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SCIENTIFIC PROGRAM OF 33RD WORLD CONGRESS OF ENDOUROLOGY & SWL PROGRAM BOOK

Thursday 1 October **Moderated ePoster Sessions (MP1)** **14:00–16:00**

Basic Research 1
Room 2

MP1-1 Leak Point Pressure is affected by Renal Vascular Clamp Type and Position in Human Renal Arteries
JK Shen, DN Tryon, KC Myklak, MM Alsyouf, BS Peplinski, C Conceicao, HC Ruckle, DD Baldwin
United States

MP1-2 Fabrication and in vitro feasibility research of newly designed ureteral stent with antireflux device
LZQ Liu
China

MP1-3 Effects of Alpha Blockade on Intrapelvic Pressure and Ureteral Peristalsis in an in vivo Stented Porcine Model
LJ Johnson, DL Davenport, R Venkatesh
United States

MP1-4 Urinary Infection Rate Caused by a New Biodegradable Anti-Refluxive Ureteral Stent. Animal Model Comparative Study
F Soria, E Morcillo, J De la Cruz, A Serrano, J Rioja, A Budia, T Fernandez, I Fernandez, J Bachiller, FM Sanchez
Spain

MP1-5 Nanotechnology combination therapy for Renal Cell Carcinoma: Gold Nanorods bound with tyrosine kinase inhibitor produce synergistic treatment response when combined with laser thermal ablation in a Renal Cell Carcinoma animal model
BR Lee, C Callaghan, SH Mandava, D Peralta, M Bouljihad, SD Dash, JL Liu, MT Tarr, MM Maddox, WL Lai
United States

MP1-6 Changes in the density of interstitial cells of Cajal as a prognostic factor in patients with ureteropelvic junction obstruction
RJ Jordão, RAST Bandeira, KR Leite, EP Miranda, M Miguel Srougi
Brazil

MP1-7 Expert Endourologists' Perception of Ureteral Access Sheath Insertion Force Threshold to Protect Ureteral Damage
T Tefik, C Seitz, M Brehmer, P Osther, G Giusti, JR Rassweiler, MG Grasso, GP Preminger, MP Pearle, OT Traxer
Turkey

MP1-8 In vitro Study on Ureteral Smooth Muscle Relaxation with Tamsulosin, Nifedipine, and Terpene mixture (Rowatinex®)
JW Lee, MY Lee, TH Oh, WA Kwon, SC Park, H J Jeong, I Y Seo
Korea, Republic of

MP1-9 Post turp stricture! Urologist's dilemma - can we prevent them? – a research perspective
SBP Patankar
India

MP1-10 Visual Pattern of MAG-3 renogram: an unreliable witness for ureteric obstruction?
YS Smith, S Yallappa, P Polson, K Subramonian
United Kingdom

MP1-11 Calculation of therapeutic effects after transurethral incision in BOO models
YF Fukai, T Ishii, T Igarashi
Japan

MP1-12 Incidence of raised serum creatinine in patients admitted with unilateral acute ureteric colic: A cohort study
BW Lamb, J Lettin, J Cook, S Malik, S Graham
United Kingdom

MP1-13 CD8 T Cells Inhibit the Interleukin-15 (IL-15) Induced Cytotoxic Activity of NK and NKT Cells toward Tumour Cells in the Prostate Cancer Microenvironment
O Elhage, C Sakellariou, Ra Smith, C Galustian, P Dasgupta
United Kingdom

MP1-14 Hypoxia inducible factor 1-alpha (HIF-1α) and Toll-like receptor 4 (TLR4) are overexpressed during kidney ischemia reperfusion injury in a porcine model
E Olweny, Z Zhang, B Haimovich, YS Kwon, T Lu, BFK Fyfe-Kirschner
United States

MP1-15 Association of BID SNPs (rs8190315 and rs2072392) and clinical features of benign prostate hyperplasia in Korean population
DSK Kim, T Choi, KH Yoo, S Jeon
Korea, Republic of

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MP1-16 Application of long-acting VLHL PAI-1 during sutureless partial nephrectomy in mice reduces bleeding
K Shahrour, R Keck, J Jankun
United States

MP1-17 Development of Robotic Partial Kidney Transplant in a Porcine Model: A Pilot Study
MW Ball, NT Readal, MA Gorin, PM Pierorazio, ME Allaf
United States

MP1-18 Does the Heat Generation by the Thulium (Th: YAG) Laser in the Irrigation Fluid Represent a Risk for the Upper Urinary Tract? An In Vivo Experimental Study
P Kallidonis, M Vasilas, VP Panagopoulos, LA Amanatides, IK Kyriazis, T Vrettos, F Fligkou, E Liatsikos
Greece

MP1-19 Multi-institutional development and validation of the RARP Score for training and assessment
CE Lovegrove, G Novara, K Guru, A Mottrie, B Challacombe, J Raza, H Van der Poel, J Peabody, P Dasgupta, K Ahmed
United Kingdom

MP1-20 Crowd-sourcing assessment of surgeon dissection of renal artery and vein during robotic partial nephrectomy: A novel approach for quantitative assessment of surgical performance
K Powers, T Lendvay, AG Boonjindasup, MR Pinsky, MM Maddox, J Warren, LM Su, M Gettman, C Sundaram, BR Lee
United States

MP1-21 Urine Aquaporin-1 and Perilipin-2: Can Novel Urine Markers Modify Biopsy Algorithms for Small Renal Masses?
S Figenshau, J Mobley, J Morrissey, J Song, K Figenshau, J Larson, J Vetter, S Bhayani, E Kharasch
United States

MP1-22 Influence of the platelet rich plasma injections on the urethral anastomosis in mini pigs
VV Lysenko, LG Rosha, VL Medvedev, AD Melenevsky, VA Snysarenko, VV Sazhiyenko
Russian Federation

MP1-23 Boiling histotripsy ablation of in vivo spontaneous renal carcinoma in the Eker rat
GR Schade, YN Wang, S D'Andrea, JH Hwang, DW Lin, VA Khokhlova, MR Bailey, TD Khokhlova
United States

MP1-24 Endoscopic surgery under saline irrigation for abdominal and retroperitoneal space in porcine model
T Igarashi, T Ishii, Y Matsunaga, K Inoue, Y Naya
Japan

Thursday 1 October **Moderated ePoster Sessions (MP2)** **14:00–16:00**

Basic Research 2: Urolithiasis
Room 3

MP2-1 Stone Retropulsion with the Use of a Recently In Introduced Holmium Laser System
P Kallidonis, L Amanatides, P Ioannou, N Spiliopoulos, G Koukiou, V Panagopoulos, M Vasilas, I Kyriazis, E Liatsikos
Greece

MP2-2 Evaluation of Contemporary Holmium Laser Fibers for Performance Characteristics
A Lusch, E Heidari, Z Okhunov, K Osann, J Landman
United States

MP2-3 Do we really need to Wear Proper Eye Protection When Using Holmium: YAG Laser during Endourological Procedures? Results from an ex-vivo Animal Model Pig Eyes
L Villa, J Cloutier, E Compérat, P Kronemberg, F Charlotte, L Berthe, Y Rouchausse, O Traxer
France

MP2-4 Factors which influence intraluminal temperature during Ho:YAG-Laser exposure at an in-vitro URS
JC Cordes
Germany

MP2-5 In vitro study of laser energy safety over guidewires: what do you need to know about lasers and guidewires?
P Mota, EC Carvalho-Dias, C Oliveira, S Dionísio, A Cordeiro, J Torres, N Morais, A Ciccione, AP Carvalho, E Lima
Portugal

MP2-6 Development and Implementation of an Impacted Ureteral Stone Model to Test Guidewire Efficacy
S Cheriyan, DL Faaborg, JS Khuri, PW Yang, KC Myklak, MM Alsyouf, DD Baldwin
United States

MP2-7 Can we provide low intrarenal pressures with good irrigation flow by decreasing the size of ureteral access sheaths?
TE Sener, J Cloutier, L Villa, F Marson, S Buttice, O Traxer
France

MP2-8 The optimal time of ureteric stent removal following holmium laser lithotripsy
KN Ramadan
United Arab Emirates

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MP2-9 Anti-urolithiatic and Reno-protective effect of herbal formulation in laboratory animals using Ethylene glycol model
SBP Patankar
India

MP2-10 A Comparison of Five Methods for the Extraction of Protein from Kidney Stones
A Stock, K Yadav, H Thummar, M Gupta
United States

MP2-11 The role of protein modelling in predicting disease severity of cystinuria
KA Wong, M Wass, M Bultitude, F Flinter, R Mein, K Thomas
United Kingdom

MP2-12 Inhibition of Nucleation and Growth of Cystine Crystals in Urine
K Ramaswamy, Hsi, D Chrzan, T Chi, D Killilea, A Kahn, P Kapahi, ML Stoller
United States

MP2-13 Biochemical composition and microanalysis of renal, pouch and bladder stones: a comparative study
MA Elnagar, EE Elsobky, AA Al-Shal, BA Bedeir Ali-El-Dein
United Arab Emirates

MP2-14 Classification of ureteroscopic stone patients by micro CT study of stones: Correlation with papillary pathology
JC Williams, M Boroksky, EM Worcester, AP Evan, FC Coe, JE Lingeman
United States

MP2-15 Applying Quantitative Micro-Raman Spectroscopy to Detect Urine Crystals and Micro Stones before and after the ESWL
Y Chiu, PA Chen, CY Hsu, HK Chiang, AW Chiu, S Hu
Taiwan

MP2-16 Mineral Gradients in Human Renal Papillae with and without Randall's Plaque
K Ramaswamy, S Ho, R Hsi, F Allen, A Minor, L Chen, T Chi, ML Stoller
United States

MP2-17 Serum uric acid is useless as a marker for hyperuricosuria: Results from a University Teaching Hospital
P Cook, R Geraghty, B Somani
United Kingdom

MP2-18 Oxalate Concentrations in Human Gastrointestinal Fluid
DG Assimos, TG Reddy, J Knight, RP Holmes, LM Harvey, AL Mitchem, CM Wilcox, KE Monkemuller
United States

MP2-19 Preliminary Evidence Suggests Periureteral Botulinum Toxin Type A Injection Improves Ureteral Stone Passage in the Porcine Model
NM Streeper, SY Nakada, ML Wertheim, SL Best
United States

MP2-20 Metformin induces production of mediators promoting formation of kidney stones in mouse kidney tissue
BR Reddy, S Nair, K Yadav, HG Thummar, M Gupta
United States

MP2-21 New Insights into the Genesis and Adherence of Urinary Calculi Using High Resolution Microscopy
K Ramaswamy, S Ho, R Hsi, F Allen, A Minor, L Chen, T Chi, ML Stoller
United States

MP2-22 Discovery of Inappropriately Alkaline Microenvironments within Dilated Bellini Ducts: Innitial Evidence for Geterogeneous Acidification within the Kidney
MS Borofsky, AP Evan, JC Williams, Jr., RK Handa, S Bledsoe, FL Coe, EM Worcester, JE Lingeman
United States

MP2-23 Heterogeneous nucleation drives the formation of non-calcium urinary stones in humans and Drosophila melanogaster
T Chi, G Tasian, T Zee, S Lang, G Muteliefu, D Killilea, A Kahn, P Kapahi, M Stoller
United States

MP2-24 Quantitative evaluation of heavy metals and trace elements in urinary calculi: a multicenter study
MA Elnagar, EE Elsobky, S Mehta, BA Bedeir Ali-El-Dein, T Knoll, K Alkholany, M Monga
United Arab Emirates

Thursday 1 October **Moderated ePoster Sessions (MP3)** **14:00–16:00**

Basic Research 3: Urolithiasis
Room 15

MP3-1 Demographics and comorbidities of 5000 patients undergoing PCNL from a national database
LF Derbyshire, WJG Finch, S Fowler, JN Armitage, J Glass, J Withington, SO Irving, NA Burgess, OJ Wiseman
United Kingdom

MP3-2 The Changing Epidemiology and Prevalence of Renal tract Calculi in England - A Ten-year analysis
HN Ni Raghallaigh, A Ali, A Symes
United Kingdom

MP3-3 Prevalence of urolithiasis in China: a large-scale population and urinary ultrasound-based, cross-sectional survey
GH Zeng, ZL Mai, SJ Xiao, JX Ma, WQ Wu, ZP Wang, KQ Zhang, SB Ni, W Li, ZQ Ye
China

MP3-4 Is urinary lithogenic risk increasing over the time in patients with urolithiasis?
HW Kang, SP Seo, YB Chae, IC Cho, H Jang, YJ Kim, SJ Yun, SC Lee, WJ Kim, WT Kim
Korea, Republic of

MP3-5 Do stones still kill? An analysis of death from stone disease 1999 to 2013 in England and Wales
FEC Kum, W Mahmalji, J Hale, K Thomas, M Bultitude, J Glass
United Kingdom

MP3-6 Are upper tract calculi more common in more deprived areas?
RS Radcliffe, S Miller, ST Williams, RFJ Stanford
United Kingdom

MP3-7 The epidemiology of urolithiasis in an ethnically diverse population living in the same area
J Cook, B Lamb, J Lettin, S Graham
United Kingdom

MP3-8 Renal Colic; A&E burden and the incidence of recurrent attendances.
S Bishara, M Hanna, R Dasgupta
United Kingdom

MP3-9 Effect of temperature and humidity on renal colic presentation in a UK hospital
DKC Mak, B Kelly, A Noah, R Devarajan
United Kingdom

MP3-10 Renal colic incidence and its relation to climate
MNS Nadjafi-Semnani, N Ghanbarzadeh, A Nadjafi-Semnani, F Nadjafi-Semnani, M Ahrari
Iran (Islamic Republic of)

MP3-11 Health related Quality of Life in urinary stone disease: Does age matter?
A Raja, F Wood, H Joshi
United Kingdom

MP3-12 Do urinary calculi affect first time and recurrent stone formers differently? (results from a qualitative study)
A Raja, F Wood, H Joshi
United Kingdom

MP3-13 The prevalence of secondary hyperparathyroidism amongst calcium stone formers
S Bishara, M Hanna, J Cox, R Dasgupta
United Kingdom

MP3-14 Stone fragment size post ESWL is influenced by stone composition and vitamin D levels
S Bishara, M Hanna, J Cox, R Dasgupta
United Kingdom

MP3-15 Outcomes of Urolithiasis Treatment in Patients with Renal Insufficency
G Thummar, U Khater, V Joshi, R Ganatra, J Ghevaria, R Joshi, M Gupta
United States

MP3-16 Clinical features and treatment outcomes of painless ureter stone
HW Kang, SP Seo, YB Chae, IC Cho, H Jang, YJ Kim, SJ Yun, SC Lee, WJ Kim, WT Kim
Korea, Republic of

MP3-17 Utilisation of STONE scoring system in the emergency department in predicting uncomplicated ureteral stones
CWY Ho, N Jones, S Irving
United Kingdom

MP3-18 Safety of Non-Steroidal Anti-Inflammatory Drugs in Urolithiasis
DPMS Swallow, M Abrahams, OJ Wiseman
United Kingdom

MP3-19 Does stent-induced pain correlate with ureteric stent encrustation?
A Raja, M Sherif, H Joshi
United Kingdom

MP3-20 The predicting factor associated with upward malposition of intracoporeal Double-J stenting following laparoscopic ureterolithotomy and the effects of flexible cystoscopy in reducing the malposition rate of ureteral stent: Korea University experience
HK Kim, JY Kim, JH Pyun, SB Kim, S Cho, SH Kang, JG Lee, JJ Kim, J Cheon, SG Kang
Korea, Republic of

MP3-21 Evaluation of Contact Electropulse Lithotripsy: In Vitro Assessment of Cavitation and Stone Fragmentation
AG Kaplan, G Sankin, M Gautho, C Yang, J Dale, GM Preminger, ME Lipkin, P Zhong
United States

MP3-22 Pressure bags for enhanced visibilty in FURS. Are they reliable in terms of intrarenal pressure?
LB Dragos, S Proietti, S Buttice, O Traxer
France

MP3-23 Ultrasonic tweezers to reposition kidney stones
OA Sapozhnikov, MR Bailey, BW Cunitz, AD Maxwell
United States

MP3-24 The effect of variable pulse duration on stone comminution, fiber tip degradation, and stone retropulsion in a "dusting" model
AJ Ackerman, TT Chen, AG Kaplan, C Yang, R Shin, WN Simmons, CD Scales, GM Preminger, ME Lipkin
United States

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Thursday 1 October **Moderated ePoster Sessions (MP4)** **14:00–16:00**

Imaging 1 - MRI & Paediatrics
Room 17

MP4-1 **Men at high risk of complications may avoid biopsy with a negative pre-biopsy MRI: A cohort study over a 1 year period.**
BW Lamb, WS Tan, A Rehman, A Nessa, D Cohen, J O'Neill, JSA Green, JEW Hines
United Kingdom

MP4-2 **Routine Use of Magnetic Resonance Imaging in Prostate Cancer Facillitates Better Candidate Selection for Active Surveillance**
A Sivaraman, R Sanchez-Salas, E Barret, Y Ahallal, M Galinao, F Rozet, N Cathala, A Mombet, D Prapotnich, X Cathelineau
France

MP4-3 **Diagnostic role of preoperative magnetic resonance imaging (MRI) in the detection of a large anterior prostate cancer and its oncological significance**
M Kim, M Park, D Lee, IG Jeong, C Song, JH Hong, CS Kim, TY Ahn, H Ahn
Korea, Republic of

MP4-4 **Perineal Biopsy is the only way access anterior lesions detected by prostate MRI.**
SJ Jain, KS Shahrour, TJL Lewis, JB Bieszczad
United States

MP4-5 **MRI based surgical planning can exclude extracapsular disease prior to RARP: a prospective cohort study of 400 cases**
BW Lamb, PJ Cathcart, A Sridhar, M Davari, I Ahmad, JEW Hines, TP Briggs, S Nathan, JD Kelly
United Kingdom

MP4-6 **Estimating periprostatic fat using software programme as a marker of prostate aggressiveness in men undergoing radical prostatectomy**
N Dahran, C Wei, S Vinnicombe, G Nabi
United Kingdom

MP4-7 **Diffuse hypointensity on the T2 phase of a prostate MRI in men with diffuse prostate cancer can be a significant confounder resulting in a falsely low PIRADS score**
S Jain, R Vaidya, TJ Lewis, K Shahrour, J Bieszczad
United States

MP4-8 **Interobserver reliability is excellent amongst experienced radiologists interpreting prostate MRIs using the PIRADS scoring system**
S Jain, B Saltzman, TJ Lewis, K Shahrour, J Bieszczad
United States

MP4-9 **Diagnostic performance of multiparametric MRI in prostate cancer: per core analysis of two prospective ultrasound/MRI fusion biopsy datasets**
G Simone, A Giacobbe, D Collura, R Papalia, S Guaglianone, G Tuderti, GL Muto, M Gallucci, G Muto, M Ferriero
Italy

MP4-10 **The accuracy of MR/US fusion biopsy to predict pathological outcomes of prostate cancer**
K Kamoi, F Hongo, Y Naya, Y Naitoh, A Iwata, T Nakamura, K Okihara
Japan

MP4-11 **The Use of Multiparametric MRI in Cognitive Targeted Template Biopsies: How Predictive is PIRAD Scoring?**
T Mahesan, U Reddy, N Pereira, H Evans, BS Montgomery, SR Bott
United Kingdom

MP4-12 **Multiparametric MRI: Clinical value of 3 Tesla MRI and Dynamic Contrast Enhancement**
DJ Eldred-Evans, G Marra, S Samad, M Puglisi, W Lam, A Polson, G Rottenberg, B Challacombe, R Popert
United Kingdom

MP4-13 **Utility of preoperative 3 Tesla multiparametric pelvic phased-array magnetic resonance imaging in prediction of extracapsular extension of prostate cancer and its impact on surgical margin status: Experience at a Canadian tertiary academic health centre**
J Hoogenes, I Wright, C Boylan, B Shayegan
Canada

MP4-14 **Multiparametric 3T MRI in the evaluation of prostate cancer and Correlation with histopathology**
SJS Shah
India

MP4-15 **Robotic HIFU: Evaluation with D-CE-MR Imaging**
F Pisanti, R Del Vescovo, F Attisani, L Mavilla, D Granata, M Casilio, B Zobel, M Schettini
Italy

MP4-16 **Diagnosis of adrenal masses – A need of a standardised method of evaluating suspected adrenal masses**
MS Vedanayagam, RH Zakri, I Morrison, N Shrotri
United Kingdom

MP4-17 **A New Method of Intraoperative Radiographic Assessment of Ureteral Length, to Determine the Ideal Stent Length**
K Barrett, D Ghiculete, RJD Honey
Canada

MP4-18 **Intravenous Urogram (IVU) – a valuable modality for specific indications in endourology**
D Halstuch, R Holland, M Lubin, Y Ehrlich, J Baniel, D Lifshitz
Israel

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MP4-19 Floroscopy guided, Endoscopic Trans vesical ureteroneocystostomy for distal end ureteral obstruction
WM Sameh, MA Sharaf Eldeen, MA Atta
Egypt

MP4-20 Novel Use of an Image Enhancement Device to Reduce Fluoroscopic Radiation Exposure during Ureteroscopic Lithotripsy: A Randomized, Prospective Clinical Evaluation of LessRayTM
AJ Brandon, M Fabrizio, A Poddar, S Shaun Wason
United States

MP4-21 Stone size and location are associated with increased ionising radiation exposure during ureterorenoscopy and Ho:YAG laser lithotripsy
M Hadjipavlou, LJ Tay, V Lam, J Seth, F Anjum, S Sriprasad
United Kingdom

MP4-22 Optimization of Fluroscopic Imaging to Reduce Radiation Exposure in Children Undergoing Endourological Intervention
AM Fahmy, ME Youssif, IA Mokhless, AM Albeltagy, HI Rhashad
Egypt

Friday 2 October **Moderated ePoster Sessions (MP5)** **14:00–15:30**

Laparoscopy: Upper Tract Benign 1
Room 10

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MP5-1 3D Laparoscopic Right Nephrectomy for Giant Right Renal Vein Aneurysm and Successful Auto Transplantation
R Ramaswami, A Jindal, A Anand, H Podiydath
India

MP5-2 Laparoscopic Ureteroureterostomy for Circumcaval Ureter: Single Center Experience with 5 Cases
M Laymon, A Shoma, A Elsherbiny
Egypt

MP5-3 Pyeloplasty in marginal kidneys – is it worth doing?
J Barclay
United Kingdom

MP5-4 Laparoscopic Pyelolithotomy: A Good Alternative for Open Surgery and PCNL
MM Hosseini, AR Aminsharifi, D Irani, AR Haghpanah, A Eslahi, AR Yousefi, R Inaloo, M Zaki-Abbasi
Iran (Islamic Republic of)

MP5-5 Laparoscopic nephrectomy for urolithiasis: when is better to avoid it
A Danilovic, GV Maia, S Reis, FCM Torricelli, GS Marchini, CC Lopes, FC Vicentini, AH Brito, E Mazzucchi, M Srougi
Brazil

MP5-6 Laparoscopic Heminephrectomy for Benign and Malignant Diseases of the Horseshoe Kidney
A Tuncel, A Erkan, M Sofikerim, M Arslan, Y Kordan, Y Akin, Y Aslan
Turkey

MP5-7 Intraoperative antegrade stenting for laparoscopic pyeloplasty; tips, tricks and pitfalls
A Downey, A Thwaini
United Kingdom

MP5-8 Laparoscopic pyeloplasty with concomitant pyelolithotomy
B Guliev, BK Komyakov, RV Aliev
Russian Federation

MP5-9 Risk factors of unstable hemodynamic during laparoscopic adrenalectomy for the management of pheochromocytoma
DH Cho, BS Kim, SY Kwon, HT Kim, TH Kim, ES Yoo, SK Chung, BW Kim, WS Oh, TG Kwon
Korea, Republic of

MP5-10 Transvesical Laparoscopic Surgery for megaureters
Y Naitoh, Y Yamada, A Fujihara, F Hongo, Y Naya, K Kamoi, K Okihara
Japan

MP5-11 Diagnosis and treatment of adrenal hematolymphangioma (with 4 case reports)
Y Yan, M Qiu
China

MP5-12 Laparoscopic Retroperitoneal Right Ureterolithotomy
E Malkoc, S Basal, F Dursun, O Bakal, M Zor, Z Aktas, K Karademir
Turkey

MP5-13 Withdrawn

MP5-14 Retroperitoneal laparoscopic surgery for Ureteropelvic Junction Obstruction by double renal veins
M Qiu
China

MP5-15 Laparoscopic nephro ureterctomy for nonfunctioning kidney
M El Mrini, R Rabii, Y Houry, A Halfya, R Aboutaieb, F Meziane
Morocco

MP5-16 Laparoscopic Intraperitoneal Pyeloplasty with Renal Stone Extraction
E Malkoc, S Basal, F Dursun, O Bakal, F Ates, Z Aktas, K Karademir
Turkey

MP5-17 Anatomical considerations of retroperitoneal perirenal intrafascia plane.
J-G Qiu, HC Hu
China

MP5-18 Clinical analysis of retroperitoneal laparoscopic approach in treating adrenal hematolymphangioma
Y Yan, M Qiu
China

MP5-19 Laparoscopic Transteritoneal Decortication of a Giant Left Adrenal Cyst
S Basal, E Malkoc, F Dursun, O Bakal, Z Aktas, T Senkul, K Karademir
Turkey

MP5-20 Ureteral inflammatory myofibroblastic tumor: a case report and literature review
FP Li, H Guo, MS Jin, RQ Wang, XM Fan, EP Liu, CX Wang, YC Hou
China

MP5-21 Outcomes of a Laparoscopic Pyelolymphatic Disconnection in Patients with Refractory Chyluria
BP Singh, HR Pathak, U Dhakad, S N Sankhwar
India

MP5-22 Retroperitoneal Ganglioneuroma Mimicking Right Adrenal Mass
H Nasseh
Iran (Islamic Republic of)

Friday 2 October **Moderated ePoster Sessions (MP6)** **14:00–15:30**

Metabolic Stone Disease 1
Room 11

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MP6-1 Metabolic Assessments in Recurrent and First Episodes of Calcium Oxalate Urolithiasis
B Çakiroglu, O Sinanoglu, T Tas, E Eyyupoglu
Turkey

MP6-2 A prospective evaluation of obesometric parameters associated with kidney stone recurrence
D Bos, CB Allard, S Dason, E Matsumoto, J Pinthus
Canada

MP6-3 Age-Related Prevalence of Diabetes Mellitus, Cardiovascular Disease and Anticoagulation Therapy Use in a Urolithiasis Population and Their Effect on Outcomes: The Clinical Research Office of The Endourological Society Ureteroscopy Global Study
FPJ Daels, A Gaizauskas, J Rioja, AK Varshney, E Erkan, Y Ozgok, M Melekos, J de la Rosette
Argentina

MP6-4 Use of Social Media in the Management of Cystinuria patients
S Sundar, K Subramonian
United Kingdom

MP6-5 What metabolic abnormalities are found in uric acid and calcium oxalate stone formers and how do they differ?
RC Macleod, CS Biyani, M Jordaan, SJ Symons
United Kingdom

MP6-6 Variation in Work-up of Primary Hyperparathyroidism in Kidney Stone Formers by Endourologists
TP Marien, SD Herrell, NL Miller
United States

MP6-7 The natural history of asymptomatic renal stones: A systematic review and meta-analysis
KR Ghani, A Alruwaily, MAM Rogers, M Bierlien, W Townsend, C Dauw, JS Wolf, Jr, JM Hollingsworth
United States

MP6-8 Impact of Urine pH on Urinary Supersatuation and Stone Recurrence in Calcium Oxalate Stone Formers
M Morgan, Canvasser, N Maalouf, J Antonelli, J Pointdexter, B Huet, A Cohen, K Sakhee, M Pearle
United States

MP6-9 Medical dissolution therapy of radio-lucent renal calculi in patients with metabolic syndrome
AO Noah, BD Kelly, R Devarajan
United Kingdom

MP6-10 Coronary Artery Calcium Score and Association with Recurrent Nephrolithiasis: the Multi-Ethnic Study of Atherosclerosis
RS Hsi, AJ Spieker, ML Stoller, DR Jacobs, AP Reiner, RL McClelland, AJ Kahn, T Chi, M Szklo, MD Sorensen
United States

MP6-11 Rapid recurrence of cystine calculi requiring multiple PCNLs within a 4-year period
B Eisner, V Pais, R Sur, D Miller, G Pareek
United States

MP6-12 Diabetics on Metformin Experience Increased Stone Episodes Compared to Non-Metformin Users
BNR Reddy, HG Thummar, M Gupta
United States

MP6-13 Value of simple urinary pH should not be forgotten in metabolic stone screening for high-risk patients: Results from our 'Medical stones clinic'
P Cook, R Geraghty, B Somani
United Kingdom

MP6-14 Prevalence of urolithiasis rises with increasing number of metabolic syndrome traits: Results of a systematic review
YV Wong, P Cook, P Roderick, B K Somani
United Kingdom

MP6-15 Seasonal Variance in the Presentation of Urolithiasis
CP Slayden, JM Riley, MS Davis
United States

MP6-16 Adherence Rates for Preventive Pharmacologic Therapy among Patients with Kidney Stones
CA Dauw, Y Yi, MJ Bierlein, AF Alruwaily, KR Ghani, JS Wolf, BK Hollenbeck, JM Hollingsworth
United States

MP6-17 The Effect of Stone Prevention Counseling at the Initial Consultation on 24-hour Urine Collection Results (“Clinic Effect”)
T Alzahrani, D Ghiculete, KT Pace, JY Lee, RJD Honey
Canada

MP6-18 Low socioeconomic status is not a barrier to successful 24 hour urine collection
E Fram, AK Keehn, JM Stern
United States

MP6-19 The role of parathyroid hormone testing in patients with nephrolithiasis
KS Eyre, EJ Grout, BW Turney
United Kingdom

MP6-20 Development of a Novel Curriculum in Medical Kidney Stone Prevention
DP Viprakasit, TA Sukhu, JR Lomboy, MR Macey
United States

MP6-21 Biochemical stone analysis: does it really matter?
C Fragkopoulou, L Forster, A Gkentzis, R Azad, AB Stewart, JA Forster
United Kingdom

MP6-22 Two 24-hour urine collections for the metabolic assessment of patients with nephrolithiasis; Does timing between studies matter?
I Kafka, O Ayyash, J Lynam, S Jackman, T Averch
United States

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Friday 2 October **Moderated ePoster Sessions (MP7)** **14:00–15:30**

Surgical Outcomes 1
Room 12

MP7-1 Assessing the Volume-Outcome Relationship for PCNL in 2014 -Analysis using BAUS Registry Data of over 2000 Cases
JM Withington, WJG Finch, S Fowler, JN Armitage, JM Glass, SO Irving, NA Burgess, K Thomas, OJ Wiseman
United Kingdom

MP7-2 PCNL access by Urologist or Radiologist: An analysis of the BAUS PCNL Registry
JN Armitage, S Fowler, WJ Finch, NA Burgess, SO Irving, J Withington, J Glass, OJ Wiseman
United Kingdom

MP7-3 Outcome from percutaneous nephrolithotomy (PCNL) in patients with spinal cord neuropathy: a single UK Centre’s experience
A Moon, R Gowda, A Sakthivel, A West
United Kingdom

MP7-4 Stone size is best predictor of operative time required in ureteroscopic laser lithotripsy: Implications for surgical planning and quality improvement
M White, I Sorokin, DC Cardona-Grau, A Rehfuss, A Birney, C Stavrakis, G Leinwand, A Herr, PJ Feustel
United States

MP7-5 Are we ready to predict percutaneous nephrolithotomy stone-free failure?
NK Gadzhiev, SS Brovkin, VE Grigoryev, DD Shkarupa, NS Tagirov, SB Petrov
Russian Federation

MP7-6 The role of prolonged antibiotic course prior to percutaneous nephrolithotomy in the prevention of systematic inflammatory response syndrome
E Dellis, AG Papatsoris, M Lardas, M Berdebes, P Mourmouris, I Varkarakis, AA Skolarikos
Greece

MP7-7 Percutaneous nephrolithotomy: A cost-effective analysis of tubeless and standard procedures
J Akerman, HYV Tu, J Hoogenes, SA Lambe, ED Matsumoto
Canada

MP7-8 Simultaneous supine percutaneous nephrolithotomy and retrograde intrarenal surgery in complex renal stones
DJ Curry, R Srinivasan, T Stonier, N Woodward, D Yu, A Goode, P Singh, D Allen, L Ajayi
United Kingdom

MP7-9 Service improvements through the standard use of nephrostogram prior to nephrostomy removal after PCNL
PD Cleaveland, A Seager, M Christodoulidou, L McHugh, M Mokete
United Kingdom

MP7-10 Prognostic factors associated with stone-free rate and complications of percutaneous nephrolithotomy for treatment of staghorn calculi over 10 years at a single institution
SW Choi, SH Hong, JY Lee, SW Kim, TK Hwang, HJ Cho
Korea, Republic of

MP7-11 A Zero-Fluroscopy Percutaneous Nephrolithotomy for Children in Modified Supine Position: A Novel Technique
AM Fahmy, ME Youssif, IA Mokhless, HI Rhashad
Egypt

MP7-12 Is smaller really better? A comparison of different techniques in percutaneous nephrolithotomy
JP Jessen, P Honeck, G Wendt-Nordahl, T Bach, T Knoll
Germany

MP7-13 What is the Best Scoring System to Predict Percutaneous Nephrolithomy Outcomes? A Comparative Study among S.T.O.N.E Score, Guy's Stone Score and CROES Nomogram
FCV Vicentini, FR Serzedello, GS Marchini, FCM Torricelli, M Srougi, E Mazzucchi
Brazil

MP7-14 The Practicality of Using Score Systems to Predict the Outcome of Percutaneous Nephrolithotomy
BTY Lim, WL Yam, SK Lim, D Goh, JK Teo, FC Ng
Singapore

MP7-15 Complications of percutaneous approach in renal stones
DR Multescu, D Georgescu, B Geavlete, P Geavlete
Romania

MP7-16 Percutaneous nephron-lithotomy (PCNL): Using Statistical process control charts to reduce variability and improve outcomes
A Mevcha, A Elves
United Kingdom

MP7-17 Long Term DMSA Scintigraphy Split Renal Function Results After Nephrolithotomy Procedures
T Ebiloglu, E Kaya, Y Aydogmus, B Kopru, S Bedir
Turkey

MP7-18 Upper pole renal puncture in supine percutaneous nephrolithotomy
DJ Curry, R Srinivasan, N Woodward, D Yu, A Goode, R Kucheria, P Singh, D Allen, L Ajayi
United Kingdom

MP7-19 Bilateral simultaneous PCNL under regional block a feasible low cost model
VK Mishra
India

MP7-20 Comparison and analysis of Guy's and S.T.O.N.E. nephrolithometry scoring systems for prediction of stone-free status and complications after tubeless percutaneous nephrolithotomy
SW Choi, SH Hong, JY Lee, SW Kim, TK Hwang, HJ Cho
Korea, Republic of

MP7-21 The Wisconsin Stone Quality of Life Questionnaire: Baseline Results Results from a Prospective, Longitudinal, Multi-Center Validation Study
JA Antonelli, KL Penniston, TD Averch, DP Viprakasit, RL Sur, S Sivalingam, BH Chew, VG Bird, VM Pais, SY Nakada
United States

MP7-22 Modified Clavien –Dindo Classification, Single institute PCNL experience at District General Hospital
F Khan, J Hamill, E Papworth, J Joseph, R MacDonagh
United Kingdom

Friday 2 October **Moderated ePoster Sessions (MP8)** **14:00–15:30**

Surgical Outcomes 2
Room 2

MP8-1 10-year Experience of Robot Assisted Radical Prostatectomy (RARP) for High-Risk Prostate Cancer
N Raison, O Elhage, C Brown, D Cahill, R Popert, B Challacombe, P Dasgupta
United Kingdom

MP8-2 Robot Assisted Radical Prostatectomy in High Risk Patients
BF Katz, D Maass, SJ Yu, BL Taylor, AM Lee, M Yezdani, K Monahan, A McGill, DI Lee
United States

MP8-3 Positive margins and their risk factors after robotic assisted laparoscopic prostatectomy in pT3 prostate cancer
J Klein, G Wirth, CE Iselin
Switzerland

MP8-4 Comparing conventional laparoscopic to robotic-assisted radical prostatectomy with extended pelvic lymph node dissection in intermediate and high-risk prostate cancer: are we really doing that better?
S Albisinni, D Le Dihn, F Aoun, K Limani, E Hawaux, A Peltier, RV van Velthoven
Belgium

MP8-5 Preoperative Low Risk Men Who Were Eligible for Active Surveilllance and Underwent Robotic Assisted Radical Prostatectomy
BF Katz, BL Taylor, SJ Yu, D Maass, AM Lee, M Yezdani, K Monahan, A McGill, DI Lee
United States

MP8-6 Cost Effectiveness of Robotic-Assisted Urologic Oncology Surgery
KL Stern, CJ Chen, MR Humphreys
United States

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MP8-7 Improved Continence with Posterior Reconstruction of the Rhabdosphincter after Robotic-Assisted Radical Prostatectomy
B McGuire, S Eaton, Y Bhanji, R Matulewicz, D Oberlin, A Manjunath, M Said, C Dong, KT Perry, RB Nadler
United States

MP8-8 Challenges Posed by Desmoplastic Changes In a High Risk Patient that had Anti Androgen Therapy Prior to Robotic Assisted Radical Prostatectomy
AP Castro, I Lorenzo
Philippines

MP8-9 Continence outcomes for the our first 1000 robotic radical prostatectomies
ER Jefferies, AJ Koupparis, DA Gillatt, MP Wright, RA Persad, PH Abrams, EW Rowe
United Kingdom

MP8-10 Robot-Assisted Radical Cystectomy with Totally Intracorporeal Urinary Diversion: A comparative analysis with Extracorporeal Urinary Diversion
HK Kim, JH Pyun, JY Kim, SB Kim, S Cho, SG Kang, JG Lee, JJ Kim, J Cheon, SH Kang
Korea, Republic of

MP8-11 Minimally Invasive Radical Cystectomy Leads to Decreased Perioperative Complications compared to Open Cystectomy – Analysis from the NSQIP Database
SP Park, N Fahey, CH Wang
United States

MP8-12 Risk assessment of complications after robotic radical cystectomy with total intracorporeal urinary diversion
M Ferriero, G Simone, R Papalia, R Mastroianni, S Guaglianone, M Gallucci
Italy

MP8-13 Oncological Outcomes and Recurrence Sites Following Robotic Cystectomy with Intracorporeal Urinary Diversion versus Open Radical Cystectomy
WS Tan, A Sridhar, G Ellis, B Lamb, M Goldstraw, S Nathan, J Hines, P Cathcart, T Briggs, JD Kelly
United Kingdom

MP8-14 Risk assessment of chronic kidney disease development in patients undergone robotic radical cystectomy and totally intracorporeal diversion
M Ferriero, G Simone, R Papalia, R Matroianni, S Guaglianone, M Gallucci
Italy

MP8-15 Retropubic radical prostatectomy reproducing robot-assisted laparoscopic radical prostatectomy technique: analysis of functional and pathologic outcomes
BS Kim, SY Kwon, HT Kim, TH Kim, ES Yoo, TG Kwon, SK Chung, BW Kim, DH Cho, WS Oh
Korea, Republic of

MP8-16 Comparison of surgical outcomes between open and robot-assisted laparoscopic radical cystectomy
WS Oh, BS Kim, YS Ha, HT Kim, TH Kim, ES Yoo, SK Chung, BW Kim, DH Cho, TG Kwon
Korea, Republic of

MP8-17 Surgical and Pathologic Outcomes after Robotic-Assisted Laparoscopic and Open Radical Cystectomy among High-Risk Patients
SMG Gilbert, P Sharma, K Zargar-Shoshtari, MA Poch, JM Pow-Sang, WJ Sexton, PE Spiess
United States

MP8-18 Results from a pilot study of The "Better Robotic Prostatectomy" Project: an evidence-based perioperative pathway for patients undergoing robot-assisted laparoscopic prostatectomy
TW Tan, KS Png, SJ Chia, YL Chong
Singapore

MP8-19 Factors associated with positive surgical margins following robot-assisted laparoscopic radical prostatectomy: Impact of learning curve
EK Kolesar, B Shayegan
Canada

MP8-20 Extraperitoneal Robot-Assisted Radical Prostatectomy: Outcomes in Patients with Very Large Prostates (>100 g): A Matched Pair Analysis
V Agrawal, C Feng, J Joseph
United States

MP8-21 Pelvic Lymph Node Dissection, and Complications in African American Compared to Caucasian Patients with Localized Prostate Cancer Undergoing Robot-Assisted Radical Prostatectomy
V Agrawal, W Underwood, C Feng, J Joseph
United States

MP8-22 Anterior Suspension of Posterior Reconstruction Suture- a Novel Technique to Improve Early Return of Urinary Continence Following Robot-Assisted Radical Prostatectomy
V Agrawal, A Ghazi, J Joseph
United States

MP8-23 Early Outcomes of Salvage Robotic Prostatectomy post LDR Brachytherapy
ER Jefferies, AJ Koupparis, DA Gillatt, EW Rowe
United Kingdom

Friday 2 October **Moderated ePoster Sessions (MP9)** **14:00–15:30**

Imaging 2
Room 14

MP9-1 "Doctor, may I biopsy your prostate ?" - our perceptions and our own preferences
EJ Lim, CT Heng, WT Loke
Singapore

MP9-2 The use of prophylactic antibiotics in percutaneous nephrostomy insertion: is there a role?
S Sarkar, RS Shaikh, VM Jones, BW Lamb, S Pathak, SJ Graham
United Kingdom

MP9-3 Lipid-poor Angiomyolipoma: Can We Avoid Surgical Interventions?
AM Potretzke, TA Potretzke, JM Mobley, A Park, B Anderson, GS Sandhu, RS Figenshau, SB Bhayani, CL Siegel
United States

MP9-4 Progression vs regression, interobserver reliability and Malignancy rate in complex renal masses ≥ Bosniak IIF
AH Hamed, S Hamed, I El-Mokadem, G Nabi
United Kingdom

MP9-5 The change of postoperative CT imaging following laparoscopic partial nephrectomy
TS Kim, SH Kang, PM Kang, HY Rhew, JG Park, KS Oh
Korea, Republic of

MP9-6 Findings and Impact of Early Imaging after Partial Nephrectomy
DA Duchene, R Tubre, T Dum, W Parker, T Walmann, Z Hamilton, M Mirza
United States

MP9-7 A new methodology for standardised reporting of ureteric stent encrustation
A Raja, M Sherif, J Hobot, H Joshi
United Kingdom

MP9-8 Assessment of Occurrence and Growth Patterns of Cysts in patients with Autosomal Dominant Polycystic Kidney Disease using Volumetric Data
Y Matsunaga, T Ishii, T Igarashi
Japan

MP9-9 Boiling Histotripsy of the Kidney Using an MR-Guided Clinical Focused Ultrasound System
GR Schade, N Farr, YN Wang, TD Khokhlova, A Partanen, AD Maxwell, W Kreider, MR Bailey, VA Khokhlova
United States

MP9-10 A tertiary referral centre experience in establishing cryoablation (CYA) for small renal masses (SRM)
HS Ertemi, J Al-Roubaie, G Webster, M Al-Akraa, FH Mumtaz, M Aitchison, R Illing
United Kingdom

MP9-11 Radiological cross-sectional follow up of Bosniak 2F cysts: how long?
AH Hamed, Mistry, I El-Mokadem, G Nabi
United Kingdom

MP9-12 Before or during ablation? The effect of the timing of biopsy on the management of small renal masses (SRM)
HS Ertemi, J Al Roubaie, M Al- Akraa, G Webster, FH Mumtaz, M Aitchison, R Illing
United Kingdom

MP9-13 Impact of AUA recommendations on imaging trends in the follow-up of ureteral calculi
AJ Ackerman, TT Chen, L Ding, GM Preminger, CD Scales, ME Lipkin
United States

MP9-14 Stone Imaging Options; Survey on the Current Practice of Endourology Society Members.
H Alenezi, L Nott, D Olvera-Posada, T Tailly, SE Pautler, H Razvi, JD Denstedt
Canada

MP9-15 Are upper urinary tract investigations mandatory in men with visible hematuria secondary to a prostatic or lower urinary tract origin?
SJ Srirangam, O Abed, R Kaba, A Parnham, GD Wemyss-Holden
United Kingdom

MP9-16 Fiber-optic Confocal Laser Endomicroscopy of Small Renal Masses: Towards Real-time Optical Diagnostic Biopsy
LM Su, J Kuo, RW Allan, JC Liao, KL Ritari, PE Tomeny, CM Carter, BJ Otto
United States

MP9-17 The Clinical Research Office of the Endourology Society (CROES) multicentre randomised trial of narrow band imaging-assisted transurethral resection (TURBT) versus conventional white light-assisted TURBT in primary non-muscle-invasive bladder cancer patients: trial protocol and 1-year results
S Naito, F Algaba, M Babjuk, R Bryan, H Herr, M Soloway, Y Sun, L Valiquette, J de la Rosette
Japan

MP9-18 Is There Value Added to Endourologists Doing Renal Ultrasound in their Office? A Patient's Perspective
H Thummar, A Stock, U Khater, S Gupta, D Paulluci, K Gupta, M Gupta
United States

MP9-19 How Important is it for Endourologists to Look at Films Prior to Decision-making?
H Thummar, A Stock, S Gupta, K Gupta, U khater, M Gupta
United States

MP9-20 Methylene Blue Bedside Injection as a Cost-Effective Alternative to Antegrade Nephrostography to Assess Urinary Obstruction after Percutaneous Nephrolithotomy
MD Truesdale, M Elmer-Dewitt, B Schmidt, I Metzler, A Gadzinski, M Sandri, M Stoller, T Chi
United States

MP9-21 Staging bone scans in clinically localised intermediate risk prostate cancer – a comparison of outcomes from a large UK cohort compared with standard international guidelines
G V Kanda Swamy, A Bennett, K Narahari, O Hughes, J Rees, H Kynaston
United Kingdom

MP9-22 Kidney Stone Size Accuracy with the Posterior Ultrasound Shadow: A Prospective Study
B Dunmire, YA Haider, PC May, BC Cunitz, RS Hsi, J Thiel, Z Lui, MD Sorensen, MR Bailey, JD Harper
United States

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MP10-1 A Novel Cadaveric Robotic Training Programme in Urology
N Raison, K Ahmed, A Aydin, MS Khan, P Dasgupta, N Soomro
United Kingdom

MP10-2 Learning curve of the Tube 3 module designed for practicing vesicourethral anastomosis in a virtual reality robotic simulator and the preliminary study of concurrent and predictive validation
HK Kim, JH Pyun, JH Tae, SG Yoon, S Cho, SH Kang, JG Lee, J Cheon, JJ Kim, SG Kang
Korea, Republic of

MP10-3 Predicative capabilities of neuropsychological tests on robotic and laparoscopic simulator performance
MCB Morgan, W Lam, N Douek, S van Rij, B Challacombe, P Dasgupta
United Kingdom

MP10-4 The surgical skill of novice trainee manifests in time-consuming exercises of virtual simulator rather than quick finishing counterpart: a concurrent validity study using an urethrovesical anastomosis model
HC Jung, JH Kim, HS Park, JT Seo, JY Choi, PH Song, KH Moon, YH Ko
Korea, Republic of

MP10-5 Comparison of the performance of experienced and novice surgeons: Measurement of Gripping Force during Laparoscopic Surgery Performed on Pigs by Using Forceps with Pressure Sensors
AA Araki, KM Makiyama, SO Ohtake, HY Yamanaka, DU Ueno, KO Osaka, MN Nagasaka, TY Yamada, MY Yao
Japan

MP10-6 Development and content validation of the RAPN Assessment Tool
ES Bruce, N Raison, B Challacombe, G Novara, A Mottrie, J Hubert, D Murphy, H van der Poel, P Dasgupta, K Ahmed
United Kingdom

MP10-7 Are 5 cases enough? : A prospective study to minimize learning curve for Robot-assisted radical prostatectomy in a local University hospital in Japan.
H Zakoji, T Miyamoto, M Kamiyama, S Kira, N Sawada, Y Ootake, T Yamagishi, H Kobayashi, M Takeda
Japan

MP10-8 Incorporation of the da Vinci Surgical Skills SimulatorTM at Urology Objective Structured Clinical Examinations (OSCEs): Pilot Study
Y Noureldin, A Stoica, W Kassouf, S Tanguay, F Bladou, S Andonian
Canada

MP10-9 Validation of the RobotiX Mentor Robotic Surgery Simulator
G Whittaker, A Aydin, N Raison, F Kum, B Challacombe, MS Khan, P Dasgupta, K Ahmed
United Kingdom

MP10-10 Utility of a novel on-screen overlay frame of reference system for orientation during intraoperative laparoscopic surgical education
J Hoogenes, R Elias, S Kim, B Shayegan, K Kim, K Piercey, A Kapoor, ED Matsumoto
Canada

MP10-11 Direct comparison of an ergonomic laparoscopic combination with robotic surgery in an inanimate experimental laparoscopic radical prostatectomy setting; times and ergonomy
T Tokas, AS Gözen, A Tschada, J Rassweiler
Austria

MP10-12 Assessment and Validation of the EAU Hands-On-Training Course in Robotic Surgery
N Raison, K Ahmed, N Fossati, NM Buffi, AE Canda, N Suardi, G Guazzoni, A Mottrie, P Dasgupta, H Van Der Poel
United Kingdom

MP10-13 Dry Lab Training for Vasovasostomy
HS Ram, A Madan, M Nazar
India

MP10-14 Preliminary Results of an Intensive Training On A Simulation Model For Flexible Ureteroscopy in Medical Students: The Kidney-Box (K-BOX) Model
V Villa, ES Sener, JC Cloutier, FB Butticè, FM Marson, SD Doizi, OT Traxer
France

MP10-15 Robotic training with porcine models is less stressful than virtual reality robotic simulators for urology resident trainees
VB Mouraviev, E Schommer, DD Thiel, S Samavedi, A Gupta, RJ Leveillee, T Raju, JP Sang, LM Su, VR Patel
United States

MP10-16 Identifying tomorrow's Urologists from today's students: assessing the aptitude for minimally invasive procedures through simulation.
N Virani, M Ahmed, A Roy, A Patel, P Patki
United Kingdom

MP10-17 Is There a Place for Virtual Reality Simulators in Assessment of Competency in Percutaneous Renal Access?
A Noureldin, N Fahmy, M Anidjar, S Andonian
Canada

MP10-18 Validation of a patient-specific simulator for laparoscopic renal surgery
K Makiyama, H Yamanaka, D Ueno, K Ohsaka, F Sano, N Nakaigawa, A Araki, M Yao, Y Kubota
Japan

MP10-19 Validation of a Novel Cadaveric Endourology Training Programme
A Aydin, K Ahmed, MS Khan, P Dasgupta, JE McCabe
United Kingdom

MP10-20 Validation of a Dry-lab Training Model for Cystoscopy and Delivery of Intravesical Botolinum-Toxin Injections
A Aydin, K Ahmed, JE McCabe, MS Khan, P Dasgupta, A Sahai
United Kingdom

MP10-21 Development and content validation of the LRN Assessment Tools
ES Bruce, S Khan, A Rane, M Sheriff, P Dasgupta, K Ahmed
United Kingdom

MP10-22 Non-technical skills and stress responses in surgery: An analysis of human factors and an evaluation of the learning curve
A Lowdon, A Aydin, M Iqbal, MS Khan, P Dasgupta, K Ahmed
United Kingdom

MP10-23 Do non-technical skills impact technical performance within a simulation-based ureteroscopy environment?
O Brunckhorst, S Shahid, A Aydin, C McIlhenny, S Khan, A Sahai, J Brewin, MS Khan, P Dasgupta, K Ahmed
United Kingdom

MP10-24 Ureteroscopic Skills with and without Roboflex Avicenna in a Training Model
S Proietti, L Dragos, S Butticè, F Gutierrez, O Traxer
France

Friday 2 October **Moderated ePoster Sessions (MP11)** **14:00–15:30**

Laparoscopy: Upper Tract - Oncology
Room 17

MP11-1 Why Do We Convert? Understanding Open Conversion during Minimally Invasive Renal Surgery in England Using the British Association of Urological Surgeons (BAUS) Registry Data
R Nair, R Gray, CJ Anderson, S Fowler, TS O'Brien, PJ Le Roux
United Kingdom

MP11-2 Management of vascular and bowel injury during laparoscopic and robot-assisted urological surgery
KS Png, MWL Chow, CP Sundaram
Singapore

MP11-3 Smaller incisions for larger tumours: The role of hand-assisted laparoscopic nephrectomy (HAL-N) for stage T2 renal lesions
R Nair, R MacArthur, M Kulkarni, P Tsavalas, P Le Roux, CJ Anderson
United Kingdom

MP11-4 Laparoscopic Cytoreductive Nephrectomies- Single UK Centre Experience
Z Cheema, M Afzal, T Mcdermott, A Kolovos, S Grumett, A Chakravarti
United Kingdom

MP11-5 Diagnostic Utility of Selective Upper Tract Urinary Cytology: A Meta-analysis and Systematic Review of the Literature
BA Knight, AM Potretzke, A Park, B Anderson, JM Vetter, RS Figenshau, SB Bhayani
United States

MP11-6 Does urinary cytology performed at haematuria clinic help in the diagnosis of upper tract Transitional Cell Carcinoma?
M ElMahdy, M Varma, H Joshi
United Kingdom

MP11-7 Template based Laparoscopic lymph nodes dissection in urotherial carcinoma of renal pelvis and upper ureter
K Araki, A Fujimoto, M Kanesaka, K Hou, T Suyama, H Masuda, S Kojima, Y Naya, T Igarashi, T Ichikawa
Japan

MP11-8 The role of pre-operative histology in Nephroureterectomy: The UK experience
M Malki, S Fowler, S Williams
United Kingdom

MP11-9 Perioperative outcomes of template-based laparoscopic lymphadenectomy for upper urinary tract urothelial carcinoma
A Maeno, R Ito, H Tsuruta, T Inoue, M Saito, S Narita, N Tsuchiya, S Sato, T Habuchi
Japan

MP11-10 Prognostic factors for intravesical recurrence after laparoscopic nephroureterectomy for native upper urinary tract urothelial carcinoma in renal transplant recipients
Y Liu, XF Hou, L Zhao, LL Ma
China

MP11-11 Laparoscopic radical nephroureterectomy is associated with worse survival outcomes than open radical nephroureterectomy in patients with locally advanced upper tract urothelial carcinoma
HD Yuk, HS Kim, JH Ku, C Kwak, JS Paick, CW Jeong, HH Kim
Korea, Republic of

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MP11-12 Hand-assisted retroperitoneoscopic nephroureterectomy (HARNU) with bladder cuffing after preperitoneal and retroperitoneal perivesical ballooning
KT Kim
Korea, Republic of

MP11-13 External Validation of Renal Nephrometry Score to Access the Perioperative Parameter for Laparoscopic Partial Nephrectomy in a Single Institution
C Y Wu, YC Chen, K Lu, CY Huang, CH Chen, HY Lin, VC Lin
Taiwan

MP11-14 Predictors of trifecta outcomes in laparoscopic partial nephrectomy for clinical T1a renal masses
KO Osaka
Japan

MP11-15 The Surgical Outcome Comparison between V-Loc Self-Retaining Barbed Suture and Vicryl Polyglactin Suture for Renorrhaphy in Retroperitoneal Laparoscopic Partial Nephrectomy for Patients with Renal Cell Carcinoma
DP Wu, GD Zhu, ZS Yang, WB Song, DL He
China

MP11-16 Laparoscopic versus percutaneous cryoablation for T1 renal masses: an Italian multicentric study
BD de Concilio, C Cicero, G Zeccolini, F Laganà, L Balestrieri, G Casarrubea, F Zattoni, F Merlo, S Siracusano, A Celia
Italy

MP11-17 Renal Nephrometry score predicts surgical outcomes in partial nephrectomy
JP Keane, H O'Kane, C Hagan, PF Keane, A Thwaini
United Kingdom

MP11-18 Positive Surgical Margins are Associated with Increased Risk of Recurrence after Partial Nephrectomy for Localized Renal Tumors
Z Okhunov, DM Moreira, PH Shah, AK George, AA Razmaria, L Richstone, AL Shalhav, I Gill, J Landman, LR Kavoussi
United States

MP11-19 Renal functional outcomes after laparoscopic partial nephrectomy using dynamic renal scintigraphy
T Fujita, M Nishi, K Tabata, K Matsumoto, K Yoshida, M Iwamura
Japan

MP11-20 Can Aspirin Safely be continued during Laparoscopic Partial Nephrectomy?
DA Leavitt, P Shah, M Siev, M Keheila, P Zhao, L Richstone, M Vira, L Kavoussi
United States

MP11-21 Predictors of Delayed Intervention (DI) for Patients on Active Surveillance (AS) for Small Renal Masses: Does Renal Mass Biopsy (RMB) Influence our Decision?
SN Ambani, TM Morgan, JS Montgomery, AJ Gadzinski, BL Jacobs, N Krishnan, S Hawken, DC Miller, AZ Weizer, JS Wolf
United States

MP11-22 Percutaneous biopsy of renal masses: an assessment of diagnostic capabilities and complications in relation to RENAL nephrometry
BA Knight, AM Potretzke, B Anderson, A Park, JM Vetter, SB Bhayani
United States

MP11-23 The efficacy comparing of selective laparoscopic nephron-sparing surgery and radical nephrectomy for early renal cell carcinoma
J Zhang
China

Friday 2 October **Moderated ePoster Sessions (MP12)** **15:00–16:00**

Robotic Surgery: Lower Tract - Benign
Room 7

MP12-1 Comparative Analysis of Robot-Assisted Simple Prostatectomy and Greenlight Photoselective Vaporization for Prostates Greater than 100 CC: A Matched- Pair Analysis
LG Glickman, GS Sivarajan, CW Wright, CW White, MA Ahmed, GL Lovallo, ME Esposito, KB Basralian, RM Munver
United States

MP12-2 Boari Flap Ureteral re-implantation: Replicating the techniques of open surgery in robotics.
JU Stolzenburg, B Rai, M Do, A Dietel, E Liatsikos, R Ganzer, I Kyriazis, H Qazi, A Meneses, P Kallidonis
Germany

MP12-3 Robotic Assisted Vesico-Vaginal Fistula Repair: Our Technique
JU Stolzenburg, M Do, A Dietel, R Ganzer, I Kyriazis, P Kallidonis, B Rai, E Liatsikos
Germany

MP12-4 Side-Docking for Simultaneous Robot-assisted and Endourological Surgery
IH Chen, CC Yu, T Wu
Taiwan

MP12-5 Feasibility and Outcomes of Combined Holmium Laser Enucleation of the Prostate (HoLEP) and Robotic Bladder Diverticulectomy
RK Khanna, NT Tuong, AM Madala, JP Paonessa, OS Shapiro
United States

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MP12-6 Concomitant Management of Lower Urinary Tract Obstruction and Bladder Diverticulum with Robot Assistance: Simplifying the Procedure with Easier Identification of the Diverticulum
I Tufek, P Mourmouris, OB Argun, C Obek, MS Keskin, H Akpinar, F Atug, AR Kural
Turkey

MP12-7 Robot assisted laparoscopic repair of spontaneous appendicovesical fistula
Y Kibar, S Yalcin, B Kopru, B Topuz, E Kaya
Turkey

MP12-8 Extraperitoneal Robot-Assisted Repair of a Pelvic Fracture Associated Urethral Injury
V Agrawal, H Levey, R Davis, J Joseph
United States

MP12-9 Robotic Surgery used as First-Line Treatment for Iatrogenic Ureteral Injuries
W McDonald
United States

MP12-10 Robotic-assisted simple prostatectomy: outcomes of a modified operative technique
JE Sulek, P Ghamarian, AF Colhoun, LJ Hampton
United States

MP12-11 "Cupid and Psyche": a novel technique for Robotic Hysterosacropexy in the treatment of Pelvic Organ Prolapse
F Dal Moro, A Calpista, M Mancini, F Zattoni
Italy

MP12-12 Robot-Assisted Laparoscopic Bladder Diverticulectomy with Intraoperative Cystoscopy: Surgical Technique and Long Term Follow Up
S Jain, P Wong, R Munver, K Shahrour
United States

Friday 2 October **Moderated ePoster Sessions (MP13)** **15:30–17:00**

New Technology 1
Room 10

MP13-1 Use of Head Mounted Wearable Technologies in Surgery
MH Iqbal, A Aydin, K Ahmed, P Dasgupta
United Kingdom

MP13-2 SinHapticMed: a new Gesture-controlled tool to assist navigation of kidney anatomy in three-dimension during minimally invasive nephron sparing surgery
A Dourado Meneses, B Aragão Rocha, PA Lima Mattos, A Tolstenko Nogueira, FM Almeida De Araújo, A Andrade Saraiva, S Cassio Zequi
Brazil

MP13-3 Prostate cancer in 140 characters: A time-trend analysis of prostate cancer on Twitter
KR Ghani, Y Liu, MA Shlykov, JT Wei, B Hollenbeck, K Zheng
United States

MP13-4 A review of the current trends in urology smartphone applications
P Osuri, H Abboudi, MS Khan, P Dasgupta, K Ahmed
United Kingdom

MP13-5 Smartphones: the rise and rise of urological apps
HR Warren, J Makanjuola, M Bultitude
United Kingdom

MP13-6 The use of Google GLASS in Surgery and Effect on Performance
MH Iqbal, A Aydin, A Lowdon, HI Ahmed, GH Muir, MS Khan, P Dasgupta, K Ahmed
United Kingdom

MP13-7 Three-dimensional printing of surgical clips: a pilot study and trial of efficacy
AH Lay, S De, N Canvasser, R Fernandez, JA Cadeddu
United States

MP13-8 A new semi-rigid device for females self urethral catheterization
D Dalela, A Goel, D Dalela, SN Sankhwar, M Patodia
India

MP13-9 Flexor® Vue™ Deflecting Ureteral Access Sheath: a promising addition to the endourological armamentarium
EAA Mains, B Tang, T Golabek, T Wiatr, G Ross, D Howie, A Duncan, I Tait, P Chłosta, G Kata
United Kingdom

MP13-10 Utilization of The Single-Use, Disposable ProSurg Neo-Cystosheath® In Outpatient Cystoscopic Procedures
JV DiTrolio, MD LaSalle, K Blum
United States

MP13-11 Efficacy of Antegrade and Retrograde Warm Saline Perfusion during Renal Cryoablation for Ureteral Preservation
N Khater, AN Erskine, DL Faaborg, PW Yang, JC Smith, DD Baldwin
United States

MP13-12 Treatment of parapelvic cyst by internal drainage using flexible ureteroscopy and holmium laser
YQ Liu, CL Xiao, J Lu, LL Ma
China

MP13-13 A Swellable Drug-Eluting Stent to Target Fibrosis-Induced Ureteral Stricture
WS Lim, YY Huang, TW Chong, K Chen, SS Venkatraman
Singapore

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MP13-14 The Efficacy of a Ureteral Stent with Polymeric Flap Valve for Preventing Urinary Reflux: A Pilot Study in a Porcine Model
H Kim, CJ Park, S Seo, Y Park, J Lee, D Shin, H Moon, J-H Lee
Korea, Republic of

MP13-15 The use of Cook Resonance® metallic ureteric stent in cases of obstructive uropathy from persistent neo-ureteric stenosis, following kidney transplantation
SF Hulligan, CM Patel, I Michailidis, R Jones, I Shergill
United Kingdom

MP13-16 The new concept of ureteral access sheath with guidewire disengagement: one wire does it all
B Alberto, E Emiliani, P Juárez del Dago, F Millán, CM Scoffone, T Knoll, P JS Osther, E Liatsikos
Spain

MP13-17 Prospective outcomes of Duowire Bi-Flex (Nitinol hydrophilic flexible ends PTFE guidewire): Combined results from two UK Endourology centers
HL Wells, N Rukin, BK Somani
United Kingdom

MP13-18 A new kind of stent for conservative treatment of ureteral fistulas
Y Hussein Mohamed Ismail, D Taglialatela, F Ceresoli, R Milesi, AD Del Rosso, I Vavassori
Italy

MP13-19 Comparison of initial experiences between full-length metallic stent and segmental metallic stent in malignant ureteral obstruction
JK Nam, JY Han, DH Lee, SW Park, MK Chung
Korea, Republic of

MP13-20 Preliminary experience with Uventa: a new coated metallic ureteric stent
TJ Smith, M Kulkarni, S Herbert, N Drinnan, R Kulkarni
United Kingdom

MP13-21 The 17-gene Genomic Prostate Score vs. the Kattan & Partin Nomograms to predict Non-Organ Confined Prostate Cancer
MJ Whalen, DJ Paulucci, KK Badani
United States

MP13-22 Office-based Ultrasound Guided Percutaneous Renal Mass Biopsy
Z Okhunov, A Menhadji, V Nguyen, T Lee, J Landman
United States

Friday 2 October **Moderated ePoster Sessions (MP14)** **15:30–17:00**

Metabolic Stone Disease 2
Room 11

MP14-1 Evaluation of Student Athlete Kidney Stone Risk via 24 Hour Urine Collection
KM Theisen, O Ayyash, M Ferroni, K Rycyna, J Riley, TD Averch, MJ Semins
United States

MP14-2 Consequences of Non-Adherence to Preventive Pharmacological Therapy among Patients with Kidney Stones
CA Dauw, Y Yi, MJ Bierlein, AF Alruwaily, KR Ghani, JS Wolf, BK Hollenbeck, JM Hollingsworth
United States

MP14-3 Compliance and Metabolic Stone Disease. Does Distance to Care Matter?
CP Slayden, MA Gallegos, JM Riley
United States

MP14-4 A prospective analysis of patient knowledge regarding risk factors and prevention of nephrolithiasis
M Fakhoury, N Raminfar, B Shorter, E Cabezon, MR Cohn, JS Wysock, MA Bjurlin
United States

MP14-5 The Kidney stone and Increased Water Intake Pilot Study in Steel Workers
JA Antonelli, Y Lotan, IB Jiménez, H Gharbi, R Herring, A Beaver, A Dennis, D Von Merveldt, AB Cohen, MS Pearle
United States

MP14-6 Cystine Stone-Formers have Impaired Health Related Quality of Life Compared to Non-Cystine Stone-Formers
NM Streeper, ML Wertheim, KL Penniston, SY Nakada
United States

MP14-7 Education alone does not improve adherence to metabolic stone screen guidelines: are we missing uric acid abnormalities?
MK Phull, P Nandra, J Withington, M Bultitude, J Brewin
United Kingdom

MP14-8 5 year performance of a patient information website for cystinuria
MS Smith, A Doherty, G Rottenberg, D Game, K Thomas, M Bultitude
United Kingdom

MP14-9 Hypertension and renal impairment in patients with cystinuria: findings from a specialist cystinuria centre
FE Kum, K Wong, D Game, J Glass, M Bultitude, K Thomas
United Kingdom

MP14-10 Nutritional Recommendations for Stone Prevention: What Do Patients Remember?
KL Penniston, ML Wertheim, SY Nakada
United States

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MP14-11 The high prevalence of co-morbidities and concurrent metabolic abnormalities in recurrent kidney stone formers with idiopathic hypercalciuria
LA McGuinness, K Exarchou, RC Calvert, V Mishra
United Kingdom

MP14-12 Urine Biochemistry and Stone outcomes in recurrent renal stone formers with concurrent hypercalciuria and hyperuricosuria
LA McGuinness, K Exarchou, RC Calvert, V Mishra
United Kingdom

MP14-13 Recurrence of uric acid stones in the modern era: Results from a 15-year stone database
RC Macleod, CS Biyani, SJ Symons, M Jordaan
United Kingdom

MP14-14 Patient Attitudes toward Medical Management for Recurrent Urolithiasis
KL Penniston, SY Nakada
United States

MP14-15 Primary Care Utilization for Kidney Stone Disease
MH Mendez, ME Lipkin, LE Boulware, SK Hull, JW Ragsdale, GM Preminger, CD Scales
United States

MP14-16 Is there a difference between body height and age in patients with calcium oxalate and cystine stones?
M Noble, M Omar
United States

MP14-17 Quality of care of uric acid stone formers: single center review
I Kafka, O Ayyash, J Lynam, D Lapoint, M Semins, S JAckman, T Averch
United States

MP14-18 Guidelines for preventing the recurrence of uric acid stones: where is the evidence?
RC Macleod, M Jordaan, SJ Symons, CS Biyani
United Kingdom

MP14-19 How Much Information is Lost When Only 24-Hour Urine is Collected as Part of the Initial Metabolic Evaluation?
AA Alruwaily, CA Dauw, MJ Bierlein, JR Asplin, KR Ghani, JS Wolf Jr, JM Hollingsworth
United States

MP14-20 Litholink: a novel 24 hour urine analysis service for metabolic stone evaluation
AA Ali, A Symes, H NiRaghallaigh
United Kingdom

MP14-21 Factors associated with development of stones in the octogenarians and nonagenarians based on the 24-hour urine analysis
G Baldwin, BN Reddy, M Silva, HG Thummar, G Badalato, M Gupta
United States

MP14-22 Association of metabolic syndrome traits with struvite stone formers: a comparison with calcium stone formers
FC Torricelli, S Reis, GS Marchini, CC Segre, A Danilovic, M Srougi, E Mazzucchi
Brazil

Friday 2 October **Moderated ePoster Sessions (MP15)** **15:30–17:00**

Surgical Outcomes 3
Room 12

MP15-1 Frailty is Associated with Increased One-Year Mortality in Patients Undergoing Major Surgery
K Ogan, MA Henderson, LM Revenig, DJ Canter, JF Sweeney, JM Sarmiento, DA Kooby, SK Maithel, C Tai, VA Master
United States

MP15-2 How Fit is Your Patient? Using Activity Monitoring to Assess the Surgical Patient
HW Cui, BW Turney, FC Hamdy
United Kingdom

MP15-3 Health Related Quality of Life in Patients Undergoing Laparoscopic Adrenalectomy
AB Althaus, O Dovirak, J Mao, C Crociani, K Taylor, P Chang, A Wagner
United States

MP15-4 Outcomes of Holmium Laser Enucleation of the Prostate (HoLEP) in chronic urinary retention
A Tsiotras, G Georgiadis, J Hale, M Cynk
United Kingdom

MP15-5 Creating an "Acute Renal Colic Pathway" in a Teaching Hospital, a Quality Improvement Project
JE Jelski, P Gordon, J Dunn, M Crockett, C Gutteridge, R Pearcy, AJ Dickinson
United Kingdom

MP15-6 Long term follow-up for Rendezvous procedures
G Mazzon, S Choong, PO Pal, S Allen, D Smith, C Allen, A Kirkham, N Ramachandram, M Walkden, T Philp
United Kingdom

MP15-7 Is acute ureteroscopy for painful ureteric colic cost effective and beneficial for patients? A cost effectiveness analysis
MPS Darrad, T Sibartie, NJ Rukin, JA Inglis
United Kingdom

MP15-8 Predictors of Unplanned Hospital Readmission after Major Urologic Inpatient Surgery
R Cohn, SN Patel, NM Donin, M Schulster, JS Wysock, MA Bjurlin
United States

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MP15-9 Audit of Emergency Re-attendance Post-Ureteroscopy at a District General Hospital
CE Lovegrove, N Shrotri
United Kingdom

MP15-10 Enhancing life or prolonging death? Indications and outcomes for nephrostomy insertion for malignant ureteric obstruction
A Lotlikar, N Karunanithy, J Glass, K Thomas, M Bultitude, S Willis
United Kingdom

MP15-11 Spinal Anaesthesia facilitates the early recognition of TUR Syndrome
I Jour, S McGowan-Smyth, V Prasad, N Vasdev, S Gowrie-Mohan
United Kingdom

MP15-12 Transperineal Biopsy of Prostate as default diagnostic modality – Is it feasible in practice?
LJ TAY, P Sangster, R Dickinson, J Nelson, B Khoubehi, N Borley
United Kingdom

MP15-13 High Value Hematuria Care: Identifying Costs of a Novel Care Pathway
TT Chen, W Webster, CE Samples, M Shahsahebi, ME Lipkin, GM Preminger, SK Hull, CD Scales
United States

MP15-14 Independent Risk Factors for Contralateral Patent Processus Vaginalis Undetected by Preoperative Ultrasonography in Boys with Unilateral Inguinal Hernia
DS Yoo, BS Kim, HW Hwang, SH Woo
Korea, Republic of

MP15-15 Gentamicin resistance mirrors increased Ciprofloxacin resistance but multidrug resistance does not necessarily translate as increased infection and sepsis rates after TRUS biopsy
GV Kanda Swamy, A Shripat, H Ibrahim, S Phillips, M Nair, BD Sarmah, RS Jaganathan, S Morris
United Kingdom

MP15-16 Detection of asymptomatic locally advanced and high risk prostate cancer (PCa) through PSA testing: clinical outcomes in men excluded from the ProtecT Trial
T Johnston, GL Shaw, AD Lamb, V Gnanapragasam, D Parashar, AL Moore, JA Lane, JL Donovan, FC Hamdy, DE Neal
United Kingdom

MP15-17 EORTC risk tables: usefulness in our daily urological practice
RG Giulianelli, LA Albanesi, BCG Gentile, GM Mirabile, GR Rizzo, PT Tariciotti
Italy

MP15-18 Patient Frailty is a Strong Predictor for Complications after Renal Cancer surgery– Analysis from the NSQIP Database.
S Park, N Fahey, CH Wang
United States

MP15-19 Same day discharge with an early recovery after surgery protocol is safe and applicable for patients undergoing robot assisted laparoscopic surgery
S Jain, K Shahrour
United States

MP15-20 Hepatic–coagulopathy: do we really need to correct it prior to urological interventions? Experience from an apex hepatobiliary referal hospital in India
VJ Jain, S Jain, P Singhal, AT Tiwari
India

MP15-21 A Trial Without Catheter (TWOC) Protocol - A Simple Way to Reduce Transurethral Resection of Prostate (TURP) Post-Operative Length of Stay (LoS)
MD Hillen, K Gallagher, C Quirie, P Bollina
United Kingdom

MP15-22 Laser prostatectomy; HoLEP is an effective bladder outflow surgery with better clinical outcome– Our experience in district general settings
W Akhter, G Bhamra, J Kalsi
United Kingdom

Friday 2 October **Moderated ePoster Sessions (MP16)** **15:30–17:00**

Surgical Outcomes 4
Room 2

MP16-1 Utilization of prostate cryoablation has decreased over time in Gleason 6 prostate cancer: results from the SEER database
M Daugherty, R Khanna
United States

MP16-2 Poorer Quality of Life is Associated with Increased Healthcare Utilization in Men Following Robotic-Assisted Radical Prostatectomy
GA Abdelsayed, B Kim, M Merchant, J Slezak, W Chu, P Kilday, K Porter, J Gelfond, SJ Jacobsen, GW Chien
United States

MP16-3 The Efficacy and Safety of Tadalafil 5mg Once Daily for the Treatment of Erectile Dysfunction Related to the Vascular Causes after Robot-assisted Radical Prostatectomy: 2 Year Follow-up
GT Sung, SD Kim
Korea, Republic of

MP16-4 Comparative Peri-operative, Oncologic and Continence study after 300 cases of Retzius-sparing Robot-assisted Radical Prostatectomy
DK Kim, I Alabdulaali, A Sheikh, A Atawi, KH Kim, KC Koo, SH Lee, KH Rha
Korea, Republic of

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MP16-5 Using the EPIC 26 QOL questionnaire to detect and assess depression in patients with prostate cancer
S Kilday, PA Elliott, GA Abdelsayed, JM Slezak, E Rodriguez, TN Harrison, SJ Jacobsen, GW Chien
United States

MP16-6 Targeted prophylactic antimicrobial therapy prior to TRUS biopsy: A systematic review of literature
A Cussans, BK Somani, A Basarab, T Dudderidge
United Kingdom

MP16-7 Prospective assessment of time-dependent changes in quality of life of Japanese patients with prostate cancer following robot-assisted radical prostatectomy
K Harada, A Miyazaki, N Hinata, M Muramaki, H Miyake, M Fujisawa
Japan

MP16-8 Focal Cryo-Ablation in Localized Radiation Failure Prostate Cancer
J Del Dago, A Breda, A Bakavicius, P Castellán, E Moncada, D Salas, J Palou, H Villavicencio
Spain

MP16-9 Long Term Effect of Neoadjuvant Leuprolide Injection on Quality of Life Following Radical Prostatectomy
S Kilday, PA Elliott, GA Abdelsayed, JM Slezak, TN Harrison, SJ Jacobsen, GW Chien
United States

MP16-10 Robotic Radical Prostatectomy for High Risk Prostate Cancer in Men Greater than 70 Years Old
BF Katz, J Bonzo, BL Taylor, SJ Yu, M Yezdani, A McGill, KM Monahan, DI Lee
United States

MP16-11 Preoperative prediction of biochemical recurrence in high-risk prostate cancer patients who underwent robot-assisted radical prostatectomy
N Yamaguchi, T Yumioka, T Masago, S Morizane, M Honda, T Sejima, A Takenaka
Japan

MP16-12 Cost-Benefit Comparison of Robotic-assisted Simple Prostatectomy (RASP), Open Simple Prostatectomy (OSP), Bipolar Transurethral Resection (TURP), and Photovaporization (PVP) for Benign Prostatic Obstruction (BPO)
AC Eschenroeder, K Wood, D Haddad, S Hemal, A Hemal, D Rukstalis, J Gutierrez-Aceves, R Evans, RP Terlecki, GH Badlani
United States

MP16-13 Assessment of functional, oncological and population-based complications surveillance following extraperitoneal laparoscopic prostatectomy using record-linkage methodology
C Paterson, A Alashkham, J-U Stolzenburg, G Nabi
United Kingdom

MP16-14 Radical prostatectomy outcomes in Germany: an analysis of a surgeon independent database of 20.067 patients subjected to open, laparoscopic and robotic assisted procedures
JU Stolzenburg, I Kyriazis, C Gilfrich, G Popken, L Weissbach, C vonZastrow, C Fahlenbrach, C Gunster, E Jeschke, H Leicht
Germany

MP16-15 The effect of smoking on sexual function after robotic prostatectomy
S Kilday, GA Abdelsayed, PA Elliott, JM Slezak, TN Harrison, SJ Jacobsen, GW Chien
United States

MP16-16 Ureteral stone surgery in the United Kingdom: early results of a National Registry
A Gulamhusein, BT Parys
United Kingdom

MP16-17 Baseline continence of men undergoing radical prostatectomy in the UK – do we start with a level playing field?
ER Jefferies, EW Rowe, PH Abrams, AJ Koupparis
United Kingdom

MP16-18 Extraperitoneal Robot-Assisted Radical Prostatectomy: Oncologic Outcomes at >Five-year Follow-up
V Agrawal, C Feng, J Joseph
United States

MP16-19 Factors improving lymphh node invasion detection during pelvic lymph node dissection for prostate cancer: outcomes of 2160 lymph node dissections
I Kyriazis, M Do, A Dietel, R Ganzer, S Alloussi, P Kallidonis, E Liatsikos, JU Stolzenburg
Germany

MP16-20 The Impact of Surgical Caseload Volume on Quality of Life in Men after Robot-Assisted Radical Prostatectomy
GA Abdelsayed, B Kim, M Merchant, J Slezak, K Porter, J Gelfond, W Chu, P Kilday, SJ Jacobsen, GW Chien
United States

MP16-21 Reduced Length of Stay following Implementation of a Standardized Robotic Assisted Laparoscopic Radical Prostatectomy Clinical Care Pathway
GA Turini, C Tucci, G Pareek, JF Renzulli
United States

MP16-22 Critical appraisal of literature comparing minimally invasive extra-peritoneal and transperitoneal radical prostatectomy - a systematic review and meta-analysis
B Rai, P Kallidonis, R Ganzer, M Do, A Dietel, H Qazi, E Liatsikos, A McNeill, C Anderson, JU Stolzenburg
Germany

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MP17-1 Comparison of Renal Stone Fragmentation and Stone Clearance with Shockwave Lithotripsy at 60 Shocks / min and 120 Shocks / Min
VR Vallivayai, P Govardhane, I Geelani, K G
India

MP17-2 Optimising the Angle of Shockwave Lithotripsy
V Nagarajan, B Turney, R Cleveland
United Kingdom

MP17-3 Comparison of Escalating, Constant and Reduction energy output in SWL for renal stones: Multi-arm Prospective Randomized study
D Rabah
Saudi Arabia

MP17-4 Comparison of high, intermediate, and low frequency shock wave lithotripsy for urinary tract stone disease: A systematic review and network meta-analysis
DH Kang, KS Cho, HD Jung, H Lee, WS Ham, YD Choi, JY Lee
Korea, Republic of

MP17-5 Safety and efficacy of a mobile third generation lithotripsy service at a DGH: a one year review
HK Sra, R Kucheria, A Goyal
United Kingdom

MP17-6 Will SWL lead to long-term renal fibrosis? A prospective randomized study to investigate the effect of SWL on renal fibrosis under different kidney treatment protocols
CF Ng, S Luke, CH Yee, KWM Lee, J Yuen, D Gohel
Hong Kong

MP17-7 Optimising the angle of shockwave lithotripsy
NL Sharma, V Nagarajan, BW Turney, R Cleveland
United Kingdom

MP17-8 Is Extracorporeal Shockwave Lithotripsy for the Treatment of Kidney Stones a Risk Factor for the Development of Diabetes Mellitus? A Population-Based Cohort Study
M Ordon, JY Lee, D Ghiculete, RJ Honey, KT Pace
Canada

MP17-9 Extracorporeal shockwave lithotripsy monitored by an integrated ultrasound system: Could this technique broaden SWL application in kidney calculi?
A Pérez-Lanzac, P Parra, M Maestre, J Rosety, M Merlo, MJ Saavedra, J Soto, JL Alvarez-Ossorio
Spain

MP17-10 Antibiotic Prophylaxis and Extracorporeal Shock Wave Lithotripsy (ESWL) – A Complete Audit Cycle
GM Hann, F Abogunrin, M Young
United Kingdom

MP17-11 Etoricoxib provides adequate anaglesia with minimal side effects for outpatient extracorporeal shock wave lithotripsy (ESWL)
EJ Lim, SC Tay, YLW Chua, WEJ Ngo, TW Chong
Singapore

MP17-12 The effect of renal cysts on the fragmentation of renal stones during Shockwave Lithotripsy: A comparative in vitro study
H Alenezi, D Olvera-Posada, JD Denstedt, H Razvi
Canada

MP17-13 Does routine renography after SWL have any practical impact?
KH Andreassen, K Affeldt, RB Hansen, ML Møller
Denmark

MP17-14 Standardized grading of shock wave lithotripsy complications with modified Clavien system
AS Srivastava, R Kapoor, V Mittal, N Patidar
India

MP17-15 Do renal stones that fail ESWL require treatment?
B Pullar, C Lunter, J Collie, N Shah, S Hayek, O Wiseman
United Kingdom

MP17-16 Extracorporeal Shockwave Lithotripsy – Current Practices in the UK
NL Sharma, C Alexander, E Grout, BW Turney
United Kingdom

MP17-17 The new versus the old: Comparison of outcomes of extracorporeal shockwave lithotripsy (ESWL) treatment using two different lithotripters
LR Forster, N Husnoo, K Hames, C Fragkopoulou, A Gkentzis, AB Stewart, JA Forster
United Kingdom

MP17-18 Shock-wave lithotripsy and traditional Chinese medicine: friend or foe?
JJ Siu, WC Chen
Taiwan

MP17-19 99mTc-DTPA renography before and after SWL
KH Andreassen, K Affeldt, V Kristensen, RB Hansen, ML Møller, J Mehlsen
Denmark

MP17-20 Urine beta2-microglobulin changes after extracorporeal shock wave lithotripsy (ESWL)
HN Nasseh, A Roshani, E Kazemnejad, S Abdi
Iran (Islamic Republic of)

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MP17-21 **Evaluation of serum Cystatin C, Creatinine and microalbuminuria as biomarkers of acute kidney injury after shock wave lithotripsy**
MA Elnagar, EE Elsobky
United Arab Emirates

MP17-22 **Ultrasound imaging feedback to control kidney injury caused by burst wave lithotripsy**
W Kreider, AD Maxwell, YN Wang, BW Cunitz, D Lee, K Maeda, P Movahed, T Colonius, J Freund, MR Bailey
United States

Friday 2 October **Moderated ePoster Sessions (MP18)** **15:30–17:00**

Endoscopic Education: Simulator Training, Virtual Reality 2
Room 15

MP18-1 **Surgical Theatre – A Systematic Review of Live Surgical Demonstrations within Urological Surgery**
O Brunckhorst, B Challacombe, H Abboudi, MS Khan, P Dasgupta, K Ahmed
United Kingdom

MP18-2 **3D Printed Renal Models with Extensive Urolithiasis: A Novel Resident Educational Tool for Planning Percutaneous Nephrolithotomy**
KD Spradling, S Vernez, C Khoyilar, B Dolan, Z Okhunov, RF Youssef, RV Clayman, J Landman
United States

MP18-3 **A renal simulator (TRISTANS-II) advances nephrostomy & PCNL training**
NI Ishito, TS Sako, SY Yokoyama, TI Ichikawa, YY Yamamoto, HT Takamoto
Japan

MP18-4 **Use of a novel radiation-free fluoroscopy emulator (iPERC) to improve surgical skills in percutaneous nephrolithotomy**
E Maldonado- Alcaraz, J Moreno-Palacois, E Serrano-Brambila, J Rodriguez-Silverio, LO Torres-Mercado, V Lopez-Samano
Mexico

MP18-5 **Ureterorenoscopy Training on Cadavers Embalmed by Thiel's Method: Simulation or a Further Step Towards Reality? Initial Report.**
EAA Mains, B Tang, T Golabek, T Wiatr, G Ross, D Howie, A Duncan, I Tait, P Chlosta, G Kata
United Kingdom

MP18-6 **Laparoscopic IVC Injury Management Training – Evaluating Technical & Non-technical Skills**
JY Lee, MO Ordon, KT Pace
Canada

MP18-7 **Smartphone Torch-App "Shadows-Play" For Learning Of Calyx Puncture Without Radiation Exposure**
M Lezrek, H Tazi, A Slimani, K Bazine, A Beddouch, A Qarro, M Alami
Morocco

MP18-8 **CUT Laparoscopic Skills Assessment Study – Developing National Technical Skills Milestones**
JY Lee, S Andonian, T Shuler, K T Pace, E Grober
Canada

MP18-9 **Reflective Practice in Surgical Training: Does the Integrated Surgical Curriculum Programme work?**
N Raison, J Olsburgh, B Challacombe, P Dasgupta, K Ahmed
United Kingdom

MP18-10 **Development of a Simulation-based Ureterorenoscopy Curriculum**
A Aydin, AMA Shafi, M Bultitude, JM Glass, JE McCabe, N Rukin, MS Khan, P Dasgupta, K Ahmed
United Kingdom

MP18-11 **Implementation of the Curriculum of Robotic Educational Simulation & Training (CREST): The Brown University Experience**
GT Turini, D Golijanin, JF Renzulli, G Pareek
United States

MP18-12 **The Impact of Remote Monitoring and Supervision on Resident Endoscopic Training Using New ACGME Urology Milestone Criteria**
IJ Safir, AB Shrewsberry, IM Issa, K Ogan, CWM Ritenour, J Sullivan, MM Issa
United States

MP18-13 **Fundamentals of endourology: the resident perspective**
AJ Ackerman, M Mendez, TT Chen, GM Preminger, ME Lipkin, CD Scales, MN Ferrandino
United States

MP18-14 **Discrepancies in perception of residency training between residents and staff urologists: results from a North-America and Europe wide survey**
TO Tailly, G Patruno, JL Vasquez, H Alenezi, D Olvera-Posada, JP Sedelaar, EM McDougall, SE Pautler, JD Denstedt, H Razvi
Belgium

MP18-15 **Simulation-based Urological Training – A Quantitative Study of Practice and Opinions amongst UK Residents and Specialists**
A Aydin, AMA Shafi, MS Khan, P Dasgupta, K Ahmed
United Kingdom

MP18-16 **Training in Urolithiasis: outlook of Portuguese Residents**
I Braga, A Marques-Pinto, J Cabral, V Cavadas, A Fraga
Portugal

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MP18-17 Current Status of Endourology Simulation: A Systematic Review
A Aydin, AMA Shafi, MS Khan, P Dasgupta, K Ahmed
United Kingdom

MP18-18 Evaluation of Global Urology Residency Training Discrepancies and Perceived Resident Competencies
Z Okhunov, S Fukawa, R Yoon, T Zand, S Juncal, S Vernez, R Youssef, R Clayman, M Jordan, J Landman
United States

MP18-19 Differences between European and North-American residency training: results from a Europe and North-America wide residency survey
TO Tailly, G Patruno, JL Vasquez, H Alenezi, D Olvera-Posada, JP Sedelaar, EM McDougall, SE Pautler, JD Denstedt, H Razvi
Belgium

MP18-20 A randomized exposure study demonstrates that ultrasound-guided percutaneous renal access is a teachable skill
T Chi, P Filippou, A Odisho, M Usawachintachit, K Ramaswamy, W Hu, J Li
United States

Friday 2 October **Moderated ePoster Sessions (MP19)** **15:30–17:00**

Laparoscopy: Lower Tract - Oncology
Room 17

MP19-1 Laparoscopic and robotic-assisted radical cystectomy and urinary diversion: Results and complications on 50 cases
GZ Zeccolini, BDC de Concilio, PS Silvestre, AC Celia
Italy

MP19-2 Our experience in laparoscopic radical cystectomy
Y Kordan, S Celen, B Coskun, O Kaygisiz, H Vuruskan, H Kilicarslan, I Yavascaoglu
Turkey

MP19-3 Laparoscopic radical cystectomy with intracorporeal orthotopic ileal neobladder
P Shao, P Li, C Qin, J Li, X Meng, Q Lv, X Ju, C Yin
China

MP19-4 Improvement in surgical skills in laparoscopic radical cystectomy
H Kuno, A Moro, F Bo, M Ishii, A Ochi, K Suzuki, N Shiga, H Abe, T Ota
Japan

MP19-5 Comparison of laparoscopic and open cystectomy: a single centre experience
A Reekhaye, B Chaplin, S Fulford, J Cresswell
United Kingdom

MP19-6 Laparoscopic Radical Cystectomy: Early Postoperative Complications and Long term Survival Results
M Laymon, Ahmed Shoma, Nasr El- Tabey
Egypt

MP19-7 Impact of learning curve on perioperative complications in laparoscopic radical prostatectomy: A single center experience
H Yi
China

MP19-8 Salvage Robotic-Assisted Laparoscopic Prostatectomy
B Mouraviev, A Bates, A Kumar, S Samavedi, C Chew, J Marquinez, R Coelho, B Rocco, V Patel
United States

MP19-9 A two-year oncological and functional study between extraperitonial and transvesical intrafascial nerve-sparing laparoscopic radical prostatectomy for patients with low-risk prostate cancer
H Zhang, X Gao
China

MP19-10 Laparoscopic radical prostatectomy after previous transurethral resection of the prostate in clinical T1b and T2a prostate cancer - a matched-pair analysis
Y Yang, C Hu, H Zhang, J Pang, X Gao, Y Luo
China

MP19-11 Effect of prostate volume on histopathologicol outcomes in patients after laparoscopie radical prostatectomy
Z Fan
China

MP19-12 NOTES-Assited Pure Laparoscopic Radical Cystectomy with Intracorporeal Construction of Orthotopic Sigmoid Neobladder: Technique and Results
H Liu
China

MP19-13 The Learning Course for Improving Early Continence Control after Our Minimally Invasive Radical Prostatectomy — Personal Experience in a Low Volume Center
KY Chiu
Taiwan

MP19-14 Laparoscopic Retzius-sparing posterior approach radical prostatectomy: Reversed evolution from Robotic-assisted radical prostatectomy
JC Hu, KY Chiu
Taiwan

MP19-15 Laparoscopic Radical Prostatectomy- continence and oncological outcomes in 268 cases
S Goonewardene, D Cahill
United Kingdom

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MP19-16 Impact of the body mass index on perioperative results of the laparoscopic radical prostatectomy in the locally advanced prostate cancer
VV Lysenko, VL Medvedev, AV Medvedev, AD Melenevsky, VA Snysarenko, LG Rosha
Ukraine

MP19-17 Our experience in laparoscopic radical prostatectomy
YK Kordan, KO Gunseren, B Coskun, O Kaygisiz, H Vuruskan, I Yavascaoglu
Turkey

MP19-18 Laparoscopic Radical Prostatecomy with Extended Lymphadenectomy for Treatment of High Risk Prostate Cancer
RC Sanseverino, O Intilla, U Di Mauro, T Realfonso, G Molisso, G Napodano
Italy

MP19-19 Conservative Treatment of a Rectal Injury Complication Following Laparoscopic Radical Prostatectomy
M Zor, Z Aktas, F Dursun, O Bakal, F Ates, S Basal, K Karademir
Turkey

MP19-20 endGIA decreased Positive Margin of Apex in Laparoscopic Radical Prostatectomy
Y Hashimoto, J Iizuka, N Oomae, T Takagi, T Kondo, K Tanabe
Japan

MP19-21 Laparoscopic retroperitoneal lymph node dissection for non seminomatous germ cell tumors: indications and repass of the surgical technique
J Arriaga Aguilar, RA García Vásquez, A Zárate Morales, J Padilla Piña, MC Candia Plata, JA Solís Rodríguez, I Gerardo Osuna, M García Díaz
Mexico

MP19-22 Laparoscopic Transvesical Resection of an En Bloc Bladder Cuff and Distal Ureter for Treatment of Distal Ureter Tumor during Nephroureterectomy
QX Huang, H Zhang, C Hu, Y Luo, J Pang, X Gao
China

Saturday 3 October **Moderated ePoster Sessions (MP20)** **14:00–15:30**

PCNL: Technique
Room 4

MP20-1 Ultrasonography guided percutaneous nephrolithotripsy
BG Guliev, EO Stetsik
Russian Federation

MP20-2 Total Tubeless Percuteneous Nephrolithotomy (PCNL) - Safe and Effective Treatment for Large Renal Calculi
R Vallivayai, P Govardhane, DVSN Sharma, K G
India

MP20-3 Upper Pole Urologist-Obtained Percutaneous Renal Access for PCNL is Safe and Efficacious
K Ogan, AP Patel, D Bui, JG Pattaras
United States

MP20-4 Pneumopyelogram- an aid to puncture in fluroscopic guided PCNL
VK Mishra, D Mishra
India

MP20-5 Lessons from supine PCNL series in Scottish District General Hospital and description of ureteric balloon catheter technique to manage difficult access
RR Marri, RS Khan, H Bekarma, A Ramsay, SK Nalagatla
United Kingdom

MP20-6 Percutaneous Nephrolithotomy (PCNL) as an outpatient procedure.
WM Sameh, A Fahmy, OF Elgebaly
Egypt

MP20-7 A novel technique for accessing deep-seated calyceal calculi during percutaneous nephrolithotomy
TJ Smith, N Shah, M Kulkarni, N Drinnan, R Kulkarni
United Kingdom

MP20-8 Ureteropelvic junction stent: a novel adjunct to percutaneous nephrolithotomy
TC Zhou, A Keehn, JM Stern
United States

MP20-9 Questioning the Wisdom of Puncture at the Calyceal Fornix in Percutaneous Nephrolithotripsy: Our Experience with 137 Patients Operated Via a Non Calyceal Percutaneous Track.
I Kyriazis, P Kallidonis, M Vasilas, V Panagopoulos, E Liatsikos
Greece

MP20-10 Tubeless Percutaneous Nephrolithotomy with Retrograde Tethered Stent
KP Barrett, D Ghiculete, MH Ordon, JY Lee, KT Honey, RJD Honey
Canada

MP20-11 Percutaneous Nephrolithotomy for Staghorn Stones: A Randomized Trial Comparing High Power Holmium Laser versus Ultrasonic Lithotripsy
AR EL-Nahas, AM Elshal, NA EL-Tabey, AM EL-Assmy, AA Shokeir
Egypt

MP20-12 Laser with suction as an energy source in Mini PCNL: MPUH experience
AGS Singh, MR Desai, JS Chabbra, AS Bhattu, SK Mishra, A Ganpule, RB Sabnis
India

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MP20-13 High energy holmium laser combined with suction for large renal stone lithotripsy
SK Mishra, M Vinodh, A Singh, JS Chhabra, A Ganpule, RB Sabnis, MR Desai
India

MP20-14 Initial Clinical Outcomes Employing the Novel Laser Direct Alignment Radiation Reduction Technique (DARRT) For Percutaneous Nephrolithotomy Access
SR Abourbih, PW Yang, DL Faaborg, JL Arenas, N Khater, JC Smith, DD Baldwin
United States

MP20-15 Minipercutaneous Nephrolithotomy versus Retrograde Intrarenal Surgery for Renal Stones Larger than 10 mm: A Prospective Randomized Controlled Trial
JW Lee, J Park, SB Lee, H Son, SY Cho, H Jeong
Korea, Republic of

MP20-16 Preliminary results from treatment of upper urinary tract calculi with ultrasound guided percutaneous nephrolithotomy using Ultraminiperc technique (UMP) under local infiltration anesthesia
BL Li, HL Li
China

MP20-17 Early UK experience of ultra-mini PCNL
B Pullar, E Havranek, AJR Blacker, SN Datta, B Somani, S Sriprasad, S Scriven, RD Smith, S Mackie, O Wiseman
United Kingdom

MP20-18 Prospective randomized comparison of Microperc and RIRS for lower calyceal (LC) calculus <15 mm
RB Sabnis, V Murali, JS Chhabra, A Singh, SK Mishra, MR Desai
India

MP20-19 Ultramini PCNL – A Welcome Addition To The Endourologist's Armamentarium; Results From A Large Single Centre UK Case Series
Z Ali, GM Watson, SJ Mackie
United Kingdom

MP20-20 Complete supine position for percutaneous nephrolithotomy (PCNL)
SM Mehrabi
Iran (Islamic Republic of)

MP20-21 Use of a novel flexible mini-nephroscope during mini-PCNL: a pilot study
MS Agrawal, T Jindal, D Mishra, K Agarwal
India

MP20-22 A prospective and randomized comparison of fluoroscopic, sonographic or combined approach for renal access in minimally invasive percutaneous nephrolithotomy
GH Zeng, W Zhu, J Yuan, GZ Liu, YD Liu, WQ Wu, WZ Chen, JT Luo, DL Zhong, W Zhong
China

MP20-23 Super-Mini Percutaneous Nephrolithotomy (SMP): A new concept in technique and instrumentation
GH Zeng, S Wan, J Zhu, A Tuerxun, C Song, L Zhong, M Liu, K Xu, S Khadgi, K Saric
China

Saturday 3 October **Moderated ePoster Sessions (MP21)** **14:00–15:30**

Robotic Surgery: Upper Tract - Oncology 1
Room 7

MP21-1 Comparison of Short Term and Technical Outcomes of Robotic and Open Partial Nephrectomy for clinical T2 renal mass
IH Derweesh, HJ Lee, J Woo, H Mirheydar, S Wang, B Lane
United States

MP21-2 Renal Mass Biopsy Influences the Management of Small Renal Masses
J Montgomery, N Krishnan, S Hawken, S Ambani, T Morgan, K Hafez, D Miller, G Palapattu, A Weizer, JS Wolf
United States

MP21-3 Outcomes of robotic assisted partial nephrectomy after prior open abdominal surgery in a multicenter cohort
R Barod, D Dalela, N Abdullah, H Rahbar, H Zargar, M Allaf, J Kaouk, M Stifelman, S Bhayani, C Rogers
United States

MP21-4 Renal Functional Outcomes Between Off-Clamp, On-Clamp and Selective-Clamp Techniques in Partial Nephrectomy
AY Keehn, I Agalliu, M Kim, C Rogers, M Allaf, J Kaouk, S Bhayani, J Larson, M Johnson, M Stifelman
United States

MP21-5 Robot assisted NSS for tumors with high RENAL nephrometry score: A paradigm shift from radical extirpation to functional preservation
AK Mandal, SM Mavuduru, GS Bora, SK Devana, AP Sharma, S Singh
India

MP21-6 A comparison of Operative Outcomes of Open, Laparoscopic and Robotic Partoial Nephrectomy for Nephrometry-Score Matched Renal Tumors
P Banapour, G Abdelsayed, P Kilday, R Jabaji, N Patel, G Chien
United States

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MP21-7 Early unclamping technique significantly increases the probability of achieving pentafecta after robot-assisted laparoscopic partial nephrectomy
T Kondo, T Takagi, K Omae, J Iizuka, Y Hashimoto, N Fukuda, K Tanabe
Japan

MP21-8 The Relationship Between Perienal Fat and the Clinicopathological Features of Patients with Small Renal Masses
AY Keehn, J Taylor, J DiVito, I Agalliu, J Stern, R Ghavamian
United States

MP21-9 Pushing the boundaries of robotic partial nephrectomy: A multi-centre comparison of the functional and oncological outcomes for T1a and T1b tumours
A Kadirvelarasan, T Malthouse, S Belfrage, O Nehikhare, M Chakravorty, W Lam, N Doeuk, K Ahmed, D Moon, B Challacombe
United Kingdom

MP21-10 Critical Analysis of Robotic-Assisted and Laparoscopic Rafical Nephrectomy: A Matched-Pair Analysis
L Glickman, G Sivarajan, M Degen, R Munver
United States

MP21-11 Urinary fistula after robotic partial nephrectomy: a multicenter analysis of 1791 patients
AM Potretzke, H Zargar, JH Kaouk, R Barod, CG Rogers, A Mass, MD Stifelman, MH Johnson, ME Allaf, SB Bhayani
United States

MP21-12 Selective renal artery clamp during robot-assisted laparoscopic partial nephrectomy
F Hongo, K Kamoi, Y Yamada, S Harikai, A Fujihara-Iwata, H Nakanishi, Y Naitoh, T Nakamura, Y Naya, K Okihara
Japan

MP21-13 Impact of primary histology on oncologic outcomes after minimally invasive adrenalectomy for metastatic cancer
M F, G Simone, R Papalia, R Mastroianni, S Guaglianone, M Gallucci
Italy

MP21-14 Margin, ischemia, and complications rate after Robotic Assisted Laparoscopic Partial Nephrectomy: an early experience in a tertiary centre
HS Ertemi, J Al Roubaie, G Webster, M Al-Akraa, F H Mumtaz, M Aitchison
United Kingdom

MP21-15 Robot Assisted Heminephrectomy for Renal Cell Carcinoma in L-shaped Crossed Fused Ectopia
SK Singh, S Singh, S Kumar, GS Bora, S Jain
India

MP21-16 Robot-assisted partial nephrectomy: a comparison of the transperitoneal and retroperitoneal approaches
A Alanbuki, N Burgess
United Kingdom

MP21-17 Amount of resected healthy margin does not account for total volume loss after partial nephrectomy
CD Bahler, L Cheng, CP Sundaram
United States

MP21-18 The clinical application of the sliding loop technique for renorrhaphy during robot-assisted laparoscopic partial nephrectomy: surgical technique and outcomes
HD Yuk, HS Kim, YJ Lee, JH Ku, C Kwak, HH Kim, JS Paick, CW Jeong
Korea, Republic of

MP21-19 Robot-Assisted Partial Nephrectomy Verus Laparoscopic Partial Nephrectomy: Co MParison of Initial Case Series at a Single Institution in Japan
T Segawa, R Saito, M Ito, S Funada, R Ikeuchi, T Sunada, T Yoshikawa, T Yoshida
Japan

MP21-20 Comparison of the Trifecta Outcomes of Robotic and Open Nephron-Sparing Surgeries Performed in the Robotic Era of a Single Institution
O Acar, EO Isik, T Mut, Y Saglican, A Onay, M Vural
Turkey

MP21-21 Robotic Partial Nephrectomy for Renal Tumors Using Indocyanine Green with Near Infra-red Fluorescence Image: Preliminary Result
YCL Lin, CY Ho, TF Tsai, TIS Hwang
Taiwan

MP21-22 Robot-assisted partial nephrectomy for renal tumors in obese patients: perioperative and functional outcomes in a multi-institutional analysis
D Dalela, N Abdullah, R Barod, M Johnson, J Larson, J Kaouk, M Stifelman, M Allaf, S Bhayani, C Rogers
United States

Saturday 3 October **Moderated ePoster Sessions (MP22)** **14:00–15:00**

Robotic Surgery: Upper Tract - Benign
Room 8

MP22-1 A multicenter evaluation of zero-fragment nephrolithotomy: robotic pyelolithotomy and nephrolithotomy for treating renal stones
KR Ghani, R Swearingen, A Sood, J Elder, Z Klaasen, R Madii, K Badani, K Wood, A Hemal
United States

MP22-2 Multi-institutional study of robotic assisted buccal mucosa graft ureteroplasty: inital results
BN Armstrong, L C Zhao, Y Yamaguchi, MM Maddox, B Lee, D Eun, A Lay, J Caddedu, D Canes, M Stifelman
United States

MP22-3 Robotic pyeloplasty using barbed suture: technique, controversies and considerations
SN Ambani, JS Wolf, KR Ghani
United States

MP22-4 The Role of Robotic Surgery in The Treatment of Complex Kidney Stones – A SingleCenter Experience
R Madi, Z Klaassen, J DiBianco, L Tran, C Cleveland, S King, E Ibarra
United States

MP22-5 10 Year Experience of Robot Assisted Laparoscopic Pyeloplasty
N Raison, O Elhage, D Cahill, MS Khan, B Challacombe, P Dasgupta
United Kingdom

MP22-6 Evaluation of robotic-assisted repair of pelviureteric junction obstruction
M Iskander, R Weston
United Kingdom

MP22-7 Robotic Pyeloplasty: a series of 120 consecutive patients
F Dal Moro, P Beltrami, C Valotto, F Zattoni
Italy

MP22-8 Living donor nephrectomy: comparison between robotic and hand-assisted retro-peritoneoscopy
J Renard, K Hadaya, N Douaihy, PY Martin, CE Iselin
Switzerland

MP22-9 Robotic Ureterolithotomy in the 21st Century
M McDonald
United States

MP22-10 Innovation in Robotics and Pediatric Urology: Robotic Ureteroureterostomy
MV Silva, JB Finkelstein, SM Lambert, P Casale
United States

MP22-11 Advantages Of Robot-Assisted Laparoscopic nephrolithotomy for complete staghorn calculus
ZJ Shen, W He, XJ Wang
China

MP22-12 Robotic surgery for giant pheochromacytomy extending to retrovena cava space
ZJ Shen, W He, XJ Wang
China

Saturday 3 October **Moderated ePoster Sessions (MP23)** **14:00–15:30**

LESS & NOTES
Room 10

MP23-1 Evaluation of a New Mechanized Computer Assisted Single Port Bedside "Robot" in a Porcine Model: SurgiBot
RJ Leveillee, VR Patel, S Samevedi, M Raynor, M Ferradino
United States

MP23-2 Robotic Natural Orifice Translumenal Endoscopic Surgery (R-NOTES) in Urology: current progress and future challenges
C Delimpalta
United Kingdom

MP23-3 Initial Experience and Outcomes of Natural Orifice Translumenal Endoscopic Radical Prostatectomy
MS Borofsky, JA Mandeville, N Bhojani, JE Paonessa, MM El Tayeb, JE Lingeman
United States

MP23-4 NOTES nephrectomy: From animal models to pure NOTES, current practice and future considerations
C Delimpalta
United Kingdom

MP23-5 Transumbilical laparoendoscopic single-site gonadectomy for complete androgen insensitivity syndrome
S Fukuhara, Y Kakuta, T Ujike, A Nagahara, K Fujita, M Uemura, H Kiuchi, R Imamura, Y Miyagawa, N Nonomura
Japan

MP23-6 Laparoendoscopic Single-Site (LESS) distal ureterectomy of refluxing ectopic ureter
AM Abdel-Karim, E Yehyia, S Elsalmy
Egypt

MP23-7 Laparoendoscopic Single-Site Surgery (LESS) Sacrocolpopexy
AM Abdel-Karim, W Mahnfouz, A Aboelfotoh, A Moussa, S Elsalmy
Egypt

MP23-8 Transvesical laparoendoscopic single-site surgery (T-LESS) for treatment of selected urinary tract pathologies: a five-year single-center experience.
MR Roslan, MM Markuszewski, W Piaskowski, W Polom
Poland

MP23-9 Application of Transurethral-Assisted technology in Transumbilical Laparoendoscopic Single-site Radical Prostatectomy and Radical cystectomy
QY Zhu, YF Wei, L Yuan, J Su, y Zhang, LM Shen
China

MP23-10 Reduced port surgery in bilateral cyst decortication of autosomal dominant polycystic kidney disease: a case report
M Kanesaka, A Fujimoto, K Hou, T Suyama, K Araki, H Masuda, S Kojima, Y Naya
Japan

MP23-11 Laparoendoscopic Single-Site Surgery (LESS) Nephrectomy: Step by Step Technique
AM Abdel-Karim, E Yehyia, S Elsalmy
Egypt

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MP23-12 Laparoendoscopic single-site surgery (LESS) and conventional laparoscopy for treatment of different upper urinary tract pathologies: outcome of a prospective multi-institutional comparative study
AM Abdel-Karim, A Fayz, O Elashry, S Elsalmy
Egypt

MP23-13 Comparison of outcomes between laparoendoscopic single site and mini-incision open living donor nephrectomy
M Muramaki, K Tanaka, T Ishimura, K Harada, K Matsushita, H Miyake, M Fujisawa
Japan

MP23-14 Laparoendoscopic single-site radical nephrectomy by Single-Cup or Single-Ring glove technique
SD Zhang, LL Ma, Y Huang, K Liu, Y Tian
China

MP23-15 Total Transumbilical Laparoendoscopic Single-Site Nephroureterectomy for Upper Urinary Tract Urothelial Carcinoma
QY Zhu, J Su, L Yuan, Y Zhang, QL Zhang, YF Wei, LM Shen
China

MP23-16 Simultaneous laparoendoscopic single-site surgery (LESS) for surgical treatment of intra-abdominal pathologies in two different organs
KT Kim
Korea, Republic of

MP23-17 Hybrid Laparoendoscopic Single-Site Surgery of Upper Urinary Tract with Use of Mini-Laparoscopic Instruments. Excellent Cosmetic Ouctome and Mid-Term Oncological Outcome.
PK Kallidonis, JK Kyriazis, VP Panagopoulos, MV Vasilas, EL Liatsikos
Greece

MP23-18 Initial experience of laparoendoscopic single-site partial nephrectomy at Sapporo City General Hospital
TA Akino, NF Fukuzawa, SM Maru, AK Kawaguchi, HS Suzuki, MH Higuchi, YW Wada, T Tanaka, HH Harada, TS Seki
Japan

MP23-19 Mini-laparoscopic partial nephrectomy combined with minimized umbilical access: A new concept in minimally invasive surgery for small renal tumor
F Sato, T Shibuya, R Sato, D Watanabe, S Suzuki, N Yamanaka, T Ando, K Mori, T Nomura, H Mimata
Japan

Saturday 3 October **Moderated ePoster Sessions (MP24)** **14:00–15:00**

BPH / LUTS 1
Room 11

MP24-1 The effect of hyaluronic acid/carboxymethylcellulose instillation to prevent urethral stricture after transurethral bladder surgery
SU Jeh, SC Kam
Korea, Republic of

MP24-2 Height: Width Ratio – a novel parameter in predicting outcome after Transurethral resection of prostate – a pilot study
GV Kanda Swamy, A Elangovan, B Viswaroop, A Dhanasekaran, A Myilswamy, B John, G Gopalakrishnan, K Sangam Vedanayagam
India

MP24-3 Bipolar plasma enucleation versus open prostectomy – long term follow-up
P Geavlete, C Bulai, C Ene, C Moldoveanu, M Jecu, R Multescu, B Geavlete
Romania

MP24-4 Prostate biopsy effects on lower urinary tract symptoms and potency
H Nasseh, S Asgari, E Kazemnejad, Z Meshkat, M Haji Agha Bozorgi
Iran (Islamic Republic of)

MP24-5 The burden of prostatic calculi is more important than the presence
SH Choo, JY Kim, SG Park, K Shim, T Kim, B Park
Korea, Republic of

MP24-6 Conservative Treatment for Benign Prostatic Hyperplasia in Patients with Bladder Stones
TY Yoshida
Japan

MP24-7 Measurement of Blood Loss During Thulium Laser Enucleasion of Prostate
JL Lin
Taiwan

MP24-8 Secondary Haemorrhage after Bipolar Transurethral Resection and Vaporization of Prostate
CH Yee, PKF Chiu, KWM Lee, CK Chan, SSM Hou, CF Ng
Hong Kong

MP24-9 A study of position related chnages in uroflowmetric parameters before & after treatment in patients with benign prostatic hyperplasia and study of revised modifed LUTS questionnaire in these patients
H Kamal, M Agarwal, A Mandal, R Mavuduru, K Kshetrapal
India

MP24-10 Comparing PSA & free PSA serum levels in fresh and freezed blood
RT Taghavi Razavizadeh, MR Darabi Mahboub, J Hasanzadeh, SH Jahed Ataeian
Iran (Islamic Republic of)

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MP24-11 Bipolar resection of prostate using Turis system: A study about 47 cases
M El Mrini, R Rabii, Y Houry, A Halfya, R Aboutaieb, F Meziane
Morocco

MP24-12 Impact of Blood Sugar Control on the Therapeutic Effect of Alpha Blockers in Patients with Benign Prostate Hyperplasia and Diabetes Mellitus: a Multicenter, Retrospective Study
HS Yu, EC Hwang, SI Jung, TW Kang, DD Kwon
Korea, Republic of

Saturday 3 October **Moderated ePoster Sessions (MP25)** **14:00–15:30**

Robotic Surgery: Lower Tract Oncology
Room 12

MP25-1 Salvage Robot-Assisted Laparoscopic Prostatectomy after High-Intensity Focused Ultrasound Therapy for Clinically Localized Prostate Cancer
LG Glickman, GS Sivarajan, MD Degen, KB Basralian, RM Munver
United States

MP25-2 Prolonged console time during robotic prostatectomy increases estimated blood loss in the initial experience with daVinci Xi machine
GV Kanda Swamy, R Hughes, O Hughes, K Narahari, H Kynaston
United Kingdom

MP25-3 Intra-Surgical Total and Re-Constructible Pathological Prostate Examination for Safer Margins and Nerve Preservation: ISTANBUL Preserve
P Mourmouris, Y Saglican, U Ince, B Argun, C Obek, I Tufek, M Tuna, S Keskin, AR KURAK
Turkey

MP25-4 Open versus robotic surgery – a single centre comparison of 1000 consective radical prostatectomies
MSV Vedanayagam, RH Zakri, J Babbin, E Streeter, B Hearden, P Simpson, J Pain, H Evans, B Eddy
United Kingdom

MP25-5 Innovative Application of Instant Toggling of Endoscope in Challenging Cases During Robot Assisted Radical Prostatectomy Using Xi da Vinci Robotic Surgical System
A Kumar, S Samavedi, V Mouraviev, J Marquinez, R Coelho, B Rocco, V Patel
United States

MP25-6 Prediction of 30-d Clavien grade ≥ 3 complication rate in Robot-Assisted Radical Cystectomy with totally intracorporeal urinary diversion
G Simone, R Papalia, M Ferriero, G Tuderti, R Mastroianni, S Guaglianone, M Gallucci
Italy

MP25-7 Robot-Assisted urinary undiversion from Orthotopic Neobladder to ileal conduit
G Simone, R Papalia, M Ferriero, R Mastroianni, G Tuderti, S Guaglianone, M Gallucci
Italy

MP25-8 Robotic cystectomy with intracorporeal diversion is better tolerated by patients with low cardiorespiratory fitness: A cohort study
BW Lamb, WS Tan, P Eneje, I Ahmad, A Sridhar, H Baker, G Bassnet, TP Briggs, R Stephens, JD Kelly
United Kingdom

MP25-9 Surgical complications of robot-assisted radical prostatectomy: Initial experience in 70 cases of Osaka University Hospital
Y Miyagawa, R Imamura, H Kiuchi, M Uemura, K Fujita, S Fukuhara, A Nagahara, T Abe, T Ujike, N Nonomura
Japan

MP25-10 Reducing length of stay and complication rate following robotic radical cystectomy: the Royal Surrey County Hospital experience
GA Athanasiadis, P Menezes, H Mostafid, C Jones, M Dickinson, M Swinn, M Perry, R Soares, S Langley, K Patil
United Kingdom

MP25-11 Transition to robot-assisted laparoscopic prostatectomy is associated with a reduction of positive surgical margin
K Tabata, T Satoh, K Matsumoto, H Tsumura, T Hirayama, M Nishi, T Fujita, D Ishii, K Yoshida, M Iwamura
Japan

MP25-12 Introduction of Robotic Prostatectomy in a Community Hospital Setting
N Simmons, A Neeb
United States

MP25-13 Robotic radical prostatectomy for patients of high risks
ZJ Shen, W He, XJ Wang
China

MP25-14 Robotic-assisted Laparoscopic Stump Ureterectomy for Transitional Cell Carcinoma after Radical Nephrectomy
WL Lee, AD D'Amato, JT Tam, FC Cheung, WW Waltzer, AC Corcoran
United States

MP25-15 Concomitant Mesh Free Repair of Inguinal Hernia during Robot Assisted Radical Prostatectomy
P Mourmouris, B Argun, I Tufek, C Obek, M Bilal, A. Kural
Turkey

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MP25-16 Robotic prostatectomy and psychosexual care- a systematic review
S Goonewardene, R Persad
United Kingdom

MP25-17 Neoadjvant hormone therapy for localized prostate cancer: initial experiences in intermittent- and high-risk patients in the robotic surgery era
JC Hu, YC Ou
Taiwan

MP25-18 Points of technique to facilitate the dissection in very large prostates during robot assisted radical prostatectomy
I Jour, GL Shaw, S Gowrie-Mohan, J Adshead, N Vasdev
United Kingdom

MP25-19 Combined inguinal hernia repair with a synthetic mesh during robot assisted laparoscopic radical prostatectomy
F Schoofs, D Benamran, J Schwartz, N Douaihy, CE Iselin
Switzerland

MP25-20 Impact of an Experienced Bedside Assistant on Outcomes during Robotic Prostatectomy
AH Lay, N Canvasser, I Jacobs, JC Gahan
United States

MP25-21 Bladder neck sparing (BNS) robot assisted laparoscopic prostatectomy (RALP); does it improve continence?
RH Zakri, M Vedanayagam, B John, J Pain, B Hearnden, P Simpson, B Eddy
United Kingdom

MP25-22 View from the Head end: A prospective analysis of the respiratory changes and challenges encountered during Robotic assisted Radical Prostatectomy (RALP)
SA Umranikar, M Netke, PW Cooke
United Kingdom

MP25-23 High-tech or high-risk? An analysis of media reports about robotic surgery
Z Ficko, K Koo, ES Hyams
United States

Saturday 3 October **Moderated ePoster Sessions (MP26)** **14:00–15:30**

BPH / LUTS 2
Room 2

MP26-1 Short-term Outcomes of a Prostatic Urethral Lift Procedure (PUL)
T Mahesan, SV Segaran, NJ Barber
United Kingdom

MP26-2 Enucleation of the Transition Zone and the Effect on PSA in Patients with LUTS
OD Nehikhare, G Marra, W Lam, O Elhage, K Ahmed, B Challacombe, R Popert
United Kingdom

MP26-3 Histotripsy for Treatment of Benign Prostatic Hyperplasia using the VORTX RX®: Safety and Initial Efficacy Results
JT Wei, TG Schuster, K Hendlin, R Jahnke, WW Roberts
United States

MP26-4 Relationship between bladder wall thickness and lower urinary tract symptoms: Does bladder wall thickness change after alpha-blocker therapy with tamsulosin?
HS Yu, EC Hwang, SI Jung, TW Kang, DD Kwon
Korea, Republic of

MP26-5 Relationship between body mass index and prostate specific antigen in patient with lower urinary tract symptoms
RT Taghavi Razavizadeh, R Mahdavi Zafarghandi, M Ameli, J Hasanzadeh, SH Jahed Ataeian
Iran (Islamic Republic of)

MP26-6 Prostatic urethral lift versus prostate arterial embolisation: Novel non-ablative strategies in the management of LUTS secondary to BPH
PJ Jones, BP Rai, OM Aboumarzouk, BK Somani
United Kingdom

MP26-7 Early Multicenter Experience using Aquablation, an image guided robot-assisted water jet ablation of the prostate, for the treatment of BPH
PJ Gilling, P Anderson, A Tan
New Zealand

MP26-8 Present Practice and Treatment Strategies in the Transurethral Treatment of Benign Prostatic Hyperplasia (BPH) under oral Anticoagulants: a National-wide Survey
CN Netsch, CM Moritz, AJG Gross
Germany

MP26-9 The Functional Anaylsis of Patient Outcomes Following Different Surgical Interventions for Benign Prostate Hyperplasia through the Administration of an Independent Survey
M Abdul-Muhsin, MD Tyson, PE Andrews, EP Castle, RG Ferrigni, CE Wolter, SK Swanson, MR Humphreys
United States

MP26-10 Health information seeking behaviour in a contemporary cohort of Benign Prostate Hyperplasia patients: results from an independent Survey
M Abdul-Muhsin, S Raghu, MD Tyson, MR Humphreys
United States

MP26-11 Wolf Piranha Versus Lumenis Versacut Prostate Morcellation Devices: A prostective Randomized trial
MS Borofsky, MM El Tayeb, JE Paonessa, JE Lingeman
United States

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MP26-12 **Thulium VapoEnucleation of the Prostate (ThuVEP): long-term results during 6-year follow-up of 500 procedures**
CN Netsch, DJ Jakobler, AE Engbert, TB Bach, AJ Gross
Germany

MP26-13 **Thulium laser prostatectomy: Another Rookie, Same Crown**
PJ Jones, BP Rai, BK Somani, OM Aboumarzouk
United Kingdom

MP26-14 **A comparison of the costs of different surgical techniques for transurethral prostate surgery**
T Mahesan, SV Segaran, NJ Barber
United Kingdom

MP26-15 **Infectious Considerations with the use of temporary prostatic urethral stents in patient with benign prostatic hyperplasia**
H Abdul-Mushin, NJ JAKOB, RM McLemore, MR Humphreys
United States

MP26-16 **The "Scalpel and Scissors Effect" using infrared lasers – Visiualisation of a principle and deduction of operative consequences in transurethral prostate enucleation**
S Piesche, H Keller
Germany

MP26-17 **High power (200W) Thulium Laser Vaporization of the prostate with the Oyster Technique: Initial experience and early postoperative outcomes.**
P Kallidonis, V Panagopoulos, I Kyriazis, M Vasilas, E Liatsikos
Greece

MP26-18 **Efficacy and safety of Thulium laser vapoenucleation of the prostate compared with Holmium laser enucleation of the prostate for benign prostatic hyperplasia**
Y Liu, J Lu, CL Xiao, LL Ma
China

MP26-19 **Efficacy and Impact on Erectile Function between Holmium laser versus Thulium laser Enucleation of the Prostate**
YQ Liu, CL Xiao, J Lu, LL Ma
China

MP26-20 **Various treatments on bladder stone: analysis of clinical outcomes and cost**
PB Birowo, I Deswanto, N Rasyid, A Basukarno
Indonesia

Saturday 3 October **Moderated ePoster Sessions (MP27)** **14:00–15:30**

Imaging CT & Ultrasound
Room 14

MP27-1 **Stone specific ultrasound imaging of human subjects**
BW Cunitz, BL Dunmire, Y Haider, MD Sorensen, J Thiel, JC Simon, AD Maxwell, OA Sapozhnikov, MR Bailey, JD Harper
United States

MP27-2 **Evaluating and Improving the Diagnostic Accuracy of USS for Urolithiasis in Hospital and in the Community: a 12 month Study**
JM Withington, M Mercer, SJ Graham
United Kingdom

MP27-3 **Comparing the Diagnostic Accuracy of Ultrasound in the Community and in the Hospital Setting for Urolithiasis: a Prospective Cohort Study.**
MRK Westergreen-Thorne, S Yan Lee, N Shrotri, K Babawale
United Kingdom

MP27-4 **Efficacy of contrast-enhanced renal ultrasound in the management of complex renal cysts**
JAS Sewell, D La Paglia, J Pho, D Steiner, J Ooi, D Agarwal, R Tong, P Tran, J Nguyen, P Santos
Australia

MP27-5 **The outcomes of interspecialty utilization of non-contrast computer tomography of the renal tract in the diagnosis of the suspected ureteric colic**
S Tadtayev, R Waterworth, J Bycroft
United Kingdom

MP27-6 **Utilisation of Computed Tomography in the Asessment of Urinary Tract Calculi to Predict Extracorporeal Shockwave Lithotripsy Success**
P Erotocritou, T Shah, B Turney, M Walkden, D Smith
United Kingdom

MP27-7 **Ureteral Stone Diameter on Computerized Tomography Coronal Reconstructions is Clinically Important and Under Reported**
TP Marien, NV Johnsen, WS Reynolds, NL Miller
United States

MP27-8 **Digital Tomosynthesis: A viable alternative to non-contrasted computed tomography for the follow up of nephrolithiasis?**
F Cabrera, AK Kaplan, RY Youssef, MT Tsivian, RS Shin, CS Scales, GP Preminger, ML Lipkin
United States

MP27-9 **Size measurement of residual stone fragments with the Uro Dyna-CT**
MC Rassweiler, B Meister, S Haneder, M Ritter
Germany

MP27-10 **How do we fare using CT KUB as the key radiological investigation in diagnosing renal calculi?**
MK Phull, N Burfitt, R DasGupta
United Kingdom

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MP27-11 A feasibility study to compare two different attenuation measurement methods and their predictive value of stone composition
L Durner, A DiBenedetto, A Bourdoumis, A Patel
Germany

MP27-12 Can we predict stone composition from radiodensity?
JL Hendry, F Housami, GE Jones
United Kingdom

MP27-13 Computed Tomography for Nephrolithiasis: Radiation Dose is Widely Variable within the Healthcare System
S Park, N Fahey, K Hughes, CH Wang
United States

MP27-14 Is NCCT safe to use as the primary imaging modality in females with suspected renal colic?
A Raza, C Lonngren, F Wisniacki
United Kingdom

MP27-15 Ureteric stone 3 diameter measurements and its Clinical Significance
YI Siegel, A Tamimi, N Berkovitz, RS Kenett, A Cooper, S Roisman, L Copel, A Zisman
Israel

MP27-16 Perinephric Fat Distribution and Anatomical Considerations when Performing Percutaneous Nephrolithotomy in Obese Patients
T Alzahrani, D Ghiculete, A Garbens, KT Pace, RJD Honey
Canada

MP27-17 Combining Mean and Standard Deviation of Hounsfield Unit Measurements from Pre-operative CT Allows More Accurate Prediction of Urinary Stone Composition Than Mean Hounsfield Units Alone
TO Tailly, Y Larish, BR Nadeau, PD Violette, L Glickman, D Olvera-Posada, H Alenezi, J Amann, JD Denstedt, H Razvi
Belgium

MP27-18 Withdrawn

MP27-19 Analysis of the Skin to Calyceal Distance (SCD) to the Upper Pole Calyx among Filipino Patients: A Guide to Upper Pole Access PCNL
GVB Gasa, AL Anastacio, CC de Guzman, Jr., GM Maglalang, Jr.
Philippines

MP27-20 Contrast Computed Tomography in 100 clear cell renal cell - cancers - an analysis of enhancement, tumour size and survival
R Veeratterapillay, R Ijabla, D Conaway, P Haslam, N Soomro, R Heer
United Kingdom

MP27-21 Diagnostic Significance of Ureteric Thickening on Multi-detector Computed Tomography Urography in patients with Frank Haematuria
K Mistry, I Johnson, M Szewczyk-Bieda, G Nabi
United Kingdom

MP27-22 Three-Dimensional Evaluation of Perirenal Adipose Tissue Volume Predicts Renal Cortical Neoplasm Histopathology
AP Drysch, C Khoyliar, Z Okhunov, M Bozoghlanian, H Kim, M Helmy, J Landman
United States

Saturday 3 October **Moderated ePoster Sessions (MP28)** **14:00–15:30**

Surgical Outcomes 5
Room 16

MP28-1 Treatment of Small Renal Cancers: Less is More
DEM Moskowitz, J Chang, A Ziogas, H Anton-Culver, RV Clayman, Z Okhunov
United States

MP28-2 The role of cytoreductive nephrectomy in patients with synchronous metastatic renal cell carcinoma and prognostic factors of overall survival
W Low, T Gu, C Toh, R Kanesvaran, Y Yuen, HS Ho, L Lee, LK Lim, H Huang, W Lau
Singapore

MP28-3 Predictive Factors for Benign Pathology in Renal Tumours Suspicious of Malignancy on Radiological Imaging
XL Teo
Singapore

MP28-4 Degree of Kidney Tumor Enhancement Predicts Radiofrequency Ablation Failure
AH Lay, N Canvasser, J Stewart, JA Cadeddu, JC Gahan
United States

MP28-5 Off-clamp partial nephrectomy: Initial experience using a novel transection device in an academic centre
D Olvera-Posada, H Alenezi, T Tailly, P Luke, A Sener
Canada

MP28-6 The influence of tumor location on postoperative renal function after laparoscopic partial nephrectomy
K Tatsugami, J Inokuchi, K Kiyoshima, R Takahashi, S Kajioka, A Yokomizo, S Naito
Japan

MP28-7 Baseline estimated Glomerular Filtration rate influences need for intervention in small renal masses
GN Nabi, C Yew-Fung, A Lim, C Paterson, A Hamed
United Kingdom

MP28-8 A 10-year experience of ablative treatment for small renal masses
S Yeow, U Pua, KS Png
Singapore

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MP28-9 Morcellation in robotic radical nephrectomy: A safe alternative with shorter hospital stay.
RM Madi, EI Ibarra, ZK Klaassen, SW Wilson
United States

MP28-10 Conservative management of upper tract urothelial carcinoma in a high volume single center experience
P Beltrami, A De Gobbi, L Bettin, F Zattoni, A Guttilla, M Iafrate, F Dal Moro, F Zattoni
Italy

MP28-11 Salvage Percutaneous Cryoablation for Locally Recurrent Renal Cell Carcinoma after Primary Cryoablation
Z Okhunov, J Chamberlin, DM Moreira, A George, K Babaian, K Spradling, R Youssef, II Lobko, L Kavoussi, J Landman
United States

MP28-12 Pain after Percutaneous Irreversible Electroporation of Renal Tumors is not dependent on tumor location
AH Lay, MS Morgan, N Canvasser, C Trimmer, JA Cadeddu
United States

MP28-13 Initial Clinical Experience with Percutaneous Irreversible Electroporation of Kidney Tumors
AH Lay, MS Morgan, N Canvasser, A Ozayar, JC Gahan, C Trimmer, JA Cadeddu
United States

MP28-14 Does Mannitol Use Impact Delayed Graft Function and Renal Functional Outcomes in Recipients of Living Donor Renal Transplants?
JW Wren, AP Pfaff, C Bahler, NL Liu, FM Monn, WG Goggins, CS Sundaram, SK Kheysfets
United States

MP28-15 Factors affecting long-term renal function after partial nephrectony: parenchymal volume loss and warm ischemic time
D Lee, M Kim, M Park, C Song, T Ahn, H Ahn
Korea, Republic of

MP28-16 The impact of preoperative retrograde pyelography before radical nephroureterectomy for upper urinary tract urothelial carcinoma on intravesical tumor recurrence
JY Choi, JH Kim, HS Park, JT Seo, YH Ko, PH Song, KH Moon, HC Jung
Korea, Republic of

MP28-17 Analysis of the Transperitoneal Approach to Robot-Assisted Laparoscopic Partial Nephrectomy for the Treatment of Anterior and Posterior Renal Masses
DJ Paulucci, MJ Whalen, KK Badani
United States

MP28-18 Comparison of preoperative adaptive enlargement of contralateral normal kidney in patients nephrectomized for benign non-functioning kidney and renal cell carcinoma
W Song, TH Kim, JY Jeong, HH Sung, DH Han, BC Jeong, SI Seo, SS Jeon, HM Lee, HG Jeon
Korea, Republic of

MP28-19 Comparative outcomes of endoscopic management of TCC versus laparoscopic nephroureterectomy; a large single centre study with up to ten year follow up.
S Bishara, H Gresty, A Shamsuddin, N Gibbons, D Hrouda, R Dasgupta
United Kingdom

MP28-20 Systematic Review of Open Vs. Laparoscopic Vs. Robot-Assisted Nephroureterectomy
EJM Mullen, KA Ahmed, BC Challacombe
United Kingdom

MP28-21 Establishment of prediction model of progression after radical nephrectomy or partial nephrectomy for Chinese patients with clear cell renal cell carcinoma
Y Zhao
China

MP28-22 The expanded use of percutaneous resection for upper tract urothelial carcinoma: a 30-year comprehensive experience
P Motamedinia, M Keheila, DA Leavitt, P Zhao, Z Okeke, AD Smith
United States

Saturday 3 October **Moderated ePoster Sessions (MP29)** **14:00–15:30**

Robotic Surgery: New Techniques - Oncology
Room 17

MP29-1 Adapting the robotic platform to small operating theaters: the side-docking technique for urologic pelvic surgery
SA Albisinni, FA Aoun, DLD Le Dinh, KL Limani, EH Hawaux, AP Peltier, RVV van Velthoven
Belgium

MP29-2 Withdrawn

MP29-3 Psychosexual care post radical prostatectomy: a systematic review
S Goonewardene, R Persad
United Kingdom

MP29-4 Cardio-pulmonary exercise testing and major urological surgery: risk stratification and preoperative assessment
S Goonewardene, R Persad
United Kingdom

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MP29-5 Robotic partial nephrectomy on multiple kidney tumors. A safe alternative to radical nephrectomy
RM Madi, EI Ibarra
United States

MP29-6 Single setting robotic multiple partial nephrectomies and salvage radical prostatectomy.
RM Madi, EI Ibarra
United States

MP29-7 Ves.Pa. – Designing a novel robotic intracorporeal orthotopic ileal neobladder
FDM Dal Moro
Italy

MP29-8 Intraoperative frozen section of the prostate to reduce the risk of positive margin whilst ensuring nerve sparing in patients with Intermediate and high risk prostate cancer during robotic radical prostatectomy – First UK Series with technique
I Jour, N Vasdev, S Agarwal, A Abroaf, S Gowrie-Mohan, J Adshead
United Kingdom

MP29-9 Robotic Reconstruction of Bladder Neck: Patient Reported Outcomes
FJ BIANCO, JD Cedeno, I Lopez, M Nicholson
United States

MP29-10 Side-docking of the da Vinci for robot-assisted radical prostatectomy: simplicity and advantage
MI Ishida, MK Katsui, KO Ogihara, KT Takamatsu, YM Miyazaki, MK Kosugi, YS Saiki, YN Nakajima
Japan

MP29-11 Simultaneous use of suction device and laparoscopic grasper via Airseal® system valveless trocar during robotic upper urinary tract surgery
O Argun, I Tufek, C Obek, P Mourmouris, B Tuna, S Keskin, A Kural
Turkey

MP29-12 Dorsal Venous Complex ligation in robotic surgery. Is it still necessary?
GCG Cardoso Guimarães, RSMC Sousa Madeira Campos, BSB Santos Benigno, RLF Lima Favaretto, MMR Murce Rocha, LF Lucas Fornazieri, TBMS Borges Marques Santana, WHC Henriques da Costa, RARO Almeida Rosa de Oliveira, SCZ De Cássio Zequi
Brazil

MP29-13 Modification of Port Placement in Robot Assisted Laparoscopic Prostatectomy in Patients who have Undergone a Large Ventral Hernia Repair
GL Machen, P Lowry
United States

MP29-14 Use of Biomaterials during Robotic-Assisted Radical Prostatectomy
VB Mouraviev, J Syed, AS Bates, A Kumar, S Samavedi, J Marquinez, RF Coelho, R Bernardo, VR Patel
United States

MP29-15 A Novel Transversus Abdominal Plane Block During Robotic Assisted Radical Prostatectomy
BFK Katz, SJY Yu, DM Maass, AML Lee, MY Yezdani, KM Monahan, AM McGill, DIL Lee
United States

MP29-16 Withdrawn

MP29-17 Evaluation of a hybrid surgical navigation system with 3D-cancer map and real-time transrectal ultrasound image during robot-assisted radical prostatectomy
KK Kamoi, F Hongo, Y Naya, Y Naitoh, A Iwata, T Nakamura, K Okihara
Japan

MP29-18 Retrovesical Robotic Radical Prostatectomy with Suprapubic Tube Placement is associated with Early Continence
AH Lay, I Tachibana, I Jacobs, N Canvasser, JC Gahan
United States

MP29-19 Computational analysis of recovery from ischemic damage to kidney function undergoing robotic partial nephrectomy for renal tumor
YY Yoshino, TY Yamamoto, YF Funahashi, MO Oda, CW Wang, MK Kagajo, KM Mori, MG Gotoh
Japan

MP29-20 Dual Virtual and Image-Guided, Targeted Robotic Salvage Lymph Node Dissection
B Mouraviev, E Parra, S Samavedi, A Kumar, J Marquinez, C Chew, V Patel
United States

Saturday 3 October **Moderated ePoster Sessions (MP30)** **15:00–16:00**

Laparoscopy: Upper Tract - Benign
Room 8

MP30-1 Laparoscopic pyeloplasty in patients with renal anatomic variations and ureteropelvic junction obstruction
RJ Duarte, BC Nascimento, EP Miranda, V Srougi, MA Arap, HS Andrade, RAST Bandeira, AI Mittre, M Srougi
Brazil

MP30-2 Outcomes of laparoscopic pyeloplasty in adults with poorly functioning kidneys as an alternative to nephrectomy
RJ Duarte, BC Nascimento, EP Miranda, V Srougi, MA Arap, HS Andrade, RAST Bandeira, AI Mittre, M Srougi
Brazil

MP30-3 An Enhanced Recovery Pathway favouring Day-case, catheter and drain free Laparoscopic Pyeloplasty – Our Single Centre 8-year Experience
JDB Donati-Bourne, MI Husaini, SJM Mathias, PP Pillai, IS Smith, HF Fernando, AG Golash
United Kingdom

MP30-4 Long-term renal function in adults with ureteropelvic obstruction and solitary kidneys who underwent laparoscopic pyeloplasty
RJ Duarte, EP Miranda, BC Nascimento, V Srougi, MA Arap, HS Andrade, RAST Bandeira, AI Mittre, M Srougi
Brazil

MP30-5 Long-term outcomes and complication rates of laparoscopic pyeloplasty for ureteropelvic junction obstruction in a residency program
RJ Duarte, EP Miranda, BC Nascimento, V Srougi, MA Arap, HS Andrade, RAST Bandeira, AI Mittre, M Srougi
Brazil

MP30-6 Our strategy to reduce invasiveness by changing from HALS (hand-assisted laparoscopic surgery) to RPS (reduced port surgery) in laparoscopic donor nephrectomies for living renal transplantation
KI Ishii
Japan

MP30-7 Laparoscopic nephrectomy for ex vivo repair of renal artery aneurysms and autotransplantation: results of a consecutive case series.
JF Cabral, I Braga, A Fraga, P Principe, M Silva-Ramos
Portugal

MP30-8 Laparoscopic ureterolysis and omental wrap for retroperitoneal fibrosis: update on a single-centre experience
TMM Mendonca, I Dukic, DM Burke, RD Napier-Hemy
United Kingdom

MP30-9 Retroperitoneoscopic nephrectomy for large adult polycystic kidneys (>20cm): optimising technique and outcomes
A Hamed, C Li, C Kennedy, G Nabi
United Kingdom

MP30-10 Laparoscopic Repair of Colon Perforation after PCNL
RC Sanseverino, O Intilla, U Di Mauro, G Molisso, T Realfonso, G Napodano
Italy

MP30-11 Retroperitoneal Laparoscopic Living Donor Nephrectomy: Report of 192 Cases
HX Zhang, L Zhao, L Ma, X Hou, G Wang, L Liu
China

MP30-12 Laparoscopic intracorporeal ureter replacement by ileum
BK Komyakov, BG Guliev, VA Ochelenko
Russian Federation

MP30-13 Evaluating the learning curve for retroperitoneoscopic adrenalectomy in a high-volume center for laparoscopic adrenal surgery
A van Uitert, FCH D'Ancona, JF Langenhuijsen
Netherlands

Saturday 3 October **Moderated ePoster Sessions (MP31)** **15:30–17:00**

PCNL Outcomes
Room 4

MP31-1 PCNL in the United Kingdom: Trends in 5000 cases from BAUS PCNL Registry
WJG Finch, RC Calvert, S Fowler, JN Armitage, J Glass, J Withington, OJ Wiseman, SO Irving, NA Burgess
United Kingdom

MP31-2 The Clinical Efficacy and Safety of Bilateral Synchronous Percutaneous Nephrolithotomy (BSPCNL) for Bilateral Large Renal Stones
GNL Llanto, JBA Abraham
Philippines

MP31-3 Does pre-placement of Nephrostomy tube prior to PCNL improve outcomes or reduce complications
P Bearelly, CA Lis, RM Patel, MH Katz, RK Babayan, DS Wang
United States

MP31-4 A prevalence and risk factor analysis in retrorenal colon
T Zeng, GH Zeng
China

MP31-5 Development and Internal Validation of a Classification System for Predicting Stone-free Rates after Endoscopic Combined Intrarenal Surgery in the Modified Valdivia Position for Large Renal Stones
S Kuroda
Japan

MP31-6 Results and Complications of Percutaneous Nephrolithotomy (PCNL): Report of over 12,000 cases in southern Iran
MM Hosseini, AR Aminsharifi, D Irani, AR Haghpanah, A Eslahi, AR Yousefi, R Inaloo, M Zaki-Abbasi, A Farokhi
Iran (Islamic Republic of)

MP31-7 21st Century Trends in Percutaneous Nephrolithotomy in the United States: 1998-2011
K Stern, MD Tyson, H Abdul-Muhsin, M Humphreys
United States

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MP31-8 Percutaneous Nephrolithotomy (PCNL) Versus Retrograde Intrarenal Surgery (RIRS) in Treatment of Large Renal Stones (>2cm) In Pediatric Patients: A Randomized Controlled Trial
KSM Saad, SAN Hamdy, ME Youssif, AGE Hanno, AR El Nahas
Egypt

MP31-9 Post-operative bleeding risk in anticoagulated patients undergoing PCNL
P Motamedinia, DA Leavitt, P Zhao, AD Smith, Z Okeke
United States

MP31-10 Patients Are at Risk For Pyelovenous Backflow During Percutaneous Nephrostolithotomy
MM Alsyouf, HA Hodgson, KC Myklak, DL Faaborg, JL Arenas, JK Shen, SK Cheriyan, N Gillespie, DD Baldwin
United States

MP31-11 Prospective Evaluation of the Safety and Efficacy of Spinal Anesthesia vs. General Anesthesia for Percutaneous Nephrolithotomy (PCNL)
G Thummar, U Khater, R Chug, T Chauhan, M Gupta
United States

MP31-12 Relationship between Stone Density on CT and Outcomes of Percutaneous Nephrolithotomy
BTY Lim, WL Yam, SK Lim, D Goh, FC Ng
Singapore

MP31-13 Is tubeless ambulatory percutaneous nephrolithotomy for staghorn calculi safe and effective?
D Beiko, A Kokorovic, MA Elkoushy, G Roberts, S Robb, R Di Lena, S Andonian
Canada

MP31-14 Complications in 504 consecutive patients undergoing percutaneous nephrolithotomy using a posterosuperior calyceal approach
JR Bell, P Dalvie, SY Nakada, K Karaoglu, SP Hedican, SL Best, M Wojtowycz, JC McDermott
United States

MP31-15 Stone complexity does not affect fluoroscopy time during percutaneous nephrolithotomy
JPI Ingimarsson, AJV Vollstedt, LMD Dagrosa, VMP Pais
United States

MP31-16 Modification of the Guy Stone Score to improve prediction stone free rate in percutaneous nephrolithotomy
J Moreno-Palacios, E Maldonado-Alcaraz, E Serrano-Brambila, E Garcia-Peña, LO Torres-Mercado, G Montoya-Martínez
Mexico

MP31-17 Supracostal punctures in the supine percutaneous nephrolithtomy are safe: outcomes from a comparative study
GJ Wood, FC Torricelli, FC Vicentini, M Oliveira, M Srougi, E Mazzucchi
Brazil

MP31-18 Can Activities of Daily Living Predict for Complications Following Percutaneous Nephrolithotomy?
DA Leavitt, P Motamedinia, P Zhao, S Moran, M Siev, M Fakoury, M Alom, DM Hoenig, AD Smith, Z Okeke
United States

MP31-19 Preoperative Patient and Stone Characteristics Associated With a Prolonged Length of Hospital Stay Following Tubeless PCNL
KP Barrett, D Ghiculete, Mh Ordon, JY Lee, KT Pace, RJD Honey
Canada

MP31-20 Comparison of Safety Outcomes in Totally Tubeless Percutaneous Nephrolithotomy According to Nephrostomy Tract Sealing Materials: A propensity Score Matching Study
YS Suh, JJ Kim, SW Lee, BC Jeong, SI Seo, SS Jeon, DH Lim, DH Han, J Yong
Korea, Republic of

MP31-21 Do post-operative white cell count, C-reactive protein or stone culture results influence length of hospital stay after percutaneous nephrolithotomy?
SE Allen, G Mazzon, P Pal, S Longhorn, T Philp, S Choong, D Smith
United Kingdom

MP31-22 Safety and efficacy of Percutaneous Nephrolithotomy (PCNL) in Patients with Solitary Kidney
SJS Shah
India

Saturday 3 October **Moderated ePoster Sessions (MP32)** **15:30–17:00**

Robotic Surgery: Upper Tract - Oncology 2
Room 7

MP32-1 Robotic Partial Adrenalectomy
G Simone, R Papalia, M Ferriero, R Mastroianni, G Tuderti, A Stigliano, S Guaglianone, M Gallucci
Italy

MP32-2 Tumor Diameter Accurately Predicts Perioperative Outcomes in T1 Renal Cancer Treated with Robot-Assisted Partial Nephrectomy
AM Potretzke, BA Knight, B Anderson, A Park, JM Vetter, G Anderson, GS Sandhu, SB Bhayani, RS Figenshau
United States

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MP32-3 Selective artery clamping under image guidance of three-dimensional reconstruction in robot-assisted partial nephrectomy
K Tanaka, K Shigemura, J Furukawa, K Harada, M Muramaki, M Fujisawa
Japan

MP32-4 Nephro-ureterectomy benefits from robotic assistance
N Douaihy, S Van Deun, J Renard, C.E Iselin
Switzerland

MP32-5 Comparative study of Optimal Outcomes on Robot-assisted Partial Nephrectomy for T1a and T1b Renal Masses: Propenstity score matched study
DK Kim, JT Seo, I Alabdulaali, A Sheikh, A Atawi, YE Yoon, KC Koo, WK Han, KH Rha
Korea, Republic of

MP32-6 Tumour characteristics are more important than patient's conditions in predicting complications after RAPN: results of a single-center study on 104 patients treated by a single-surgeon robotic-skilled
FDM Dal Moro, CV Valotto, FZ Zattoni
Italy

MP32-7 Robotic Assisted Laparoscopic Partial Nephrectomy (RPN) in Patients on Anticoagulation/ Antiplatelet Agents
GT Turini, AR Leone, JM Brito, G Pareek, JF Renzulli, D Golijanin
United States

MP32-8 Aspirin and Clopidogrel during Robotic Partial Nephrectomy, Is It Safe?
ABA Althaus, O Dovirak, P Chang, K Taylor, T O'Halloran, A Wagner
United States

MP32-9 Robotic versus laparoscopic nephrectomy from a single centre: comparing apples with oranges?
TA Malthouse, A Hart, W Lam, A Kadirvelarasan, N Doeuk, B Challacombe
United Kingdom

MP32-10 Off-Clamp Robotic-Assisted Partial Nephrectomy
A Wright, AM Potretzke, GS Sandhu, RS Figenshau
United States

MP32-11 Partial Nephrectomy: Comparison of open and robotic techniques in a single centre
LR Forster, S Ingham, V Hanchanale, R Singh, SK Addla
United Kingdom

MP32-12 Use of the Satinsky clamp in a multi-center cohort of patients undergoing robotic partial nephrectomy
R Barod, N Abdullah, D Dalela, H Rahbar, J Larson, M Allaf, S Bhayani, J Kaouk, M Stifelman, C Rogers
United States

MP32-13 Does occasional retroperitoneal robot-assisted partial nephrectomy negatively affect outcomes? A comparison of transperitoneal versus retroperitoneal robot-assisted partial nephrectomy
W Lam, M Chakravorty, T Malthouse, A Kadirvelarasan, N Doeuk, B Challacombe
United Kingdom

MP32-14 Racial disparities in Renal Cell Carcinoma: Histology and renal function of a contemporary cohort undergoing Robotic Partial Nephrectomy
JC Wang, EJ Traore, GC Mitchell, MM Maddox, JS Silberstein, BR Lee
United States

MP32-15 Five-year Oncologic and Functional Outcomes after Robotic Partial Nephrectomy
YE Yoon, JH Han, DK Kim, KH Rha, YD Choi, SC Yang, WK Han
Korea, Republic of

MP32-16 Robotic Partial Nephrectomy Demonstrates Similar Perioperative and Renal Functional Outcomes as Open Partial Nephrectomy in Patients with Pre-operative Chronic Kidney Disease: Trifecta Analysis
IH Derweesh, HJ Lee, J Woo, H Mirheydar, S Wang, B Lane
United States

MP32-17 Robot-assisted laparoscopic retroperitoneal laparoscopic partial nephrectomy with 4-arm method
HY Ho, S Huang
Taiwan

MP32-18 Single centre experience employing a default extra-peritoneal approach for robotic assisted laparoscopic partial nephrectomy
G Mueller, AM Emara, RG Hindley, NJ Barber
United Kingdom

MP32-19 Robotic Partial Nephrectomy Becomes cost neutral copmared to open partial nephrectomy during a period of increasing utlilization
CD Bahler, MF Monn, AR Gramm, C Flack, SV Kheyfets, CP Sundaram
United States

MP32-20 Robotic partial nephrectomy for multiple ipsilateral renal tumors: a multi-institutional analysis of perioperative and functional outcomes
D Dalela, R Barod, A Mass, M Johnson, J Larson, J Kaouk, M Stifelman, M Allaf, S Bhayani, C Rogers
United States

MP32-21 Microwave Ablation for Facilitating Zero-Ischemia Robot-Assisted Laparoscopic Partial Nephrectomy
LG Glickman, GS Sivarajan, MD Degen, RM Munver
United States

MP32-22 High Volume robotic partial nephrectomy centers: is there a difference between teaching VS. nonteaching hospitals?
G Abdelsayed
United States

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MP33-1 Suprapubic-assisted laparoendoscopic single-site surgery for nephrectomy: analysis of a single-surgeon learning curve of 30 cases
H Xu, XF Zou, YJ Xue, XN Wang, GX Zhang, RH Xiao, YH Yuan, GQ Wu
China

MP33-2 A nationwide survey of laparo-endoscopic single-site and reduced port surgery in Japan.
K Kobayashi, M Narita, A Kawauchi, H Mimata, JSEE working group for LESS and RPS
Japan

MP33-3 Transvaginal Natural Orifice Transluminal Endoscopic Surgery (NOTES)-Assisted Laparoscopic Heminephrectomy in Duplex Kidney: Report of 4 Cases
FL Liu, XF Zou, GX Zhang, RH Xiao, YH Yuan, GQ Wu
China

MP33-4 Chinese Patient Perceptions of Transvaginal Natural Orifice Transluminal Endoscopic Surgery
YJ Xue, XF Zou, GX Zhang, YH Yuan, RH Xiao, GQ Wu, XN Wang, QL Liu
China

MP33-5 Complications of transvaginal natural orifice transluminal endoscopic surgery (NOTES) in urology
GX Zhang, QL Liu, XF Zou, YH Yuan, RH Xiao, FL Liu, YJ Xue, X Zhong
China

MP33-6 Application of three-dimensional (3D) laparoscopic technique in hybrid transvaginal NOTES nephrectomy
GQ Wu, XF Zou, YJ Xue, XN Wang, GX Zhang, RH Xiao, YH Yuan, FL Liu
China

MP33-7 Suprapubic assisted umbilical laparoendoscopic single-site surgery for duplex kidney in children: report of 9 cases
YT Wu, RQ Xu, XF Zou, GX Zhang, YH Yuan, RH Xiao, H Xu, GQ Wu
China

MP33-8 Transabdominal scar-assisted transumbilical laparoendoscopic single-site surgery (U-LESS) in urology: A report of 52 cases
GQ Wu, XF Zou, YJ Xue, XN Wang, GX Zhang, RH Xiao, YH Yuan, FL Liu
China

MP33-9 Application of Multi-channel Port (ZOU-port) in Pure Transvaginal NOTES
DZ Long, B Jiang, XF Zou, GX Zhang, RH Xiao, YH Yuan, GQ Wu, XN Wang
China

MP33-10 Suprapubic-assisted Laparoendoscopic Single-site Surgery (SAE-LESS) for Nephroureterectomy
XF Zou, GX Zhang, G Xu, QM Zeng, GQ Wu, YH Yuan, RH Xiao, XN Wang
China

MP33-11 Our experience with 3D Laparoscopy in Urology
SBP Patankar
India

MP33-12 Transvaginal Natural Orifice Transluminal Endoscopic Surgery (NOTES)-Assisted Laparoscopic Partial Nephrectomy: Report of the First Ten Human Cases
XF Zou, YJ Xue, XN Wang, GX Zhang, RH Xiao, YH Yuan, GQ Wu, FL Liu
China

MP33-13 Laparoendoscopic single-site radical nephrectomy by Single-Cup or Single-Ring glove technique
SD Zhang, LL Ma, H Huang, K Liu, T Tian
China

MP33-14 The long-term oncologic results of radio-frequency ablation for small renal tumors
GT Sung, SD Kim
Korea, Republic of

MP33-15 Office based MRVUS fusion cryoablation of Prostate Cancer under local anethesia: quality of life indicators
F Bianco, JD Cedeno, M Nicholson, C Woodhouse, EL Gheiler, CD Guerra
United States

MP33-16 Pilot Evaluation of Histotripsy Based Treatment of Peyronie's Disease: Histologic Effects in Ex Vivo Plaques
GR Schade, YA Haider, AD Maxwell, YN Wang, TD Khokhlova, F Lee, MR Bailey, H Wessells
United States

MP33-17 3D printing: a new tool in preoperative surgical planning of complex minimally invasive nephron sparing surgery
ADM Dourado Meneses, P Lima Mattos, RDS Donalisio da Silva, BAR Aragao Rocha, ATN Tolstenko Nogueira, JUS Stolzenburg, SCZ Cassio Zequi
Brazil

MP33-18 A novel laparoscopic nephrectomy via transumbilical approach for infective nonfunctioning kidney with perinephric adhesion
YF Liao, H Xu, XF Zou, GX Zhang, RH Xiao, YH Yuan, GQ Wu, XN Wang
China

MP33-19 Robotic HIFU: Focus on early complications after 6 years experience
F Pisanti, F Attisani, L Mavilla, D Granata, M Casilio, M Schettini
Italy

MP33-20 HIFU hemiablation for prostate cancer in 50 men: results from a prospective cohort with a median follow-up of 3.3 years
FA Aoun, SA Albisinni, QM Marcelis, KL Limani, AP Peltier, RVV van Velthoven
Belgium

MP33-21 Changing trends in the detection (Prostate biopsy) and treatment (Focal therapy) of prostate cancer in England: Evidence from hospital episodes statistics (HES) database
BK Somani, D Naief, G Nabi
United Kingdom

MP33-22 Development of Convective Water Vapor Energy Therapy for Treating Localized Prostate Cancer: First-In-Man Early Clinical Experiences.
CM Dixon, CD Cabanas, C Huidobro, TR Larson
United States

Saturday 3 October **Moderated ePoster Sessions (MP34)** **15:30–17:00**

BPH / LUTS 3
Room 2

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MP34-1 Personal experience with Transurethral Bipolar Enucleation with Button electrode (B-TUEP) for the treatment of bladder outlet obstruction (BOO) due to benign prostatic hyperplasia (BPH)
RG Giulianelli, LA Albanesi, BCG Gentile, GM Mirabile, GR Rizzo, PT Tariciotti
Italy

MP34-2 Benefits of the TURis system for transurethral resection of the prostate in benign prostatic hyperplasia: systematic review,meta-analysis and economic evaluation for England and Wales
Z Ihara, D Booth, C Treharne, L Crowe
Germany

MP34-3 TURiS prostatectomy as daycase: introducing the service
TT Tharakan, D Nandi, A Pai, AS Bong, P Carter, S Woodhams
United Kingdom

MP34-4 Bipolar TURP – The Trainee's Gold Standard
JA Raju, S Aziz, KK Prasad, IG Apakama
United Kingdom

MP34-5 B-Tuep with Plasma Kinetic System: A new enucleation technique for the treatment of large volume BPH
F Pisanti
Italy

MP34-6 Is Green light photo selective vaporization of the prostate (GPVP) gold standard in management of benign prostatic hyperplasia in high-risk patients?
SJ Shah
India

MP34-7 120W Green Light Laser Photo selective Vaporization (PVP) of the Prostate versus Bipolar TURP for Treatment of Symptomatic Benign Prostate Hyperplasia: A Prospective Randomized Study
D Hota, S Panda, GP Singh, PK Mohanty, S Swain
India

MP34-8 Photoselective vaporization of the prostate in patients with refractory urinary retention: results and predictive factors of a prospective study
BP Pradere, BP Peyronnet, NB Brichart, FB Bruyère
France

MP34-9 Age and prostate size matched comparison of urinary incontinence between HoLEP and PVP
AF Alruwaily, R Siddiqui, MJ Bierlein, SM Lenherr, JT Wei
United States

MP34-10 Evaluation of safety, efficiency and surgical outcomes between GreenLight 180W-XPS techniques: comoarison of Pure Photo-Vaporization and Vapor- Incision Techniques
GR Eure, MA Hai, RR Gonzalez, LS Kriteman, KC Zorn
United States

MP34-11 Efficacy and safety of photovaporization of prostate with the Greenlight® laser in patients under oral anticoagulation with mechanical heart valve : results of a multicentric study
Q Langouet, Mr Pradere, MD Misraï, Ph D Bruyere
France

MP34-12 Functional Results of a Prospective Randomized Controlled Study Comparing GreenLight XPS to TURP Demonstrate Durable Efficacy and Safety at 24-Months (GOLIATH): UK Analysis
JA Thomas, A Tubaro, N Barber, A Riddick, T Larner, N Gogoi, R Hindley, A Thorpe, N Shrotri, A Bachmann
United Kingdom

MP34-13 Photovaporization of prostate with the Greenlight® laser in octogerians : results of a comparative, multicentric study
BP Pradere, VM Misrai, BP Peyronnet, FB Bruyère
France

MP34-14 Photoselective Vaporization of the Prostate in Men with Large Glands and in High Risk Men using the 180-W GreenLight XPS Laser System: Results from a Large Multicenter Retrospective Study
GR Eure, MA Hai, RR Gonzalez, LS Kriteman, KC Zorn
United States

MP34-15 Do antiplatelet and anticoagulant increase risk of haemorrhagic complications in photo-vaporization of prostate by Greenlight® laser
B Pradere, B Peyronnet, N Brichart, F Bruyère
France

MP34-16 Impact of photoselective vaporization of prostate in management of prostate cancer
B Pradere, B Peyronnet, N Brichart, F Bruyère
France

MP34-17 Comparative study of photovaporization by Greenlight® laser in benign prostate hyperplasia and prostate cancer
BP Pradere, BP Peyronnet, NB Brichart, FB Bruyère
France

MP34-18 Investigation for Postoperative Extubation in 24 Hours after Transurethral Anatomical Enucleation and Resection of the Prostate
B Li, A Xu, Y Zou, C Liu
China

MP34-19 Early catheter removal: A Prospective study of 800 consecutive patients undergoing transurethral resection of the prostate(TURP)
SJ Shah
India

MP34-20 Decrease in serum prostate specific antigen level following transurethral resection of prostate for benign prostatic hyperplasia and its correlation with the resected prostate weight and the clinical outcome
A Hamid, M Yaqoob
India

MP34-21 Can we preserve ejaculation after transurethral resection of the prostate? Comparative study between the conventional and a new technique.
M Gargouri, M Ben Chehida, A Sellami, S Ben Rhouma, Y Nouira
Tunisia

Saturday 3 October **Moderated ePoster Sessions (MP35)** **15:30–17:00**

BPH / LUTS 4
Room 14

MP35-1 Home after HoLEP: Patient outcomes and cost-benefits of a day-case HoLEP service
KS Eyre, N HItchen, PVS Kumar
United Kingdom

MP35-2 An evaluation of the learning curve for Holmium Laser Enuclation of the Prostate (HoLEP) – A single surgeon's experience
O Brunckhorst, K Ahmed, O Nehikhare, G Marra, R Popert
United Kingdom

MP35-3 Long Term Efficacy of HoLEP: A Prospective Study
VK Ramakrishnan, MJ Murugesan, AK Kumar, IR Iyyasamy, GA Ganapathy, KK Kailasam
India

MP35-4 Durable symtom improvement after Holmium laser Enucleation of the prostate: Analyzing outcomes at ten years in over 100 men
T Large, MS Borofsky, MM El Tayeb, JE Lingeman
United States

MP35-5 Holmium laser enucleation of the prostate (HoLEP) verus simple prostatectomy for large prostates: systematic review and meta-analysis
P Jones, O Aboumarzouk, B K Somani, BP Rai
United Kingdom

MP35-6 Analysis of Perioperative performance and functional improvements for patients undergoing Holmium laser enucleation of the prostate stratified by gland size
GD Fritz, MS Borofsky, JE Lingeman
United States

MP35-7 Single Lobe Versus Multiple Lobe Holmium Laser Enucleation Of Prostate
BP Singh, U Dhakad, A Jhanwar, G Prakash, SN Sankhwar
India

MP35-8 The impacts of training on the perioperative and intermediate functional outcomes after Holmium Laser Enucleation of the prostate.
H Abdul-Mushin, MD Tyson, R Nunez, KL Stern, MR Hu MPhreys
United States

MP35-9 Morcellation Efficiency: Comparative Study of Two Generations of Morcellators
H Abdul-Muhsin, KL Stern, MR Humphreys
United States

MP35-10 Perioperative or operative factors affecting the hemoglobin decrease in HoLEP with Pure Laser hemostasis
F Endo, K Ohwaki, M Shimbo, K Hattori
Japan

MP35-11 Sphincteric mucosal saving technique for the prevention of transient incontinence after holmium laser enucleation of the prostate
BS Kim, JN Lee, HT Kim, TH Kim, TG Kwon, SK Chung, BW Kim, WS Oh, DH Cho, ES Yoo
Korea, Republic of

MP35-12 The effect of preoperative administration of 5 alpha-reductase inhibitor, Dutasteride, on holmium laser enucleation of the prostate (HoLEP)
KS Suzuki, FB Fan, MS Ishii, AM Moro, HK Komori, AO Ochi, NS Shiga, HA Abe, TO Ota
Japan

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MP35-13 Is Power Everything in HoLEP Surgery? The First Reported 50W HoLEP Series.
M Sut, F Khan, A Saleemi, S Taneja, A Alam, I Nunney, T 'Aho
United Kingdom

MP35-14 How Efficient is Reduced Power in HoLEP Surgery? A Comparison of 50W and 100W HoLEP Surgical Times.
M Sut, K Khan, A Saleemi, S Taneja, A Alam, I Nunney, T 'Aho
United Kingdom

MP35-15 HoLEP 111W EPS – A transurethral operation without antibiotic prophylaxis Prospective evaluation of 194 patients with a new laser system
S Piesche, H Radu, J Beier, H Keller
Germany

MP35-16 Improving Holmium Laser Enucleation of the Prostate Efficiency: The Lumenis Pulse 120H Laser Platform
KL Stern, H Abdul-Muhsin, MR Humphreys
United States

MP35-17 A prospective study to compare changes in male sexual function following Holmium laser Enucleation of prostate versus Transurethral resection of Prostate
P Pushkar, R Taneja, A Agarwal, SK Rawat, N Subramanian, S Gore, A Saxena, S Pradhan, M K Sharma, I A Geelani
India

MP35-18 Holmium Laser Enucleation versus Transurethral Resection of the Prostate for urinary retention – peri-operative and long-term outcomes from a single centre experience.
M Sut, P Jefferson, L Siriwardena, T Aho
United Kingdom

MP35-19 Holmium laser enucleation of the prostate versus laparoscopic retropubic simple prostatectomy in large benign prostatic hyperplasia
TH Kim, WY Cho, DY Kim, KS Lee
Korea, Republic of

MP35-20 Correlation between postoperative dysuria and intraoperative features of the en-bloc no-touch HoLEP
CM Cracco, CM Scoffone
Italy

MP35-21 Does Cystolithopaxy at the time of Holmium Laser Enucleation of the Prostate (HoLEP) affect Outcomes?
TP Marien, A Tumen, C Mitchell, NL Miller
United States

MP35-22 Transurethral anatomical enucleation of the prostate by 1470nm Diode Laser
C Liu, A Xu, B Li
China

Saturday 3 October **Moderated ePoster Sessions (MP36)** **15:30–17:00**

Surgical Outcomes 6
Room 16

MP36-1 Predicting hospital stay for flexible ureteroscopy
JL Hendry, F Housami, GE Jones
United Kingdom

MP36-2 Loss of flexible ureteroscope flexion is associated with increased repair rates: a prospective multi-center study
M Usawachintachit, C Chu, A Xu, B Duty, R Sur, D Wenzler, M Sorenson, J Harper, M Stoller, T Chi
United States

MP36-3 Outcomes of ureteric stents with extracting strings
A Reekhaye, R Gowda, A Sakthivel
United Kingdom

MP36-4 Diagnostic ureteroscopy does not routinely need a post-operative stent insertion: Prospective outcomes from a University teaching hospital
BK Somani, H Wells
United Kingdom

MP36-5 Effect of tamsolusin on quality and Complication of ureteroscopy
N Rashahmadi, K Estifaii
Iran (Islamic Republic of)

MP36-6 The predictive value of ureteroscopic biopsy to final pathological stage in upper tract urothelial carcinoma
AT Takamoto, Y Kobayashi, K Sasaki, K Wada, K Fujio, M Sugimoto, M Araki, S Ebara, T Watanabe, Y Nasu
Japan

MP36-7 Operator dissatisfaction with flexible ureteroscopes rarely results in scope repair: a prospective multi-center study
T Chi, C Chu, M Usawachintachit, I Allen, B Duty, R Sur, K Ramaswamy, M Sorensen, J Harper, M Stoller
United States

MP36-8 Outcomes at 3 and 6 months in patients with renal lithiasis treated with flexible ureteroscopy
DR Multescu, C Ene, D Georgescu, B Geavlete, P Geavlete
Romania

MP36-9 Do lower pole renal stones effect RIRS stone free results in the modern ureteroscopy era?
DG Golomb, HG Goldberg, YS Shtabholtz, ST Tapiaro, RH Holland, DL Lipshitz
Israel

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MP36-10 Natural History, Complications, and Re-Intervention Rates of Asymptomatic Residual Stone Fragments Post-Ureteroscopy: a Report from the EDGE Research Consortium
AE Krambeck, RL Sur, BE Knudsen, NL Miller, C Yong, T Marien, A Wang, CM Charchenko, H Brotherhood, M Humphreys, BH Chew
United States

MP36-11 Construct validity of operation time and volume of stone fragmented per unit laser energy as a marker of expertise in ureteroscopy and stone fragmentation
JP Blackmur, N Maitra, M Malki, F al-Housami, RR Marri, C McIlhenny
United Kingdom

MP36-12 Entractable Fragment Versus Dusting during Uretheroscopic Laser Lithotripsy in Childeren: Prospective Randomizied study
AF Fahmy, ME Youssif, SS Orabi, IA Mokhless
Egypt

MP36-13 The management of urinary stones in the octogenarians.
K Farrag, J Nariculam, M Bolgeri, D Hossain, F Anjum, H Marsh, S Sriprasad
United Kingdom

MP36-14 Ureteroscopy in emergency setting
P Geavlete, R Multescu, B Geavlete, V Mirciulescu, G Nita, D Georgescu
Romania

MP36-15 Does pre-operative Urinary Tract Infection increase the risk of post-operative sepsis in patients undergoing Ureteroscopy?
NU Maitra, JP Blackmur, M Malki, F al-Housami, RR Marri, C McIlhenny
United Kingdom

MP36-16 Which factors are most likely to increase the risk of post-operative urosepsis in patients undergoing ureteroscopy for treatment of stone disease?
NU Maitra, JP Blackmur, M Malki, F al-Housami, RR Marri, C McIlhenny
United Kingdom

MP36-17 Prophylactic antibiotics may reduce stone recurrence in non-struvite renal calculi
OK Kalejaiye, ID Dukic, NC Collin, KJ Jacobson, FXK Keeley, AGT Timoney, JP Philip
United Kingdom

MP36-18 Factors influencing operative time for ureteroscopy and stone fragmentation
JP Blackmur, N Maitra, M Malki, F al-Housami, RR Marri, C McIlhenny
United Kingdom

MP36-19 Variation in kidney stone treatment patterns between different English University Hospitals
DM Gulur, RC Calvert
United Kingdom

MP36-20 Developing a disease specific Ureteric Stone Patient reported outcome measure: Stage 3 and 4
M Sut, MGB Tran, X Cheng, J Yip, J Collie, S Al-Hayek, JN Armitage, OJ Wiseman
United Kingdom

MP36-21 Acute urinary tract stone disease in the very elderly – need for a national audit?
KC Moore, R Robinson, Z Gall, D Ross, A Cowie, CD Betts
United Kingdom

MP36-22 Use of Ureteral Catheters and Stents after Uretero-renoscopy: How soon can they be safely removed?
MD Ahmed, L Durner, N Runi, P Owegie, A Patel
United Kingdom

MP36-23 Is Routine JJ stent placement necessary after use of Ureteral Access Sheath (UAS) for Retrograde Intrarenal Surgery (RIRS)?
L Durner, M Ahmed, N Runi, P Owegie, A Patel
Germany

Sunday 4 October **Moderated ePoster Sessions (MP37)** **14:00–16:00**

New Technology 3
Room 2

MP37-1 From diagnostic to focal prostate cancer treatment at a high volume prostate cancer center: concept of a workflow
J von Hardenberg, N Westhoff, M Ritter, MS Michel
Germany

MP37-2 Head to head comparison of ASTRO, Phoenix and Stuttgart criteria in patients treated with High Intensity Focused Ultrasound for primary prostate cancer.
G Simone, L D'Urso, D Collura, A Giacobbe, GL Muto, R Papalia, R Rosso, G Tuderti, E Castelli, G Muto
Italy

MP37-3 2D-US versus 3D-US guided saturation biopsy to detect prostate cancer
M Ferriero, G Simone, R Papalia, R Mastroianni, S Guaglianone, M Gallucci
Italy

MP37-4 3D US versus US/MRI fusion-guided target biopsy to detect prostate cancer: a preliminary experience
M Ferriero, G Simone, R Papalia, R Mastroianni, S Guaglianone, M Gallucci
Italy

MP37-5 MRI Fusion Biopsy for patients who are on Active Surveillance
AC Vasiljevic, Z Cheema, KJ Ho, A Abedin, K Rhandawa, A Chakravarti
United Kingdom

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MP37-6 MRI-US Fusion Targeted Biopsy: Comparison of different biopsy schemes
DJ Eldred-Evans, G Marra, S Samad, M Puglisi, W Lam, A Polson, G Rottenberg, B Challacombe, R Popert
United Kingdom

MP37-7 An analysis of PSA Density and MRI in Newly Diagnosed Prostate Cancers
MD Ahmed, F Chinegwundoh, A Patel
United Kingdom

MP37-8 Detecting Positive Surgical Margins: Utilization of Light Reflectance Spectroscopy on ex vivo Prostate Specimens
AH Lay, MS Morgan, N Canvasser, X Wang, P Kapur, H Liu, CG Roehrborn, JA Cadeddu
United States

MP37-9 Comparision of early oncologic outcomes of focal cryotherapy in prostate cancer (PCA) with gleason score 6(3 + 3) VS 7(3 + 4)
A Sivaraman, F Uriburu Pizarro, E Barret, R Sanchez-Salas, M Galinao, F Rozet, N Cathala, A Mombet, D Prapotnich, X Cathelineau
France

MP37-10 Prospective comparison of oncological outcomes between Focal cryotherapy versus Focal High-Intensity Focused Ultrasound in localized prostate cancer
A Sivaraman, Y Ahallal, E Barret, R Sanchez-Salas, M Galinao, F Rozet, N Cathala, A Mombet, D Prapotnich, X Cathelineau
France

MP37-11 Therapeutic effect of variant wavelengths of Nd:YAG laser on benign prostatic hyperplasia
YS Cho, CH Park, KJ Joo, HJ Park, CH Kwon
Korea, Republic of

MP37-12 En bloc thulium laser resection of bladder tumors: 3-yr single centre experience
G Simone, D Collura, A Giacobbe, E Castelli, G Tuderti, GL Muto, R Papalia, G Muto
Italy

MP37-13 New imaging technology significantly reduces radiation dose during prostate artery embolization (PAE): Assessment of a UK University Hospital Practice
B Maher, G Hickson, B Somani, T Bryant, CN Hacking
United Kingdom

MP37-14 Dependence of stone composition and dimensions on fragmentation efficacy with burst wave lithotripsy
A Maxwell, M Hubbard, B Dunmire, O Sapozhnikov, W Kreider, M Bailey
United States

MP37-15 High-frequency versus long-pulse laser lithotripsy performance
P Kronenberg, O Traxer
Portugal

MP37-16 Comparison of an electric pulse lithotripter to the Holmium laser; Stone fragmentation efficiency and impact on flexiable ureteroscope deflection and flow
AG Kaplan, TT Chen, R Shin, A Ackerman, G Sankin, P Zhong, CD Scales Jr., WN Simmons, GM Preminger, ME Lipkin
United States

MP37-17 An exploratory study on novel herbal formulation for the treatment of recurrent urinary stone
SB Patankar
India

MP37-18 Management of Refractory Dystrophic Calcifications of the Lower Urinary Tract with Hyperbaric Oxygen Therapy
KL Stern, MR Humphreys
United States

MP37-19 Microwave Ablation of T1a Renal Cancer: Preliminary Safety and Clinical Efficacy
SL Best, SJ Wells, TJ Ziemlewicz, M Klapperich, JL Hinshaw, MG Lubner, CL Brace, SY Nakada, FT Lee, EJ Abel
United States

MP37-20 Spending money to make money: new LASER technology results in shorter operating time and more patients on a theatre list
A Gkentzis, L Forster, C Fragkopoulou, JA Forster, AB Stewart
United Kingdom

MP37-21 PercSac: A Novel Device to Prevent Stone Fragment Migration during Percutaneous Lithotripsy in A Kidney Model
JA Antonelli, MS Morgan, AB Cohen, JC Gahan, H Beardsley, MS Pearle, JA Cadeddu
United States

MP37-22 Evaluation of combined electro cutter with cold knife effect on the intractable anterior urethral strictures
AA Ketabchi
Iran (Islamic Republic of)

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Sunday 4 October | **Moderated ePoster Sessions (MP38)** | **14:00–16:00**

New Technology 4
Room 3

MP38-1 Evaluation of a novel single use flexiable ureteroscope
AG Kaplan, D Radvak, R Shin, A Ackerman, TT Chen, J Dale, CD Scales Jr., WN Simmons, GM Preminger, ME Lipkin
United States

MP38-2 The Disposable Digital Flexible Ureteroscope: A New Paradigm?
B Matlaga, B Eisner, W Molina
United States

MP38-3 First evaluation of a new single use flexible digital ureteroscope in human fresh cadavers
O Traxer, S Proietti, L Dragos, W Molina
France

MP38-4 Fourth Generation flexiable ureteroscopes: A comparison of optics, deflection and flow
AG Kaplan, D Radvak, R Shin, A Ackerman, TT Chen, J Dale, CD Scales Jr., WN Simmons, GM Preminger, ME Lipkin
United States

MP38-5 I-Guide^{TM} localization system (Siemens) and Ultramini Access Ureteroscopic Anterior PNCL
A Patel, L Durner, R Hurst, JY Chun
United Kingdom

MP38-6 Comparison of a Novel Combined Holmium Laser and Suction Device, LithAssist, to an Ultrasonic Lithotripter for Percutaneous Nephrolithotomy-A Randomized Controlled Multicenter Clinical Trial
NM Streeper, Z Okhunov, J Landman, SL Best, SY Nakada
United States

MP38-7 Results from a prospective multicentric observational and comparative study on XenxTM, a new stone management device for the treatment of ureteric stones.
F Sanguedolce, N Macchione, A Papatsoris, P Kallidonis, P Honeck, S Hruby, M Alvarez Maestro, O Traxer, F Montanari, F Greco
United Kingdom

MP38-8 Developing an Augmented Reality PCNL Access System
BW Turney, S Keoghane, M Vairinhos, S Eliseu, S Marques, J Borgerson
United Kingdom

MP38-9 PCNL puncture using an image guidance system
JM Lazarus, M Dewar, L Kaestner
South Africa

MP38-10 Urine diagnostic testing for bladder cancer by imaging flow cytometry
K Lai, M Olivieri, PJ Chana, A Chandra, P Dasgupta, H Yamamoto
United Kingdom

MP38-11 Initial evaluation of clinical implementation of the semi-robotic MPMRI/TRUS-guided transrectal fusion biopsy of the prostate using the ArtemisTM-device in a high volume university prostate cancer
N Westhoff, J Von Hardenberg, MS Michel, M Ritter
Germany

MP38-12 MRI Fusion Biopsy in Biopsy Naive patients
AC Vasiljevic, Z Cheema, KJ Ho, A Abedin, K Rhandawa, A Chakravarti
United Kingdom

MP38-13 MRI Fusion Biopsy of Prostate in patients that have had previous negative Transrectal Ultrasound guided biopsy
AC Vasiljevic, Z Cheema, KJ Ho, A Abedin, K Rhandawa, A Chakravarti
United Kingdom

MP38-14 Image Guided Percutaneous Cryoablation for Solid Renal Tumours: Early Experience of a Novel Cone Beam CT Needle Guidance System
E Fletcher, NJ Railton, MC Nuttall, P Berry
United Kingdom

MP38-15 Second Harmonic Generation Optical Microscopy Identifies Aggressive RCC Variants
SL Best, Y Liu, M Greuel, T Thimm, M Houlihan, J Bredfeldt, KW Eliceiri
United States

MP38-16 Virtual 3D bladder reconstruction from white light Cystoscopy
JC Liao, KL Lurie, DV Zlatev, R Angst, S Li, J Gao, KE Mach, AK Ellerbee
United States

MP38-17 Transurethral resection in one piece by using a flexible cystoscopy (fTURBO): A new technique for the treatment of non-muscle-invasive bladder cancer.
A Fujikawa, J Matsuzaki, H Itou, S Kuroda, T Tabei, K Usui
Japan

MP38-18 En-bloc plasma-button bladder tumor removal – is it feasible?
P Geavlete, F Stanescu, C Ene, C Bulai, C Moldoveanu, M Jecu, R Multescu, B Geavlete
Romania

MP38-19 íSPIES; Evaluation of bladder images in four different SPIES modalities by a tablet application
GM Kamphuis, DM de Bruin, MJ Brandt, T Knoll, P Conort, A Lapini, JL Dominques-Escriq, JJM de la Rosette
Netherlands

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MP38-20 **Development and use of tablet application íSPIES for evaluation & comparison of image perception of Storz Professional Image Enhancement System (SPIES)**
GM Kamphuis
Netherlands

MP38-21 **SPIES versus NBI technology in bladder tumors' diagnostic**
P Geavlete, F Stanescu, C Ene, C Bulai, C Moldoveanu, M Jecu, R Multescu, B Geavlete
Romania

MP38-22 **Confocal laser endomicroscopy in the management of endoscopically treated upper urinary tract transitional cell carcinoma (UTUC) - preliminary data compared with histopathiological analysis**
L Villa, J Jonathan Cloutier, O Olivier Traxer
France

MP38-23 **Treatment of Stress Urinary Incontinence in Women of Reproductive Age Using Laser Technologies**
EV Leshunov, AG Martov
Russian Federation

Sunday 4 October **Moderated ePoster Sessions (MP39)** **14:00–15:00**

Laparoscopy: Lower Tract - Benign
Room 9

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MP39-1 **Extraperiotneal laparoscopic prostatectomy for very large prostates (>150grams) not suitable for endoscopic laser or non-laser management: Early outcomes.**
A Hamed, C Paterson, K Mistry, G Nabi
United Kingdom

MP39-2 **Flexible 3D laparoscopic repair of iatrogenic vesicovaginal fistulas**
I Leotsakos, U Paul, T Tokas, L Bäurle, T Loch
Germany

MP39-3 **Combined endoscopic and Laparoscopic partial Cystectomy in the treatment of Bladder endometriosis.**
IT Castillon-Vela, P Ramirez, M Rodriguez-Monsalve, J Saenz-Medina, JA Carballido
Spain

MP39-4 **A review of laparoscopic assisted orchidopexy for crytorchidism in a single institution**
HJ Bekarma, H Rooney, R Khan, A Almushatat
United Kingdom

MP39-5 **Laparoscopic ureteroneocystostomy in iatrogenic ureteral injuries after gynecologic operations**
BG Guliev, BK Komyakov, VA Ochelenko
Russian Federation

MP39-6 **Laparoscopic sacrocolpopexy using barbed sutures for mesh fixation and peritoneal closure: A safe option to reduce operational times**
P Kallidonis, M Ozsoy, M Vasilas, I Kyriazis, V Panagopoulos, E Liatsikos
Greece

MP39-7 **Transutricular seminal vesiculoscopy in the treatment of ejaculatory duct obstruction: clinical analysis and discussion**
Y Yan, JH Jiang, HK Hong, MLL Ma
China

MP39-8 **Robotic Urological Reconstructive Surgery Outside of the Tertiary Referral Center**
M Simmons, A Neeb
United States

MP39-9 **Pediatric laparoscopic assisted percutaneous indirect inguinal hernia ligation**
PH Noh, Z Liss
United States

MP39-10 **Laparoscopic varicocelectomy: two trocars, one wound and one man**
JJ Siu, CP Huang
Taiwan

MP39-11 **Laparoscopic sacrocolpopexy (LSC) is needed to see the thin fascia for secured LSC**
H Abe, BF Fan, HK Kuno, AO Ochi, KS Suzuki, NS Shiga
Japan

MP39-12 **Laparoscopic Varicocelectomy with two-port Scarless Periumblical Mini-Incision: Initial Experience in Approach and Outcomes**
CK Oh, SC Kim, JS Chung, SS Park, SH Park
Korea, Republic of

Sunday 4 October **Moderated ePoster Sessions (MP40)** **14:00–15:00**

Laparoscopy: New Techniques - Oncology
Room 10

MP40-1 **En Bloc Stapling of the Renal Hilum during Laparoscopic Nephrectomy: A Multi-institutional Analysis of Safety and Efficacy.**
AC Chow, MN Newsome, BS Sherer, CC Coogan, SP Prasad, KL Latchamsetty
United States

MP40-2 **Transumbilical Laparoendoscopic Single-Site Surgeries: A Single-Center Experience of 236 Consecutive Cases**
QY Zhu, J Su, L Yuan, Y Zhang, QL Zhang, YF Wei, LM Shen
China

MP40-3 **"Y" shaped tubeless ileal neobladder for laparoscopic radical cystectomy: A pilot study**
C Hu, WT Huang, K Li, DJ Wang, X Gao, JG Qiu
China

MP40-4 **Dorsal venous complex ligation. Is it still necessary? An advance of standard laparoscopic technic**
RSMC Sousa Madeira Campos, GCG Cardoso Guimarães, BSB Santos Benigno, RLF Lima Favaretto, MM Maurício Murce, LF Fornazieri, RRO Rosa Oliveira, SCZ Cássio Zequi, TBMS Borges Marques Santana, WHC Henriques da Costa
Brazil

MP40-5 **Clinical Application of targeted stereotactic prostate biopsy: experience in our center**
S Puliatti, GM Pirola, E Martorana, A Zordani, M Rani, S Micali, G Bianchi
Italy

MP40-6 **Renal and adrenal mini-laparoscopy: a prospective multicentric study**
B Alberto, P Juárez del Dago, P Castellan, A Freitas Rui, JL Álvarez Osorio, JH Amón-Sesmero, JA Bellido, E Ramos, JA Peña, H Villavicencio
Spain

MP40-7 **Endoscopic Subcutaneous Modified Inguinal Lymph Node Dissection (ESMIL) for Squamous Cell Carcinoma of the Penis, Adopting a Revised Technique**
YS Kwon, AH Salmasi, GW Mulheron, EA Singer, SE Elsamra
United States

MP40-8 **Safe and simplified laparoscopic radical nephrectomy by novel "transperitoneal anterior and posterior approach"**
K Takeda, S Ou, M Shiba, H Takayama
Japan

MP40-9 **Percutaneum surgical system (PSS): a novel instrument for laparoscopic urologic surgery.**
A Pérez-Lanzac, P Parra, J Rosety, J Soto, M Maestre, A Ojeda, J Amores, JL Alvarez-Ossorio
Spain

MP40-10 **Zero ischemia laparoscopic partial nephrectomy with hydrodissection – a safe option**
P Durai, TK Ng
Singapore

MP40-11 **Hybrid-NOSE (natural orifice specimen extraction) Robotic or Laparoscopic Surgery with Vaginal Extraction for Urologic Neoplasm: A Preliminary Report of the Initial Experience**
HS Lee, SC Lee, DH Suh, CW Jeong
Korea, Republic of

MP40-12 **En-bloc resection of bladder tumor with hybridknife**
DG Sousa, DO Oliveira-Reis, MO Oliveira, JS Soares, AF Fraga
Portugal

Sunday 4 October **Moderated ePoster Sessions (MP41)** **14:00–16:00**

Stones: SWL
Room 12

MP41-1 **The proximal ureteric stone conundrum: Comparison of ESWL vs Ureteroscopy**
AS Ali, A Pai, H NiRaghallaigh, C Page, S Baker, T Liston, A Symes
United Kingdom

MP41-2 **Validation of a scoring system for the prediction of the treatment outcome of ureteral stone treated by shockwave lithotripsy**
CF Ng, S Luke, CH Yee, KWM Lee, KT Wong, SSM Hou
Hong Kong

MP41-3 **A retrospective comparative analysis between emergency and elective shockwave lithotripsy for acutely obstructing ureteral stones**
L Durner, A DiBenedetto, A Bourdoumis, J Roberts, A Patel
Germany

MP41-4 **Is Extracorporeal Shockwave Lithotripsy more cost effective than ureteroscopy for the management of ureteric calculi in the NHS?**
KA Wong, C Rao, K Nucken, E Eversden, S Gordon
United Kingdom

MP41-5 **Patient's preferences in treatment of ureteral calculi: SWL vs. URS**
V Malkhasyan, I Semenyakin, V Ivanov
Russian Federation

MP41-6 **SWL vs. URS: Between indications and doctor's whim**
V Malkhasyan, I Semenyakin, V Ivanov
Russian Federation

MP41-7 **Primary ESWL is successful for treating lower pole renal calculi between 10 to 20mm. A large single institution study**
LH Chan, KA Laing, S Phipps, BG Thomas, JY Keanie, DA Tolley, ML Cutress
United Kingdom

MP41-8 **Relative Cost Comparison of the Surgical Treatment of Medium-sized Renal Stones**
BD Hamilton, JB Hancock, A Presson
United States

MP41-9 **What is the best treatment for renal calculus after first failure shockwave lithotripsy? Shockwave lithotripsy vs. Retrograde Intrarenal surgery.**
P Valente, H Castro, F Vila, P Araújo, J Lindoro
Portugal

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MP41-10 Shockwave lithotripsy (SWL) of lower pole stones - Any difference in newer generation lithotripters?
S Palaniappan, TW Chong
Singapore

MP41-11 Is ureteral stenting an essential procedure before extracorporeal shockwave lithotripsy for proximal ureteral stones? A prospective randomized controlled trial
M Abo-Elenen, AM Tawfik, AS El-Abd
Egypt

MP41-12 The Success of Shockwave lithotripsy (SWL) in treating larger renal stones
V Chung, N Sharma, B Turney
United Kingdom

MP41-13 Extracorporeal shock wave lithotripsy of pelvic and distal ureteral stone in supine position: does stone size matter?
S Puliatti, GM Pirola, MC Sighinolfi, A Mofferdin, E Martorana, A Zordani, S Micali, G Bianchi
Italy

MP41-14 Combined Retrograde Intrarenal Surgery and Shockwave Lithotripsy for Renal Stones over 20 mm in Diameter
K Oka, K Inoue, M Hayashi
Japan

MP41-15 Laser Lithotripsy versus ESWL for Lower Calyceal Renal Stones
I Saad, A Salem, M Abdel-Hakim, O Abdelrazzak, M Abdelkader
Egypt

MP41-16 Endourological treatment in patients with renal colic and fever
DR Multescu, C Ene, B Geavlete, D Georgescu, P Geavlete
Romania

MP41-17 Increased Urinary Neutrophil Gelatinase-Associated Lipocalin Excretion after Shock Wave Lithotripsy in a Pig Model
DL Clark, CD Johnson, PM Blomgren, BA Connors, RK Handa
United States

MP41-18 Quantification of Renal Hemorrhagic Injury: Development of a Novel Magnetic Resonance Imaging Acquisition and Analysis Workflow.
P Territo, PMB Blomgren, CL Lin, CDJ Johnson, LJ Jiang, BAC Connors, RKH Handa, GDH Hutchins
United States

MP41-19 Assessing the magnitude of effect of bone structures on SWL fragmentation: Results from an in vitro study
D Olvera-Posada, H Alenezi, T Tailly, JD Denstedt, H Razvi
Canada

MP41-20 In-vitro comparative assessment of clinical shockwave lithotripsy technologies
NL Sharma, SR Faragher, OJ Wiseman, S Kumar, RO Cleveland, BW Turney
United Kingdom

MP41-21 Comparison of shockwave lithotripsy and retrograde intrarenal surgery for the treatment of renal stones <20 mm
G Atis, M Meftun Culpan, A Asif Yildirim, B Bulent Erol, O Onur Danacioglu, F Furkan Sendogan, T Turhan Caskurlu
Turkey

MP41-22 Comparison of the new ShockPulse Intracoroporeal Lithotriptor to 3 Commercially Available Ultrasonic Lithotriptors
BH Chew, RF Paterson, T de los Reyes, D Lange
Canada

Sunday 4 October **Moderated ePoster Sessions (MP42)** **14:00–16:00**

Stones: Miscellaneous
Room 6

MP42-1 Significance of the presence of Systemic Inflammatory Response Syndrome (SIRS) in patients with obstructive urolithiasis presenting to the emergency department
J Johnson, D Davenport, S Larkin, R Venkatesh
United States

MP42-2 The Relationship between Vascular Calcification, Bone Mineral Density, and Perinephric Fat in Kidney Stone Patients
AK Pirlamarla, EB Fram, J Di Vito, JM Stern
United States

MP42-3 Office Perurethral Cystolithotripsy (PUCL) for bladder stone up to 2 cms - a safe and cost effective modality
SJ Shah
India

MP42-4 Assessing radiation exposure during Endoscopic Combined IntraRenal Surgery (ECIRS)
CM Cracco, CM Scoffone
Italy

MP42-5 Percutaneous nephrolithotomy for management of pediatric renal calculi: A tertiary care centre experience
SN Sankhwar, V Singh, BP Singh, M Kumar, NS Dasila, M Patodia, S Singh
India

MP42-6 Percutaneous Nephrolithotomy: Experience with over 150 Pediatric Cases
MM Hosseini, AR Aminsharifi, D Irani, AR Haghpanah, AR Yousefi, R Inaloo, M Zaki-Abbasi
Iran (Islamic Republic of)

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MP42-7 Narcotic Use and Postoperative "Doctor Shopping" among Patients with Nephrolithiasis Requiring Operative Intervention
TP Marien, S Kappa, E Green, SD Herrell, C Mitchell, H Mir, NL Miller, M Resnick
United States

MP42-8 Does Previous Open Renal Stone Surgery Affect Percutaneous Nephrolithotomy (PCNL) Outcome?
H Thummar, R Ganatra
India

MP42-9 Patient Reported Outcomes: Emergency Ureteroscopic stone treatment gets patients back to work earlier
JP Noël, D Morgan, A Goyal, R Kucheria
United Kingdom

MP42-10 Extrarenal Manipulation to Facilitate Retrograde Intrarenal Surgery (RIRS) with Semirigid Ureteroscope and Pneumatic Lithotripter: Novel Techniques
H Thummar, R ganatra, J Ghevaria, V joshi
India

MP42-11 Multicenter Prospective Comparison of Laparoscopic Ureterolithotomy Versus Ureteroscopic Lithotripsy Combined with Retrograde Intrarenal Surgery for Large Proximal Ureteral Stones
JD Choi, JB Kwon, BS Kim, JM Cho
Korea, Republic of

MP42-12 The Use of Medical Expulsive Therapy during Pregnancy: a Worldwide Perspective.
GL Lloyd, A Lim, N Hamoui, SY Nakada, SJ Kielb
United States

MP42-13 Outcomes of Ureteroscopy and stone treatment for patients with urosepsis/obstruction is independent of the mode of pre-operative drainage
RM Geraghty, H Ishii, BK Somani
United Kingdom

MP42-14 Urolithiasis in Pregnancy: Cost-effectiveness Analysis of Ureteroscopic Management versus Serial Ureteral stenting
ST Park, K Wymer, BA Plunkett
United States

MP42-15 Preoperative Belladonna and Opium Suppository for Postoperative stent pain: a randomized controlled, double-blinded placebo-based trial
JD Harper, FC Lee, RS Hsi, SL Holt, B Haynes
United States

MP42-16 Maintaining a ureteric stent register: An imperative aspect of endourological surgery
AO Noah, BD Kelly, R Devarajan
United Kingdom

MP42-17 The value of acute renal injury markers and associated factors after endoscopic urinary stone surgery
HD Yuk, TS Ahn, SC Lee, JH Ku, C Kwak, HH Kim, JS Paick, CW Jeong
Korea, Republic of

MP42-18 Effect of body mass index on outcomes of ureterorenoscopy (URS) for renal stones
C Netsch, F Schott, S Knipper, AK Orywal, AJ Gross
Germany

MP42-19 Horizontal bolster positioning during percutaneous nephrolithotomy displaces the kidney caudally when compared to vertical bolster positioning
DS Sagalovich, CB Besa Correa, HT Thummar, BL Le Grand, BT Taouli, MG Gupta
United States

MP42-20 Learning Curve for Ultrasound-guided Renal Access Percutaneous Nephrolithotomy
M Usawachintachit, S Masic, J Li, T Chi
United States

MP42-21 Guy's Stone Score (GSS) Based on Intravenous Urography Findings Predicting Percutaneous Nephrolithotomy (PCNL) Outcomes.
B Lojanapiwat
Thailand

MP42-22 Flank Percussion in the Semi-prone Position Can Relocate Stones Prior to Percutaneous Nephrolithotomy or Laparoscopic Pyeloplasty
AM Althunayan, K Barrett, RJD Honey
Canada

Sunday 4 October **Moderated ePoster Sessions (MP43)** **14:00–16:00**

Surgical Outcomes 7: Lower Tract
Room 14

MP43-1 Diagnostic accuracy of immediate second resection of tumor bed after complete transurethral resection of bladder tumor
M Park, M Kim, D Lee, M Shim, C Song, TY Ahn, H Ahn
Korea, Republic of

MP43-2 NBI Cistoscopy and bladder carcinoma in situ in our experience
R Giulianelli, L Albanesi, BC Gentile, G Mirabile, G Rizzo, P Tariciotti
Italy

MP43-3 Patient Frailty is a Predictor for Complications after Bladder Cancer surgery– Analysis from the NSQIP Database
S Park, N Fahey, CH Wang
United States

MP43-4 Evaluation of the effects of the recent NICE guidelines on detecting recurrence among patients with low-risk urothelial cancers
B Fazekas, JSA Green, S Eapen, J O'Neill, P Allchorne
United Kingdom

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MP43-5 NBI guided TURBT in NMIBC management
P Geavlete, C Ene, C Bulai, F Stanescu, C Moldoveanu, M Jecu, R Multescu, B Geavlete
Romania

MP43-6 Incidence of Bladder cancer after radiation for prostate cancer as a function of time and radiation modality
AY Keehn, E Fram, E Ludmir, M Schoenberg, F Rabbani
United States

MP43-7 The impact of surgical duration of Transurethral Resection of Bladder Tumors on postoperative complications: an analysis of ACS-NSQIP data
RS Matulewicz, V Sharma, BB McGuire, DT Oberlin, KT Perry, RB Nadler
United States

MP43-8 Is Extended Venous Thromboembolism Prophylaxis with Enoxaparin Cost-Effective in Radical Cystectomy?
S Park, M Rydberg
United States

MP43-9 Predictive power of NBI versus standard cystoscopy before TURB
R Giulianelli, L Albanesi, BC Gentile, G Mirabile, G Rizzo, P Tariciotti
Italy

MP43-10 Ultrasound Guided Obturator Nerve Block for TURBT. Technique and Preliminary Results
HE Smith, W Borowski, M Bhom, SG Kata
United Kingdom

MP43-11 Our experience with NBI. Can it improves our ability to identify bladder tumors progression in the follow-up?
R Giulianelli, L Albanesi, BC Gentile, G Mirabile, G Rizzo, P Tariciotti
Italy

MP43-12 The Endoscopic Management of Upper Tract TCC – Initial Results from the BAUS Upper Tract TCC Audit
JM Withington, S Fowler, A Browning
United Kingdom

MP43-13 Patient-Reported Quality of Life and Convalescence after Minimally Invasive Kidney Cancer Surgery
AB Althaus, P Chang, J Mao, K Taylor, O Dovirak, A Carneiro, A Percy, C Crociani, A Wagner
United States

MP43-14 Venous thromboembolism following open and minimally invasive nephrectomy: thirty day incidence and risk factors from national multi-institutional data
RS Matulewicz, BB McGuire, IB Helenowski, B Jovanovic, KT Perry, RB Nadler, S Kundu
United States

MP43-15 Pre-operative Group & Save in Transurethral and Upper Tract Surgery - An Expensive, Unnecessary Practice?
H Ni Raghallaigh, H Teixeira, S Rintoul-Hoad, T Larner
United Kingdom

MP43-16 Second transurethral resection for T1, high-grade and T1 -high grade bladder cancer. Is it really necessary?
P Contreras, L Blas, G Vitagliano, N Villasante, R Ríos Pita
Argentina

MP43-17 Development of a nomogram predicting 30-day probability of severe complications in patients undergoing radical cystectomy
G Simone, M Ferriero, C De Nunzio, G Tuderti, C Leonardo, A Celia, A Minervini, V Pagliarulo, G Muto, M Gallucci
Italy

Sunday 4 October **Moderated ePoster Sessions (MP44)** **14:00–16:00**

Surgical Outcomes 8
Room 15

MP44-1 Does ureteral pre-stenting reduce incidence of severe ureteral wall injuries related to ureteral access sheath?
RR Moniz, L Jorge, LRM Guidoni, RJ Moreira, FAS Bertagnon, ANP Jorge
Brazil

MP44-2 Effect of Metabolic Syndrome on Pathologic Features and Outcomes of Renal Cell Cancer after Partial Nephrectomy
A Srivastava, R Ghavamian
United States

MP44-3 Lower urinary tract symptoms in patients after treatment for localized prostate cancer. A comparative study: Robot assisted laparoscopic radical prostatectomy vs brachytherapy.
H Ito, Y Matsuta, YO Aoki, H Yamauchi, M Taga, O Yokoyama
Japan

MP44-4 Predictors of surgical complications after nephrectomy for urolithiasis
A Danilovic, GV Maia, S Reis, FCM Torricelli, GS Marchini, CC Lopes, FC Vicentini, AH Brito, E Mazzucchi, M Srougi
Brazil

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MP44-5 Negative Ureteroscopy: Appropriate care or wasted care?
BD Hamilton, K Du, AW Southwick
United States

MP44-6 Complications following flexible ureteroscopy for heterogeneous population
JL Hendry, F Housami, GE Jones
United Kingdom

MP44-7 Outcomes on ureteroscopy in a tertiary referral center
S Röell
Netherlands

MP44-8 Withdrawn

MP44-9 Comparison of the stent-related symptoms of regular polymeric and Resonance metallic stents.
U Khater, B Reddy, HG Thummar, M Gupta
United States

MP44-10 Ureteric Strictures - Is Endoluminal procedures still has dominant role?
AK Dhanasekaran, K Subramonian
United Kingdom

MP44-11 Cook Resonance Metallic Ureteric Stent: 5-year contemporary clinical series analysing efficacy and safety in treatment of chronic ureteric obstruction.
CM Patel, S Hulligan, R Jones, D Loughran, M Abdulmajed, I Michiliades, I Shergill
United Kingdom

MP44-12 Predictive Value of Individual Nephrometry Score Variables on Peri-Operative Outcomes and Renal Functional Outcomes in Minimally Invasive Partial Nephrectomy
KL Watts, R Ghavamian
United States

MP44-13 Survival outcomes following urological stenting for malignant ureteric obstruction.
A Oliveira, U White, J Hudson, D Smith, S Choong
United Kingdom

MP44-14 Native nephrectomy with renal transplantation improves long-term quality of life in autosomal dominant polycystic kidney disease
EL Ferguson, CD Bahler, SV Kheyfets, WC Goggins, AA Sharfuddin, CP Sundaram
United States

MP44-15 Selective Arterial Clamping Offers no Renal Function Benefit under Low Ischemia Time
DJ Paulucci, BN Reddy, MJ Whalen, R Abaza, KK Badani
United States

MP44-16 Systematic review of surgical and oncological outcomes following surgical management of clinical T1 renal masses
ES Bruce, P Dasgupta, K Ahmed
United Kingdom

MP44-17 Can radiofrequency ablation of renal tumours be performed as a day case procedure?
A McCloskey, D Hennessey, A Thwaini, W Loan
United Kingdom

MP44-18 Is there a difference between renal sinus and capsular invasion in T3a Renal Cell Cancer (RCC)? A study comparing the outcomes after extirpative surgery
N Faure Walker, R Nair, J Allen, R Issa, PJ Le Roux, CJ Anderson
United Kingdom

MP44-19 Preoperative Predictors of T3 upstaging in Partial Nephrectomy
AY Keehn, C Rogers, M Allaf, J KaouK, S Bhayani, H Zargar, R Barod, M Johnson, J Larson, M Stifelman
United States

MP44-20 Recovery and Health Related Quality of Life in Patients Undergoing Cytoreductive Radical Nephrectomy
AB Althaus, O Dovirak, J Mao, C Crociani, K Taylor, P Chang, A Wagner
United States

MP44-21 Cerebrovascular disease and chronic pulmonary disease increase risk of complications during robotic partial nephrectomy
TM Bauman, AM Potretzke, JM Vetter, SB Bhayani, RS Figenshau
United States

MP44-22 Impact of accidentally cutting open a tumour during laparoscopic partial nephrectomy on the oncologic and clinical outcomes
H Ito, K Makiyama, T Kawahara, K Osaka, K Izumi, Y Yokomizo, N Nakaigawa, S Yamanaka, M Yao
Japan

MP44-23 Management of small renal massess in the octogenarian patient
K Celtik, P Shah, AK George, M Alom, DM Moreira, J Steckel, MA Vira, LR Kavoussi
United States

MP44-24 Laparoscopic radical nephrectomy for large renal tumours: expanding the frontiers of endo-urology
K Gordon, D Harry, P Owegie, A Roy, J Peters, P Patki
United Kingdom

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Sunday 4 October **Moderated ePoster Sessions (MP45)** **14:00–16:00**

URS: Outcomes
Room 16

MP45-1 Contemporary practice patterns of flexible ureteroscopy for treating renal stones: Results of a worldwide survey
CA Dauw, L Simeone, AF Alruwaily, F Sanguedolce, JM Hollingsworth, WW Roberts, GJ Faerber, JS Wolf, KR Ghani
United States

MP45-2 Impact of Case Volume on Outcomes of Ureteroscopy (URS) for Ureteral Stones: the Clinical Research Office of the Endourological Society (CROES) URS Global Study
SV Kandasami, C Mamoulakis, AR EL-Nahas, T|D Averch, OL Tuncay, A Rawandale-Patil, L Cormio, J de la Rosette
India

MP45-3 Differences in renal stone treatment and outcomes for patients treated either with or without the support of a ureteral access sheath: The Clinical Research Office of The Endourological Society Ureteroscopy Global Study
O Traxer, G Wendt-Nordahl, H Sodha, J Rassweiler, S Meretyk, A Tefekli, F Coz, J de la Rosette
France

MP45-4 Prospective evaluation of treating renal stones greater than 2 cm as a Day-Surgery Activity (Outcome, complications and tolerance)
SM Hamri Al-Qahtani, A Almuhrij, A Alswaig, A Ajjaj, A Alasker
Saudi Arabia

MP45-5 Post-Operative Infection Rates in Patients with a Negative Baseline Urine Culture Undergoing Ureteroscopic Stone Removal: A Matched Case Control Analysis on Antibiotic Prophylaxis from The CROES URS Global Study
A Martov, S Gravas, M Etemadian, A Unsal, G Barusso, A D'Addessi, A Krambeck, J de la Rosette
Russian Federation

MP45-6 The New Stone Age: Outcomes of Ureteroscopic Stone Dusting using a 120-Watt Holmium Laser
KR Ghani, G Gagin, D Morhardt, J Montgomery, J Hollingsworth
United States

MP45-7 Outcome of the transurethral lithotripsy by using holmium-laser lithotriptor (Odyssey 30)
H Terada
Japan

MP45-8 Flexible ureterorenoscopy in the treatment of renal stones: analysis of factors influencing stone-free rate
BA Penev, M Kulkani, G Geogiadis, J Hale, MS Cynk
United Kingdom

MP45-9 RIRS – the impact of evolving experience
Y Stabholz, H Goldberg, D Golomb, S Tapiero, A Shariv, R Holland, J Baniel, D Lifshitz
Israel

MP45-10 Safety and efficacy of Ureterorenoscopy and Holmium:YAG laser lithotripsy in patients on anticoagulant or antiplatelet therapy
DMS Hossain, M Hadjipavlou, S Sriprasad
United Kingdom

MP45-11 Patient-initiated encounters extracted from an electronic medical record after ureteroscopy
M Morgan, J Antonelli, N Shakeer, Kavoussi, A Cohen, N Canvasser, MS Pearle
United States

MP45-12 Does insurance status or ethnicity affect follow-up after ureteroscopy with laser lithotripsy?
N Thirumavalavan, C Wong, SW Nealy, MH Katz, RK Babayan, DS Wang
United States

MP45-13 A prospective multicenter study on infectious complications of RIRS for renal stones using the Clavien classification system
PS Sountoulides, FB Berardinelli, LC Cindolo, SP Proietti, OD Dalpiaz, DH Hennessey, FT Tamburro, FP Pellegrini, LS Schips, GG Giusti
Greece

MP45-14 Semirigid and flexible URS „all prestented" - SFR 100% and high patient satisfaction – a prospective study of 250 patients
S Piesche, U Plinninger, J Beier, H Keller
Germany

MP45-15 Antegrade Irrigation Technique to Facilitate Ureteroscopy for Large Ureteral Stone Burden
H Thummar, S Karia, J GHevaria, V Joshi
India

MP45-16 Urolithiasis - Semirigid and flexible URS „all prestented" - Without antibiotic prophylaxis? A prospective evaluation of 250 Patients
S Piesche, U Plinninger, J Beier, H Keller
Germany

MP45-17 Flexible Ureterorenoscopy and Laser Lithotripsy for Kidney Stones: Does size matter?
Y Kordan, O Kaygisiz, B Coskun, KO Gunseren, H Kilicarslan
Turkey

MP45-18 Ureteroscopy and laser stone fragmentation (URSL) for large (≥1cm) paediatric stones: Outcomes from a University teaching hospital
NC Featherstone, BK Somani, SJ Griffin
United Kingdom

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MP45-19 Simultaneous Bilateral Ureteral Calculi: A New Paradigm for Management
K Scotland
United States

MP45-20 The Efficacy of Extended Antibiotic Prophylaxis Post–Ureteroscopy/Flexible Ureterorenoscopy: A Case Control Study
L Lei, L Sprogyte, S Allen, S Logan, D Smith
United Kingdom

MP45-21 The Effect of Stone Composition on Holmium Laser Lithotripsy
K Shahrour, P Irwin, S Jain
United States

MP45-22 Bilateral Same-Session Ureteroscopy for the Treatment of Ureter and Kidney Stones
B Ozveren, A Sahin
Turkey

MP45-23 Retrograde Intrarenal Surgery (RIRS) for Mid-Size (10-20 mm) Renal Stones
S Tapiero, H Godberg, Y Stabholz, D Golomb, R Holland, J Baniel, D Lifshitz
Israel

Sunday 4 October **Moderated ePoster Sessions (MP46)** **14:00–16:00**

Ureteroscopy: Stents/Lasers/Access
Room 17

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MP46-1 Evaluating the image quality of a novel single-use digital flexible ureteroscope
B Eisner
United States

MP46-2 Extending the durability of the flexible ureteroscope: Time for a multi-center database to identify best practice?
SJ Srirangam, K Hall, D Neilson
United Kingdom

MP46-3 Durability of Flexible Ureteroscopy and Predictors of Repair: A Prospective Multi-Center Study
T Chi, C Chu, M Usawachintachit, I Allen, B Duty, R Sur, K Ramaswamy, M Sorensen, J Harper, M Stoller
United States

MP46-4 Effects of silicone hydrocoated double loop ureteral stent on sy MPtoms and quality of life in patients undergoing F-URS for kidney stone: a co MParative randomized multicentre clinical study intermediate rate
O Traxer1, OJ Wiseman2, M Daudon1, J Cloutier1, F Kleinclauss3, J Letendre4, P Holliday5, I Desriac5 1Sorbonne University Tenon Hospital, Paris (FR), 2Cambridge University Teaching Hospitals NHS Trust (UK), 3Besançon University Hospital (FR), 4Maisonneuve-Rosemont Hospital, Montreal (CA), 5Coloplast, Le Plessis-Robinson (FR)
OT Traxer, LV Villa, JC Cloutier, ES Sener, SD Doizi
France

MP46-5 Pattency and Safety outcomes of uventatm metallic stent in benign and malignant ureteral obstructions: 5.5 years experiences
SW Lee, YS Suh, JJ Kim, BC Jeong, SI Seo, SS Jeon, SH Choo, KJ Chung, CM Park, DH Han
Korea, Republic of

MP46-6 Long term outcomes of the resonance® metallic ureteral stent in the management of benign and malignant ureteral obstruction
U Khater, H Haresh Thummar, B Balaji Reddy, M Mark Silva, G Gina Badalato, M Mantu Gupta
http://www.wce2015.com/registration/

MP46-7 The JJ stent and urinary tract infection. Is there any specificity?
M Botoca, A Cumpanas, L Daminescu, V Tucicovschi, R Bardan, V Bucuras
Romania

MP46-8 Flexible Ureterorenoscopy and Laser Lithotripsy with D/J stent or not
Y Kordan, O Kaygisiz, B Coskun, KO Gunseren, H Kilicarslan
Turkey

MP46-9 Routine stenting following URS is unnecesary and painful. Our results.
J Gil Guijarro, S Chillón Sempere, C Soler López, A Costa Martínez, C Carro Rubias, M Ortiz Gorráiz, E de Nova Sánchez
Spain

MP46-10 Double-blinded prospective study comparing tadalafil Vs Placebo for double J stent symptoms control
CE Mendez-Probst, CI Villeda Sandoval, BE Montaño Roca, JA Ruiz Hernandez, CA Reyes Utrera
Mexico

MP46-11 Intrapyelic pressures during flexible ureteroscopy with flow-assisting devices measured by a digital pressure sensor placed on a guidewire. A pilot study.
J Letendre, S Doizi, E Ravier, J Cloutier, A Ploumidis, O Traxer
France

MP46-12 Cost savings associated with selective retrograde guide wire USE
SG Hubosky, KA Healy, DH Bagley
United States

MP46-13 **Dusting vs Basketing During Ureteroscopic Lithotripsy—What is More Efficacious? A Multi-Centre Prospective Trial from the EDGE Research Consortium**
O Shah, B Chew, M Humphreys, R Sur, BE Knudsen, B Matlaga, A Krambeck, N Miller, M Monga
United States

MP46-14 **Lubriglide Sequential Ureteral Dilators: a Safe and Effective Method of Ureteral Dilation to Facilitate Primary Ureteroscopic Intervention**
TP Marien, C Mitchell, B McCormick, NL Miller
United States

MP46-15 **Ureteral stenting after flexible ureterorenoscopy with ureteral access sheath; is it really needed?: A prospective randomized study**
W Sirithanaphol, S Jitpraphai, T Taweemonkongsap, C Nualyong, E Chotikawanich
Thailand

MP46-16 **Prospective randomized study between high power laser & Low power laser through FURS for treating renal stones >2 cm size**
RB Sabnis, A Jain, AG Singh, JS Chabbra, SK Mishra, A Ganpule, MR Desai
India

MP46-17 **A novel insertion technique of a modified ureteral access sheath to reduce the fluoroscopic exposure during retrograde intrarenal surgery: a randomized trial**
GH Zeng, Z Zhao, W Wu, W Zhong, SP Wan
China

MP46-18 **Ureteric Stricture Following Ureteral Access Sheaths in the Modern Era: How Rare Is It?**
AM Althunayan, D Ghiculete, JY Lee, M Ordon, RJD Honey, KT Pace
Canada

MP46-19 **Economic analysis on ureteric stenting after uncomplicated ureteroscopic laser lithotripsy for urolithiasis: Is stenting necessary?**
J Akerman, HYV Tu, J Hoogenes, SAR Lambe, ED Matsumoto
Canada

MP46-20 **Cleaving of Reusable Laser Fibers Increases the Risk for Ureteral Injury and Ureteroscope Damage**
K Cheriyan, DL Faaborg, HA Hodgson, BS Peplinski, KC Myklak, MM Alsyouf, PW Yang, DD Baldwin, EM Miao
United States

MP46-21 **Determination of the Optimal Guidewire Type, And Effect of Prior Use, on the Ease of Ureteral Stent Insertion**
N Khater, HA Hodgson, KC Myklak, MM Alsyouf, JL Arenas, DD Baldwin
United States

MP46-22 **Ureteral stent removal without cystoscopy**
MC Rassweiler, MS Michel, M Ritter
Germany

Friday 2 October **Video Sessions (V1)** **14:00–15:30**

Laparoscopy: Upper Tract - Benign 1
Room 16

V1-1 **Laparoscopic Boari Flap in Upper Ureteric stricture**
KP Thakkar, MA Mehta
India

V1-2 **Non-functioning kidney in a duplicated calicial system with extrarenal calyces following a transureteroureterostomy and ureteroureterostomy – a laparoscopic challenge?**
S Gaspar, J Dias, T Leitão, T Oliveira, P Oliveira, TM Lopes
Portugal

V1-3 **Laparoscopic Renal Pedicle Lymphatic Disconnection for Management of Intractable Chyluria**
AR EL-Nahas, M Laymon
Egypt

V1-4 **Laparoscopic (by Retroperitoneoscopy) Repair of Persistent Urinary Fistula after Percutaneous Nephrolithotomy**
D Oliveira-Reis, D Gil-Sousa, J Cabral, I Braga, D Nunes-Carneiro, A Marques-Pinto, A Fraga, J Soares, V Cavadas, L Osório
Portugal

V1-5 **Laparoscopic Transperitoneal Dismembered Pyeloplasty of Retrocaval Ureter**
N Fidalgo, N Bentes, H Pinheiro, J Pina, P Baltazar, R João, A Meirinha, F Ferronha, J Morales, L Campos-Pinheiro
Portugal

V1-6 **Laparoscopic Intraperitoneal Left Ureter-oneocystostomy**
E Malkoc, S Basal, F Dursun, O Bakal, F Ates, Z Aktas, K Karademir
Turkey

V1-7 **Laparoscopic Ureteroureterostomy: Right Retrocaval Ureter**
S Basal, E Malkoc, F Dursun, O Bakal, M Zor, Z Aktas, K Karademir
Turkey

V1-8 **Laparoscopic Pyelolithotomy for Bilateral Staghorn Renal Stone**
MM Hosseini, AR Aminsharifi, AR Haghpanah, A Eslahi
Iran (Islamic Republic of)

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V1-9 A laparoscopic management combined with a flexible ureteroscope for ureteral polyps of more than 3cm length
M Matsuo, K Ueda, K Nishihara, M Nakiri, S Suyama, K Chikui, S Hayashi, N Ogasawara, S Suekane, T Igawa
Japan

V1-10 Laparoscopic retrocaval ureter correction
H Nasseh
Iran (Islamic Republic of)

V1-11 Laparoscopic off-clamp unsutured partial nephrectomy for renal angiomyolipoma after transarterial embolization for rupture.
K Maeda, M Nagasawa, H Hanada, M Nishida, Y Okinaka, M Narita, A Kawauchi
Japan

V1-12 Minilaparoscopic Excision of Retroperitoneal Tumor
AM Abdel-Karim, E Yehyia, S Elsalmy
Egypt

Friday 2 October **Video Sessions (V2)** **15:00–16:00**

BPH 1
Room 8

V2-1 Estabslishing the Role of Video Information for Patients in Urology – Flexible Cystoscopy as a Pilot Study
JM Withington, A Fitchie, S Sellaturay, B Challacombe
United Kingdom

V2-2 Enhanced prostate vaporization using high power holmium and improved fiber
ME Leo
United States

V2-3 The en-bloc no-touch HoLEP technique
CM Cracco, MA Mendoza Sotelo, CM Scoffone
Italy

V2-4 Bladder Neck Incision under Local Anaesthetic Using a Thulium Laser
Z Ali, SJ Mackie
United Kingdom

V2-5 Greenlight Laser Hybrid Enucleation of Prostate
K Shahrour, O Khan, H Mostafa, S Jain, A Singla
United States

V2-6 Holmium Laser Enucleation of the Prostate (HoLEP): THe Crucial Technical Aspects to Decrease the Learning Curve, Our Institutional Experience
A Anand, R Krishnamohan, J Ashish, P Harigovind
India

Friday 2 October **Video Sessions (V3)** **15:30–17:00**

Laparoscopy: Upper Tract - Benign 2
Room 16

V3-1 Laparoscopic management of Rt Ureterocolonic Fistula with Non functioning Kidney
KP Thakkar, MA Mehta
India

V3-2 Robotic Nephroureterectomy of a Symptomatic Atrophic Pelvic Kidney with Ectopic Insertion into a Seminal Vesicle
TP Marien, SD Herrell
United States

V3-3 Robotic Pyelolithotomy in a Horseshoe Kidney
TP Marien, SD Herrell
United States

V3-4 Simultaneous Laparoscopic Ureterolithotomy and Ureteroscope-assisted Double-J Stenting
IH Chen, CC Yu, T Wu
United Kingdom

V3-5 Laparoscopic nephrolithotomy and ablation of calyceal diverticulum
JFC Cabral, I Braga, D Carneiro, V Cavadas, M Silva-Ramos
Portugal

V3-6 Laparoscopic Partial Nephrectomy in renal tumours with high RENAL scoring system; tips, tricks and pitfalls
JP Keane, A Thwaini
United Kingdom

V3-7 Laparoscopic Boari Flap Ureteroneocystotomy
IT Castillon-Vela, J Turo-Antona, P Ramírez, M Rodriguez-Monsalve, E Fernández, JA Carballido
Spain

V3-8 Flexible 3D laparoscopic segmental ureterectomy and end-to-end ureteral anastomosis for benign diesease
I Leotsakos, U Paul, T Tokas, L Bäurle, T Loch
Germany

V3-9 Renal denervation via bilateral kidney autotransplantation for the treatment of refractory hypertension
S Jain, M Rees, K Xiang, J Muskovich, C Cooper
United States

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V3-10 How hard can it be? Retroperitoneal laparoscopic adrenalectomy in a patient with a horseshoe kidney: operative findings compared with available literature
SJS Rintoul-Hoad, H Ni Raghallaigh, D Magrill, T Larner
United Kingdom

V3-11 Laparoscopic Partial Adrenalectomy for the Management of Pheochromocytoma: a Case Report and Review of Literatures
PJ Huang, T Matsuda, W Chiu, Y Hsueh, Y Chiu
Taiwan

V3-12 Laparoscopic non-clamping tumor enucleation of renal hilum schwannoma of single kidney
YT Teranishi
Japan

Friday 2 October **Video Sessions (V4)** **16:00–17:00**

Robotic Surgery: Lower Tract - Benign
Room 7

V4-1 Robot-Assisted Laparoscopic Cystorrhaphy for a Chronic Bladder Perforation Following Transurethral Resection of Bladder Tumor
L Glickman, G Sivarajan, M Degen, R Munver
United States

V4-2 Robotic-assisted Laparoscopic Enucleation of Anterior Bladder Wall Leiomyoma in Patient with Chronic Urinary Retention
AB Althaus, O Dovirak, RJ Hartman, AA Wagner
United States

V4-3 Robot-assisted ureteral reimplantation with neobladder Boari flap
G Simone, R Papalia, M Ferriero, R Mastroianni, G Tuderti, S Guaglianone, M Gallucci
Italy

V4-4 Vaginal Sparing Robot Assisted Laparoscopic Radical Cystectomy: Technique and Outcomes
S Jain, K Shahrour
United States

V4-5 Wallace Versus Conventional Bricker Ureteroileal Anastomoses During Robot Assisted Radical Cystectomy with Totally Intracorporeal Urinary Diversion
G Simone, R Papalia, M Ferriero, R Mastroianni, G Tuderti, S Guaglianone, M Gallucci
Italy

V4-6 Initial outcomes of robotic assisted radical cystectomy for bladder carcinoma
SH Neo, YW Lim, WS Cheng, SS Ho, LS Lee
Singapore

Friday 2 October **Video Sessions (V5)** **16:00–17:00**

Robotic Surgery: New Techniques - Oncology
Room 8

V5-1 Salvage Robotic Bilateral Retroperitoneal Lymph Node Dissection Using a Novel Single-Dock Technique
SD Soni, TE Stout, AC Goh
United States

V5-2 A Video of a Novel Transversus Abdominal Plane Block During Robotic Assisted Radical Prostatectomy
BF Katz, SJ Yu, D Maass, AM Lee, M Yezdani, K Monahan, A McGill, DI Lee
United States

V5-3 Our Successful Experience Utilizing Posterior Rhabdosphincter Reconstruction During Robotic Prostatectomy
BF Katz, SJ Yu, YK Su, AM Lee, M Yezdani, A McGill, K Monahan, DI Lee
United States

V5-4 Endopelvic Fascia Sparing Robotic Assisted Laparoscopic Radical Prostatectomy
VT Tugcu, SS Sahin, FA Atar, AH Yavuzsan, BD Torer, AI Tasci
Turkey

V5-5 Complex Robotic Ureteroplasty Using Buccal Mucosal Onlay Graft for Treatment of 3cm Proximal Ureteral Stricture
BR Lee, M Maddox, M Ellis, MK Powers, W Lai, G Mitchell
United States

V5-6 Stapling from below is ergonomically favourable for intra-corporeal ileal conduit reconstruction during Robot Assisted Laparoscopic cystectomy in males and females
IJ Jour, GL Shaw, S Gowrie-Mohan, N Vasdev, J Adshead
United Kingdom

V5-7 Extended pelvic lymph node dissection during extraperitoneal endoscopic radical prostatectomy
I Kyriazis, M Do, A Dietel, R Ganzer, S Alloussi, P Kallidonis, E Liatsikos, JU Stolzenburg
Germany

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Saturday 3 October **Video Sessions (V6)** **14:00–15:00**

Robotic Surgery: Lower Tract – Benign
Room 9

V6-1 Concomitant Management of Lower Urinary Tract Obstruction and Bladder Diverticulum with Robot Assistance
I Tufek, OB Argun, P Mourmouris, S Keskin, C Obek, AR Kural
Turkey

V6-2 Step-By-Step Approach for Robot-Assisted Ureteral Reimplant for Anastamotic Stricture after Orthotopic Ileal Neobladder
AC Goh, MM Pan, MA Aghazadeh, N Sirikishen
United States

V6-3 Robotic Intracorporeal Neobladder: Video Presentation of an Evolved Technique
TB Manny, AK Hemal
United States

V6-4 Robotic assisted laparoscopic seminal vesicle cyst excision from ectopic ureteral insertion with nephroureterectomy
PH Noh, Z Liss, A Neheman
United States

V6-5 Robot-assisted technique for Boari flap ureteral reimplantation
VT Tugcu, IE Evren, SS Sahin, AH Yavuzsan, İY Yigitbası, AI Tascı
Turkey

V6-6 Robot-Assisted Laparoscopic Urethral Diverticulectomy for the Management of a Symptomatic Large Anterior Urethral Diverticulum
L Glickman, KD Faber, ML Kim, DL Fromer, R Munver
United States

Saturday 3 October **Video Sessions (V7)** **15:00–16:00**

Robotic Surgery: Upper Tract - Benign
Room 9

V7-1 Transperitoneal robotic management of a calyceal diverticulum
D Olvera-Posada, H Alenezi, S Tatzel, T Tailly, H Razvi, SE Pautler
Canada

V7-2 Robotic excision of right adrenal mass encasing renal vessels with retrocaval extension and abutting the left renal vein
TA Kishore, MK Ramaprasad
India

V7-3 Peripelvic Cysts Causing UPJ Obstruction: Pearls In Diagnosis and Surgical Repair
EO Olweny, JS Parihar, YS Kwon
United States

V7-4 Pediatric Robotic-Assisted Laparoscopic Ureterocalicostomy
DH Hatcher
United States

V7-5 Pediatric robotic complex upper urinary tract reconstruction for duplication anomaly
PH Noh
United States

V7-6 Robot-assisted laparoscopic hemi-nephrectomy for non-functioning duplex renal collecting system in adults: video review of technical challenges and outcomes
PD Sturch, W Lam, M Puglisi, M Mahendra, M Bultitude, P Dasgupta, B Challacombe
United Kingdom

Saturday 3 October **Video Sessions (V8)** **15:30–17:00**

Robotic Surgery: Upper Tract – Oncology
Room 12

V8-1 Robot assisted right nephrectomy with inferior vena cava double thrombectomy
G Simone, R Papalia, M Ferriero, R Mastroianni, G Tuderti, M Costantini, V Pompeo, S Guaglianone, M Gallucci
Italy

V8-2 Transperitoneal Robotic Assisted Laparoscopic Partial Nephrectomy for Clinical T2 Renal Mass
IH Derweesh, HS Mirheydar, HJ Lee, J Woo
United States

V8-3 Partial Nephrectomy For Enophytic T1b Leasions
AY Keehn, J Taylor, R Ghavamian
United States

V8-4 Robotic Assisted Laparoscopic Partial Nephrectomy Challenging Case
VT Tugcu, SS Sahin, AH Yavuzsan, TK Kargı, KG Seker, AI Tascı
Turkey

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V8-5 Triple, robot assisted laparoscopic partial nephrectomy for a patient with multiple, ipsilateral renal masses: Technique and outcomes
S Jain, K Shahrour
United States

V8-6 Robotic Assisted Adrenalectomy in the Management of a Large Adrenocortical Carcinoma
L Turkeri, B Ozveren
Turkey

V8-7 Video case series of robot-assisted surgical treatment of renal epithelioid angiomyolipoma – "the wolf in sheep's clothing".
RD Akiboye, T Malthouse, W Lam, M Chakravorty, N Doeuk, B Challacombe
United Kingdom

V8-8 A Case Report (Video): Retroperitoneoscopic Robotic Partial Nephrectomy
FS Hsu, S Chueh
Taiwan

V8-9 Radical nephroureterectomy without patient or trocar repositioning using the da Vinci Xi® robotic system: Initial experience
O Argun, I Tufek, P Mourmouris, B Tuna, S Keskin, C Obek, A Kural
Turkey

V8-10 Da Vinci nephro-ureterectomy with single robotic placement: utility of the Xi system
VF Vanessa, ND Douaihy, DB Benamran, CI Iselin
Switzerland

V8-11 Endovascular extraction of caval tumor thrombus to facilitate minimally-invasive cytoreductive nephrectomy for metastatic kidney cancer
R Barod, D Dalela, S Schwartz, M Menon, C Rogers
United States

V8-12 Retroperitoneal robot-assisted partial nephrectomy: Exceeding limits in high-complexity cases
MM Rocha, RSM Campos, L Fornazieri, BS Benigno, RL Favaretto, RAR Oliveira, MBAC Tavares, EQ Santos, DM Capibaribe, GC Guimarães
Brazil

Saturday 3 October **Video Sessions (V9)** **15:30–17:00**

Robotic Surgery: New Techniques - Benign
Room 17

V9-1 Video: Combined Robotic Assisted Bladder Diverticulectomy and Photoselective Vaporization of the Prostate
JS Cheng, M Zangi, S Tabatabaei
United States

V9-2 Novel Technique of Concurrent Perineal and Robotic Assisted Abdominal Approach for Repair of Rectourethral Fistula
C Zhao, Y Yamaguchi, D Wollin, B Armstrong, J Levine
United States

V9-3 Robotic transperitoneal kidney donor nephrectomy
DA Benamran, N Douaihy, J Renard, J Klein, TH de Perrot, CE Iselin
Switzerland

V9-4 Robotic-Assisted Simple Prostatectomy Step-by-Step
B de Concilio, Zeccolini, S Yazici, P Silvestre, A Caruso, A Celia
Italy

V9-5 Zero-Ischemia Partial Nephrectomy for a Large Renal Angiomylipoma with the Aid of Indocyanine Green Fluorescence
YC Lin, CY Ho, TF Tsai, TIS Hwang
Taiwan

V9-6 Robotic-assisted pelvic exploration and bilateral orchiectomy in a patient with complete androgen insensitivity
K Cotter, C Weight, V Narayan
United States

V9-7 Robotic Augmented Anastomotic Ureteroplasty with Buccal Mucosa Graft Interposition: A Novel Technique for Repair of Ureteral Stricture
C Zhao, DJ Bryk, Y Yamaguchi, SA Mitchell, MD Stifelman
United States

V9-8 Novel Use of Indocyanine Green for the Localization of a Ureteral Stricture during Robotic Ureteroneocystotomy
MJ Whalen, KK Badani, J Blok
United States

V9-9 Intra-corporeal Robotic Renal Auto-transplantation - Minimizing Ischemia
JY Lee, T Alzahrani, M Ordon
Canada

V9-10 Robotic anatrophic nephrolithotomy using near infra-red fluorescence image-guidance: Idea, Development, Exploration, Assessment and Long-term monitoring (IDEAL) Phase 0 Study
KR Ghani, A Sood, D Assimos, JO Peabody, M Menon, A Hemal
United States

V9-11 Zero-fragment nephrolithotomy: Robotic retroperitoneal approach for posterior calyceal diverticular stone
KR Ghani, S Ambani, J Ortmann, J Montgomery
United States

V9-12 CO2-assisted nephroscopy during robotic pyeloplasty: The suggestion of a novel approach
V Arumuham, G Shaw, N Vasdev, J Adshead, J Bycroft
United Kingdom

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Sunday 4 October | **Video Sessions (V10)** | **14:00–15:00**

Laparoscopy: Lower Tract – Oncology
Room 1

V10-1 High burden Radical Cystectomy (>10 cm): Is laparoscopy feasible?
SKM Mishra, JS Chhabra, A Ganpule, RB Sabnis, MR Desai
India

V10-2 Laparoscopic Reconstruction of Vesico-urethral Anastomosis Dehiscence after Laparoscopic Radical Prostatectomy
D Oliveira-Reis, D Gil-Sousa, J Soares, A Fraga, F Teves
United Kingdom

V10-3 En bloc bladder tumor resection: back to oncologic basics
P Motamedinia, P Zhao, A Martov, Z Okeke, AD Smith
United States

V10-4 Visualizing bladder tumors: seeing beyond white light
P Motamedinia, P Zhao, J de la Rosette, Z Okeke, AD Smith
United States

V10-5 Extracorporeal Ileal Neobladder Reconstruction through a Minimal Umbilical Incision after Laparoscopic/Robotic-Assisted Radical Cystectomy: A Simple and Effective Method
CH Ho, CC Wu, CK Chen, HJ Yu, SP Liu
Taiwan

V10-6 Ureteral reimplantation in urinary diversions: is it the laparoscopy a good option?
P Mota, A Carvalho-Dias, A Cordeiro, J Torres, N Morais, G Grimaldi, AP Carvalho, E Lima
Portugal

V10-7 Video Endoscopic Inguinal Lymphadenectomy
AC Cordeiro, N Mor, JP Torres, P Mota, E Dias, F Botelho, VH Nogueira, E Lima
Portugal

Sunday 4 October | **Video Sessions (V11)** | **14:00–16:00**

Stones: PCNL
Room 4

V11-1 Micropercutaneous Nephrolithotomy in Modified Lithotomy Position
A Hoznek, P Castellani, M Chiaradia, B Parier, MH Khan, A de la Taille
France

V11-2 Experience with a novel'steerable' basket in PCNL
MS Agrawal, D Mishra, T Jindal, K Agarwal
India

V11-3 Capsule to Calculus Optical Dissection for Tract Creation During Difficult Percuataneous Nephrolithotomy (PCNL)
H Thummar, u Khater, K Gupta, R Joshi, M Gupta
United States

V11-4 Early Clinical Experience with the ShockPulse Intracorporeal Lithotriptor in Percutaneous Nephrolithotomy
BH Chew, D Lange, T de los Reyes, RF Paterson
Canada

V11-5 Laparoscopic assisted PCNL in ectopic pelvic kidney: a critical appraisal
A Srivastava
India

V11-6 Microperc Armamentarium: Expanding the Indications – A Video Demonstration
JS Chhabra, SK Mishra, A Ganpule, A Singh, A Bhattu, RB Sabnis, MR Desai
India

V11-7 A Unique Transgluteal Access Technique in Percutaneous Nephrolithotomy: Video Presentation
DD Baldwin, PW Yang, KC Myklak, JK Shen, N Khater
United States

V11-8 Video Presentation of the Laser Direct Alignment Radiation Reduction Technique (DARRT) For Percutaneous Nephrolithotomy Access
DD Baldwin, PW Yang, JL Arenas, JC Smith
United States

V11-9 Ultrasound-guided renal access for percutaneous nephrolithotomy: a description of three novel ultrasound-guided techniques
M Usawachintachit, C Chu, S Masic, W Hu, W Yang, M Stoller, J Li, T Chi
United States

V11-10 Super-perc – A new technique of Minimally-Invasive PCNL
DK Mishra, K Shah, MS Agarwal
India

V11-11 Mini PCNL with Storz MIP XS Nephroscope is ideal for Pediatric Urolithiasis: A pilot study
DK Mishra, MS Agarwal, T Jindal, K Agarwal
India

V11-12 Expanding opportunities: miniperc nephrolithotripsy under ultrasonic control
SH Ali, NA Grigorev, AZ Vinarov, HM Ali
Russian Federation

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Sunday 4 October | **Video Sessions (V12)** | **14:00–15:00**

BPH 2
Room 7

V12-1 Our experience in Laparoscopic transvesical adenomectomy
Y Kordan, B Coskun, O Kaygisiz, KO Gunseren, H Vuruskan, I Yavascaoglu
Turkey

V12-2 Comparison of the different techniques for laser enucleation of the prostate: PVEP, HoLEP, ThuVEP
DA Leavitt, C Netsch, M El Tayeb, M Borofsky, C Tiburtius, AD Smith, A Te, J Lingeman, A Gross, Z Okeke
United States

V12-3 Bipolar enucleation of the prostate. Comparison between two different loops
A Meneghini, A Congregalli, A Crestani
Italy

V12-4 Holmium laser resection of a symptomatic anterior prostatic cyst
TF Aho, OJ Wiseman
United Kingdom

V12-5 Holmium Laser Enucleation of the Prostate, Tips and Tricks Not Just for Beginners
Y Hussein Mohamed Ismail, D Taglialatela, F Ceresoli, R Milesi, A Del Rosso, I Vavassori
Italy

V12-6 Feasibility of Thulium Laser VapoEnucleation of the prostate (ThuVEP) after prior prostate surgery for benign prostatic hyperplasia (BPH)
M Wolters, DA Leavitt, AJ Gross, TRW Herrmann, C Netsch
Germany

Sunday 4 October | **Video Sessions (V13)** | **14:00–15:00**

BPH 3
Room 8

V13-1 GreenLight 180W XPS Prostatectomy: How I Do It
FS Hsu, YP Tu
Taiwan

V13-2 Semi-robotic mpMRI/TRUS-guided transrectal fusion biopsy of the prostate using the ArtemisTM-device (Eigen, USA)
N Westhoff, J Von Hardenberg, MS Michel, M Ritter
Germany

V13-3 Combining Laser TUVP with Urethral Reconstruction - A Successful Experience
Z Tabrez, MK Keshavamurthy, K Premkumar, H Sreeharsha, K Neelagar, B Rao, B. Belavadi
India

V13-4 Sequential photoselective vaporization of the prostate (PVP) and robot-assisted laparoscopic bladder diverticulectomy (RABD)
N Andriopoulos, A Karamanis, E Kosmaoglou, N Pardalidis
Greece

V13-5 Holmium Laser Enucleation of a Severely Calcified Prostate
P Marien, NL Miller
United States

V13-6 HoLEP for a 560cc prostate
TF Aho
United Kingdom

Sunday 4 October | **Video Sessions (V14)** | **14:00–16:00**

Stones: Ureteroscopy
Room 11

V14-1 Introduction of a Renal Papillary Grading System for Patients with Nephrolithiasis
MS Borofsky, JE Paonessa, AP Evan, JC Williams, Jr., FL Coe, EM Worcester, JE Lingeman
United States

V14-2 Utilization of variable pulse width holmium:YAG laser for treatment of large upper tract urothelial carcinoma
R Tanimoto, DH Bagley, SG Hubosky, KA Healy
United States

V14-3 Developments in Ureteroscopic Stone Treatment (DUST): Tips and tricks for lithotripsy using multi-cavity high-power holmium lasers
KR Ghani, G Gagin, J Hollingsworth, W Roberts, G Faerber, JS Wolf, Jr
United States

V14-4 Flexible Ureterorenoscopy with Holmium Laser Lithotripsy under the Guide of B Ultrasound In the Management of Caliceal Diverticular Calculi
M Chen
China

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V14-5 Step by step flexible ureteroscopy supported with SPIES technology for conservative treatment of UTUC
G Giusti, S Proietti
Italy

V14-6 Evaluation of the ''Richard Wolf Cobra™ vision'' – The only digital dual lumen flexible ureterorenoscope in the world.
K Farrag, M Hadjipavlou, M Bolgeri, J Nariculam, S Sriprasad
United Kingdom

V14-7 Robotic assisted retrograde intrarenal surgery (RA-RIRS), the new concept for the treatment of large or complex renal stones.
A Patel
United Kingdom

V14-8 Robotic Flexible Ureteroscopy: Live Surgery
J Rassweiller
Germany

V14-9 Performance of a novel single-use digital flexible ureteroscope in a live porcine model
H Eisner, W Molina, B Matlaga
United States

V14-10 Step by Step Technique of Retrograde Uventa Metallic Stent Placement
SW Lee, YS Suh, JJ Kim, BC Jeong, SI Seo, SS Jeon, SH Choo, KJ Chung, CM Park, DH Han
South Korea

V14-11 Evaluation of the Cook's Flexor® Vue™ Deflecting Endoscopic System for flexible uretrorenoscopy.
K Farrag, M Hadjipavlou, M Bolgeri, J Nariculam, F Anjum, S Sriprasad
United Kingdom

V14-12 Thulium laser use in stone and bladder cancer disease: How I do it
P Kallidonis, I Kyriazis, P Vasilios, M Vasilas, E Liatsikos
Greece

Unmoderated ePosters (U1)

Stones

U1-1 The GUUN score: a comprehensive standardized system for predicting necessity of ureteral dilatation to treat proximal ureteral calculi. Running title: The GUUN scoring system
J Kyu Oh, T Beom Kim, K Ko, C Kim, K Kim, K Chung, K-H Kim, H Jung, S Jin Yoon
South Korea

U1-2 Transurethral contact lithotripsy in a gas (CO2) medium.
EG Arzumanyan, AV Proskura, DG Tsarichenko, LM Rapoport, PV Glybochko, YG Alyaev
Russian Federation

U1-3 Epidemiology of Urolithiasis in India-study of 3000 case and its inferences
K Parikh, S Mehta, A Parikh
United Kingdom

U1-4 Prevalence and association of renal stones, renal cysts and renal impairment in patients with gout and asymptomatic hyperuricemia
U Dhakad, BP Singh, D Bhadu, SK Das, SN Sankhwar
India

U1-5 Comparison of The Effectiveness And Financial Aspects Of Emergency URS And Elective URS In Patients With Symptomatic Ureteral Calculi
Karademir, C yesildal, T Şenkul, F Ates, G Oysul, H Soydan, E Malkoc, O Yılmaz, Sezgi Okcelik
Turkey

U1-6 Presentation and Management of Renal Calyceal Diverticula
AJ Couves, SK Nalagatla
United Kingdom

U1-7 YouTubeTM as a source of patient information for ureteroscopy
H Abboudi, M Mikhail, M Ghazal-Aswad, M Michael, A Pope
United Kingdom

U1-8 Case series of laparoscopic ureterolithotomy for large proximal ureteral calculi with concomitant renoscopic extraction of renal calculi.
A. Yuwono, SK Hong, KS Png
Singapore

U1-9 PCNL in the Prone Oblique Position - Results of a Single UK Centre
SA Ehsanullah, SA Umranikar, V Koo, MJ Lancashire, PH Rajjayabun
United Kingdom

U1-10 Staghorn Kidney Stone patient treated Acalculous with Percutaneous Nephrolithotomy : Single session two port access
S Bedir, S Yilmaz, E Kaya, S Uguz, H Tomruk
Turkey

U1-11 Minimally invasive therapy of urolithiasis in urinary upper tract anomalies
L Bettin, P Beltrami, F Zattoni, A Guttilla, A Iannetti, A Nazaraj, F Dal Moro, F Zattoni
Italy

U1-12 Minimally Invasive (MINI) Percutaneous Nephrolithotomy In The Management Of Staghorn Stones
D Alifov, V Veshkurtsev, B Haritontsev, D Zhilinsky, S Semenov, S Krutskikh
Russian Federation

U1-13 Supine PCNL - Road from novice to expert: Lessons we have learnt
HOA Andrews, S Ali
United Kingdom

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U1-14 Laparoscopic Assisted Mini Percutaneous Nephrolithotomy (MPCNL) with Laser in Ectopic Pelvic Kidney
CA Dsouza, Mu Rahiman, A Khan, A Rai, A K
India

U1-15 The simultaneous endoscopic treatment of bilateral renal and ureteral stones
T Shukhrat, F Nasirov, F Akilov, B Ayubov, M Djalol
Uzbekistan

U1-16 Prevention and treatment of postoperative urosepsis of ureter endoscopiclithotripsy for not being infected
J Shen
China

U1-17 MiniPCNL in modified lithotomy position: cost effective management option in renal stone
NS Basarge, A Lande
India

U1-18 Treatment of Paediatric Renal Stones with Endoscopic Surgical Procedures:Our Clinical Experience
G Dundar, G Gokce, A Asdemir, E Korgali, K Kaygusuz, EY Gultekin
Turkey

U1-19 PCNL outcomes in an obesity society
S van Rij, M Rice, N Dodd, J Tuckey, A List
New Zealand

U1-20 Percutaneous nephrolithotomy versus shock wave lithotripsy for high density moderate sized kidney stones
M Gadelmoula, Ahmad Elderwy, Ghale Althamthami, Ahmad Abdulmoneim
Egypt

U1-21 Withdrawn

U1-22 Comparative analysis of the effectiveness and safety of upper versus lower calyceal access in Percutaneous Nephrolithotomy (PCNL)
JM Mendoza, DM Pagtakhan, JB Abraham
Philippines

U1-23 Recurrent renal colic in pregnant women with hydronephrosis as a potential suggestion of ureteral stone disease
SR Lee, YK Hong, KH Choi
Korea, Republic of

U1-24 Unique experience in management of patients with previous open renal surgery and anatomical abnormality by percutaneous nephrolithotomy (PCNL).
Mousa Tawhari, M Alomar Mohammad
Saudi Arabia

U1-25 Can factors affecting complication rates for PCNL be predicted? Use of the modified Clavien classification system in a pediatric population.
C Ozcan, E Atabey, A Eraslan, T Sahin, S Sarikaya, C Senocak, M Yordam, O Bozkurt
Turkey

U1-26 The Effect Of Infindibulopelvic Angle On Operation Time Of Flexible-URS (F-URS) Procedures
E Kaya, T Ebiloglu, B Kopru, S Bedir
Turkey

U1-27 Does Body Mass Index (BMI) affect the outcome of Percutaneous Nephrolithotomy (PCNL)? – a single centre experience.
A Yuwono, B Thakur, YK Tan
Singapore

U1-28 Impact of ureteral stent size on stone-free rates in ureteroscopic lithotripsy for ureteral stones: Randomized controlled trial
P Prasanchaimontri, E Chotikawanich
Thailand

U1-29 The evaluation of PCNL results in pediatric renal stones between March 2012 and October 2014
MR Drabai Mahboub, M AslZare, M Keshvari, AH Bashash, M Salehi, A Ghods
Iran (Islamic Republic of)

U1-30 Minimally-Invasive (Mini) Percutaneous Nephrolithotomy in the Manamagent of Staghorn Stones
S Naryshkin, O Teodorovich, G Borisenko, D Kochiev
Russian Federation

U1-31 The Infected, Obstructed Kidney: A Patient Pathway Based on Sepsis Six, NICE, UK and EAU 2015 Guidelines
SG Garg, J Baek, S Ganta, J Khastgir
United Kingdom

U1-32 "Totally tubeless" or not? How to decide?
T Shukhrat, F Nasirov, B Ayubov, A Farkhad, M Djalol
Uzbekistan

U1-33 "Multy-accessed" PCNL in patients with staghorn and multiple stones of the kidney
T Shukhrat, A Farkhad, G Shukhrat, N Furkat, A Djakhangir, M Djalol, A Bekhzod
Uzbekistan

U1-34 Long term follow up of Holmium:YAG laser endopyelotomy in patients with ureteropelvic junction obstruction
PSJ Park, KTM Kwon, PSC Park, MKH Moon, CSH Cheon
Korea, Republic of

U1-35 An Investigation into the Influence of the Gut Microbiome on Kidney Stone Disease
SM Moazami, KD Davies, RB Burk, IA Aguilar, JS Stern
United States

U1-36 Pilot experiments on the use of a fiber-optic microsensor to measure renal papillary duct urine pH in real time, in vivo
RK Handa, JE Lingeman, SB Bledsoe, BA Connors, AP Evan, CD Johnson
United States

U1-37 The use of Magnetic Resonance Imaging to evaluate injury caused by burst wave lithotripsy for stone comminution
Y-N Wang, W Kreider, AD Maxwell, D Lee, J Park, BW Cunitz, R Handa, MD Sorensen, MR Bailey, VA Khokhlova
United States

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U1-38 Is the cut off limit of normal uric acid and Calcium in tropical countries different?
D Mishra, VK Mishra
India

U1-39 Colonic perforation during percutaneous nephrolithotomy: An 18-year experience
MR Drabai Mahboub, M AslZare, B Shakiba
Iran (Islamic Republic of)

U1-40 Effect of Active Aspirin Therapy on blood loss and complications of Percutaneous Nephrolithotomy
JR Bylund, R Bole
United States

U1-41 Prediction of life-threatening complications of endoscopic treatment of urolithiasis through separation of patients by category complexity of stones
T Shukhrat, B Ayubov, F Nasirov, SH Giyasov
Uzbekistan

U1-42 Is there a role for open surgery for stone disease in modern urology?
M Kraszewski, HC Godbole
United Kingdom

U1-43 Ultra-mini-percutaneous Nephrolithotomy in lithotomy position
A Hoznek, MH Khan, J Rode, J Desai, A de la Taille
France

U1-44 Supine Mini PCNL for Upper Tract Renal Stones- Outcomes of 100 cases
AK Balakrishnan
India

U1-45 PCNL-URS rendezvous for the management of complex upper urinary tract calculi
T. Ribeiro de Oliveira, P Simões de Oliveira, J Pádua Marcelino, S Henriques Pereira, T Matos Lopes
Portugal

U1-46 Endoscopic Diagnosis and Management of Calyceal Diverticular Calculi
AM Al-Aown
Saudi Arabia

U1-47 Guy's Stone Score predicts stone clearance rate after percutaneous nephrolithotomy (PCNL) – a single centre experience
A Yuwono, B Thakur, YK Tan
Singapore

U1-48 A test of the hypothesis that papillary plaque represents stone phenotype
E Gnessin, J Wagmeister, OZ Shenfeld
Israel

U1-49 Percutaneous Treatment of Bladder Stones in Children: 10 Years Experience, Is Blind Access Safe?
P Ahmadnia
Iran (Islamic Republic of)

U1-50 Percutaneous nephrolithotripsy inimmunocompromised patients: a matched case-control study
V Dall'Acqua, FC Torricelli, GS Marchini, FC Vicentini, M Srougi, E Mazzucchi
Brazil

U1-51 Comparison of Electrohydraulic and Electromagnetic Extracorporeal Shock Wave Lithotriptors for Upper Urinary Tract Stones in a Single Center
CC Lee, M Chen, WC Lin, HK Chang, S Yang, JM Hsu, WR Lin, WC Chow, WK Tsai, AW Chiu
Taiwan

U1-52 Predictive factors and treatment outcomes of steinstrasse following extracorporeal shock wave lithotripsy for ureteral calculi: A Bayesian regression model analysis
YJ Kang, HW Kang, KS Cho, DY Chung, SH Lee, WS Ham, YS Kim, YD Choi, JY Lee
Korea, Republic of

U1-53 Ureteroscopic Stone clearance and complication rates: surgical outcomes from a single unit
LI JU Tay, W Blad, S Abbott, C Richardson, K H Attar
United Kingdom

U1-54 Our Retrograd Intrarenal Surgery (RIRS) experience in a patient with right Soliter Kidney to accompany Ureter Duplication who has D-J Catheter which causes Renal Perforation
S Bedir, B Kopru, E Kaya, T Ebiloglu, S Uguz
Turkey

U1-55 Limiting needle movement to one plane during percutaneous renal access:initial experience with a novel simple device
AM Tawfik, YA Farahat, OM El-Ashry
Egypt

U1-56 Imaging Modalities Post Shockwave Lithotripsy (SWL)
ME El Hadi, HA Al Zubaidi, CL Lewis
United Kingdom

U1-57 The feasibility and efficacy of the novel image planning technique for Percutaneous nephrolithotomy
SI Isotani, HS Shimoyama, YN Noma, TC China, HI Ide, SM Muto, SH Hisasue, YW Wakumoto, RY Yamaguchi, SH Horie
Japan

U1-58 The outcomes of retrograde infrarenal surgery in treating renal cystine stones
TC Caskurlu, GA Gokhan Atis, MC Meftun Culpan, AY Asif Yildirim, BE Bulent Erol, IU Ismail Ulus, OE Ozgur Efiloglu
Turkey

U1-59 Transurethral ureterolithotripsy using Holmium: YAG laser in patients with continuous oral anticoagulation
YS Sugita, SK Kubo, TH Hirayama, TF Fujita, KY Yoshida, TS Shitara, AI Irie, MI Iwamura
Japan

U1-60 Safety and feasibility of ureteroscopy and laser stone fragmentation (URSL) for stones in solitary kidney: prospective outcomes from a university hospital
AG Ghosh, H Ishii, BK Somani
United Kingdom

U1-61 Prospective Long-term Evaluation of the Genuine Impact of Silent Ureteral Stone Treatment on Renal Function
GS Marchini, FC Vicentini, FCM Torricelli, C Câmara, A Danilovic, A Brito, E Mazzucchi, M Srougi
Brazil

U1-62 Minilaparoscopic Ureterolithotomy for the management of large lower ureteric stone in pediatric age
L Campos Braga, C Ferreira, J Ferreira, B Bonet, J Castro, L Osório, V Cavadas, A Trindade, A Reis
Portugal

U1-63 Treatment of calyceal diverticulum stones with retrograde flexible ureteroscope and laser
A Breda, A Kanashiro, H Villavicencio
Spain

U1-64 Is RIRS better option for renal stones up to 1.5 cm as compare to miniaturize versions of PCN
K Parikh, A Parikh
India

U1-65 Surgical management of iatrogenic ureteral strictures related to ureteroscopy for nephrolithiasis
PC May, RS Hsi, JD Harper
United States

U1-66 Hypercalciuria: Evaluation of gender difference and metabolic abnormalities.
C Lynam, H Taan, O Ayyash, IZ Kafka, A Daud, TD Averch, SV Jackman
United States

U1-67 Randomized Controlled Trial of Two Vitamin D Repletion Protocols to Assess Impact on Calcium Excretion in Stone Formers
C Ferroni
United States

U1-68 Vascular calcification and 24 hour urine parameters
AK Pirlamarla, EB Fram, JD Di Vito, JM Stern
United States

U1-69 Iatrogenic submucosal tunnel in the ureter:a rare complication during introduction of guide wire
M Eldarawany
Saudi Arabia

Unmoderated ePosters (U2)

Upper Tract, Laparoscopy and Robotics

U2-1 An alternative surgical approach to renal vein ligation in laparoscopic cytoreductive nephrectomy for advanced Renal Cell Carcinoma with renal vein thrombosis
EWC E Eu, YG Tan, NUM Arif, P Sundaram, ASP Sim, LG Ng
Singapore

U2-2 Tips on laparoscopic surgery for paraganglioma: Video presentation.
T Abe, A Sazawa, T Harabayashi, N Miyajima, K Tsuchiya, S Maruyama, N Shinohara
Japan

U2-3 An Unusual Case of Multiple Recurrent Upper Tract Urothelial Cancer in the Lower Moiety of a Complete Duplex Collecting System, treated with Organ Preserving Endourological Management
L Defidio, M De Dominicis, A Patel, A Calarco
Italy

U2-4 Robotic Proximal Segmental Ureteral Excision and Reconstruction for Obstructing Intraluminal Metastatic Melanoma
AC Goh, AB Hollander, DA Cohen
United States

U2-5 Clinical factors affecting the laparoscopic surgery time for primary hyperaldosteronism
T Ujike, A Kawashima, A Nagahara, S Fukuhara, K Fujita, M Uemura, H Kiuchi, R Imamura, Y Miyagawa, N Nonomura
Japan

U2-6 Tumor thrombus of inferior vena cava in patients with renal cell carcinoma – perioperative outcome of 6 patients after surgery
HS Ertemi, J Al-Roubaie, M Al-Akraa, F H Mumtaz, M Aitchison
United Kingdom

U2-7 Two cases of reduced port laparoscopic pyeloplasty and nephrolithotripsy performed simultaneously
R Sato, T Shibuya, T Ando, K Mori, T Nomura, F Sato, H Mmata
Japan

U2-8 Can adrenal surgery be performed safely by a District General Hospital?
A Pai, T Tharakan, A Kunnenkeril, AS Bong, T Liston, J Hicks, B Chappell
United Kingdom

U2-9 A novel method for retrograde ureteric stent insertion during laparoscopic ureterolithotomy without radiological guidance
KS Lim, ASP Sim, NAB Mohd Zam, HSS Ho
Singapore

U2-10 Our experience in children with robot-assisted laparoscopic surgery: Position and trocar placements
Y Kibar, S Yalcin, B Kopru
Turkey

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U2-11 Robot Asisted Laparascopic Blind Ending Ureterectomy, Partial Nephrectomy to the Dysplastic Part of the Left Kidney and Menagement with Transurethral Incision of Multipl Calculi in a Ureterocele Which Belongs To The Blind Ending Branch of Complete Ureteral Duplication
Z Demirer, A Guragac, BF Alp, S Basal, I Yıldirim
Turkey

U2-12 Reduced port nephrectomy through a Pfannenstiel incision for ALK-positive renal cell carcinoma of a young woman
D Watanabe, R Sato, Y Akita, T Shibuya, T Ando, K Mori, T Nomura, F Sato, T Daa, H Mimata
Japan

U2-13 Laparoscopic extraperitoneal adenomectomy for benign prostatic hyperplasia: the results after one year of follow-up our initial 120 patients.
DG Geddo
Italy

U2-14 Laparoscopic radical nephrectomy with inferior vena cava thrombectomy: highlight of key surgical steps
A Sim, A Stenzl, C Schwentner
Singapore

U2-15 Laparoscopic adrenalectomy for contralateral adrenal metastasis of renal cell cancer arising from a horseshoe kidney.
H Zakoji, T Miyamoto, S Kira, Y Ootake, N Sawada, T Shimura, M Takeda
Japan

U2-16 Simultaneous Total Endoscopic Bilateral Nephroureterectomy with Bladder Cuff Excision for Native Kidneys in Renal Transplant Recipients: Initial Experience in A Single-center
H Bi, XF Hou, LL Ma, L Zhao, GL Wang
China

U2-17 Laparoscopic Partial Nephrectomy for multiple tumors
LCG Curcio, BSH Salama, DLP Pinto, ACCH Ahouagi
Brazil

U2-18 Radical Nephrectomy with Inferior Vena Cava Thrombectomy for T3B Renal Cell Carcinoma: Are there any changes in 2015?
DV Perlin, IV Aleksandrov, VP Zipunnikov, ON Shevchenko
Russian Federation

U2-19 The application of ''Renal pedicle rotation'' method in retroperitoneal laparoscopic partial nephrectomy for renal ventral tumors
S Song
China

U2-20 Initial experiences of complete non-clamping partial nephrectomy under normal blood pressure
H Yanaihara, T Hayashi, Y Teranishi, H Kaguyama, F Hanashima, H Sakamoto, K Aonuma, K Matsuda, Y Nakahira, H Hirotaka
Japan

U2-21 Single tract percutaneous nephrolithotomy combined with flexible ureteroscopy in the treatment of residual kidney calculi
JG Yang, XJ Huang, LK Fang, YX Zhang
China

U2-22 Laparoscopic Nephrectomy for Renal masses more than 10 cm – How safe is it? A single UK Centre Experience
T Mcdermott, Z Cheema, A Chakravarti
United Kingdom

U2-23 Video-Rate Structured Illumination Microscopy to Diagnose Presence of Kidney Cancer on 18- Gauge Core Needle Renal Biopsy
W Lai, M Wang, D Tulman, SH Mandava, Q Brown, AB Sholl, BR Lee
United States

U2-24 Arterial Clamping Time: Advantage for Retroperitoneal Laparoscopic Nephroureterectomy in Patient with Upper Urinary Tract Urothelial Carcinoma
KKT Ko, MT Kim, MS Choo, SY Kim, DY Yang
Korea, Republic of

U2-25 Management of major vessel injury in laparoscopic urological procedures
VP Zipunnikov, DV Perlin, IV Aleksandrov, AO Shmanev
Russian Federation

U2-26 Can you implement international guidelines recommending biopsy of small renal masses before ablation in the UK?
HS Ertemi, J Alroubaie, G Webster, M Al-Akraa, F H Mumtaz, M Aitchison, R Illing
United Kingdom

U2-27 ''Lap. Nephroureterectomy: How to keep Oncological principle intact''
NI Bhuiyan
Bangladesh

U2-28 Laparoscopic ureteroneocystostomy with psoas hitch following distal ureterectomy for ureter cancer
SW Park, SS Lee, SC Jung, DH Lee, JK Nam, TN Kim, MK Chung
Korea (Republic of)

U2-29 Laparoscopic excision of the retroperitoneal para-aortic paraganglioma
K Gokcen, G Gokce, G Dundar, A Asdemir, E Korgali, EY Gultekin
Turkey

U2-30 Laparoscopic partial nephrectomy for a renal tumour during pregnancy
B Petrut, V Schitcu, M Hogea
Romania

U2-31 Laparoscopic alternative for the surgical management of renal cell carcinoma with venous tumour thrombus
B Petrut, V Schitcu, M Hogea
Romania

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U2-32 Laparoscopic Nephroureterectomy for upper tract urothelial carcinoma after Radical Cystectomy and orthotopic diversion
L Mahmoud Laymon, A Shoma
Eygpt

U2-33 Laparoscopic removal of a paragangolioma located behind the hepatic segment of the inferior vena cava
RH Hattori
Japan

U2-34 TAC3D: How a new model of 3D printing improves surgical planning of ultra-selective minimally invasive nephron sparing surgery in high complex T1b renal Cancer
A Dourado Meneses, PA Lima Matos, R Donalisio Da Silva, B Aragão Rocha, A Tolstenjo Nogueira, JU Stolzenburg, S Cassio Zequi
Brazil

U2-35 The use of self-retaining unidirectional barbed suture for laparoscoic retroperitoneal partial nephrectomy
YH Jung, TH Oh, DS Ryu, YS Lee, KW Kwak
Korea, Republic of

U2-36 Diltiazem effects on function of transplanted kidney and cyclosporine A blood level
Dr Asadpour, Dr Mohammad Aslzare, Dr Ali Shamsa, Dr Mahmoud Tavakoli
Iran (Islamic Republic of)

U2-37 Comparison of the Clinical Outcomes and Surgical Invasiveness for Living Donor Nephrectomy between Conventional Laparoscopic Surgery and Single-Port Surgery
H Tsuruta, M Saito, T Inoue, S Narita, A Maeno, N Tsuchiya, S Satoh, T Habuchi
Japan

U2-38 Intravesical recurrence of urothelial cancer in patients after bilateral laparoscopic nephroureterectomy
CH Ou
Taiwan

U2-39 Long term functional and oncological outcomes for Laparoscopic guided cryotherapy of small renal tumours: Single UK centre experience
AM Emara, G Mueller, U Reddy, S Segaran, RG Hindley, NJ Barber
United Kingdom

Unmoderated ePosters (U3)

Lower Urinary Tract

U3-1 Influence of surgical approach discrepancy on outcome in patients treated with radical cystectomy for bladder cancer: a comparison between open, laparoscopic, and robot-assisted approaches
TH Kim, HH Sung, W Song, JY Jeong, DH Han, SI Seo, SS Jeon, HM Lee, HY Choi, BC Jeong
Korea, Republic of

U3-2 Outcome of Robot-assisted laparoscopic radical prostatectomy in a tertiary hospital in the Philippines: First 100 cases
PY Yang-ed, DG Lusaya, ML Morales, KC Rivera
Philippines

U3-3 Daycase RALP and patient perception of 'same-day' discharge
C Miller, JS McGrath, EC Waine, LE Jackson, N Batchelor, M Daugherty, M Goldstraw, N Campain
United Kingdom

U3-4 The impact of preoperative factors on urinary incontinence after robot-assisted radical prostatectomy
T Yanagida, N Haga, S Hoshi, Y Satou, H Akaihata, S Ogawa, N Kushida, K Ishibashi, K Aikawa, Y Kojima
Japan

U3-5 Erectile function after RALP: A comparison between EPIC and IIEF-5 questionnaires
V Berge, LM Diep, SJ Karlsen, LM Eri
Norway

U3-6 Targeted MRI/US Fusion Prostate Biopsy: Initial Experience in a Small Private Urology Group Practice
A Kasraeian, J Yellin, B Noell, A Kasraeian
United States

U3-7 The significance of computerized tomography in the detection of bladder rupture
S Choi, TH Oh
Korea, Republic of

U3-8 Robotic (Da Vinci Xi) ureteral reimplant with Boari flap
PK Agarwal, JM DiBianco, C Bayne, D Su, AD Kilchevsky, J Sparenborg, L Folio
United Kingdom

U3-9 Laparoscopic psoas hitch ureteroneocystostomy for the treatment of an iatrogenic ureteral lesion
T Ribeiro de Oliveira, T Palmela Leitão, P Simões de Oliveira, S Henriques Pereira, T Matos Lopes
Portugal

U3-10 Laparoscopic gastrocystoplasty for genitourinary tuberculosis with contracted bladder
MR Ramalingam, M Anandan, K Senthil, MG Pai
India

U3-11 Transperitoneal Laparoscopic Excision of a Solitary Bladder Diverticulum
FO Ozcan, T Oktar, MI Dönmez, O Sanli, H Ander, O Ziylan
Turkey

U3-12 Initial experience of laparoscopic sacral colpopexy in Tonami General Hospital, Japan
M Egawa, Y Kamimura, K Ichimatsu, S Nojima
Japan

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U3-13 Laparoscopic Intravesical Closure of Rectovesical Fistula – A Hybrid Technique Description and Review of Literature
H Hsueh
Taiwan

U3-14 Laparoscopic YV-plasty in patient with refractory bladder neck contracture and peri-anastomotic migration of hernioplasty mesh
MD Di Marco, R Parascani, A Fraioli, M Mattioli, C Avitabile
Italy

U3-15 Laparoscopic partial cystectomy for Pheochromocytoma of the urinary bladder
Y Takezawa, A Ohtsu, H Nakajima, T Makino, T Etsunaga, Y Saito, M Kobayashi, K Kawashima
United Kingdom

U3-16 Robot-assisted Resection of Seminal vesicle Schwannoma
Y Matsuzawa, H Nishimatsu, J Takahashi, K Hagiwara, S Murayama, T Kaneko, Y Hirano, T Kawamura, Y Homma
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U3-17 Laparoscopic vesico-vaginal fistula repair: A tertiary care centre experience
P Sankhwar, SN Sankhwar, V Singh, BP Singh, M Kumar, S Singh, M Patodia
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U3-18 Concomitant Endoscopic and Surgical Assessment Score for Iatrogenic Ureteric injuries
A Madan, HS Ram, M Nazar
India

U3-19 Management of severe iatrogenic ureteral injuries based on ureteral anastomosis technique
U Asadpour, E Mohammad Aslzare, U Mahmoud Tavakoli, P Parisa Saeedi, R Mohammad Hosami
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U3-20 Analysis of factors predicting recovery of erectile function after laparoscopic radical prostatectomy
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OY Yilmaz, Ö Kurul, C Yeşildal, Z Aktaş, H Soydan, F Ateş, T Şenkul, K Karademir
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A Gupta, S Samavedi, V Mouraviev, RF Coelho, B Rocco, VR Patel
United States

U3-23 Transrectal ultrasound guided prostate biopsy in patients with PSA ≥ 20 ng/mL: how many cores should be taken?
G Bingölo, AE Zümrütbas, C Toktas, A Baser, M Gülten, T Turan, Ö Tuncay
Turkey

U3-24 Retrospective Analysis of Hemostatic Effect of Flo-Seal in Patients Undergoing RALP
GM Pirola, S Puliatti, E Martorana, A Territo, A Zordani, S Micali, G Bianchi
Italy

U3-25 NBI Cistoscopy increases the detection rate of Carcinoma in situ; personal experience.
GM Mirabile, LA Albanesi, PA Pouria Alijani, BCG Gentile, GR Rizzo, PT Tariciotti, RG Giulianelli
Italy

U3-26 Is cardiopulmonary exercise testing in patients undergoing radical cystectomy a useful preoperative tool?
RK Khan, O Elhage, C Amadi, F Ismail, C Gan, K Thomas, TS O'Brien, R Thurairaja, MS Khan
United Kingdom

U3-27 Vesico-Urethral anastomosis using 'V-Loc 90' barbed suture during Laparoscopic Radical Prostatectomy
AH Bhat, S Madaan, M Sheriff
United Kingdom

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HD Halstuch, HR Holland, LM Lubin, EY Ehrlich, BJ Baniel, LD Lifshitz
Israel

U4-2 Comparison of bladder irritativeness between two kind of ureteral stents: A prospective randomized trial
HS Chung
Republic of Korea

U4-3 Total endourologic approach with thermoexpandable metallic ureteral stent for the treatment of complex iatrogenic ureteral stricture
IKG Kartalas Goumas
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U4-4 Tips and tricks in managing challenging cases of retained ureteral stent – a single centre experience
A Yuwono, SL Bang, KS Png
Singapore

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U4-5 The beneficial effect of alpha-blockers for ureteral stent-related discomfort: Systematic review and network meta-analysis for alfuzosin versus tamsulosin versus placebo
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Korea, Republic of

U4-6 A Novel Method for Preventing Proximal Stent Migration When Inserting Two Stents in Parallel
TG Brenton, H Godbole
United Kingdom

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NA Lange, J Chan, T Hirayama, M Iwamura, N Branda, BH Chew
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U4-8 A case report: Renal resistive index is a useful tool for detection of malformation in implanted JJ stent
Y Aydogmus, T Ebiloglu, E Kaya, Y Yeşilkaya, S Bedir
Turkey

U4-9 Safety, patient satisfaction and tolerability of 'stents on a string': A review of literature
RL Oliver, H Wells, BK Somani
United Kingdom

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F Soria, D Cruz, JC Gomez-Blanco, J De la Cruz, J Mayo, J Martinez-Reina, B Pagador, E Morcillo, FM Sanchez
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U4-11 Experience with Metallic Ureteral Stents for Malignant and Benign Ureteral Obstructions
S Lee, DH Lee, SC Jeong, JK Nam, SW Park, MK Chung
Korea (Republic of0

U4-12 The management of severe ureteric stricture disease with Memokath stents.
J Zhao, S Bishara, R Dasgupta
United Kingdom

U4-13 Treatment Of Urinary Fistula In Ureteropyelostomy Through Metallic Stents (Memokath051®)
JR Torrecilla Garcia-Ripoll, JM Diaz Romero, S Martin Martin, FJ Trueba Arguiñarena, MA Udaondo Cascante, M Bedate Nuñez, MD Rivero Martinez, JR Cortiñas Gonzalez
Spain

U4-14 Use of temporary metallic stents for treating iatrogenic lesions of the urether
JM Diaz Romero, S Martin Martin, JR Torrecilla Garcia-Ripoll, FJ Trueba Arguiñarena, R Calvo Gonzalez, M Bedate Nuñez, L Pesquera Ortega, JL Soto Rodriguez, FM Lara Perez, JR Cortiñas Gonzalez
Spain

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W Nealy, C Wong, N Thirumavalavan, DS Wang, MH Katz, Babayan
United States

U5-2 Intralesional Injection Therapy for Peyronie's Disease: Verapamil versus Triamcinolone
A Ghoreifi, AA Asadpour, S Hajian
Iran (Islamic Republic of)

U5-3 Slow release Diclofenac effects on varicocelectomy pain
Dr Asadpour, Dr Mohammad Aslzare, Dr Mahmoud Tavakoli, Dr Parisa Saeedi
Iran (Islamic Republic of)

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DSJ Ellis, N Burfit, M Clark, R Dasgupta
United Kingdom

U5-5 Long-term outcomes of a novel therapeutic procedure for persistent and recurrent hemospermia by transurethral seminal vesiculoscopy
XHJ Xiao
China

U5-6 Rates and predictors of hospital acquired conditions in urologic surgery
T Rude, M Cohn, N Donin, S Patel, J Wysock, M Bjurlin
United States

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S Al-Hayek, L Toner, N Papa, S Aliyu, H Dev, N Lawrentschuk
United Kingdom

U5-8 Extended Spectrum Beta-Lactamase (ESBL) Producing Enterobacteriaceae in Hospital Urinary Tract Infections – Increasing Incidence and Antibiotic Susceptibility Profile Over 10 Years
S Al-Hayek, L Toner, N Papa, S Aliyu, H Dev, N Lawrentschuk
United Kingdom

U5-9 Vancomycin Resistant Enterococcus species in Hospital Urine Cultures – Incidence and Changes in Antibiogram Over Ten Years
S Al-Hayek, L Toner, N Papa, S Aliyu, H Dev, N Lawrentschuk
United Kingdom

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U5-10 Effects of fixatives on tissue elastic properties measured by quantitative Optical Coherence Elastography (OCE)
Y Ling, C Li, K Feng, R Duncan, R Eisma, D McGloin, Z Huang, G Nabi
United Kingdom

U5-11 The Art of Flexible Cystoscopy – a pictorial narrative
S Middela, B Peterrsson
United Kingdom

U5-12 Suspected acute pyelonephritis :Who refers to Whom ? The role of imaging in the diagnosis of pyelonephritis
L M Alzweri, C E Gollins, K E Burke, M Rowe, R Devarajan
United Kingdom

U5-13 Association between Ureteral Jet Dynamics and Nonobstructive Kidney Stones in Children
MD Celik, MD Bozkurt, MD Altay, MD Celebi Celik, MD Uz, P Soylu, P Kefi, P Kavukcu, P Secil, A Demir
United Kingdom

Unmoderated ePosters (U6)

Lower Urinary Tract

U6-1 Transurethral 2um laser enucleation of submucosal bladder benign tumor: two cases report with literature review
H Bi, GL Wang, LL Ma, JF Ye
China

U6-2 Palliative holmium laser enucleation of the prostate for severe bladder outlet obstruction in patients with advanced prostate cancer
KTN Kim, NJK Nam, SDG Shin, LZZ Lee, CMK Chung
Korea, Republic of

U6-3 Trus biopsy and octagenarians-a change in management?
S Goonewardene, C Brown, D Cahill, M Brown, B Challacombe, P Dasgupta, R Popert, R Persad
United Kingdom

U6-4 Clinical factors that predict successful visual internal urethrotomy for urethral stricture recurrence after dorsal onlay graft urethroplasty
SR Lee, YK Hong, KH Choi
Korea, Republic of

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JM Cho, KT Moon, SC Shin, JY Kang, TK Yoo, JD Choi
Korea, Republic of

U6-6 Clinical Efficacy of PTNS (Posterior Tibial Nerve Stimulation) in the treatment of Non Neurogenic Detrusor Underactivity.
GM Mirabile, PT Tariciotti, BCG Gentile, GR Rizzo, LA Albanesi, RG Giulianelli
Italy

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G Mirabile, P Tariciotti, BC Gentile, G Rizzo, L Albanesi, R Giulianelli
Italy

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C L Liu, AX Xu, BL Li
China

U6-9 Initial Experience of HoLEP
NI Bhuiyan
Bangladesh

U6-10 Evaluation of 6-month Results of Bipolar Transurethral Surgery for BPH
I Saad, AH Abo Zamel, TZ Orban, AS Bedair
Egypt

U6-11 The management of acute urinary retention in a busy District Hospital, Cost implication and Length of stay - An Audit
HOA Andrews, S Aziz, S Ali, N Iordan
United Kingdom

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MP1 - BASIC RESEARCH 1

MP1-1 Leak Point Pressure is affected by Renal Vascular Clamp Type and Position in Human Renal Arteries

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United States

Objectives: Attempts to clamp the renal artery during a partial nephrectomy can be ineffective at achieving complete vascular control. Recently, it has been demonstrated that robotic bulldog clamps were not effective at preventing leakage on a penrose drain model at physiologic pressures. The purpose of this study was to determine the ability of robotic and laparoscopic bulldog clamps to control blood flow from a human renal artery. In addition, the effect of clamp position was also evaluated.
Materials and Methods: With the use of a novel bench top model, fresh human cadaveric renal arteries were attached to a pressure gauge, and were continuously infused with normal saline. Leak point pressures (LPP) of seven different vascular bulldog clamps from three manufacturers were determined. Five separate trials were performed at four different locations along the clamp including: the fulcrum, proximal, middle, and distal positions. Analysis was performed using the Kruskall-Wallis procedure with multiple comparisons of post hoc hypotheses adjusted for multiple testing. P values < 0.05 were considered significant.
Results: The lowest LPP observed in all clamps when applied at the proximal, middle or distal position was 220 mmHg. In general LPP decreased as the artery was positioned more distally along the clamp. However, the exception was when the vessel was placed at the fulcrum position. At the fulcrum position, both Klein and Scanlan clamps had significantly lower LPP when compared to the mean LPP at the other positions ($p < .001$). Eighty to 100% of Klein clamp trials and 60% to 80% of Scanlan trials leaked at pressures below 210 mmHg when the clamp was placed at the fulcrum position.
Conclusions: Each vascular clamp tested resulted in adequate control of the renal artery when applied at the proximal, middle, or distal positions. To our knowledge this is the first study to use fresh human arteries to compare vascular bulldog clamps, and to demonstrate leakage at physiologic pressures when the artery is placed at the fulcrum of the Klein and Scanlan clamps. These results suggest that application of a bulldog clamp at the fulcrum could potentially lead to inadequate vessel occlusion and potentially catastrophic intraoperative bleeding.

MP1-2 Fabrication and in vitro feasibility research of newly designed ureteral stent with antireflux device

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Introduction: The placement of a double J stent is a widespread procedure performed to relieve ureter blockages for benign or malignant reasons. However, the double J stent may lead to a number of complications. Bypassing the ureterovesical junction, the traditional stent can cause bladder pressure reflection to the renal pelvis and vesicoureteral reflux (VUR), which in turn will render one predisposed to urinary tract infections (UTIs). Moreover, VUR and UTIs may result in scarring and renalfailure. To solve this problem, we developed two advanced double J stents with anti-reflux device and evaluated the effectiveness of these new double J stents by in vitro studies.
Materials and Methods: We designed and manufactured two newly designed double J stents with anti-reflux device (Model Q-1, Model Q-2. 60 pieces of standard double J stents were randomly divided into three groups, group A, group B and group C, each group 20 pieces. A were converted into Model Q-1 while B were converted into Model Q-2. In vitro testing was conducted to evaluate the drainage and antireflux characteristics of Model Q-1(group A), Model Q-2(group B) and standard double J stent (groupC). In an in vitro experimental model, we compared the resistance of ureteral placement among the three groups and the force of stent insertion was measured. Statistic and compare the data of three groups.
Results: Two newly designed double J stents with anti-reflux device (Model Q-1, Model Q-2) were manufactured. In vitro testing, there were significant difference among the three group in anti-reflux properties ($P < 0.01$), 20 cases in both group A and group B had positive results of anti-reflux (100%, 20/20), while 0 case in group C(0%, 0/20). In terms of drainage properties at three different pressure (30 cmH2O, 20 cmH2O and 12 cmH2O), there was notable difference among three groups ($P < 0.01$). Among them, group C was the best, group A the worst, and group B between them. For the force of stent insertion, group A was the highest, and group C was the lowest($P < 0.05$).
Conclusion: The two newly designed double J stents with anti-reflux device (Model Q-1, Model Q-2) had favorable drainage and perfect anti-reflux properties and were easily placed over a guidwire. The novel ureteral stent got a lot of flexibility and had a bright prospect.

MP1-3 Effects of Alpha Blockade on Intrapelvic Pressure and Ureteral Peristalsis in an in vivo Stented Porcine Model

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United States

Introduction: Clinical studies have shown beneficial role of oral alpha-blockers for ureteral stent related morbidity. However, the *in vivo* effects of oral alpha-blockers on a stented ureter are unclear. We evaluated the effects of alpha blockade on ureteral dynamics in a stented porcine ureter.
Methods: Twenty-seven female pigs were utilized in this study. Fourteen pigs received oral alpha-blocker medication (silodosin, 8 mg daily) and 13 pigs received no medication. The study was powered to see a difference of 30% change in renal pelvic

pressures between the two groups. Under cystoscopic guidance a 5F ureteral catheter was positioned in the renal pelvis and attached to a pressure monitor. A Foley catheter was placed in the bladder along with a bladder pressure transducer. A lumbotomy was performed and ureter was identified. A magnetic sensor was placed on the extra-luminal surface of the ureter to monitor ureteral peristalsis. We measured renal pelvic and bladder pressures, urine output and ureteral peristalsis every hour for 10 minutes for a total of 5 hours. The pigs were then euthanized.
Results: The mean weight was 42.5 kg in the drug group and 45.9 kg in the non-drug group ($p = 0.008$). Mean hourly urine output was 140 ml in the drug group and 144 ml in the no-drug group ($p = 0.76$). Mean baseline renal pressure was 13.2 mmHg and 13.8 mmHg ($p = 0.69$) in the drug and non-drug group, respectively. Mean peristaltic renal pelvic pressure was 19.1 mmHg in the drug group and 19.2 mmHg in the no-drug group ($p = 0.97$). Mean number of peristalsis was 11/10 min and 14/10 min ($p = 0.03$) in the drug and non-drug group, respectively.
Conclusions: Alpha blockade in an *in vivo* stented porcine ureter resulted in no significant effect on renal pelvic pressure but a significant decrease in the number of ureteral peristalsis. Further investigation of alpha-blocker on ureteral dynamics is required to better understand its effects on stent related symptoms.

MP1-4 Urinary Infection Rate Caused by a New Biodegradable Anti-Refluxive Ureteral Stent. Animal Model Comparative Study

F Soria, E Morcillo, J De la Cruz, A Serrano, J Rioja, A Budia, T Fernandez, I Fernandez, J Bachiller, FM Sanchez

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Introduction: Despite the widespread use of double J ureteral catheters in urology, these devices are not exempt from a high rate of morbidity related to their design (VUR, dysuria, flank pain, UTI, etc.). For these reasons in recent years, many researchers are working on new designs to reduce these side effects. We evaluated the infection rate rate of a new design of an antireflux ureteral stent manufacture with biodegradable PGA (polyglycolic acid) compared with the same polymeric design (SARP) and compared with control group, classic JJ ureteral stent in porcine animal model.
Material and Methods: 45 pigs were used, the animals are randomized into three homogeneous groups: Group-JJ (JJ ureteral stent of 4Fr, 6 weeks); Group-SARP (intraureteral antirefluxive stent 3FR, 6 weeks) and Group-PGA (biodegradable intraureteral antirefluxive 3Fr stent 6 weeks) Follow-ups are conducted at 3 weeks and 6 weeks. They are assessed throughout the study: dilatation of the upper urinary tract, the vesicoureteral reflux (VUR) rate and urinary infection rate.
Results: No statistical significance (SS) are seen with respect to the degree of dilatation of the upper urinary tract obtained by the three stents. The SARP and PGA, groups do not cause VUR in any animal showing SS versus-JJ Group at 3 and 6 weeks. With regard to the rate of urinary tract infection the following percentages at 6 weeks were: 26.6% Group-JJ; SARP group-33.3%; Group-PGA and 46%.
Conclusions: The new design prevents VUR of JJ ureteral stents, while getting the dilation of the urinary tract in the segment in which it is placed, similar to JJ ureteral stents. It does not show any of the side effects associated with JJ stents at UVJ and bladder trigone level. However, the use of biodegradable material such as PGA in the urinary tract causing an unacceptable UTI rate. So further research is needed into new materials or coatings which allow controlled biodegradable stents but with lower infection rate.

MP1-5 Nanotechnology combination therapy for Renal Cell Carcinoma: Gold Nanorods bound with tyrosine kinase inhibitor produce synergistic treatment response when combined with laser thermal ablation in a Renal Cell Carcinoma animal model

BR Lee, C Callaghan, SH Mandava, D Peralta, M Bouljihad, SD Dash, JL Liu, MT Tarr, MM Maddox, WL Lai

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United States

Introduction and Objectives: Nanotechnology has introduced a novel platform for targeted drug delivery for therapy of GU tumors. Photothermal ablation of tumor ablation is early in its development. Previously, we reported our experience with *in vitro* studies on use of nanoparticles as both platform for delivery of tyrosine kinase inhibitors as well as vehicle for laser ablation. We report our experience with Gold Albumin Nanorods (AuNRs) encapsulated with Human Serum Albumin Proteins (HSAP) and loaded with Sorafenib (Sor) in this in vivo animal tumor model.
Methods: Immunologically naïve nude mice ($n = 70$, Athymic Nude-Foxn1nu) were injected bilaterally on the flanks ($n = 140$) with 2.5×106 cells of a human metastatic renal cell carcinoma cell line (RCC 786-O) together with matrigel. Subcutaneous xenograft tumors grew to 1 cm palpable nodules. Gold Nanorods encapsulated in Human Serum Albumin Protein (HSAP-AuNRs) nanoparticles were synthesized with or without the loading of Sorafenib (HSAP-AuNR-Sor) and administered via direct injection, with contralateral tumor serving as control. Laser ablation was administered with 808 nm LED diode laser for ten minutes. Animals were sacrificed 72 hours post-irradiation; the tumors were excised, preserved in formalin and pathology determined percent tumor necrosis.
Results: In mice that did not receive laser ablation treatment, with Sorafenib treatment yielded 25% necrosis on the injected side and 3% on the contralateral control tumor, while administration of HSAP-AuNRs yielded 10% necrosis on the treated side and 10% on the control side. HSAP-AuNR-Sor administration yielded 3% necrosis on treated side and 2% on the control tumor. Trials that were irradiated without particle administration achieved 60% necrosis on the treated tumor and 10% on the control tumor. The combination of ablation and HSAP-AuNR-Sors had the greatest cellular kill at 85% necrosis on the treatment side and 2% necrosis on the control tumor.
Conclusions: Compared to control tumors, the nodules receiving treatment achieved a 83, 50, 22, 1 and 0% increase in necrosis for irradiation with HSAP-AuNR-Sor, irradiation without nanoparticles, Sorafenib, HSAP-AuNR-Sor and HSAP-AuNR respectively. In the absence of laser irradiation with chemotherapy alone, only moderate necrosis occurs. Irradiation causes excitation of the AuNRs, which induces hyperthermia and a spike in the release of Sorafenib with a greater synergistic tumor kill.

Sources of Funding: TNPRC Base Grant (Number: P51OD011104)

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MP1-6 Changes in the density of interstitial cells of Cajal as a prognostic factor in patients with ureteropelvic junction obstruction

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The interstitial cells of Cajal (ICC) have been studied as peristalsis participating in various systems. Its presence in the genitourinary tract can sustain the importance of these cells in the pathophysiology of ureteropelvic junction obstruction (UPJO). The aim of this study was to evaluate the density of ICC in adults and in the late adolescence patients with UPJO, undergoing pyeloplasty and to check if there is association of changes in the ICC density with clinical findings, as well as pre and postoperative images, especially ultrasound and diuretic radioisotope renography. We selected 23 patients with UPJO, undergoing laparocopic dismembered pyeloplasty consecutively, by the same group of surgeons in the period between February 2011 and January 2012. It was performed immunohistochemical analysis for tyrosine kinase receptor expression (c-KIT) in all samples of UPJO quantified the ICC density. The patients were followed up periodically to evaluate the clinical response and imaging. The average age of the sample was 34.83 years. There was a predominance of males (56.5%). The right kidney was the most affected (56.5%). Severe hydronephrosis was identified in most patients (52.2%). The average renal function affected estimated by diuretic radioisotope renography, pre and post-operative was respectively 33.7 and 33.4%. Of the 23 patients, 20 had an improvement on diuretic radioisotope renography pattern of ureteral drainage. There was a predominance of patients with high ICC density (52.2%). There was statistical significance when associated with ICC density and the improvement of ultrasonographic pattern ($p = 0.032$). However, there was no association between the ICC density and other clinical or imaging variables. It can be concluded that the density of the ICC maybe a good predictor of post-operative ultrasound response in adult patients with UPJO undergoing pyeloplasty.

MP1-7 Expert Endourologists' Perception of Ureteral Access Sheath Insertion Force Threshold to Protect Ureteral Damage

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Turkey

Aim: To define an insertion force (IF) threshold for ureteral damage with ureteral access sheaths (UASs) on an experimental ureteral orifice model.
Materials and Methods: A specially designed water tank using 2 laparoscopic 5 mm ports and 2 different size (10 Fr and 8 Fr) sealing cap adaptors (SCA) as ureteral orifice model was used to perform the test. A 10–12 Fr UAS was fixed to a load cell and the IF was continuously recorded with a digital force gauge (DFS II, Chatillon®, Ametek® Test and Calibration Instruments, Largo, Florida, USA) during insertion. Each of the 11 experts in the field of endourology who participated performed 3 UAS insertions. The IF was recorded initially with 10 Fr followed by 8 Fr sealing cap orifice. On the final insertion, the orifice was obstructed, leaving a 5 cm length to insert the UAS. The experts were asked to ''Stop at the point they feel there would be a ureteral damage and they would not proceed in real life''.
Results: Using 10 Fr SCA the max and average IF was 2.03 ± 0.59 Newton (N) (range: 1.48–3.48) and 0.69 ± 0.42 N (range: 0.04–1.54) while 8 Fr SCA showed a max and average IF of 5.72 ± 1.00 N (range: 4.05–7.35) and 2.66 ± 1.46 N (range: 0.37–5.79), respectively. Five of the experts, said they would stop proceeding when they reached above 5.1 N, 3 experts had IF < 5.1 and the other 3 said they would go with IFs of 5.88, 6.16 and 7.35 N when using SCA of 8 Fr. The highest load they would stop proceeding had max and average IF of 6.05 ± 2.04 N (range: 2.53–10.74) and 2.66 ± 1.46 N (range: 0.37–5.79), respectively. When excluding the 2 experts on the extreme of the IFs, the highest load to stop proceeding had max and average IF of 5.92 ± 0.95 N (range: 5.04–7.65) and 2.86 ± 1.37 N (range: 0.42–4.97), respectively.
Conclusion: The IF threshold for ureteral damage inserting UAS of the endourology experts is similar. Even though, IF is a subjective perception, experience indicates that ureteral damage may occur at 6.05 N. In-vivo measurement of UAS IF is awaited.

MP1-8 In vitro Study on Ureteral Smooth Muscle Relaxation with Tamsulosin, Nifedipine, and Terpene mixture (Rowatinex®)

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Korea, Republic of

Objectives: The aim of this study was to evaluate whether Tamsulosin, an alpha-blocker, has an effect on relaxation in spontaneous ureteral contractility with or without phenylephrine, an alpha-agonist. Additionally, nifedipine, terpene mixure (Rowatinex®) were tested and compared with each other.
Methods: We obtained ureteral segments by incising the ureter from renal pelvis to bladder from freshly killed eight-week-old rabbit. Preparation was performed in aerated Krebs buffer (95% oxygen and 5% carbon dioxide) at a constant temperature of 37°C. All segments were suspended into organ tissue baths containing aerated Krebs buffer (37°C) using stainless steel hangers and clips. The ureter divided into four segments; upper, middle, low and uretero-vesical junction. Each ureteral segment was suspended longitudinally and circularly by opposite corners, respectively. Contractile activity was recorded and analyzed by PowerLab data acquistition system (AD instruments CO., USA). Area under the curve was compared between before and after each drug application for each 5 minutes with or without pheylephrine, 10^{-5} M. Statistical analysis was performed using the unpaired Student's t test; $p < 0.05$ was considered statistically different.
Results: Ureteral smooth muscle relexation was significantly increased in all segments over 10^{-6}M in Tamsulosin, 10^{-7}M in nifedipine and 0.001x3 concentrations in terpene mixture (Rowatinex®) ($p < 0.05$). However, under the pretreatment of phenylephrine, there was no significant difference at all concentrations in Tamsoluin and nifedipine. In contrast to Tamsolusin and nifedipine, in terpene mixture (Rowatinex®), there was a significant increase in ureteral smooth muscle relaxation in most of segments at 0.01x1 concentrations ($p < 0.05$).

Conclusion: Tamsulosin, nifedipine, and terpene mixture (Rowatinex®) showed the effect on spontaneous ureteral contractility. In particular, terpene mixture (Rowatinex®) might have the most ameliorating effect on ureteral smooth muscle relaxation. Additional studies should be performed to validate this hypothesis and to compare various drugs.

MP1-9 Post turp stricture! Urologist's dilemma - can we prevent them? – a research perspective

SBP Patankar

AMAI Charitable Trust's ACE Hospital & Research Centre
India

Introduction and Objective: Incidence of urethral stricture (US) is common problem after TURP surgery. The formation of US is due to fibrosis of connective tissue rich in collagen type I, due to up regulation of CTFF expression and is closed to scar formation. Usually causes of urethral stricture following TURP are from urological procedures and manipulation of the urethra like surgical instrumentation, catheter trauma, prolonged endoscopic surgeries, etc. Presently various preclinical studies are being carried out using animal models to understand the mechanism and prevention of US. Halofuginone (HF) derived from Chinese herb inhibits periurethral type I collagen deposition and helps in prevention of US in animal model. In this presentation results of exploratory study carried out on the novel herbal formulation for prevention of US post TURP are presented.
Study Methods: The formulation Anuradha oil (AO) was prepared from *Curcuma longa* Rhizomes, *Glycyrrhiza glabra* Rhizomes, *Hamiltonia suaveoleans* Stem bark, *Typha angustifolia* flowers, *Azadirchta indica* leaves, using *Sesamum indicum* Seed oil as base and or pig fat in certain proportion. The preclinical safety and efficacy on various wound size was carried out using OECD guidelines in rodents. A prospective, phase II, randomized, double arm Controlled clinical studies in 128 patients (n = 64) following TURP was conducted after the approval of Institutional Ethics Committee. The treatment group received 2.5 ml of AO while control received vehicle for 3 to 12 weeks. The gland size, resection time, procedure and catheter duration was kept more or less same. Assessment for Dysuria was done by VAS, rate of stricture formation by Endoscopic examination and IPSS score at 3, 6 and 12 Weeks. The results were analyzed by Chi-Square Test using 2013 Graph Pad Software, Inc.
Results: The preclinical studies revealed no untoward reaction after application of AO for 28 days using OECD guidelines in rodents. Clinically there was no statistically significant difference in gland size, resection time, procedure & catheterization duration and IPSS score in control and AO treated group. However, the incidence of dysuria and stricture rate was found to be significantly less at Day 1 ($p < 0.002$), 3 weeks ($p < 0.03$, $p < 0.02$), 6 and 12 weeks ($p < 0.04$ & $p < 0.05$, and $p < 0.04$ & $p < 0.03$) in AO treatment group as compared to control group respectively.
Conclusions: AO showed encouraging results to prevent US in Post TURP patients; however, phase III study in large sample size is needed before final conclusion.

MP1-10 Visual Pattern of MAG-3 renogram: an unreliable witness for ureteric obstruction?

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Introduction: MAG-3 renogram is currently the definitive diagnostic tool for defining ureteric obstruction. Interpretation of the renograms is largely qualitative. We have anecdotally noted patients with unobstructed pattern showing clear clinical evidence of obstruction. We reviewed MAG-3 renogram curves in patients with clinical obstruction to determine objective criteria for obstruction.
Materials and Methods: A list of patients undergoing MAG-3 renogram over an eight year period was generated. From this data, patients with demonstrable obstruction due to pelvi-ureteric junction (PUJ), ureteric stricture, ureteric stones were included. Other than PUJ, patients were included if they were symptomatic (pain, urinary tract infection or deterioration in renal function) and had hydronephrosis or ureteroscopic evidence of obstruction. Patients with duplex systems were excluded. Where the patient had a contralateral normal kidney, this was used as an internal control.

Time in minutes to maximum counts (TTP), time in minutes for the curve to reach half maximum counts (T1/2) and percentage of maximal count remaining at 25 minutes (%25) was recorded. Where a peak or T1/2 were not reached within the duration of the study, TTP was assigned a value of 30 minutes and T1/2 was arbitrarily assigned a value of 60 minutes. Analysis was performed in SPSS using one way ANOVA test.
Results: 45 normal renal units (RU) and 80 RU with evidence of obstruction were included in the study. Despite clinical obstruction 21/80 (26%) had a morphologically unobstructed renogram curve. The mean and 95% confidence intervals (CI) for TTP, T1/2 and residual counts at 25 minutes are shown below.

	Number	Time to peak mean (95% CI)	T 1/2	residual at 25 mins
Normal	45	4.53 (3.8-5.3)	11.0 (9.6-12.4)	17.3 (14.5-20.1)
PUJO	33	16.6 (13.2-20)	46.4 (39.2-53.6)	73.9 (62.4-85.6)
Stricture	29	15.5 (12.0-19.1)	40.9 (33.0-48.8)	61.4 (48.8-74.0)
Stones	18	16.6 (10.1-19.1)	33.4 (23.1-43.6)	54.8 (37.9 -71.8)

When the stones, strictures and PUJ group was compared individually against normal, TTP, T ½ and %25 were all significantly different. However, there was no significant difference against each other.
Conclusion: Although numbers of patients were relatively small, this preliminary study suggests that a delayed time to peak, t1/2 and percentage of counts remaining at 25 minutes may be useful objective indicators of ureteric obstruction. We propose using the lowest obstructed 95% CI TTP > 10, T1/2 > 23 and %25 > 37 to define ureteric obstruction, Larger patient numbers are required to test the hypothesis further.

MP1-11 Calculation of therapeutic effects after transurethral incision in BOO models

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Introduction: Therapies for LUTS are to expand caliber of the prostatic urethra at the expense of deterioration of sexual function such as retrograde ejaculation. Previously, we proposed a method to identify lesions responsible for LUTS through

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processing urethroscopic video image combined with computed flow dynamics (Minim Invasive Ther Allied Technol. 2015; 4:141–7). In this study, we developed a simulation system to assess therapeutic effects on urine flow after TU-incision in BOO models.
Methods: SolidWorks Flow Simulation 2012 (Dassaault Systems SolidWorks Corp.) working on Windows® PC was used for drawing models and calculating flow dynamics. Tracing anatomical characteristic and cystourethroscopic image of BOO, three models of lower urinary tract were prepared; Boo model before incision, one-cut model with midline incision at the dorsal direction and two-cut model with incisions at the oblique position from the midline. Different depth of incision also was prepared. The urine flow in each model was visualized and change of fluid energy through the urethra was calculated.
Results: In urine flow simulation, BOO model showed prominent vortex formation at the prostatic urethra adjacent to median bar. In one-cut model, reduction of the vortex at median bar was observed, however, vortex had remained at the side of the downstream of bladder outlet. In two-cut models, rapid flow appeared at the dorsal side of the prostatic urethra, while vortex was depicted at the ventral side adversely. Calculation of flow dynamic energy showed different pattern of energy loss through the prostatic urethra. One-cut models revealed improvement of energy loss at the proximal part of the prostatic urethra, and two-cut models at the distal part, respectively.
Conclusion: Estimation of urine flow before therapy is feasible using the simulation software. Combination of reconstruction of 3D models of the urethra and the present method would promote system for focal therapy of LUTS to preserve sexual function and to reduce difficulty for urination.

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MP1-12 Incidence of raised serum creatinine in patients admitted with unilateral acute ureteric colic: A cohort study

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Introduction and Objectives: It is often said that unilateral ureteric obstruction should not cause a rise in the serum creatinine of patients with two working kidneys. The aim of our audit was to assess the incidence of raised serum creatinine among patients presenting to our emergency department with unilateral renal or ureteric colic.
Methods: All patients presenting to Whipps Cross Urology department with acute ureteric colic between July 2012 and December 2012 were included in the audit. Patient details, clinical, radiological and pathological data were obtained from our electronic admissions database and hospital case records. Patients with bilateral ureteric calculi, or solitary kidneys were excluded.
Results: 84 Patients were included in the audit. 60 were male, median age at presentation was 44 (range 18–98). 83 patients had their creatinine measured on the day of admission (Median 103; range 57–235), with 51 and 28 having further renal function tests on days two (Median 110; range 57–206) and three (Median 94; range 64–221) respectively. 31/84 patients had an abnormal creatinine on presentation. 11 of these patients had normal creatinine on day two, with 16 patients' creatinine rising on day two. 22 patients still had a raised creatinine on day three.
Conclusions: Over a third of patients with unilateral ureteric colic will have a rise in serum creatinine despite having two healthy kidneys. Reasons for the rise in creatinine may be prerenal due to vomiting, or an inability to tolerate oral fluids; or intra-renal due to use of non-steroidal anti-inflammatory medication. Further analysis of our results is needed to ascertain whether this rise is associated with patient outcomes, but of itself, a rise in serum creatinine is not a sign of an obstructed kidney.

MP1-13 CD8 T Cells Inhibit the Interleukin-15 (IL-15) Induced Cytotoxic Activity of NK and NKT Cells toward Tumour Cells in the Prostate Cancer Microenvironment

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Introduction: The prostate cancer (PCa) microenvironment is highly immunosuppressive and immune effector cells entering this environment are rendered anergic and unable to effect the viability of the tumour cells. We have shown, however that Interleukin-15 (IL-15), unlike IL-2, IL-12 or IL-21, can greatly enhance the expansion of Natural killer (NK) and NK- T cells in a PCa – lymphocyte coculture model and can induce killing of tumour cells within these co-cultures. In this study, we investigated the effects of depleting CD56 positive cells (NK cells) and CD8 positive cells on the effector cell induced PCa cell killing, and the expansion of CD8 and CD56 cells respectively within the lymphocyte–PCa co-cultures.
Methods: Non-adherent lymphocytes were isolated from whole blood, and depleted of either CD56 or CD8 T cells and were then cultured with the prostate cancer cell lines LNCaP or PC3 for 7 days. Effector cell expansion and prostate cancer cell killing were then examined using antibody markers for CD3, CD56 and CD8 T cells, and annexin and propidium iodide staining respectively.
Results: IL-15 expanded NK-cells by upto 255% and CD8 T cells by 33% in PCa-lymphocyte co-cultures ($N=5$, $p<0.05$). NK and NKT cell expansion was not affected by depleting CD8-T-cells and CD8 T cell expansion was not affected by depleting CD56+cells before co-culture. In the presence of IL-15, upto 64% PCa cell death occurred in the lymphocyte co-cultures containing both NK, NKT and CD8-T-cells. When CD56+cells were depleted, no significant PCa cell death occurred: However, when CD8-T-cells were depleted from the lymphocytes before culture with PCa cells, cancer cell killing was enhanced by upto 27% ($n=5$, $p<0.05$) above that seen with the mixed NK, NKT and CD8-PCa cell co-cultures.
Conclusions: IL-15 mediates NK-cells and CD8-T-cell expansion in PCa-lymphocyte co-cultures: This is not affected by removal of CD8 T cells, or CD56+cells respectively. CD56+cell removal does however inhibit prostate cancer cell death in the co-cultures suggesting that NK and NKT cells, but not CD8-T-cells, are responsible for mediating cytotoxicity against tumour cells in the co-cultures. In complete contrast, CD8-T-cell depletion actually enhances prostate cancer cell killing in the lymphocyte cocultures, suggesting that CD8-T-cells may hinder CD56+cell activity. This is important in the context of anticancer immunotherapy indicating that CD8-T-cells may hinder the efficacy of IL-15 activated NK and NKT cells in their ability to kill prostate cancer cells.

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MP1-14 Hypoxia inducible factor 1-alpha (HIF-1α) and Toll-like receptor 4 (TLR4) are overexpressed during kidney ischemia reperfusion injury in a porcine model

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Introduction: Ischemia/reperfusion (I/R) during partial nephrectomy (PN) contributes to acute kidney injury (AKI), which is inaccurately assessed using existent clinical markers of renal function. We evaluated temporal changes in hypoxia inducible factor 1α (HIF-1α) and toll-like receptor 4 (TLR4) expression within kidney tissue and peripheral blood leukocytes (PBL), during I/R in a porcine model of PN.
Patients and Methods: We conducted a non-survival study in 3 adult pigs. Each animal underwent bilateral retroperitoneal renal dissection. The hilum of one kidney was cross-clamped for 180 min followed by 15 min reperfusion. The contralateral unclamped kidney served as a control. Biopsies of the clamped kidney were obtained at time 0 (pre-clamp), every 60 min during the hypoxic phase, and post reperfusion. The control kidney was biopsied once at 180 min. Peripheral blood was sampled at time 0 (pre-clamp), every 30 min during the hypoxic phase, and post reperfusion. HIF-1α and TLR4 expression in kidney tissue and in PBL were analyzed by Western blotting. Hematoxylin and eosin (H&E)-stained biopsy tissues were evaluated histologically.
Results: Expression of HIF-1α in both kidney and PBL was below detection level at time 0, rising to detectable levels after 60 min of hypoxia, and continuing to rise throughout the hypoxic and reperfusion phases. Expression of TLR-4 in kidney and PBL was low at baseline (pre clamp), rising above baseline level after 30–60 min of hypoxia, and remaining high throughout the hypoxic and reperfusion phases. In the control kidney, expression of HIF-1α and TLR-4 remained unchanged from baseline levels. Ischemia-related histologic changes were minimal, consisting of mild tubular dilatation characterstic of AKI only in the cross-clamped kidneys.
Conclusion: In a porcine model of PN, HIF-1α and TLR4 exhibited robust elevation in acute expression only in kidneys subjected to I/R. A parallel expression profile was detectable in circulating blood. Further studies investigating these molecules as potential markers of AKI are underway.

MP1-15 Association of BID SNPs (rs8190315 and rs2072392) and clinical features of benign prostate hyperplasia in Korean population

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Exercise has beneficial effect on cancer apoptosis and benign prostatic hyperplasia (BPH). The BH3 interacting domain death agonist (BID) gene expression is associated with apoptosis or cell proliferation. In this study, we investigated the association between BID single nucleotide polymorphisms (SNPs) and the development, prostate volume, and international prostate symptom score (IPSS) of BPH.

In 222 BPH males and 214 controls, two SNPs in BID [rs8190315 (Ser56Gly), and rs2072392 (As-p106Asp)] were genotyped and analyzed using multiple logistic regression models.

In the result, the genotype and allele frequencies of rs8190315 and rs2072392 were not associated with BPH development or IPSS, however, the allele frequencies [odd ratio (OR) = 1.90, 95% confidence interval (CI) = 1.07–3.41, P = 0.03] and genotype frequencies (in dominant model, OR = 1.94, 95% CI = 1.01–3.74, P = 0.42) of rs8190315, and the genotype frequencies of rs2072392 (in dominant model, OR = 1.94, 95% CI = 1.01–3.74, P = 0.42) were associated with increased prostate volume.

We propose that rs8190315 and rs2072392 of BID may contribute to the disease severity of BPH.

MP1-16 Application of long-acting VLHL PAI-1 during sutureless partial nephrectomy in mice reduces bleeding

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Introduction: PAI-1 prevents lysis of blood clot by inhibiting the urokinase and tPA induced conversion of plasminogen to plasmin. VLHL PAI-1 protein mutant was created to extend half-life over 700 hours. The objective of this paper was to test VLHL PAI-1 effects on bleeding during partial nephrectomy in mice.
Methods: All animals had a left partial nephrectomy after intravenous infusion of saline or tPA. The animals were divided into four groups. Group 1 was infused with saline and kidney was exposed to saline too; Group 2 was infused with saline and kidney was exposed to PAI-1. Group 3 was infused with tPA and kidney was exposed to saline, while Group 4 was infused with tPA and kidney was exposed to PAI-1. Preweighed gauze containing PAI-1 or saline was then applied to the kidney for 30 minutes. The gauze was afterward weighed and blood loss was measured by subtracting the pre-weight of gauze from the final weight.
Results & Conclusion: We have observed a statistically significant ($P \leq 0.05$) reduction of bleeding in PAI-1-treated group in comparison to saline and tPA-treated groups. Based on these results we propose that VLHL PAI-1 can be used therapeutically in limiting the flow of blood from renal wounds.

MP1-17 Development of Robotic Partial Kidney Transplant in a Porcine Model: A Pilot Stud

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Introduction: Currently, there is a discrepancy in the number of kidney transplant donors and recipients. While the kidney has discrete segmental vasculature that can divided as in partial nephrectomy, partial kidney transplant is not a currently used modality. We sought to develop a partial kidney transplant porcine model.
Materials & Methods: Adult 200 lb swine were selected because of similar renal vasculature to humans. Using a robotic approach, the segmental renal vessels to the upper and lower pole were dissected. After systemic heparin was administered, the upper pole vessels were selectively clamped and an upper pole heminephrectomy was performed. The lower pole was reconstructed and the upper pole was autotransplanted to the pelvis after flushing with heparinize saline intracorporally. The internal

iliac vessels were used as donor vessels. Both artery and vein anastomoses were performed in an end-to-end fashion. A calicovesicostomy was performed for the urinary anastomosis. The end point of this pilot study was vascular perfusion of the donor moiety.
Results: A total of 10 non-survival surgeries were performed. Systemic heparinization was not utilized in the first two cases and the donor kidney clotted before the anastomoses were completed. In the final 8 cases with adequate anticoagulation, the donor moiety reperfused after the vascular anastomoses were completed. Mean operative was 4:15 hours and mean vasculature anastomosis time was 40 minutes.
Conclusions: In this pilot study, partial kidney transplant appears to be technically feasible in a porcine model. Future work will investigate post-operative recovery of renal function

MP1-18 Does the Heat Generation by the Thulium (Th: YAG) Laser in the Irrigation Fluid Represent a Risk for the Upper Urinary Tract? An In Vivo Experimental Study

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Introduction: The current experimental study aimed into evaluating the temperature raise of the irrigation fluid caused by the use of the Thulium laser (THL) and Holmium laser in the upper urinary tract (UT) of pigs.
Materials and Methods: An experimental setting was designed for the investigation of differences in the temperature of the irrigation fluid in different flow rates, laser power settings, laser activation times and modes. The experimental configuration included a FlexVue (COOK Medical, Limerick, Ireland) single use flexible ureteroscope and an optic fiber of 273 nm of Thulium (Revolix 200, Lisa laser products OHG, Katlenburg-Lindau, Germany) laser system. A thermocouple inserted through a ureteral catheter was placed to the FlexVue in the renal pelvis of the pig. An additional thermocouple was placed next to the renal pelvis of the pig after open preparation of the porcine kidney. Irrigation was achieved with either the irrigation vessels placed 1 m above the level of the pig or with the use of an irrigation pump. Temperature measurements were obtained with different laser settings (10, 20, 30 and 40 W) under continuous mode and irrigation flow settings of continuous and pumped flow with 30 and 60 compressions per minute.
Results: The table shows the increases in temperature (oC) between the baseline measurements and the last measurements after 3 minutes of laser activation. Power 10W 20W 30W 40W Normal flow Internal 0.5 2.9 4.3 10.5 External 0 0 2.5 2.5 30 compressions flow Internal 0 0 3.5 9.2 External 0 0 0.5 1.2 60 compressions flow Internal 0 0 1.9 8.7 External 0 0 0 0.8 The higher flow provided by the pump system minimizes the increase of temperature within the renal pelvis regardless of the laser power used. The external temperature increase is lower in comparison to the increase inside the renal pelvis. The internal temperature could increase up to 10.5 oC from an initial value of 23 oC. Thus, the temperature increase did not achieve temperatures represent a risk for the renal tissue.
Conclusion: The THL in continuous mode with power settings up to 40W with flow rates used in the clinical practice seemed to result in temperature increases which do not represent a risk for the renal tissue.

MP1-19 Multi-institutional development and validation of the RARP Score for training and assessment

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Introduction and Objectives: Robot assisted surgical training and assessment are critical in assuring optimal outcomes. This study aims to:1-Develop and validate a checklist-based training and assessment tool (RARP Score); 2-Evaluate learning curves(LCs) of RARP.
Methods: This multi-institutional, observational, prospective study used HFMEA (Healthcare Failure-Mode and Effect Analysis) to identify high-risk, critical steps of RARP. A, focus-group of specialists was consulted to develop and content validate the RARP Score. 15 trainees performed RARP, assessed by mentors. Results were analysed relative to RARP experience to examine LCs for each step. A plateau above ''Score 4'' was indicative of competence.
Results: 5 surgeons were observed for 42 console hours to map RARP. HFMEA identified 84 failure modes and 46 potential causes with ''Hazard-score'' ≥8. Content validation by experts (US, UK, Europe) created the RARP Score- 17 stages, 41 steps. This was acceptable, feasible with educational impact.15 trainees were assessed for 8 months in 426 RARP cases (Range 4–79). All steps were attempted. Most cases were T stage 2 (40.3%), N stage 0 (59.9%) ''Intermediate'' D'Amico risk (36.1%).

LCs demonstrated plateaus for Anterior Bladder-Neck Transection (16 cases), Posterior Bladder-Neck Transection (18 cases), Posterior Dissection (9 cases), Dissection of Prostatic Pedicle and Seminal Vesicles (15 cases) and Anastomosis (17 cases). For other steps, LCs did not plateau during data collection (e.g. Expose Prostatic Apex and Endopelvic Fascia; 31 cases, Stitching and Division of Dorsal Venous Plexus; 32 cases).
Conclusions: RARP Score based on HFMEA, identified critical hazardous steps of RARP and assessed and evaluated surgeons. LCs demonstrate experience necessary to reach competence in essential technical skills to protect patient safety.

MP1-20 Crowd-sourcing assessment of surgeon dissection of renal artery and vein during robotic partial nephrectomy: A novel approach for quantitative assessment of surgical performance.

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Introduction: We sought to describe a methodology of *crowdsourcing* for obtaining quantitative performance ratings of surgeons performing procedures, specifically during the renal artery and vein dissection of robotic partial nephrectomy (RPN). We sought to compare assessment of technical performance obtained from the crowd sourcers to those of surgical content experts (CE). Our hypothesis is that the *crowd* can score performances of renal hilar dissection comparably to surgical CE using a validated robotic surgery assessment tool, as well as a novel renal artery dissection-specific skills question.
Methods: A group of robotic surgeons (n = 5) ranging from resident to attending physician submitted a total of 14 video clips

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of RPN during hilar dissection from time of renal vein exposure to renal artery isolation. These videos were rated by both crowd and CE for technical skills performance using the Global Evaluative Assessment of Robotic Skills (GEARS). We additionally obtained a 5-point Likert scale rating of a novel renal artery dissection question.

To establish inter-rater reliability, experts completed a training module that allowed them to compare their scores to the average CE score on a set of videos that were previously assessed.

A minimum of 3 CE and 30 Amazon Mechanical Turk crowdworkers evaluated each video with the GEARS scale. We evaluated inter-rater reliability of experts using a two-way intraclass correlation coefficient. We used linear mixed effects models to derive an average crowd and CE rating for each video clip, and summarizing associations with Pearson correlation coefficients and linear regression models. We examined surgeon-level GEARS scores by averaging scores.

Results: Within 13 days we received ratings on all videos from the 3 CE and within 11.5 hours we received 548 GEARS ratings from crowdworkers. Even though CE were exposed to a training module, internal-consistency across videos of CE GEARS ratings remained low (ICC = 0.38). Despite this, we found that crowdworker GEARS ratings of videos were highly correlated with CE ratings at both the video-level ($R = 0.82$, $p < 0.001$) and surgeon level ($R = 0.84$, $p < 0.001$, meaning there was agreement between CE and the crowdworkers. Similarly, crowdworker ratings of the renal artery dissection were highly correlated with expert assessments ($R = 0.83$, $p < 0.001$) for the unique surgery-specific assessment question.

Conclusions: We conclude that crowdsourced assessment of quantitative performance ratings may be a suitable alternative to surgical experts ratings. This would provide a rapid, scalable solution to triage technical skills and assessment among large groups of surgeons.

MP1-21 Urine Aquaporin-1 and Perilipin-2: Can Novel Urine Markers Modify Biopsy Algorithms for Small Renal Masses?

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Introduction: Clinical management of small renal masses (stage T1a smaller than 4 cm) varies. Among patients undergoing nephrectomy, 13–28% are found to have benign pathology. Improvement is needed in differentiating benign from malignant masses, preventing overtreatment, and preserving renal function. Urine aquaporin-1 and perilipin-2 have recently been identified as sensitive and specific biomarkers for clear cell and papillary renal cell carcinoma. This investigation developed algorithms for evaluating a small renal mass using both biomarkers and renal mass biopsy (RMB).

Materials and Methods: Preoperative urine aquaporin-1 and perilipin-2 were obtained from 57 patients with SRMs ≤ 4 cm. Retrospective comparisons of marker concentrations and surgical pathology facilitated calculation of marker cut-off values that maximized either sensitivity or specificity for detecting clear cell or papillary renal cell carcinoma. We assessed the markers' ability to direct patients into a treatment arm or RMB arm.

Results: We propose algorithms utilizing either urine aquaporin-1, perilipin-2, or both aquaporin-1 and perilipin-2 combined. Urine aquaporin-1 and perilipin-2 possessed either 100% sensitivity or 100% specificity for detecting clear cell and papillary renal cell carcinoma dependent on cut-off values. Combining both markers into a single process, we devised an algorithm with 100% sensitivity and specificity for all clear cell and papillary renal cell tumors. This could result in a 74% reduced biopsy rate in systems that biopsy all SRMs, and prevention of unnecessary nephrectomies in patients with a benign mass.

Conclusions: Urine aquaporin-1 and perilipin-2 possessed high sensitivity and specificity for detecting clear cell and papillary renal cell carcinoma. Combination of the two markers achieved 100% sensitivity and specificity. These markers may be used with RMB to prevent unnecessary treatment of benign, SRMs.

MP1-22 Influence of the platelet rich plasma injections on the urethral anastomosis in mini pigs

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Introduction: The stricture of the vesicourethral anastomosis after radical prostatectomy (RPE) detected in 7.5 – 14% cases (Wang R., Choi W.W., 2012), about 17% patients have incontinence after surgery, especially in T3 prostate cancer (PCa) and in the cases, when the tumor involved prostate apex. These problems connection with neurovascular disorders in this area after surgery. Regenerative technology such as platelet rich plasma (PRP) can improve the trophic properties of the tissue. The aim was to study the influence of the PRP injections on morphological changers of the urethral anastomosis in the mini pigs.

Materials and Methods: Experimental study included 10 mini pigs (weight 14–16 kg), under i.v. anesthesia complete circular urethral dissection in membranous part of the urethra were performed, than running Biosin 4–0 urethral suture were done: 5 cases of the urethral restoration were performed with periurethral injections PRP 3 ml in the anastomosis area, that were prepared intraoprativaly in accordance standart protocol. The platelet rate were verified by laboratory analysis and were 3.5 times larger than in the peripheral blood of the experimental animals. 3 month later reoperation with excision of the areas of the urethral anastomosis were performed and morphological changers were assessed.

Results: Normal urethral epithelium of the pigs contained of the 8–10 layers. There were some capillaries and middle size collagen bands in the submucosal layer. The specimens of urethral anastomosis 3 month after surgery contained epithelial acantosis, chronic inflammation with lymphoid follicles, irregular capillaries and higher fibrosis with sick bands. The specimens of the urethral anastomosis 3 month after surgery with periurethral PRP injections had small difference from normal urethral tissue, the epithelium had same layers and only poor fibrosis submucosal layer was identified.

Conclusion: The using of PRP injections surrounding tissue of the vesicourethral anastomosis improves the trophic of this area, reduce the sclerotic changers and inflammation after surgery. This technic may use for improvment the functional results of the RPE in patients with locally advanced PCa or salvage prostatectomy, especially after radiation.

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MP1-23 Boiling histotripsy ablation of in vivo spontaneous renal carcinoma in the Eker rat

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Introduction: Boiling histotripsy (BH) is an experimental, non-invasive, focused ultrasound (FUS) technology distinct from cavitation cloud histotripsy. BH uses milliseconds-long FUS pulses at low-duty cycle to non-thermally mechanically ablate tissue. We aimed to evaluate *in vivo* BH ablation of spontaneous renal tumors in the Eker rat hereditary renal carcinoma (RCC) model.
Methods: Eker rats (n = 14) were monitored for *de novo* RCCs with serial US. When tumors were ≥8 mm, rats underwent extracorporeal BH using a 1.5 MHz transducer (n = 10, duty cycle 1%, 10 ms pulses, ~30 kW/cm^2) or a sham procedure (n = 4) under US guidance. Treatments targeted ~50% of the largest RCC with a margin of normal kidney. BH treated rats were euthanized at 1 (n = 3), 4 (n = 3) or 48 (n = 4) hrs and sham subjects 48 hrs. The temporal effect of BH treatment (pre-treatment vs. 0.25, 1, 4, 24 and 48 hrs) on circulating plasma cytokines and alterations in intra-renal cytokines were assessed using a 10 cytokine multiplex assay. Kidneys and adjacent structures were grossly inspected and kidneys were collected and processed for histologic assessment.
Results: BH treatment was feasible in all subjects, producing hypoechoic regions within the targeted volume on US consistent with BH treatment effect. Grossly, regions of homogenized tumor tissue were apparent with evidence of intra-parenchymal hemorrhage. Histologically, BH produced focally homogenized tumor tissue containing acellular debris sharply demarcated between treated and untreated. BH treatment was associated with significantly increased mean relative-plasma TNF-α vs. sham treatment at 0.25, 4 and 24 hrs (1.8, 4.6, 3.1-fold vs 0.7, 1.6, 1.4-fold change, respectively, all $p < 0.05$). Forty-eight hrs after treatment, intra-renal concentrations of IL-8 (227.7 vs. 113.2 pg/mL, $p = 0.04$), IL-10 (13.0 vs. 7.6 pg/mL, $p = 0.02$), and IFN-γ (2.1 vs. 6.9 pg/mL, $p = 0.04$)) were significantly different, while IL-6 (94.7 vs. 13.7, $p = 0.09$) approached significant differences between BH and SHAM kidneys, respectively. Complications included gross hematuria (n = 2), perinephric hematoma (n = 1) and hemoperitoneum (n = 2) in the first 2 rats after which the delivered pulses were decreased from 30 to 10 pulses/focus without further hemoperitoneum
Conclusions: These data represent the first application of histotripsy to spontaneously occurring tumors and suggest that BH ablation of *in situ* RCC is feasible. Further studies are ongoing to optimize renal BH parameters and to further characterize the systemic response to treatment. Work supported by NIH K01EB015745, R01CA154451, and NSBRI through NASA-NCC-9-58.

MP1-24 Endoscopic surgery under saline irrigation for abdominal and retroperitoneal space in porcine model

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Introduction: Endoscopic surgeries for urinary tracts are performed under irrigation with single access point. Applying irrigation system to wider abdominal or retroperitoneal cavity would add some benefits for laparoscopic surgeries such as utilization of resectoscope for the liver (Shimada T et al. MITAT 2014, PMID: 25541380) or simultaneous ultrasonographic observation (Igarashi T et al. JLAST 22: 70–75, 2012), and avoidance of some adverse effects of gas insufflation. We developed an irrigating device and apparatus designed for managing organs in the abdominal and retroperitoneal space, and tested feasibility and reproducibility of surgical modalities in a porcine model.
Methods: Seven pigs underwent surgical procedures under general anesthesia with muscle relaxant agent. A 30-cm extracorporeal cistern was placed over a 5-cm abdominal incision. Warm saline was used to irrigate the abdominal or retroperitoneal cavity, and was drained via a suction tube placed near the surgical field. Conventional forceps for laparoscopic and open surgery and bipolar electrode, sealing devices were used. Body weight was measured before and after surgery in five pigs.
Results: One-way flow of irrigant ensured laparoscopic vision by rinsing blood from the surgical field. Through a retroperitoneal approach, cystoprostatectomy was successfully performed in four pigs, nephrectomy in two, renal excision in two, and partial nephrectomy in two, with the assistance of simultaneous ultrasonographic monitoring. Through a transperitoneal approach, liver excision and hemostasis with a bipolar sealing device was performed in three pigs and excision of the bladder pedicle in one. Body weight increased by a median of 2.1% (range, 1.2–4.4%) of initial weight 3–5 h after irrigation.
Conclusions: Surgery under irrigation is feasible and practical when performed though a small abdominal incision. Further research was required to reduce the number and size of incision.

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MP2 - BASIC RESEARCH 2: UROLITHIASIS

MP2-1 Stone Retropulsion with the Use of a Recently In Introduced Holmium Laser System.

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Introduction: Holmium laser devices represent the mainstay of laser lithotripsy in the urinary tract. A holmium laser device (Rhapsody H-30, COOK Medical, Limerick, Ireland) was recently introduced. We evaluate the impact of different laser settings in stone retropulsion in a vitro experiment.
Materials and Methods: An experimental setting containing a glass tube of approximately 5 mm in diameter was set at a horizontal position in a water bath filled with normal saline. A Plaster of Paris stone with weight of 0.07 gr was inserted in the tube and a laser fiber (265 nm) was placed in contact with the stone. A high speed slow motion camera (Olympus i-speed 2, Olympus Corp, Hamburg, Germany) was set perpendicularly to

the glass tube setting in order to provide measurements on the movement of the stone during the activation of the laser system. The laser was activated with a variety of settings with both long and short pulse duration. A total energy of 100 Joules was delivered to the stone. After each measurement the tube was cleared from the stone and fragments and another stone was placed. Three measurements were performed for each setting. Mean values of the displacement of the stone were calculated.
Results: The table shows the results of the measurements.

Power, Joule	Frequency, Hz	Mean Displacement, mm (Pulse duration Long=L, Short=S)
0.5	5Hz	1.18 ± 0.23 (L)
		2.07 ± 0.13 (S)
0.5	10	0.54 ± 0.49(L)
		1.94 ± 1.38(S)
0.5	20	0.59 ± 0.41(L)
		1.35 ± 0.26(S)
1	10	1.94 ± 1.38(L)
		2.03 ± 0.66(S)
1	20	1.77 ± 0.71(L)
		2.2 ± 1.98(S)
2	5	2.51 ± 0.77(L)
		3.53 ± 1.43(S)
3	5	2.54 ± 1.2(L)
		2.55 ± 1.61(S)

The activation of the laser with short pulse resulted in further displacement of the stone. Lower frequency with the same power setting seemed to result in further stone retropulsion. Higher power with the same frequency setting resulted in further displacement of the stone.
Conclusion: The laser setting with Phaspody H-30 for minimal stone retropulsion would include high frequency, low power and long pulse duration.

MP2-2 Evaluation of Contemporary Holmium Laser Fibers for Performance Characteristics

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Introduction: Several Holmium:Yag laser fibers are currently commercially available. We compared Holmium laser fibers with different core sizes for performance characteristics including energy transmission, fiber failure, fiber flexibility and core diameter.
Materials and Methods: Single use fibers from Cook, Boston Scientific, and Storz were tested in small (200, 272/273 micron), medium (365 micron) and large (550 and 940/1000 micron) core sizes. Fibers were tested in straight and deflected configurations. All fibers were evaluated for flexibility, true fiber diameter, energy transmission, and fiber failure. For energy transmission fibers were tested (strait and bent) at a pulse energy of 1 J and a frequency of 10 hz for 30 sec. Energy transmission was measured with a Ophir Star Link USB Sensor (Ophir, North Logan, USA). All testes were performed on a 30W Holmium Laser (Cook Medical, Blooomington, USA)
Results: For the small core fibers Storz, Cook Optilite and Smart Sync had the smallest core diameter ($p < 0.005$). In the large core fiber group (540, 940/1000 micron) Cook Optilite and Boston Scientific Accumax showed the smallest diameter. Among the small core fibers Storz and Cook Smart Sync showed a significant higher deflection, whereas in the 550 micron group Boston Scientific Accumax and Cook Smart Sync were the most flexible fibers. In the large and medium core groups, the Boston Scientific Accumax showed superior energy transmission ($p = 0.007$ and $p = 0.001$, respectively) whereas in the small core group there was no significant difference between the fibers, except for 272/3 micron (Storz was inferior compared to the competitors ($P < 0.0005$)). For fiber failure Storz, Cook Optilite and BS AccuTrac completed all testing without failing (200 micron, bending radius < 0.5 cm). In the 365 micron group Cook Optilite showed superior results, whereas in the large fiber diameter group (550 micron) the Boston Scientific AccuMax was superior.
Conclusions: Performance characteristics differ significantly between different laser fiber diameters and manufacturers, and fiber choice should depend on specific surgical requirements.

MP2-3 Do we really need to Wear Proper Eye Protection When Using Holmium: YAG Laser during Endourological Procedures? Results from an ex-vivo Animal Model Pig Eyes

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Purpose: We sought to evaluate the effect of Ho:YAG laser exposure on ex-vivo pig eyes and to test the protective action of different glasses in preventing eye lesions in case of accident.
Materials and Methods: We pointed the tip of a Ho:YAG laser fiber from different distances (0,3,5,8,10 and 20 cm, respectively) towards the center of the pupil of the pig eye. The Ho:YAG laser was activated for one or five seconds at three different settings (0.5J-20 Hz, 1J-10 Hz and 2J-10 Hz, respectively). The experiment was repeated using laser safety glasses and eyeglasses. A total of 78 pig eyes were used. The effects of the Ho:YAG laser on pig eyes were assessed by histopathology. Comparable laser emission experiments were performed on thermal paper at different distances using different pulse energies.
Results: Ho:YAG laser-induced corneal lesions were observed in unprotected eyes, ranging from superficial burning lesions to full-thickness necrotic areas, and were directly related to pulse energy and time of exposure and inversely related to the distance from the eye. When the laser was placed 5 cm or farther, no corneal damage was observed regardless of the laser setting and the time of exposure. Similar distance/energy level relationships were observed on thermal paper. No damage was observed to the lens or the retina in any of the Ho-YAG laser-treated eyes, or in any of the eyes protected by laser safety and eyeglasses.
Conclusions: Ho:YAG lasers can cause damage especially when set to high energy, but only to the cornea, from close distances (0–5 cm) and in the absence of eye protection. Eyeglasses are equally effective in preventing laser damage as laser safety glasses. Since the risk of eye injury is minimal, the need to wear laser safety glasses when using the Ho:YAG laser should be left at the discretion of each surgeon.

MP2-4 Factors which influence intraluminal temperature during Ho:YAG-Laser exposure at an in-vitro URS

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Introduction: The Ho:YAG-Laser is categorized as a potentially dangerous lithotripsy device (DIN: Class 4) for perforation which is mainly caused by the photonic energy the laser emits. Long time complications like ureteral strictures seem to be directed by thermal and mechanical injury. In this study different energy settings (a) are being investigated, a DJ (double J stent) is placed beside the laser to simulate a therapy of a forgotten stent with reduction of the lumen (b) due to the volume exploitation of the DJ, and direct contact between the laser fiber and the DJ in the ureter (c) is simulated during laser exposure.
Materials and Methods: We used the Ho:YAG-laser (Vera Pulse™, Coherent, Santa Clara USA) with a 365 μm diameter laser fiber. The settings of the laser were 0.6 J and 1 J pulse energy with a frequency of 5 Hz. The experimental setup was closely aligned with the clinical situation. The tip of the thermometer was attached inside the catheter through a puncture. The laser fiber was guided by means of a rigid URS video device (11.5 Ch). We had four different settings for a), b) and c) during the measurement: 1) Distance of 0.5 cm between the laser and the thermometer; without irrigation, 2) Distance of 0.5 cm between the laser and the thermometer; with irrigation, 3) Distance of 1 cm between the laser and the thermometer; without irrigation, 4) Distance of 1 cm between the laser and the thermometer; with irrigation.
Results: The temperature in an empty ureter rises approximately by 5° C, when the laser energy is increased from 0.6 J to 1 J. When a DJ is inserted in the artificial ureter there is surprisingly almost no difference in the maximum temperature between the lower energy level (0.6 J) and the high energy level (1 J). However the time needed to reach the maximum temperature is noticibly less when using high energy levels. The reduction in volume based on the placement of the DJ leads to a higher maximum temperature for the low energy setting. The third setting with direct laser fiber contact with the DJ produces the highest temperatures of up to 55° C. We think there must be a melting or burning of the DJ which leads to a temperature rise. Bubble formation was a sign of heating in the ureter in every setting without irrigation. A temperature fall off with increasing distance between the laser fiber and the thermometer is noticable when measuring without irrigation.
Conclusion: There is no relevant heating with irrigation. Direct contact between the laser fiber and the DJ seems to evoke additional heating because of melting or underwater burning of the DJ. The maximum temperatures reached whithout irrigation are limited to a relatively small volume since there is a noticable temperature fall of when increasing the distance between the laser fiber and the thermometer.

MP2-5 In vitro study of laser energy safety over guidewires: what do you need to know about lasers and guidewires?

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Introduction: In Urology, laser is used in endoscopic procedures such as benign prostatic hyperplasia treatment, fragmentation of renal calculi and ablation of urothelial tumors. Also in these procedures, guidewires are used frequently.
Purpose: This study aims to determine the safety of using laser holmium and thulium on metal guidewires with PTFE coating (PTFE), nitinol with hydrophilic coating (Hydrophilic) and nitinol with hydrophilic listed coating (Zebra).
Material and Methods: There were applied frequency combinations (5, 10 and 12 Hz) and energy per pulse (0.5, 1.5 and 2.6J) for holmium laser on three kinds of guidewires in two experiments (50J vs 100J of total energy). For the thulium laser there were used three power levels (5, 35, and 70W) with a total energy of 100J applied in the guidewires. After each of laser application, it was recorded the degree of damage (0 to 5) of the guidewire.
Results: The holmium laser showed a higher degree of injury to guidewires with higher values of total energy used ($p = 0.036$), whereas the laser thulium showed a higher degree of lesion guidewires with higher values power applied ($p = 0.051$). The most resistant guidewire to holmium laser energy was Zebra, followed by PTFE and hydrophilic ($p < 0.001$). With the thulium laser the PTFE guidewire appears to be the most resistant and the hydrophilic the most easy injured.
Discussion and Conclusion: Both lasers revealed harmful effect on the three guidewires. There was an association between the degree of injury and the amount of holmium energy laser and thulium power laser used. The guidewire Zebra proved to be the safest using holmium laser and the PTFE guidewire the most resistant to laser thulium. Further studies are necessary to confirm these results.

MP2-6 Development and Implementation of an Impacted Ureteral Stone Model to Test Guidewire Efficacy

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Introduction and Objectives: A tightly impacted stone can be a formidable obstacle for either stone treatment or decompression of an infected obstructed collecting system. The first step in either procedure is guidewire passage beyond the impacted stone and the optimal guidewire for this purpose has not been previously determined. The purpose of this study was to compare the efficacy between commercially available guidewires on an in-vitro impacted ureteral stone model.
Methods: An impacted ureteral stone model was created to replicate actual ureteral diameter, length, and tortuosity. A 7 mm calcium oxalate monohydrate stone was tightly impacted to resist fluid passage to 300 mmHg to simulate an impacted stone. A 6 Fr ureteral catheter was positioned 2 cm below the stone and used for passage of different lubricious and conventional guidewires. In a randomized single-blinded fashion, five urologists tested the model using 0.038 inch versions of the angle-tipped Hiwire (Cook), angle-tipped Glidewire (Terumo), angle-tipped ZIPwire (Boston Scientific), straight-tipped Roadrunner hydrophilic PC (Cook), and the straight-tipped Standard Teflon-coated wire (Cook). Additionally, a separate benchtop trial of the force required to pass the impacted stone was measured for each wire. Outcomes included force required for wire passage, time for wire passage (sec), number of attempts, force required to pass each wire, and attending blinded subjective preference ratings. An Independent-Samples Kruskal-Wallis test was used for statistical analysis, with $p < 0.05$ considered significant.
Results: The attending urologists' preference order for wires was Glidewire, ZIPwire, Hiwire, Standard Teflon coated wire, and the Roadrunner in this impacted stone model. The mean pound force (lbf) for wire passage (with comparison to Glidewire) was; Glidewire = 0.025, ZIPwire (0.036; $p = 0.08$), Hiwire (0.2; $p = 0.01$), Standard wire (0.6; $p < 0.01$), and the Roadrunner did

not pass. Pairwise comparisons showed significant differences between the ZIPwire and Hiwire ($p = 0.01$), and ZIPwire vs. standard wire ($p < .01$). The mean time (sec) to pass the stone (with comparison to Glidewire) was; Glidewire (12.9 sec), ZIPwire (14.5 sec; $p = 0.6$) Hiwire (23.5 sec; $p < 0.01$), standard Teflon coated guidewire (23.3 sec; $p = < 0.01$) and the Roadrunner did not pass. The mean number of attempts to pass each wire was Glidewire (1.9), ZIPwire (2.5), Hiwire (3.5), Standard teflon coated (4.1), and the Roadrunner did not pass (trend not significant).

Conclusions: The guidewire employed may have a significant effect upon the ease of passage beyond a tightly impacted ureteral stone. This may have significant implications upon operative time, surgical ease, and safety.

MP2-7 Can we provide low intrarenal pressures with good irrigation flow by decreasing the size of ureteral access sheaths?

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Purpose: Flexible ureterorenoscopy (F-URS) plays a major role in treatment of kidney stones. The use of ureteral access sheaths (UAS) is an important contributor to the success of F-URS. In this study, we aimed to evaluate the intrarenal pressure and irrigation flow variance for different flexible ureteroscopes while using the same UAS.

Materials and Methods: Eight different flexible ureteroscopes are tested with 5 different UAS on an artificial bench model to measure intrarenal pressures and irrigation flow.

Irrigation at 60 cmH_2O pressure was performed, the pressure and the irrigation flow amount are recorded with different states of the operator channel; free, with the laser fiber (272 μm) and with the nitinol basket (1.9Fr) inside.

Results: The highest pressure recorded was 46.68 cmH_2O with Wolf Boa and 9.5/11.5Fr Cook Medical UAS. All the ureteroscopes that fit inside 10/12Fr Coloplast ReTrace provided pressures below 40 cmH_2O. The inner diameter of 10/12Fr Rocamed Bi-Flex is actually 11Fr, so intrarenal pressures are lower and irrigation flow is higher. With 11/13Fr Boston Scientific Navigator HD and 12/14Fr Coloplast ReTrace, the pressures are very low. The irrigation flow measurements are in concordance with pressure measurements.

Conclusion: The ureteroscope sizes diminished with advancements in technology and this provides more maneuverability. Small-sized endoscopes can be used with small-sized access sheaths with the advantage of lower ureteral lesion rates, but the disadvantage of high intrarenal pressures must be kept in mind. The conventional access sheath size should be diminished and 10/12Fr UAS should be the first choice globally.

MP2-8 The optimal time of ureteric stent removal following holmium laser lithotripsy

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The aim of my study is to evaluate the optimum time for the removal of ureteric stent following laser lithotripsy from a retrospective study involved a random selection of (400) cases from a total number of nearly (1800) cases, who had been operated in the same urology department which has a very well experience in the field of stones disease treatment.

Methods: This is a retrospective study of four hundreds patients who underwent laser lithotripsy for either a ureteric or a renal stone at Al Zahra Hospital, Sharjah, United Arab Emirates in the period between 2001 to 2012.

All these patients were treated in the hospital and the surgeries were all done by one Surgeon.

400 cases were selected randomly and were analysed to see how many patients returned to the hospital before the normal follow up appointment of one week. This includes patients' who had earlier clinic visit, patients who had a history of ureteric stricture or congenital abnormalities of the kidney or ureter were exluded. Patients who had previous experience of ureteric stents were also excluded. [9] I used the USSQ (ureteral stent symptom questionnaire) to identify the pieces of information that I have collected from the medical records of the hospital My idea of modifying the USSQ is to make it easy, simple to the patients by covering only three inquiries, first if the patient still have the stent or it was removed when he came back early to the hospital, and second is how many days was the stent removed after the surgery & the third what was the main reason to come back early to the hospital. The results of the questionnaire were going in the same direction of my follow up data collected from the medical records.

Conclusions: By comparing the results of the two groups, I found that the group 1 where the ureteric stent was removed in the first 3 days is associated with a higher unplanned re- attendance rate.

I suggest that the early removal of the ureteric stent in first 3 days is not recommended at all according the results of this study I recommend removing the stent at 4 days or greater.

MP2-9 Anti-urolithiatic and Reno-protective effect of herbal formulation in laboratory animals using Ethylene glycol model

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Introduction: Urolithiasis is the third common disorder in urology. It is a metabolic disorder and the incidence is increasing day by day worldwide. In such conditions medical management is intricate. The drugs like Thiazides, Allopurinol, diurectics, etc. though prescribed cannot be used for long term. We have developed a novel Herbal formulation Herbmed plus (HP). The safety profiles of HP in laboratory animals were found to be safe up to 2000 mg/kg dose. The present study was designed to investigate anti-urolithiatic and reno-protective effect of HP in Laboratory animals.

Materials and Method: Urolithiasis was induced in Albino Wistar rats by addition of 0.75% Ethylene glycol (EG) in drinking water for 28 days. The animals were equally divided into four groups. HP was derived from bark of *Crataeva nurvala* Buch- ham, stem and roots of *Musa paradisica* Linn, *Achyranthes aspera* Linn whole plant and *Hordeum vulgare* Linn seeds. Oral potassium magnesium citrate (PMC) was used as standard. HP was given 90 mg/kg dose while PMC was given 210 mg/kg dose. Various parameters were used including 24 hours urine analysis, hematology, biochemistry, tissue enzymes and histopathology to assess the activity.

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Results: There was no mortality/ adverse effects observed in any study groups for 28 days. There was no statistical difference in hematological parameters in all the groups. In biochemistry there was significant decrease in SGPT and SGOT levels in HP treated group ($p < 0.02$) in comparison with DC which indicated decreased liver injury. There was no statistical difference in levels of BUN, Total proteins & ALP in all the study groups. There was highly statistical decrease in urinary calcium and phosphorous in HP group when compared to DC ($p < 0.04$ & $p < 0.001$) and PMC ($p < 0.009$). There was highly statistical increase in urinary citrate, magnesium and potassium in HP group in comparison to DC ($p < 0.001$, $p < 0.03$ & $p < 0.006$) and PMC ($p < 0.001$) respectively. Also, decrease in oxalate crystals in urine was observed.

Tissue enzymes like LDH from liver & kidney, GGT and ALP from liver showed highly significant decrease in HP group in comparison to DC & PMC ($p < 0.002$, $p < 0.001$, $p < 0.04$ & $p < 0.03$ respectively). Thus, indicating recovery of damaged tissue.

Histopathological findings showed 81.43% damage in DC group, while 58.63% and 27.22% recovery in HP & PMC treated groups respectively in comparison to DC.

Conclusions: HP showed significant anti-urolithiatic as well as reno-protective activity with low dose consumption than standard in laboratory animal model.

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MP2-10 A Comparison of Five Methods for the Extraction of Protein from Kidney Stones

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Introduction and Objectives: The crystalline nature of kidney stones is well established, but little is known about the proteins that make up the stone matrix. Stones produced by patients suffering from certain diseases may be studied to identify markers of disease or to uncover mechanisms that explain why these diseases predispose to stone formation. We compared five methods (three already published) for extracting proteins from kidney stone matrices.

Methods: A significant stone sample of calcium oxalate and uric acid, each from a single patient was equally divided and subjected to the 5 different methodologies: 1) Stone Lysis Buffer (SLB) (0.06 M Tris HCl, 10% glycerol, 5% β-mercaptoethanol, 2% SDS), 2) Demineralization Extraction Buffer (DEB) (0.2 M EDTA, 1% β-mercaptoethanol), 3) 1X Loading Buffer (LB) (4X Laemmli Sample Buffer, Bio-Rad diluted 3:1), 4) SLB + EDTA (50% SLB, 40% 0.5M EDTA), and 5) LB + EDTA (25% 4X LB, 40% 0.5M EDTA). Methods 4 and 5 were rationally designed from previous studies. All buffers were supplemented with protease inhibitors. Extracts were then submitted to SDS-PAGE and stained with Coomassie blue to visualize extracted proteins.

Results: In general, all the prior methods described in previous studies were capable of extracting matrix proteins. However, for calcium oxalate stones, the method designed by us (method 4, SLB + EDTA) provided the best protein extraction. It also was the best method that showed low amount of smearing on the gel, suggesting that it minimized protein degradation.

For uric acid stones (UA) SLB (method 1) provided the best protein extraction. LB (method 3) provided the overall best extraction but smeared significantly on SDS-PAGE, likely due to protein degradation. None of the EDTA containing buffers were able to extract any proteins, presumably due to non-presence of divalent cations for EDTA to chelate, thereby reducing effectiveness of stone solubilization/extraction.

Conclusions: For stones known to be primarily CaOx, the SLB + EDTA extraction method proved to be the most effective, providing a good balance between protein extraction and protein degradation. For stones, known not to contain calcium or stones of unknown composition, the SLB extraction method provided the best extraction of proteins. EDTA-containing buffers were ineffective at extracting proteins from non-calcium containing stones. LB, however, provided the overall greatest protein extraction. Therefore, for studies in which protein degradation is of less significance (e.g. those utilizing mass spectrometry) the LB extraction method may prove the most effective.

MP2-11 The role of protein modelling in predicting disease severity of cystinuria

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Introduction: Patients with cystinuria are clinically diverse. We have found 57 different mutations in 74 UK cystinuria patients. Most are missense mutations and it is unclear what effect they have on protein function and how this translates to phenotype. We used computational protein modelling to determine which mutations in our cohort cause significant protein dysfunction and to predict urinary and clinical phenotype from the mutations identified.

Material and Methods: The protein structures encoded by the two genes SLC3A1 and SLC7A9 were modelled using the Phyre2 webserver. The likely effect of pathogenic mutations on the structure and function of the two proteins were predicted. Mutations in SLC7A9 were assigned a score based on our model; 1 = low/low-medium effect, 2 = high /high-medium effect and an overall severity score was calculated for each patient based on the sum of each individual mutation. The urinary and clinical phenotype of patients with a low and high severity score were compared using the Mann-U Whitney test.

Results: 20 missense mutations in SLC3A1 and 13 mutations in SLC7A9 were modelled. In SLC3A1 the majority of mutations altered protein stability or folding. The majority of mutations in SLC7A9 affected functional residues while some altered the stability of the protein in the membrane.

Patients with a higher severity score ($S = 4$) had higher levels of urinary arginine (323 mM/MC SE 35.16 vs 154.4 mM/MC SE 53.81, $p = 0.0277$) and ornithine (130.6 mM/MC SE 14.04 vs 93.69 mM/MC SE 14.48, $p = 0.0482$) than those with a low score ($S = 3$). There was no statistically significant difference for cystine (187.7 mM/MC SE 17.39 vs 175.5 mM/MC SE 22.24, $p = 0.2545$) or lysine (684.4 mM/MC SE 46.72 vs 587.5 mM/MC SE 83.06, $p = 0.2887$).

Patients with a higher severity score had more stone episodes per year (0.5455 SE 0.1575 vs 0.1250 SE 0.067, $p = 0.0451$), a younger age at disease presentation (15.5 IQR 14 to 32.5 vs 29 IQR 14 to 40.5, $p = 0.2081$), and had more interventions per year (0.6250 IQR 0 to 1.125 vs 0.1250 IQR 0 to 0.5000, $p = 0.1569$) although the latter two were not statistically significant.

Conclusion: We were able to model the transporter protein and suggest how mutations in SLC3A1 and SLC7A9 can lead to disease presentation in Cystinuria. This novel approach has given us insight into how the different missense mutations may cause

the range of phenotypes seen in Cystinuria and is a step closer to a personalised approach to the management of these patients.

MP2-12 Inhibition of Nucleation and Growth of Cystine Crystals in Urine

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United States

Introduction: Nucleation and growth of cystine crystals in urine are dependent upon the concentration of urinary cysteine and pH. Cystine crystals include two primary components: microcrystallites formed of cystine, a sulfur bonded cysteine dimer, and proteins. Recent human and mouse studies have identified selenium (Se) in cystine stones as seleno-cysteine. Could seleno-cysteine alter the crystalline structure and inhibit the nucleation and growth of cystine microcrystals? The aim of this study was to model the atomic structure and free energy of crystallization of cystine with and without the Introduction of seleno-cysteine.
Materials and Methods: Super-computer computation of the cohesive energy of molecular solids is performed using density functional theory (DFT), starting only with knowledge of the atoms contained within the cystine crystal. Changes in cohesive energy of the cystine crystals are computed when Se is substituted (seleno-cysteine) for one of the sulfur (S) atoms in a cystine molecule. The predicted structure for a free-standing cystine molecule is compared to the predicted structure for cystine when one of the S atoms is replaced by Se. The changes in cohesive energy are used to estimate the changes in free energy needed for crystallization in urine.
Results: Computational modeling is illustrated in the figure demonstrating changes in the structure of hexagonal L-cystine microcrystals when seleno-cysteine is introduced. Note the spiral structure within a single unit cell. Comparing the two free-standing molecules, the Se atom changes the bond angles substantially: the dihedral angle decreases by 13^0 (161.4^0 to 151.7^0). The bond lengths also change: the Se-S bond is about 5% longer than the S-S bond. The changes in bond angles and lengths will give rise to local stresses and strains within the crystal near the Se atom. This increases the free energy of the cystine crystal; thereby decreasing the tendency for cystine to crystallize in urine.
Conclusion: Using DFT and advanced computational modeling, alterations of the atomic structure of the cystine molecule by substituting Se for S introduces distortion into the cystine molecule, with potential for increased solubility and reduced precipitation. This model could serve as a blueprint for future pharmacologic drug development.

MP2-13 Biochemical composition and microanalysis of renal, pouch and bladder stones: a comparative study

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Introduction: The exact underlying mechanism of urinary stones formation is unknown. The biochemical composition of stones could be determined by many analytical techniques. However, the micro-composition of organ-specific urinary stones has not yet been evaluated.
Objectives: To compare between the biochemical structure and the micro-composition of organ-specific urinary stones.
Materials and Methods: A total of 53 urinary stones were collected from adult patients and included in the study (20 renal, 14 pouch and 19 bladder). The stones were subjected to the biochemical analysis using Fourier Transform Infrared Spectroscopy (FT-IR) and the elemental microanalysis (22 elements/stone) by using Inductively Coupled Plasma Optical Emission Spectrometry (ICP-OES). Statistical analysis was performed using SPSS software using one way ANOVA test
Results: The biochemical composition is shown in the table. Most of the renal and bladder stones were urate, while the pouch stone were mixed and struvite minerals. There was significant concentration difference of 13 elements (Al, B, Ba, Ca, Cu, K, Mg, Na, Ni P, S, Sr and Zinc) between bladder and pouch stones. All these elements were significantly higher in pouch stones except B, Cu and S. There was significant concentration difference of 10 elements (Al, As, B, Ca, Co, Cr, Fe, Mn, Ni and Se) between bladder and renal stones. All elements were significantly high in renal stones except B. there was significant concentration difference between renal and pouch stones in 9 elements (As, Ba, K, Mg, Na, Ni, P Se and Sr). There was significant concentration difference of 15 elements between bladder, pouch and renal stones. Bladder stones had the highest level of B and Cu. Pouch stones had highest levels of Al, Ba, Ca, K, Mg, Na, P, Sr, and Zn. Renal stones had the highest level of As, Fe, Ni and Se.

Stone source	Biochemical composition					Total
	Urate	oxalate	struvite	mixed	cystine	
Bladder stones	12	4	0	3	0	19
Pouch stones	2	0	5	7	0	14
Renal stones	10	4	0	5	1	20

Conclusion: There were many heavy and trace elements with different concentration within the structure of the urinary stones. The micro-elemental composition of the stones varies according to formation site and types of stone. The routine stone analysis is not sufficient to determine the stone micro-structure and additional analytical techniques are needed. Further studies on stone micro-structure could have an impact on future stones management strategy.

MP2-14 Classification of ureteroscopic stone patients by micro CT study of stones: Correlation with papillary pathology

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Introduction: Recent endoscopic and biopsy studies with stone formers have shown that the papillary pathologies differ among stone forming types. Specifically, idiopathic calcium oxalate (CaOx) stone formers who retain stones during their early growth on Randall's plaque (RP) have no crystal deposition in papillary collecting ducts (CD). In contrast, both apatite and brushite stones are associated with plugging of CD with apatite. The aim of this study was to see if stones formers undergoing ureteroscopy could be classified in such a way that visual scores of papillary pathology might correlate with stone forming type.

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Methods: Patients undergoing ureteroscopy were consented. During the procedure, papillary pathology was graded for degree of mineral plugging, pitting of the papilla tip, and flattening of papilla shape. All stones removed were scanned individually using a Skyscan 1172 Micro CT System using voxel sizes of 2–10 μm, which allowed identification of mineral types and 3D reconstruction of stone structure. Stones found to have a concave surface containing apatite—typically showing lumens of calcified tubules and/or vessels, indicating interstitial RP—were classed as stones that had been attached to RP. Stones having rod-like apatite projections, ranging in diameter from 150–700 μm, were classed as having formed on plugs. Stones that showed no sign of early retention mechanism were classed simply as CaP (apatite or brushite) or CaOx.
Results: In 25 patients, 10 were classed as having primarily RP stones (RPSF), 7 as CaP stone formers (CaPSF), and 8 as having mostly CaOx stones that were not classifiable as either RP or plug type (non-RPSF). RPSF averaged 24 stones removed, with 85% of the stones having formed on RP, and only 0.4% on plugs. CaPSF formed 23 stones on average, with 10% on RP and 16% on ductal plugs. Non-RPSF yielded 16 stones on average, with 10% on RP and 21% on ductal plugs. In renal units graded for papillary pathology, CaPSF ($n = 6$) showed significantly worse scoring than did RPSF ($n = 3$; 3.1 ± 1.4 v 1.8 ± 0.5, $P = 0.04$). In 4 papillae graded for non-RPSF, scores averaged 2.5 ± 2.3, not different from either RP or CaP.
Conclusion: These data support the concept that CaOx stones forming on RP are not associated with mineral deposition in tubular lumens.

MP2-15 Applying Quantitative Micro-Raman Spectroscopy to Detect Urine Crystals and Micro Stones before and after the ESWL

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Introduction: With the improvement of the stone management, less stone fragments could be collected after minimal invasive management, especially after the extracoporeal shock wave lithotripsy (ESWL). But stone analysis still highly involves the further metabolic study and stone management policy. We tried to apply the micro-Raman spectroscopy (MRS) to quantitatively detect the urine crystals and the micro stones in the urine before and after the ESWL to make the correlation between them.
Material and Methods: In the patients who received the ESWL, urine was collected as one shot in the morning and another one shot (within 1 hour) before and after the ESWL on the same day. Then we compared the result of the urine crystal types in the Pre-ESWL urine samples to the subsequently expelled micro urine stones in the Post-ESWL urine samples. All the urine crystal and micro urine stones were analyzed by the MRS-based method.
Results: 40 patients with subsequent stone expelling were included in the study. Post-ESWL urine samples from these patients were analyzed, including 26 single composition samples, 9 binary composition samples, and 5 ternary composition samples. There are six COM/COD samples, two COM/Uric acid samples, and one COM/HAP sample. Pre-ESWL urine crystal analysis revealed 86% correlation with the analysis of stone composition. In addition, the crystal type results showed a high correlation, larger than 80%, between one shot morning Pre-ESWL urine samples and the post-ESWL urine samples.
Conclusion: This research successfully applied the quantitative MRS-based analysis technique, from bench to bedside, to measure the micro stone components in urine after the ESWL and proved high correlation between urine crystal in the one shot morning urine before the ESWL and porst-ESWL micro stones.

MP2-16 Mineral Gradients in Human Renal Papillae with and without Randall's Plaque

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Introduction: Mineralization occurs at multiple locations in the human body, not all of which is pathologic. Biofilters in a human body, such as the glomerulus in the renal cortex and the structural components of the renal papilla contain local gradients in pressure, ionic strength and pH. These gradients allow optimal filtration mechanisms to eliminate metabolic wastes and buffer blood. Shifts in these gradients occur with age and other non-pathologic environmental factors, and are stimuli for mineral formations within the organic matrices of renal papillae. The purpose of this study is to illustrate the spatial distribution of mineral density (MD, g/cc) in normal renal papilla and correlate it with Randall's plaque (RP).
Materials and Methods: Normal human papillae and those with RP, as viewed through an endoscope, were biopsied. These papillae were imaged *ex vivo* using high resolution microCT with a spatial resolution of < 1 μm. Segmentation of tubules of varying diameters and mineral gradients was performed on respective high resolution μCT tomograms using post-analysis software.
Results: Normal papillae have mineralization, albeit at a lower density and volume fraction (VF) than RP. Both normal and pathologic papillae illustrate spatial gradients in MD and VF (see table). Representative normal papilla illustrate MD gradients from tip to the proximal papilla (upper panels; $MD_{tip} = 0.13$, $MD_{proximal} = 0.2$). In papillae with RP, MD gradients were observed in the lumen, lumen wall, and interstitium (lower panels; $MD_{lumen} = 0.9$, $MD_{lumen\ wall} = 0.7$, $MD_{interstitium} = 0.6$ at the tip).
Conclusion: Mineralization that is undetectable by endoscopy or standard clinical computerized tomography is appreciated by high resolution x-ray microscopy. *Ex vivo* microCT illustrates for the first time that normal papillae mineralize; it may be a normal phenomenon. Higher mineral density and volume fraction of mineralization in the interstitium can lead to pathologic mineralization and subsequent calculi formation.

MP2-17 Serum uric acid is useless as a marker for hyperuricosuria: Results from a University Teaching Hospital.

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Introduction: The 'European Association of Urology' have recently published guidelines on the 'Metabolic Evaluation and Recurrence Prevention for Urinary Stone Patients'. One recommendation is that all patients with urinary stones should undergo a basic evaluation including serum uric acid analysis. The aim of

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this study was to examine whether an increase in serum uric acid was a good predictor of an increase in 24 hour urinary uric acid excretion.
Materials and Methods: The 'Medical Stones Clinic' at our University Teaching Hospital accepts referrals from a wide catchment area for high risk patients who require detailed metabolic evaluation and has been running for 25 years (since 1990). Prospective data from 352 'high risk kidney stone patients' over the last 4 years was analysed looking at serum serum uric acid concentration and 24 hour urinary uric acid excretion.
Results: Of the 352 patients 227(64%) were male and 125(36%) female. 5/227(2%) male patients had an increase in serum uric acid. Of these none had in increase in 24 hour urinary uric acid excretion (defined as > 4.8 mmol). However, in men with normal serum uric acid 36 had an increase in 24 hour urinary uric acid excretion. 17/125(14%) female patients had an increase in serum uric acid and only four had an increase in 24 hour urinary uric acid excretion (defined as > 4.5 mmol). In women with normal serum uric acid 8 had an increase in 24 hour urinary uric acid excretion.

Overall, of the 352 patients analyzed, 22(6%) had an increase in serum uric acid level and only 4(1%) had an increase in the 24-hour urinary uric acid excretion. Conversely, 44 patients with a normal serum uric acid had an increase in 24 hour urinary uric acid excretion.
Conclusion: Our study clearly demonstrates that there is no correlation between an increase in serum uric acid concentration and increased 24 hour urinary uric acid excretion, even for high risk patients. Based on our results, routine measurement of serum uric acid does not add much clinical value and might therefore be an unnecessary part of the basic evaluation.

MP2-18 Oxalate Concentrations in Human Gastrointestinal Fluid

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Introduction: Multiple factors influence the delivery of oxalate from the intestine into the bloodstream and finally into the urine including the amount of oxalate in a food, the conformation of the oxalate within the intestine (insoluble or soluble), cations in the intestinal lumen, the fecal microbiome, and intestinal and renal transport processes. Animal models have shown that oxalate is both absorbed and secreted within the intestine. Gastrointestinal oxalate absorption has been demonstrated in humans but there is limited data regarding secretion and the conformation of oxalate within the human alimentary tract. The objective of this study was to measure the amount and conformation of oxalate in the stomach and small intestine of adults undergoing upper G.I. endoscopy.
Materials and Methods: Eleven adults undergoing endoscopy of the stomach or both the stomach and the small bowel participated in this study. None of the patients had end stage renal disease. All fasted for a minimum of 8 hours. Aspirates from fluid and material within these areas were obtained. Oxalate was measured by ion chromatography. The limit of detection of this technique is 1.5 micro-molar. A determination of the soluble and insoluble components of oxalate was made by centrifugation of the sample and subsequent acidification of the resultant pellet.
Results: Only one of four gastric samples had detectable oxalate, 4.9 micro-molar of soluble oxalate. There was no insoluble oxalate detected in the gastric samples. In contrast, eight of eleven small intestinal samples contained oxalate, soluble oxalate detected ranged from 1.7 to 191 micro-molar and insoluble oxalate detected ranged from 56 to 3243 micro-molar. Ratio of insoluble to soluble oxalate was calculated in a subset of 3 small intestinal samples and insoluble oxalate was noted to be 36–52x greater than the amount of soluble oxalate.
Conclusions: These results demonstrate that there is no measurable oxalate secretion in the stomach in the fasted state in the majority of individuals who do not have end stage renal disease. Alternatively in the small intestine, there is some degree of oxalate activity in the majority of subjects without end stage renal disease in the fasted state. In those with measurable oxalate in the intestine there is a wide range of oxalate concentrations reported suggesting that there is inter-individual variability of the mechanisms responsible for oxalate transport processes. Further studies are warranted including in patients with renal dysfunction.

MP2-19 Preliminary Evidence Suggests Periureteral Botulinum Toxin Type A Injection Improves Ureteral Stone Passage in the Porcine Model

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Purpose: We evaluated the use of periureteral injection of botulinum toxin type A (Botox®, BTX-A) to facilitate passage of ureteral stones in a porcine model. We believe that reducing detrusor muscle tone around the intramural ureter may facilitate passage of ureteral stones through the ureterovesical junction (UVJ).
Methods and Materials: With complete Institutional Animal Care and Use Committee (IACUC) approval, artificial stones (BegoStone plus) were placed by retrograde ureteroscopy into the proximal ureter using fluoroscopic guidance using an in vivo porcine model. Six animals underwent periureteral BTX-A injection 30 U / mL to 3 locations around the ureteral orifice and 6 animals were in the control group undergoing periureteral injection of normal saline.
Results: There was a significant decrease in time to stone passage in the BTX-A group compared to the control group, 2.6 ± 1.3 vs. 6.8 ± 2.9 days respectively ($p = 0.018$). None of the animals had evidence of vesicoureteral reflux (VUR) post-procedure ($N = 0/12$).
Conclusions: Preliminary results suggest periureteral injection of BTX-A facilitates ureteral stone passage in this model. BTX-A may provide a simple, office-based endoscopic treatment option for ureteral stones. Further studies would be necessary to evaluate its efficacy in humans as compared to traditional medical expulsive therapy.

MP2-20 Metformin induces production of mediators promoting formation of kidney stones in mouse kidney tissue

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Introduction: Metformin is increasingly being used in patients with conditions other than diabetes mellitus, including malignancies. It inhibits PI3-Kinase pathway and other mediators in the cellular metabolism pathway, the effects on tissues when used in non-diabetic patients is not known. We sought to study the effect of metformin on the mouse kidney.
Methods: We treated a total of 6 wild type mice, with either control diet (CD), metformin (Met) for 4 weeks either in the diet or drinking water. The average weight gained was not different between groups. All animals survived the treatment phase with no illness or death. The animals were then sacrificed and the kidneys harvested. The tissue was lysed, and analyzed for expression of proteins by western blot for super-oxide-1 (SOD-1) and tissue injury molecule – 1 (TIM-1).
Results: Mice treated with Met expressed higher levels of SOD-1 and TIM-1 compared to control. The effect of metformin on the kidney was confirmed by a significantly decreased level of phospho-AKT with equal loading controls between samples.
Conclusion: Metformin affects the expression of SOD in the kidney tissue. Further studies are warranted in this regard to study the impact of elevated SOD-1 and TIM-1 including nephrolithiasis in patients on metformin.

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MP2-21 New Insights into the Genesis and Adherence of Urinary Calculi Using High Resolution Microscopy

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Introduction: It has been postulated that Randall's plaque (RP) is the nidus for calculus formation. What keeps the RP or the early ''calculus'' adherent to the papilla and allow it to grow? The purpose of this study is to provide insights by identifying mineral density variation and ultrastructure of the anchor between the calculus and parenchyma.
Materials and Methods: 500 μm biopsies from non-stone forming and stone forming human papillae were obtained from patients and were immediately imaged using high resolution x-ray microscopy with a spatial resolution < 1 μm. Post processing software was used to analyze tomograms to identify mineral density of the lumen, anchor and papillary interstitium.
Results: A representative figure illustrates a 3-dimensional digital reconstruction (20x, far left) and virtual sections (40x, right two images) with a representative calculus emerging from a uriniferous tubule (yellow arrows). Multiple mineral gradients from higher to lower mineral densities (40X images) were observed. The mineral density of the approximately 200 μm formed ''calclulus'' (1.3 g/cc, yellow arrow) was similar to that of the luminal wall (1.2 g/cc, white arrows). The 20–50 μm wide ''anchor'' (black arrow) attaching the formed ''calculus'' to the luminal wall illustrates similar heterogeneous mineral density (yellow arrows, 40X) as identified by a mixture of higher and lower x-ray attenuation regions. The rough surface morphology of the formed mineral/calculus (red arrow, 20X) was distinctly different than the mineralized structures within the luminal walls and the interstitium (red star) of the papilla (white arrows, 40X).
Conclusion: High resolution x-ray microscopy illustrates the anchor (attachment site) of urinary calculus emerging from the mineralized wall of a plaque-ridden uriniferous tubule. This anchor appears to be an integral part of the mineralized luminal wall. These results provide new insights and an appreciation for the genesis and attachment mechanism(s) of the calculus to the parenchyma.

MP2-22 Discovery of Inappropriately Alkaline Microenvironments within Dilated Bellini Ducts: Innitial Evidence for Geterogeneous Acidification within the Kidney

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Introduction: One proposed hypothesis for the rise in calcium phosphate (CaP) stones over the past several decades is focal damage to renal acidification mechanisms within ducts of Bellini that subsequently raise pH and favor CaP formation. These injured ducts are manifested grossly via dilation and tubular plugging with CaP deposits. To date, this theory has remained speculative with no prior research analyzing regional pH within the working human kidney. Recently, a pH microsensor (PreSens, Regensburg, Germany), only 140 microns wide, was introduced with the potential to perform such measurements. We sought to study this hypothesis among patients with short bowel syndrome or ileostomy as these patients have known evidence of diffuse CaP plugging despite acidic bulk urine that should not allow for CaP crystallization.
Materials and Methods: After IRB approval, four patients with acidic urine secondary to short gut syndrome/ileostomy undergoing percutaneous nephrolithotomy gave consent for study participation. After stone removal, dilated ducts were identified and the pH microsensor was used to record pH measurements within them. In each instance, probes were preconditioned and tested for validity in a variety of physiologic buffers. The microsensor was then held within the lumen of the duct until a stable reading was obtained. In each case, measurements were also obtained from the bladder and saline irrigant used during the procedure for comparison.
Results: All patients had evidence of markedly acidic bulk urine (pH 4.83 – 5.58). Saline irrigant was acidic as well (pH 5.17 – 5.75). All patients had evidence of Bellini duct plugging and dilation and at least one measurement was performed from a representative dilated duct in all cases. Stable ductal pH measurements were successfully achieved in all 4 patients. In all instances (9 ducts total), a profound difference in pH was observed between the dilated duct and bulk urine with the intraductal pH reading being at least 1 log higher.
Conclusions: This is the first documented, direct evidence for inappropriately alkaline microenvironments within injured/dilated ducts of Bellini in a functioning human kidney. These findings strengthen the hypothesis that renal tubular injury has a role in the increasing prevalence of CaP stone formation via urinary alkalization.

MP2-23 Heterogeneous nucleation drives the formation of non-calcium urinary stones in humans and Drosophila melanogaster

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Introduction: Heterogeneous nucleation is the process whereby calcium hydroxyapatite is thought to serve as a nidus for nephrolithiasis formation. This nucleation process is not traditionally held to be important for most non-calcium stones. Xanthine stones have been described as being composed entirely of xanthine. We applied a *Drosophila* model for xanthinuria renal stones to test the hypothesis that heterogeneous nucleation may be equally important for non-calcium based nephrolithiasis.
Materials and Methods: We utilized the GAL4-UAS targeted gene knockdown system to create a single gene knockdown model for xanthinuria in *Drosophila melanogaster*. Fly stone samples were collected and compared to human stones collected from a patient with xanthinuria type I utilizing inductively coupled plasma optical emission spectroscopy (ICP-OES) as well as Fourier transform infrared spectroscopy (FTIR). Fly stones were analyzed for the presence of hydroxyapatite utilizing a bisphosphonate stain as well as synchrotron radiation based analyses.
Results: Upon xanthine dehydrogenase (*Xdh*) inhibition, flies formed significant tubule stones, confirming a similar phenotype compared to human xanthinuria type I. FTIR confirmed the presence of xanthinuria in both human and fly stones. ICP-OES demonstrated that in fly stones, calcium, magnesium, and zinc were present in a 4:2:1 ratio ($p < 0.01$) measured by percent of total composition. This ratio was preserved in human xanthine stones. The presence of hydroxyapatite in fly stones was confirmed with a bisphosphonate dye stain as well as micro X-ray absorption near edge spectroscopy (μXANES) (Figure 1).
Conclusion: The significant presence of calcium compared to other divalent cations in both fly and human xanthine stones supports the idea that ''pure'' non-calcium kidney stones are not homogeneous in nature as previously reported in the literature. Hydroxyapatite's ubiquitous presence in fly stones supports the idea that heterogeneous nucleation plays an important, previously unrecognized role in the initiation of not just calcium based nephrolithiasis, but potentially all kidney stones. The implication of this finding is that disrupting a universal pathway leading to renal stone formation of all types may be a therapeutic strategy for the treatment of nephrolithiasis.

MP2-24 Quantitative evaluation of heavy metals and trace elements in urinary calculi: a multicenter study

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Introduction: The exact etiology of the urinary stones is unkown. Heavy metals and trace elements have been reported to affect the process of crystallization during urinary stones formation. The aim of this study was to evaluate the concentrations of heavy and trace elements in the urinary stones from diverse geographical regions by using Inductively Coupled Plasma-Optical Emission Spectrometry (ICP-OES).
Material and methods: A total of 1173 urinary stones were collected from adult patients living in different geographical regions (10 intercontinental countries). The stones were retrieved either after spontaneous passage or surgical intervention. The stones were washed, dried, weighed then underwent quantitative (mg/kg) multi-elemental microanalysis of heavy and trace elements (22 elements/stone) by using Inductively Coupled Plasma Optical Emission Spectrometry (ICP-OES) technique. Data were analyzed by using SPSS software.
Results: There were 792 (67.4%) stones from males and 382 (32.6%) from females. The mean age was 45.25 ± 13.6 years. The mineralogical types of stones were; 607 Ca oxalate (51.7%), 312 Ca phosphate (26.6%) and 254 uric acid stones (21.7%). ICP-OES analysis of the stone showed significant concentration differences in 17 elements; Aluminum (Al), Arsenic (As), Boron (B), Barium (Ba), Calcium (Ca), Cadmium (Cd), Cobalt (Co), Chromium (Cr), iron (Fe), Magnesium (Mg), Nickel (Ni), Phosphate (P), Lead (Pb), Sulphur (S), Selenium (Se), Strontium (Sr) and Zinc (Zn) among the examined stones. Ca phosphate stones had highest levels of 9 elements (B, Ba, Ca, Co, Mg, P, Pb, Sr, Zn). Ca oxalate stones had high concentration of 4 elements (As, Cr, Fe and Ni), while Urates had high Sulphur concentration. Both Ca Oxalate and phosphate stones had the highest level of 3 elements (Al, Cd, Se). There were significant differences in all heavy metal types and concentrations in stones that were explicit to the country of origin.
Conclusion: Many heavy and trace elements are present in significant but different concentrations in the urinary stones from diverse geographical regions. This may imply involvement of heavy metals in the underlying lithogenesis of urinary stones. Ca oxalate and phosphate contained most of heavy metals. The source of heavy and trace elements could be due to either environmental pollution or soil contamination. These results deserve further evaluation study to determine the exact relationship between these elements and stone formation.

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MP3 - BASIC RESEARCH 3: UROLITHIASIS

MP3-1 Demographics and comorbidities of 5000 patients undergoing PCNL from a national database

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On behalf of the BAUS section of Endourology
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Introduction: Percutaneous nephrolithotomy (PCNL) is an established way of treating larger kidney stones. This study aims to identify changes in the population of patients undergoing PCNL in the UK in the last 5 years using a national registry, and to define the comorbidities of this population in the UK in 2014.
Materials and Methods: The PCNL registry has been established by BAUS and now contains details of 5285 cases, mostly performed between 2010-5. The registry was analysed for trends in patient demographics. The data from 2014 when detailed comorbidity data started to be collected, which comprises 2042 cases, was also analysed to get detailed information about the health of the patients undergoing PCNL.
Results: Between 2010 and 2015 there has been no significant change in the gender of patients undergoing PCNL, with the % of

males varying between 50% and 58% for any given year. The median age of patients remains unchanged, at 56, with the age of the oldest patient undergoing surgery for any given year also stable.

2% of patients were underweight, 34% overweight, 25% obese and 16% very obese.

Data on Charlson comorbidities and age-adjusted co-morbidities are presented in Table 1.

Table 1: Charlson score and age adjusted Charlson Score (%)

Charlson Score	% of 2014 patients with that score	Age-related Charlson Score (%)
0	50.6	24
1	13.3	13.8
2	10.9	15.6
3	4	11.1
4	3	7.4
5	1	5.5
6	0.7	2.9
7	0.2	2
8	0.2	0.8
9	0	0.2
10	0	0.2
11		0.1
12		0.1
Not recorded	16	16.2

Conclusions: The BAUS PCNL registry is a unique resource for UK surgeons, providing vital information on current practice, and trends representing evolving PCNL practices. Our data shows that there has not been any change in the age of patients we operate on, but 41% are obese or very obese. Overall our patients have few comorbidities as measured by the Charlson comorbidity index, with only 11% of those recorded having a score of 3 or more, and only 14% of those recorded having an age adjusted score of 5 or more. This database will provide a useful baseline to measure changes in our practice in the future.

MP3-2 The Changing Epidemiology and Prevalence of Renal tract Calculi in England - A Ten-year analysis

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Introduction: Kidney stones have long been the subject of epidemiological interest, with their prevalence increasing in the United States and Europe. With stone-related emergency attendances and performed procedures ever increasing, significant economic, workforce burdens and widespread lengthy waiting-lists now exist.

Implications for NHS workforce planning, and the provision of centralised stone services are therefore becoming increasingly relevant. Detailed knowledge of geographical trends, stone 'hot-spots' and patient demographics are highly relevant to the stone surgeon..

Methods: By using specially requested Hospital Episode Statistics (HES) datasets, Health and Social Care Information Centre (HSCIC) data access request service and recent Census data - we extracted the numbers of kidney stones occurring in England from 2003–2014 broken down by age-bracket, gender, ethnicity, Index of Multiple Deprivation (IMD) decile and local authority district of residence.

Results: HES data analysis revealed an increase in the annual prevalence rate of kidney stones in England from 11 cases per 10,000 in 2003/04, to 16 per 10,000 in 2013/14; with prevalence in men and women increasing from 15 and 6 per 10,000 to 21 & 11 per 10,000 respectively. Examining age brackets; the highest prevalence is now in those aged 65 years and older, with this age-group overtaking those aged 45–64. A significant increase in prevalence amongst those aged 85 + has also been shown.

Geographical variation also exists with the highest numbers of stones occurring in Bedford and Southend-on-Sea (prevalence of 30–40 per 10,000 2013/14). Whilst the lowest prevalence was in Rutland in the east Midlands, (8 per 10,000). A striking increase in prevalence in stones is noted in those from mixed, Asian and black-ethnic minorities, which may reflect net immigration or changing population demographics.

Conclusions: To our knowledge, our work provides the most in-depth analysis of demographic and geographical variation in stone prevalence in England to date. We confirm the increasing prevalence of kidney stones in England, and demonstrate this prevalence is varied depending on; area of residence, age and ethnicity. Scope for further epidemiological analysis exists. The striking increasing prevalence observed in the older population provides challenges in treatment given the likelihood of multiple medical co-morbidities. Targeted stone prevention strategies could be tailored and targeted to specific demographic groups based on this local and regional knowledge.

MP3-3 Prevalence of urolithiasis in China: a large-scale population and urinary ultrasound-based, cross-sectional survey

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Introduction: During the past 30 years, the prevalence and incidence of urolithiasis has been rising in westernized societies. However, only few studies on the epidemiology of urolithiasis are available on nation-wide surveys. China represents one of the more rapidly developing countries in the world. However, there is not a national epidemiology survey of urolithiasis in such large country, which has about 1.3 billion population and accounting for about one-fifth of the world's population. From May 2013 through July 2014, we conducted a cross-sectional study to provide current and reliable data on the prevalence of urolithiasis and associated metabolic risk factors in the adult population in China.

Methods: A multi-stage random cluster sampling was used to investigate the prevalence and associated factors of urolithiasis among adult population in 7 provinces/Municipalities in China. In total, 11 urban communities and 19 rural villages were selected. All residents 18 years of age or older in the selected cluster were under went urinary ultrasound graph, interview of questionnaire, urine analysis and blood examinations. Urolithiasis diagnostic criteria: spots more than 4 mm in diameter was found in urinary system screen.

Results: A total of 12,570 subjects were sampled and invited to participate the study. The mean age was 48.78 (SD15.34), ranged from 18 to 95 years old. 9,310 (74.07%) persons completed the urinary ultrasound graph. Among 9,310 participates, 472 didn't complete questionnaires, 101 persons' blood samples were not eligible. 8,737 (3,556 men and 5,181 women) participates were

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included in the final analysis. The total response rate was 69.51% (8,737/12,570). The crude prevalence of urolithiasis in China was 6.83%. Standarized to Chinese population in 2010, the overall prevalence of urolithiasis was 6.3%. The prevalence of urolithiasis was significantly higher in men than in women (8.13% VS 5.94%; P < 0.001), higher in rural area than in urban area (8.56% VS 5.00%; P < 0.001). The prevalence increased with age (Ptrend < 0.001). Multivariate logistic regression analyses showed that living in rural area, male sex, aging, increasing consumption of meat, consumption of double-stewed soup, family history of urolithiasis, abnormal fasting blood-glucose, abnormal plasma urine acid and abnormal total cholesterol were all significantly associated with an increased risk of urolithiasis. Tea, increasing consumption of legumes and vinegar was a protectable factor of urolithiasis.
Conclusion: Urolithiasis is prevalent in adult population of China. The prevalence was significant higher in male, rural areas, and southern China. Upper urinary stones and stones less than 10 mm in diameter are the most urolithiasis.

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MP3-4 Is urinary lithogenic risk increasing over the time in patients with urolithiasis?

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Introduction: Urolithiasis is common and is becoming more prevalent in Korea. This study assessed the clinical and metabolic features with time in patients with urolithiasis.
Materials and Methods: We performed a retrospective analysis of 4300 patients at our stone clinic. Urinary metabolic and stone analysis data were available in 1673 (38.9%) and 826 (19.2%) patients, respectively. Patients were categorized into 2 groups according to the date of initial diagnosis: group 1 (1994–2004, n = 1789) and group 2 (2005–2015, n = 2511).
Result: Group 2 had significantly higher mean BMI, older age than group 1 (each $P < 0.001$). Difference in gender distribution was not significant. Prevalence of renal stone and incidentally detected stones were more common in group 2 than group 1 (each $P < 0.001$) Group 2 had significantly lower urinary sodium, calcium, oxalate excretion than group 1 (all $P < 0.001$). The incidence of urinary metabolic abnormalities, hypernatriuria ($P < 0.001$), hyperuricosuria ($P = 0.018$), hypercalciuria ($P < 0.001$), hyperoxaluria ($P < 0.001$) were more common in group 1 than in group 2. Stone analysis revealed that uric acid stones have been increased with time (10.7% in group 1 vs. 19.7% in group 2, $P = 0.004$).
Conclusion: Incidentally detected uric acid renal stone has become more prevalent in recent years. Increasing incidence of urolithiasis in Korea might have been due to the frequent health check-up imaging rather than increasing urinary lithogenic risk.

MP3-5 Do stones still kill? An analysis of death from stone disease 1999 to 2013 in England and Wales

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Introduction: Urolithiasis has an estimated lifetime risk of 12% in males and 6% in females. It is not perceived as a life-threatening pathology. Admissions with urinary calculi contribute to 0.5% of all inpatient hospital stays. The number of deaths attributable to urolithiasis has yet to be identified.
Materials & Methods: Office of National Statistics Data relating to causes of death from urolithiasis, coded as ICD-10 N20-23, was collated and analysed for the 15 year period from 1999–2013 in England and Wales. This data is sub-categorised into anatomical location of calculi, age and gender.
Results: 1954 deaths were attributed to urolithiasis from 1999–2013 (mean 130.3 deaths/year). Of which, 141 were attributed to ureteric stones (mean 9.4 deaths/year). Calculi of the kidney and ureter accounted for 91% of all deaths secondary to urolithiasis; lower urinary tract (bladder or urethra) calculi contributed to only 7.9% of deaths.

Data revealed an overall increasing trend in mortality from urolithiasis over this 15 year period with an increase of 3.8 deaths/year based on a linear trend (R^2 0.65).

Overall, the number of deaths in females was significantly higher than in males, (ratio 1.5:1, P < 0.001); kidney and ureteric calculi causing death had a female preponderance (1.7:1, F: M); whereas calculi of the lower urinary tract in males was more common (1:2.2, M: F).
Conclusions: Stone disease still causes death in the 21st century in England and Wales. The trend to increased deaths must be placed in the context of an increasing incidence of stone disease in the UK.

MP3-6 Are upper tract calculi more common in more deprived areas?

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Introduction: It has been thought that there is an increased risk of upper tract calculus formation in more affluent populations. This association has been linked to a more indulgent diet and lifestyle in this group. Since this assertion was first made over 20 years ago, the relationship between diet, lifestyle and affluence has changed. In light of this change, we have re-examined the assumption that more affluent populations have a higher rate of upper tract calculus formation.
Patients: Our study population comprised of all individuals, aged 16 and above, living within a geographical area served by our hospital. From within this population, individuals with an admission coded with a diagnosis of calculus of kidney or calculus of ureter between December 2009 and December 2013 were identified.
Methods: Each individual's address lay within a Lower Layer Super Output Area (LSOA, a group of contiguous postcodes with a consistent population size). Within our geographical area of interest, each LSOA had an associated Index of Multiple Deprivation (IMD). This a measure of multiple types of deprivation experienced by people living in an area. It is calculated for each LSOA in England and is published by the Department for Communities and Local Government.

IMD was dichotomised as being above or below the 50th centile. Poisson regression was used to quantify the incidence rate ratio for these groups, and so identify the relationship between IMD and stone occurrence.
Results: 1011 patients aged 16 and above were identified as having a renal or ureteric calculus from a population of 219,683

living within 165 LSOAs. The overall incidence was 115 per 100,000 person-years (pys) (95% Confidence Interval [CI] [108 – 122 per 100,000 pys]). In the less deprived group, the incidence was 104 per 100,000 pys (95%-CI [95 – 115 per 100,00 pys]), and the more deprived group the incidence was 128 per 100,000 pys (95%-CI [118 – 139 per 100,000 pys]). The incidence rate ratio for stone occurrence in the more deprived group was 1.229 (95%-CI [1.084 – 1.394]); that is to say 22.9% higher when compared with the less deprived group ($p = 0.001$, 95%-CI [8.4% – 39.4%]).
Conclusion: The incidence of stone disease in our population is consistent with that published elsewhere. Within our study population we have shown that the rate of renal or ureteric calculi is significantly higher in more deprived areas. This forces us to question the traditional view that stones are more common in more affluent populations.

MP3-7 The epidemiology of urolithiasis in an ethnically diverse population living in the same area

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Introduction: Little is known about whether migrants retain the risk of urolithiasis seen in their indigenous populations. We sought to evaluate the risk of renal colic between different ethnic groups among a diverse population in London.
Patients and Methods: Data on a cohort of 100 consecutive patients presenting to our emergency department with acute renal colic over a 6 month period was collected retrospectively. Data was extracted from electronic patient record review, trust data and the 2011 census. Risk ratios were calculated and comparisons between groups were made with Chi-Squared test using SPSS.
Result: The odds of renal colic among Turkish (odds ratio [OR] 6.57, 95% confidence interval [CI] 3.31–13.04, $p < 0.001$), Bulgarian (OR 4.94, CI 1.82–13.44, $p = 0.001$), Romanian (OR 4.53, CI 2.10–9.77, $p < 0.001$), Indian (OR 2.42, CI 1.17–4.98, $p = 0.013$) and Pakistani (OR 2.25, CI 1.38–3.67, $p = 0.001$) patients were significantly higher than the population average. The odds of colic among Black-Caribbean [OR 0.27, CI 0.07 – 1.07, $p = 0.045$), Black-African (OR 0.27, CI 0.07–1.07, $p = 0.046$), White-British (OR 0.44, CI 0.30 – 0.66, $p < 0.001$) patients were significantly lower than the general population.
Conclusion: This study suggests that migrants from countries known to have higher incidence of urolithiasis tend to retain this increased risk once in London. Such ethnic groups may benefit from targeted intervention to reduce the incidence of stone disease. Further research is needed with greater numbers in a range of populations to confirm this hypothesis.

MP3-8 Renal Colic; A&E burden and the incidence of recurrent attendances

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Introduction: Emergency admissions for renal colic have increased from 20000 in 2001 to 31700 in 2014, and accounts for 0.8% of all A&E admissions (http://www.hscic.gov.uk/.2015). Data on UK A&E attendance for symptomatic renal colic is sparse. The aim of this study was to examine the presentation, investigation and outcome of A&E encounters for renal colic and estimate the incidence of recurrent renal colic.
Patients and Methods: A database was generated from HES data for A&E attendances between 9/2011 and 2/2015, recording demographics, diagnosis, investigation and outcome for all patients. Recurrence was defined as re-attendance at A&E with a second diagnosis of renal colic at 4 months or later than the original attendance (to avoid counting continued passage of a stone as recurrence). Recurrent stone episodes were plotted on a Kaplan-Meier Survival Curve and were found to closely fit an exponential decay curve $r^2 = 0.98$ (in accordance with a previous study (Rule et al. J Am Soc Nephrol 2014: 25(12):2878–2886)), from which future stone episodes were estimated.
Results: 3945 attendances were reported during the study period. 68% of patients had imaging at A&E (55.8% CT). The average number of A&E attendances per patient during the follow up period was 1.2 (Range 1–8). 52.4% of patients were discharged directly from A&E. 36.6% of patients spent time in a clinical decision unit. 16.8% of patients were admitted to an inpatient bed. 61% of attendances were outside normal working hours but this did not alter the duration of A&E stay.

During a median follow up of 21 months, 4.7% of patients had one or more further A&E attendances for renal colic, with a probability of stone recurrence at 42 months of 8%. Lifetime risk of stone recurrence was estimated at 23% with half of episodes occurring within 76 months. The UK lifetime risk of A&E attendance for renal colic was estimated as 5%.
Conclusion: The incidence of renal colic in the UK is increasing. The use of CT in the diagnostic pathway has not lengthened A&E stays. This study provides the first UK estimate of the risk of recurrence after renal colic.

MP3-9 Effect of temperature and humidity on renal colic presentation in a UK hospital

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Introduction: In the UK, acute renal colic has an annual incidence of 1–2 cases per 1000 people. The incidence of emergency department renal colic attendance is increasing. There is variation in published data regarding the correlation of ambient temperature and humidity with renal colic presentation. Few reports have analysed the influence of UK climate variations on renal colic presentation. We evaluated the effect of temperature and humidity on acute renal colic attendance.
Materials & Methods: We retrospectively analysed acute renal colic visits to a single institution in the West Midlands, UK, between 1st August 2013 and 31st August 2014. Using diagnosis coding and by reviewing CT imaging, only those patients who presented with symptoms of renal colic and had urolithiasis confirmed on CT KUB were included in the analysis. Local meteorological data (maximum daily temperature and maximum humidity) was obtained from www.weatheronline.co.uk. Statistical analysis using STATA (StataCorp) was performed to assess for any correlation between meteorological parameters and renal colic presentation.
Results: A total of 134 men and 44 women attended with acute renal colic in the study time period. Mean patient age was 43.7 +/- 14.7 years (range 16–82). Twenty four percent of patients were previous stone formers. There was a slightly higher proportion (26.4%) of renal colic presentation in summer months

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(June to August). There was no correlation found between maximum daily temperature or humidity with renal colic presentation, using Pearson's correlation test and linear regression analysis.
Conclusions: Although there was a suggestion of increased renal colic presentation with summer months, no statistically significant correlation was evident with daily temperature or humidity in the West Midlands region of the UK. The more temperate climate seen in the UK may have less of an influence on urolithiasis and stone presentation. Further longitudinal prospective studies and ethnographic considerations over longer periods into the effect of climate on renal colic in UK regions may yield more meaningful data.

MP3-10 Renal colic incidence and its relation to climate

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Introduction: this study was done to evaluate the incidence of renal colic (RC) in Birjand, an eastern area of Iran, and its relationship with the season and climate. Birjand has a cold desert climate (Köppen climate classification *BWk*) with hot summers and cool winters. Precipitation is low, and mostly falls in winter and spring.

Patients and Methods: we reviewed the data of patients presented to the emergency rooms (ER) of all hospitals of the city of Birjand between 2011 and 2013. Data such as age, gender, and data about temperature, humidity and hours of daylight were reviewed. RC incidents were correlated with climate characteristics using the Pearson correlation coefficients. The Chi-square and Spearman rank order correlation (rho) test were used for the statistical analysis.
Results: 2450 cases (80.3% males and 19.7% female) were diagnosed as RC. The mean age was 36.7 ± 14.4 (2–92 years). 29.7%, 26.9% and 18.8% were in the age range of 21–30, 31–40 and 41–50 years. The highest monthly RC visit were 270 (11%), 245 (10%) and 181 (7.4%) in the months of July, June and May respectively. The lowest monthly incidents observed were 184 (7.5%) and 188 (7.7%) in the months of September and October respectively. The difference between RC visit in different months was significant, P value < 0.0001. Regarding the seasonal RC incidence, the 670 (27.3%) visit occurred during summer (June, July and August) and lowest RC visit 557 (23.6%) observed during winter (December, January and February), $p = 0.008$.

While considering a 10-day period as a homogeneous climatic phase to compare the RC incidence and meteorological characteristics, we found no significant relation of RC visit and the maximum temperature $r = 0.27$ spearman rho $p = 0.11$, and also average temperature r-0.3 $p = 0.08$. Considering a 10-day period, we found a significant relationship between RC visit and daylight duration from sunrise to sunset (583–959 minutes) $r = 0.34$ $p = 0.04$. There was also no significant relation between average relative humidity and RC visit $r = -0.17$, $p = 0.32$.
Conclusion: Although the RC incidence was significantly higher in summer compared to winter but after the seasonal and monthly decomposition analysis by 10 days period we found no significant correlation between the mean temperature and maximum temperature and RC visit. Interestingly this analysis showed that daylight duration was instead significantly correlated with RC incidence.

MP3-11 Health related Quality of Life in urinary stone disease: Does age matter?

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Introduction: Urinary calculi and treatments can have a significant impact on patients' health related quality of Life (HRQoL). There is limited data on the HRQoL domains for patients who are affected by urinary stone disease. Qualitative research is fundamental to understanding these issues from the patients' perspective in order to develop valid HRQoL measures for urinary stone disease. We investigated if quality of life domains affected by urinary stone disease patients differed significantly between age groups.
Patients and Methods: Adult patients with urinary calculi presenting in secondary care in a University Hospital were selected using purposeful sampling on the basis of age. Patients were stratified into 3 age groups: 40 years and younger (group 1), 41–61 (group 2) and older than 60 (group 3). Qualitative research using face-to-face, semi-structured interviews was conducted to determine the important HRQoL domains that patients experienced as a consequence of their disease. Interviews were audio-recorded, transcribed and data were coded using thematic analysis supported by qualitative data analysis software (NVivo). The themes were elicited and tabulated. A proportion of interview data (30%) underwent second coding to ensure consistency of coding.
Results: Forty-one patients participated in interviews with an age range of 19–92. The two most common themes elicited were physical symptoms (pain, haematuria and nausea and vomiting) (group 1 = 100%, group 2 = 100% and group 3 = 88%), and fear of the unknown (group 1 = 88%, group 2 = 88% and group 3 = 63%). The third most common theme for groups 1 and 2 were emotional or mental distress – including insomnia, anger and anxiety (group 1 = 75%, group 2 = 75%), while the third most common theme in group 3 was negative impact on social life (50%). Fifty percent of patients in group 1 and group 3 stated they would rather avoid surgery and take medication if possible, in contrast to 13% of patients in group 2 who appeared to show more preference for interventional treatment.
Conclusion: Our results indicate that, the age of stone patients does not appear to determine the type of HRQoL problems experienced and health domains affected. Stone disease appears to have a greater impact on the social life of patients over the age of 60. Patients aged 41–60 appeared to favour interventional treatment. Further research is required in this field and the data gathered would be useful to clinicians, service providers and other researchers.

MP3-12 Do urinary calculi affect first time and recurrent stone formers differently? (Results from a qualitative study)

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Introduction: A fair proportion of first time stone formers have recurrence(s). This can influence their treatment preferences. Stones have significant impact on health related quality of life (HrQoL). Using qualitative research methodology, we evaluated if HRQoL domains affected by urinary stone disease differed significantly between first time and recurrent stone formers.

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Patients and Methods: Adult patients with urinary calculi presenting in a university hospital outpatients department were selected on the basis of stone recurrence by purposeful sampling. Consenting patients were interviewed using a face-to-face semi-structured interview schedule. Interviews were audio-recorded, transcribed and data were coded using thematic analysis supported by qualitative data analysis software (NVivo) Common, important themes were elicited and tabulated. Codes were aggregated to parent codes to produce broad themes.
Results: 38 patients were interviewed, of whom 71% (n = 27) were male and 29% female (n = 11). Sixty-eight percent were recurrent stone formers (n = 25) and 32% presented for the first time (n = 13). The common domains in both groups were physical symptoms with recurrent stone formers reporting this 100% of the time and non-recurrent 91% and fear for their future (recurrent = 77%, non-recurrent 64%). Physical symptoms included pain, haematuria, nausea and vomiting, the inability to get comfortable and feeling generally unwell whereas fears for the future mainly revolved around fear of the unknown aspects of living with stone disease.
Conclusion: The results of this qualitative research study show that there is little difference between the HRQoL domains experienced recurrent and non-recurrent stone formers. Although physical symptoms predominated, both groups of patients were concerned about their future living with stone disease and experienced fear of the unknown. This is important in treatment planning as well as prevention and could be addressed with better patient information and education.

MP3-13 The prevalence of secondary hyperparathyroidism amongst calcium stone formers

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Vitamin D deficiency has been associated with metabolic syndrome, cardiac mortality and fractures, though cause and effect is unclear, and the benefit of Vitamin D supplementation, though it is undertaken, remains controversial across the board. The role of Vitamin D deficiency in nephrolithiasis is unclear. Vitamin D insufficiency is common in the UK (Elina Hyppönen et al, Am J Clin Nutr 2007; 85:860–8) and the incidence seems to be increasing in the USA. Secondary hyperparathyroidism has been shown to be present in up to 25% of stone (Mohamed A et al. UROLOGY 79: 781–785, 2012).

The aim of this study was to review the experience of a multidisciplinary metabolic stone clinic, to determine whether secondary hyperparathyroidism is associated with altered urinary biochemistry in stone formers.
Patients and Methods: From a retrospective review of patients undergoing ureteroscopy or lithotripsy, from 2011 to 2015, patients who had 2 or more of: stone analysis, vitamin D and PTH levels or 24 hour urine collection were included. Patients with primary hyperparathyroidism were excluded.
Results: Out of 143 patients (mean age of 52, range 22 to 89), 119 (83%) had Vitamin D insufficiency (< 75 nmol/L) 1,25HO VitD and 58 (41%) had Vitamin D deficiency (< 40 nmol/L). The number of patients with elevated PTH > 6.9 pmol/L was 59 (41%).

There was an inverse association between PTH and vitamin D levels on linear regression ($p = 0.04$, $r^2 = 0.04$, $n = 143$) and an inverse association between PTH and 24 hour Ca^{2+} ($p = 0.01$, $r^2 = 0.11$, $n = 52$).
Conclusion: Vitamin D deficiency and secondary hyperparathyroidism is common amongst patients with nephrolithiasis. Vitamin D levels are inversely associated with PTH levels as has previously been demonstrated. Elevated PTH levels are associated with reduced urinary Ca^{2+}, and this needs to be interpreted in the wider context of urinary Calcium and nephrolithiasis risk. The role of PTH levels in nephrolithiasis is complex and warrants further evaluation.

MP3-14 Stone fragment size post ESWL is influenced by stone composition and vitamin D levels

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Introduction: The aim of this study was to determine if stone fragment size post ESWL correlated with serum and urinary biochemistry.
Methods: Patients who underwent ESWL for renal and ureteric stones were provided with specimen pots to collect stone fragments passed. Fragments were photographed digitally and the diameter of the largest fragment was recorded. Stone analysis, data from 24 hour urine collection and serum Calcium, PTH and Vitamin D was recorded.
Results: 55 patients were included, though laboratory classification between calcium Oxalate monohydrate and dehydrate was only reported amongst 28 patients. There was no association between stone type and maximum fragment size (Table 1). 26 out of 32 patients (81.25%) had Vitamin D insufficiency (Vitamin D < 75 nmol/L). There was an inverse association between Vitamin D levels and stone size ($p = 0.047$ $r^2 = 0.14$, $n = 32$). The corresponding graph for Parathyroid hormone levels shows a trend ($P = 0.29$). A higher proportion of Calcium Oxalate Monohydrate was associated with an increased fragment size ($p = 0.03$, $r^2 = 0.18$, $n = 28$).
Conclusion: Calcium Oxalate monohydrate stones are known to be hard and the larger fragments suggests that ESWL fragments these stones less effectively. The association between Vitamin D levels and stone fragment is a novel one. Whilst the prevalence of Vitamin D insufficiency amongst the populations of the UK and USA is high and seems to be rising (Ginde AA et al. *Arch Intern Med* 2009: **169**(6):626–632, Pearce SH et al. *BMJ* 2010: **340**:b5664), it is unknown whether Vitamin D deficiency plays a role in the pathogenesis of nephrolithiasis. This study suggests that Vitamin D insufficiency, possibly via secondary hyperparathyroidism may have a role, and is associated with harder or larger stones.

Table 1: Stone Analysis

Composition	Fragment size	STDEV	NO
Cysteine	5.09		1
Urate	3.34		1
Pure Calcium Oxalate	5.64	2.47	12
Pure Calcium Phosphate	4.8		2
Mixed; CacliumOx >50%	5.47	2.27	25
Mixed; CalciumPho >50%	5.82	3.5	14

MP3-15 Outcomes of Urolithiasis Treatment in Patients with Renal Insufficency

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Introduction and Objectives: If obstructing urinary stones are not treated in a timely manner, permanent renal dysfunction and/or infection can result. There is scanty data in the literature regarding the outcome of these patients after definitive intervention.
Methods: We studied 210 patients with urolithiasis with serum creatinine (Cr) greater than 1.5 mg/dl (1.5 to 34 mg/dl). All patients underwent standard treatment with stent placement, percutaneous nephrostomy (PCN) or dialysis when indicated. Once nadir Cr was achieved definitive surgery was performed. Age, gender, stone size/location, imaging, hydronephrosis, laboratory parameters, comorbidies, infection, therapeutic procedures, complications, stone free rates (SFR), and renal function were reviewed.
Results: 88/210 (41.9%) patients were placed on dialysis initially. 62 required PCN and 42 stent placement. Definite surgery was ureteroscopic lithotripsy for ureteral stones (URSL) in 72 cases, percutaneous nephrolithotomy (PCNL) in 158, and retrograde intrarenal surgery (RIRS) in 26 cases. Complete clearance was achieved in a single session in 186 (88.6%). At 6 months, 118 had improved renal function compared to nadir Cr, 66 had stabilization and 26 had deterioration. After definitive intervention, on follow up, S creatinine improved in 118, stabilised in 66 and deteriorated in 26 patients. All who exhibited deterioration had nadir Cr greater than 9, cortical atrophy, recurrent infections and late presentation with large stone burden and proteinuria.
Conclusions: Patients with renal insufficiency with stone disease requires aggressive multimodal approach to unobstruct urinary tract, control infection, and achieve complete stone clearance; despite this, pts. presenting with CKD 5 have poor prognosis.

Age	4-88 years (36.8)	
No of patients	210	
Comorbidity	DM	85 (40.5%)
	HTN	122 (58.1%)
	CAD	44 (20.9%)
	CKD	26 (12.4%)
	Obesity	34 (16.2%)
Calculus type	Complete staghorn	32
	Partial staghorn	34
	Pelvic	48
	Complex	18
	Ureteric	72
	Calyceal	48
Cr after surgery	Cr	Number of patients
	1.0-2.0 mg/dl	122 (58.1%)
	2.1-4.0 mg/dl	37 (17.6%)
	4.1-6.0 mg/dl	25 (11.9%)
	> 6.0 mg/dl	26 (12.4%)

MP3-16 Clinical features and treatment outcomes of painless ureter stone

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Introduction: Colicky pain with hematuria or nonspecific abdominal pain is the most common presenting symptom in ureter stone. However, some patients with ureteral stone may not accompanied by classic symptoms. We evaluated the clinicoradiological features and treatment outcomes of incidentally founded ureter stone.
Materials and Methods: The clinical data of 3,536 consecutive ureter stone patients over 20 yr old were reviewed retrospectively between January 1994 and March 2009 at our hospital. The patients were classified into 2 groups: classic symptom group (n = 3,393, 96.0%) and asymptomatic group (n = 143, 4.0%). The database included clinical, radiologic characteristics and treatment outcomes of ureter stones.
Result: Majorities of asymptomatic ureter stone were discovered by microscopic hematuria evaluation (94.6%) and the others were discovered on incidental imaging. Asymptomatic group were more likely to be older and associated with cerebrovascular diseases, such as hypertension, diabetes mellitus, coronary artery disease, cerebrovascular accident ($P < 0.001$, $P = 0.012$, respectively). Difference in BMI, gender distribution and stone location were not significant between groups. The maximum diameters of the ureter stone were larger in asymptomatic group than classic symptom group (7.70 ± 3.49 mm vs. 4.02 ± 2.33 mm, $P < 0.001$). Compared to asymptomatic group, classic symptom group were more likely to have been managed expectantly and exhibit a higher spontaneous clearance rate (each $P < 0.001$)
Conclusion: Despite the large stone burden, elderly patients with cerebrovascular diseases may not accompanied by classic symptom and more likely to require intervention. Thus, high index of suspicion is important for early detection and judgments on the timing of intervention.

MP3-17 Utilisation of STONE scoring system in the emergency department in predicting uncomplicated ureteral stones

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Urolithiasis is commonly seen in the emergency departments (ED) as renal colic and carries a heavy financial burden on the health care system. In recent years non-contrast CT has become the popular diagnostic investigation of choice. Unfortunately, these are often not readily available in ED and patients are often referred to the urology team as in-patients. A recent novel prediction model (STONE) has been developed to predict uncomplicated ureteral stones. The clinical application of this scoring system could lead to early management and avoid unnecessary hospital admissions.

A retrospective study was conducted; collecting data related to the five factors of **STONE** score: **S**ex, **T**iming of pain, ethnic **O**rigin, presence of **N**ausea/vomiting and urinalysis (**E**rythrocytes). Results of the non-contrast CT abdomen were noted separately.

215 patients identified during the 6 months study period; 125 had complete record with no exclusion criteria. Of these, 72 (58%) had confirmed ureteral stones on non-contrast abdominal and pelvic CT. Statistical analysis using multiple logistic regressions was performed. Logistic regression of the male gender yielded an adjusted odds ratio (OR) of 5.03 (95% CI 2.05, 12.29; p = 0.0004). Onset of pain less than 6 hours has an adjusted OR of 2.65 (95% CI 1.00, 7.02; p 0.049). AUR = 0.779 (95% CI 0.696, 0.861) for our predictive model. A nomogram has been developed based on this model, which could readily predict the probability of ureteral stones.

Our study has successfully validated the STONE scoring system and potential clinical application of this model explored.

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MP3-18 Safety of Non-Steroidal Anti-Inflammatory Drugs in Urolithiasis

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Introduction: Diclofenac has been the mainstay of analgesia for renal colic for many years in the UK. The Medicines and Healthcare Products Regulatory Agency UK have issued a recent warning of increased risk of thromboembolic events, for patients with certain underlying illnesses such as heart failure, myocardial infarct and stroke. In view of this, urologists are now prescribing alternative analgesic drugs more frequently. We review the evidence for the efficacy and side effect profile of different NSAIDs.
Methods: A pubmed search was made using search terms including 'non-steroidal analgesic drugs', 'NSAID', 'urolithiasis', 'side effects', 'thromboembolism', etc., as well as review of the original documents from the MHRA website.
Results: Studies show that there is no particular benefit of diclofenac over ibuprofen if given at a higher dose in terms of number needed to treat (NNT) – diclofenac 100 mg NNT = 1.8 versus ibuprofen 600 mg NNT = 1.7, to achieve the same analgesic effect. Naproxen 400 mg in comparison is 2.7. Moreover, we also noted that naproxen is not associated with an increased risk of cardiovascular side effects, yet it has got a less favourable gastric side-effect profile, if taken long-term. Diclofenac has a similar cardiovascular side effect profile to the now-withdrawn COX-2 inhibitors.
Conclusions: Our review suggests that injudicious use of NSAIDs can be source of morbidity for stone patients, and acts as a reminder to urologists to consider carefully which analgesic agent to use, whether for renal colic, or for pain prevention post extracorporeal shockwave lithotripsy. Choice of an appropriate NSAID in these situations might be best tailored to a particular patient given their comorbidities, but there does not seem to be any additional benefit in giving diclofenac over other NSAIDs from an analgesic viewpoint.

MP3-19 Does stent-induced pain correlate with ureteric stent encrustation?

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Introduction: Ureteric stents are known to encrust at variable rates when deployed and this can vary significantly between patients. It has been suggested that stent induced pain is influenced by amount of en and incrustation. However, this has never been assessed in a clinical context. No research has been carried out to ascertain whether the amount of crust formed inside or outside a stent affects the amount of pain experienced by the patient.

Our study evaluated a relationship between the amount of en and in crustation against patients' experience of pain.
Patients and Methods: Patients undergoing peri-ureteroscopic stent insertion (Boston Scientific, Contour™ Ureteral) during treatment of calculi were recruited and asked to complete the 'Ureteric Stent Symptom Questionnaire' whilst the stent was in situ. The stents, upon removal, were sent for quantification of en and incrustations using electron microscopy and a new reproducible protocol. The results were correlated with pain domain scores.
Results: 33 patient were included. 24 were male (73%) and 9 were female (27%). The mean age was 57 (range 30–86). Patients reported a mean pain score of 24.1 (median 27, range 8–37) on the USSQ domain score. There was no correlation between encrustation and pain scores (Pearson correlation value 0.073) or incrustation and pain scores (Pearson correlation value 0.107).
Conclusion: The results of our study show no correlation between stent-induced pain, a common side effect and the amount of en and incrustation as measured by electron microscopy. This challenges the view that en and incrustations on indwelling ureteric stents are responsible for stent related pain. This could be further evaluated in a larger studies and using different stent designs.

MP3-20 The predicting factor associated with upward malposition of intracoporeal Double-J stenting following laparoscopic ureterolithotomy and the effects of flexible cystoscopy in reducing the malposition rate of ureteral stent: Korea University experience

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Introduction: Laparoscopic ureterolithotomy is an effective way to surgically treat ureteral stones. However, upward migration of the D-J stent can often cause patients to undergo further treatment with ureteroscopy for its removal which causes unwanted pain and discomfort. The aim of this study is to identify the predicting factor associated with upward malposition of intracoporeal Double-J stenting following laparoscopic ureterolithotomy and to evaluate the effects of flexible cystoscopy in reducing the malposition rate of ureteral stent.
Materials and Methods: From April 2009 to June 2015, 97 patients with a large stone of the upper ureter underwent intracoporeal double-J stenting of the ureter following laparoscopic ureterolithotomy. The first 70 patients received ureterolithotomy by 3 different surgeons and did not go under any evaluation to identify the position of the ureteral stent in the operating room. The latter 27 patients went through ureterolithotomy by a single surgeon and evaluated via flexible cystoscopy to identify any upward malposition of the double-J stent. Upon identification of an upward malposition of ureteral stent, correction by adjustment of the position was done by manipulating the ureteral stent through the incision site of the ureter, introcorporeally. Statistical analysis was performed with SPSS® version 22.0 using the logistic regression anlaysis univariately and with SAS® version 9.4 using penalized logistic regression analysis multivariately, with p 0.05 considered statistically significant.
Result: Sixty-seven (69.1%) patients were males and thirty (30.9%) were females. Intra-operatively, the mean opearative time was 97 (±52.44) minutes and 84 patients underwent a transperitoneal approach while 13 patients were surgically managed by a retroperitoneal approach. Postoperatively, identification of an upward malposition of ureteral stent was found in 21 patients (21.6%) of the enrolled 97 patients. Flexible cystoscopy was performed in the latter 27 patients successfully identifying an upward malposition of the ureteral stent in 5 (18.5%) patients whom all required further manipulation. Finally, there were no patients with an upward malposition after re-positioning of the

double-J stent. Mean added op time for re-adjustment of the D-J stent with the flexible cystoscope was 4 minutes and 30 seconds. Preventing factors for upward malpositioning of the D-J catheter were surgeon ($p = 0.039$) and the use of flexible cystoscopy ($p = 0.009$) in a multivariate, penalized logistic regression analysis with SAS.
Conclusion: Flexible cystoscopy has proven to be a simple but safe and effective method that can identify and correct malpostion of D-J stent without consuming much time.

MP3-21 Evaluation of Contact Electropulse Lithotripsy: In Vitro Assessment of Cavitation and Stone Fragmentation

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Introduction and Objectives: A novel intracorporeal lithotripter fragments urinary stones through delivery of high-voltage, nanosecond duration electric pulses. The pulses are delivered through a coaxial probe that fits into the working channel of a rigid or flexible ureteroscope. We evaluated microfracture formation and cavitation activity during stone treatment with this newly developed lithotripter.
Methods: The Nano-electric Pulse Lithotripter (NPL, Lithotech Group, Israel) was evaluated with 3 probe sizes (2.4Fr, 3.6Fr, and 4.5Fr) at varying stand-off distances from the target begostone (5:2 ratio), ranging from 0 to 8 mm. Lithotripter settings were 1J/5 Hz. Bubble shape at the maximum expansion was captured with a high-speed video camera (Phantom v7.3, Vision Research, USA). Resultant damage to the begostone after 10 pulses was analyzed with a micro-CT scanner (XTH225ST, Nikon, Japan).
Results: The maximum projected bubble area or equivalent radius (R_{eq}) was found to be consistent for each probe during the 200 pulses tested. At a stand-off distance less than 6 mm, Req decreased with probe size, however at a distance greater than 6 mm, R_{eq} increased with the probe size. The 2.4Fr probe showed a significantly increased crater volume at a stand-off distance of 0 mm (direct contact) vs. a stand-off distance of 1 mm ($0.78 \pm 0.06\ mm^3$ vs. $0.42 \pm 0.14\ mm^3$, $p = 0.027$). The same probe also demonstrated a significant decrease in cavitation activity at direct contact vs. a 1 mm stand-off distance ($R_{eq} = 5.28 \pm 0.23$ mm versus $R_{eq} = 5.415 \pm 0.17$ mm, $p = 0.002$).
Conclusions: The NPL exhibits stone damage in the form of a crater that relies on mechanisms in addition to those associated with electrohydraulic lithotripsy (i.e., shock wave and cavitation erosion). In fact, the more important method of stone fragmentation is likely that of nanosecond dielectric breakdown inside the stone. These results suggest that the optimal use of the device is with the probe in direct contact with the stone, as this configuration demonstrated the largest damage crater with the least cavitation effect.

MP3-22 Pressure bags for enhanced visibilty in FURS. Are they reliable in terms of intrarenal pressure?

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Introduction: Pressure bags are widely used for improving visibility during flexible ureteroscopy. Untill now, there is no study to report the intrarenal pressures obtained using these devices. High intrarenal pressures are associated with multiple complications. The purpose of this study is to measure the ''intrarenal'' pressure variation in a bench model during usage of pressure bag for increasing flexible ureteroscopy irrigation and to compare with other pressure-elevating methods.
Materials and Methods: The artificial kidney model was a Boston Scientific bladder evacuator with a silicone sealed cap. An 8.5 Fr. flexible ureterorenoscope (URF-V2, Olympus) and a 10/12 Fr. ureteral access sheath (ReTrace, Coloplast) were used. Pressure bag was attached to the saline irrigation elevated at 60 cm. from the kidney model. The ''intrarenal'' pressure was measured using the St. Jude Medical pressure fiber system with the flexible ureteroscope working channel free or occupied by the 272 μm. laser fiber and the 1.9 Fr nitinol stone retrieval basket (Zero Tip, Boston Scientific). 100 and 300 mm. Hg pressure was applied using the pressure bag and the results were measured each minute. Same pressure was applied three times, in one setting each 10 minutes and in the other only after the starting pressure was reached again. ''Intrarenal'' pressures using gravitational system and isostatic heating pump (Endoflow II-Single chamber, Rocamed) were also evaluated.
Results: It was not possible to obtain the same ''intrarenal'' pressure for each utilisation of the pressure bag. There was a significant difference between the results obtained with the pressure bag in both settings. The ''intrarenal'' pressure value was never the expected one. Also, the ''intrarenal'' pressure did not remain constant after pressure bag utilisation. It decreased after each pressure aplliance. The decrease was bigger when high pressure (300 mmHg.) was apllied and the flexible ureteroscope working channel was free. Endoflow and gravitational system produced always the same results for the ''intrarenal'' pressure and it remained constant, with no decrease during the evaluated time period. For each of these two systems results were similar after every measurement. In all situations highest pressures were obtained with free working channel and lowest with basket catheter in place.
Conclusion: Using pressure bag leads to different ''intrarenal'' pressure every time. The obtained pressure is also not constant. Pressure bag usage is uncontrolable and unreliable. Endoflow and simple gravitational system produce constant ''intrarenal'' pressure, they are predictible and reliable.

MP3-23 Ultrasonic tweezers to reposition kidney stones

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Introduction: Our group has recently introduced ultrasonic propulsion to transcutaneously reposition kidney stones with megahertz frequency focused ultrasound beams. This technology can be used to facilitate the passage of small (< 5 mm) stones or relocate an obstructing stone, but currently stones can only be pushed away from the probe, limiting the position to which stones can be directed. The goal of the current study is to investigate a noninvasive ultrasonic beam that can ''Grab'' A stone and drag along with the transducer as an alternate method of manipulation.
Materials and Methods: We used two approaches – a lens and a 12-element array – to create a hollow acoustic beam that could be positioned like a tube over the stone. The ultrasound frequency of the transducer ranged from 1–1.5 MHz. Human stones of different compositions were used as well as spherical target beads made of

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different materials with diameters up to 4 mm. Targets were positioned on a flat tissue-mimicking phantom in a degassed water bath. The transducer was then translated along a preprogrammed path at a fixed speed to test how well the stone followed.
Results: Observations confirmed that the beads and stones can be trapped and effectively manipulated. Stones were pushed against the gel pad and then dragged across the surface following the motion of the transducer. Targets could be translated at speeds of 1 cm/s, although larger, heavier stones required slower speed or more power. Stones naturally repositioned to center of the beam as ultrasound was initiated. Additionally, certain beam patterns could produce controlled rotation of the stone without translational motion.
Conclusions: Ultrasonic propulsion of stones has been shown effective in a number of possible uses in a first clinical trial. In this study we show that, with similar ultrasound transducers and relatively low acoustic power levels, it is possible not just to push the stone away but to pull the stone to the side with the probe *in vitro*. This capability could have many other applications such as gathering together small fragments or aligning and holding steady a stone for lithotripsy treatment. Future work will further test this method both *in vitro* and *in vivo*.

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MP3-24 The effect of variable pulse duration on stone comminution, fiber tip degradation, and stone retropulsion in a "dusting" model

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Introduction: Stone dusting is typically performed using a high-powered laser at low energy and high frequency settings. Adjusting the pulse width of low-powered lasers may also produce a stone dusting effect. We determined the fragmentation efficiency comparing long pulse versus short pulse duration in a low-powered laser using a dusting model. We also compared fiber-tip degradation and retropulsion at different pulse lengths.
Materials and Methods: Experiments were conducted using a new variable pulse laser (Swiss Laserclast Ho:YAG laser-EMS, Nyon, Switzerland) with adjustable pulse duration (300 μs-1500 μs). To assess comminution efficiency and fiber-tip degradation, a dusting model was employed by delivering 4 kJ of energy to a BegoStone over a constant surface area controlled by a 3-dimensional positioning system. Laser settings were 1J/10 Hz and 2J/5 Hz in both long and short pulse mode. Comminution efficiency was measured as the loss of stone mass and fiber-tip degradation was measured simultaneously. The same laser and fiber were used in a pendulum model to measure stone retropulsion with a high-speed resolution camera. A BegoStone was attached to a silk suture and immersed in water. The laser was applied to the suspended stone and retropulsion was considered displacement from the origin after a single fire. ANOVA test was used for multiple groups, and post-hoc analysis with Tukey test was applied.
Results: Comminution was significantly greater at higher energy (2J/5 Hz) compared to lower energy (1J/10 Hz) on both long and short pulse ($p < .0001$ and $p = 0.0002$). The long pulse setting improved mean comminution significantly at higher energy (0.420 g vs 0.310 g), but not lower energy (0.163 g vs 0.247 g) ($p = 0.0022$, $p = 0.1419$). At the higher energy setting mean tip degradation was 1.308 mm on short pulse and 0.335 mm on long pulse, which was significant($p = 0.0009$). Tip degradation was also greater on short pulse at lower energy than on long pulse (0.230 mm vs 0.038 mm), but this was not significant ($p = 0.7247$). The results of the pendulum test showed that at higher energy, short pulse caused more retropulsion than the long pulse setting (14.348 mm vs 2.771 mm) ($p < 0.0001$). At lower energy short pulse also caused more retropulsion than long pulse (1.314 mm vs 0.036 mm), but this was not significant ($p = 0.6071$).
Conclusions: Increasing pulse duration may allow for better stone dusting with increased fragmentation efficiency, decreased tip degradation, and less retropulsion when using higher energies with a low-power laser.

	1J/10HZ			2J/5Hz		
Pulse Width	Long	Short	p-value	Long	Short	p-value
Comminution	0.163	0.217	0.1419	0.420	0.310	0.0022
Tip Degradation	0.038	0.230	0.7247	0.335	1.308	0.0009
Retropulsion	0.036	1.314	0.6071	2.771	14.348	<0.0001

MP4 - IMAGING 1 - MRI & PAEDIATRICS

MP4-1 Men at high risk of complications may avoid biopsy with a negative pre-biopsy MRI: A cohort study over a 1 year period.

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Introduction: Pre-biopsy multiparemetric MRI (mpMRI) is frequently used in clinical practice to detect clinically significant prostate cancer (PCa), although its role has yet to be clearly defined. We audited the accuracy of pre-biopsy MRI for men with clinical suspicion of prostate cancer undergoing initial TRUS biopsy.
Methods: All patients who had a pre-biopsy prostate MRI and initial transrectal ultrasound (TRUS) prostate biopsy between 01/01/2013 and 31/12/2013 were included in the study. Prostate MRI was performed with a 1.5T scanner with T2 and diffusion weighted imaging (DWI) axial phase. TRUS prostate biopsy was performed using a monoplane ultrasound machine. Systematic 12 core prostate biopsy were taken with tru-cut biopsy needle from the apex, middle and base of the left and right lobes of the gland.
Results: 173 patients met the inclusion criteria. 128 (74.4%) patients had a lesion detected on MRI. 114 (66.3%) patients had a positive biopsy. The sensitivity of MRI for significant prostate

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cancer on TRUSpB was 83.5%, specificity of 35.2%, Positive predictive value was 55% and negative-predictive value 68.9%. A positive MRI was significantly associated with significant prostate cancer diagnosis, and higher NCCN risk classification (pp ≤ 0.001). MRI detected 62/63 NCCN high risk and 18/18 Gleason 8–10 cases.
Conclusion: The sensitivity and specificity of MRI appear insufficient to exclude all significant disease in men with clinical suspicion of prostate cancer. Standardised MRI reporting and robust prospective studies are needed to define the role of prebiopsy MRI in this setting. For patients at risk of complications from biopsy, a negative MRI may exclude high-risk disease.

MP4-2 Routine Use of Magnetic Resonance Imaging in Prostate Cancer Facillitates Better Candidate Selection for Active Surveillance

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Introduction and Objectives: To evaluate the changing trends in appropriate candidate selection for Active Surveillance (AS) after routine use of Magnetic Resonance Imaging (MRI) for Prostate Cancer (PCa), using Transperineal Template guided Mapping Biopsy (TTMB).
Materials and Methods: We retrospectively analyzed 462 TTMB performed at our institution (2008 – 2014) and identified 165 patients with low risk cancer eligible for AS based on TransRectal UltraSound (TRUS) biopsy (Prostate Specific Antigen (PSA) < 10 ng/ml, Gleason score (GS) ≤ 6, clinical stage ≤ T2a, unilateral disease and maximum of 1/3 positive cores and < 50% of total length) underwent TTMB. Routine use of MRI for PCa was started since 2012, hence the study population was divided into two groups G1 (Before MRI, 2008 – 2011) and G2 (After MRI, 2012 – 2014). We compared the TTMB results between two groups for the rates of GS upgrading (GS ≥ 7) and upstaging (bilateral) as compared to initial and detection of clinically significant caner (maximum cancer core length (MCCL) ≥ 4 mm and/or Gleason grade ≥ 3 + 4).
Results: The clinical and biopsy characteristics of G1 and G2 are shown in table 1. MRI was performed in 82.1% patients in G2. TTMB detected cancer in G1 - 64 (65%) and G2 - 52 (77.6%) patients. The rates of upgrade and detection of clinically significant cancer was significantly in lower in G2 after routine use of MRI.
Conclusion: Routine use of MRI in PCa appears to aid in better candidate selection for active surveillance

Table 1: Clinical and TRUS biopsy characteristics.

Variable	G1 (Before MRI, 2008 – 2011)	G2 (After MRI, 2012 – 2014)	*p* value
Number of patients	98	67	
Mean age (years)	64 (48 – 77)	62.9 (42 - 69)	0.8
Mean PSA (ng/ml)	6.34 (2.03 – 9.96)	6.7 (3.2-10.5)	0.7
Mean Prostate volume (mm^3)	43.1 (11 – 85)	49.8 (35 - 130)	0.6
Mean TRUS overall core length (mm)	109.2 (55-111)	119.3 (59-189)	0.7
Mean positive cores	1.28 (1 - 4)	1.6 (1 -3)	0.6
Mean positive core length (mm)	3.8(1-5)	4.1 (1-6)	0.8

Table 2: TTMB outcomes

Variable	G1 (Before MRI, 2008 – 2011)	G2 (After MRI, 2012 – 2014)	*p* value
TTMB cancer detection	64 (65%)	52 (77.6%)	0.5
Upgraded (%)	21(21.4)	6(8.9)	**0.03**
Upstaged (%)	8(8.1)	3(4.5)	0.4
Upgraded and upstaged (%)	5(5.1)	2(2.9)	0.5
Clinically significant cancer UCL 2- Criteria (%)	19(19.4)	5(7.4)	**0.03**

MP4-3 Diagnostic role of preoperative magnetic resonance imaging (MRI) in the detection of a large anterior prostate cancer and its oncological significance

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Introduction: The prostate cancer located at anterior prostate has been reported to have better prognosis than conventional posteriorly located prostate cancer. However, a large tumor at anterior prostate might have poor prognosis. We evaluated the diagnostic role of magnetic resonance imaging (MRI) in the anterior tumors.
Materials and Methods: We analyzed the data from 639 patients who performed the preoperative MRI and received robotic or open radical prostatectomy. Anterior tumor (N = 332) was divided into two groups: a large anterior tumor (diameter ≥ 1 cm; N = 237), and small scattered anterior tumor (N = 95). Biochemical recurrence free survival of a large anterior tumor was compared to those of small scattered anterior tumor, and posterior tumor (N = 307). MRI findings such as a visible lesion greater than 1 cm at anterior prostate, a suspicious extracapsular extension (ECE) lesion in transverse view, and the irregularity of anterior capsule in sagittal view were assessed for predictive performance of a large anterior tumor.
Results: Large anterior tumors were more likely to have anterior ECE (OR, 6.520; p < 0.001), and anterior positive surgical margin (OR, 5.332; p < 0.001) compared to small scattered anterior tumors. The 5-year biochemical free survival after radical prostatectomy was 71.1% in large anterior tumor, 94.5% in small scattered anterior tumor, and 77.0% in posterior tumor, respectively (p = 0.002). Multivariate analysis revealed that anterior ECE (HR, 2.672; p = 0.036) and nodal status (HR, 2.748, p = 0.019) were independent factors for biochemical recurrence. In MRI findings, a suspicious ECE lesion in transverse view (HR, 3.408; p = 0.004), and the irregularity of anterior capsule in sagittal view (HR, 1.933, p = 0.019) were independent preoperative risk factors of anterior ECE. When the numbers of risk factors are increased, the positive predictive values for anterior ECE were also increased (no risk, 24.6%; one risk, 44.9%; two risks, 86.2%).
Conclusions: Large anterior prostate cancer demonstrated poor prognosis than small scattered anterior tumor, largely due to anterior ECE. Preoperative MRI was helpful to predict the risk of anterior ECE in final pathology.

MP4-4 Perineal Biopsy is the only way access anterior lesions detected by prostate MRI.

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Introduction: The standard prostate biopsy template is a transrectal approach with ultrasound guidance. While this approach allows for access to the peripheral zone of the prostate, it has limited ability to sample the anterior zone of the prostate. We report on 4 patients whose prostate cancer was accessible by perineal biopsy only.
Methods: At our institution, each MRI is reviewed by both the urologist and radiologist for biopsy planning purposes. If indicated by MRI, we routinely perform a perineal biopsy along with a standard transrectal 12 core biopsy to adequately sample the prostate and suspicious nodule. Patients were identified by reviewing an IRB approved, prospectively maintained prostate MRI database.
Results: Of the 105 prostate MRIs performed, we prospectively identified 4 patients with a PIRADS 4 or 5 lesion in the anterior zone of the prostate. Three of these patients had undergone previous, negative biopsies within the previous 18 months. The mean age, PSA, BMI and PSA density were 72.5, 16.0, 27.9, and 0.25 ng/ml^2, respectively. Each of the patients underwent concomitant ultrasound guided perineal and transrectal biopsies of the prostate in a non-blinded fashion. Each of the four was found to have significant disease on the perineal biopsy only and the transrectal biopsy was either negative for cancer or showed non-significant disease by Epstein criteria.
Conclusion: We believe that perineal prostate biopsy is the only way to access anterior lesions as seen on prostate MRI. Urologists should keep this in mind when planning biopsies based on prostate MRI.

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MP4-5 MRI based surgical planning can exclude extracapsular disease prior to RARP: a prospective cohort study of 400 cases

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Introduction and Objectives: Patients with high risk prostate cancer are at risk of a positive surgical margin in the presence of extra-capsular extension (ECE). The objective of this study is to assess the accuracy of pre-surgical MRI planning for predicting ECE, and its use as a screening test for nerve-sparing surgery.
Methods: All patients undergoing RARP at our institution from 02/14-02/15 with a preoperative prostate MRI scan were reviewed at a preoperative planning meeting attended by a uro-radiologist, consultant urologist, and residents. MRI images were reviewed by the radiologist and the proforma annotated with the location of lesions visible on the MRI scan. A plan was made by the meeting for bilateral-, unilateral-, or non-nerve sparing surgery. Post-operative histopathological data was collected and prospectively entered into a database along with information from the planning proforma. Statistical analyses, including descriptive statistics, receiver-operator-characteristic curves and Kappa association were performed.
Results: 405 consecutive patients were included, with full data available for 397 (98%). Mean age was 62 yrs. Post-operative histology: T2 $N=234/405$ (58%), T3 $N=172/405$ (43%). Non-nerve sparing $N=185/405$ (45%), unilateral nerve sparing $N=149/405$ (37%) and bilateral nerve sparing $N=65/405$ (16%). Data for the accuracy of MRI in predicting ECE is presented in Table 1. ROC analysis varied from 0.62 at the apex, 0.7 at the base and posterior, 0.78 posteriolaterally, and 0.8 anteriorly.
Conclusions: The data suggests that pre-operative MRI based planning has a very high NPV for predicting ECE. However, PPV for ECE was poor, implying that men with an MRI suggesting ECE probably require an additional strategy to assess margin status. In our cohort the majority of men undergoing bilateral nerve-spare do not have ECE on final pathology suggesting they were accurately selected by the surgical planning process. MRI planning could be used as triage to separate patients who are unlikely have ECE from those who might. Those patients who might have ECE could be offered frozen section, which may help to reduce positive margin rates, whilst increasing the number of nerve-sparing procedures, at reduced expense.

Table 1: Data on accuracy of MRI predicted margin status.

Aspect/plane of prostate	Prevalence (%)	Sensitivity (%)	Specificity (%)	Positive predictive value (%)	Negative predictive value (%)
Posteriolateral (left)	16.4	71.2	83.4	45.6	93.7
Posteriolateral (right)	18.6	72	84.8	51.9	93.0
Anterior	7.4	63.3	96.8	61.3	97.0
Posterior	14.4	48.3	94.2	58.3	91.6
Apex	5.2	33.3	92.4	19.4	96.2
base	7.4	46.7	93.6	36.8	95.9

MP4-6 Estimating periprostatic fat using software programme as a marker of prostate aggressiveness in men undergoing radical prostatectomy

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Objective: Several reports suggested that obesity was associated with aggressive prostate cancer. These studies were basically relied on body mass index, which is not specific for body fat. We would address this issue through the present study
Methods: From 3 Tesla MRIs with 3 mm thickness, the periprostatic fat volume (PPFV) (cm^3), trans-abdominal fat area (TAFA) (cm^2), and subcutaneous fat thickness (SCFT) (cm) of 16/70 men undergoing radical prostatectomy for clinically localised disease were determined using multiple sequential axial T1 weighted MRI slices, single T1 weighted slice at the level of umbilicus, and transverse pelvic T1 weighted slice, respectively. PPFV and TAFA were automatically calculated using segmentation technique on special software. The unpleasant masked areas were manually excluded. The SCFT was determined from perpendicular distance between symphesis pubis and skin.
Results: The results showed significant negative correlation between SCFT and Gleason score (GS) ($\rho=-0.809$, $p<0.001$). GS was negatively correlated to PPFV ($\rho=-0.562$, $p<0.023$) and TAFA ($\rho=-0.548$, $p<0.028$). No statistically significant correlation between pathological staging and the different fat measurements.
Conclusions: In an ongoing study, we have shown automatic measurement of periprostatic fat using routine images and software programme. This could be correlated with grade and stage of cancer and potentially could serve as a biomarker of cancer aggressiveness.

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MP4-7 Diffuse hypointensity on the T2 phase of a prostate MRI in men with diffuse prostate cancer can be a significant confounder resulting in a falsely low PIRADS score.

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Introduction: The PIRADS score was developed to standardize the reporting of suspicious lesions on prostate MRIs. The system still carries a risk of false negative reports. We report on such false negatives and implicate a specific entity as a confounder.
Methods: In this IRB approved study, we reviewed a prospectively maintained prostate MRI database. We focused on patients with PIRADs scores 1 and 2 and determined how many had significant cancer on subsequent biopsy and prostatectomy.
Results: A total of 105 prostate MRIs were reviewed. Of these, 66 were classified as PIRADS 1 or 2. A total of 9 patients underwent biopsies and 3 were found to have clinically significant prostate cancer. The three with significant cancer had a mean age and PSA of 55 and 10.82, respectively. Mean PSA density was 0.4 ng/mL^2. Biopsy results revealed at least Gleason 7 disease and/or high volume (>3 cores) disease. At prostatectomy, all three patients had >15% of their entire gland involved with at least Gleason 6 disease. None of these three patients had a distinct nodule seen on prostate MRI. All three had diffuse hypointensity on the T2 imaging with minimal changes seen on diffusion weighted imaging, dynamic contrast enhancement and ADC mapping. All three MRIs were classified as PIRADS 2 or less.
Conclusion: Diffuse hypointensity of the T2 weighted image on prostate MRI should give the urologist and radiologist pause. A low PIRADS score with this finding could represent diffuse carcinoma without a dominant nodule.

MP4-8 Interobserver reliability is excellent amongst experienced radiologists interpreting prostate MRIs using the PIRADS scoring system

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Introduction: The PIRADS system was developed to help standardize prostate MRI interpretation. In our current study, we determined the interobserver reliability between two radiologists in reading prostate MRIs using the PIRADS system.
Methods: In this IRB approved study, all prostate MRIs performed at our institution were reviewed in a blinded and random fashion by two experienced radiologists, one of whom is fellowship trained in body MRI. Both radiologists assigned a PIRADS score to each MRI and reliability was tested with a Kappa analysis. Discordance was present when a PIRADS score was changed from a 1 or 2 to a 3 or higher, from a 3 to a value higher or lower or from a 4 or 5 to a 3 or lower. Statistical analysis was performed by T Tests and Mann Whitney U tests, where appropriate.
Results: A total of 105 MRIs were reviewed. Interobserver reliability was excellent between the radiologists ($K = 0.637$, $P < 0.001$). During the study period, the most common cause for discordance changed from diffusion weighted imaging to differed interpretation of T2 morphology. There was no difference in age, BMI, PSA and prostate size between the two groups. However, PIRADS 3 lesions were present more often in the discordant group ($P < 0.01$)
Conclusion: Using the PIRADS scoring system allows for standardized reporting and was found to have excellent interobserver reliability. Further study with a more diverse group of radiologists is warranted to understand the generalizability of the PIRADS scoring system.

MP4-9 Diagnostic performance of multiparametric MRI in prostate cancer: per core analysis of two prospective ultrasound/MRI fusion biopsy datasets

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Introduction: The fusion of multiparametric (Mp) magnetic resonance imaging (MRI) with real time ultrasound during prostate biopsy is gaining popularity among urologists. The aim of this study was to evaluate the diagnostic performance of Mp-MRI using a per-core analysis of patients who underwent prostate ''fusion'' biopsy.
Materials and Methods: Baseline, clinical and pathological data of 76 consecutive patients who underwent Mp-MRI/ultrasound ''fusion'' biopsy of prostate were prospectively collected in two centres between October 2013 and September 2014. The UroStation™ (Koelis, France) and a V10 ultrasound system with an end-fire 3D TRUS transducer were used for the imaging fusion process.

Diagnostic accuracy of Mp-MRI was evaluated in the whole cohort and in those patients with Gleason score >6, separately. Sensitivity (Se), specificity (Sp), positive predictive value (PPV), negative predictive value (NPV) and accuracy (Ac) of Mp-MRI were assessed on the base of a per core analysis of histologic findings.
Results: The 2 series were not homogeneous for number of suspicious foci at Mp-MRI ($p < 0.001$), number of cores taken ($p < 0.001$) and number of targeted cores taken ($p < 0.001$) (Table 1). Out of 76 patients, 47 had a PCa diagnosis (61.8%); 28 of them (59.5%) were Gleason score 6. Overall, 1691 cores were taken: Se, Sp, PPV, NPV and Ac of Mp-MRI in the whole cohort were 41.7%, 86.5%, 33.1%, 85.4% and 72.9%, respectively. When restricting the analysis to Gleason scores >6, Se, Sp, PPV, NPV and Ac were 33.5%, 82.2%, 16.2%, 92.3% and 77.7%, respectively. The PPV of PI-RADS scores 3,4 and 5 were 28.5%, 65.8% and 90%, respectively, while the PPV of PI-RADS scores for Gleason score PCa >6 were 7.1%, 18.4% and 60%, respectively.
Conclusions: This study confirmed high PCa detection rates with Mp-MRI-ultrasound fusion biopsy. Nevertheless, a meticulous analysis of 1691 biopsy cores taken has highlighted a poor sensitivity and PPV of Mp-MRI, especially for Gleason score >6 PCa foci. Despite the poor discrimination of PI-RADS scores of 3 and 4, PIRADS scores 5 correctly identified PCa lesions with Gleason scores >6.

MP4-10 The accuracy of MR/US fusion biopsy to predict pathological outcomes of prostate cancer

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Introduction: The aim of this study was to develop 3D-cancer map depending on both MRI findings and histology by MR-US fusion biopsy, and to evaluate its accuracy of predicting pathological outcomes by comparing with radical prostatectomy (RP) specimen.
Patients and Methods: A cognitive fusion biopsy (n = 74) or a MRI-US fusion biopsy (n = 67) was used for PCa diagnosis before RP. Cognitive fusion biopsies were performed using 2 target cores and 8 systematic cores. MR-US fusion biopsies were performed using Urostation (Koelis, France) with 2 targeted cores and 6 cores from conventional sextant sites. 3D-cancer maps were created and compared with the RP specimens in terms of the number of significant tumors, Gleason score of the index tumors, and extraprostatic extension. The MRI-estimated volume of index tumor was also compared with those in the RP specimen. The indication of focal treatment according to the whole mount section analysis was determined as tumor volume less than 3 ml, Gleason sum of 7 or less, and no extraprostatic extension.
Results: The Gleason scores in the index lesion, the number of significant tumors on 3D-cancer map, findings of pT3 disease were better matched with the correspondences to the RP specimens in the MR-US fusion group than cognitive fusion group (kappa values of 0.31 vs. 0.25, 0.64 vs. 0.37, and 0.40 vs. 0.30, respectively). The MRI-estimated tumor volume correlated better with the volume of index tumor in patients underwent MRI-US fusion biopsy than cognitive fusion biopsy (Pearson's correlation coefficients of 0.73 vs. 0.31). The sensitivities and specificities of predicting focal therapy indication by 3D-cancer map were 95% (20/21) and 80% (37/46) in the MR-US fusion group, and 88% (21/24) and 72% (36/50) in the cognitive fusion group, respectively.
Conclusions: MR-US fusion biopsy has significant potential to detect the pathological grade and size of index tumor which enables tailored treatment depending on the oncological characteristics.

MP4-11 The Use of Multiparametric MRI in Cognitive Targeted Template Biopsies: How Predictive is PIRAD Scoring?

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Introduction: The role of multi-parametric MRI (mp-MRI) in the pre-biopsy setting is expanding. The aim of this study was to compare the pre-biopsy mp-MRI findings (PI-RAD score) with the results of transperineal targeted prostate biopsies (TTB) in order to establish the accuracy of PI-RAD scoring as a predictor for clinically significant prostate cancer.
Method: All patients referred with a PSA above the age-standardized norm but below 20 ng/ml were offered an mp-MRI. The mp-MRI was reported by one of three uroradiologists. TTB were taken targeting any abnormal (PI-RAD 4/5) or equivocal (3) areas as well as systematic sampling at 10 mm intervals for areas scored 1–2. Significant cancer was defined as any Gleason pattern 4 or 5, more than 5 mm of cancer in a single core or more than 4 cores involved with cancer.

	Significant cancer	Insignificant cancer	**Any Cancer**	No cancer
PI-RAD 4/5	36 (24%)	14 (9.3%)	**50 (33.3%)**	6 (4%)
PI-RAD 3	14 (9.3%)	18 (12%)	**28 (18.7%)**	25 (16.7%)
PI-RAD 1/2	8 (5.3%)	14(9.3%)	**22 (14.7%)**	14 (9.3%)

Results: 150 consecutive patients underwent mp-MRI and TTB. The results are shown in the table. 38.6% (58) patients had clinically significant prostate cancer. Of these 36 (62.1%) had a PIRAD score of 4 or 5, 14 (24.1%) had an equivocal MRI with a PI-RAD score of 3, and 8 (13.7%) had a PI-RAD score of 1 or 2. 45 (30%) men had no cancer on biopsy. Of these 5 (11.1%) had a PI-RAD score of 4, 24 (53.3%) had an equivocal MRI (PI-RAD 3) and 13 (28.9%) had a PI-RAD score of 1.
Conclusions: When reported by dedicated uroradiologists, PI-RAD scoring is a good predictor of clinically significant prostate cancer. In this cohort 89.2% with a PI-RAD score of 4 or 5 had prostate cancer, of which 64.3% clinically significant.

MP4-12 Multiparametric MRI: Clinical value of 3 Tesla MRI and Dynamic Contrast Enhancement

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Introduction: Mulitparametric MRI has emerged as an attractive method for identification of clinically significant prostate cancer. Recent developments in magnetic field strength and contrast enhanced imaging are reported to improve diagnostic accuracy but there is variation in their availability. This study evaluated the diagnostic performance of 1.5 Tesla and 3 Tesla MRI with and without dynamic contrast enhancement.
Methods: A prospective cohort of 100 biopsy naïve men were allocated to three different MRI protocols. Protocol A 1.5T: T2W + DWI (29 patients), Protocol B 1.5T: T2W + DWI + DCE (44 patients), Protocol C 3T: T2W + DWI + DCE (28 patients). Lesions were scored from 1 to 5 according to the European Consensus guidelines (PI-RADS) by an expert uro-radiologist. MRI-US fusion targeted biopsy of the lesion combined with systematic transperineal sector. Receiver operating characteristic (ROC) curve analysis was used to compare performance of different MR parameters.
Results: The overall prostate cancer detection rate was 61% of which 84% was clinically significant (41/61). The sensitivity, specificity and area under the ROC curve were as follows; Protocol A: 82%, 62% and 0.841, Protocol B: 79%, 64% and 0.821 and Protocol C: 84%, 67%, 0.85. There was no significant difference in the sensitivity and specificity between the different protocols ($P > 0.05$).
Conclusions: mp-MRI is a useful tool for in the detection of localised prostate cancer. The theoretical benefit of stronger magnetic field strength and dynamic contrast enhanced to not appear to translate into clinical practice.

MP4-13 Utility of preoperative 3 Tesla multiparametric pelvic phased-array magnetic resonance imaging in prediction of extracapsular extension of prostate cancer and its impact on surgical margin status: Experience at a Canadian tertiary academic health centre

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Introduction: Magnetic resonance imaging (MRI) is rapidly gaining ground in the preoperative planning for radical prostatectomy (RP). Reports of its predictive ability to detect

extracapsular extension (ECE) have varied significantly in the literature. We evaluated the ability of 3 Tesla (3T) pelvic phased-array (PPA) multiparametric MRI (mpMRI) to predict ECE and its subsequent effect on surgical margin status in a patient cohort treated by a single urologic oncologist.
Methods: We retrospectively evaluated 48 preoperative RP patients who underwent 3T PPA mpMRI based on clinical probability of adverse pathological features. T_1- and T_2-weighted sequences, diffusion-weighted imaging (DWI) and dynamic contrast-enhanced (DCE) mpMRI was used in all cases, each read by an expert genitourinary radiologist. Tumor stage based on mpMRI was compared to pathological stage. Specificity, sensitivity, positive predictive value (PPV), and negative predictive value (NPV) of mpMRI in predicting ECE were calculated. Positive surgical margin rates of patients with positive ECE on mpMRI were compared to those patients with negative ECE on mpMRI.
Results: Forty-two (88%) patients were intermediate or high risk based on D'Amico criteria. The mpMRI reports predicted 19 (40%) patients to be positive for ECE, while final pathology revealed that nine of these patients were actually ECE positive, with two having positive surgical margins. Of the 29 (60%) patients who were not predicted to have ECE based on mpMRI, 14 had positive ECE on pathology, 12 of whom had positive surgical margins. Preoperative 3T PPA mpMRI using T_1- and T_2-weighted sequences with DWI and DCE achieved a sensitivity of only 44% and a specificity of 61% in predicting ECE on surgical pathology. The PPV and NPV were 55% and 50%, respectively. Of the patients with ECE reported on mpMRI, 11% had positive surgical margins compared to 41% of those patients without ECE on mpMRI.
Conclusions: At our centre, the use of preoperative 3T PPA mpMRI using T_1- and T_2-weighted sequences with DWI and DCE in predicting pathological ECE and surgical margin status is of questionable benefit. Our findings suggest that preoperative mpMRI reports of organ-confined disease may result in closer surgical dissection and subsequent positive surgical margins, regardless of true pathological staging. As such, caution should be exercised when basing intraoperative decisions on mpMRI findings.

MP4-14 Multiparametric 3T MRI in the evaluation of prostate cancer and Correlation with histopathology

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Introduction: We sought to determine how reliable multiparametric MRI is in the detection of intraprostatic prostate cancer and what role it has in risk stratification.
Methods: The study population included 46 patients(mean age 68.2 years, range 49–75 years)with a mean PSA level of 52.2 ng/mL, who had biopsy proven prostate cancer diagnosis prior to MR imaging from 2012 to 2014. The MRI protocol included triplane T2W TSE MRI, DW MRI, MR spectroscopy, DCE MRI. Following imaging, patient specific specimen molds were created. Histopathology specimens were mapped by location, size and Gleason score blinded to Mirth effects of lesion size [greatest diameter ≤ 5 mm vs. > 5 mm] and Gleason score [≤ 7 vs. > 7] on sensitivity of MP MRI were also evaluated.
Results: A total of 2760 sectors (1164 in PZ, 582 in CG) were analyzed both in MP MRI and histopathologic specimens. Histopathologic evaluation revealed 539 tumor-positive sectors(452 in PZ, 87CG). For cancers < 5 mm and > 5 mm the detection rate for T2-weighted imaging was 37% and 68%, sensitivity of DWI was 33% and 64% respectively. For cancers with Gleason's score < 7 and Gleason score > 7, sensitivity of T2WI was 56% and 85%respectively, sensitivity of DWI was 52% and 74% respectively. Positive predictive value was higher with MR spectroscopy (94% in PZ, 89% in CG and 96% in overall gland). Sensitivity was highest with T2WI (65% in PZ, 15% in CG and 58% in overall gland).
Conclusion: Our data indicates that MP MRI of prostate at 3T enables accurate tumor detection with reasonable sensitivity and specificity values in most cases. MP MRI has better sensitivity for detecting larger (> 5 mm in diameter) and more aggressive(Gleason score of > 7) tumors.

MP4-15 Robotic HIFU: Evaluation with D-CE-MR Imaging

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Aim of the study: To evaluate the diagnostic performance of the D-CE-MR in adenocarcinoma of the prostate before and after trans-rectal HIFU.
Materials and Methods: *From May 2009 to October 2009 we prospectively analysed 25 consecutive patients affected by prostate cancer (T1-T2). The average age was 70 ± 6 years (range 55–83; median = 71 years). PSA value of 9.0 ± 5.3 ng/ml (range 0.30 – 28.6; median = 8.2). Prostate volume of 28 ± 13 cm3 (range 16–54; median = 28).* All patients, before ultrasound treatment, underwent transurethral resection of the prostate (TURP). The treatment required the use of the 2nd generation Ablatherm device: *(Technomed SA, Vaux en Veline-France®)*. The dosage of the PSA was evaluated at 1, 4 and 6 months after robotic HIFU. Trans-rectal prostate biopsies were carried out at the moment of diagnosis and 6 months after treatment using an 18 gauge needle and TRUS guidance.
Results: Evaluation of the MR images: before the treatment, the intraglandular lesions, hypointense in T2-w sequences and hyperintense in the post-contrast adm. T1-w sequences, were sites of neoplasia (confirmed as sites of prostate adenocarcinoma, with the PSA and histological exam) in all 25 patients ($p < 0.001$). **Evaluation of the MR images (1 mo. post rHIFU)**: in the CE-MRI, the region that underwent treatment showed in all 25 patients, a central portion without contrast uptake surrounded by a thin portion with an important contrast agent uptake (inflammatory condition)**. Evaluation of the MR images (4–6 mo. post rHIFU)**: the prostate presented a significantly reduced total volume (average volumetric reduction, 61%), a diffuse signal hypointensity in the T2-w sequences and a completely homogeneous contrast uptake of the glandular parenchima.
Conclusions: Our results show that CE-MR can be used as ''a method of choice'', non-invasive, for the visualization of adenocarcinoma of the prostate. Such conditions can be verified by the evaluation of the increase in the vascular flow at the level of the neoplasia instead of the normal glandular tissue. The main factor responsible of the contrast uptake present is the neoplastic tissue. ***After HIFU treatment:*** regular trend with no rapid rise nor peaks of enhancement in the 1, 4 and 6 month MR evaluation. Correlation among MRI, PSA and TRUS to value the reduction of prostate volume. MRI as non invasive methodic for evaluating remaining illness. No positive biopsies at 6 mo.

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MP4-16 Diagnosis of adrenal masses – A need of a standardised method of evaluating suspected adrenal masses

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Introduction: Adrenal masses are often incidentally identified on CT imaging to investigate other pathology. The difficulty is confirming them as benign. In uncertain cases the best imaging modality remains debatable. We assessed how incidentalomas were investigated in our trust to evaluate our practice and the benefit of using MRI as a follow up investigation.
Methods: We retrospectively reviewed consecutive cases of adrenal MRI performed to clarify suspected adrenal masses seen on CT. The minimum follow-up was one year.
Results: 45 consecutive cases were assessed of which14 were excluded as MRI adrenals were performed as a primary investigation. In the group of 31 patients who had incidentalomas detected on CT imaging, 21 (68%) patients had adrenal mass with features of adenomas on CT, which were also confirmed on MRI. In 10 (32%) patients the initial CT raised suspicion of indeterminate or suspicious adrenal mass. Of these patients, the use of MRI helped to clarify anatomy showing the lesion to be in another organ in 1 (10%) patient, in 6 (60%) an adrenal adenoma was confirmed and in 3 (30%) patient's sinister pathology was identified prompting further investigation.
Conclusion: In 68% of patients, the use of MRI did not alter management or diagnosis. A standardised consensus for investigation of adrenal masses is needed to limit the use of radiology resources.

MP4-17 A New Method of Intraoperative Radiographic Assessment of Ureteral Length, to Determine the Ideal Stent Length

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Introduction: The accurate determination of ureteric length, and subsequently the length of ureteric stent appropriate for a given patient, remains a challenge. Direct measurement with a graduated catheter is accurate, but may be time consuming or require repeat instrumentation at the end of a procedure. The objective of this study was to describe our experience with an intraoperative technique to measure ureteric length and determine appropriate stent length, and to compare this technique to other methods of determining appropriate stent length.
Methods: Patients undergoing ureteroscopic procedures requiring post-operative stenting and who had a pre-operative CT were prospectively identified. Gender, age, height, BMI, and lumbar height on CT were recorded. Ureteric length was measured using 4 methods: direct measurement with a graduated ureteric catheter, uretero-pelvic junction (UPJ) to uretero-vesical junction (UVJ) distance on axial and coronal CT reconstructions, and using a novel intraoperative radiographic technique. To perform the radiographic measurement, the tip of the cystoscope was positioned at the UVJ. A metal bead was then affixed to the skin over the UVJ. The tip of an angiographic catheter with radiopaque markings at 1 cm intervals out to 24 cm was positioned at the UPJ. Ureteric length was determined by measuring the distance from the UPJ to the bead at the UVJ using the catheter markers. Correlation between direct ureteric measurement and the recorded variables and methods of ureteric length measurement were then calculated. Stent length was chosen based on the ureteric length obtained through radiographic measurement. Stents were deemed of appropriate length if they demonstrated a proximal coil in the renal pelvis and a distal coil in the bladder without crossing midline.
Results: 18 ureters from 16 patients (14 men and 2 women) were included in the study. Radiographically measured ureteric length was most strongly correlated with direct ureteric measurement. ($r = 0.833$, $p < 0.01$). Coronal CT ureteric length was also significantly associated with direct measurement ($r = 0.569$, $p = 0.014$). Height, CT axial ureteric length, and lumbar height on scout or coronal CT were not significantly associated with direct measurement. Stents were deemed of appropriate length in 17/18 cases, with one stent being excessively long.
Conclusions: This new intraoperative method for radiographic ureteric length measurement is strongly correlated with directly measured ureteric length. A length of stent chosen based on radiographic ureteric length resulted in an appropriate stent length in nearly all cases.

MP4-18 Intravenous Urogram (IVU) – a valuable modality for specific indications in endourology

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Introduction: CTU (computed tomography urogram), has largely replaced the older technique of IVU. However, IVU may have some advantages including the ability to acquire delayed films as needed and a significantly lower effective radiation dose in comparison to CTU.

We reviewed our data in search of specific indications in which IVU may provide unique diagnostic data in comparison to other imaging modalities.
Methods: A retrospective review of all IVU studies performed in our institution during 2010–2015 was conducted. Patient's data, previous imaging modalities and the indication to perform an IVU were recorded. The diagnostic value of IVU was analyzed.
Results: The study cohort consisted of 60 consecutive patients that underwent an IVU. The ratio of IVU and CT performed in the study period was 1:10. The indication for IVU included: 1) assessment of renal obstruction in patients with a dilated collecting system, previously operated or with an abnormal anatomy 2) Defining the presence of a ureteral stone in patients with a nonconclusive CT 3) Identifying renal diverticular stones 4) Mapping of the renal collecting system in abnormal renal and ureteral anatomy conditions.

IVU provided specific additional diagnostic data in 90% of the patients. The IVU study altered the treatment plan in 68% of the patients.
Conclusions: IVU should remain an optional imaging modality in endourology. For specific indications it may be superior to current imaging modalities.

MP4-19 Floroscopy guided, Endoscopic Trans vesical ureteroneocystostomy for distal end ureteral obstruction.

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Introduction: Distal end ureteral obliteration may develop secondary to resection of non-muscle-invasive bladder cancer on or close to ureteral orifice. Identification and dilation of ureteral orifice may be impossible in these cases. Ureteral reimplantation is not recommended in such a potentially malignant bladder. We aim to achieve ureteral patency with proper drainage of the upper urinary tract in a minimally invasive way without violating the patency of this potentially malignant bladder.
Patients and Methods: Between January 2010 and February 2015, Twenty one patients with NMIBC had distal end ureteral obliteration after aggressive TURBT with consequent severe back pressure on the ipsilateral upper tract. As the UO could not be identified endoscopically, the ureter is opasified with a mixture of contrast material and methyline blue either through a pre placed nephrostomy tube or an intraoperative antigrade pyelo-ureterography. Under precise floroscopic guidance, the bladder wall overlying the distal ureteral end is incised until the lumen of the dilated ureter is entered. Trimming of the edges is done then two ureteric stents are placed side by side in the ureter and left for 6 weeks.
Results: All ureters are accessed by this technique. Mean operative time was 35 minutes. No significant intra or early post operative complications developed. Mean floolw up of 34 months revealed improvement of upper tract drainage in 16 patients with recurrence of stenosis in five patients who needed redo procedure. Vesicoureteral reflux developed in 12 patients and was managed conservatively.
Conclusion: In such a tight situation of distal end ureteral stricture in a potentially malignant bladder, this technique can safely and efficiently help to save the upper tract.

MP4-20 Novel Use of an Image Enhancement Device to Reduce Fluoroscopic Radiation Exposure During Ureteroscopic Lithotripsy: A Randomized, Prospective Clinical Evaluation of LessRayTM

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Purpose: Intraoperative exposure to ionizing radiation is a growing concern for the safety of both patient and OR staff. Efforts to reduce the amount of radiation during ureteroscopic procedures often result in decreased image quality. LessRay™ is a device used to digitally enhance images obtained from a C-arm using a low-dose pulse setting allowing for reduction in radiation dose while maintaining image quality.
Materials and Methods: A randomized prospective trial of 23 patients was performed comparing ureteroscopic cases for unilateral obstructing ureteral stones using standard fluoroscopy compared to LessRay™. Patient demographics, stone parameters, and operative characteristics were recorded in addition to total radiation dose, total fluoroscopy time and images obtained. Dosimetry badges worn by OR personnel estimated radiation exposure to operating room staff.
Results: Average patient radiation dose was decreased from 1003 to 373 mRAD ($p = 0.008$) per case, along with total fluoroscopy time (43.32 vs. 16.2 sec, $p = 0.006$) and average dose per image (23.6 vs. 10.3 mRAD/image, $p = 0.002$) using LessRay™ compared to standard fluoroscopy intraoperatively. A reduction in radiation exposure to the surgeon was also noted ($p = 0.03$). Image quality was not compromised and no conversion from LessRay™ to standard fluoroscopy was needed in any case.
Conclusions: A nearly threefold reduction in patient radiation exposure was achieved using the LessRay™ digital enhancement device compared to standard fluoroscopy. This novel technology has not previously been used in urologic surgery and offers a promising alternative to standard fluoroscopy while ameliorating risks to both the patient and surgeon.

MP4-21 Stone size and location are associated with increased ionising radiation exposure during ureterorenoscopy and Ho:YAG laser lithotripsy

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Introduction & Objectives: Stone formers are often exposed to significant ionising radiation from radiological investigations and management. Ureterorenoscopy and laser lithotripsy (URS + LL) is an option for treatment of ureteric and renal stones of small or moderate size. The use of fluoroscopy can increase the total yearly effective radiation dose and pose potential long-term risks. Predicting radiation would allow the clinician to quantify expected cumulative radiation and find strategies to minimise radiation exposure.

We evaluated radiation exposure during URS + LL for a single stone episode and correlated to patient and stone characteristics.
Method: Data was collected retrospectively for all patients undergoing URS + LL in our Stone Centre between 1st January 2013 and 31st January 2014. Patients with multiple stones, staghorn stones or incomplete stone clearance were excluded for simplification. Patient characteristics, radiation exposure from ureteric stent placement, fluoroscopy and stone characteristics from computer tomographs were recorded.
Results: 302 patients were included in the study of which 195 were male. The mean age was 56 years (range 21 – 92 years). The majority of stones were located in the kidney/renal pelvis (54%) while the rest were located in the upper ureter (18%), middle ureter (15%) and lower ureter (13%). The mean stone density was 690 Hounsfield units (HU) (range: 100 to 1862 HU). The mean stone diameter was 7.5 mm (range 1 – 30 mm). The mean radiation exposure time during URS + LL was 44 seconds (range: 12 – 119 seconds) with a mean total radiation exposure of 7.5 mGy (range: 1.2 – 29.7 mGy). Renal stones were associated with 27% higher radiation exposure compared to ureteric stones (8.3 vs 6.7 mGy; $p = 0.007$). Stone location within the ureter did not influence radiation exposure significantly. There was a positive correlation between maximum stone diameter and radiation exposure (Pearson's correlation coefficient $\rho = 0.27$; $p < 0.001$). Stones with diameter greater or equal to 10 mm were associated with 37% higher radiation exposure compared to smaller stones (9.05 vs 6.6 mGy; $p < 0.001$).
Conclusion: There is a direct positive correlation between stone burden and radiation exposure during ureterorenoscopy and laser lithotripsy. Patients with larger renal stones and truncal obesity are at higher risk. Clinicians should consider strategies to reduce total radiation exposure in patients at risk of high radiation exposure such as pulsed rather than continuous fluoroscopy.

MP4-22 Optimization of Fluroscopic Imaging to Reduce Radiation Exposure in Children Undergoing Endourological Intervention

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Introduction: The era of minimal-invasive surgery has created a heavy dependence on fluoroscopic guidance to allow a real time imaging of the patient. Radiation protection management recommends radiation exposures that are as low as reasonably achievable, while still maintaining diagnostic image quality. The aim of the study is to prospectively compare fluroscopy time during pediatric endourological intervention before and after implementation of strategy for optimization of fluroscopic imaging and study its effect on surgical outcomes.
Materials and Methods: We observed 56 consecutive endourological intervention in children in whom a dose reduction strategy was adopted. The strategy included several measures, including optimizing position by performing the procedure with the patient table elevated while keeping the fluoroscopy table as far from the X-ray tube as possible (to reduce skin entry dose), and the image intensifier close to the patient (to maximize image capture), use of pulsed mode with last image hold technique, beam collimation, use of a designated fluoroscopy technician. Outcomes were compared to those in 42 children before implementing dose reduction protocol.

Fluoroscopy times, operative time, stone free rate, perioperative complications were compared between both groups. Fluoroscopic times, operative times, stone free rate, and complications were compared before and after strategy implementation using a paired *t*-test
Results: Operative time ($P = 0.53$), stone free area ($P = 0.36$), and complication rate ($P = 0.21$) were similar between the 2 groups. Total fluoroscopy time was significantly reduced by 55% from 1.68 to0.75 minutes ($p < 0.002$) with very little loss of image quality.
Conclusion: Radiation exposure in children undergoing endourological interventions can be reduced significantly after optimization of fluroscopy imaging. Reduced radiation protocol did not increase surgical complexity, operative time, or complication rates while reducing radiation exposure in such susceptible populati

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MP5 - LAPAROSCOPY: UPPER TRACT BENIGN 1

MP5-1 3D Laparoscopic Right Nephrectomy for Giant Right Renal Vein Aneurysm and Successful Auto Transplantation

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Introduction and objective: True renal vein aneurysm are very uncommon and right sided is less common (< 3% of visceral aneurysm).1. Our patient is a 44 year old male who presented with hypertension, vague abdomen discomfort and on evaluation found to have large right renal vein aneurysm of more than 10 cm We opted for 3D laparoscopic right nephrectomy and proceed to aneurysmorrhaphy on bench surgery and Autotransplanation if technically feasible. We present our technique of laparoscopic nephrectomy in large right renal vein aneurysm and successful autotransplanation.
Methods: Patient was evaluated with contrast enhanced CT, Renal angiogram and isotope scan. Bowel preparation was done with Poly ethylene glycol. Transperitoneal 5 port technique was used. The venous anaeurysm was arising from the upper division of main renal vein. Peritoneal fold over the venous aneurysm helped us to follow the ''NO TOUCH'' technique of venous aneurysm to prevent any pressure effect. Ureter was divided at lower level. Once right renal artery was secured with haemolock clips venous aneurysm collapsed and collapsed renal vein secured with multiple haemolock clips. Hilar vessel divided with cold scissors and kidney was retrieved intoto through Right iliac fossa incision. Kidney was cooled in ice slush and HTK perfusion. The warm ischaemic time was 5 mts. Aneursym was excised and aneurysmorrhaphy was done with prolene 6-0 sutures and it was found to be feasible for autotranplant. Renal bed for auto transplantation was prepared by extending the kidney retrieval incision medially. Renal artery was anastamosed to internal iliac artery end-end with prolene 6-0 and renal vein to external iliac vein in end –side fashion with 5-0 prolene. Ureteroneocytostomy done and stent placed. Intraoperative urine output noted and postoperative Doppler study showed good vascular kidney.
Results: Operative time was 6 hrs with blood loss of 50 ml. No blood transfusion given. Successful autotransplanation with good graft outcome.
Conclusion: 3D laparoscopic approach for renal vascular anomalies is technically feasible, safe with good functional outcome and reduced morbidity in selected cases. Extra corporeal surgery (bench surgery) with autotransplantation is a tactical solution for extremely challenging cases and preservation of kidney. Because of rarity of Renal vein aneurysms, there are insufficient data regarding optimal treatment.

MP5-2 Laparoscopic Ureteroureterostomy for Circumcaval Ureter: Single Center Experience with 5 Cases

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Purpose: To describe our experience and 1-year follow-up of 5 patients with circumcaval ureter (CU) treated laparoscopically at a tertiary referral center.
Patients & methods: Between Jan 2012 till July 2014, 5 patients (4 males and 1 female) with symptomatic CU were referred to our center. Ultrasonography and IVU demonstrated hydronephrosis of the right kidney. Type 1 CU with typical S shaped deformity was seen in 3 cases while type 2 was found in 2 cases. Computed tomography with contrast confirmed these findings and excluded presence of any associated anomalies. Diuretic renogram was done in all patients to confirm obstruction and provide baseline renal function for follow up later on.

All 3 patients underwent laparoscopic transperitoneal surgical repair. After reflection and mobilization of the ascending colon and exposure of the retroperitoneum, the IVC and ureter were identified. The lower ureter was mobilized sufficiently to facilitate tension-free anastomosis. Transection and reanastomosis of

the ureter anterior to the IVC using running sutures (4/0 Vicryl) were performed. A double Pigtail ureteral stent was kept for 6 weeks after surgery.
Results: The mean operative time was 180 minutes. The mean estimated blood loss was less than 100 mL in all patients. All cases were successfully managed laparoscopically without conversion to open surgery. The mean length of hospital stay was 6 days. Two patients had persistent urine leakage from tube drains, they were discharged with tube drain and leakage stopped spontaneously 2 weeks after surgery.

Intravenous urography obtained 3 and 12 months after surgery demonstrated patent anastomosis with significant reduction of hydronephrosis.
Conclusion: Our results showed that laparoscopic repair of CU is feasible and successful. The sample size was quite small because of rarity of this congenital anomaly. Long term follow up results are required to prove our findings.

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MP5-3 Pyeloplasty in marginal kidneys – is it worth doing?

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Introduction: Pyeloplasty remains the treatment option of choice in patients with pelvicouretetic junction (PUJ) obstruction, in order to attempt to improve drainage from the affected kidney and preserve or improve renal function if possible. The role of pyeloplasty in 'marginal' kidneys – those displaying less than 25% split function on renography pre-operatively, is still uncertain, as it is not known whether there is any long term benefit to dis-obstructing these kidneys with regard to improvement of drainage or preservation of function. We report our data from a single centre UK teaching hospital for patients undergoing this procedure.
Patients and Methods: 117 patients undergoing unilateral pyeloplasty were selected over a 4 year period in our centre. Outcomes were assessed using a retrospectively compiled database looking at operative method and reports from pre- and post-operative renography. Data regarding split function and drainage assessment were included.
Results: Of the 117 pyeloplasties performed, 29 were excluded due to incomplete renography information. The surgical modality of remaining 88 pyeloplasties was: 9 open, 24 robotic and 55 laparoscopic. There were 7 pyeloplasties performed on marginal kidneys – 1 open, 6 laparoscopic. Overall post-operative split function was assessed as such: no change - 18%, decline - 39%, improvement - 43%.

Residual dilatation was observed in 85%, but there was an improvement in drainage and obstruction in 83% and 78% of patients respectively. Of the 7 marginal kidneys, post-operative split function was equivocal in 1 patient, declined in 3 patients (5%,6% and 7% decline seen respectively) and improved in 3 patients (1%, 8% and 14% improvement seen respectively). All patients remained dilated post-operatively, but 5 patients showed improved drainage and 4 showed resolution of obstruction.
Conclusions: Although a small sample size, it would appear that performing pyeloplasties on 'marginal' kidneys still conveys benefit, and their post-operative split function, drainage, obstruction and residual dilatation rates are comparable to the wider population undergoing pyeloplasties. Ongoing analysis looking at improvement of symptoms and QoL would be useful in order to draw further Conclusions.

MP5-4 Laparoscopic Pyelolithotomy: A Good Alternative for Open Surgery and PCNL

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Introduction and Objectives: Complex renal stones which ESWL is not indicated should undergo other modalities, which PCNL is the gold standard. Laparoscopy seems a good alternative for staghorn stones. We evaluated the feasibility, safety and efficacy of laparoscopic pyelolithotomy in our center.
Materials and Methods: Between September 2010 and March 2015, 68 cases of staghorn renal stone underwent laparoscopic removal. Procedure was performed in flank position, under general anesthesia, colon mobilized, pedicle and renal pelvis explored. Stone extracted through pyelotomy incision and ureteral stent put. The incision repaired and hemovac drain inserted. Stone removed from the extended port which was placed lateral to rectus muscle.
Results: Our patients included 45 men and 23 women, mean age 42(24–71). Mean operation time was 115 minutes (90–160), and mean hospital stay 2.5 days (2–4). six patients received blood transfusion. Three patients had residual stone in calices who underwent ESWL. Fever was seen in 11 patients and well controlled with antipyretics.
Conclusion: Laparoscopic pyelolithtomy is a good alternative method in selected cases.

MP5-5 Laparoscopic nephrectomy for urolithiasis: when is better to avoid it

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Introduction: Laparoscopic nephrectomy may be necessary to manage urolithiasis in cases of severe urinary infection and symptomatic renal unit with relative poor function. This study aims to investigate the predictive factors for surgical complications after laparoscopic nephrectomy for urolithiasis.
Patients and Methods: We retrospectively evaluated 84 consecutive patients submitted to laparoscopic nephrectomy and 66 patients submitted to open nephrectomy for urolithiasis from January 2006 to July 2012 in a tertiary reference center. We analyzed clinical characteristics, laboratory data and preoperative computed tomography features (kidney size, presence of abscess, adherence and fistula). Renal function was assessed by the equation of the Modification Diet for Renal Disease for estimated glomerular filtration rate, staging according to *National Kidney Foundation* and DMSA renal scintigraphy scan. Comorbidity was evaluated by Charlson comorbidity index and *American Society of Anesthesiologists* (ASA) score. Primary endpoint was conversion to open surgery and secondary endpoint was Clavien-Dindo score. Logistic multivariate regression models assessed the predictors for surgical complications.

In order to assess the disadvantage of initial laparoscopy approach, length of hospitalization and surgical complications were compared between converted procedures and open nephrectomy.
Results: The median hospitalization period in laparoscopic nephrectomy was 3.0 ± 2.3 days. Conversion to open surgery occurred in 19.0% (16/84) patients.

On univariate analysis, the presence of renal abscess ($p = 0.033$), perirenal abscess ($p = 0.023$), pararenal abscess ($p = 0.006$), renocutaneous fistula ($p = 0.006$), liver or spleen adhesion ($p = 0.015$) and bowel adhesion ($p < 0.001$) were associated with conversion to open surgery. On multivariate analysis, only pararenal abscess ($p = 0.005$) and bowel adhesion ($p < 0.001$) remained significantly associated. Higher preoperative chronic kidney stage ($p = 0.019$) and higher ASA score ($p = 0.009$) were significantly associated with Clavien-Dindo score > 1 on both univariate and multivariate analysis.

Length of hospitalization was not significantly different between converted and open nephrectomy groups (4.5 ± 3.1 days and 6.0 ± 11.4 days, $p = 0.328$, respectively). Compared to open procedure, converted nephrectomy had a higher chance of liver, spleen or great vessels lesions ($p = 0.012$, OR = 4.9, 95% CI 1.5–16.6).

Conclusions: Pararenal abscess and bowel adhesion were predictors for conversion to open surgery. Higher preoperative chronic kidney stage and higher ASA score were associated with Clavien-Dindo score > 1. Compared to open procedure, converted nephrectomy had almost five times higher chance of liver, spleen or great vessels lesion. We suggest that laparoscopic nephrectomy should be avoided when tomographic signs of pararenal abscess and bowel adhesion are present to reduce the rate of postoperative complications.

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MP5-6 Laparoscopic Heminephrectomy for Benign and Malignant Diseases of the Horseshoe Kidney

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Introduction: To present our pure laparoscopic heminephrectomy experience in 13 patients with horseshoe kidney (HK).

Patients and Methods: A total of 13 patients with HK underwent pure laparoscopic heminephrectomy (Transperitoneal = 7, Retroperitoneal = 6) due to benign and malign renal conditions (Non-functional hydronephrotic and/or infected kidney = 12, Kidney mass = 1).

Results: The mean age of the patients was 45.8 ± 4.6 (range; 28 to 77) years. The mean operating time was 140 ± 1.8 (100–180) minutes, and estimated blood loss was 131 ± 12.6 (30–320) ml. The mean hospital stay was 2.3 ± 1.4 (1–5) days. Division of istmus was performed with stapler in 5, ultrasonic scalpel in 3, 15 mm Hem-o-lok® (Weck-Teleflex, US) clip in 3, 10 mm LigaSure® (Covidien Healtcare, US) vessel seal system in 1 and endoscopic suturization with using 0 polyglactin suture in 1 patients without bleeding. Twelve patients underwent pure laparoscopic heminephrectomy due to nonfunctional hydronephrotic and or infected kidney. One patient underwent transperitoneal laparoscopic right heminephrectomy due to kidney mass. According to modifies Clavien classification, Grade I complication *(Wound infection)* occurred in 1 (7.7%) patient underwent heminephrectomy due to non-functional kidney.

Conclusions: Laparoscopic heminephrectomy in HK seems to technically feasible and safe for benign and malignant diseases in a HK.

MP5-7 Intraoperative antegrade stenting for laparoscopic pyeloplasty; tips, tricks and pitfalls

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Aim: To discuss techniques involved in confirmation of antegrade JJ stent placement during laparoscopic pyeloplasty.

Patients and methods: Data was collected from 89 patients who had undergone laparoscopic pyeloplasty between April 2004 and October 2014 in a single centre. 11 patients were excluded; 2 due to incomplete data and 9 due to preoperative stenting for pain/infection. Three different techniques of confirmation were performed by three surgeons.

Results: Antegrade JJ stent insertion with endoscopic confirmation (EC) (intra-operative flexible cystoscopy) was performed in 28 patients and without confirmation (WoC) in 30. 20 patients had confirmation of placement by artificial filling (AF) of the bladder intraoperatively. Intravesical position was confirmed by observing reflux of saline through/around the stent.

Five patients had malpositioned stents in the upper ureter, 4 had to have stents repositioned. Two AF patients had a failed antegrade stent insertion, resulting in malposition of the lower end of the stent within the ureter; one diagnosed and repositioned with the aid of semi-rigid ureteroscope intraoperatively, and the other at the time of elective stent removal (this patient had to have the stent removed at a later date under general anaesthesia). One WoC patient was readmitted with pain; X-ray KUB confirmed intra-ureteric stent position and the patient was taken back to theatre for repositioning.

Conclusion: Correct position of antegrade JJ ureteric stent should be confirmed intra-operatively. Intra-operative endoscopic confirmation of stent position is the gold standard, however, artificial filling of the bladder seems to be safe and reliable, reducing requirements for additional instrumentation.

MP5-8 Laparoscopic pyeloplasty with concomitant pyelolithotomy

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Introduction: To assess the efficiency of laparascopic pyelolithotomy and laparoscopic pyeloplasty (LP) in patients suffering from ureteropelvic junction (UPJ) obstruction in combination with renal stones.

Materials and Methods: A total of 96 patients (42 males and 54 females) underwent laparoscopic pyeloplasty of UPJ at the urology clinic of North-Western State Medical University. The age of the patients ranged from 20 to 64 years (mean 30.4 ± 4.8 years). Fifty two patients underwent right laparoscopic pyeloplasty and 44 patients underwent left laparoscopic pyeloplasty. All procedures were performed using transperitoneal approach with the patient placed in lateral position. Fourteen patients (14.6%) who suffered from UPJ obstruction in combination with stones of kidney underwent laparoscopic pyelolithotomy followed by laparoscopic pyeloplasty. After the resection of UPJ intraoperative pyelocalicoscopy was performed using rigid ureteroscope, which provided the access for examination of all groups of renal calyxes with subsequent remove of the renal stones.

Results: No conversion was seen. The leakage of urine occurred in 4 patients. In 3 patients the leakage stopped spontaneously and 1 patient underwent laparoscopic re-pyeloplasty and suture of anastomotic disruption. Three patients experienced the recurrence of UPJ stricture, 2 of them underwent retrograde

endopyelotomy and 1 of them underwent open re-pyeloplasty. These cases occured at the stage of experience acquisition. However, these patients did not undergo pyelolithotomy. The stones were fully removed in all patients and pyeloplasty was performed in all of 14 patients. We did not notice any postoperative complications.
Conclusions: LP is defined as a procedure of choice in patients suffering of primary UPJ stricture. In the case of hydronephrosis coupled with renal stones intraoperative pyelocalicoscopy is preferred. The procedure should be performed using rigid ureteroscope, which provides a possibility to remove all stones with minimal postoperative risk of complications.

MP5-9 Risk factors of unstable hemodynamic during laparoscopic adrenalectomy for the management of pheochromocytoma

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Introduction: Despite the development of newer surgical and anesthetic techniques for the management of pheochromocytoma, intraoperative hemodynamic fluctuation continues to present a challenge. In this study, we retrospectively evaluated the risk factors for hemodynamic fluctuation during laparoscopic adrenalectomy in patients with pheochromocytoma.
Patients and Methods: Data from 53 patients diagnosed with pheochromocytoma at our institution between January 2000 and June 2012 were retrospectively analyzed. The subjects were divided into 2 groups depending on the presence of hemodynamic fluctuation at the time of surgery. Patients' demographic characteristics, preoperative evaluations, and postoperative outcomes were assessed for their prognostic relevance with respect to intraoperative hemodynamic fluctuation. A univariate analysis and multivariate logistic regression analysis was performed.
Results: In the univariate analysis, systolic blood pressure at presentation, preoperative hormonal status (including epinephrine, norepinephrine, vanillylmandelic acid, and metanephrine levels in a 24-hour urine sample), and tumor size were found to associate significantly with the development of hemodynamic fluctuation. The multivariate analysis revealed that the preoperative epinephrine level and the tumor size were independent factors that affected hemodynamic fluctuation.
Conclusion: In this study, a larger tumor size and elevated preoperative urinary epinephrine level were found to be risk factors for intraoperative hemodynamic fluctuation during laparoscopic adrenalectomy in patients with pheochromocytoma.

MP5-10 Transvesical Laparoscopic Surgery for megaureters

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Objectives: Transvesical laparoscopic cross-trigonal ureteral reimplantation (TLCUR) is a minimally invasive technique with a high success rate and is one of the attractive surgical options for vesicoureteral reflux. As an application of TLCUR, we report the performance of transvesical laparoscopic surgery in patients with megaureter cases.
Subjects and methods: The subjects include 5 patients with megaureter who underwent transvesical laparoscopic surgery at our department. To perform the surgery, three 5 mm ports were directly placed into the bladder from the lower abdomen. A 5 mm flexible laparoscope and 3 mm forceps were used. The tapered portion of the ureter was closed by 5-0 absorbable suture. A submucosal tunnel was created, and according to the cross-trigonal technique, ureterocystoneostomy was performed. Operating time, length of stay, and postoperative resolution of disease were evaluated.
Results: The subject consisted of 2 female and 3 males. The median age was 5 years (range: 2 to 26 years). The mean operation time was 282 minutes (197 to 360 minutes). There were no intraoperative and postoperative complications. The median observation period was 30 months (24 to 40 months), and no recurrence of UTI or aggravation of renal function was observed in any subject. Their hydronephrosis and ureter were improved in all cases.
Conclusions: By transvesical laparoscopic surgery, it is possible to perform radical surgery in patients with megaureters using three small incisions of 5 mm without making an incision in the lower abdomen. Collectively, transvesical laparoscopic surgery is a safe and minimally invasive surgery for megaureters.

MP5-11 Diagnosis and treatment of adrenal hematolymphangioma (with 4 case reports)

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Objective: To discuss the diagnosis and treatment options of adrenal hematolymphangioma with selective literature review.
Methods: We performed retrospective analysis of 4 adrenal hematolymphangioma cases by combining clinical manifestations, imaging characteristics and treatment information.
Results: A small group of 4 patients consisted of 2 men and 2 women, the average age is 48 year-old (range from 28 to 57). 2 had adrenal masses on left side, the other two were in right. CT scan revealed low density masses with clear boundaries. MR image appeared to be T1 long and T2 long signals. All the patients received retroperitoneal adrenalectomy. All the patients were diagnosed to be hematolymphangioma by postoperative pathological examinations.
Conclusion: adrenal hematolymphangioma is a kind of rare disease. The diagnosis mostly relies on histopathological result. Retroperitoneal laparoscopic surgical excision is a reliable choice of treatment.

MP5-12 Laparoscopic Retroperitoneal Right Ureterolithotomy

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Introduction: In this presentation, we aim to show our technique about laparoscopic retroperitoneal ureterolithotomy to a patient with right mid-ureteral stone.
Materials and Methods: A 25 years old patient referred our center with voiding symptoms. His physical examination, complete blood counts and routine blood tests were normal.

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Microscopic hematuria seen in urine tests. In direct urinary system graphy, we detected 18 mm opacity in right lateral of L4 vertebra. Grade 3 hydronephrosis was observed in the sonographic evaluation. Computed tomography showed 18x10 mm stone in middle part of right ureter, and dilatation in proximal part of the stone. DMSA scintigraphy showed right kidney function was %39. Then we inserted D-J catheter before the surgery and performed a laparoscopic right retroperitoneal ureterolitotomy
Results: The stone in the middle part of the ureter was removed and the ureter was sutured water tightly There were no intraoperative and postoperative complications. D-J catheter is extracted after 30 days.
Conclusions: Large Stones in ureter which treatments are difficult by ESWL and URS, can be treated by laparoscopic retroperitoneal approach. Laparoscopy can be better alternative to open surgery for large stones in ureter.

MP5-13 Withdrawn

MP5-14 Retroperitoneal laparoscopic surgery for Ureteropelvic Junction Obstruction by double renal veins

M Qiu

China

Objective: To evaluate the safety and efficacy of retroperitoneal laparoscopic surgery for UPJO of double renal veins.
Methods: Patient was a 28 years male with left low back pain for 6 months, and diagnosis as left hydronephrosis and UPJO. The patient was placed a ureteral stent for 3 months, but still hydronephrosis, so pull out the ureteral stent. Then the patient came to our department for therapy. CT scan showed UPJO, and left Ureteropelvic Junction was near to renal vein. Nephrogram showed left GFR 35.26 ml/min, and right GFR 34.36 ml/min. Left upper urinary tract was mechanical obstruction. The patient underwent retroperitoneal laparoscopic Anderson—Hynes dismembered pyeloplasty.
Results: The procedure was successful, 2 left renal veins were found, and the ventral renal vein was in front of ureter and pressed the ureteropelvic junction. An aberrant renal artery went into left kidney with ureter. 0.5 cm stenosis of ureteropelvic junction was cut, then pelvis and ureter were sew up in front of the ventral renal vein with placed a ureteral stent. Surgical time was 240 min, and blood loss was 50 ml. Postoperative hospital stay time was 4 days. During short term follow up, patient was well without hydronephrosis.
Conclusion: Retroperitoneal laparoscopic surgery for UPJO of double renal vein is minimal invasion, safe and effective.

MP5-15 Laparoscopic nephro ureterctomy for nonfunctioning kidney

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Morocco

Objective: we reported the safety and efficacy of transperitoneal laparoscopic nephroureterctomy for nonfunctioning kidney with ureteral pelvic lithiasis.
Materials & Methods: A 50 year-old female presented with right flank pain. The CT-scan showed a nonfunctioning kidney with 2 cm pelvic lithiasis. The scintigraphy cofirm the nonfunctioning kidney. We performed a transperitoneal laparoscopic approach with an iliac incision to extract the kidney with the ureter and the lithiasis.
Results: the operative time was 1 hour. The blood loss was 30cc. We performed an iliac incison for extract the kidney with the uretere and the lithiais. There were no bleeding complications. The catheter was take out the first postoperative days, and the patient left the hospital in the second day.
Conclusion: the laparoscopic nephrourterectomy for nonfunctioning kidney with ureteral pelvic lithiasis is an operation of choice for this kind of lesions. This intervention as well as other laparoscopic procedures has become easier with safety and efficacy.

MP5-16 Laparoscopic Intraperitoneal Pyeloplasty with Renal Stone Extraction

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Introduction: We report a case of symptomatic ureteropelvic junction obstruction with secondary lower pole stone. The video shows a transperitoneal laparoscopic pyeloplasty combined with renal stone extraction.
Methods: 42-years-old male patient with a left flank pain more then 6 months referred to our center. His phsyical examination, blood and urine tests were normal. Grade 3 hydronephrosis and 13 mm lower pole stone was observed in the sonographic evaluation and the pelvis anteroposterior **diameter was 5 cm.** Intravenous pyelography showed severe hydronephrosis in her right kidney, and the ''reverse J'' shape of the collecting system suggested circumcaval course of the ureter. Left kidney has perfused normally but has increased size and decreased uptake with cortical thinning; accumulation in dilated collecting system proximal to the UPJ in the DTPA scan. A transperitoneal laparoscopic approach is used to perform a dismembered pyeloplasty according to the Anderson-Hynes technique. We introduced the pusher of the catheter to insert an hydrophilic guidewire into the ureter. A double J stent is placed running on the guidewire. Ureteropelvic anastomosis is Performed with a continue 4/0 watertight sutures.
Results: There were no intraoperative and postoperative complications. The patient was discharged after 4 days. D-J catheter is extracted after 45 days.
Conclusion: Laparoscopic approach for performing pyeloplasty combined with renal stones extraction seems to be a safe and feasible procedure.

MP5-17 Anatomical considerations of retroperitoneal peri-renal intrafascia plane

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Introduction: Entrance and extension of peri-renal intrafasica plane during retroperitoneal laparoscopic surgery can expand retroperitoneal space maximally, reduce injury of peritoneum and adjacent organs, the current study was aimed to show the

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anatomical relationship between peri-renal fasciae, elucidate the anatomical approach to find the peri-renal bloodless plane.
Methods: 39 cases of upper tract disease (adrenal gland mass, renal tumor or proximal ureteral calculi, etc) in our hospital from September 2013 to December 2014 who received retroperitoneal laparoscopic surgery were enrolled (age: 23–68 years, gender: 21 male and 18 female). Retroperitoneal peri-renal fasciae were dissected precisely and all video clips were recorded and analyzed.
Results: Lateroconal fascia was exposed after the dissection of flank pad, it's continued from fascia transversalis and covered outside on the reflection of peritoneum. After the incision of lateroconal fasica near the reflection of peritoneum, a flat crescent shaped fat tissue was found, it's always located at the tip of peritoneum with the diameter of 1–2 cm. Drew out the crescent shaped fat tissue and incised the fascia beneath, a foam-like, loose connective tissue was observed, this space located between peritoneum and renal fascia, named peri-renal bloodless plane, extension along this plane could separate digestive and urinary system, avoid damage to peritoneum and adjacent organs. All peri-renal plane were found via this technique, time consumption from incision of lateroconal fascia to the entrance of peri-renal plane was 8.6 min (Range: 4.5–15 cm), no peritoneum injury occurred.
Conclusion: Clearly identification of retroperitoneal peri-renal fasciae and crescent shaped fat tissue are crucial for the entrance of peri-renal intrafascia plane, our finding provides anatomical evidence for retroperitoneal laparoscopic procedural.

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MP5-18 Clinical analysis of retroperitoneal laparoscopic approach in treating adrenal hematolymphangioma

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Objective: to explore the safety and efficacy of retroperitoneal laparoscopic adrenalectomy in treating adrenal hematolymphangioma.
Methods: a small group of 4 patients consisted of 2 men and 2 women diagnosed as non-functional adrenal masses. All the general clinical information, surgical data and postoperative clinical information were collected and analyzed.
Result: the average age of the patients was 48 year-old (range from 28 to 57 year-old). All the operations of retroperitoneal laparoscopic adrenalectomy were successfully performed. The average operative time was 100 min (range from 96 to 176 min), estimated blood loss was 42.5 ml (range from 20 to 50 ml), and postoperative hospitalization was 5.5 day (range from 4 to 7 days). One hypostatic pneumonia occurred and recovered by anti-inflammatory treatment. 4 cases were diagnosed as adrenal hematolymphangioma by postoperative pathological examinations, no recurrence has been observed during a 10 to 20 month follow-up.
Conclusion: adrenal hematolymphangioma is a kind of rare disease which cannot easily be distinguished from other non-functional masses by clinical information. The accurate diagnosis depends on pathological findings, and retroperitoneal adrenalectomy is a safe and effective way for treatment.

MP5-19 Laparoscopic Transteritoneal Decortication of a Giant Left Adrenal Cyst

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Purpose: Laparoscopic cyst decortication has become the standard of surgery for management of giant symptomatic cystic formations. In this presentation we aimed to tell how we perform this surgery.
Materials and Methods: A 42-year-old woman presented with a 2 year history of a left flank pain. Physical examination, urine sample, routine blood tests and complete blood count tests were normal. By ultrasound, we noticed 168x134 mm cystic mass which pushes left kidney to infero-medial direction. For more detailed assessment a computed tomography (CT) performed. From gastro-eusophageal junction to pelvic entrance, 19x11x15 cm measured, retroperitoneal located, thin walled, 10 hounsfield unit (HU) dansity cystic formation was described. The cyst does not have any solid component and its wall has 2 punctate calsification. Kidney is replaced dramatically by cystic mass.
Results: We performed laparoscopic transperitoneal cyst decortication. No complication seen perioperatively. Pathology results reported as non neoplastic simple cyst. Histologically normal surrenal glands detected in cystic wall. After drainage tube was pulled out at 24th hour she was discharged.
Conclusion: Giant cystic formations which caused displacement of anatomic structures, can be treated by laparoscopically.

MP5-20 Ureteral inflammatory myofibroblastic tumor: a case report and literature review

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Objective: To identify the clinical and pathological features, diagnosis and treatment of inflammatory myofibroblastic tumors to improve the comprehension of the disease.
Methods: A case of inflammatory myofibroblastic tumor occurred in ureteral submucosal and lied in its around was reported. A laparoscopic left nephroureterectomy was performed and the specimens were sent to pathology lab for testing.
Results: The left ureteral tumor was completely resected during surgery. Immunohistochemical staining showed Desmin(-), Ki-67(< 1% +), SMA(+), ß-catentin(-), ALK(-), CD117(-), Dog-1(-), S-100(-), CD34(-). The post-operative pathological examination confirmed the diagnosis of ureteral inflammatory myofibroblastic tumor. The patient recovered well and no occurrence of complications.
Conclusions: The inflammatory myofibroblastic tumor occurred in ureteral submucosal and lied in its around is rarely seen, and it has non-specific clinical manifestation. The accurate diagnosis mainly depends on pathological means. Currently, complete excision is the effective therapeutic method for the disease.
Key words: Ureteral neoplasms; Inflammatory myofibroblastic tumor; Immunohistochemistry

MP5-21 Outcomes of a Laparoscopic Pyelolymphatic Disconnection in Patients with Refractory Chyluria

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India

Introduction: Incidence of chyluria in filariasis is up to 10%. With varied options for management, this debilitating disease is famous for recurrences. Here we would like to present our experience and outcomes of laparoscopic pyelolymphatic disconnection (LPLD) for refractory chyluria (RC).
Patients and methods: This prospective study involved 20 patients with RC who underwent LPLD (total 21 renal units: 10 left, 9 right and 1 bilateral) at 2 tertiary care teaching institutions between March 2010 and June 2014. RC was defined as recurrence of chyluria after medical therapy and ≥2 courses of instillation therapy. Exclusion criteria included- age < 15 years, non-parasitic chyluria, any malignancy, pregnancy, medical renal disease and uncontrolled diabetes mellitus. Patient evaluation included clinical assessment, complete hemogram, serum creatinine, serum protein level, routine urinalysis and culture, urine examination for chyle (gross assessment, ether dissolution test, microscopy for fat globules and lymphocytes), triglycerides, cholesterol, and proteins. Preoperative ultrasound abdomen, intravenous urography, cystoscopy and retrograde pyelography were done in all patients. LPLD involved nephrolympholysis, hilar stripping and upper ureterolympholysis using 3 or 4 transperitoneoscopic ports. Patients were followed-up clinically and for presence of chyle in urine at 1, 3, 6, 12 months and thereafter 6 monthly.
Result: Mean age, patient weight, duration of current symptoms, previous instillations, operative time, analgesic requirement (in first 48 hrs.), hemoglobin drop and hospital stay were 33.7 years, 52.7 kg, 4.8 months, 2.6 times, 148 minutes, 324 mg of tramadol, 0.7 mg% and 4.5 days respectively. Urine became clear in all patients immediately after surgery. Three patients had high (> 1 Liter/day) and /or prolonged (> 5 days) chylous drain output which settled spontaneously. At 3 months follow up a significant decrease in urinary protein, triglyceride and cholesterol levels was observed along with a significant rise in serum protein level. At a mean follow up of 28.5 months, surgical procedure alone was curative in 85% of patients and 90% of renal units. Two patients (10%) had recurrence from operated side: one at 4 months from ureter and other at 5 months and site of its recurrence could not be ascertained. One patient (5%) presented with chyluria from contralateral kidney in follow up period (at 12 months). All the 3 patients responded well to povidine - iodine instillation therapy.
Conclusion: LPLD is an effective treatment for RC with low morbidity. It also offers an early full dietary freedom to these patients.

MP5-22 Retroperitoneal Ganglioneuroma Mimicking Right Adrenal Mass

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Ganglioneuroma is a rare benign tumor of the sympathetic nervous system that can arise from the adrenal medulla. Few reports have been published of the surgical resection of this rare tumor using a laparoscopic approach. We present a case of retroperitoneal ganglioneuroma that mimicked an adrenal mass on imaging and was resected laparoscopically.

MP6 - METABOLIC STONE DISEASE 1

MP6-1 Metabolic Assessments in Recurrent and First Episodes of Calcium Oxalate Urolithiasis

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Objectives: This study aimed to demonstratethe dominant role of metabolic disorders in the formation of calcium oxalate stones in patients with recurrent urolithiasis, as well as in patients experiencing their first episode of urolithiasis.
Patients and Methods: The records of the patients who attended our kidney stone outpatient clinics between 2008 and 2012 were reviewed, and the data onthe 318 oxalate stone patients who had undergone a metabolic assessment were retrospectively analysed. The first group included the patients who presented with their first episode of urolithiasis (Group I, n = 170), and the second group included patients with recurrent urolithiasis (Group II, n = 148); intergroup comparisons of metabolic disorders were performed.
Results: A significant difference was found between the two groups in urine calcium levels (Group I, 0.25; Group II, 0.31; $p = 0.001$), while the serum calcium level was found to be higher significantly in Group II (Group I, 9.4; Group II, 9.6); $p = 0.04$). Significant differences were also found in urine citrate (Group I, 481.9; Group II, 397.2, $p < 0.0001$) and oxalate (Group I, 22.1; Group II, 28.5; $p < 0.0001$) levels.
Conclusion: This study revealed a metabolic tendency to hypercalciuria in calcium oxalate stone patients, predominantly in those with recurrent calcium oxalate urolithiasis. Urinary oxalate excretion was found to be higher in recurrent urolithiasis in comparison to the first episode of calcium oxalate urolithiasis, while urinary citrate excretion was lower in recurrent urolithiasis.
Keywords: Kidney stone, calcium oxalate, first episode, recurrent

MP6-2 A prospective evaluation of obesometric parameters associated with kidney stone recurrence

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Introduction: Obesity is an established risk factor for stone formation, but the underlying mechanisms of this association are uncharacterized. Body mass index (BMI) is limited in its ability to discriminate body fat from lean body mass, while proportion of visceral adipose tissue (%VAT) better predicts metabolic and cardiovascular outcomes. We evaluated whether specific obesometric factors, including %VAT, are associated with stone recurrence.
Patients and Methods: We conducted a prospective cohort study, including patients undergoing renal stone intervention at a

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single academic institution from November 2009 through June 2010. Obesometric parameters were measured at the time of treatment. Enzyme-linked immunosorbent assay (ELISA) was utilized to measure fasting serum leptin and adiponectin. Patient body mass index (BMI), %VAT, skin-to-stone distance (SSD), diabetic status (DM), and stone history were determined. %VAT was estimated by summing pixels of fat density on pre-treatment CT scans and averaging this sum across three fixed axial slices. The primary study outcome was 5-year stone-free survival (SFS). Univariate and multivariate predictors of SFS were evaluated by log rank tests and Cox proportional hazards regressions, respectively.
Results: A total of 110 patients were enrolled with median follow-up 62 months from time of initial stone treatment. In univariate analysis, elevated %VAT (highest quartile) and past history of stones were associated with an increase risk of stone recurrence; participants with %VAT < 50.6 and ≥50.6% had 5-year SFS of 72.2% and 47.1% respectively ($p = 0.004$). In multivariable analyses adjusting for gender, elevated %VAT was independently predictive of stone recurrence among participants with no previous history of stones ($N = 74$; HR: 4.53, 95%CI 1.08–19.02) but not among previous stone formers ($N = 19$; HR 0.51, 95%CI 0.054–4.72). No associations were observed for other obesometric factors and stone recurrence, including serum leptin, adiponectin, BMI, SSD, or DM.
Conclusion: We report a novel association between body fat distribution and renal stone recurrence. These findings may have important implications for patient counseling and individualized follow-up protocols. Further studies are necessary to characterize the biologic relationship underlying fat distribution and stone disease.

MP6-3 Age-Related Prevalence of Diabetes Mellitus, Cardiovascular Disease and Anticoagulation Therapy Use in a Urolithiasis Population and Their Effect on Outcomes: The Clinical Research Office of The Endourological Society Ureteroscopy Global Study

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Introduction: This study examined the prevalence of risk factors for urological stone surgery and their possible influence on outcome and complications following ureteroscopy (URS).
Materials and Methods: The Clinical Research Office of the Endourological Society Ureteroscopy Global Study collected prospective data on consecutive patients with urinary stones treated with URS at centers around the world for 1 year. The prevalence of common comorbidities and anticoagulation therapy and their relationship to complications and age was examined.
Results: Of 11,719 patients, 2989 patients (25.8%) had cardiovascular disease, including 22.6% with hypertension, and 1266 patients (10.9%) had diabetes mellitus. Approximately six percent of patients were receiving oral anticoagulation therapy, including aspirin (3.7%) and clopidogrel (0.8%). The prevalence of hypertension and diabetes mellitus and the proportion of patients receiving anticoagulant medication and/or anti-diabetes treatment increased with age. Elderly were more likely to develop a post-operative complication when they had diabetes, a cardiovascular disease or received anticoagulation therapy. Post-operative bleeding was higher in patients receiving anticoagulants than those not receiving them (1.1% vs. 0.4%; $p < 0.01$). Patients with risk factors for stone formation had more complications than those without (4.9% vs. 3.0%, $p < 0.001$).
Conclusions: This is the first study confirming in a global population that URS can effectively and safely be performed in a population with high comorbidity. The risk of a complication was highest among elderly patients presenting with comorbidities.

MP6-4 Use of Social Media in the Management of Cystinuria patients

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Background & Aims: Patients with chronic urological conditions such as cystinuria requires continued medical and psychological support often resulting in multiple attendances in hospital and primary care. With the advance of social media, there is a tendency for patients to seek help from these resources as it is easily accessible and rapid. We aim to study a cohort of cystinuria patients who posted their questions in social media, their outcomes and potential financial savings to healthcare systems.
Methods: A cohort of 100 cystinuria patients were identified from facebook groups and online discussion forums. Online questions were assessed with regards to reasons for seeking help, type of help received, percentage of problems resolved and time taken for resolution. Data was analysed using Excel worksheet.
Results: Following table shows reasons for seeking (with percentage in each group), percentage of problems resolved and the average time for response. Overall, social media helped in resolving 71% of questions satisfactorily with an average response time of 69 minutes. In the UK National Health Service, this equates to a saving of £7100 a month from one chronic condition (assuming an average cost of follow up of £100).

Reason for seeking help	Percentage of patients in each	Percentage resolved	Avearage time for response in minutes
Symptom related	22	82	15
Diagnostic procedures	2	50	57
Drug treatment	15	60	11
Lithotripsy	6	83	2
Operations	13	85	30
Miscellaneous	42	66	300

Conclusions: Benefits of social media extend beyond social networking and communication. In this study we have shown the usefulness of social media in helping people with chronic health conditions preventing the need to visit their healthcare practitioners in 71% of situations and potential financial savings and convenience.

MP6-5 What metabolic abnormalities are found in uric acid and calcium oxalate stone formers and how do they differ?

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Introduction: Uric acid stones account for around 10% of all upper tract calculi. Uric acid (kPa 5.4) precipitates in low volume, acid urine with urinary pH the putative dominant factor in stone formation. Calcium oxalate will also precipitate to form crystals (and ultimately stones) in acid urine and also in the presence of hyperuricosuria. To some extent it is possible to regard the formation of both stone types as part of the same disorder. We undertook a retrospective analysis of metabolic stone screen results to try to establish the difference between pure uric acid stone formers and pure calcium oxalate stone formers.
Materials and Methods: From a database of 1400 stone analysis results, 49 patients were identified with uric acid or calcium oxalate stones that had also undergone metabolic stone screening (i.e. 24 hour urinalysis). 3 patients were excluded who were on allopurinol at the time of metabolic stone screen. Results for acknowledged urinary risk factors (pH, volume, magnesium, citrate, calcium, oxalate, uric acid and sodium) and serum urate measurements were collated and compared. The Chi-square test was used to analyse statistical significance between the prevalence of risk factors comparing pure uric acid stone formers to pure calcium oxalate stone formers.

RISK FACTOR	% ABNORMAL
Magnesium	79
UA	74
pH	68
Oxalate	63
Sodium	57
Volume	44
Serum urate	27
Citrate	27
Calcium	17

Results: Of 46 patients included in the analysis, 21 formed pure uric acid stones, 21 formed pure calcium oxalate stones and the remaining five formed mixed uric acid and calcium oxalate stones. The overall metabolic abnormalities are represented in the figure below.

Urine pH was significantly more acidic ($p = 0.0001$) in the pure uric acid stone forming group. Serum urate was also significantly higher in the pure uric acid stone forming group ($p = 0.0176$). There were no other statistically significant differences between metabolic risk factors.
Conclusion: The high proportion of patients with hypomagnesuria may reflect the importance of urinary magnesium as an inhibitor of this type of urolithiasis. The precise role of magnesium is poorly described in the literature. Urine pH and serum urate seem to be the risk factors that differ significantly between uric acid and calcium oxalate stone formation and these findings are supported elsewhere in the literature. This may help predict stone type in patients where no stone is available for analysis and may facilitate effective treatment and prevention of recurrence.

MP6-6 Variation in Work-up of Primary Hyperparathyroidism in Kidney Stone Formers by Endourologists

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Introduction: Nephrolithiasis occurs in 15–20% of patients with primary hyperparathyroidism (PHPT) and 5% with nephrolithiasis have PHPT. AUA guidelines recommend obtaining a parathyroid hormone (PTH) level if PHPT is suspected. While many likely suspect PHPT in the setting of hypercalcemia, some may not be realize that normocalcemic PHPT exists or that a high normal PTH in the setting of hypercalcemia is abnormal and warrants further evaluation. The aim of this survey is to determine the practice patterns for the workup of PHPT in stone formers (SFs) by Urologists.
Methods: An online six question survey was sent to members of the Endourological Society via e-mail. These Endourologists were queried on their approach to the work-up of PHPT in their stone patients.
Results: The 232 Endourologists who responded to this survey had been in practice for an average of 15 years (1–45 years). 94% work-up their SFs for PHPT when they felt this was indicated. 12% report sending PTH on all SFs, 43% for recurrent nephrolithiasis, 37% for hypercalciuria, and 69% for hypercalcemia. 71% refer to an Endocrinologist for elevated PTH and 60% will refer for further PHPT work-up for a high normal PTH in the setting of hypercalcemia. If serum calcium level is normal, 16% never check PTH, 22% check PTH regardless of serum calcium, 40% check if serum calcium is in the upper limits of normal, 34% check for hypercalciuria, and 22% check for worsening hypercalciuria on a thiazide diuretic. In terms of repeating PTH, 18% said they never recheck, 46% will for persistent hypercalcemia, 53% for recurrent stone episodes and hypercalcemia, 11% for hypercalciuria, and 25% check for worsening hypercalciuria after starting a thiazide diuretic.
Conclusions: PHPT is not always an easy diagnosis to make, and therefore requires a high index of suspicion. This survey demonstrates high variability in the work-up of PHPT in SFs conducted by Endourologists. Recognizing that PTH should be checked for hypercalcemia and that a high normal PTH in the setting of hypercalcemia is abnormal is necessary to diagnose PHPT. Significant variation in practice patterns on checking PTH in the setting of normal serum calcium and re-checking a PTH after a prior was normal is likely secondary to the lack of data available to guide practitioners. Further studies are needed to ascertain when to test for PHPT in these challenging cases and more sophisticated guidelines will improve the work-up of PHPT in SFs by Urologists.

MP6-7 The natural history of asymptomatic renal stones: A systematic review and meta-analysis

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Introduction: With the increasing use of cross-sectional imaging, more incidental kidney stones are being detected. These individuals present a management dilemma: differentiating those to treat surgically from those who can be safely observed. To better inform clinical decision-making around management of incidental kidney stones, we conducted a systematic review and meta-analysis.
Materials and Methods: We searched MEDLINE, Embase, Scopus and Web of Science, as well as scientific meeting

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abstracts, from 1900 to February 2, 2014. All studies on adults with asymptomatic kidney stones managed initially with observation were eligible for inclusion. We followed PRISMA guidlelines and pooled data from 12 studies involving 1712 patients. Our main outcomes included the proportion of patients who 1) developed symptoms, 2) required surgical intervention, and 3) had spontaneous stone passage. We fitted random-effects models to calculate pooled incidence rates using the Freeman-Tukey double arcsine transformation to stabilize variances.
Results: Pain was the most common symptom reported (5/12 studies). For every year of follow-up, 10% (95% CI, 7 to 13%) of patients experienced pain. Frequent urination, gross hematuria, and infection occurred in 6% (3 to 10%), 3% (2 to 4%), and 1% (0 to 5%), respectively, per year. The proportion of patients undergoing surgical intervention over time was 23% (95% CI: 17 to 29%) or 7% of patients for every year of follow-up (95% CI: 5 to 9%). Fourteen percent (11 to 17%) and 6% (3 to 10%) of patients experienced stone growth or spontaneous passage for every year of follow-up, respectively. There was little evidence of publication bias (Egger test, $p = 0.646$). The data suggested that the rate of surgical intervention decreased over time (0.9% per year; $p = 0.066$).
Conclusions: Monitoring is a reasonable approach for managing asymptomatic stones. While stones are more likely to grow than be passed spontaneously, stone directed surgery is needed in only a quarter of patients. Further study is needed to determine if size criteria may identify those patients at increased risk of pain or surgery.

MP6-8 Impact of Urine pH on Urinary Supersatuation and Stone Recurrence in Calcium Oxalate Stone Formers

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Introduction: The effect of urine pH on formation of calcium oxalate (CaOx) stones has not been fully explored, and it is unclear if increasing urine pH in CaOx stone formers with low urine pH is beneficial. Therefore, we investigated the effect of raising urine pH on urinary saturation of CaOx and on stone recurrence rates in CaOx stone formers with low urine pH.
Methods: Using mean values for urinary parameters derived from 1494 patients in our stone registry, we analyzed the effect of varying urine pH on estimates of urinary supersatuation [saturation index (SI), JESS v8.2 (Joint Expert Speciation System)] over a range of urinary citrate while keeping other urinary parameters constant (model). In addition, we obtained 24-hour urine values at baseline and after treatment with potassium citrate in 53 calcium oxalate stone formers with low urine pH (≤ 6.0) and normal urinary citrate (citrate $\geq$500 mg/day) and performed regression analysis, adjusting for calcium, oxalate, volume and citrate, to determine the independent effect of Δurine pH on ΔSI of calcium oxalate in this patient group. Additionally, we constructed a Cox proportional hazard regression model to determine the independent effect of raising urine pH on stone recurrence rates (new stones, growth of old stones, passage of previously unrecognized stones).
Results: In the model, SI decreased over a range of pH from 5.0 to 7.0 at all levels of urinary citrate, while keeping other urinary parameters constant. In the patient group, with a medium follow-up of 33 months, Δurine pH (from baseline to post-treatment) showed a significant negative correlation with ΔSI ($r = -0.34$, $p = 0.01$), and on multiple regression analysis after adjusting for total volume, calcium, oxalate and citrate, Δurine pH was a significant predictor of ΔSI ($b - 2.36$, SE 0.91, $p = 0.01$). Stones recurred in 37% of patients at a median follow-up of 44 months, while 63% of patients did not recur at a median follow-up of 21 months. Urine pH was a significant negative predictor of stone recurrence; each unit increase in pH was associated with a 73% decrease in SI (HR 0.27, 95% CI 0.09 – 0.80, $p = 0.02$).
Conclusion: Urine pH is an important determinant of urinary saturation of CaOx. Treating CaOx stone formers who have low urine pH, regardless of urinary citrate, with potassium citrate reduces urinary saturation of CaOx and stone recurrence rates.

MP6-9 Medical dissolution therapy of radio-lucent renal calculi in patients with metabolic syndrome

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Aim: To evaluate the efficacy of medical dissolution therapy in a series of patients at risk of metabolic syndrome with radiolucent stones on plain X-ray.
Methods: Five patients with a potential diagnosis of metabolic syndrome (hypertension, high BMI, diabetes mellitus and dyslipidaemia) with confirmed renal calculi on CT KUB (radiolucent on plain X-ray) were selected for management with our departmental protocol for medical dissolution. This protocol involves: Potassium Citrate 20 mEq three times daily and Allopurinol 300 mg daily. All patients were counselled to maintain a urinary pH of 6 – 6.5.
Results: All five patients were diagnosed with renal calculi on a CT-KUB of median size 10 mm (range 6–20 mm). All patients had radiolucent stones on plain abdominal X-ray, with respective median Hounsfield units of 400 (range 350–420). Median serum uric acid level was 332 μMol/L (range 290–420). Four patients were re-imaged with a CT-KUB at median follow up of 4.8 months (range 2–11 months) and none had residual stone. The fifth patient who had stenting for multiple obstructing ureteric and bilateral renal stones underwent flexible ureteroscopy at 6 weeks and showed no evidence of residual stones
Conclusion: Medical dissolution therapy is a well tolerated suitable alternative to endoscopic management of radiolucent renal calculi in patients with significant medical co-morbidities such as those patients at risk of metabolic syndrome.

MP6-10 Coronary Artery Calcium Score and Association with Recurrent Nephrolithiasis: the Multi-Ethnic Study of Atherosclerosis

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Introduction: Subclinical coronary artery calcification (CAC) is an established predictor of cardiovascular events. While a history of kidney stones has been linked to subclinical carotid atherosclerosis, no study has examined its relationship with CAC. We studied the association between kidney stone history and prevalent CAC from the MESA study.

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Patients and Methods: The Multi-Ethnic Study of Atherosclerosis is a multi-site cohort study of participants aged 45–84 without known cardiovascular disease at baseline (2000–2002). In 4,716 participants at follow up in 2010–2012, kidney stone history was assessed by self-report, and participants underwent computed tomography to determine CAC. CAC scores were categorized as none, mild (< 100), moderate (101–400), or severe (> 400). A cross-sectional analysis was performed adjusting for demographic and dietary factors related to kidney stones.
Result: Prevalence of kidney stone disease history was approximately 9%, mean age was 69.5 ± 9.3 years, 39% of participants were Caucasian, 47% were men, and 69% had detectable (CAC score > 0). No difference in CAC score was seen between single stone formers and non-stone formers. Recurrent kidney stone formation was associated with moderate or severe CAC on multivariable logistic regression (versus none or mild CAC) (OR 1.80, 95% CI 1.22–2.67). When CAC scores were separated into none, mild, moderate, and severe CAC, recurrent stone formation was associated with higher CAC score category on multivariable ordinal logistic regression (OR per category 1.44, 95% CI 1.04- 2.01).
Conclusion: Recurrent kidney stone formation is associated with subclinical coronary atherosclerosis. This association appears stronger with greater severity of coronary calcium.

MP6-11 Rapid recurrence of cystine calculi requiring multiple PCNLs within a 4-year period

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Purpose: To identify a cohort of patients at high risk for recurrence of large cystine stones.
Methods: A retrospective review of the longitudional medical record was performed. Inclusion criteria were cystine stone composition and 2 PCNLs performed on the same kidney within a 4-year period.
Results: Eight patients met inclusion criteria. Mean age at the time of the first PCNL was 30.2 years (SD 16.1 years) and mean age at the time of the second PCNL (for stone recurrence) was 32.3 years (SD 16.4 years). Mean interval between PCNL procedures was 24.5 months (SD 16.2 months). All stones were > 2.0 cm and 8/18 (44%) PCNLs were done for staghorn calculi. One patient was taking tiopronin 200 mg orally twice per day and one patient was taking d-penicillamine – the remainder were not on medication therapy during the time period of the study. Twenty-four hour urine composition studies were available for 5 patients and the
Results: are as follows: volume – mean 2.4 L (SD 1.4), mean cystine excretion 969 mg/d (SD 272), mean pH 7.0 (SD 0.4), mean SSCys 1.4 (SD 0.5), and mean capacity – 145.4 (SD 164.6).
Conclusions: Herein we report the characteristics of this patient group with large (> 2.0 cm) cystine stones who underwent PCNL and subsequently had a recurrence requiring PCNL within 4 years. In this patient cohort, a minority of patients were taking thiol-binding medications and the one taking was on a dose well below standard doses from prior studies. We hypothesize that medical treatment of these patients at high risk for recurrence with thiol binding medications may reduce recurrence rates. Future studies are necessary to identify patients at high risk for recurrence and to evaluate the efficacy of thiol binding medications.

MP6-12 Diabetics on Metformin Experience Increased Stone Episodes Compared to Non-Metformin Users.

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Introduction and Objectives: Metformin is primarily used for type 2 diabetes, and, less commonly also in polycystic ovary syndrome and premature puberty. Oxidative stress likely plays a role in stone formation, and metformin is postulated to affect oxidative stress within the cellular environment. We intend to explore a relationship between metformin use in diabetics and stone formation.
Methods: Online medical records of all patients between 08/2006 and 08/2014 at a single institution were queried using a data mining software tool. The ICD/CPT codes were used to identify the patients based on diagnosis of diabetes mellitus type-2, metformin users, and diagnosis of urolithiasis. Chi-square test was performed to compare the prevalence of stones between the two groups; ANOVA was used to compare age and urine pH.
Results: Diabetic patients (N = 47,170) who were on metformin (GpA) (N = 10,016) compared to non-metformin users (gpB) (N = 37,154) with 414 and 936 stone formers respectively had an odds ratio (OR) of 1.67 for being diagnosed with urolithiasis (4.13% vs 2.52%, p < 0.01). Gp A and B were older than non-DM patients (Gp C) (p < 0.001), with a lower urine pH (p < 0.001).
Conclusions: Diabetic patients on metformin have higher risk of kidney stones compared to diabetic patients not on metformin. Further studies are warranted to evaluate the etiology of urolithiasis in metformin users.

Prevalence of stones among diabetic and non-diabetics.(*p<0.01)

	Diabetic N=1350	Metformin N=414	Non-metformin N=936	Non diabetic N=13,722
Male%	762 (56.4%)	231 (55.8%)	531 (56.7%)	7753 (56.5%)
Age (mean,	64.6	65.3	64.3	55.5*
y)				
Urine pH (mean)	5.9	5.87	5.94	6.1*

MP6-13 Value of simple urinary pH should not be forgotten in metabolic stone screening for high-risk patients: Results from our 'Medical stones clinic'.

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Introduction: Renal stone disease is rising worldwide and carries a high risk of recurrence. High-risk and recurrent stone formers are more likely to have metabolic abnormalities. Metabolic investigations are important in predicting the likely stone type (if stone analysis is not available), in identifying secondary causes and metabolic risk factors, in assessing prognosis, and as a guide to therapy.

In routine clinical practice it is often forgotten that urine pH is a key determinant of stone formation. An 'inappropriately' acid urine is often found in uric acid and calcium oxalate stone formers. Knowing this is important because it can be a potential target for medical therapy. Our aim was to examine the proportion

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of patients who had an 'inappropriately' acid urine which can be diagnosed by simple urinary pH measurement.
Materials and Methods: In our University hospital 'Medical stones clinic', referrals are received for high-risk stone formers from a wide geographical area for detailed metabolic evaluation. Over a period of 4 years, prospective data was analyzed for 352 patients who underwent detailed metabolic evaluation.
Results: For the analysis of the 352 patients, there were 227(64%) male and 125(36%) female patients. Sixty-six (29%) male patients had an inappropriately acid urine (defined as pH < 5.5). Of these, 27/66 (41%) this was the sole urinary abnormality. Similarly, twenty-two (18%) female patients had an inappropriately acid urine (pH < 5.5). Of these, 4/22 (18%) this was the sole urinary abnormality.

Overall of all patients who had detailed metabolic stone screening, 88/352 (25%) had an acid urine of which in 31/88 (35%) this was the only urinary abnormality found.
Conclusion: Our study shows that an 'inappropriately' acid urine is a common abnormality in high risk stone formers. Of these patients, in more than a third of them urine acidity was the only abnormality found. Urine pH is easily measured and failure to do so can potentially deny patients a biochemical diagnosis and importantly treatment for stone prevention.

MP6-14 Prevalence of urolithiasis rises with increasing number of metabolic syndrome traits: Results of a systematic review

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Introduction: According to the International Diabetes Federation (IDF) five traits for metabolic syndrome (MetS) includes waist circumference; low high-density lipoprotein (HDL) cholesterol; and elevated triglyceride, fasting glucose and blood pressure. With a worldwide rise in the incidence of kidney stone disease, we wanted to conduct a systemic review focused on the association of metabolic syndrome to nephrolithiasis.
Methods: A systemic review was performed according to the Cochrane and PRISMA guidelines on all English language articles. Our inclusion criteria were studies comparing the prevalence of kidney stone disease in patients with and without MetS.
Results: The initial literature search identified 355 potentially relevant studies. After screening, 22 full text articles were reviewed and six (219,255 patients) were included in the final review. All studies displayed increasing odds of nephrolithiasis with increasing number of metabolic syndrome traits (see table), where patients with three or more metabolic syndrome traits tended to have higher prevalence of nephrolithiasis. Studies also showed different significant component of metabolic syndrome contributing to nephrolithiasis.
Conclusions: Our review shows a definite association of MetS with kidney stone disease. Although multifactorial in etiology, lifestyle and dietary factors seem to be increasingly important in prevention of stone disease.

Presence of Nephrolithiasis according to MetS and each component of MetS for the included studies.

Author (Number of patients)	Odds Ratio and 95% Confidence Interval						
	West 14870	Jeong 34895	Jung 40687	Kim		Cho 712	Kohjimoto 11555
				Male 67262	Female 49274		
MetS	N/M	1.71 (1.45 – 2.03)	1.36 (1.13 – 1.64)	1.33 (1.24 – 1.44)	1.56 (1.35 – 1.81)	1.93 (1.27 – 2.93)	N/M
Waist circumference	N/M	2.44 (1.93 – 3.09)	1.59 (1.12 – 1.34)	1.14 (1.07 – 1.22)	1.16 (1.03 – 1.30)	1.24 (0.78 – 1.96)	1.04 (0.96 – 1.13)
High TG	N/M	1.51 (1.22 – 1.88)	1.07 (0.74 – 0.89)	1.09 (1.03 – 1.16)	1.24 (1.08 – 1.42)	2.59 (1.71 – 3.91)	1.36 (1.22 – 1.52)
Low HDL	N/M	0.65 (0.53 – 0.81)	1.12 (0.76 – 0.93)	1.05 (0.97 – 1.15)	1.18 (1.06 – 1.30)	0.62 (0.41 – 0.93)	N/M
High Blood Pressure	N/M	2.18 (1.73 – 2.74)	1.50 (1.06 – 1.26)	1.19 (1.11 – 1.27)	1.80 (1.60 – 2.03)	1.34 (0.89 – 2.02)	1.14 (1.03 – 1.26)
High Fasting Glucose	N/M	1.57 (1.26 – 1.95)	1.63 (1.03 – 1.30)	1.18 (1.10 – 1.26)	1.26 (1.12 – 1.42)	1.91 (1.25 – 2.92)	1.00 (0.87 – 1.15)

MP6-15 Seasonal Variance in the Presentation of Urolithiasis

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Introduction: It is well known that dehydration is an overwhelming risk factor for urolithiasis. This would likely lead to increased symptomatic presentation of stone disease in the hot summer months. The aim of this study was to determine if there is a seasonal variance in the presentation of urolithiasis at a single institution within a desert environment.
Materials and Methods: A retrospective review of all adult patients seen over a 14 year period at a tertiary care center was performed. Patients were identified by ICD-9 codes specific for urolithiasis (592, 592.0, 592.1, 592.9). We included any location of presentation which comprised outpatient, inpatient or the emergency department. Children were excluded because of the increased rate of metabolic rather than environmental causes of urolithiasis in this population.
Results: There were a total of 12513 diagnoses. These were organized by month and meteorological season for further analysis. Peak diagnosis of urolithiasis was seen in August (1291), with a low in December (847). Summer had the greatest number of diagnoses (3432), followed by fall (3216), spring (3040), and winter (2825). Trends by month and season were statistically significant.
Conclusions: Overall presentation of urolithiasis appears to increase in the summer months and is decreased during the winter months, as expected. Further studies are needed to determine if this is applicable to more widespread population with differing climates. We presume that dehydration increases in the summer months but additional studies are needed to determine the cause of these findings.

MP6-16 Adherence Rates for Preventive Pharmacologic Therapy among Patients with Kidney Stones

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Introduction and Objective: Selective medical therapy plays an important role in the secondary prevention of kidney stones. Since the effectiveness of preventive pharmacologic therapy depends, in part, on how well patients follow their prescriber's instructions, understanding adherence to different regimens and factors associated with it are important.

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Methods: With medical claims data from working-age adults and their dependents (2002 to 2006), we identified patients over 18 years of age with a physician-coded diagnosis of kidney stones. Using National Drug Codes, we determined the subset with one or more prescription fills for a selective medical therapy agent (i.e., thiazide diuretics, alkali citrate therapy, or allopurinol). We then used the proportion-of-days-covered (PDC) formula to measure adherence within the first 6 months of starting treatment. Finally, we fitted logistic regression models to evaluate patient factors associated with adherence or lack thereof.
Results: Our cohort consisted of 21,843 adults with kidney stones who were prescribed preventive pharmacologic therapy. Just about half (50.1%) adhered to their regimen (defined by a PDC greater than or equal to 80%). Adherence rates differed between agents. They were highest for thiazides (60.7%) followed by allopurinol (54.9%) and citrates (19.5%). On multivariate analysis, patient factors that were independently associated with lower odds of medication adherence included female gender and geographic region of residence. In contrast, patients who had more generosity of insurance, those taking single agents and male gender had higher odds of adherence.
Conclusions: Adherence to selective medical therapy is low. Our findings suggest possible targets for quality improvement in the secondary prevention of kidney stones

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MP6-17 The Effect of Stone Prevention Counseling at the Initial Consultation on 24-hour Urine Collection Results (''Clinic Effect'')

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Introduction and Objectives:
24-hour urine collections are integral to long-term management of patients with recurrent urolithiasis and identifying treatable metabolic risks for urolithiasis (stone prevention). However, by the time a patient is seen in follow-up, some stone prevention counseling is likely to have occurred, altering the second 24-hour urine collection results ''clinic effect''. At our institution, patients bring a 24-hour urine collection to the initial assessment for extracorporeal shockwave lithotripsy (SWL); they are then given general dietary advice and brochures about stone prevention before knowing the initial 24-hour urine results. Our objective was to determine if there are differences in 24-hour urine parameters between the first 2 consecutive samples collected if stone prevention counseling did or did not occur at the time of the initial 24-hour collection, reflecting a possible ''clinic effect''.
Methods: Data for 24-hour urine collections for new patients were reviewed. There were two groups of patients: those who had stone prevention counseling at the time of the initial 24-hour collection and those who did not. Patients were included if they had at least two complete collections, not more than 6 months apart. The rates of abnormal 24-hour urine collection parameters (e.g. low urine volume, hypercalciuria, hypocitraturia, hyperoxaluria, urinary pH, and hyperuricosuria) were determined by comparing the percentage of normal and abnormal results between the two samples.
Results: We collected data from 225 patients (79 had counseling at initial presentation and 146 did not). Percentages of patients with urinary lithogenic risk factors at base line were similar in both groups. There was a significant improvement in the urine volume in the repeated samples in both groups ($P < 0.01$). The rate of abnormal oxalate and citrate levels in patients who had counseling decreased in the repeated collections but did not reach statistical significance ($P = 0.064$ and 0.052 respectively); this change was not seen in patients who did not get stone prevention counseling.
Conclusions: First 24- hour urine collections prior to counseling are important to pick up some abnormalities such as low fluid intake or hyperoxaluria that could be missed in the second sample due to the ''clinic effect''. Improvements in the 24-hour urine parameters can be noticed even after simple general dietary advice at the initial consultation prior to the results of the 24-hour urine parameters are known.

MP6-18 Low socioeconomic status is not a barrier to successful 24 hour urine collection

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A 24 hour urine collection and analysis is an important part of the metabolic workup for recurrent stone formers. Recent data suggests that use of the 24 hour urine collection among high risk stone formers is less than 10% (Milose JC, Kaufman SR, Hollenbeck BK, Wolf JS, Hollingsworth JM. Prevalence of 24-hour urine collection in high risk stone formers. J Urol. 2014;191(2):376–80.). We sought to determine if successful 24 hour urine collection was limited by the patient's failure to complete the test. We report on a series of 2672 collections done by a single institution in an area with low mean socioeconomic status without use of an external lab or scheduled reminders to return collections.

All patients with orders for 24 hour urine collection of citrate and calcium performed between January 2000 and August 2014 were collected. Information was collected regarding each patient's demographics, insurance status, socioeconomic status as calculated by home address and census data, as well as whether they completed the collection or not. Multivariate regression models were used to predict the effect of each variable on the likelihood of completing the collection. For patients with multiple collections, only the first was considered. Cancelled orders were not included in this study.

2672 unique patients were identified, of whom 2464 (92.2%) had a completed collection. Multivariate regression demonstrated the only significant predictor of a successful collection was increased age ($B = -0.016$, $p < 0.001$). Variables that were not significant predictors included insurance status, socioeconomic status, ethnicity, and gender. Insurance status was available for 1721 patients (64.4%).

Patients of lower socioeconomic status are not less likely to complete a 24 hour urine collection. Our results indicate that the majority of patients, regardless of ethnicity or SES, will complete a 24 hour urine collection. While older patients were more likely to complete a collection, the effect was small overall and younger patients did not have unacceptable rates of successful collection. Physicians should not be hesitant to order 24 hour urine collections on the basis of ethnicity or low socioeconomic status. Further studies are needed to analyze why the use of 24 hour urine collection in the general population of stone formers is low.

MP6-19 The role of parathyroid hormone testing in patients with nephrolithiasis

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Introduction: The association between hypercalcaemia and nephrolithiasis is well established and serum calcium is routinely tested in patients with renal stones. The role of parathyroid hormone (PTH) testing in these patients is less clear. Here we evaluate the additional value of PTH measurement in identifying those nephrolithiasis patients that require endocrine intervention.
Methods: Metabolic blood and urine screens were prospectively recorded in non-selected patients presenting with nephrolithiasis in our UK centre, February 2011 to March 2015, as part of an ongoing Stone Biobank database. The biobank recruits all stone formers and does not select based on risk or recurrence rate. Follow-up of patients entered into the database is left to clinician discretion. In patients with raised PTH, retrospective review of records determined follow-up and outcomes.
Results: 528 patients with nephrolithiasis were entered in the database; 439 had serum PTH and calcium levels recorded, mean age of 57 years (range 18–88). 15% (65/439) of patients had raised PTH and of these only 9% (6/65) had raised calcium.

Of 65 patients with raised PTH, 22(34%) were referred for endocrine opinion, 11(17%) had normal PTH on repeat testing and were excluded from further investigation. The remaining patients 32(49%) had no follow up data available.

Of 22 patients receiving endocrine review, 14(64%) had a treatable endocrine condition; 5/22 (23%) required parathyroidectomy for adenoma, 1 underwent neck exploration and thymectomy, in 4/22(18%) low vitamin D was corrected and PTH subsequently normalised, 4/22(18%) were treated for unrelated endocrine disease where raised PTH was thought insignificant. A further 8/22(36%) had normal endocrine investigations and were discharged.

Only 6/14(43%) patients with a treatable endocrine condition would have been identified by raised calcium levels had PTH not been measured. The remaining 8/14(57%) were only identified by isolated raised PTH in a full metabolic screen.
Conclusion: Abnormal PTH levels were found in around 15% of all stone formers. Routine testing of PTH in patients with nephrolithiasis identifies additional treatable endocrine conditions not identified by basic metabolic screens.

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MP6-20 Development of a Novel Curriculum in Medical Kidney Stone Prevention

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Introduction: Recent reports show that many at-risk kidney stone patients do not undergo appropriate metabolic evaluations. Under-utilization of guideline recommended testing may be partially due to decreased physician confidence with test result interpretation. We sought to evaluate the creation and implementation of a novel asynchronous learning medical stone prevention curriculum within a urology residency program to address this knowledge skill.
Materials and Methods: An education guide was created based on current guideline recommendations, relevant published data and actual patient examples to detail the rationale and individual steps for test interpretation. Participants were presented with an introductory didactic lecture and received the guide in a reference electronic format. Monthly self-study test cases and questions were subsequently administered online. The formal interpretation of the cases with explanations to all the responses were immediately provided to the learner. Pre-study and post-study surveys were used to evaluate the efficacy, utility and satisfaction of the curriculum.
Results: Over a 12-month academic period, all fourteen residents (PGY1-5) within a urology residency completed the curriculum. Prior to implementation, residents received training in metabolic testing during relevant clinical rotations. Initial experience with metabolic evaluations varied with seniority including three learners with no formal experience treating kidney stone patients. Thirteen residents reported reference use of the education guide and completing greater than 75% of the monthly self-assessment questions. Mean duration of time spent on monthly questions was 6 minutes (range 25 seconds to 21 minutes). The percentage of residents reporting comfort in their ability to interpret metabolic test results increased from 50% to 78%. Proficiency in interpreting actual test cases increased from 43% to 71% over the duration of the study period. The reported likelihood of the learner for ordering metabolic evaluations in the future increased from 79% to 100%. All participants felt that that the curriculum was beneficial to their understanding and ability to interpret metabolic stone evaluations. Interest in continued participation in the program was 100%.
Conclusions: Evaluation of a novel asynchronous learning medical stone prevention curriculum suggests improved resident confidence and knowledge base with metabolic test interpretation. Through repeated interval self-assessment, skill development was obtained by learners over time with a minimal time commitment. Monthly testing is on-going and has been expanded to the nephrology fellowship program at our institution. Further application will determine the utility of the program for addressing potential knowledge gaps and possibly increasing widespread utilization of metabolic testing in appropriate patients.

MP6-21 Biochemical stone analysis: does it really matter?

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Introduction: 2015 EAU guidelines state that stone analysis (SA) is mandatory for all first-time stone-formers. Repeat SA is advised for early recurrence after stone clearance, recurrence despite pharmacological therapy or after a prolonged stone-free period. In practice, many UK urologists seldom perform SA. The primary outcome of this study was to determine if SA alters management. The secondary outcome was to evaluate whether SA matches 24 h urine metabolic evaluation (UME).
Patients & Methods: Patients were identified retrospectively for two consecutive years 2012 & 2013 from the biochemistry database. Information collected included demographics such as age and sex, stone analysis, UME within 6 months of SA and management outcomes.
Results: 178 patients were identified of which 46 were excluded due to incomplete data. Of the remaining 132, 88 were male and 44 female with an age range from 15 to 88 and a median age of 49 years. The stone composition comprised of mainly calcium oxalate stones (57.6%), with mixed (15.6%), uric acid (12.1%) and infection (7.6%) stones following. Cystine stones attributed for 3.8% with calcium phosphate (2.3%) and xanthine (0.8%) being more rare forms. Twenty four patients had urinary metabolic evaluation within 6 months of stone analysis. Twenty (83.3%) of

these were found to have at least one abnormal value and only four were normal. Of the patients that had both SA and UME, 80% of calcium oxalate and 60% of uric acid stone results matched. Stone analysis directly led to a significant change in management in 15 (11.4%) of patients. This consisted of either initiation of medical treatment (particularly when rare and important stone types such as cystine were diagnosed), change in follow-up plans including management of patients in a dedicated metabolic stone clinic, and/or stone-specific medical/dietary treatment. When comparing data from 2012 to 2013 during which there was a change in staff and service provision, the proportion of patients that SA caused a change in management rose from 4.62% to 17.91% respectively.
Conclusions: Stone analysis is often disregarded as an unnecessary investigation. Our experience shows that in a 'metabolic-aware' environment, management of patients can change, especially when SA imparts the diagnosis of non-calcium oxalate calculi, or dictates specific pharmaceutical or dietary modifications to target recurrent stone prevention. Additionally, we observed that urine metabolic evaluation alone does not seem to accurately predict stone composition.

MP6-22 Two 24-hour urine collections for the metabolic assessment of patients with nephrolithiasis; Does timing between studies matter?

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Introduction: 24-hour urine collections are vital part of an evaluation in patients with urolithiasis. Latest guidelines agree that there are conflicting views whether using one or two studies for assessment. Several groups have reported that a single study is recommended. On the contrary, others suggested that two may yield a superior number of precise diagnoses. No consensus exists regarding the timing between collections.
Materials/Methods: We retrospectively analyzed a 24-hour urine collection database of patients attending our stone clinic from 2000–2014. Individuals with two colections were divided into 2 groups depending their timing. 23 patients identified with two successive studies. 147 identified with a delay between studies, defined as gap between studies > 24 hrs but < 1 year.

Data from the Litholink™ report was used to perform a Pearson's chi squared test of independence to identify statistically significant differences in frequency of detectable abnormalites between groups.
Results: Top abnormalities in successive studies (control group) -Na, UA, Ca, pH, and SSCaP with a frequency of 79%, 71%, 69%, 66%, and 62%, respectively. Top abnormalities in a delayed second study (experimental group) -Na, pH, UA, Ox, and P with a frequency of 90%, 76%, 72%, 63%, and 63%, respectively. Only statistically significant difference was detected frequency of abnormal Na (p-value = 0.001) and SSCaP (p-value = 0.043) between groups. No difference in terms of frequency of detected abnormalities in other parameters.
Conclusions: No statistical significant difference was seen between the two groups, suggesting that delaying a second collection does not differ from getting an immediate study in abnormality detection.

MP7 - SURGICAL OUTCOMES 1

MP7-1 Assessing the Volume-Outcome Relationship for PCNL in 2014 -Analysis using BAUS Registry Data of over 2000 Cases

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On behalf of BAUS Section of Endourology
United Kingdom

Introduction: Previous volume-outcome analyses for PCNL have yielded mixed findings. In England, PCNL was previously shown to be equally safe in high and low volume hospitals. However, the effect of volume on stone clearance has not previously been assessed in this context.
Patients and Methods: BAUS registry data from 2014 were analysed. Two approximately equal sized groups were defined; hospitals performing fewer than 20 and those performing 20 or more cases per year. A series of comparisons was performed between these volume-defined groups, including stone complexity and outcomes, including stone clearance at day one, blood transfusion, sepsis and median post-operative length of stay (LOS). Comparisons were also performed for subgroups of complex (Guy's Stone Score III-IV) and non-complex (GSS I-II) stones.
Results: 2042 cases were performed in total. There was no significant difference between stone complexity (p = 0.056), or stone dimensions (p = 0.18) of PCNL cases undertaken at high and low volume centres. Overall stone clearance, by imaging at day one, was higher in the high volume group than the low volume group (73%vs 63%, p < 0.05). This was true for both complex and non- complex stones (55%vs 45%, p < 0.05; 85% vs 77%, p < 0.05). Blood transfusion rates did not differ significantly overall between high and low volume groups (2.5%vs 2.6%, p = 0.92), or when subdivided by stone complexity (GSS III-IV: 3.0%vs 4.9%, p = 0.22; GSS I-II, 0.9%vs 2.2%, p = 0.09). Post-operative sepsis occurred in 3.1% patients overall. Hospital

Table 1.Summary of results by volume

	Volume		Total
	<20	≥ 20	
Consultants,N=	114	36	150
Hospitals,N=	98	31	129
Patients,N= (%)	992 (48.6%)	1050 (51.4%)	2042
Stone Complexity			
GSS I-II	523 (54%)	578 (59%)	1101
GSS III-IV	442 (46%)	410 (41%)	852
Outcomes			
Stone clearance, d1	63%	73%	68%
Stone free (follow-up)	72%	74%	74%
Transfusion	2.6%	2.5%	2.5%
Sepsis	3.1%	3.1%	3.1%
LOS	3d	2d	2d

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volume made no significant difference overall (p = 0.1), in complex stones (p = 0.09) or in non-complex stones (p = 0.97). Overall, LOS was shorter at high volume centres than low volume centres (2d vs 3d). For GSS I-II stones, LOS was shorter in higher volume hospitals (2d vs 3d), but this difference was less for GSS III-IV (3.5d vs 4d).

Conclusion: Hospital volume does not significantly affect transfusion or sepsis rates post-PCNL; stone complexity appears to be more relevant to these outcomes. Stone clearance, however is clearly influenced by hospital volume, with higher volume centres achieving significantly higher stone free rates, for both complex and non-complex stones. Length of stay appears shorter in high volume centres, especially for less complex stones. These findings may inform the debate around centralisation of complex PCNL.

MP7-2 PCNL access by Urologist or Radiologist: An analysis of the BAUS PCNL Registry

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On behalf of BAUS Section of Endourology
United Kingdom

Introduction: Obtaining percutaneous access to the collecting system of the kidney is fundamental to safe and effective PCNL. Practice varies between countries, hospitals and individual surgeons as to whether access is obtained by a urologist or an interventional radiologist (IR). We compared outcomes of PCNL for urologist versus IR tracts.

Methods: Data submitted to the BAUS PCNL data registry between 2009 and 2015 were analysed according to whether access was obtained by a urologist or an IR. We evaluated tract success, number and type of tracts, perceived and actual access difficulty, as well as outcomes including stone free rate, length of stay and complications including transfusion rates. Stone complexity was assessed using the Guy's Stone Score.

Results*:* Overall, percutaneous renal access was undertaken by an IR in 3,453 of 5,211 procedures (66.3%); this rate appeared stable over the entire study period, for all categories of stone complexity and in cases where there was predicted or actual difficulty with access. Only 1% of procedures were abandoned because of failed access and this rate was identical in each group, p = 1.00 (Table 1).

IRs did more multiple tracts than urologists (6.8% vs 5.1%, p = 0.02) but did similar rates of supracostal punctures (8.2% vs 9.2%, p = 0.23) and fewer supine procedures (15.2% vs 18.1%, p = 0.01). Ultrasound was used more commonly by IRs (56.6%) than urologists (21.7%) to guide access, p = 0.0001. There were no significant differences in complication rates, length of stay or stone free rates on Day 1 post-operative imaging.

	Urologist		Radiologist		
	N	(%)	n	(%)	
Failed access	17	(1.0)	33	(1.0)	p=1.00
Multiple tracts	89	(5.1)	226	(6.8)	p=0.02
Supracostal	161	(9.2)	276	(8.2)	p=0.23
Supine	282	(18.1)	466	(15.2)	p=0.01
Ultrasound guidance	381	(21.7)	1,941	(56.6)	p=0.0001
Stone free rate (Day 1)	1,011	(70.0)	1,932	(67.7)	p=0.14
Transfusion	37	(2.2)	81	(2.4)	p=0.56
Clavien 3-5	21	(1.2)	62	(1.8)	p=0.13
Length of stay (median, days)	3		3		
Total	1,758		3,453		

Significance tested using two-tailed Fisher's exact test

Conclusions: In the UK most access for PCNL is obtained by an interventional radiologist. There do not appear to be any differences in outcomes of PCNL according to who obtains access. This implies that favourable outcomes may be expected where access is obtained by individuals who have been appropriately trained and who are skilled and proficient in the procedure. However, a multidisciplinary approach to the management of patients with complex stones may lead to better outcomes.

MP7-3 Outcome from percutaneous nephrolithotomy (PCNL) in patients with spinal cord neuropathy: a single UK Centre's experience

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Introduction: Spinal neuropathy patients are at increased risk of urolithiasis. Data on PCNL in this population is limited. Our aim was to review our experience of PCNL in this complex group of patients.

Patients and Methods: Between 2010 and 2014, seventeen patients with spinal neuropathy (8 paraplegia, 7 tetraplegia and 2 spina bifida patients) underwent 21 PCNL procedures at a UK regional spinal injury centre. All patients were classified as grade IV according to Guy's stone score.

Mean stone size was 21.9 mm (range 12 – 40 mm). All PCNLs were performed prone. 81.8% of percutaneous access was via the lower pole and 95.2% of procedures performed via a single puncture.

Results: 7 patients (33.3%) developed urosepsis post operatively requiring intravenous antibiotics (Clavien Grade II). 1 patient (4.7%) developed pneumonia requiring admission to the ICU post PCNL (Clavien Grade IV). No patients required blood transfusion.

Mean length of stay following PCNL was 5.5 days.

7 patients (33.3%) were stone free following their first PCNL. 3 patients (17.6%) required further PCNL procedures and 8 patients (38.1%) required ureterorenoscopy to render them stone-free (2 cases for completion of original treatment, remaining cases for stone recurrence). Two patients with small stone fragments (mean size 4.5 mm) were managed conservatively.

Conclusions: PCNL in patients with spinal neuropathy is complex with challenging patient anatomy, stone burdens and frequent stone recurrence rates. However, for the majority of cases, when managed in a dedicated spinal unit, the clinical outcomes match the good results achieved in our non-spinal patient group.

MP7-4 Stone size is best predictor of operative time required in ureteroscopic laser lithotripsy: Implications for surgical planning and quality improvement

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Background: Retrograde ureteroscopic laser lithotripsy (ULL) is highly successful at eliminating both ureteral and renal stones of various sizes and compositions. As urologists are taking on more complex procedures using ULL, this has led to increase in

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operative times. Our objective was to determine the best predictor of operative time in patients undergoing ULL.
Methods: We retrospectively reviewed the records of patients undergoing unilateral ULL for solitary stones over a 10 year time span. Variables potentially effecting operative time such as stone location, size, Hounsfield units (HU), composition, ureteral access sheath (UAS) use, and pre-operative stenting were collected. Multivariable linear and stepwise regression was used to evaluate predictors of operative time.
Results: There were 258 patients that met inclusion criteria. The mean stone size was 8.8 mm (±3.7 SD) and the mean operative time was 48.3 minutes (±23.7 SD). UAS was used in 31.4% of the cases, pre-operative stents were placed in 31.8% of cases, and both were placed in 15.5% of cases. On multivariable stepwise regression, stone size had the strongest impact on operative time, increasing time by 2.9 (95% CI 2.14–3.61, $p < 0.001$) minutes for each mm increase in stone size. UAS was used mostly with larger stones (10.9 mm vs. 7.9 mm, $p < 0.001$) and added 6.2 (95% CI 0.37–12.04, $p = 0.037$) minutes per mm in each case it was used. Pre-operative stenting, stone location, and HU had no significant effect on operative time. Patients that experienced any complications had increased stone size and operative time compared to those who didn't.
Conclusion: Amongst the main stone factors in ureteroscopic laser lithotripsy, stone size has the strongest impact on operative time. This can be used to predict the length of the procedure by roughly adding 3 minutes per mm increase in stone size. The surgeon's schedule in the operating room can be rendered more efficient by scheduling the exact time increase needed for larger stones. This means potential for quality improvement for the operating room and patient satisfaction.

MP7-5 Are we ready to predict percutaneous nephrolithotomy stone-free failure?

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Introduction: To develop a tool, both simple and reliable, for postoperative percutaneous nephrolithotomy (PCNL) stone-free failure prediction.
Materials and Methods: We analysed a sample of 116 patients, who underwent conventional PCNL from 2011 to 2014. Cases with residual stones less than or equal to 4 mm in size were regarded as clinically insignificant and 'stone-free'.
Result: According to the low-dose computed tomography (CT) scan performed within 24 hours after operation, the patients were stratified as follows: 72 stone-free and 44 with residual stones. Among the analysed variables, three were derived as most important for prediction purposes: an additional stone in a calyx with an acute angle (less than or equal to 45°), represented by 'A'; an additional stone in a long calyx (more than or equal to 10 mm) with a narrow infundibulum (less than or equal to 8 mm), represented by 'C'; and a stone size that is more than 24 mm, represented by 'S'. These were abbreviated as the 'ACS' score. Depending on the absence or presence of each of these three variables, a score of 0 or 1 was assigned. If the ACS score is 0, then the probability of being a stone-free patient was about 88%; however, when the ACS score is 3, then the probability of being stone free was just 8%.
Conclusion: Use of the ACS score seemed to be a simple and reliable tool for PCNL stone-free failure prediction.

MP7-6 The role of prolonged antibiotic course prior to percutaneous nephrolithotomy in the prevention of systematic inflammatory response syndrome

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Introduction: To identify factors predisposing to SIRS after percutaneous nephrolithotomy (PCNL), giving emphasis to the duration of antibiotic prophylaxis.
Materials and Methods: We prospectively collected and evaluated data of 112 patients who underwent prone-PCNL over a one-year period in our department. Antibiotic prophylaxis was given as a single dose of ciprofloxacine or cefuroxime intravenously with induction to anesthesia or as ciprofloxacine 250 mg bid for one week preoperatively. Univariate and multivariate tests using SPSS were performed, to identify patient-related, procedure-related and stone–related factors that predisposed to SIRS development post-PCNL. Probability values less than 0.05 were considered significant.
Result: Stone-free rate was 58.4%. SIRS was reported in 22 patients. In univariate analysis parameters that affected significantly SIRS development were the operating time, bleeding during the procedure, use of a haemostatic agent, the duration of the preoperative antibiotic prophylaxis and the Clavien classification system of complications. In multivariate analysis only the antibiotic prophylaxis for one week prior to the operation and the short operating time of less than 60 minutes significantly reduced SIRS incidence by a 90% and 78%, respectively.
Conclusion: Our study results indicate that prolonged period of preoperative antibiotics plays a significant role in reducing SIRS incidence after percutaneous nephrolithotomy.

MP7-7 Percutaneous nephrolithotomy: A cost-effective analysis of tubeless and standard procedures

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Introduction and Objectives: Percutaneous nephrolithotomy (PCNL) is the established gold standard for treatment of large renal stones. Traditionally, a nephrostomy tube was left postoperatively to tamponade bleeding along the tract, allow for urinary drainage, and facilitate a second procedure if necessary. In appropriately selected patients, tubeless PCNL has emerged as a safe and effective alternative. The purpose of our study was to assess whether the tubeless method of PCNL is cost-effective when compared to standard PCNL.
Methods: A decision tree was constructed to calculate the costs of achieving a complication free-outcome in standard and tubeless PCNL. A comprehensive literature review was performed to determine the rates of common post-operative complications. Each complication was graded using the validated Revised Clavien classification. Costs of the surgical procedures were obtained from the Ontario Case Costing Initiative and the Ontario Schedule of Benefits. Drug costs were obtained through the Ontario Drug Benefit Formulary. A willingness to pay threshold of $3000 was used and adopted from drug-eluding stent literature.

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Results: Tubeless PCNL was more cost-effective than standard PCNL at $10171.09 with a complication grade of 0.29 compared to $12673.62 and 0.35. Overall complication rates in the tubeless and standard PCNL groups were 12.8% and 15.6% respectively. Sensitivity analysis demonstrated that tubeless PCNL remained cost effective as long as the cost of the procedure remained below $12000 and the cost of standard PCNL remained above $9000.
Conclusions: In appropriately selected patients, tubeless PCNL is more cost effective than standard PCNL in achieving a complication free outcome at a WTP of $3000. A shorter average length of hospitalization and reduced cost of OR supplies among tubeless patients led to lower upfront costs of the primary procedure. Due to comparable complication rates in the two groups, tubeless PCNL remained the more cost-effective option when post-operative events were accounted for.

MP7-8 Simultaneous supine percutaneous nephrolithotomy and retrograde intrarenal surgery in complex renal stones

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Introduction: One of the major advantages of supine percutaneous nephrolithotomy (sPCNL) over traditional prone methods is the ability to perform simultaneous retrograde intrarenal surgery (RIRS). This allows access to and manipulation of stones that would otherwise require a second tract to treat.
Patients and Methods: We present 40 cases of sPCNL and combined RIRS performed at our institution between Oct 2008 and May 2015. Data was collected prospectively on cases performed by two endourologists and input to an anonymised predesigned database.

14 (35%) female and 26 (65%) male patients were included with a mean age of 54 (Range 22–90) mean BMI of 28.5 (Range 18–45) and mean Charlson co-morbidity index of 3 (Range 0–9).

Stones were lower pole in 11(27.5%), interpolar in 5(12.5%), upper pole in 5(12.5%), renal pelvis in 10(25%) and multiple calyces in 9(22.5%).
Results: Stone clearance (fragments < 2 mm on CT KUB) was achieved in 39 (97.5%) cases. 6 (15%) cases utilised semi-rigid ureteroscopy and 34 (85%) used flexible ureteroscopy. Laser was used as an energy source in 4 (10%) cases, Lithoclast Master in 31 (77.5%) and lift out in 5 (12.5%). Mean operative time was 84 minutes (Range 40–175). 19 (47.5%) patients were stented intraoperatively.

5 (12.5%) Clavien-Dindo Grade II complications were encountered with 1(2.5%) Grade IIIa. 2 patients required blood transfusion due to post-operative bleeding.
Conclusion: sPCNL has the advantage over prone PCNL as RIRS can be performed simultaneously. This reduces the need for additional tracts and offers a superior stone clearance rate.

MP7-9 Service improvements through the standard use of nephrostogram prior to nephrostomy removal after PCNL

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Introduction: Percutaneous nephrolithotomy (PCNL) is the standard procedure for large renal calculi. A nephrostomy is placed for a significant number of patients undergoing PCNL and is traditionally clamped prior to removal. This may delay the removal of the nephrostomy and discharge from hospital. We present a PCNL case series where all patients with a nephrostomy underwent nephrostogram prior to nephrostomy removal.
Method: A retrospective review of PCNLs between February and August 2014 was performed. Recommendations were made and changes implemented. The audit cycle was completed by a prospective review of all PCNLs between September 2014 and February 2015.
Results: 28 PCNLs were performed (Initial audit = 11, re-audit = 17). 57% of patients were female. Median age was 53 years.

Initial Audit: Median time to nephrostomy removal = 5 days; median length of stay = 4 days. 7 patients required a nephrostogram after clamping.

Re-audit: 13 of 17 patients had a nephrostomy, 11 had nephrostogram prior to nephrostomy removal. Median time to nephrostomy removal = 2 days, median length of stay = 3 days. Complete stone clearance achieved in 88%. Complications were minimal (pyrexia = 2, haematoma (small) = 1, ureteric stenting = 1).
Conclusion: Performing a nephrostogram on all patients with a nephrostomy after PCNL reduced time to nephrostomy removal and length of stay in our series by 3 days and 1 day respectively; and costs related to length of stay. Although the numbers are small this appears to be a cost-effective and safe alternative to clamping nephrostomies.

MP7-10 Prognostic factors associated with stone-free rate and complications of percutaneous nephrolithotomy for treatment of staghorn calculi over 10 years at a single institution.

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Introduction: To investigate the factors associated with stone free rate (SFR) and complications of percutaneous nephrolithotomy (PCNL) for treatment of staghorn stone.
Patients and Methods: We retrospectively reviewed all patients undergoing PCNL in our center from June 2003 to June 2014. Perioperative patient and stone factors, including age, sex, body mass index (BMI), stone laterality, genitourinary anomalies, operative time, stone burden and type, pre-existent urinary tract infection (UTI) and hydronephrosis, tract multiplicity, puncture site, previous history of shock wave lithotripsy (SWL) and ipsilateral renal surgery, comorbidities, and complications classified by modified Clavien grading system were investigated. Preoperative computed tomography (CT) was performed in 217 cases. On the basis of those CT scan images, we calculated Guy's and S.T.O.N.E stone scoring systems to assess association with stone-free status and complications. For statistical evaluation, univariate analyses and multivariate logistic regression analyses were used.
Results: During the study period, available medical records were 886 cases. Total cases who underwent PCNL for treatment of staghorn calculi accounted for 34.4% (305/886 cases). The 305 procedures (290 patients, 15 simultaneous bilateral PCNLs) with a mean age of 53.5 ± 14.5 years had a mean stone size of 1365.4 ± 759.1 mm^2, with 151 (49.5%) partial staghorn and 154 (50.5%) complete staghorn stones. The initial and overall SFRs of PCNL were 52.5% and 70.5%, respectively. The overall complication rate was 42.6% (130/305 cases). On multivariate

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logistic regression analysis, risk factors for SFR were complete staghorn calculi, pre-existent UTI and multiple tract (relative risk = 3.539, 2.280, and 3.175 respectively). Complete staghorn calculi and genitourinary anomaly were independent risk factor for development of complications on multivariate analysis (relative risk = 2.142 and 3.030 respectively). Multivariate analysis of 217 procedures based on preoperative CT scan showed that Guy's and S.T.O.N.E scores of staghorn stones were significantly associated with stone-free status after PCNL for staghorn stones.
Conclusion: The results of this study show that complete staghorn stone, pre-existent UTI and multiple tracts were associated with lower SFR after PCNL for staghorn calculi. Risk factors for complications are complete staghorn calculi and genitourinary anomaly. In terms of predicting post-PCNL results for staghorn calculi, two scoring systems were associated with stone-free status, not complications. Larger prospective evaluation is needed to assess for SFR or complication occurrence rate.

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MP7-11 A Zero-Fluroscopy Percutaneous Nephrolithotomy for Children in Modified Supine Position: A Novel Technique

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Introduction: Pecutaneous nephrolithotomy (PCNL) has proven its safety and efficacy in children of any age group. In children the supine position is increasingly and successfully employed. A fundamental principal that apply to pediatric intervention is to minimize or avoid radiation exposure whenever possible. The aims of the study to evaluate the feasibility, safety and efficacy of a zero-fluoroscopy technique during PCNL for children in modified supine position.
Patients and Methods: Eight children with a mean age of 9.5 years underwent PCNL in modified supine position. Initial percutaneous renal access was done using ultrasonography. Further tract dilatation was performed guided by the endovision control of the puncture by means of retrograde flexible ureteroscopy assessing the entry of the needle at the tip of the papilla and sequential tract dilatation. At the Conclusion of the procedure, stone free status was assessed by flexible ureteroscope to rule out presence of any residual fragments without the need for fluoroscopy.
Results: The access duration was 8.4 ± 1.6 minutes. Average surgical time was 102.8 minutes. 7/8 patients were stone-free (87.5%; 5 pts in one procedure, 2 pt in 2 procedures), No major complications developed: 1 patient need a blood transfusion. Average hospital stay was 1.5 ± 0.7 days.
Conclusions: Zero-fluoroscopy PCNL in children has the advantage of perfoming PCNL with a high success rate while totally avoiding radiation exposure in such susceptible population and maximally preventing traumatic and hemorrhagic complications guided by retrograde ureteroscopy.

MP7-12 Is smaller really better? A comparison of different techniques in percutaneous nephrolithotomy

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Introduction: Aim of our study was to compare safety and efficacy of mini- (MP) and ultra-mini percutaneous nephrolithotomy (UMP) with conventional percutaneous nephrolithotomy (PNL).

Patients & Methods: We prospectively evaluated 114 consecutive percutaneous stone treatments at our departments (40 PNL, 39 MP and 35 UMP). Regardless of the technique, access was gained under simultaneous radiologic and ultrasound guidance. Following shaft and instrument sizes and methods of dilation and lithotripsy were used: PNL (26/22/metal bougies/ultrasound), MP (18/14), UMP(13/11), both modified Amplatzsheath/Ho:YAG-laser. Most MP were finished tubeless and with hemostatic sealing of the access tract, while PNL were finished with insertion of a nephrostomy tube. Half of the UMP were completed tubeless and without hemostatic sealing and the other half with insertion of an 8 FR nephrostomy tube. We compared OR-time, stone free rate (SFR) and complications and a quotient of time per mm stone size. Kruskal-Wallis-Tests and post-hoc Mann-Whitney-U-Tests with Bonferroni correction for multiple testing were performed for stone size, complications and clearance. For OR-Time and time per mm stone size an ANOVA was performed with Tukey honest significant differences post-hoc tests.
Results: The mean stone size was 3.7 ± 1.8 cm in the PNL, 1.8 ± 0.5 cm in the MP and 1.3 ± 0.6 cm in the UMP group ($p < 0.001$ overall, $p < 0.001$ PNL-MP, $p < 0.001$ PNL-UMP, $p = 0.19$ MP-UMP). The mean OR-time was 94.2 ± 39.5 min (PNL), 71.3 ± 25.5 min (MP) and 60.4 ± 16.4 min (UMP; $p < 0.001$ overall, $p = 0.002$ PNL-MP, $p < 0.001$ PNL-UMP, $p = 0.25$ MP-UMP). The time per mm stone size was 3 ± 1.6 min/mm (PNL), 4.4 ± 1.8 min/mm (MP) and 5.1 ± 1.6 min/mm (UMP; $p < 0.001$ overall, $p < 0.001$ PNL-MP, $p < 0.001$ PNL-UMP, $p = 0.16$ MP-UMP). The complication rate was 13.6% (PNL), 20% (MP) and 28.6% (UMP; $p = 0.39$ overall, therefore no post-hoc tests). The SFR after one procedure was 58.5% (PNL), 95% (MP) and 91.4% (UMP; $p < 0.001$ overall, $p = 0.0001$ PNL-MP [significance level 0.017], $p = 0.002$ PNL-UMP [significance level 0.017], $p = 0.66$ MP-UMP).
Conclusions: Percutaneous stone treatment is highly efficient. The higher SFR in MP and UMP groups compared to PNL reflects the lower stone burdens treated. The SFR for MP was higher than for UMP with smaller stones in the UMP group, although this finding was not statistically significant. Also, MP was significantly slower than PNL (as measured by time per mm stone size) and UMP was slower than MP without reaching statistical significance. The complication rate was higher the smaller the instrumentation size was, but this was also not statistically significant.

MP7-13 What is the Best Scoring System to Predict Percutaneous Nephrolithomy Outcomes? A Comparative Study Among S.T.O.N.E Score, Guy's Stone Score and CROES Nomogram.

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Introduction and Objective: To compare the capacity of Guy's Stone Score (GSS), S.T.O.N.E. Nephrolithometry (STONE) and Clinical Research Office of the Endourological Society (CROES) nephrolithometric nomogram to predict the success rate of percutaneous nephrolithotomy (PCNL), as well to compare the time of application of the nomograms, evaluating the most effective one for clinical use.
Methods: We studied 48 patients who underwent PCNL by the same surgeon between 2008 and 2012. We calculated the Guy's

Stone Score, S.T.O.N.E. Nephrolithometry, and CROES nephrolithometric nomogram based on preoperative computerized tomography (CT) images. A single observer, blinded to the outcomes, reviewed all images and assigned scores. Immediate success was defined as stone fragments < or = 4 mm on CT scan on the first postoperative day (POD1). We compared the area under the ROC curve (AUC) of the three nomograms two by two to determine the most predictive scoring system. For time application comparison, an analysis of variance for repeated measures and the multiple comparisons by the Tukey test was used.
Results: The immediate success rate was 66.7%, and complications occurred in 16.7%. The average operative time was 122 minutes. After the two by two comparison of the AUC, there was no significant difference among the Guy's Stone Score (AUC = 0.653), S.T.O.N.E. Nephrolithometry (AUC = 0.663) and CROES nephrolithometric nomogram (AUC = 0.641) in the capacity to predict immediate success of PCNL. Mean application time for the Guy's Stone Scores was 27.5 seconds, 300.6 seconds for S.T.O.N.E. Nephrolithometry, and 213.4 seconds for CROES nephrolithometric nomogram ($p < 0.001$).
Conclusions: All three nomograms showed similar capability to predict success of PCNL. However, the Guy's Stone Score was the fastest to be applied, making it more suitable for a daily basis use when counseling patients about the outcomes of PCNL.
Keywords: percutaneous nephrolithotomy, nomogram, scoring system, urolithiasis.

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MP7-14 The Practicality of Using Score Systems to Predict the Outcome of Percutaneous Nephrolithotomy

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Introduction and Objective: We aim to investigate the use of scoring systems to correlate with outcomes and complications after percutaneous nephrolithotomy (PCNL)
Materials and Methods: We retrospectively examined the records of 194 patients who underwent PCNL in between July 2008 and December 2014 in our institution. Guy's and S.T.O.N.E. scoring systems were calculated. Preoperative characteristics and outcomes were analysed. Stone free status is defined as residual fragments of ≤ 4 mm
Results: The stone free patients and those with residual fragments have similar distribution in age, sex, stone laterality, American Society of Anaesthesiologists score and BMI. Overall stone free rate is 59.8%. Stone-free patients had significantly lower Guy's score (2.9 vs 3.4, $p = 0.000$) and S.T.O.N.E score (7.8 vs 8.7 $p = 0.029$). Logistic regression analysis showed that both Guy's and S.T.O.N.E systems were significantly associated with stone free status; OR 1.9 ($p < 0.000$) and OR 2.4 ($p = 0.002$) respectively. There is also a positive correlation in both Guy's and S.T.O.N.E scoring systems in terms of duration of operation; $r = 0.2$, $p = 0.030$ and $r = 0.2$, $p = 0.002$ respectively.

There was no significant difference in the areas under the curves for the Guy's and S.T.O.N.E. scoring systems (0.62 [95% CI 0.54–0.70] vs. 0.66 [95% CI 0.58–0.75]; $p = 0.48$)

There is also no significant association between both scoring systems in terms of complications ($p = 0.360$ and $p = 0.370$) and length of hospitalisation ($p = 0.516$ and $p = 0.885$).
Conclusions: Guy's and S.T.O.N.E scores can accurately predict stone free status. The scores should however be interpreted with caution as they do not predict complications accurately

MP7-15 Complications of percutaneous approach in renal stones

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Introduction: Percutaneous nephrolithotomy (PCNL) is nowadays a widely practiced procedure. Despite the good stone-free rates, it still has a specific morbidity. Our goal was to describe the complications of this method on a significant series of patients.
Material and methods: Between January 2001 and January 2015, 3248 patients (age between 18 and 82 years old) underwent PCNL (3546 procedures). We used 24 F rigid nephroscopes and 15F flexible ones (214 procedures). The mean follow-up period was 92 months (range 2 to 148 months).
Results: Intraoperative incidents were encountered during 122 procedures (3.4%): losing the percutaneous traject (63 cases), poor visibility due to bleeding and imposing the termination of the procedure (41 cases) and descendant stone fragments' migration imposing antegradeureteroscopic removal (26 cases). The overall complications' rate was 18% (638 cases): significant bleeding requiring blood transfusions (83 cases), emobolisation (7 cases) nephrectomy (4 cases) or open surgical hemostasis (3 cases), sepsis (7 cases), fever (121 cases), pyelocaliceal perforations (38 cases), hemoperitoneum (1 case), persistent lumbar urinary fistulae requiring retrograde JJ ureteral stenting (371 cases) and extrarenal stone fragments migration (3 cases). However, the majority of these complications were minor. The mortality rate related to PCNL procedures was 0%.
Conclusions: According to our experience, PCNL is a safe and effective technique. Most of the intraoperative incidents or complications are minor and easy to solve. However, an adequate training is imperative in order to reduce the associated morbidity.

MP7-16 Percutaneous nephron-lithotomy (PCNL): Using Statistical process control charts to reduce variability and improve outcomes

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Introduction: Clinical quality may be defined differently by different individuals. Quality for patients might be defined by the reliability or lack of variability in outcomes that impact upon day to day living such as stone free rate, Length of stay (LOS) and readmission. 3 sigma defines 98.6% of the population and is an important measure of variability used in industry to improve outcomes and performance. We have used statistical process control methodology with 3 sigma upper control limits to identify causes of variability in our PCNL practice with regard to LOS and readmissions and the implemented changes to improve reliability.
Material and method: Between April 2010 and October 2014 we undertook a series of PDSA cycles aimed at improving the outcome and reliability of outcomes around LOS and readmission for patients undergoing PCNL. Information was obtained from reviewing electronic records of patients including LOS and readmission rate. Issue were identified with regard to variations in postoperative care, timing of nephrostomy removal, discharge criteria and urosepsis and changes implemented to improve these.
Results: Total of 113 procedures were undertaken during the study period. The median age was 58.6 (range: 28 to 83) years.

The overall stone complexity (Guy's score), was Graded as I in 33 (29%), II in 30 (27%), III in 30 (27%) and IV in 20 (17%) patients but increased over the study period. Median LOS improved from 4 days (3 Sigma 7.2 days) to 3 days (3 Sigma 4.9 days) with Introduction of a care pathway and discharge criteria. Undertaking the nephrostogram on the first post-operative day reduced LOS to a median of 2 days (3 sigma 3.6 days). A common cause of delayed discharge was post-operative fever and sepsis. The Introduction of antibiotics for 4 days postoperatively did not impact upon the median LOS but did reduce variability (3 sigma) to 1.4 days. The overall re-admission rate was 2.65% (n = 3) with no readmission since November 2011.
Conclusion: The variability of a service is an important quality outcome measure that is often over looked. Understanding the common causes of variability allows improvement and assurance of highly reproducible outcomes and process. Consequently whilst our median Los is 2 days we can predict that 98.6% of our patients will have a LOS of 3.4 days.

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MP7-17 Long Term DMSA Scintigraphy Split Renal Function Results After Nephrolithotomy Procedures

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Objectives: Advancement in endourology practise diminished the use of nephrolithotomy procedures (NL) in worldwide. However, in some difficult cases, NL is still the best option for stone removal. In this research, we examined the long term DMSA scintigraphy split renal function (SRF) results after nephrolithotomy procedures.
Materials and Methods: We examined our hospital records between 2006 and 2015. A total of 18 patients were found to have NL procedures before more than 10 years. DMSA results were analyzed.
Results: Eleven patients (61%) had right sided, and 7 (39%) had left sided NL. The mean time from NL procedures to DMSA controls was 15.27(10–25) years. The mean SRF was 25.5% (7%-49%).
Conclusions: NL significantly reduces the SRF in effected kidney. Randomized controlled studies will reveal the difference between NL and other endourological procedures.

MP7-18 Upper pole renal puncture in supine percutaneous nephrolithotomy

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Introduction: Due to anatomical reasons there is a perception that upper pole punctures carry an increased risk of visceral injury in the supine percutaneous nephrolithotomy (sPCNL).
Patients and Methods: We describe a series of 47 patients with upper pole puncture, under ultrasound and fluoroscopic guidance, for renal access for sPCNL between Oct 2008 and Jun 2015 at our institution. Data was collected prospectively on cases performed by two endourologists and collected on an anonymised pre-designed database.

27 male and 20 female patients were included with a mean age of 56 (Range 20–90), mean BMI of 28 (Range 20–41) and mean Charlson co-morbidity index of 3 (Range 0–8).
Results: Stones accessed were located in the upper pole alone in 18(38.3%) cases, staghorn in 14(29.8%), and renal pelvis in 7(14.9%). The remaining 8(17%) patients had stones in multiple calyces. Excluding staghorns the mean maximum stone diameter was 19 mm (Range 9 – 35). Mean density was 1020HU (Range 412–2000HU). 7(14.9%) cases required a second tract for: staghorn (4); multiple stones (3). 32(68.1%) cases were considered stone free (< 2 mm fragments on CTKUB). Failure to access was encountered in 5 (10.6%) of cases Complications were graded by Clavien-Dindo classification, 4 Grade II, 2 Grade IIIb. (1 General anaesthetic bladder washout and 1 migrated stent). No visceral or thoracic injuries were encountered.
Conclusions: Upper pole punctures in supine position are safe. No thoracic or visceral injuries encountered in our series.

MP7-19 Bilateral simultaneous PCNL under regional block a feasible low cost model

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Introduction: Percutaneous nephrolithotomy (PCNL) is the standard mode of therapy for renal calculi of more than 15 mm. But, PCNL is being criticised for being invasive and requiring General Anaesthesia. We have been performing even bilateral PCNL under regional block for over two decades, which is not only cost effective but gives satisfaction to patient by complete clearance and minimum morbidity.
Material and Method: We have analysed our data from the period 1994–2014 where in bilateral PCNL (Group A) was compared with unilateral (Group B). Patients with morbid obesity, associated ureteric or vesical calculi was excluded. All patients were adviced breathing exercise with respirometer and primed to lie prone for at least 75 minutes at home. They were also given the option of General Anaesthesia as the primary modality for undergoing procedure. The demographic data was compiled and compared.

A total of 646 patients with bilateral renal calculi underwent simultaneous PCNL under regional block. The patients underwent cystoscopy and bilateral ureteric catheterisation followed by standard PCNL using 26F storz nephroscope simultaneously in prone position under fluroscopic guidance using retrograde pneumogram to visualise PCS by bull's eye technique. All consumables like Terumo guide wire, Foleys catheter were reused. The pneumatic lithotripter was used for fragmentation. The clearance was documented by X ray KUB AP view on first post operative day. A nephrostomy and DJ stent were placed in all patients except in those with solitary pick up stone. The mean stone bulk was 350^{+}–50 sq.mm and the largest was 650 sq.mm. A total of 1486 patients underwent unilateral PCNL with a stone bulk of 240^{+}_sq.mm and max.size of 600 sq.mm.
Result: The mean operative time was 60^{+}_15 minutes in group A and 20^{+}_5 min in Group B. A total of 10 patients in bilateral and 2 patients in unilateral PCNL underwent relook PCNL under local anesthesia using the same track on 2nd postop day. Multiple punctures were done in 89 patients in group A, superior caliceal puncture in 330, middle caliceal in 400 and inferior caliceal in 85 patients whereas in Group B 300 patients had multiple punctures 450 in sup.,600 in middle and 200 in inf. calyx. The average hospital stay was 4 days in group A and 3 days in group B. The

average cost of treatment in Group A was 270 Pounds and 300 Pounds in group B.
Conclusion: Bilateral PCNL is feasible, safe and cost effective treatment and can be recommended under regional block as the primary modality of treatment for renal calculi.

MP7-20 Comparison and analysis of Guy's and S.T.O.N.E. nephrolithometry scoring systems for prediction of stone-free status and complications after tubeless percutaneous nephrolithotomy.

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Introduction: To investigate the prognostic factors associated with the surgical outcomes of tubeless percutaneous nephrolithotomy (TPCNL) and compare between Guy's and S.T.O.N.E. scoring systems and other prognostic factors.
Patients and Methods: We retrospectively reviewed the surgical outcomes recorded prospectively and image data of preoperative computed tomography (CT) scan of 121 patients who had undergone TPCNL from June 2012 to April 2015. Guy's and S.T.O.N.E. scoring systems and prognostic factors were assessed with univariate and multivariate statistical analyses and receiver operating characteristic (ROC) curves. Baseline characteristics were compared with stone-free versus (vs.) non-stone free patients and complicated vs. non-complicated patients.
Results: The initial stone-free and complication rate after TPCNL were 83.5% (98/121) and 26.5% (32/121). On univariate analysis, both scoring systems were identified as significant factors in terms of stone-free rate (SFR). The analysis of multivariate logistic regression showed that Guy's and S.T.O.N.E. scores and stone multiplicity had significant correlation with stone-free status. Guy's scoring system (GSS) was significantly associated with complications ($p = 0.023$). However, multivariate analysis showed that there were no significant associations between S.T.O.N.E. nephrolithometry and complications. Risk factors for development of complications were genitourinary anomaly, change in hemoglobin level, length of stay, and Guy's scores. On the analysis of ROC curve and area under curve (AUC), Guy's and S.T.O.N.E. scoring systems, stone multiplicity had fair results (AUC = 0.834 vs. 0.890 vs. 0.800, respectively). Pairwise comparison of ROC curves showed that there were significant difference of S.T.O.N.E scores vs. stone multiplicity ($p = 0.006$).
Conclusions: Guy's and S.T.O.N.E. scoring systems have comparable results after TPCNL on the univariate and multivariate analysis. S.T.O.N.E scoring system has better accuracy than GSS and stone multiplicity. Multivariate analysis of complications shows that only GSS is associated with complications. Further investigation is needed to develop more predictive scoring system with regard to stone-free rate and complications.

MP7-21 The Wisconsin Stone Quality of Life Questionnaire: Baseline Results From a Prospective, Longitudinal, Multi-Center Validation Study

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Introduction: Decrements in health-related quality of life (HRQOL) have been reported in kidney stone patients; yet, there is no urolithiasis-specific instrument to quantify quality of life. The Wisconsin Stone Quality of Life (WiSQoL) questionnaire was developed to fill this void. Herein we examine the generalizability of this instrument across comprehensive clinical stone centers in North America.
Materials and Methods: Adult urolithiasis patients were recruited from clinic and prior to surgical procedures. After obtaining informed consent patients were asked to complete a WiSQoL questionnaire at baseline and at future time points to capture longitudinal data. Stone-related medical and surgical data as well as baseline questionnaire scores were compiled within this multi-institutional cohort.
Results: After obtaining institutional review board approvals we collected data on 761 patients (26% first-time stone-formers) at eight sites. The males (51%) were significantly older than the females (49%) ($M = 57 \pm 13$ years; $F = 51 \pm 14$ years, $p = < 0.0001$). A little over half of male (52%) and female (56%) respondents reported a stone at the time of survey. The stones were described as painful by 52% of females and 48% of males. Those with stones had significantly lower scores than those without stones at the time of survey for all questions regarding energy level, sleep, forcing one-self to fulfill responsibilities (work, school, exercise), and adherence to dietary/medical recommendations ($p \leq 0.01$). Females had significantly lower scores than males with the same stone status for 10 of the 15 questions in the aforementioned domains ($p \leq 0.01$). Similarly, with regard to symptoms, sexual/social interest, and worry/anxiety those with stones scored significantly lower than those without stones on all items ($p \leq 0.01$) and females scored significantly lower than males on 11 of 15 items ($p \leq 0.01$) in these domains. First-time male and female stone formers had similar scores across the instrument, however recurrent female stone-formers scored lower than recurrent male stone-formers on most questions. There was no difference in HRQOL for male first-time and recurrent stone-formers but female recurrent formers seem to have a lower HRQOL than female first-time stone-formers.
Conclusions: In a multi-institutional cohort, the performance of the WiSQoL questionnaire was consistent with original instrument expectations. Specifically, those with stones and females, particularly recurrent female stone-formers have a lower HRQOL. Based on these data we predict the instrument will be a generalizable and useful tool for reporting urolithiasis-related quality of life and further validation is underway.

MP7-22 Modified Clavien –Dindo Classification, Single institute PCNL experience at District General Hospital

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Aim: Percutaneous nephrolithotomy (PCNL) is the recommended treatment option for large volume renal and staghorn calculi. European Association of Urology (EAU) guidelines recommend to record the post-operative complications by using standardised clavien-dindo grading system.

To stratify our success rate, overall complications rate and the severity of percutaneous nephrolithotomy (PCNL) in a district general hospital; we analysed data by using Clavien- Dindo grading system.
Methods: 24 PCNL procedures were performed from Jan 2013 to Jan 2015 at our institute. Data was collected retrospectively.

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All case notes reviewed to record multiple variables and complications were analysed by using Clavien –Dindo classification. We also compared our success rate of stone clearance with published evidence.

Results: Out of 24 patients 10 were females and 14 males. Majority of PCNL were performed on left kidney (n = 15) while 9 PCNL were performed on right kidney. Median BMI was 31 (20–40) with an average stone size of 2.2 cm. Five PCNLs were performed for staghorn calculi. Tract puncture were performed by radiologist.

Majority of cases n = 18 (82%) were stone free on fluoroscopy while in 4 patients, residual stones were noted. Two of these had ESWL and two were managed conservatively. Median length of stay was 3 days.

Complications were recorded as modified Clavien- Dindo grading (Table 1). One patient need transfusion and later on embolization for post PCNL bleeding.

Conclusion: The modified Clavien system provides a robust system to record complications and their severity more accurately. Our result have proved better stone clearance and less complication rates in comparison with published evidence. A shorter operation time leads to less manipulation of the pelvicaliceal system which in turn reduces bleeding and infection. Therefore, a skilled surgical team and proper equipment are imperative.

Table 1: Complications as per Clavien Dindo Grading system

Clavein- Dindo Grades	N= No of pts	%age	
0	7	30%	
I	11	45%	Pain , Temp, Nausea
II	2	8%	Septic, Transfusion
III	4	17%	Stent, Emobilisation
IV	0	0	
V	0	0	

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MP8 - SURGICAL OUTCOMES 2

MP8-1 10-year Experience of Robot Assisted Radical Prostatectomy (RARP) for High-Risk Prostate Cancer

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Introduction: Whilst opinions on the optimal management of high-risk prostate cancer are divided, radical prostatectomy remains an important treatment option. We present our 10-year experience of robot assisted radical prostatectomy (RARP) for high-risk prostate cancer.

Methods: 452 patients with high-risk prostate cancer according to D'Amico's classification underwent RARP. Retrospective analysis of a prospectively collected database was performed. Patient and prostate cancer characteristics, perioperative results and oncological outcomes were recorded. Logistic regression analysis was performed to assess the strength of association between factors.

Results: Median age was 63.2 years (44.6–76.1). Mean PSA at diagnosis was 14.1 ug/l ± 13.3. Biopsy Gleason score was 8–10 in 36.2% of patients and ≥T2c in 42.0%. Mean operative time and blood loss were 162 min ± 60 min and 282 ml ± 212 ml respectively. Mean length of stay was 2.6 ± 2.3 days. Unilateral/bilateral nerve sparing was performed in 281 cases (62.2%) and extended pelvic lymph node dissection in 242 cases (53%) including 35 node positive cases. Two Clavien III complications occurred (0.4%). Comparison of final pathological Gleason score led to 99 patients being down graded and 70 patients upgraded. 118 patients had positive margins (26.1%), which was associated with nerve sparing (p = 0.07). At medium term follow up 19.6% (n = 60) of patients developed biochemical recurrence, 47 patients (14.9%) developed local recurrence and 15 (4.7%) metastatic disease.

Conclusions: This series supports the efficacy of RARP as a primary treatment for high-risk prostate cancer. It is associated with favourable perioperative outcomes, short hospital stays and acceptable oncological control. However the significant rates of recurrence highlight the continuing challenge of managing high-risk prostate cancer.

MP8-2 Robot Assisted Radical Prostatectomy in High Risk Patients

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Introduction: Robot assisted radical prostatectomy (RARP) for the treatment of high-risk prostate cancer has not been well studied to date. Yuh et al reported on the safety and efficacy of RARP in men with high-risk prostate cancer. Multiple studies have shown results to be similar to open radical prostatectomy. Our goal was to evaluate our experience in all patients with high-risk prostate cancer undergoing RARP at our institution.

Material and Methods: We performed a single-institution, single-surgeon review of 3,433 patients who underwent RARP from 2005 to 2014. Patients were identified who underwent RARP for high-risk disease as determined by D'Amico classification (Gleason 8- 10, stage ≥T2c, and or PSA ≥20). Perioperative data was evaluated from a prospectively maintained RARP database. Treatment was considered a failure with PSA levels ≥0.2.

Result: In total, 404 patients were identified that met high-risk classification. The median age was 62. The median BMI was 28.8. Follow-up ranged from 1 to 91 months with a median of 18 months. 1-year biochemical recurrence free survival (1-RFS) was 81%. 2- year biochemical recurrence free survival (2-RFS) was 74.9%. Gleason score of 8–10 was the most common preoperative high-risk identifier (65%). Positive surgical margins occurred in 32.2% of patients. Lymph node dissection was performed on 351 patients (97%). The 12 patients that did not receive a lymph node dissection had surgery. In total, 19 patients (5.4%) were found to have positive lymph node involvement.

Conclusion: We present our prospective database patients with high-risk prostate cancer who underwent a RARP. Consistent with recent meta-analysis, RARP appears to be an effective initial treatment for high-risk prostate cancer. Further follow-up for these patients remains necessary to help better understand long-term outcomes following RARP for high-risk prostate cancer.

Reference: Yuh B, Walter A, Axel H Et al. The role of robot-assisted radical prostatectomy and pelvic lymph node dissection in the management of high-risk prostate cancer: a systematic review. *European urology* 2014; 65: 918–927.

MP8-3 Positive margins and their risk factors after robotic assisted laparoscopic prostatectomy in pT3 prostate cancer

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Introduction: Robot-assisted laparoscopic prostatectomy (RALP) remains one of the gold standard treatments of localized prostate cancer (PC). However, pT3 tumors have a significant rate of positive margins, rendering their surgical management questionable.

The aim of our study was to evaluate incidence and risk factors for positive margins (PM) of all non organ-confined PC (pT3) treated by RALP between June 2006 and July 2014.

Material and methods: Retrospective evaluation of all patients treated by RALP for pT3 PC, between June 2006 and July 2014 at our institution, operated by two senior surgeons with different surgical experience. Values are medians ± interquartile range. Tumor proportion was characterized as the ratio (%) between tumor and prostate volume. Prognostic factors for PM were identified using Mann-Whitney U Test and Chi-square test.

Results: Inclusion of 142 patients who had a pT3 specimen after RALP, of which 75% had a pT3a and 25% a pT3b PC. Median age was 65 ± 9 years. Median PSA of 8.2 ± 8 ng/ml and median prostate volume of 39 ± 16 ml. Cancer volume in final histopathology analysis was 4.5 ± 4.9 cm^3, with a mean tumor proportion of 15%.11% of patients had a Gleason score (GS) 6, 69% a GS 7 and 20% a GS ≥8. Altogether, 35% of patients had a PM, of which 60% were focal (<4 mm) and 40% were extensive (>4 mm). In 60% of specimens, PM were at the apex. Three patients had an immediate adjuvant postoperative radiotherapy. Biochemical recurrence (BCR) was observed in 30% of all patients with a mean follow-up of 45 months (range 3–100). No significant correlation was observed between PM and BCR ($p = 0.105$), even after considering focal and extensive margins ($p = 0.405$). Risk factors for positive margins were cancer volume ($p < 0.001$), size of cancer infiltration ($p < 0.001$), Gleason score ($p = 0.04$) and preoperative PSA value ($p = 0.009$). There was a trend to correlation between PM and experience of the surgeon ($p = 0.08$) as well as pathological stage ($p = 0.06$). No correlation was found between PM and prostate volume.

Discussion: This study shows that RALP provides significant surgical oncologic control of pT3 prostate cancers, namely in 2/3 of cases. Cancer volume so as tumor proportion, PSA and Gleason score were statistically significant prognostic factors. Also, the PM rate decreased with surgeon's experience. In this study, the apex remained the main localization for positive margins.

Since cancer volume on the specimen correlated with positive margins, our study suggests that preoperative MRI volume determination may help to orientate therapeutic strategy between surgery and radiation therapy.

MP8-4 Comparing conventional laparoscopic to robotic-assisted radical prostatectomy with extended pelvic lymph node dissection in intermediate and high-risk prostate cancer: are we really doing that better?

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Introduction: Robotic-assisted laparoscopic prostatectomy (RALP) with extended pelvic lymph node dissection (ePLND) has arisen as a standard in the management of intermediate and high-risk prostate cancer patients, reducing drastically the number of conventional laparoscopic procedures (LRP) performed in Europe. Aim of this study was to explore pathologic and oncologic outcomes after LRP and RALP + ePLND, in a cohort of patients with intermediate and high risk prostate cancer.

Patients and Methods: We performed a matched-pair analysis matching 1:1 70 patients who underwent LRP + ePLND to 70 who underwent RALP + ePLND between 2004 and 2014. All patients presented with intermediate or high-risk prostate cancer according to the D'Amico classification. Patients were retrospectively analyzed. Differences in pathologic characteristics and post-operative complications across the two groups were assessed using Rank sum or χ^2-test. Kaplan Meier curves and cox regressions were constructed to assess differences in biochemical recurrence-free survival across two groups.

Results: The two groups (lap n = 70; robotic n = 70) were comparable in terms of demographic data. LRP was associated with shorter OR times and decreased blood loss ($p < 0.001$). However, in the robotic-assisted arm, more lymph nodes were retrieved (median LRC 12 vs median RALP 18; $p < 001$). No significant difference in positive surgical margins was found across the two techniques ($p = 0.9$). Moreover, no significant differences were found regarding post-operative complications ($p > 0.15$). Lymphocele and prolonged lymphorrea were specifically addressed, with no significant difference emerging ($p > 0.74$). After a median follow-up of 3 years, biochemical free survival was 92% in the laparoscopic vs. 95% in the robotic arm ($p = 0.67$).

Table 1. Comparing surgical outcomes between laparoscopic and robotic groups

	Laparoscopic	Robotic	P
OR time (mins) median (IQR)	205 (180-240)	245 (209-290)	<0.001
EBL (ml) median (IQR)	200 (100-350)	300 (200-500)	<0.001
Conversion to open	3/70	0/70	0.08
Final pathology Gleason			
6	20	20	
7	35	47	0.005
8-10	16	3	
pT			
≤pT2	31/70	39/70	0.18
≥pT3	39/70	31/70	
pN			
pN0	60/70	59/70	0.81
pN1	10/70	11/70	
LN retrieved (n) median (IQR)	12 (10-14)	18 (14-23)	<0.001
Margins			
Negative	48/70	48/70	0.90
Positive	22/70	22/70	

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Conclusions: In this matched-pair analysis comparing patients with intermediate and high-risk prostate cancer, the surgeon was able to obtain a higher lymph node yield in RALP procedures compared to LRP. However, this increase in node yield was balanced with longer OR times, increased blood loss, similar post-operative complications and similar oncologic outcomes. Prospective studies in patients at high risk are necessary to validate these findings.

MP8-5 Preoperative Low Risk Men Who Were Eligible for Active Surveilllance and Underwent Robotic Assisted Radical Prostatectomy

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Introduction and Objectives: Active surveillance (AS) has become increasing utilized and has gained acceptable for the management of men with localized prostate cancer who have low risk clinical features. Our goal was to analyze the preoperative data in men with adenocarcinoma of the prostate and compare this with post prostatectomy specimens in patients who were eligible for AS but chose to undergo robotic-assisted radical prostatectomy (RARP).
Materials and Methods: We performed a single-institution; single-surgeon review of 3433 patients who underwent RARP from 2005 to 2014 under an IRB approved protocol. The inclusion criteria were: PSA ≤ 10, clinical stage T1-T2a, Gleason score 6 or less on biopsy, less than 33% of cores positive and less than 50% of tumor percentage in one core. We compared preoperative data with the pathological features of prostate cancer using t-test (continuous) and chi-square test (categorical).
Result: 3,029 patients had all data points available and of these patients, 1145 qualified for AS. Among them, 571 (50%) were found to have upgraded Gleason scores on their prostatectomy specimen. There were 547 patients upgraded to Gleason 7 (497 to $3+4$ and 50 to $4+3$), 19 to Gleason 8, and 2 to Gleason 9. Only 1 patient downgraded from Gleason 6 to 5.

Positive margins were found in 116 patients (10.1%). Pathologic stage T3 was identified in 103 patients (9%). Also, one patient presented with lymph node involvement on surgical pathology report.
Conclusion: Our large cohort study highlights a disturbing percentage of men whose Gleason score was upgraded and staged following RARP. AS is an encouraging treatment option in the management of prostate cancer; however, appropriate education and counsel should be given to patients about the risks associated with this management style.

MP8-6 Cost Effectiveness of Robotic-Assisted Urologic Oncology Surgery

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Objective: To review the cost effectiveness of robotic-assisted surgery in uro-oncology.
Introduction: With healthcare spending coming under more scrutiny and changes in healthcare policy taking effect, the cost of medical care has come into the forefront in both the medical and political community. This places pressure on the scientific community to develop technological advances that will not only improve health outcomes but are also more cost effective. Robotic surgery has been a recent technology to draw up debate regarding its cost effectiveness.

The urologic community has been quick to adopt robotic assisted laparoscopic surgery especially in urologic oncology, first through robotic assisted prostatectomy and more recently for partial nephrectomies and cystectomies. Robotic assisted laparoscopic surgery offers several advantages. From the surgeon perspective, robotic assisted surgery offers improved visual field, including 3-dimentional view, improved freedom of movement through 'wristed' instruments, elimination of surgeon tremor and ergonomic benefits. For the patient, benefits include improved cosmetics with smaller incision sites, decrease loss of blood, decreased post-procedure pain, shorter length of stay and faster recovery.
Methods: A literature review was done, focusing on cost identification and cost effectiveness on robotic-assisted prostatectomies, cystectomies and partial nephrectomies compared to the cost and effectiveness of open surgeries.
Results: Robotic-assisted surgery tends to more expensive compared to open surgery because of the high acquisition cost and maintenance cost of the robot.
Conclusion: Overall, robotic assisted surgery has offered significant amounts of benefit to urologic surgery, with shorter length of stay, less blood loss, and improved peri-operative quality of life. Given the high fixed cost of robotic acquisition and maintenance, robotic assisted surgery is more often than not, more expensive than open procedure when evaluating direct costs. However, the gap in cost between robotic assisted and open surgery can be narrowed in high volume centers where the fixed cost can be divided between a larger number of cases. Also, if the length of stay is substantially different between robotic and open groups, such as in cystectomies, the cost of robotic surgery can actually be even lower than an open procedure.

MP8-7 Improved Continence with Posterior Reconstruction of the Rhabdosphincter after Robotic-Assisted Radical Prostatectomy

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Introduction: A 2012 systematic review suggests posterior reconstruction (PR) of the rhabdosphincter after robotic assisted radical prostatectomy (RALP) may confer improved recovery of early incontinence, however this remains controversial. Our objective was to assess if PR improves early restoration of continence compared to no reconstruction. The primary outcome evaluated was time to continence recovery.
Patients and methods: We designed a single-blinded, parallel group, randomized control trial. Between 2012 and 2014, 120 patients undergoing RALP were randomized (1:1) to receive PR or no reconstruction at time of RALP. Post-prostatectomy urinary outcomes were prospectively collected. Intervention was PR of the rhabdosphincter *versus* no reconstruction. Assessment was by questionnaire prospectively filled out by patient at post operative office visit assessing pad usage and AUA symptom score (AUASS) at 1, 3, 6 and 12 months following surgery. Pad usage was quantified by precautionary, $\leq 1, \geq 2$ pads and mean total pad usage.

Results: Median follow-up was 17 months and there were no statistically significant differences between groups in terms of baseline clinical or pathological variables.

At 1 and 3 months, there was significantly less pad usage amongst patients who received PR. At 6 and 12 months, the percentage of patients using ≥2 pads per day was no different between the two groups, however the PR group reported significantly lower mean total pads used per day, suggesting less severe leakage in those with incontinence ($p = 0.012$, $p = 0.023$ respectively). Kaplan-Meier curves demonstrated PR resulted in significantly improved continence compared to no reconstruction.

Conclusion: In a prospective randomized controlled trial of rhabdosphincter reconstruction during RALP, reconstruction significantly improved both early and lasting continence

MP8-8 Challenges Posed by Desmoplastic Changes In a High Risk Patient that had Anti Androgen Therapy Prior to Robotic Assisted Radical Prostatectomy

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Introduction: The desmoplastic changes caused by neoadjuvant therapy on prostate cancer patients have been reported by Hugosson (Hugosson et al. Eur Urol 1996; 29: 413–9) and Soloway (Soloway et al. J Urol 1995;154: 424–8) as they have observed in their open radical prostatectomy patients. With the advent of robotic surgery comes high definition video recording that documents the operative difficulty caused by desmoplastic reaction of prostate tissues to the androgen deprivation. Our video presents our experience doing robotic assisted radical prostatectomy in a patient that underwent neoadjuvant hormonal therapy.

Patient/Material: This is the case of a 62 year old male diagnosed with Prostatic Adenocarcinoma Gleason's 9 (4+5). Metastatic work up revealed no metastic focus. The patient was initially undecided on undergoing surgery and was placed on Biacalutamide 50 mg once daily for 3 months by the referring urologist. He later consented to surgery and subsequently underwent Robotic Assisted Radical Prostatectomy using the Davinci s platform.

Methods: Using the Da Vinci's recording equiptment we were able to document the difficulty we encountered due to the desmoplastic reaction of the prostatic tissues to the anti androgen therapy. A posterior non-nerve sparing approach was employed to remove the 50 gram prostate. Dissection of the seminal vesicles posed an extra challenge due to its visually evident adhesion to the surrounding soft tissues.

Results: Total console time was 240 minutes. Histopath findings revealed left seminal vesicle invasion although the cut surgical margins were negative for tumor.

Conclusion: The rationale of using neoadjuvant hormonal therapy before radical prostatectomy is to reduce the positive surgical margin rate by increasing apoptosis and decreasing proliferation of prostate carcinoma cells and ultimately inducing tumor regression. This advantage should be balanced with the risk of incurring increased surgical difficulty due to desmoplasdtic reaction caused by neoadjuvant hormonal therapy. Our video demonstrates the effects of desmoplastic changes on the ease of dissection and the total time of surgery. Although surgeon skill and experience might negate the difficulty posed by desmoplastic changes, both surgeon and patients should be cognizant of the possibilty of incurring morbidities that may result from the extra challenges posed by neoadjuvant hormonal therapy prior to radical prostatectomy.

MP8-9 Continence outcomes for the our first 1000 robotic radical prostatectomies

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Introduction: Robotic assisted laparoscopic prostatectomy (RALP) was introduced at our UK institution in November 2008. Post-op continence rates were not centrally documented and thus departmental long-term (>12 month) continence rates were unknown.

Methods

We contacted the first 1004 men who underwent RALP and asked them:

- in terms of your post-operative urinary continence, do you have good control/are you dry?
- if no –do you wear pads/change your clothes on a regular basis?
- did you need a second operation to make you dry?

If they responded they were incontinent, a ICIQ-UI (Short) form was sent out, along with questions of how many pads/type they used and whether they would like to see a surgeon who specialises in post-prostatectomy incontinence.

Results: Of 1004 patients, 773 (77%) returned their questionnaires. 546 (71%) had good control/dry and 204 (29%) were not. Pad-free rate was 75% (9% of incontinent patients didn't wear pads) with those incontinent ranging from 2-per-week to 14/day. Of the incontinent – 143 (71%) returned their second ICIQ-UI form. 66% (95) had mild incontinence (only leaked a small amount). 53% (76) had an impact of 0–3/10 (minimal) on their quality of life. 58 (7.5% of the 1000) had already seen a functional surgeon but 48 (41%) of the incontinent wanted to see one but had not yet been referred. The AUS/Sling rate is 3.5% (35)

Conclusions: The incontinence rate is higher than expected but the degree of bother is low. By standard/classical follow-up technique, we only identified half of the bothered incontinent. We need to identify the bothered incontinent patient and encourage and refer them to the functional team.

MP8-10 Robot-Assisted Radical Cystectomy with Totally Intracorporeal Urinary Diversion: A comparative analysis with Extracorporeal Urinary Diversion

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Introduction: To analyze the perioperative outcomes, postoperative complications and oncologic outcomes of intracorporeal urinary diversion (ICUD) and extracorporeal urinary diversion (ECUD) following RARC by a single surgeon at a tertiary referral hospital.

Materials and Methods: We reviewed a prospectively maintained, Institutional Review Board-approved database of 70 patients treated with robot assisted radical cystectomy (RARC) and pelvic lymph node dissection (PLND) for bladder cancer by a

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single surgeon at Korea University Medical Center from 2007 through 2014. The Patient characteristics, perioperative data, postoperative complications within 90 days and early oncologic outcomes were collected for 64 patients who underwent either ICUD or ECUD.
Result: 38 had ECUD (23 ileal conduits and 15 orthotopic neobladders, 39.5%), and 26 patients had ICUD (15 ileal conduits and 11 orthotopic neobladders, 42.3%) ($p > 0.05$). Urinary diversion was performed extracorporeally in the first 37 cases, and thereafter performed intracorporeally. There were no significant differences in patient characteristics between the ECUD and the ICUD groups. Mean total operative time was 468 min for ECUD and 581 min for ICUD ($p < 0.05$). Mean estimated blood loss (EBL) was 265 ml and 148 ml, respectively ($p < 0.05$). The incidence of minor and total complications for patients with the ECUD was higher than in patients with the ICUD (minor 47.4% vs 15.4%, total 57.9% vs 30.8%) ($p < 0.05$). All patients showed negative surgical margin, 21% in ECUD group and 26.9% in ICUD group had pathologic stage T3 or T4 ($p > 0.05$). The mean number of LNs harvested was 23.2 and 31.8 respectively ($p < 0.05$), and the rate of patients that had extended PLND was higher in the ICUD group (60.5% vs 92.3%) ($p < 0.05$).
Conclusion: In our experience the results show that ICUD after RARC can be accomplished with benefits in a decreased blood loss and transfusion rate, a decreased complication rate and a higher quality of lymph node dissection compared to ECUD. We should take into consideration that ICUD was performed in the latter part of the learning curve thus may have potentially influenced the results. Larger series and long-term follow up data will be necessary to support our results.

MP8-11 Minimally Invasive Radical Cystectomy Leads to Decreased Perioperative Complications compared to Open Cystectomy – Analysis from the NSQIP Database

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Background: Radical cystectomy and urinary diversion in patients with muscle invasive bladder cancer is associated with significant perioperative complications. While there has been a shift in practice patterns towards more minimally invasive radical cystectomy (MIRC) over open radical cystectomy (ORC), their comparative outcomes (e.g. 30-day complications) are unknown. Only small, single institutional reports comparing the complication rates after MIRC and IRC have been published, thus our aim was to compare complications after ORC or MIRC using the more representative American Cancer Society's National Surgical Quality Improvement Project (NSQIP) database.
Materials and Methods: All patients in NSQIP undergoing MIRC and ORC from 2005–2013 were identified. Clavien Grades III, IV, and V postoperative complications were determined in these patients and multivariate logistic regression analysis using patient demographics and medical comorbidities was completed in order to determine independent risk factors for complications.
Results: Between 2005 and 2013, 3,784 cystectomies were recorded in the NSQIP database. While there were no significant differences in age, BMI, gender, functional status, or ASA classification between ORC and MIRC, patients with COPD or recent pneumonia were more likely to undergo ORC *($p = 0.001$),* and MIRC operative times were significantly longer *($p = 0.001$).* Clavien III or higher complications were significantly more frequent after ORC versus MIRC (22% vs. 11.9%, respectively, *$p = 0.005$),* including a significantly higher risk of unplanned re-operations within 30 days (6.2% vs. 1.5%, *$p = 0.024$*). Multivariate analysis controlling for potential confounders demonstrated that undergoing ORC (O.R. = 2.27), increased operative time (O.R. = 1.11) and history of COPD or recent pneumonia (O.R. = 1.77) were the only statistically significant independent risk factors for Clavien III or higher complications after radical cystectomy.
Conclusions: Although MIRC takes longer to perform, patients undergoing MIRC are significantly less likely to experience surgical complications (Clavien Grades III, IV, or V) as compared to patients undergoing ORC, even after controlling for ASA classification, functional status and other patient comorbid conditions.

MP8-12 Risk assessment of complications after robotic radical cystectomy with total intracorporeal urinary diversion

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Introduction: Robotic radical cystectomy (RRC) with intracorporeal urinary diversion (UD) is a challenging procedure with a high rate of perioperative complications. In this study we assessed the risk of late complications after RRC with intracorporeal UD.

METHODS: From October 2012 to October 2014, 100 consecutive unselected patients with cT2-4a/cN1-3/cM0 bladder cancer underwent RRC, extended lymphadenectomy and totally intracorporeal UD. Baseline demographics, perioperative and follow up data were prospectively collected. Univariable and multivariable regression analysis were performed to identify independent predictors of surgery related (SR) and any kind of complications at six-mo evaluation.
Results: Out of 100 RRC, we selected 87 consecutive patients with a minimum 6-mo follow up. Sixty-nine patients received a Padua Ileal bladder (54 male and 15 female), while 18 patients received an ileal conduit. At a six-mo follow up 60 (68.9%) patients experienced any kind of complication, 49 (56.4%) were SR. Ortotopic UD, preoperative eGFR and learning curve were significant predictors of SR complication at univariable analysis ($p = 0.032$, $p = 0.042$ and $p = 0.05$, respectively). At multivariable analysis, the only independent predictor of surgical related complications was orthotopic UD ($p = 0.010$; HR: 5.01 [95% CI, 1.47–17.04]). Learning curve and preoperative eGFR were significant predictors of any complications at univariable analysis ($p = 0.008$, and $p = 0.044$, respectively). At multivariable analysis, the only independent predictor of any kind of complications was the learning curve ($p = 0.025$; HR: 0.97 [95% CI, 0.95–0.99]).
Conclusions: RRC with intracorporeal neobladder is feasible but associated to higher risks of SR complications at six-mo evaluation. Learning curve plays a key role for a stepwise reduction of perioperative complications.

MP8-13 Oncological Outcomes and Recurrence Sites Following Robotic Cystectomy with Intracorporeal Urinary Diversion versus Open Radical Cystectomy

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Introduction: Intracorporeal robotic assisted radical cystectomy (iRARC) is gaining popularity over open radical cystectomy (ORC) for the treatment of bladder cancer in some institutions. However, the oncological safety of iRARC compared to ORC has yet to be clearly demonstrated. The objective of this study is to report and compare early oncological outcomes and cancer recurrence sites among patients undergoing ORC and iRARC with intracorporeal urinary diversion.
Patients & Methods: 184 patients underwent radical cystectomy for bladder cancer. ORC cases (n = 94) were performed since June 2005 while iRARC cases (n = 90) were performed since June 2011- July 2014. Primary outcome was RFS. Secondary outcomes were sites of local and metastatic recurrence and overall survival (OS).
Results: Median follow-up for patients without recurrence was 33.8 ± 15.0 months (IQR: 20.5–45.4) for ORC; and 16.1 ± 11.0 months (IQR: 11.2–27.0) for iRARC**.** No significant difference in age, gender, pre-cystectomy T stage, pre-cystectomy grade, surgical margin status or lymph node yield between ORC and iRARC was observed. Kaplan-Meir analysis showed no significant difference in RFS (69.5% ORC vs 78.8% RARC) or OS (73.5% ORC vs iRARC 83.8%) at 24 months. Cox regression analysis showed RFS and OS was not influenced by cystectomy technique. No significant difference between local and metastatic RFS between ORC and iRARC was observed.
Conclusion: ORC and iRARC have equivalent RFS and OS. Metastatic sites vary, but are not related to surgical technique. However, a randomized controlled trial with longer term follow-up data is needed to confirm these findings.

MP8-14 Risk assessment of chronic kidney disease development in patients undergone robotic radical cystectomy and totally intracorporeal diversion

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Introduction: In the last few years robotic radical cystectomy (RRC) for muscle invasive bladder cancer began to gain popularity. However total intracorporeal diversion is a challenging procedure. In this series we presented the risk assessment of chronic kidney disease (CKD) development in our first 100 patients treated with RRC and intracorporeal urinary diversion.

METHODS: From October 2012 to September 2014, 100 consecutive unselected patients with cT2-4a/cN1-3/cM0 bladder cancer underwent RRC, extended lymphadenectomy and totally intracorporeal diversion. Baseline demographics, perioperative and follow up data were prospectively collected. Univariable and multivariable cox analysis were performed to identify independent predictors of increased risk of CKD development.
Results: Out of 100 RRC, we selected 87 consecutive patients with at least a 3-month follow up. Sixty-nine patients received a Padua Ileal bladder (54 male and 15 female), while 18 patients received an ileal conduit. Nineteen patients underwent neoadjuvant chemotherapy (21.8%). At a median follow up of 11 months [interquartile range (IQR): 7–16 mo], 17 (19.5%) patients experienced IIIb-IV stage CKD. A 2–3 grade hydronephrosis occurred in 11 of the 17 patients with renal function deterioration. All these patients were successfully treated with antegrade ureteral stenting. At univariable analysis age, gender, BMI, preoperative eGFR, urinary diversion and neoadjuvant chemotherapy (all $p < 0.001$) were associated with an increased risk of CKD development. At multivariable analysis, the only independent predictor of renal function deterioration was preoperative eGFR ($p = 0.003$; HR: 0.93 [95% CI, 0.88–0.97]).
Conclusions: RRC with totally intracorporeal urinary diversion is feasible and safe. A strict follow up, especially in patients with pre-existing renal deterioration, is recommended to early identify and promptly treat complications in order to protect upper urinary tract and preserve renal function.

MP8-15 Retropubic radical prostatectomy reproducing robot-assisted laparoscopic radical prostatectomy technique: analysis of functional and pathologic outcomes

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Introduction: There have been numerous publications comparing the Results of robot-assisted laparoscopic radical prostatectomy (RALP) with retropubic radical prostatectomy (RRP) in terms of surgical outcomes. However, these two techniques are far different in terms of prostate dissection fashion and urethrovesical anastomosis; antegrade dissection and continuous urethrovesical suturing is usually performed in RALP while retrograde dissection and interrupted suturing has been commonly performed in RRP. Recently we have performed RRP following same technique of RALP; antegrade prostatic dissection and urethrovesical anastomosis with continuous suture. Herein, we present the operation methods of RRP reproducing RALP technique and their surgical outcomes compared with RALP.
Patients & Methods: A total of 322 patients underwent RRP ($N = 99$) or RALP ($N = 223$) at our institution from January 2011 to June 2013. During RRP, we dissected bladder neck first exactly same as RALP. After dissection of vas deference and seminal vesicle, prostate was dissected antegrade fashion including bilateral nerve saving. Finally urethra was cut at prostate apex. After careful hemostasis, Rocco stitch was applied. And then urethrovesical anastomosis was done similar to that of RALP using two 3-0 monofilament sutures tied together at their tail ends. One strand of running suture was directed to right and the other to left direction from the 6 to 12-o'clock, at the end of which a single tie is completed. The urethral catheter was left in place for 7 days. Perioperative outcomes and the rate of incontinence between RRP and RALP groups were retrospectively evaluated.
Results: Perioperative characteristics and complication rates were similar between the RRP and RALP groups except mean estimated blood loss (253.4 ± 155.5 vs 192.6 ± 112.5, $p < 0.001$) and the operative time (188.8 ± 62.3 vs 244.6 ± 60.0, $p < 0.001$). The rates of positive surgical margins were 46.7% in the RRP group and 52.9% in the RALP group ($p > 0.05$). Postoperative incontinence rates were also similar between both groups.
Conclusion: We could effectively and safely perform RRP with the technique reproducing RALP and their surgical outcomes were comparable to RALP. This novel method can be an option for open retropubic radical prostatectomy.

MP8-16 Comparison of surgical outcomes between open and robot-assisted laparoscopic radical cystectomy

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Introduction: Minimally invasive surgical techniques in urologic field have been rapidly adopted for the treatment of benign and malignant diseases with the promise of improving perioperative morbidity and early recovery. Robot-assisted laparoscopic approach has been also used for treatment of the bladder cancer. The aim of this study is to assess the advantage of robotic surgery comparing perioperative and oncological outcomes between robot-assisted laparoscopic radical cystectomy (RARC) and open radical cystectomy (ORC).
Patients and Methods: Between August 2008 and May 2014, 112 radical cystectomies were performed (42 RARCs and 70 ORCs). Patients' demographics, perioperative variables such as operation time, blood loss, time to oral intake, hospitalization, complication and oncologic outcomes were retrospectively evaluated, including metastasis free survival (MFS), overall survival (OS) and cancer-specific survival (CSS) using Kaplan-Meier analysis.
Results: The median follow-up period was 30.3 (0.2–81.4) months. Baseline patients' characteristics of both groups were not significantly different. Blood loss [Median, (range); 175 (100–400) *vs.* 225 (125–2000), $P=0.005$] and perioperative transfusion rate (23.7% *vs.* 45.7%, $P=0.020$) were significantly lower in the RARC group as compared with ORC group. Any patients did not experience major complications or perioperative mortality in the RARC group. There were no statistical differences in regards to MFS, CSS and OS.
Conclusion: In the present study, RARC appears to be an efficient alternative to ORC with advantages of less perioperative major complications, less estimated blood loss, and lower need for transfusions. We suggested that RARC is safer treatment modality with equivalent oncologic Results compared to ORC.

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MP8-17 Surgical and Pathologic Outcomes after Robotic-Assisted Laparoscopic and Open Radical Cystectomy among High-Risk Patients

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Introduction: Although many surgeons have extended robotic-assisted surgery to bladder cancer, the benefit of robotic-assisted laparoscopic cystectomy compared to open radical cystectomy is still unclear. In particular, comparative studies between robotic-assisted laparoscopic cystectomy and open radical cystectomy are relatively limited, and few have focused on high risk groups (e.g. advanced stage disease). We sought to evaluate postoperative and pathological outcomes of robotic-assisted laparoscopic and open radical cystectomy, focusing on high-risk patients.
Patients and Methods: We retrospectively identified patients who underwent robotic assisted laparoscopic cystectomy or open radical cystectomy for bladder cancer at our institution from January 2010 – September 2014. We limited urinary diversion to ileal conduit to limit the effects of diversion on outcome comparisons, and because conduits are the most common type of urinary diversion performed at our institution. Clinical and demographic factors, disease characteristics, postoperative complications and pathological outcomes were compared between surgical approaches. Complications were systematically assessed and recorded during hospitalization. Pathologic outcomes were abstracted from pathology reports. Logistic regression was used to identify predictors of 30-day complications, prolonged length of stay (LOS), and positive soft-tissue surgical margins (STSMs) in high-risk patients.
Results: During the study period, 55 (15.5%) patients underwent robotic assisted laparoscopic cystectomy and 300 (84.5%) underwent open radical cystectomy. A total of 176 (49.6%) cases were classified as high-risk disease. Robotic cystectomy patients were more likely to be male (96.4 vs. 71.0%, $p<0.01$), have higher performance status ($p=0.002$) and lower disease stage ($p=0.009$), and were less likely to receive neoadjuvant chemotherapy (18.2 vs. 38.0%, $p=0.005$) compared to patients treated with open cystectomy. Robotic cystectomy was associated with less blood loss (350 vs. 800 cc, $p<0.01$), and lower chance of receiving blood transfusions intraoperatively (10.9 vs. 54.0%, $p<0.01$). Surgical margin rates between robotic and open cystectomy were similar across the entire cohort and among the high-risk subgroup (29.2 vs. 27.0%, $p=0.82$). On adjusted regression analysis, a robotic surgical approach was not independently associated with postoperative 30-day complications ($p=0.82$), prolonged LOS ($p=0.18$), or positive surgical margins among high risk patients ($p=0.32$).
Conclusion: Short-term postoperative and pathologic outcomes were not significantly different between robotic assisted laparoscopic and open radical cystectomy groups. Future studies should examine longer term outcomes (e.g. survival) in high risk cases among larger groups of patients, and also focus critically on areas where robotic cystectomy could improve patient outcomes.

MP8-18 Results from a pilot study of The ''Better Robotic Prostatectomy'' Project: an evidence-based perioperative pathway for patients undergoing robot-assisted laparoscopic prostatectomy

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Introduction: The ''Better Robotic Prostatectomy'' Project is a perioperative pathway comprising of 16 evidence-based best practices elements (BPE) (Table 1). These 16 BPEs were ''hard-wired'' in the medical record system with the aim of delivering them 100% of the time in all patients undergoing robot-assisted laparoscopic prostatectomy (RALP) at Tan Tock Seng Hospital.
Methods: From August to December 2013, ten consecutive patients listed for RALP in the department were recruited for the pilot study. Each episode of care began at the point of listing for surgery and ended 8 weeks after surgery. From the 16 BPEs selected, a total of 20 verifiable points were incorporated in the redesigned perioperative pathway. At the end of the episode of care, compliance was measured by an independent team of auditors. The outcomes were compared with a historical cohort of 10 preceding patients who received RALP before the project started.
Results: Overall compliance of all applicable audit points across all 10 patients was 82% (142/174 audit points). Median compliance rate for each patient was 80% (range 71%-100%). The compliance rate of each of the 20 verifiable audit points ranged from 10–100%, with 10 audit points achieving 100% compliance. None of the patients was readmitted within 30 days of discharge. The mean length of stay during the pilot period was 2.2 days (SD 1.0) compared to 3.5 days (SD 2.1) in the historical cohort. Radiographic leak during cystogram was demonstrated in one patient in the pilot period, compared to 2 patients in the

historical cohort. However there was no clinical leak in both groups of patients. There was one (Grade 1) complication in the pilot period compared to two complications (Grade 1 and Grade 2) in the historical cohort.
Conclusion: This pilot study demonstrated the feasibility of adopting an evidence-based perioperative pathway for patients undergoing RALP. Outcomes were promising compared to a historical cohort before implementation of the pathway.

MP8-19 Factors associated with positive surgical margins following robot-assisted laparoscopic radical prostatectomy: Impact of learning curve

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Introduction: It is recognized that the adoption of novel surgical techniques is associated with a learning curve that may affect surgical quality. We sought to determine whether surgical quality, assessed by incidence of positive surgical margins, is affected by the learning curve during the adoption of skills required to perform robot-assisted radical prostatectomy (RARP).
Materials and Methods: Records of the first 355 consecutive RARPs performed at St. Joseph's Healthcare Hamilton (SJHH) using the *da Vinci* Si surgical system (Intuitive Surgical Inc., Sunnyvale, CA, USA) were retrospectively reviewed. All procedures were performed by a single surgeon, who, prior to the use of RARP, had performed > 600 laparoscopic radical prostatectomies (LRPs). Demographic, clinical, and pathologic variables were obtained for each RARP case. The prognostic significance of the effect of learning curve on the probability of positive surgical margin status was assessed using univariate and multivariate logistic regression analysis (IBM SPSS Statistics, v21). Prostate specific antigen (PSA), prostate weight, body mass index (BMI), specimen Gleason score, and pathologic stage were included in statistical analyses.
Results: 355 patients underwent RARP between March 2012 and January 2015. Median (range) operative time was 185(89–308) minutes, estimated blood loss 200(0–800) ml, and length of hospital stay 2(2–17) days. Bilateral or unilateral nerve sparing was performed in 69% of cases. No association was found between procedure date and the occurrence of PSMs ($p = 0.36$). Of the risk factors studied, only pathologic stage was associated with an increased probability of PSMs (stage T2: reference category; T3a: OR 1.93, 95% CI 1.03–3.62; T3b: OR 3.69, 95% CI 1.55–8.81).
Conclusions: The learning curve associated with the adoption of the *da Vinci* Si surgical system was found to have no impact on surgical quality. An experienced laparoscopic surgeon may successfully transition from LRP to RARP without related impact on surgical quality.

MP8-20 Extraperitoneal Robot-Assisted Radical Prostatectomy: Outcomes in Patients with Very Large Prostates (>100 g): A Matched Pair Analysis

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Introduction and Objectives: Radical prostatectomy, whether by the open, laparoscopic, or robot-assisted technique can be challenging in patients with very large prostates. The extraperitoneal (EP) approach to a robot-assisted radical prostatectomy (RARP) is often considered more difficult than the transperitoneal approach due to the limited working space. The aim of the study is to evaluate if EP-RARP overcomes the obstacles posed by very large prostates.
Methods: In this IRB-approved study, we queried our prospectively collected database (CAISIS) of patients who underwent EP-RARP. 1663 patients underwent EP-RARP at our institution by a single surgeon (Jul. 2003-Dec. 2013). 55 patients with prostate pathology specimen weight > 100 g (group 1) were matched to an equally-sized cohort with prostate weight of < 100 g (group 2). A propensity-score match using multivariate analysis was performed incorporating 10 co-variates.
Results: The mean PSA (9.1 ± 5.4 vs. 6.9 ± 5 ng/ml, $p = 0.03$) was higher in group 1. All other patient and disease variables were similar in group 1 and 2 respectively. The mean prostate weight in group 1 was 120 g, while it was 58.6 g in group 2 ($p < 0.0001$). There was no difference in the ability to perform partial or full nerve-sparing (70 vs. 78%, $p = 0.19$), or pelvic lymphadenectomy (34.5 vs. 38.1%, $p = 0.69$). Post-operative pathological parameters were similar. Higher mean OR time (205.8 ± 48.6 vs. 180.2 ± 43.4 mins, $p = 0.004$) and estimated blood loss (318.4 ± 172.8 vs. 200.3 ± 143.5 ccs, $p = 0.0002$) was noted in group 1 compared to group 2 respectively. There were no differences in rates of patients discharged on post operative day 1 (89 vs. 94%, $p = 0.27$), or complications [Clavien 1–2/3–4 (11/2 vs. 8/0, $p = 0.41$)] between the two groups.
Conclusions: This study has shown that apart from increased operative times and blood loss, no differences in peri and postoperative parameters, and complications were found between patients with prostates > than 100 g compared to those with < 100 g undergoing EP-RARP. Consideration should be given to added operative time when performing EP-RARP in patients with very large prostates.

MP8-21 Pelvic Lymph Node Dissection, and Complications in African American Compared to Caucasian Patients with Localized Prostate Cancer Undergoing Robot-Assisted Radical Prostatectomy

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Introduction and Objectives: African-American (AA) men with prostate cancer (PCa) have lower cancer-specific survival than Caucasian men, when adjusted for age and stage. A recent study utilizing the SEER database concluded that AA men were less likely to undergo pelvic lymph node dissection (PLND) at the time of radical prostatectomy than Caucasian men, especially among men with poorly differentiated PCa. In this study, the authors postulated that the findings are secondary to the perception that AA men are at greater risk of post PLND complications. Our objective in this study is to explore if AA men are less likely to undergo PLND, and to experience more complications
Methods: In this IRB-approved study, we queried our prospectively collected database (CAISIS) of patients who underwent robot-assisted radical prostatectomy (RARP). 2750 patients underwent RARP for localized prostate cancer at our institution by

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a single surgeon (July 2003 - June 2014). Complications according to the modified Clavien-Dindo classification were noted.
Results: 190 AA and 2545 Caucasian men who underwent RARP were identified. While the AA men were younger than Caucasian men (age 58.3 ± 7.3 vs. 60.8 ± 6.8 yrs., p < 0.0001), a higher mean BMI and ASA score in the AA men reflected their higher risk profile. Mean PSA was higher in the AA men as well. There were no differences in the biopsy Gleason score < 7/> 7 (51/49 vs. 57/43, p = 0.11) and pathological prostate specimen weight (59.4 ± 23.3 vs. 57.3 ± 19.7 g, p = 0.24) in AA vs. Caucasian men respectively. No difference was noted in blood loss (202.7 ± 139.5 vs. 196.5 ± 135.1 ccs, p = 0.55), transfusion rates (0.5 vs. 0.8%, p = 1), and frequency of PLND (67.3 vs. 62.1%, p = 0.14) between the groups. In addition, no difference in distribution of complications based on Clavien classification was noted (p = 0.66), with the majority of complications in both groups being Clavien grade 1–2 (86 vs. 82% respectively). On multivariate regression analysis, PSA, biopsy Gleason score > 7, and clinical stage T2, but not race were predictors for receipt of PLND. Only OR time but not race was a predictor for complications.
Conclusions: In our experience, AA men were equally likely to undergo PLND, when compared to Caucasian men. There was no difference in intraoperative or postoperative complications. PLND should be performed according to well-established criteria. Omission of PLND in AA men due to concerns regarding complications is not supported.

MP8-22 Anterior Suspension of Posterior Reconstruction Suture- a Novel Technique to Improve Early Return of Urinary Continence Following Robot-Assisted Radical Prostatectomy

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Introduction and Objectives: Various intraoperative technical modifications have been described with the goal of improving early return of continence following robot-assisted radical prostatectomy (RARP). This video illustrates our new technique of anterior suspension of posterior reconstruction sutures to Cooper's ligament to create a sling-effect on the bladder neck following RARP. In addition, we assess continence rates in patients who underwent anterior suspension of posterior reconstruction sutures (ASPRS) versus those treated with our standard posterior reconstruction (SPR).
Methods: After institutional review board approval, demographic, intra and postoperative data of the two cohorts of patients (ASPRS versus SPR) were reviewed from a prospectively collected database of a single high-volume surgeon. Early continence was defined as usage of 0–1 pad for safety per 24 hours at 3 months or less from surgery, as determined by question 3 of the validated expanded prostate cancer index composite (EPIC-26). Two-sample t-test and Pearson Chi Square test were used to compare the difference between the two groups for continuous and categorical variables respectively.
Results: The ASPRS group included 132 patients treated between Sep. 2012 and Jun. 2014, while the SPR group included 146 patients treated between Apr. 2011 and Aug. 2012. There were no significant differences in recognized variables that affect continence following a prostatectomy such as age (61.9 ± 6.4 vs. 61.9 ± 6.7 yrs., p = 0.94), body mass index (29.5 ± 5.1 vs. 30.2 ± 7.2 kg/m2, p = 0.34), prostate weight (61.4 ± 24.4 vs. 62.1 ± 21.8 g, p = 0.79) and neurovascular bundle sparing status (none/partial/complete: 4.2/73.1/22.6 vs. 10.4/72/17.4%, p = 0.12) in the ASPRS and SPR groups. Early continence rates were higher in patients managed with ASPRS, although this difference was not statistically significant (44.6% vs. 36.9%, difference = 7.7%, p = 0.24).
Conclusions: Continence recovery relies on multiple factors. Anterior suspension of the posterior reconstruction sutures is similar to a bladder neck sling commonly done for post prostatectomy incontinence. Performing this suspension technique at the time of RARP may improve early continence recovery. Additional work is required with larger number of patients to further test this hypothesis

MP8-23 Early Outcomes of Salvage Robotic Prostatectomy post LDR Brachytherapy

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Introduction: The feasibility and outcome of salvage robotic prostatectomy (SRP) following failed low dose brachytherapy is unknown and historically associated with significant complications. **The largest worldwide published series is 22.** We set to determine safety and efficacy of treatment of salvage robotic prostatectomy (SRP) following LDR Brachytherapy at our institution by a single surgeon.
Method: 5 consecutive patients underwent SRP. Inclusion criteria for salvage surgery was defined as > 2 ng/ml above the PSA nadir (ASTRO 2006) ***or*** rising PSA and confirmed residual prostate cancer on biopsy. All patients had; repeat prostate biopsies, full restaging as per referring hospitals protocol **and** choline CT PET scan (UCL) to exclude evidence of metastatic disease. Here we show you how we perform a radically assisted salvage prostatectomy.
Results: Median age 67 (range 62–68). Median operation time was 164 mins (range 117–206). Median blood loss was 70 ml (range 30–200) with zero transfusion rate. Median length of stay was 2 days (range 1–2). There were no grade 3–5 complications or rectal injuries. With a median follow-up of 10 months the PSA was un-recordable < 0.1 ng/L in four out of five men – with the other patient having a 6 week post op PSA of 4. All patients had erectile dysfunction. 80% of men have ICIQ-MLUTs stress incontinence ''sometimes'' at their 6 month questionnaire.
Conclusion: SRP provides oncological control with minimal early complications, blood loss, length of stay with the potential avoidance of systemic non-curative therapy. The long term continence and quality of life issues are still being evaluated.

Age	Initial PSA	Brachy date	Grade	Pre SRP PSA	OP Time	Blood Loss	LOS	Histology	Margins	Last PSA	Continence
62	13.5	2007	3+3	9.3	206	200	1	pT3aN0	-ve	<0.1	1 pad
68	14.5	2007	3+4	1.22	185	100	1	pT3b N0	-ve	<0.1	Pad free
67	8	2009	3+3	4.1	143	30	2	pT3aN0	+ve	<0.1	3 pads + convene
67	12	2009	4+3	25.7	117	40	2	pT3b N0	+ve	<0.1	1 pad
66	12	2006	/	11	130	100	2	pT3b N0	+ve	4	1 pad

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MP9 - IMAGING 2

MP9-1 "Doctor, may I biopsy your prostate?" - our perceptions and our own preferences

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Introduction: Currently, most initial prostate biopsies are obtained transrectally and systematically (non-targeted). This route has a well-documented morbidity and complication rate. We were interested in knowing what urologists and specialist trainees would choose for themselves, especially in light of recent developments in prostate cancer diagnostics: multiparametric MRI (mp-MRI), targeted biopsy and the transperineal route.
Method: An online survey using the SurveyMonkey platform was sent to 108 individuals including every active urologist on the Singapore Medical Council register. Responses were anonymous.
Results: 72 surveys were returned. Respondents were more experienced in the transrectal route than the transperineal route. In a hypothethical scenario where the respondent was asked to imagine they were a biopsy-naive 60 year old man with an elevated PSA, two-thirds (67%) choose to image (mp-MRI) their own prostate, rather than biopsy it. A majority chose targeted transperineal, rather than systematic transrectal biopsy.
Conclusion: Urologists' attitudes to developments in prostate biopsy change when they become patients themselves. We should reflect on this fact when counseling patients, who may not have the insights we have.

MP9-2 The use of prophylactic antibiotics in percutaneous nephrostomy insertion: is there a role?

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Introduction: Percutaneous interventions of the urinary tract are considered clean-contaminated procedures, but are most often contaminated or dirty procedures for which routine antibiotic prophylaxis is recommended (Venkatesan et al. J Vasc Interv Radiol. 2010;21(11):1611–1630). Previous evidence has shown that antibiotic use during and after percutaneous nephrostomy (PCN) insertion significantly decreased the likelihood of sepsis (Cochran et al. Radiology. 1991 Jun; 179(3):843–7). However guidelines advocating the use of prophylactic antibiotics prior to PCN nephrostomy insertion do not exist.

In this study, we investigated patients undergoing PCN and monitored infective complications post procedure.
Materials and Methods: Data was collected from 86 patients who had nephrostomies placed for ureteric obstruction during a 12 months period from November 2013 to November 2014 at a large district general hospital in London. Information on patient demographics, reasons for nephrostomy insertion, white cell count (WCC) pre and post procedure, details of urine culture and causative pathogens were recorded. Paired t-test was used to statistically analyse the significance of WCC rise post procedure using SPSS.
Results: 76 patients underwent the procedure. This was either as a new nephrostomy insertion ($n = 50$) or as a nephrostomy change ($n = 21$). The commonest presentations for nephrostomy insertion were obstruction secondary to renal/ureteric calculi ($n = 24$) or hydronephrosis due to external compression of the ureter ($n = 35$) 13 out of the 76 patients (17%) had a documented WCC rise post procedure. WCC rise was considered if there was an increase from a normal range (4–10) to abnormal (> 10). There is evidence that nephrostomy insertion can lead to WCC increase ($t = 0.203$ and $p = 0.840$) however significance was not reached. A simple linear regression was calculated to predict post procedure WCC based on pre procedural WCC. A significant regression was found ($F(3,40) = 9.935$, $p < 0.005$) with R^2 of 0.427.
Conclusion: Currently there are no guidelines outlining the need for prophylactic antibiotic prior to the insertion of nephrostomies. Our study shows that patients that have an increase in WCC or indeed are at increased risk of infective complications post procedure should have prophylactic antibiotics to reduce these risks. Our recommendation is to formalise guidelines for the use of prophylactic antibiotics prior to PCN insertion.

MP9-3 Lipid-poor Angiomyolipoma: Can We Avoid Surgical Interventions?

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Introduction: Lipid-poor angiomyolipomas (AML) lack macroscopic fat on cross-sectional imaging and may mimic renal cell carcinoma. Such lesions therefore present a diagnostic challenge and may lead to unnecessary partial or radical nephrectomy. The purpose of this study was to retrospectively describe the CT and MR features of lipid-poor AML, an improved understanding of which may prompt consideration of renal mass biopsy and potentially avoidance of surgery.
Patients and Methods: A query of our institutional pathology database from January 2005 to August 2013 identified 92 renal AML, 49 of which had available pretreatment imaging. A retrospective review of these cases included evaluation of the CT and MRI findings; 26 AMLs did not demonstrate macroscopic fat (lipid-poor). The imaging characteristics of these 26 lesions were assessed.
Results: Preoperative CT was performed on 20/26 (77%) patients. An unenhanced CT phase was available for 13 lesions and showed hyperattenuation in 8/13 (62%) and isoattenuation in 5/13 (38%). Enhanced CT phases were completed for 20 masses; 14/20 (70%) demonstrated homogenous enhancement, while 6/20 (30%) enhanced heterogenously. MRI with gadolinium was conducted for 9/26 (35%) patients. Homogeneous and heterogenous enhancement was present in 5/9 (56%) and 4/9 (44%) of cases, respectively. On T2-weighted MRI, 8/9 (89%) were hypointense and 1/9 (11%) was hyperintense. None of the nine lesions displayed signal intensity decrease on fat-suppressed sequences.
Conclusion: Certain radiographic features of a small renal mass should raise the suspicion for a lipid-poor AML. Such findings include high attenuation on unenhanced CT, homogeneous

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enhancement on enhanced CT, and hypointense signal on T2-weighted MRI. A renal mass biopsy represents a prudent option when such suspicious features are present.

MP9-4 Progression vs regression, interobserver reliability and Malignancy rate in complex renal masses ≥Bosniak IIF

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Objective: The objective of this study was to assess the clinic-pathologic correlation and radiological follow up progression of complex cystic renal masses.
Patients and Methods: The medical records of 252 patients with 269 complex cystic renal masses were retrieved during the period between Jan 2000 and Dec 2014. Primary outcomes was malignancy rate following surgical extirpate with or without follow up in Bosniak IIF, III and IV categories. Secondary outcomes were correlation between histology and degree of enhancement on contrast-enhanced computed tomography scans and survival analysis of patients with or without surgical intervention using the Kaplan-Meier analysis.
Results: The overall malignancy rate in patients who had surgery was 75% (45/60). Majority of tumours were clear cell carcinoma, however 12 were papillary renal cell carcinoma (incidence 26.6%). Radiological progression rate of Bosniak IIF cysts over median follow up of 24 months was 16.2% (21/130). There was no significance difference between progression rate and regression rate (16.2% vs. 12.3%) of IIF cysts over the period of 24 months follow up. Most of the progression renal masses were seen in the first 12 months of follow up. The malignancy rate on radiology progression was 92% (12/13) and 62.5% (10/16) in Bosniak IIF and III cystic masses, respectively. The malignancy rate in Bosniak III cyst was 50% (8/16) without a period of initial observation or follow up.
Conclusion: Majority of Bosniak IIF cysts remain stable with small amount progressing in first 12 months and show high rate of malignancies. The renal cancers in Bosniak IIF cysts are low grade and low stage tumours justifying follow-up policy at the beginning.

MP9-5 The change of postoperative CT imaging following laparoscopic partial nephrectomy

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Introduction: Laparoscopic partial nephrectomy (LPN) has a trend of more frequent utilizing hem-o-lok clip and hemostatic agents than open partial nephrectomy. The CT scan findings after LPN can be different from open partial nephrectomy. If we have limited understanding of postoperative change of radiologic imaging, we can mistake postoperative change for local recurrence. So, we reviewed the CT scan finding after LPN.
Materials and Methods: From March, 2008 to July, 2015, we performed LPN in 80 patients. Among these, we reivewed the 1st, 6th, 12nd month CT scan of 60 patients who received a follow-up study at least 1 year. Two urologists and 2 radiologists discussed the CT scan for agreement of opinions. The discussed postoperative radiologic findings were included 1) low attenuation rind which can be the results of scarring of excised area, 2) low attenuated postsurgical fluid collection which can be the process of dissolution and resorption of hemostatic agents, 3) gas pockets which can be the response with postsurgical fluid collection and around soft tissue 4) low attenuated linear postsurgical stranding which is formation of pseudocapsule or postoperative fibrosis of fascia, 5) high attenuated foci which is suspected to be non-absorbable surgical clip, 6) high attenuated linear materials which can be calcified Surgicels or Gelfoams, 7) ill defined soft tissue density which can be the granulation tissue. After interdepartment discussion, we analyzed the frequency of each discussed finding and its peak presented time.
Results: Among reviewed patients, 1) postoperative 1st, 6th, 12nd month low attenuation rind were found in 2, 7, 10 patients, respectively, 2) low attenuated postsurgical fluid collection were found in 46, 21, 1 patient, 3) gas pocket in 35, 1, 0 patient, 4) low attenuated linear postsurgical stranding in 50,45,43 patients, 5) high attenuation foci in 43, 41, 41 patients 6) high attenuation linear materials in 21, 22, 23 patients 7) ill defined soft tissue density in 7,7,6 patients, respectively.
Conclusion: The findings which were found most of early time and were disappeared with time were low attenuated postsurgical fluid collection, gas pockets. The findings which were maintained from early to late time of most patients were high attenuation foci, low attenuated linear postsurgical stranding. The urologists and radiologists have to be well-aquainted with these radiologic findings to distinguish from local recurrence.

MP9-6 Findings and Impact of Early Imaging after Partial Nephrectomy

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Introduction and Objectives: AUA Guidelines for surveillance of renal cell carcinoma after partial nephrectomy recommend imaging within 3 – 12 months of surgery. Imaging following partial nephrectomy may be difficult to interpret due to the surgical defect, the use of surgical material, and normal post – operative fluid collections. Previous studies demonstrate post – surgical changes in the operative bed regress over time, but no studies examine the rate at which post – operative radiographic changes are misinterpreted as an abnormal exam. We hypothesized that patients imaged early in their post – operative course have more indeterminate findings on initial imaging, which leads to increased and unnecessary follow up imaging.
Methods: Retrospective chart review from 2009 to 2012 of patients who had undergone open, laparoscopic, and robotic partial nephrectomy at our institution was completed. We collected and analyzed multiple variables. Radiology reports were reviewed from follow up imaging and were categorized as ''normal''or ''abnormal.''
Results: 154 patient charts were reviewed. 115 (74.7%) were considered to have normal findings on initial follow up imaging, and 39 (25.3%) with abnormal findings. Average time to initial follow up imaging for normal vs abnormal was 245 vs 121 days, respectively ($p = 0.008$). On subsequent imaging 50% of abnormal studies were downgraded to normal. The average interval between the first and second follow up imaging study for normal vs abnormal was 303 vs 157 days ($p = 0.01$). There were 5 patients found to have recurrent or new disease within 2 years of follow up. No patient had intervention for recurrence after the

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initial imaging, but 2 eventually had resection for new masses at mean of 3.5 years. Another was lost to follow up after concerning mass at 265 days. 1 complex mass has remained stable for 3 years. 5 with abnormal initial imaging required interventions for benign conditions which were identified on early imaging of < 3 months.
Conclusions: Post – operative imaging within 120 days after partial nephrectomy more often returned abnormal results compared to patients with initial imaging on average 245 days after surgery. This resulted in more frequent follow up of patients with an abnormal initial image. 50% of abnormal imaging became normal on subsequent imaging. 10 patients with initial abnormal imaging required treatment, but only 2 due to cancer on the ipsilateral side > 1 year from the original procedure. Based on our results, we believe post – operative surveillance imaging after partial nephrectomy should not be obtained until > 6 months after surgery.

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MP9-7 A new methodology for standardised reporting of ureteric stent encrustation

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Introduction: Indwelling ureteric stents are known to undergo in and encrustations that pose problems to clinicians and manufacturers. There is no reproducible protocol available to assess the amount of stent en and incrustations. We developed a method of assessing the amount of ureteric stent encrustation using scanning electron microscopy (SEM) that is quantifiable and reproducible.
Patients, Materials and Methods: Patients undergoing perireteroscopic stent insertion for urinary calculi were recruited. Upon removal, stents were sent to the SEM lab and cut transversally at four pre-determined sites (bladder loop, distal portion, proximal portion and renal loop). They were dried for 48–72 hours and adhered vertically to aluminium stubs (32 mmx10 mm, G318, Agar Scientific, UK) for SEM observation using Leit-C conducting carbon cement (G3300, Agar Scientific, UK). Specimens were allowed to dry for 48 hours before sputter coating with a gold target (EMScope).

Eight images of the inner and outer surfaces of each of the stents were taken at an operating magnification of x1,100 and computer enhanced to a magnification of x2,188. These images represent 24.4% of the inner diameter of the stent and 16.7% of the outer. Quantitative and qualitative data was obtained. Control data was obtained using similar unused stents. Areas of in and encrustation were measured directly on the computer screen using SIS digital software. The total encrustation was calculated by multiplying the incrustation mean value by 4.1 and encrustation value by 6.
Results: Sixty-four images were collected per stent (33 stents) totalling 2112 observations. The mean calculated area of encrustation was 232 mm^2 (range = 2.81–1310 mm^2) and the mean calculated area of incrustation was 469 mm^2 (range = 22.8–2210 mm^2). The area of incrustation was calculated as a percentage of the lumen. The mean luminal occlusion was 3.04% (range 0.03–16.5%).

There was statistically significant correlation between the renal loop stent encrustation and all other parts of the stent, and between the incrustation of the proximal portion and all other parts of the stent. The amount of in and encrustation formed on the inside and outside of the stent correlated at the renal loop, the proximal portion and bladder loop of the stents (Spearman correlation, $p = 0.05$).
Conclusion: This study reports a new, reproducible protocol for quantifying the amount of ureteric stent in and encrustations. The methodology can be further validated in other studies and offers potential for future nomograms. This data would be of use to manufacturers, as well as in future research.

MP9-8 Assessment of Occurrence and Growth Patterns of Cysts in patients with Autosomal Dominant Polycystic Kidney Disease using Volumetric Data

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Introduction: In the autosomal dominant polycystic kidney disease (ADPKD), progression of renal dysfunction is monitored using measurement of renal volume. Estimation of growth speed of cysts seems to be efficacious in predicting time to start therapies. Seeing expanding speed of the renal volume could be attributable to two factors, growth and occurrence speed of the cysts, mathematical model would extract some clue to stratify patients into several categories according to span of reaching to renal dysfunction. It is known that 3D thinning algorithm simplifies complicated structure of multiple cysts into three dimensional components. The present study aimed to estimate the validity of the known algorithm to extract prognostic factors for ADPKD patients using mathematical model and MRI image of ADPKD patients.
Methods: The thinning algorithm was used in the virtual model of polycystic kidney where spheres randomly appears and develops in the closed space, to obtain center points and center lines for each spheres that represents location and vectors that connects adjacent center points. In this setting, ''skeleton line'' indicates summation of whole branching lines. Five indices, the number of the center points, number and length of center lines, length of skeleton line, and the maximal length of the branch or center lines were calculated. Then, relationship between the five indices and various parameters of sphere size and number was estimated, and at last, the algorithm was applied to MRI image of a patient with ADPKD.
Results: The number of the center points, branch lines were strongly corresponded to the number of the sphere, as well as the maximal lengths of the skeleton was related to the size of sphere. In addition the number of the center point showed the almost same number of spheres. Furthermore, the lengths of the center lines corresponded to the distance between overlapped spheres. Though the number was not sufficient, the parameters could be extracted in the MRI image of ADPKD patient.
Conclusions: 3D thinning algorithm is considered to be valid in applying estimation of number, size and density of the cysts in ADPKD kidney. Further study is warranted to predict time to start some therapy in each patient with ADPKD.

MP9-9 Boiling Histotripsy of the Kidney Using an MR-Guided Clinical Focused Ultrasound System

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Introduction: We have been evaluating boiling histotripsy (BH), an experimental non-invasive focused ultrasound (FUS) technique, as a novel renal ablative technology. BH uses milliseconds-long FUS pulses to produce non-thermal mechanical tissue ablation. We evaluated the feasibility of using a clinical MR-guided FUS system to generate and monitor renal BH lesions.
Methods: Experiments were conducted using the Sonalleve V1 3.0 T MR-guided FUS system (Philips Healthcare), which includes an integrated MRI platform and a 256 element 1.2 MHz trans-abdominal FUS transducer. Fresh *ex vivo* porcine kidneys (n = 7) were submerged in degassed phosphate-buffered saline in a custom holder and then imaged using T2 weighted (T2W) MRI for treatment planning. Volumetric lesions ($\sim 5 \times 20 \times 6$ mm) were created by generating a planar grid of focal volumes spaced 2 mm apart. BH pulses were delivered at 300W, 10 ms duration, duty cycle 1% or 600W, 1 ms duration, duty cycle 0.4%. Sonications were monitored in real time with MR thermometry. Post-BH, kidneys were imaged with T1W turbo spin echo, T2W 3D fast field echo, and diffusion weighted imaging (DWI). Kidneys were then processed for gross or histologic assessment.
Results: Generation of BH lesions was achieved at both power settings. During treatment MR-thermometry provided reliable real-time feedback of BH exposures, with T max of 42.0–45.0 C for 300W exposures and 56.7 C for 600 W exposures. On post-treatment MRI, lesions appeared mildly hyper-intense on T1W and T2W imaging, while on DWI images appeared as well defined discrete areas of less restricted diffusion. Qualitatively, MRI characteristics did not differ significantly between settings. On gross inspection, BH lesions created with 300W sonications contained a low-viscosity liquid of homogenized tissue without evidence of thermal damage. Conversely, lesions generated at 600W contained blanched paste suggesting combined thermal and mechanical effect. Histologically, all lesions demonstrated homogenized tissue with clear demarcation between treated and untreated tissue consistent with histotripsy effects. NADH oxidase stained slides confirmed non-thermal pure mechanical effects for 300W exposures and combined thermal and mechanical effects for 600W exposures. Anatomic correlation between MRI, gross, and histology was excellent.
Conclusion: MR-guided BH of the kidney is feasible with a clinical FUS system. MR-guidance offers excellent spatial resolution that could improve treatment planning and targeting with close correlation between MRI and histology. Work supported by NIH DK043881, EB007643, K01EB015745, and NSBRI through NASA-NCC-9-58

MP9-10 A tertiary referral centre experience in establishing cryoablation (CYA) for small renal masses (SRM)

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Introduction: Percutaneous ablation is a recognised treatment for SRM in patients unfit or unwilling to undergo nephron sparing surgery (NSS). Data suggests that cryoablation (CYA) may be more effective than thermal (radiofrequency or microwave) ablation. Based on these data, CYA ablation of SRM was adopted by our network in 2012.
Patients and methods: Patients with renal masses technically suitable for nephron sparing surgery (NSS) or cryoablation (CYA) are identified at SMDT and seen in a joint clinic by both surgeon and interventional radiologist. Treatment takes place under general anaesthetic with CT guidance using the Galil Seednet CYA system.
Results: Between 19/10/12 & 8/12/14, 54 primary renal masses in 51 patients were treated. All were unsuitable or unwilling to undergo NSS. Mean age 70 years (range 35–89), mean tumour diameter 27 mm (12–44), mean number of treatment needles 3.4 (2–6). Technical success 53/54 cases, technical failure to cover the whole tumour in 1/54 (awaiting retreatment). Histologically proven diagnosis of primary malignancy in 35, 5 confirmed benign, 5 nondiagnostic and 9 had no biopsy attempted. No bleeding requiring transfusion or embolization, but 4 episodes of postoperative urinary retention. Mean follow up of all technically successfully treated tumours 10 months (0–26) with no unexpected local recurrence. Patient satisfatcion at one month post procedure, 100% rated very good or excellent, 100% would recommend service to a family member or friend.
Conclusion: Renal cryoablation is safe and effective with promising early outcomes in line with the recently published literature.

MP9-11 Radiological cross-sectional follow up of Bosniak 2F cysts: how long?

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Objective: The objective of this study was to assess optimal radiologic follow-up and progression of complex cystic renal masses (2F).
Patients and Methods: The medical records of 262 patients with 280 complex cystic renal masses were retrieved between Jan. 2000 and Dec.2014. Primary outcomes were radiological progression and malignancy rates following surgical extirpation in Bosniak IIF. The latter were diagnosed and followed up for 24 months. Following 24 months, cases with no radiological progression cases were discharged and reviewed only if there were symptomatic on the requests of primary care Physicians.
Results: Radiologic progression rate of Bosniak IIF cysts over median follow-up of 36 months was 9.6% (12/124). There was no statistically significant difference between progression rate and regression rate of IIF cysts (9.6% vs. 12%) over the period of 24 months of follow-up. Most of the progression in complex cystic renal masses was seen in the first 2 years of follow-up. Histology of resected showed low grade and low stage tumours.
Conclusions: Progression to malignancy on follow-up radiological surveillance in Bosniak 2F cysts is less than 10% and most of these tumours are low stage. Patients can be safely discharged after 24 months of follow-up.

MP9-12 Before or during ablation? The effect of the timing of biopsy on the management of small renal masses (SRM)

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Introduction: Most centres performing ablation for small renal masses take a biopsy at the time of treatment. This may result in over treatment and prolonged follow up of potentially benign

lesions. Prospective biopsy of small renal masses undergoing ablation is recommended in the EAU and AUA guidelines.
Patients and methods: Between 19/10/12 and 14/04/14 biopsy was undertaken at the time of cryoablation (CYA) in suitable patients. From 28/4/14 biopsy was offered to patients at a separate sitting before CYA in line with international guidelines. A retrospective review of the diagnostic accuracy and outcome of these biopsies has been undertaken and subsequent management documented.
Results: 26 patients underwent simultaneous CYA and biopsy, with renal cell carcinoma in 17 and benign diagnoses in 5. Four biopsies were nondiagnostic. 22 patients were offered pretreatment biopsy. 18 consented to biopsy before ablation; 14 had a malignant diagnosis and 3 benign, with one nondiagnostic. Four patients chose to have a simultaneous biopsy and ablation. The three patients with benign diagnoses did not proceed to CYA, whereas the patient with a nondiagnostic biopsy wished treatment despite no definitive histological diagnosis.
Conclusions: Changing the timing of renal biopsy to before cryoablation has an impact on the management of patients with small renal masses. With simultaneous biopsy and ablation, only 65% of patients had a malignant diagnosis; the remainder with benign or nondiagnostic histology may have undergone CYA for uncertain benefit. By performing biopsy before ablation, a confirmed malignant diagnosis was obtained in 93% of cases and benign lesions were screened out.

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MP9-13 Impact of AUA recommendations on imaging trends in the follow-up of ureteral calculi

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Introduction: Patients with symptomatic ureteral calculi often undergo imaging studies; associated costs and radiation doses can be substantial. To address these concerns for patients with ureteral stones, The American Urological Association recently published an imaging clinical effectiveness protocol. We assessed the impact of these recommendations on utilization, cost, and radiation exposure for patients at our institution.
Patients and Methods: We conducted a retrospective chart review of patients who presented to the emergency department with a ureteral stone during the time period one year before and after the AUA protocol was released. Patients who underwent a CT scan confirming the presence of a ureteral stone and who had follow-up with our urology department were included. We collected data regarding demographics, stone history, stone size and location, follow-up imaging obtained, effective radiation dose from imaging, and clinical outcomes. Primary outcome was the number of CT scans, abdominal X-rays (KUB), and ultrasounds (US) obtained for follow-up imaging after a period of conservative management before and after the release of the 2013 AUA protocol. Secondary outcomes included cost of imaging determined by the fees billed at our institution and radiation exposure. Statistical analysis was performed using Chi-square test, Wilcoxon rank-sum test, and logistic regression.
Results: Data from 117 medical charts (before protocol, 59; after protocol, 58) were included. 27% of patients underwent follow-up CT scan before and 12% after protocol release ($p = 0.0406$). Cost of follow-up imaging, including CT, KUB, and US, decreased by a mean of $1,030 and effective radiation dose from all imaging decreased by a mean of 2.88 mSv after protocol release, however these differences were not significant ($p = 0.0788$ and $p = 0.0592$). Of the patients who did not have a follow-up CT, we found similar rates of clinical outcomes, including surgical management, stone passage, and loss to follow up, before and after protocol release. Logistic regression failed to identify any significant predictors of obtaining repeat CT scan on follow-up.
Conclusions: Since the AUA released the 2013 Clinical Effectiveness Protocol for imaging in the management of ureteral calculous disease, our endourology department has significantly decreased utilization of CT scan for follow-up of observed ureteral stones without a negative impact on patient care or serious adverse outcome. Continued adherence to the protocol will likely lead to a significant reduction in cost and radiation exposure.

MP9-14 Stone Imaging Options; Survey on the Current Practice of Endourology Society Members

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Objective: We describe the practice variability of Endourologists in choosing different stone imaging modalities.
Methods: An online survey was sent to the Endourology society active members by the Society administration office. We collected the participants' demographic data on the type, level and country of practice. The survey consisted of 11 questions focusing on urologist's preferred imaging modality for stones in different scenarios and testing the knowledge on estimated radiation doses for common stone imaging modalities.
Results: In total, 159 urologists from 35 different countries responded. Of the respondents, 92.4% were staff, 66.5% had an academic practice and 98.7% were treating stone disease. Only

Table 1

	CT KUB	Low-Dose CT KUB	CT urography (with contrast)	X-ray KUB	Renal Ultrasound	X-ray KUB & renal ultrasound	Not applicable
Initial evaluation of renal colic	38.9% n= 62	33.9% n= 54	3.1% n = 5	1.8% n= 3	8.1% n= 13	13.8% n= 22	0
Follow-up post SWL	5% n= 8	4.4% n= 7	0	44.9% n= 71	7.5% n= 12	31.6% n= 50	6.3% n= 10
Follow-up post URS	3.7% n= 6	7.5% n=12	1.2% n= 2	29.5% n= 47	22.6% n= 36	32.7% n= 52	2.5% n= 4
Follow-up post PCNL	13.2% n= 21	20.8% n= 33	1.2% n= 2	25.3% n= 40	8.2% n= 13	27.8% n= 44	3.1% n= 5
Follow-up of recurrent stone formers	9.5% n=15	14% n= 22	5.2% n= 8	21.6% n= 34	18.4% n= 29	31.2% n= 49	0

Table 2

	1-5 mSV	6-10 mSV	11-15 mSV	16-20 mSV	21-25 mSV	I don't know
2 film X-ray KUB	61.1% n= 96	5.7% n= 9	0	0	0	33.1% n= 52
CT KUB	2.5% n= 4	24% n= 38	19.6% n= 31	13.2% n= 21	5.7% n= 9	34.8% n= 55
Low-dose CT KUB	30.3% n= 47	26.4% n= 41	5.1% n= 8	0	0.6% n= 1	37.4% n= 58

69.6% were aware of the local radiation protocol at their institution, while 43% stated that they don't know the International Commission on Radiological protection recommendation for yearly occupational radiation exposure limit.

Tables 1 and 2 show the participants' selections of preferred imaging modalities and estimated radiation doses, respectively.
Conclusion: The results show wide variation in the current practice of Endourologists in imaging stone disease and suggest a need for developing stone imaging guidelines and integration of radiation protection protocols in continuous education programs for urologists.

MP9-15 Are upper urinary tract investigations mandatory in men with visible hematuria secondary to a prostatic or lower urinary tract origin?

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Introduction: Visible haematuria (VH) in men can originate from anywhere in the urinary tract and investigations for both lower (usually cystoscopy) and upper urinary tract (CT or ultrasound scan) is recommended. Not infrequently, the clinical history in some men can suggest the prostate or lower urinary tract (LUT) to be the most likely source of haematuria. We assess the utility of investigating the upper tract in this group.
Patients and methods: The records of all consecutive male male patients with VH over a 24-month period were analysed. All patients underwent a clinical examination, flexible cystoscopy and upper tract imaging (either CT urogram or USS + IVU). Men giving a history exclusively of 'initial' or 'terminal' haematuria were identified as those most likely to have bleeding from a prostatic/lower urinary tract origin (prostatic bleeding group).
Results: A total of 592 men with VH were analysed. Of these, 97 (16.4%) fulfilled the criteria for likely prostatic/LUT bleeding (mean age 69.9 (33–91.2) years). In this group, investigation revealed a definitive diagnosis for the visible haematuria in 20/97 (20.1%) cases (*6 prostatic carcinoma (CaP); 4 bladder calculi; 4 bladder transitional cell carcinoma (TCC); 4 urethral stricture; 2 renal calculi*). An upper urinary tract pathology was detected on CT/US scanning in only 2/97 (0.16%) (*2 patients with asymptomatic small renal calculi*). Though the overall rate of a malignant diagnosis in this group was 10/97 (10.3%), these all involved the lower urinary tract, and no upper urinary tract malignancies were detected. In patients exclusively presenting with 'initial' VH (n = 40), no significant benign or malignant upper urinary tract abnormalities were demonstrated (*4 urethral stricture; 3 bladder TCC; 3 CaP*).
Conclusion: This preliminary analysis suggests that in men with a clear history of prostatic/LUT visible bleeding, extensive upper tract investigations may not be necessary due to the low likelihood of detecting significant upper tract pathology. Clinical efforts should be focussed on the likely and apparent lower tract pathology. Combined multicentre analysis with help corroborate these findings which could subsequently enable a reduction in investigation costs, patient inconvenience and radiation exposure.

MP9-16 Fiber-optic Confocal Laser Endomicroscopy of Small Renal Masses: Towards Real-time Optical Diagnostic Biopsy

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Introduction: The incidental detection of small renal masses is on the rise. However, not all require aggressive treatments as up to 20% are identified as benign and the majority of malignant tumors harbor indolent features. Improved preoperative diagnostics are needed to differentiate tumors requiring aggressive treatment from those more suitable for surveillance. We evaluated and compared confocal laser endomicroscopy (CLE) with standard histopathology in ex-vivo human kidney tumors as a proof-of-principle towards diagnostic optical biopsy.
Methods: Patients with solitary small renal tumors scheduled for partial or radical nephrectomy were enrolled after institutional review board approval and consent. Two kidneys were infused with fluorescein dye via intraoperative peripheral intravenous injection, and 18 tumors were bathed ex-vivo in dilute fluorescein prior to confocal imaging. A 2.6 mm CLE probe was used to image tumors and surrounding parenchyma from external and en face surfaces after bisection. CLE images were compared to standard H&E analysis of corresponding areas.
Results: Ex-vivo CLE imaging revealed normal renal structures that correlated well with histology. Tumor tissue was readily distinguishable from normal parenchyma, demonstrating features unique to benign and malignant tumor subtypes. Topical fluorescein administration provided more consistent imaging than the intravenous route. Additionally, en face tumor imaging was superior to external imaging.
Conclusion: We report the first feasibility study using CLE to evaluate small renal tumors ex-vivo and provide a preliminary atlas of various renal neoplasms with corresponding histology. These findings serve as an initial and promising step towards real-time, diagnostic optical biopsy of small renal masses.

MP9-17 The Clinical Research Office of the Endourology Society (CROES) multicentre randomised trial of narrow band imaging-assisted transurethral resection (TURBT) versus conventional white light-assisted TURBT in primary non-muscle-invasive bladder cancer patients: trial protocol and 1-year results

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Introduction: White light (WL) is the established conventional imaging modality for transurethral resection of bladder tumour (TURBT). Early results with the alternative modality of narrow band imaging (NBI) have shown promise. The CROES NBI randomised controlled trial compared the 12 month outcomes of TURBT using NBI and WL guidance.
Materials and Methods: This prospective, randomised, single-blind, multicentre study enrolled patients aged 18 years or older scheduled for treatment of primary non-muscle-invasive bladder cancer (NMIBC). Patients were randomly assigned 1:1 to TURBT guided by NBI in addition to WL or by WL alone, with additional stratification for multiplicity, macroscopic findings, and age. Subsequent surveillance utilised WL cystoscopy. The primary outcome for this planned interim analysis was histologically-confirmed recurrence at 12 months post-TURBT; recurrence rates were compared by chi-square tests and survival analyses. Adverse events were recorded for 7 days after the

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initial TURBT, and at 3-month and 12-month follow-up visits or until resolved.
Results: Of the 965 patients enrolled in the study, 481 patients underwent WL-assisted TURBT and 484 patients received NBI-assisted TURBT. Of these, 293 and 303 patients, respectively, completed 12 months follow-up, with recurrence rates of 27·1% and 25·4%, respectively (p=0·585, ITT analysis). In patients with a low risk for disease recurrence, recurrence rates at 12 months were significantly higher in the WL group compared with the NBI group: 27·3% *vs* 5·6% (p=0·002, ITT). Whilst TURBT took longer on average with NBI compared with WL imaging (38·1 min *vs* 35·0 min; p=0·039, ITT), lesions were significantly more often visible with NBI than with WL (98·8% *vs* 96·5%; p=0·019, ITT). The frequency and severity of adverse events were similar in the treatment groups.
Conclusions: Whilst NBI and WL guidance achieved similar overall recurrence rates 12 months after TURBT in patients with NMIBC, NBI-assisted TURBT significantly reduced the likelihood of disease recurrence in low-risk patients.

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MP9-18 Is There Value Added to Endourologists Doing Renal Ultrasound in their Office? A Patient's Perspective

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Introduction: Ultrasounds play an important role in the evaluation and management of endourology patients because of low cost, lack of radiation, reproducibility, efficiency, and availability. Most endourological disorders can be diagnosed by ultrasound (US); however, few urologists in the U.S. perform renal US in their office. Although it has been reported in the literature that trained urologists are highly efficient and accurate with office US, we could not find data on a patient's perspective. We thus present our study of a patient's perspective on the use of in-office ultrasounds by endourologists.
Materials and Methods: We randomly chose 28 patients who underwent office US by urologists at Mount Sinai from August 2015 to May 2015. We assessed patients' feedback prospectively on a questionnaire that assessed multiple factors and employed a 5-point Likert scale, with choices ranging from strongly disagree to strongly agree.
Results: Our study shows that patients overall reported a very positive score (mean 31.62 out of 35, SD 3.83) on the Likert scale. In particular, patients strongly agreed that office US reduced time and number of visits, aided in making quick decisions, and improved their confidence in the treating physician. However, patients were not sure about cost effectiveness.
Conclusion: Patients feel that in-office US is a good tool for making quick management decisions and saving them time. They reported improved confidence in their treating physician, and were highly satisfied. The unclear feelings about cost-effectiveness were likely due to lack of patient knowledge regarding the cost of the procedure in general.

No of pts	score1	Score 2	Score 3	Score 4	Score 5
10	0	1(3.6%)	6 (21.6%)		21 (75.0%)
20	0	2 (7.1%)	9 (32.1%)		17(60.7%)
30	1	1(3.6%)	7(25.2%)		19(67.9%)
40	0	1(3.6%)	11(39.2%)		16(57.1%)
50	0	9(32.1%)	4(14.3%)		15(53.6%)
60	0	4(14.3%)	5(18.1%)		19(67.9%)
70	0	2(7.1%)	6(21.4%)		20(71.4%)

score	Total number	%
1	0	0
2	1	0.5%
3	24	12%
4	48	24%
5	127	63.5%

MP9-19 How Important is it for Endourologists to Look at Films Prior to Decision-making?

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Introduction: The diagnosis and management of endourological conditions is highly dependent on imaging studies. Radiology reports do not always address all the issues relevant to decision-making, and on occasion can be inaccurate. To our knowledge, there is no data available in the endourological literature regarding the importance of self-viewing of images by treating physicians. We prospectively compared the diagnosis and management of endourology patients based on CT radiology reports alone vs. the viewing of images by an experienced endourologist.
Materials and Methods: We randomly selected 46 new patients referred to an endourology practice who came with CT radiology reports for evaluation. A diagnosis was rendered and a treatment plan was formulated based on the report and history and physical exam. Following this, during the visit, the actual images were obtained and reviewed in detail and a final diagnosis and treatment plan rendered. Comparative findings and decisions were graded according to our protocol.
Results: We saw changes in findings or treatment plan after reading of images in 29 patients (63.1%). Discrepant findings included wrong side in report, inaccurate stone size, missing stones, inaccurate location of stones, number of stones, degree of hydronephrosis etc. New findings included presence of AML, contralateral stones, crossing vessels, retrorenal colon, malrotated kidneys, duplicated collecting system, horseshoe kidney, scoliosis, and others. Missing information that affected treatment strategy included skin to stone distance, stone density, stone volume, and presence of encrustations on stent already in place. Grade 1 changes (defined as minor differences not affecting surgical plan) were observed in 11/29 (37.9%). Grade 2 changes (change in type of procedure) were noted in 7/29 (24.2%). Grade 3 changes (decision for observation vs. surgery) were observed in 5 (10.2%). Grade 4 changes (an additional procedure needed during surgery) were observed in 3 (17.2%). Grade 5 changes (potentially severe complication avoided, e.g. retrorenal colon in

Grade	No of Patients	
1	11	37.9 %
2	7	24.2%
3	5	17.2%
4	3	10.2%
5	3	10.2%

case of PCNL, change in side of surgery, crossing vessel at UPJ in patient candidate for endopyelotomy) were observed in 3 patients (10.2%).
Conclusions: In 39% of randomly selected patients, viewing CT images rather than relying on a report alone results in a significant (grades 2 to 5) change in treatment plan and can potentially avoid complications in endourology patients.

MP9-20 Methylene Blue Bedside Injection as a Cost-Effective Alternative to Antegrade Nephrostography to Assess Urinary Obstruction after Percutaneous Nephrolithotomy

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Objectives: Percutaneous nephrolithotomy (PCNL) remains an effective treatment for patients with large stone burden. When a nephrostomy tube (NT) is left in place postoperatively, antegrade urine flow is often confirmed with antegrade nephrostography (ANG). We propose methylene blue (MB) dye injection into the NT as an alternative for assessing antegrade flow. We compared MB dye test combined with NT capping trial against ANG to assess antegrade urine flow after PCNL.
Methods: Consecutive patients undergoing PCNL at 2 hospitals were prospectively enrolled between 7/2014–4/2015. A cap was placed on the NT the morning of postoperative day 1 (POD1). Capping trial failure defined as need to uncap NT for any reason (increased pain, fever, or nausea). 2 hours after capping, 7cc MB was injected into NT and tube was recapped. Positive MB test defined as presence of blue per bladder Foley. Later, ANG performed to radiographically document antegrade urine flow. NTs removed prior to discharge home in patients with no evidence of urinary obstruction. Primary outcomes: presence of antegrade flow on ANG and NT removal prior to discharge home. Sensitivity, specificity, positive (PPV) and negative predictive values (NPV), ROC and areas as well as Cohen's kappa coefficient (κ) were calculated comparing capping trial, MB and ANG at predicting NT removal.
Results: 101 subjects who underwent PCNL were included. 52.9% were left sided and 60.4% were lower pole punctures. On ROC areas evaluating tests for predicting NT removal prior to discharge; MB had an AUC 0.714 (95%CI 0.598–0.830), $\kappa = 0.413$, capping trial had an AUC 0.659 (95%CI 0.569–0.748), $\kappa = 0.361$, combining capping and MB had an AUC 0.723 (95%CI 0.608–0.837), $\kappa = 0.422$, and ANG had an AUC of 0.780 (95%CI 0.679–0.882), $\kappa = 0.566$. In predicting NT removal, ANG performed better than capping trial alone ($p = 0.04$), but no differences were seen between MB and ANG ($p = 0.2$), combining the capping trial with MB test and ANG, ($p = 0.3$) nor combined test and MB alone, ($p = 1$).
Conclusions: When combined, the capping trial and MB test results are equally accurate for predicting NT removal after PCNL compared to ANG. A capping trial and MB test may be used in combination to obviate the need for ANG, leading to potential savings in both cost and time during the care of patients undergoing PCNL.

MP9-21 Staging bone scans in clinically localised intermediate risk prostate cancer – a comparison of outcomes from a large UK cohort compared with standard international guidelines

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Introduction: The staging guidelines for imaging with BS are not uniform for intermediate risk prostate cancer in the literature (NICE Guidance CG175 2014). The aim of this study was to examine a large cohort of newly diagnosed prostate cancer patients to establish the pattern of BS positivity and compare with European Association of Urology guidelines.
Materials and Methods: All newly diagnosed prostate cancer patients were discussed in a designated MDT and were prospectively entered in the database after completion of staging workup. All intermediate and high risk patients had MRI and Bone scan unless contraindicated. A cohort of 2237 patients between 2002 to 2014 were retrospectively analysed. Patients were categorised based on Gleason score, PSA value and stage into low, intermediate and high D'Amico risk groups. The outcome of bone scan in each group was analysed.
Results: Out of 2237 patients 776 patients were low risk, 844 patients were intermediate risk and 597 were in high risk categories. 94 patients were found to have a positive BS. Eighty eight of the 94 patients (93.5%) belonged to high risk group with a BS positivity rate of 14.7% (88/597). Ninety three percent of intermediate group had a negative bone scan (786/844). Only 6 patients in intermediate group had a positive BS (0.7%) and of these five had Gleason 4 as their primary pattern. Only one patient with Gleason 6 prostate cancer and PSA between 10–20 had a positive bone scan.
Conclusion: This study, from a contemporaneous cohort confirms that a staging bone scan can be safely avoided in patients with clinically localised intermediate risk prostate cancer whose primary pattern is pattern 3. These data support the European Association of Urology guidelines recommendation of performing BS only in high risk and intermediate risk group with primary Gleason pattern 4.

MP9-22 Kidney Stone Size Accuracy with the Posterior Ultrasound Shadow: A Prospective Study

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Introduction: Recent studies have suggested that the initial evaluation of nephrolithiasis should be performed with ultrasound. However, stone size is often overestimated with ultrasound, which can impact stone management. Typically on ultrasound, stone size is determined by measuring the maximum width of the hyperechoic, or bright region, of the stone. *In vitro* studies have demonstrated that measuring the width of the posterior acoustic shadow may provide a more accurate measure of true stone size than measuring the hyperechoic width. The purpose of this study is to assess the accuracy of the posterior acoustic shadow technique for sizing renal stones in human subjects.
Materials and Methods: This is a prospective study of adult nephrolithiasis patients with one or more kidney stones. Eligible subjects received a computed tomography (CT) scan within 3 months of recruitment. Each subject underwent an ultrasound scan with a research system and Phillips C5-2 curvilinear probe. The B-mode imaging algorithm is similar to traditional ultrasound, but does not include techniques for smoothing the image and decreasing pixilation. Size measurements were made from

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digital images saved during the ultrasound scan. Three measurements are compared: maximum stone size on CT, maximum hyperechoic width on ultrasound, and posterior acoustic shadow width on ultrasound.
Results: Thirty three subjects were recruited with 57 renal stones. The mean age was 56.8 ± 11 years with a mean body mass index of 29.5 ± 5.3 kg/m^2. Seventy three percent of subjects were male, 62% of stones were right-sided, and the mean stone size was 3.2 ± 2.5 mm on CT. Compared to CT, the mean error when measuring the posterior acoustic shadow versus the stone width directly was + 0.6 ± 1.1 mm and + 2.6 ± 1.8 mm, respectively ($p < 0.001$). Thirty three percent of visible stones, with a mean size of 2.3 mm, did not present with a posterior acoustic shadow. Of the stones with a posterior acoustic shadow, the mean size on CT was 4.8 mm. Stone sizing with ultrasound was limited when multiple calculi were clustered in close proximity.
Conclusions: In this study the posterior acoustic shadow was a more accurate method of sizing renal stones than measuring the stone width directly. A subset of small, predominantly < 3 mm stones did not have the shadow. When the shadow is measurable, the improvement in accuracy is clinically significant, and this technique is available for immediate use by clinicians.

MP10 - ENDOSCOPIC EDUCATION: SIMULATOR TRAINING, VIRTUAL REALITY 1

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MP10-1 A Novel Cadaveric Robotic Training Programme in Urology

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Introduction: The BAUS cadaveric robotic training course was hosted at the Newcastle Surgical Training Centre, running over three days. The course consisted of cadaveric procedural training (radical cystectomy, radical prostatectomy, extended lymph node dissection and radical nephrectomy) using the da Vinci Xi® surgical robot, didactic lectures and observation of live robotic surgery. This study aims to assess and validate the educational outcomes of the first UK cadaveric robotic training course
Participants and Study Design: 16 delegates attended the course. All participants completed questionnaires addressing their prior robotic and simulation experience in addition to demographic details (age, gender, clinical experience, subspecialty). Baseline robotic surgical skill was assessed using the DaVinci virtual reality Skills Simulator™. During cadaveric training, participants were evaluated by expert robotic surgeons. The Global Evaluation and Assessment of Robotic Skills (GEARS) score, a validated assessment tool, was used to objectively assess their performance. All training sessions were video recorded. Participants' performance was further analysed post hoc by blinded examiners. using the GEARS tool and a procedure specific scoring tool. All participants completed a further post course questionnaire. Paired samples T-Test was used to assess the relationship in exercise scores.
Results: All 16 delegates consented to take part in the study. All were consultant urologists with a mean of nine years of independent practice. Only two participants had performed robotic surgery previously although 69% (n = 11) were laparoscopically trained. Pre-course mean robotic simulator overall score was 31%.

Face and content validity were established using the post course questionnaires. The cadaveric models scored a mean of 4.3 out of 5 for face validity. Mean score for content validity was 4.7 out of 5. Post hoc analysis found that experts performed significantly better than delegates. In addition all delegates found the course acceptable (4.6/5) and thought that cadaveric training was relevant for robotic trainees (4.4/5).

Conclusion: Our study has demonstrated face, content and construct of this novel robotic training programme. High scores for accceptability and participant satisfaction further support its educational value. Fresh frozen cadaveric training offers a high fidelity model that provides effective procedural training for robotic surgery.

MP10-2 Learning curve of the Tube 3 module designed for practicing vesicourethral anastomosis in a virtual reality robotic simulator and the preliminary study of concurrent and predictive validation

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Introduction: This study developed a new simulator training module (''Tube 3'') to allow the practice of vesicourethral anastomosis after robot-assisted radical prostatectomy. With this, the results of the learning curve of Tube 3 and preliminary validation on whether this new module can lead to performance improvement in the real da Vinci system were reported.
Materials and Methods: A total of 11 people who have no previous experience related to robots participated in this study. These inexperienced subjects consisted of 8 urology residents and 3 urology fellows. Participants performed the Tube 3 module for 1 hour daily, for 7 days. The learning curve was drawn through the scatterplot, and the stable point was identified through the cumulative sum (CUSUM) chart. To evaluate whether the proficiency in the simulator could be transferable, this study performed dry lab exercises using the real da Vinci system. For concurrent validation, synthetic material (double layer bowel 30 mm OD, length 200 mm, Limbs and Things, Bristol, England) similar to that used in the ''Tube 3'' task was used, while a vesicourethral anastomosis kit (Limbs and Things, Bristol, England) was used for predictive validation, A total of 5 participants who carried out the dry lab exercises for more than 6 hours performed these activities for 5 times.
Result: The mean number of repetitions in the first hour was 3 repetitions, and the mean time to complete the mission was about 21 minutes. With this, the mean number of repetitions in the

seventh hour was 14 repetitions, and the mean time was 4 minutes (Figure 1). When the mean time to complete Tube (384 seconds) was set as a target, about 41 repetitions (about 5 hours) were needed to achieve this stable point (Figure 2). In a dry lab, the mean time to complete the 16 suture patterns using 2 tubes was about 5 minutes, and the mean time to complete the vesicourethral anastomosis using a vesicourethral anastomosis kit was 13 minutes.
Conclusion: The repeat count for acquiring sufficient proficiency was 41 times, and the total amount of time invested for this was calculated as about more than 5 hours. In addition, obtained proficiency was transferable to vesicourethral anastomosis in the real da Vinci system. A more comprehensive study, however, is needed to validate this preliminary result.

MP10-3 Predicative capabilities of neuropsychological tests on robotic and laparoscopic simulator performance

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Aims: To determine the predictive capabilities of neuropsychological tests on medical student's da Vinci Skills Simulator (dvSS) and Endosim LaproTrain Simulator performance.
Methods: Thirty medical students completed The Finger Tapping Test, The Mental Rotation Test, Trails A and Trails B. The students were subsequently assigned to complete a sequence of four tasks on either the LaproTrain or dvSS. Once the tasks were completed the participants switched simulators and completed another four tasks. The metrics recorded from the dvSS were: 'Overall Score', 'Time to Completion', 'Economy of Movement' and 'Drops'. The metrics recorded from the LaproTrain were 'Time to Completion' and 'Drops'. The metrics of the second (baseline) and fourth (final) attempts on each simulator were correlated with the participants' neuropsychological scores using the Spearman's rank-order correlation test.
Results: There was an improvement across all metrics on both simulators. There were five statistically significant correlations between the dvSS 'baseline' metrics and the neuropsychological tests. Finger Tapping correlated with 'Drops rho' = -0.39 ($p = 0.043$). Trails A correlated with 'Overall score' rho = -0.44 ($p = 0.025$) and 'Economy of Movement' rho = 0.53 ($p = 0.006$). Trails B correlated with 'Overall Score' rho = -0.42 ($p = 0.033$), 'Time to Completion' rho = 0.42 ($p = 0.035$) and 'Economy of Movement' rho = 0.51 ($p = 0.0078$). There were no statistically significant correlations between the 'final' attempt on the dvSS and the neuropsychological tests. The 'baseline' LaproTrain® attempt's 'Number of Drops' had a statistically significant correlation with the Mental Rotation Test rho = -0.047 ($p = 0.013$). Additionally, the 'Final' LaproTrain® attempt's 'Time to Completion' had a rho = 0.45 ($p = 0.02$) when compared to the Trails A test.
Conclusions: Neuropsychological tests, particularly visuospatial, have moderate predictive abilities on baseline dvSS performance. These predictive abilities weaken during subsequent attempts and do not appear as strong or numerous in the LaproTrain simulator. Further studies should be undertaken to assess whether this 'baseline' predictive ability could be extrapolated to determine the time taken or number of attempts needed to reach a predefined competency in more complex tasks on the dvSS.

MP10-4 The surgical skill of novice trainee manifests in time-consuming exercises of virtual simulator rather than quick finishing counterpart: a concurrent validity study using an urethrovesical anastomosis model

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Introduction: To determine the proper training curriculum using a robotic virtual simulator (RVS) which enables unexperienced trainees to perform a complex task in a hands-on setting.
Patients and Methods: This study was conducted in two phases; RVS and hands-on training phase. In RVS phase, 43 participants sequentially completed 12 exercises consistent with all primary exercises in the endowrist manipulation and advanced needle driving category until the overall score reached over 80% by repeated practice. In hands-on phase using a robotic surgical system, 10 randomly selected trainees performed eight sutures once simulating urethrovesical anastomosis and the console time was recorded.
Results: The median total time and total attempt for RVS phase was 195.2 minutes and 54 times. When dividing total trainees by median total time and then comparing times to accomplish each RVS exercise between early and late completion groups, 6 exercises (prolonged course) requiring significantly more time in the late completion group were identified among 12 exercises trained. The prolonged course occupied 88.18% of total time and 77.61% of total attempts. In participants in hands-on phase, a multiple linear regression model showed that the time to accomplish the prolonged course was a single independent predictor of the console time (R square = 0.524, B = 0.05, $p = 0.018$).
Conclusion: After establishment of a high standard cut-off, the time spent for the prolonged course rather than the quick finishing counterpart showed a significant association with console time in hands-on training simulating urethrovesical anastomosis, implying educational efficacy of training involving time-consuming exercise to perform a complex task.

MP10-5 Comparison of the performance of experienced and novice surgeons: Measurement of Gripping Force during Laparoscopic Surgery Performed on Pigs by Using Forceps with Pressure Sensors

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Introduction: Laparoscopic surgical techniques are difficult to learn and developing such skills involves a steep learning curve. To assure a high level of skills, it is important to be able to measure and assess these skills. For that, it is necessary to determine aspects indicating differences in performance between experienced and novice surgeons.

We examined the differences in gripping and reaction force between experienced and novice surgeons during laparoscopic surgery.
Materials and Methods: We measured and recorded force during laparoscopic surgery performed on pigs by using forceps with pressure sensors. Several sensors, including strain gauges, accelerometers, and a potentiometer, were attached to the forceps.

This study compared 4 experienced surgeons and 4 novice surgeons.

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Each examinee elevated the kidney to approach the renal hilus by using the forceps.

Throughout the experiment, we measured gripping force and reaction force in response to forceps movement in real time.

Results: Analysis showed that reaction force was almost the same between the two groups; conversely, gripping force was different between experienced and novice surgeons.

The average gripping forces during procedures were 3.06 N and 7.15 N for the experienced and novice surgeons, respectively. The standard deviations of gripping force were 1.43 N and 3.54 N for the experienced and novice surgeons, respectively.

The average and standard deviation of gripping force were statistically significantly smaller among experienced surgeons than among novice surgeons ($P = 0.015$ and $P = 0.011$, respectively).

Conclusions: This study indicated that gripping force of experienced surgeons is smaller and more stable than that of novice surgeons during laparoscopic procedures.

MP10-6 Development and content validation of the RAPN Assessment Tool

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Introduction: The use of robot-assisted partial nephrectomy (RAPN) is increasing. This trend towards robotics for nephron sparing surgery has highlighted the requirement for training tools specific to robotic techniques, in order to evaluate the progress of trainees' skill level and ultimately safeguard patients. This study aimed to develop and validate an Assessment Tool via Healthcare Failure Mode and Effect Analysis (HFMEA) for use in training and assessment of those surgeons undertaking RAPN.

Materials and Methods: This international, multi-institutional, observational, prospective study used HFMEA protocol to identify the most hazardous steps of RAPN, in order to produce an Assessment Tool. It involved observation of expert surgeons from robotic centres worldwide, with subsequent discussion in order to perform a risk-assessment. Thorough evaluation of the Assessment Tool by the multidisciplinary team throughout the development process resulted in content validation.

Results: 5 surgeons were observed for 18 console hours to map the steps of RAPN. HFMEA identified 84 possible failure modes with 45 potential causes with ''Hazard Score'' ≥4, the defined cut-off.

The ultimate result was the construction of an internationally content validated RAPN Assessment Tool. HFMEA succeeded in identifying all possible failure modes and highlighted the most dangerous steps. The final RAPN Assessment Score contained 6 phases with 26 processes and 51 sub-processes.

Conclusions: The RAPN Assessment Tool, based on HFMEA methodology, was developed for use in the assessment of trainee surgeons and evaluation of training programmes. Future work will involve further validation and multi-centre implementation of the Assessment Tool in order to generate learning curves for specific processes within the procedures.

MP10-7 Are 5 cases enough?: A prospective study to minimize learning curve for Robot-assisted radical prostatectomy in a local University hospital in Japan.

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The aim of this study is to minimize learning curve for robot-assisted laparoscopic radical prostatectomy (RARP) in local hospital, by a prospective non-randermized fashin. Between June 2013 and March 2015, 45 consecutive RARP were performed in the University of Yamanashi hospital. Sequential 5 cases per-capita surgeon underwent RARP by 9 beginner staffs with the same procedure. Mean age, BMI, estimated prostate volume, and PSA at the time of diagnosis were 67.0 years, 23.7 kg/m^2, 49.4 ml, and 8.43 ng/ml, respectively. The D'Amico risk stratification was 17.1%, 62.8%, and 20.0% in low, intermediate, and high risk groups, respectively. The data were analysed by recording 5 surgical steps (1: incision of endopelvic fascia, 2: bladder neck dissection, 3: seminal vesicles dissection, 4: exposure of the posterior surface and division of the lateral pedicles, and 5: urethra-vesical anastomosis including Rocco stitch) and the chart-review. All cases successfully underwent RARP without open-conversion. Mean operative time was 249 minutes. Mean Estimate blood loss was 348 ml and blood transfusion was required in only 1 patient. There were no major postoperative complications. Among 5 surgical steps, total operative time was correlated most closely with step 4 ($r = 0.81$). Average catheterization days was 7 with mean hospital stay of 10 days. Positive surgical margin in organ-confined disease was 26% and biochemical recurrence rate was 2.2%(1 case). Rate of pad use was 42% at 3 months postoperatively, 22% at 6 months. Mean number of pad was 2.8 at 3 months, 1.4 at 6 months. Learning curve for RARP in a local University hospital in Japan can be reduced to 5 cases.

MP10-8 Incorporation of the da Vinci Surgical Skills SimulatorTM at Urology Objective Structured Clinical Examinations (OSCEs): Pilot Study

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Introduction and Objective: To evaluate the use of the da Vinci Surgical Skills Simulator™ (dVSSS) in competency assessment of robotic skills of urology Post-Graduate Trainees (PGTs) during Objective Structured Clinical Examinations (OSCEs).

Methods: PGTs in Post-Graduate Years (PGY-3 to PGY-5) from two Quebec urology training programs were recruited. During a 20-minute OSCE station, PGTs were asked to fill in a questionnaire and perform two tasks: Pick and Place, and Energy Dissection level 1. For each exercise, the norm-referenced method was used to establish a passing score to determine competency. The participant was considered competent if he/she gained the passing score on both tasks.

Results: All 9 PGTs who attended the OSCE voluntarily participated in the study. They had performed a median of 10 (IQR: 2.5–16) laparoscopic procedures, 2 (0–8) robotic procedures, and assisted 10 (IQR: 0–15) robotic procedures at the bedside prior to this OSCE. Based on a passing score of 90 for task 1 and 72 for task 2, there were 3 (33%) competent PGTs, all of whom were from PGY-5 level. Therefore, there was significant difference among PGY levels in terms of competency ($p = 0.01$). When

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compared with PGTs, experts had performed significantly higher numbers of robotic procedures (5.2 ± 2.4 vs. 25 ± 8.7; $p = 0.02$). However, there was no significant difference in the performance parameters between PGTs and experts in both tasks.
Conclusion: This study confirms that the da Vinci Surgical Skills Simulator™ was able to assess competency of urology PGTs during OSCE.

MP10-9 Validation of the RobotiX Mentor Robotic Surgery Simulator

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Introduction: With robot-assisted surgery becoming more common practice in urology, effective training remains a challenge. Simulation has gained wide acceptance as a method of reducing the initial phase of the learning curve. This study aims to assess construct, face, and content validity of the RobotiX Mentor virtual reality simulator. It also aims to assess its acceptability as a training tool and feasibility of its use in training.
Materials and Methods: This prospective, observational and comparative study recruited novice ($n = 20$), intermediate ($n = 15$), and expert ($n = 11$) robotic surgeons as participants from institutions across the United Kingdom and Europe. Each participant completed nine surgical tasks across two modules on the simulator, followed by a questionnaire to evaluate subjective realism (face validity), task importance (content validity), feasibility, and acceptability. Outcome measures of groups were compared using Mann-Whitney *U*-tests to assess construct validity.
Result: Construct validity was demonstrated in a total of 17/25 performance evaluation metrics ($p < 0.001$). Participants determined both the simulator console and psychomotor tasks as highly realistic (mean: 3.7/5) and very important for surgical training (4.5/5). The simulator was also rated as an acceptable (4.3/5) tool for training and its use highly feasible (4.3/5).
Conclusion: The RobotiX Mentor shows potential as a valuable tool for training and assessment of trainees in robotic skills and may reduce the initial learning curve if utilised as an adjunct to operating-room training. Investigation of concurrent and predictive validity is necessary to complete validation and evaluation of learning curves would provide insight into its value for training.

MP10-10 Utility of a novel on-screen overlay frame of reference system for orientation during intraoperative laparoscopic surgical education

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Introduction: Surgical educators are faced with unique challenges when teaching laparoscopic skills. Because the surgical field is projected onto the endoscopic screen in the operating room (OR) and is used as the focal point for performing the procedure, laparoscopic teaching involves various types of communication to direct the learner. Directional terminology can get confusing when the spatial orientation of the on-screen target differs from each individuals' vantage point. We explored how teaching occurs in the laparoscopic setting both with and without a directional tool designed to improve communication in the OR.
Methods: We previously showed that using a combination of standardized verbal commands and a transparent monitor overlay (a clock and an alphanumeric grid) significantly improved teaching with laparoscopic simulators. We videotaped 20 laparoscopic teaching cases to serve as a baseline comparator group. We then introduced an alphanumeric overlay into the OR. We videotaped 36 laparoscopic teaching cases (30 with the alphanumeric grid, 4 of the clock, and 2 of the dartboard). Videotapes were transcribed verbatim and qualitatively analyzed. Follow-up interviews were conducted with participants.
Results: In the baseline cases, the teachers frequently pointed to the screen, the patient, and the instrument(s). Other techniques included holding the instrument to guide learners' movements and displaying hand or arm movements required to perform the laparoscopic task. Directional terms were repeatedly used. Learners were often told to visualize movements before completion. The overlay study observed 55 participants from urology and general surgery. The alphanumeric grid was found to be more precise and allowed users to move more quickly and directly to a target and required fewer directional terms and less pointing. It was used more frequently when teaching junior residents and was easy to adopt into practice. The clock overlay was found to be confusing and was not used in the four teaching cases. The dartboard overlay obstructed view, especially during radical prostatectomy, and was therefore removed during the two cases.
Conclusion: Using an alphanumeric grid endoscopic monitor overlay during laparoscopic teaching cases improved accuracy, especially with junior residents. It created a common frame of reference, was easy to adapt to, and didn't obstruct the endoscopic view. This overlay reduced the amount of directional terms and pointing, thus improving the efficiency of the cases. An alphanumeric monitor overlay can improve communication and teaching in the OR, especially with junior residents who are at the beginning of the learning curve.

MP10-11 Direct comparison of an ergonomic laparoscopic combination with robotic surgery in an inanimate experimental laparoscopic radical prostatectomy setting; times and ergonomy.

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Introduction: Laparoscopy consists of significant ergonomic limitations which are the main drawbacks for its wide distribution. On the other hand, the Da Vinci robot offers significantly improved ergonomics and speed. We combined three different laparoscopic devices to improve vision, posture and instrumentation and tested them in a pelvi-trainer setting.
Materials and Methods: The system consists of the ETHOS operating ergonomic platform, the 3-D laparoscopic camera, and the Radius Surgical System (RSS) manipulator. All devices were tested individually, and in combinations, by 15 trainees who performed 3 standard suturing exercises (steps IV, V, VI of the already described Heilbronn laparoscopic training program) in a pelvi-trainer. Those exercises mimicked the dorsal vein complex

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ligation and the urethrovesical anastomosis during a laparoscopic radical prostatectomy. The trainees performed each step 5 times in every combination, and with the Da Vinci robot. The mean values, from all times and for each exercise and combination, were recorded, and the participants filled out a validated questionnaire focusing on ergonomic issues. A total of 269.66 hours of training were recorded.

Results: All the trainees had minimal to medium laparoscopic experience (0–3.5 years) and a minimum robotic experience.

Table 1: Time comparisons (secs)

		1	2	3
	STEPS	**Conventional laparoscopy**	**ETHOS + 3D + RSS**	**Da Vinci**
Operating time (mean) ± SE (secs)	**IV**	349.5 ± 24.0	244.4 ± 12.1	258.0 ± 17.4
	V	885.2 ± 41.0	664.5 ± 26.1	621.1 ± 28.3
	VI	1282.7 ± 35.4	922.5 ± 23.4	871.7 ± 27.9

Comparisons: 1vs2 (p<0.001), 1vs3 (p<0.001), 2vs3 (IV p=0.521, V p=0.261, VI p=0.164)

Table 2: Ergonomic comparisons

		Conventional laparoscopy (p<0.05)			**ETHOS + 3D + RSS (p=0.111)**			**Da Vinci (p=0.111)**		
STEPS		LD	MD	HD/P	LD	MD	HD/P	LD	MD	HD/P
IV	***Count***	7 (46.7)	6 (40)	2 (13.3)	15 (100)	0	0	15 (100)	0	0
V	***(%) Within***	3 (20)	10 (66.7)	2 (13.3)	12 (80)	3 (20)	0	15 (100)	0	0
VI	***step***	1 (6.7)	8 (53.3)	6 (40.0)	11 (73.3)	4 (26.7)	0	15 (100)	0	0

LD: low discimofort, MD: medium discomfort, HD/P: high discomfort/pain

Conclusion: The combination of the three devices can significantly improve ergonomics in laparoscopy, particularly concerning difficult steps like intracorporeal suturing. Although the Da Vinci system offers speed and better ergonomy, this laparoscopic setting proves to be a reliable alternative, demanding fewer purchase and minimal maintenance costs.

MP10-12 Assessment and Validation of the EAU Hands-On-Training Course in Robotic Surgery

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Introduction: Robotic surgical training is under increasing strain with growing expectations for zero complication surgery alongside ever reducing training opportunities. Simulation training allows trainees to progress along the learning curve outside of the operating room. However this training must be effective and appropriate. This study aims to assess and validate results from the EAU robotic hands-on-training (HOT) courses.

Materials and Methods: Results from five EAU HOT courses (EMUC 2013, ESOU 2014, EAU 2014, EMUC 2014, ESOU 2015) were evaluated. 150 delegates performed 1090 exercises on the da Vinci Skills Simulator™. All participants completed a pre-course questionnaire. Data were collected on demographic details, training stage, robotic/laparoscopic experience and prior robotic simulation training. Outcome data for each participant was retrieved. A post course questionnaire was distributed to all participants. Multiple regression analysis was used to assess the relationship between the mean overall score and various factors (age, trainee/urologist, robotic/laparoscopic experience, simulation experience). Comparison was made between expert (>30 independent cases) and novice participants.

Results: Mean age was 36.5 years (range 25–65 years) and 84% were male. 46.8% were residents with a mean of 3.9 years of training. 15% (n=23) of delegates fully completed the survey. 87% agreed that HOT courses are good training tools. 78% of participants agreed that the HOT course encouraged further participation in robotic surgery and 65.6% thought the HOT course directly improved their robotic skills. 96% would recommend HOT courses to colleagues and 91% would attend further courses. Expert robotic surgeons achieved significantly higher mean scores than novices. Differences between expert laparoscopic surgeons and novices did not reach significance. On multiple regression analysis age, prior robotic experience and prior robotic simulation experience were closely correlated with overall mean score (r=0.534). Age made the strongest unique contribution (standardised coefficient (s-coeff) – 0.409, p=0.0001) followed by prior robotic experience (s-coeff 0.214, p=0.005) and prior robotic simulation experience, (s-coeff 0.208, p=0.005). Other factors (trainee/urologist, sex, laparoscopic experience, robotic assisting experience) were not significantly associated.

Conclusions: Our survey establishes content validation for the courses with strong participant support of its role in robotic training. Simulator scores support the construct validity of the course. The benefits of age, prior robotic surgical are again highlighted in addition to prior simulator experience. Our results support the use of HOT courses in robotic training. Furthermore the importance of trainees gaining robotic surgical and simulation experience to maximise their training potential is clearly demonstrated.

MP10-13 Dry Lab Training for Vasovasostomy

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A 22 or 24 gauge iv cannula is telescoped snugly through a short strip of 5 F infant feeding tube. The inner diameter of the vas deferens corresponds to the diameter of the cannula which is 1- 2 mm and the external diameter is same as that of the IFT. the Suturing is done with double arm with 10 – 0 nylon double arm from inside to outside fashion at both the ends at 12,3,6,9 0 clock positions and approximated. Suturing of the outer layer can be done with feeding tubes alone fixed to the cardboard or thermocol. The practice is done under surgical loupe with 4 x magnification or under endoscopic camera.

MP10-14 Preliminary Results of an Intensive Training On A Simulation Model For Flexible Ureteroscopy in Medical Students: The Kidney-Box (K-BOX) Model

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Introduction: We tested in medical students the efficacy of an intensive training with a new simulation model for flexible ureteroscopy: the Kidney-Box model.

Material & Methods: The Kidney-Box (K - Box®, Porgès-Coloplast) is a training model for flexible ureteroscopy made of four different boxes reproducing the ramification of the upper urinary tract (see fig.1). Sixteen medical students were

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prospectively randomized to underwent a ten days training consisting of personally repeating different exercises aimed at learning specific movements with the flexible ureteroscope (Flex-XC, Karl Storz) (n = 5 days, one exercise per day, 10 minutes per each days) and how to catch and release stones with a nitinol basket (1.9 Fr ZeroTip, Boston Scientific) (n = 5 days, one 10 minutes per each days), using the K-Box® (n = eight students). Eight students served as non-trained control group. An expert endourologist (OT) blindly assessed the whole cohort of students through a final examination consisting of performing two exercises on ureteroscope manipulation and one exercise on stone capture. A performance scale (1–5) assessing respect of surrounding movement, motion, instrument handling, instrument knowledge, operative flow and procedure knowledge was used to evaluate each student. Time to complete the exercise was measured. Mann-Whithey Rank Sum test was used for comparisons between the two groups.

Results: Mean scores (± standard deviation) obtained by trained students were significantly higher compared to non-trained students (all $p < 0.001$). All trained students were able to complete within three minutes the two exercises on ureteroscope manipulation, while two students (25%) were not able to finish the exercise on stone capture. Conversely, four (50%) and six (75%) non-trained students were not able to finish within 3 minutes one out of the two exercises on ureteroscope manipulation and the exercise on stone capture, respectively. The mean time (± standard deviation) to complete the three exercises was 76.3 (± 34.7), 69.7 (± 29.8) and 86.1 (± 49.3) seconds in the trained group compared to 165 (± 14.7), 131 (± 19.6) and 132 (± 31.1) seconds in the non-trained group (all $p < 0.001$).

Conclusions: The K-Box® seems to be a valid training model for initiate young surgeons to flexible ureteroscopy.

MP10-15 Robotic training with porcine models is less stressful than virtual reality robotic simulators for urology resident trainees

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Introduction: In pursuit of improving the quality of residents' education, the Southeastern Section of the American Urological Association (SES AUA) hosts an annual robotic training course for its residents. The aim of this study is to evaluate robotic simulation workload and stress levels on urology resident trainees utilizing porcine models and virtual reality robotic simulators during this workshop.

Material and Methods: Twenty-one residents from 14 programs in the SES AUA participated in this 2015 course. The first day residents have been taught with didactic lectures by faculty. On the second day trainees were divided into two groups. Half were asked to perform skill tasks on the Mimic da Vinci-Trainer (MdVT, Mimic Technologies, Inc., Seattle, WA, U.S.A) for four hours while the other half performed set tasks in a live nephrectomy on porcine model using the da Vinci Xi robot (Intuitive Surgical Inc., Sunnyvale, CA). After the four hours the groups changed places for another 4-hour session. All trainees were asked to to complete the NASA TLX 1-page questionnaire following both the MdVT simulation and live animal model sessions.

Results: The Bonferroni corrected t-tests indicated that mental demand was significantly higher than physical demand ($t(20) = 4.05$, $p = 0.001$) and then frustration ($t(20) = 3.52$, $p = 0.002$). Further, temporal demand was significantly higher than physical demand ($t(20) = 2.90$, $p = 0.009$) and that effort was significantly higher than physical demand ($t(20) = 6.52$, $p < 0.001$)), temporal demand ($t(20) = 5.12$, $p < 0.001$), performance ($t(20) = 5.15$, $p < 0.001$), and frustration ($t(20) = 6.90$, $p < 0.001$). The analysis of the interface by TLX interaction was further analyzed to determine whether the scores of each of the six TLX scales varied across the two interfaces. The means of the TLX scores observed at the two interfaces were similar. The only significance was observed for frustration, which was significantly higher at the simulation than the animal model, $t(20) = 4.12$, $p = 0.001$).

Conclusion: Novice trainees experienced significant mental overload while performing tasks on both the simulator and the live animal model during the robotics course. NASA TLX scoring demonstrates that live animal models provide the same proficiency performance with less frustration. On contrary, the simulation part of course remains more challenging task for trainees with more frustration and repetitive exercises to achieve the passing score.

MP10-16 Identifying tomorrow's Urologists from today's students: assessing the aptitude for minimally invasive procedures through simulation

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Introduction: The training of urological surgeons is an extensive process comprising many different skills; not all are mastered by a significant number of individuals. One facet of training involves gaining expertise in endoscopy, laparoscopy and, increasingly robotic assisted surgery. We aim to determine if aptitude for these skill sets can be identified and cultivated in urology naïve individuals, with a view to selecting trainees for future specialist training.

Methods: This was a pilot study involving six volunteer medical students, with no previous background in urological surgery. They were asked to complete increasingly complex simulated tasks in cystoscopy, laparoscopy and robotic assisted surgery within a certain time-frame. Their ability was assessed by two independent surgeons with relevant expertise and experience, using a validated scoring sheet. The students then underwent a period of instruction and were re-assessed following this to determine whether there had been any improvement.

Results: All students showed improvement in all areas following a period of tuition. Four showed significant improvement in cystoscopy scores. Two showed a high level of competence in laparoscopy. Robotic surgery observed scores were maintained, despite the increase in complexity of tasks assigned.

Conclusion: It appears possible to train students to an acceptable level in basic tasks i.e. cystoscopy. Fewer show aptitude for more complex tasks. Identifying individuals with innate propensity towards certain skill sets early in their career may help to direct training more efficiently.

MP10-17 Is There a Place for Virtual Reality Simulators in Assessment of Competency in Percutaneous Renal Access?

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Introduction and Objective: To assess competency of urology Post-Graduate Trainees (PGTs) in percutaneous renal access (PCA).
Methods: Upon obtaining ethics approval and informed consents, PGTs between Post-Graduate Years (PGY-3 to PGY-5) from all four urology programs in Quebec were recruited. PCA competency of each participant was assessed objectively by performing task 4 on the PERC Mentor™ simulator, where they had to correctly access and pop 7 balloons in 7 different renal calyces, and subjectively by the validated percutaneous nephrolithotomy global rating scale (PCNL-GRS).
Results: A total of 26 PGTs with a mean age of 29.2 ± 0.7 years participated in this study. When compared with the 21 PGTs without practice, all 5 PGTs who had practiced on the simulator were competent ($p = 0.03$), and performed the task with significantly shorter operative time (13.9 ± 0.7 vs. 4.4 ± 0.4 minutes; $p < 0.001$) and fluoroscopy time (9.3 ± 0.6 vs. 3.4 ± 0.4 minutes; $p < 0.001$), and had significantly higher successful attempts to pop the balloons (23 ± 5 vs. 68.7 ± 11; $p = 0.001$) and PCNL-GRS scores (13 ± 0.6 vs. 20.6 ± 1; $p < 0.001$). According to a pass score of 13/25, thirteen PGTs were competent. Competent PGTs performed the task with significantly shorter fluoroscopy time (9.8 vs 6.5 minutes; $p = 0.01$) and higher percentage of successful attempts to pop the balloons ($p < 0.001$), higher PCNL-GRS score ($p < 0.001$) and lower complications ($p = 0.01$).
Conclusion: The PCNL-Global Rating Scale in combination with the PERC Mentor™ simulator was able to differentiate competent and non-competent PGTs.

MP10-18 Validation of a patient-specific simulator for laparoscopic renal surgery

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Introduction: We have developed a unique surgical training system: a patient-specific simulator for laparoscopic surgery. Using specific data for each patient, this virtual reality-based system enables surgeons to rehearse operations. The present study aims to validate this new type of simulator.
Methods: Three surgeons performed 13 preoperative simulations. The procedures included seven nephrectomies, four partial nephrectomies, and two pyeloplasties. We evaluated whether the anatomies reproduced by the simulator matched those encountered during the actual operations. Furthermore, the surgeons were asked to use visual analog scales (from 1 to 5; higher scores are better) to evaluate the anatomical integrity and utility of the simulations and their intraoperative confidence during the subsequent surgical procedures.
Results: The simulator reproduced the patients' anatomies almost perfectly, although some minor mistakes were identified. Regarding the surgeons' evaluations of the system, the mean scores for the anatomical integrity and utility of the simulations and the surgeons' intraoperative confidence were 3.4, 4.2, and 4.1, respectively.

In all 13 cases, the surgeons were able to carry out preoperative training with ease and stated that the simulator was useful for producing preoperative images.
Conclusions: A patient-specific simulator for laparoscopic renal surgery has been successfully developed. We confirmed that the simulator correctly reproduced anatomical structures, and the surgeons who used it felt that it was a useful preoperative training tool.

MP10-19 Validation of a Novel Cadaveric Endourology Training Programme

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Introduction: Despite their cost and lack of availability, human cadavers remain the gold standard for procedural surgical training. Although few studies have described their use in procedural training and in trials of novel approaches, a comprehensive and validated training programme utilizing human cadavers is lacking in urology. The aim of this study is to assess the validity of a cadaveric training programme in endourology, developed by the British Association of Urological Surgeons (BAUS).
Materials & Methods: This prospective, observational and comparative study recruited 26 urology resident in a one-day cadaveric endourology teaching-course. Two participants were allocated to one fresh frozen cadaver and were supervised by consultant urological surgeons to complete various procedures. The residents performed urethrocystoscopy, bladder biopsy, intravesical BOTOX injection, ureterorenoscopy and TURP. At the end of each module, all residents and faculty were invited to complete an evaluation survey.
Results: All procedures scored a mean of above 3/5 for face validity and content validity ($P < 0.0001$). Respondents held a positive view of the cadaver sessions and believed them to be useful for learning anatomy and steps of an operation (87% agree or strongly agree) and as a confidence booster for performing a procedure (92% agree or strongly agree). Furthermore, participants thought the training programme significantly improved their skills (87% agree or strongly agree), gave them transferrable skills for the operating room (89% agree or strongly agree) and deemed it feasible to be incorporated into training programmes (73% agree or strongly agree). Human cadaveric simulation was rated as the best mode of simulation-based training ($P < 0.0001$) for all the procedures in the curriculum proving the concurrent validity of this type of simulation.
Conclusions: The BAUS cadaveric endourology training programme represents one of the solutions to the challenges of efficient, safe and effective procedural training. It has received positive feedback from residents and experts (faculty) and has proven to be useful for teaching anatomy, operative techniques, and enhancing confidence in performing operations. It has demonstrated face and content validity with a high educational impact. Furthermore, its inclusion in the traditional training programmes is deemed both feasible and acceptable.

MP10-20 Validation of a Dry-lab Training Model for Cystoscopy and Delivery of Intravesical Botolinum-Toxin Injections

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Introduction: The introduction of bladder wall injections of botolinum toxin (BOTOX) represents a significant development

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in incontinence management. However, training new residents for this highly effective procedure remains a challenge. With recent emphasis on patient safety and simulation-based training, this should firstly take place in a simulated environment outside the operating room. This study was carried out to assess the validity of a novel dry-lab training model for cystoscopy and intravesical BOTOX injections. It also aims to evaluate the educational value of this training tool and the feasibility and acceptability of incorporating it within training curricula for endourology.

Materials and Methods: The current prospective and observational study recruited 61 participants, comprising of residents and specialists from urology, urogynaecology and nursing specialties in the United Kingdom. Of these, 14 specialists were experts who had performed more than 50 procedures. Participants received a 30-minute simulation training session, with one-to-one mentoring, on the ETXY Multifunctional Trainer (Pro-Delphus, Brazil). Each participant was given the opportunity to carry out rigid and/or flexible cystoscopy followed by delivering an injection into the bladder wall. Sessions were concluded with a qualitative and quantitative survey to evaluate learning experience. Furthermore, 15 trainees received further training on human cadavers following the dry-lab simulation.

Results: Participants rated their experience similar to that of the real operative setting with a mean Likert score of 3.98/5. Content validity revealed that the model demonstrated realism in a number of aspects including anatomy (3.76/5), visualisation of the bladder (3.89/5), needle penetration (3.73/5) and delivery of injection (3.93/5). The training sessions were considered a good way to familiarize with anatomy (3.78/5), steps of the procedure (4.02/5) and as confidence boosters (3.82/5). 97% stated that they would recommend the training session to their colleagues. Participants stated that the sessions had significantly improved their skills (n = 3.81/5) and that they had gained transferrable skills (n = 3.77/5). Furthermore, it was rated that the model should be routinely used for training and assessment (3.85/5) and deemed feasible (4.32/5).

Conclusion: The new dry-lab model for cystoscopy and intravesical BOTOX injections has demonstrated to be useful as a training tool. This study has established face and content validity of the simulator. Residents and specialists believed the simulator was an acceptable tool for training and assessment, with high educational value, and its use feasible within simulation-based training curricula for novice trainees to acquire skills to a predetermined level of proficiency.

MP10-21 Development and content validation of the LRN Assessment Tools

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Introduction: Increasing numbers of renal cancer patients are being managed by minimally invasive surgical techniques. There is a requirement for training and assessment tools specific to laparoscopic techniques in order to safeguard patients and track the progress of trainees' skill level. This study aimed to develop and validate Assessment Tools via Healthcare Failure Mode and Effect Analysis (HFMEA) for use in training and assessment of surgeons performing LRN (laparoscopic radical nephrectomy).

Materials and Methods: This multi-institutional, observational, prospective study used HFMEA protocol to identify the most hazardous steps of LRN. It involved observation of expert surgeons from laparoscopic centres, with subsequent discussion in order to perform a risk-assessment on these procedures and produce Assessment Tools to train surgeons in order to minimise patient risk. Thorough evaluation of the Assessment Tools by the multidisciplinary team throughout the development process resulted in content validation.

Results: 4 surgeons were observed for 19.5 hours to map the steps of LRN. HFMEA identified failure modes and hazard analysis identified the most dangerous steps for inclusion within the Assessment Tools. Those failure modes with potential causes of ''Hazard Score'' ≥4 (the defined cut-off) were included in the Assessment Tool.

The ultimate result was construction of internationally content validated Assessment Tools, in the form of checklists, for three approaches to LRN: transperitoneal, retroperitoneal and hand-assisted. The LRN Assessment Tool (Transperitoneal Approach) comprised 20 processes and 33 sub-processes. The LRN Assessment Tool (Hand-Assisted Approach) was comprised of 20 processes and 33 sub-processes, and the LRN Assessment Tool (Retroperitoneal Approach) was comprised of 17 processes and 30 sub-processes.

Conclusions: The HMFEA protocol directed the development of three Assessment Tools via the identification of hazardous steps particular to the LRN procedures. These tools can be used in the assessment of trainee surgeons and evaluation of training programmes in order to ensure maximum patient safety and optimal training.

MP10-22 Non-technical skills and stress responses in surgery: An analysis of human factors and an evaluation of the learning curve.

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Introduction: Non-technical skills are being increasingly recognized as one of the most important factors of operative errors. The majority of studies on non-technical skills have assessed the effect of teaching, whether it be using classroom or simulation methods. Both team and individual performances have been measured. This prospective study aims to create a learning curve for non-technical skills in partnership with technical skills. Stress responses (physical and mental) will also be measured while performing a GreenLight Photoselective Vaporization of the Prostate (PVP) on a virtual reality simulator in a distributed simulator.

Methods and Materials: This prospective observation study recruited 15 medical students at varying levels of study. Participants performed up to four GreenLight PVP small-sized prostate procedures on the virtual reality simulator after basic training. Sessions were held in a distributed simulator to create an optimum realistic environment. Google glasses were worn by the surgeon. These displayed vital signs and were programmed to show distress at a particular point in the simulation. Other stresses were added to the simulation, such as metal arithmetic questions being asked and bleeders needing coagulation on the virtual reality simulator. Each participant completed a State Trait Anxiety Inventory S-Test (STAI) before, during and after each session. Heart rates were monitored throughout. Both an assessor and the participant completed a Non-technical skills for Surgeons rating system after the procedure. The virtual reality

simulator provided performance feedback after each session on blood loss, coagulation time, damage to the scope and a global score. Feedback was given to novices on their non-technical skills prior to their next procedure.
Results: Participants appeared to control mental and physical stress responses more effectively over the trial as STAI scores and the changes in heart rates improved. The non-technical skills mildly improved over the session although not significantly. Inter-rater reliability showed participants over estimated their situation awareness scores in comparison to the assessor. Some elements of the technical skills improved (blood loss and the amount of scope damage) however the global score reduced. There was no significant correlation seen between non-technical skills and technical skills.
Conclusion: This study has not seen a significant learning curve in non-technical skills or a correlation with stress responses. This is possibly due to the participants being cognitively overloaded. A technical and non-technical skills training curriculum has been devised to over come this problem using a graded learning approach with the aim to reduce cognitive overloading.

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MP10-23 Do non-technical skills impact technical performance within a simulation-based ureteroscopy environment?

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Introduction: Technical skills are of vital importance for any surgeon, however it has been demonstrated that non-technical skills cause a great deal of errors within the surgical environment and cannot be overlooked when assessing surgeons. These two skillsets are however often trained and assessed separately. However, little in the literature has sought to analyse the impact one skillset has on the performance of the other. We therefore aimed to evaluate the relationship between technical and non-technical skills performance within a simulation-based ureteroscopy environment and further assess if any subset of non-technical skills appears to be more important.
Materials and Methods: A prospective analysis of data acquired from a comparative study of simulation vs. non-simulation training (knowledge only) was conducted. A total of 32 ureteroscopy novices were included, with half undergoing formal training for both technical and non-technical skillsets and the remaining half acting as controls and undergoing no additional practical training. All were subsequently assessed within a fully immersive environment in a standardised mid-ureteric stone removal case on a bench model. Both technical and non-technical outcome measures were utilised, to assess both skillsets. Pearson's correlation coefficient was used to analyse the relationship between outcome measures.
Results: A significant correlation was seen within all outcome measures analysed. Time to completion of the task within the whole cohort demonstrated a strong negative correlation with NOTSS (non-technical skills) scores ($r = -0.50$, $p < 0.001$). Additionally, positive relationships were observed with OSATS rating scale scores ($r = 0.89$, $p < 0.001$) and task specific checklist scores ($r = 0.91$, $p < 0.001$) against the NOTSS rating scale. Analysis of the untrained cohort separately showed strong correlation with NOTSS scores against time to completion ($r = -0.5$, $p < 0.05$), OSATS ($r = 0.80$, $p < 0.001$) and task specific checklist scores ($r = 0.87$, $p < 0.001$). Finally, all subsets of non-technical skills such as situational awareness, decision-making, communication and leadership, were shown to be correlated with all technical skills measures with all r scores larger than 0.60 and $p < 0.001$.
Conclusions: A strong relationship between these two skillsets has been demonstrated within our novice cohort. This relationship was present regardless of any training received and may therefore be inherent. Additionally, it appears no subset of non-technical skills is best correlated with technical skills performance, demonstrating how crucial all skillsets are. These results further strengthen the evidence that these skills should not be treated separately but instead should be trained and assessed together.

MP10-24 Ureteroscopic Skills with and without Roboflex Avicenna in a Training Model

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Introduction: Recently, Roboflex Avicenna has been introduced for flexible ureteroscopy (fURS), showing good outcomes in terms of SFR and safety, with significant improvements in ergonomics. To date, no information is available documenting the learning curve of Roboflex Avicenna compared to fURS alone. The aim of our study was to evaluate the learning curve related to the acquisition of basic ureteroscopy skills with and without Roboflex Avicenna by subjects with no prior surgical training.
Materials/Methods: Ten 5-year medical students volunteered for the study. Subjects were randomized in block fashion to include 5 students in each group; Group 1 was trained with the Roboflex Avicenna and Group 2 with the flexible ureteroscope alone, both using the K-box simulator model. All students received 10 didactic lessons in the course of 10 days, each session lasting 10 minutes. All participants were evaluated by an experienced surgeon, blind by the randomization table; the evaluation was performed in a different room than where the exercises were done, with a real time endoscopic vision transmission, in order not to be influenced by the device used. Participants were scored on their ability to perform 2 exercises, and time was recorded. The participants were also evaluated on the quality of their performance, using a 5-point Likert rating scale from 1(poor) to 5 (excellent), for the following parameters: respect of the surrounding environment, flow of the operation, orientation, vision centered and stability. P value < 0.05 was considered statistically significant.
Results: The averaged results are reported in the Table.

Exercise 1	Group 1	Group 2	P
Completed (N)	3 (60.0%)	4 (80.0%)	>0.99
Time (min)	1.9 ± 0.3	1.4 ± 1.0	>0.99
Respect of surrounding tissue	4.4 ± 0.5	3.2 ± 0.8	0.08
Flow	4.6 ± 0.5	3.6 ± 0.9	0.14
Orientation	4.4 ± 0.5	3.8 ± 0.8	0.39
Vision centered	4.4 ± 0.5	3.4 ± 0.5	0.08
Stability	4.6 ± 0.5	3.0 ± 0.7	0.02
Exercise 2			
Completed (N)	5 (100%)	5 (100%)	
Time (min)	1.6 ± 0.6	0.7 ± 0.4	0.008
Respect of surrounding tissue	3.4 ± 0.5	3.8 ± 0.4	0.52
Flow	4.0 ±0.7	4.6 ± 0.5	0.36
Orientation	4.0 ± 0.7	4.4 ± 0.5	0.64
Vision centered	3.6 ± 0.9	3.6 ± 0.5	>0.99
Stability	4.0 ± 0.7	3.4 ± 0.5	0.36

Conclusion: K-box simulator model allows students to achieve good proficiency in ureteroscopy; the acquisition of basic ureteroscopic skills with and without Roboflex Avicenna by subjects with no prior surgical training is similar.

MP11 - LAPAROSCOPY: UPPER TRACT - ONCOLOGY

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MP11-1 Why Do We Convert? Understanding Open Conversion during Minimally Invasive Renal Surgery in England Using the British Association of Urological Surgeons (BAUS) Registry Data

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Introduction & Objectives: Open conversion (OC) during minimally invasive renal surgery (MIRS) can negatively impact patient and surgeon. We analyzed all open conversions (459) recorded over a two year period on the BAUS national nephrectomy registry in England.
Material & Methods: The BAUS nephrectomy registry is a live self-reported national database. Registry data on 13,697 nephrectomies (59% male, 41% female), reported between January-2012 and December-2013 in England were analyzed to identify 9592 (70%) MIRS. OC was observed in 459 (4.7%) patients. Registry parameters interrogated include patient demographics, indication and pathological findings. Patient co-morbidities were quantified using the Charlson co-morbidity Index, and peri-and post-procedure complications were recorded using the ClavienDindo classification. Specific reference to indication and timing for conversion, blood-loss and type of MIRS was made. Predictors of OC and adverse outcomes were identified.
Results: 60% of all OC cases were male and 53% were right-sided. Surgery was performed by a consultant urological surgeon in 430 cases, and by non-consultants in 26. MIRS was performed for radical nephrectomy in 55.9% of cases, nephroureterectomy in 16%, partial nephrectomy in 10.8% and simple nephrectomy in 16.8%. Hand-assisted and robot-assisted procedures represented 1% of OC respectively.

Indications for OC included bleeding (27.7%), difficult dissection (25.6%), failure to progress (15.8%) and tumour size (9%). Bowel, liver and splenic injury represented less than 3% of all OC.

Of the patients who underwent OC for malignancy, 90% of tumours were greater than 7-centimeters. 25% of patients requiring OC had significant blood loss of greater than one liter. The duration of surgery was over 3 hours in 58% of OC and median hospital stay following OC was 7-days (range 1–60) compared to 4 days with MIRS alone.

Thirty-day mortality was 3 times higher in the OC cohort, 1.7% versus 0.6% in the overall nephrectomy cohort. 8 deaths were observed; all underwent radical nephrectomy or nephroureterectomy for malignancy. 7 of the 8 patients who died were male (88%). Of those who died, median blood loss was high (2–5 litres) and operating time was over 3 hours in all cases.
Conclusions: Overall MIRS in England is performed well with low complication rates. OC is associated with increased blood loss, post operative morbidity and length of stay. Risk factors predictive of OC include bleeding, nephrectomy for malignancy and tumour size (>7 cm). OC together with male sex, large blood loss (>2 litres) and operation times longer than 3-hours is associated with increased risk of death.

MP11-2 Management of vascular and bowel injury during laparoscopic and robot-assisted urological surgery

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Introduction: Vascular and bowel injury are the commonest intraoperative complications during minimally invasive surgery. In this video presentation, we focus on some of the intraoperative complications which may occur during laparoscopic and robot-assisted surgery performed for benign and malignant diseases.

Methods: The video recordings of laparoscopic and robot-assisted surgical procedures performed by two surgeons from 2011 to 2015 were reviewed. Recorded intraoperative complications from which important lessons could be drawn were selected.
Results: A total of 315 cases were performed in the review period (167 from one surgeon and 148 from another surgeon). Six cases (3 robot-assisted and 3 laparoscopic) that demonstrated bowel and vascular injury encountered during surgery were selected and summarized in Table 1.
Conclusion: While robot-assisted and laparoscopic intraoperative complications can be minimized with due diligence and meticulous surgical technique, they cannot be fully avoided. It is imperative that surgeons promptly recognize and initiate appropriate management when such events occur.

Table 1. List of Videos

Video	Surgery	Complication
1	Robot-assisted laparoscopic prostatectomy	Blunt sigmoid injury during instrument change
2	Robot-assisted radical cystectomy with intracorporael ileal conduit	Sharp bowel injury during instrument change
3	Laparoscopic left adrenalectomy	Bowel injury from dissection with ultrasonic shears
4	Laparoscopic hand-assisted right donor nephrectomy	Bowel injury from dissection with ultrasonic shears
5	Laparoscopic hand-assisted right donor nephrectomy	Inferior vena cava injury
6	Robot-assisted right partial nephrectomy	Inferior vena cava injury with torrential bleeding

MP11-3 Smaller incisions for larger tumours: The role of hand-assisted laparoscopic nephrectomy (HAL-N) for stage T2 renal lesions

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Introduction & Objectives: There has been a paradigm shift towards minimally invasive surgery (MIS) in the management of renal cancer. Whilst oncological outcomes for laparoscopy are equivocal to open nephrectomy (ON), with increasing tumour size, ON remains a favoured choice for many. We critically evaluate perioperative outcomes for HAL-N matched against the current standard for many ON for larger stage T2 renal tumours.
Material & Methods: A single-centre review of 1000-nephrectomies between September-1990 and August-2014 was performed. Applying inclusion criteria for stage T2 tumours, 88 and 283 received HAL-N and ON respectively. Cohorts were matched according to tumour size and T2 substage. Co-morbidities were quantified and peri- and post-procedure parameteres were recorded in each group. This included blood loss and transfusion requirements, conversion rates, pre-and post-operative creatinine, and length of hospital stay. Postoperative complications were classified according to the Clavien-Dindo classification.
Results: The median age of patients undergoing HAL-N was 64 (range 26–87) compared to 63 (range 21–87 years) undergoing ON. 54% underwent HAL-N for T2a tumours versus 32%of ON patients (7–10 cm). This compared to 46% of HAL-N versus 68% of ON for T2b tumours (>10 cm). The mean tumour size was 79 mm (range 70 – 190 mm) versus 89 mm (70 – 270 mm) for HAL-N and ORN respectively. The CCI scores for patients receiving HAL-N were comparable to those receiving ON and mean follow-up was 72 months (range 3–124 months) across both groups.

Significant complication rates classified as a Clavian-Dindo score of greater than 2, was higher in the ON cohort (7.7%) compared to patients receiving HAL-N (0%). Open conversion was noted at 2.2% for the HAL-N cohort and all tumours were greater than T2b. Blood loss of greater than 1 litre was significantly greater in the ORN compared to the HAL-cohort (9.8 vs 2.2%). The median length of stay was 3 days longer in the ORN cohort (4 vs 7 days). 30-day mortality was 0% for HAL-N versus 2.2% for ORN. There were no differences in pre or post-operative creatinine levels in both groups, nor were there any significant differences in disease-specific or overall survival.
Conclusions: HAL-N is both feasible and safe if offered to carefully selected patients with T2 tumours. It provides comparable peri and post-operative outcomes with reduced blood loss, shorter recovery time and reduced length of stay compared with open surgery. This is seen without a significant difference in disease specific or overall survival.

MP11-4 Laparoscopic Cytoreductive Nephrectomies- Single UK Centre Experience

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Introduction: Approximately 17% of patients with renal cancer present with metastatic disease. Around half of the remainder will progress to advanced disease. Fifty-eight per cent of patients with advanced disease receive targeted therapies, of those 62% go on to receive second line therapy. Controversy still exist regarding sequencing of multimodality treatment for metastatic renal cancers and clear evidence is awaited to determine whether cytoreductive nephrectomy followed by targeted therapy or delayed nephrectomy or targeted therapy only is the best option for these patients. Cytoreductive nephrectomy prior to adjuvant therapy has shown overall survival advantage in the pre- Tyrosine Kinase inhibitors (TKIs) era and also with current TKIs. However, proponents of neoadjuvant TKI therapy suggest that systemic therapy can be started promptly in these cases while planning for surgery and it can help to downsize the primary.
Methods: To evaluate outcomes of metastatic renal cancers treated with cytoreductive laparoscopic nephrectomy as first line followed by tyrosine kinase inhibitors in suitable cases. We intend to evaluate the safety and efficacy of this approach in terms of recovery from surgery and delay in receiving systemic therapy where indicated, morbidity and mortality associated with the procedure and overall survival. We retrospectively analysed all the cytoreductive nephrectomies done by a single surgeon at our institution between 2010–15. We analysed patient demographics, comorbidities, perioperative data, complications, systemic therapy and follow up data.
Results: 27 patients underwent CN with median age of 62 years. 63% of them had more than one site of metastasis. Majority (n = 20) cases were completed laparoscopicaly with 2 patient s needing open conversions due to IVC thrombus. Median tumour size was 8.15 cm. Only 3 patients needed transfusions in perioperative period. Mean operative time was 192 minutes. 68% of patients stayed in hospital for only up to 2 days however mean inpatient stay was 3.5 days. Only one patient had a complication which needed surgical intervention (wound hematoma evacuation). There was only one mortality in 30 days perioperative period due to rapid progression of metastatic disease. 12 patients were deemed suitable for receiving targeted therapy. Our median overall survival was 15 months.
Conclusion: Cytoreductive nephrectomy (CN) using laparoscopic approach in selected patients is safe and effective without causing undue delay in starting systemic therapy where indicated. Combined with efficient targeted therapy CN leads to favourable overall survival. Our study has shown results comparable to other studies published in English literature.

MP11-5 Diagnostic Utility of Selective Upper Tract Urinary Cytology: A Meta-analysis and Systematic Review of the Literature

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Introduction: Upper urinary tract urothelial carcinoma (UTUC) is a rare malignancy that can pose diagnostic dilemmas. Urine cytology is a commonly used test in the work-up of suspected UTUC. However, much of the data regarding cytology is extrapolated from studies investigating bladder cancer; no randomized controlled studies have investigated the diagnostic role of selective upper urinary tract cytology (UTC) for UTUC. For the first time, we systematically reviewed and meta-analyzed the published literature in order to calculate the sensitivity and specificity of UTC for suspected UTUC.
Methods and Materials: PubMed, EMBASE, Cochrane, and grey literature databases were searched in March 2015 for eligible prospective or retrospective series following the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) selection process. Quality of included studies was assessed using the QUADAS-2 tool. Sensitivity and specificity data were extracted from studies involving patients with

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suspicion for UTUC who underwent selective UTC (either lavage or aspiration) and subsequently received a pathological tissue diagnosis. Final surgical pathology was considered the gold standard in this meta-analysis (e.g. radical nephroureterectomy (RNU)). However, given the rarity of RNU in the setting of negative preoperative UTC, separate sub-analyses were also performed relating UTC sensitivity and specificity to endoscopic biopsy results. In addition, the sensitivity of UTC was analyzed relative to the grade of the final surgical pathology. Random effects models were employed for all analyses.

Results: A total of 2406 manuscripts were screened. After exclusion of ineligible studies, 46 articles were reviewed. Thirty articles were included in the final meta-analysis, and heterogeneity (I^2) was assessed in each analysis. Pooled sensitivity was 63.0% (95% CI = 53.7–71.5%, $I^2 = 84.7\%$) for final pathology and 54.1% (38.7–68.7%, $I^2 = 74.5\%$) for biopsy pathology. Sensitivity of cytology based on the final pathologic grade was 44.5% (32.1–57.6%, $I^2 = 23.9\%$) for low grade and 69.1% (59.2–77.6%, $I^2 = 51.2\%$) for high grade cancers. Pooled specificity for final and biopsy pathology was 92.4% (74.0–98.1%, $I^2 = 0\%$) and 90.0% (84.9–93.5%, $I^2 = 0\%$), respectively.

Conclusion: In the assessment of a suspicious upper urothelial tract lesion, UTC offers fair sensitivity and good specificity. The heterogeneity of previous studies of UTC is high, thereby restricting a robust analysis of the utility of UTC. Despite these limitations, UTC offers the urologist a convenient test that can help detect and confirm a diagnosis of UTUC.

MP11-6 Does urinary cytology performed at haematuria clinic help in the diagnosis of upper tract Transitional Cell Carcinoma?

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Introduction: Patients with haematuria are referred to the rapid access clinic due to suspected malignancy. The investigative workup consists of an ultrasound scan, flexible cystoscopy and urine cytology that can be performed in a one stop set-up. The usefulness of routine urine cytology in this protocol has remained controversial. We investigated the role of urinary cytology in patients subsequently diagnosed with upper tract TCC and whether it added any further value to the diagnostic workup.

Methods: A five year data (2009 to 2015) on patients presenting to the haematuria clinic was collected from patients' records and those with upper tract TCC were identified. The data was analysed to establish the role of each investigative modality in diagnosing upper tract TCC with special emphasis on the role of abnormal cytology acting as a sole abnormality.

Results: 6240 patients were seen in haematuria clinic. Of these, 42 (0.7%) were diagnosed with upper tract TCC. These included 21 Males and 21 females with the mean age of 66 (range 50 – 88). 20/42 (48%) had normal urine cytology while15/42 (36%) had abnormal cytology. [6/42 (14%) cases did not have a valid cytology]. 8/42 (19%) patients with subsequently confirmed upper tract TCC had normal cytology and US scan at initial investigation. 9/42 (21%) patients had normal cytology with an abnormal US scan. 3/42 (7%) patients with upper tract TCC had only abnormal cytology with normal US scan. Subsequent staging CT scans performed in these patients identified abnormalities in 100% of the patient group. Twenty patients who have shown normal urine cytology, 50% had G1/G2 TCC and 50% had G3 TCC. In the patient group with abnormal cytology, 4/20 (27%) have shown G1/G2 TCC and 11/20 (73%) were found to have G3 TCC disease. 70% of patients underwent surgical treatment while 30% were managed with non surgical modalities, including palliative treatments.

Conclusion: In a haematuria clinic involving ultrasound scan and cytology in the investigative pathway, no single test is completely reliable in the diagnosis of upper tract TCC. However both seem to complement each other in reducing the number of false negative cases. Urinary cytology appear to be useful in the diagnosis of some lower grade TCC. Unless additional imaging modality (e.g. CT scan) is performed routinely, urinary cytology would need to be included in the diagnostic work up.

MP11-7 Template based Laparoscopic lymph nodes dissection in urotherial carcinoma of renal pelvis and upper ureter

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Introduction: Recently, the importance of lymph adenectomy for urotherial carcinoma of upper urinary tract has been discussed in order to attain the cancer control.

Since 2008, laparoscopic lymph nodes dissection in renal pelvis and upper ureter cancer has been initiated at Chiba university hospital and at Teikyo university chiba medical center. We will discuss the result and detail about the procedure of operations.

Materials and Methods: The template of lymph nodes dissection is between upper edge of the renal artery and the bifurcation point of the common iliac artery. If the cases are on the right side, dissection will be made at both para-caval and aorto-caval lymph nodes. If the cases are on the left side, dissection will be made at para-arotic lymph nodes.

We have performed the 48 cases between May 2008 through October 2014. Among them, 31 cases are on the left side and 17 cases are on the right side. There were 38 renal pelvic cancer and 10 upper ureter cancer cases.

Results: The average length of the operation is around 1 hr. The number of lymph nodes dissected are between 4 to 26; average 13.7. Positive lymph nodes are found in 9 cases.

Conclusions: The outcome of this procedure will be more precisely determined after longer term of surveillances, however, we believe patients may be benefit in terms of cancer control by removing the lymph node. This procedure requires profound understanding in anatomy as well as skills in laparoscopic operation to precisely dissect the lymph nodes.

MP11-8 The role of pre-operative histology in Nephroureterectomy: The UK experience

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Introduction: There is on-going debate about the role of pre-operative histological diagnosis of TCC prior to Nephroureterectomy. Some Urologists would favour this option. Others would be happy to proceed with nephroureterectomy on the basis of pre-

	Group 1	Group 2
TCC	306 (83%)	1325 (85%)
RCC	25 (7%)	133 (8.5%)
Other cancer	8 (2%)	34 (2.1%)
Benign	8 (2%)	13 (0.9%)
Incomplete histology	23 (6%)	55 (3.5%)

operative imaging. 2 studies in literature reported the incidence of benign surgical pathology following nephroureterectomy at 2.9% - 10.25%. This study reviews the UK experience in the surgical management of upper tract TCC, and evaluates the significance of pre-operative histological diagnosis.

Materials and Methods: The BAUS' Nephroureterectomy database (years 2012 & 2013) was reviewed. 2018 nephroureterectomy were recorded in BAUS database. Post-operative histology was not recorded in 25 cases. Nephroureterectomy for benign reasons was performed in 63 cases. Both subgroups were excluded of the study (n = 1930 patients).

Result: Pre-operative histological diagnosis and / or abnormal urine cytology were obtained in 370 patients before undergoing Nephroureterectomy (Group-1). Interestingly, 8 out of the 370 patients had benign final histology despite a pre-operative histological diagnosis of TCC (4 patients) and abnormal urine cytology in the other four.

Patients in group-2 (1560 patients) underwent Nephroureterectomy based on suspicious pre-operative imaging only. Thirteen (0.9%) patients had benign final surgical pathology.

Majority of patients (85%) had TCC in their final surgical specimen (table 1). Of which, sixty-three patients had G1 disease. Nine patients out of 63 patients had less than 1 cm tumour.

Conclusion: Surgical management of upper tract TCC varies in the UK. Majority of cases are performed with no pre-operative histological diagnosis (81%).

The incidence of benign histology is extremely low in these patients whether or not they had biopsy.

MP11-9 Perioperative outcomes of template-based laparoscopic lymphadenectomy for upper urinary tract urothelial carcinoma

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Purpose: To evaluate the safety and efficacy of template-based lymphadenectomy at the time of laparoscopic nephroureterectomy for upper urinary tract urothelial carcinoma.

Patients and methods: Between October 2000 and June 2014, 126 laparoscopic nephroureterectomies were performed at five institutions. Of 126 patients, 54 patients underwent template-based lymphadenectomy (extended group), 52 patients received lymphadenectomy in limited region (limited group), and 20 patients did not receive lymphadenectomy (no lymphadenectomy group). We compared the perioperative outcomes among these three groups retrospectively.

Results: The median number of lymph nodes (LNs) removed was 12 (range 3–36) in the extended group and 3 (range 1–7) in the limited group. There was no significant difference in the lymph node-positive rate between the extended group and the limited group (16% and 15%, p = 0.61). In the extended group, there were seven postoperative complications: two cases of chylorrhea (grade 2), cerebral infarction (grade 2), ileus (grade 2), epididymitis (grade 2), two cases of wound dehiscence (grade 3). There were no significant difference regarding postoperative complications among the three groups. Cancer-specific survival in the extended group was lower than that of the limited group and the no lymphadenectomy group, but not significant (P = 0.096, and 0.03, respectively; Log-rank test).

Conclusions: Template-based laparoscopic lymphadenectomy for upper urinary tract urothelial carcinoma can be performed safely and effectively during laparoscopic nephroureterectomy. Long-term outcomes are necessary to assess the therapeutic role of this procedure.

MP11-10 Prognostic factors for intravesical recurrence after laparoscopic nephroureterectomy for native upper urinary tract urothelial carcinoma in renal transplant recipients

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Objective: To elucidate clinicopathological independent prognostic factors for intravesical recurrence after laparoscopic nephroureterectomy for native upper urinary tract urothelial carcinoma (UUT-UC) in renal transplant recipients.

Methods and Materials: This study included 38 consecutive patients clinically diagnosed as localized upper urinary tract urothelial carcinoma after renal transplantation, and treated by retroperitoneal laparoscopic nephroureterectomy between April 2006 and March 2013, after exclusion of those with a previous and/or concurrent history of bladder cancer. The clinicopathologic features, risk factors, and intravesical recurrence free survival were analyzed using the Kaplan-Meier method. Univariate and multivariate analyses by Cox's proportional hazards regression model was used to identify independent risk factors for intravesical tumor recurrence.

Results: Of the patients, 16/38 (42.1%) developed subsequent intravesical recurrence during a median follow-up period of 38 months (range 12 to 104 months). Among them, 12/16 (75.0%) developed recurrent bladder cancer within 2 years after nephroureterectomy, and the median interval between surgery and intravesical recurrence was 15.5 months (range 6 to 48 months). Multifocal tumors, native aristolochic acid nephropathy and distal ureter invasion were determined as risk factors for intravesical recurrence by univariate analysis. However, by multivariate analyses, multifocality (hazard ratio = 2.603, 95% CI = 1.529 – 8.906, P = 0.019) and native aristolochic acid nephropathy (hazard ratio = 2.179, 95% CI = 1.085–8.093, P = 0.038) were identified as independent predictors for the development of recurrent bladder cancer after surgery for UUT-UC in renal transplant recipients.

Conclusions: The incidence of intravesical recurrence after laparoscopic nephroureterectomy for UUT-UC in renal transplant recipients is high, and most subsequent bladder cancers recur within 2 years after surgery. Tumor multifocality and native aristolochic acid nephropathy are significant independent risk factors in developing initial intravesical recurrence after laparoscopic surgery for primary upper urinary tract urothelial carcinoma after renal transplantation.

Keywords: Laparoscopic surgery; Transitional cell carcinoma; Bladder cancer; Recurrence; Renal transplantation

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MP11-11 Laparoscopic radical nephroureterectomy is associated with worse survival outcomes than open radical nephroureterectomy in patients with locally advanced upper tract urothelial carcinoma

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Introduction: In upper urinary tract urothelial carcinoma (UTUC) patients, the safety and feasibility of laparoscopic radical nephroureterectomy (LRNU) as an alternative to open radical nephroureterectomy (ORNU) have not been clearly established in terms of survival outcomes. In this study, we aimed to assess the feasibility of LRNU, compared to ORNU, with respect to postoperative survival outcomes in nonmetastatic UTUC patients.
Materials and Methods: We retrospectively analyzed the clinical and pathological data of 371 UTUC patients who underwent ORNU (n = 271) or LRNU (n = 100) between 1992 and 2012. The survival outcomes of interest included intravesical recurrence (IVR)-free survival, overall survival (OS), and cancer-specific survival (CSS). The Kaplan-Meier method and log-rank test were used to estimate and compare survival curves between groups. Factors associated with survival outcomes were evaluated using univariable and multivariable Cox proportional hazard models.
Results: The median follow-up durations in the ORNU and LRNU groups were 57.6 and 38.8 months, respectively, and this difference was statistically significant ($p < 0.001$). The 3-year IVR-free survival rates were similar between the ORNU and LRNU groups (59.9% and 61.7%, $p = 0.267$). However, the LRNU group showed worse 5-year OS (59.1% vs. 75.2%, $p = 0.027$) and CSS (66.1% vs. 80.2%, $p = 0.015$) rates than the ORNU group. In particular, on stratifying the study cohort by pathological stages, significant differences in OS ($p = 0.007$) and CSS ($p = 0.005$) rates between the surgical approaches were observed only in patients with locally advanced disease (pT3/T4). In multivariable analysis, LRNU was an independent predictor of worse OS ($p = 0.001$) and CSS ($p = 0.006$) than ORNU. Likewise, in multivariable analysis in patients with pT3/T4 stage, LRNU was significantly associated with worse OS (hazard ratio [HR], 2.59; 95% confidence interval [CI], 1.44–4.65; $p = 0.001$) and CSS (HR, 2.50; 95% CI, 1.32–4.71; $p = 0.005$).
Conclusions: Our data suggest that in UTUC patients, LRNU, compared to ORNU, is generally associated with unfavorable OS and CSS results. In particular, LRNU should be performed in locally advanced UTUC patients after careful consideration of its impact on patient survival.
Keywords: upper tract urothelial carcinoma; radical nephroureterectomy; open; laparoscopic; survival

MP11-12 Hand-assisted retroperitoneoscopic nephroureterectomy (HARNU) with bladder cuffing after preperitoneal and retroperitoneal perivesical ballooning

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Introduction: We aimed to describe the surgical technique of hand-assisted retroperitoneoscopic nephroureterectomy (HARNU) with bladder cuffing after preperitoneal and retroperitoneal perivesical ballooning.
Materials and Methods: From March 2008 to December 2014, we performed HARNU and open bladder cuffing in 42 consecutive series of patients with upper urinary tract urothelial carcinoma. We performed HARNU according to the following procedure: (1) a camera port incision was made on the posterior axillary line; (2) multiple, repeated, preperitoneal and retroperitoneal ballooning was performed on both the posterior axillary line and in the umbilicus; (3) a 7.0 cm skin incision was made from the suprapubic to the lower inguinal with the balloon present in the extraperitoneal area; (4) hand-assisted laparoscopic retroperitoneal nephroureterectomy; (5) cessation of gas insufflation; and (6) extravesical cuffing as an open surgical procedure. This is based on two speculations. The first one is that repeated retropubic preperitoneal and retroperitoneal ballooning would not only lead to excellent effects of perivesical dissection but also that an incision made near the bladder via a low-positioned extraperitoneal hand-port would not cause peritoneal injury, if there is a persistent presence of extraperitoneal ballooning. As a result, bladder cuffing might be easily performed with an open surgical technique.
Results: The mean estimated blood loss was 250 mL. The mean operation time was 240 minutes. The mean time to oral intake and ambulation was 1.0 day and two days, respectively. As for postoperative complications due to the hand-assisted device, two patient developed febrile urinary tract infection within three weeks postoperatively and was hospitalized again to receive parenteral antibiotics.
Conclusions: We made a low Gibson incision for a route for the hand-assisted procedure as well as a window for open surgery in dissecting the distal ureter and extracting the surgical specimens. Thus, our results indicate that the HARNU might be a feasible surgical modality.

MP11-13 External Validation of Renal Nephrometry Score to Access the Perioperative Parameter for Laparoscopic Partial Nephrectomy in a Single Institution

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Objective: RENAL nephrometry score (RNS) has been proposed as an anatomical classification system for renal masses to investigate the influence on perioperative outcomes and complications. The aim of this study was to assess the system for external validation on laparoscopic partial nephrectomy (LPN).
Materials and Methods: The single-surgeon database enrolled patients who had undergone laparoscopic partial nephrectomy from December 2008 to September 2013. Renal tumors were divided into low, intermediate and high complexity groups according to the RNS sum score. We reviewed peri-operative outcomes including operation time (OT), length of stay (LOS), estimated blood loss (EBL), ischemic time (IT), conversion to open surgery rate, estimated glomerular filtrating rate (eGFR) and complications. We also assess the individual characteristic parameter in present study. The data was collected retrospective and analyzed by PASW ver. 18.0.
Result: Total 53 patients were enrolled with mean age 49.2. Of the 53 patients, there were 15 low, 26 intermediate and 12 high

RNS lesions. Major complication rate had significant difference between low and high score groups. Both radius and nearness can be an independent predictor of major complication rate. High complexity tumor group was also had significant difference in eGFR change when comparing to low complexity group. The IT and eGFR change had fair degree correlation, $p < 0.05$.
Conclusion: The RNS is a valuable tool to categorize renal tumors based on the anatomic feature when predicting major complication rate. The renal function can be impacted after surgery when handling a high complexity tumor and ischemia time is a fair degree correlation factor to the renal function loss.

MP11-14 Predictors of trifecta outcomes in laparoscopic partial nephrectomy for clinical T1a renal masses

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Objectives: To assess trifecta outcomes for laparoscopic partial nephrectomy for clinical T1a renal masses.
Methods: A total 63 patients who underwent laparoscopic partial nephrectomy for clinical T1a renal masses by a single surgeons between January 2007 and December 2013 were evaluated. Demographic and perioperative data were collected and statistically analyzed. We retrospectively evaluated trifecta outcomes. Multivariable logistic regression models were used to analyze predictors of trifecta outcomes. Trifecta outcomes are defined as the combination of total ischemia time < 25 min, negative surgical margins and no surgical complications.
Results: Of the 63 patients, 39 (62%) achieved trifecta. Twenty-one patients had total ischemia time ≧ 25 min, 4 patients had positive surgical margins and 2 patients had surgical complications. Tumor size ($p < 0.001$), distance from the urine collecting system or sinus ($p < 0.001$) and surgeon's learning curve ($p < 0.01$) were significantly different between the two groups of trifecta and no trifecta. Multivariate analysis showed that tumor size and surgeon's learning curve were independent predictors of trifecta outcomes.
Conclusions: Tumor size and surgeon's learning curve were shown to be strong predictors of trifecta outcomes after laparoscopic partial nephrectomy.

MP11-15 The Surgical Outcome Comparison between V-Loc Self-Retaining Barbed Suture and Vicryl Polyglactin Suture for Renorrhaphy in Retroperitoneal Laparoscopic Partial Nephrectomy for Patients with Renal Cell Carcinoma

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Objective: V-Loc™ Self-retaining barbed suture is a novel suture material that resists backsliding, eliminating the need to maintain constant tension to optimize renorrhaphy efficiency during the time constraint of warm ischemia in partial nephrectomy, which is currently the standard or suggested treatment strategy for most clinical T1 renal neoplasms. The aim of this study was to evaluate the safety and efficacy of V-Loc™ suture for renorrhaphy in retroperitoneal laparoscopic partial nephrectomy (RLPN) for patients with renal cell carcinoma in comparison with conventional absorbable Vicryl™ polyglactin suture by retrospectively assessing perioperative data and outcomes.
Methods: The clinical data of sixty consecutive patients with renal cell carcinoma were retrospectively reviewed, and all the patients received RLPN by a single experienced surgeon between January 2014 and December 2014 in our institution. Among them, 30 patients received renorrhaphy with V-Loc™ 180 suture (Covidien, Mansfield, MA), and other 30 patients with Ethicon absorbable Vicryl™ polyglactin suture (Johnson & Johnson, Shanghai, China). Renorrhaphy modality was performed depend on the depth of the incision. If it was much deeper, the renorrhaphy could be made in two layers, with a continuous running closure of tumor beds followed by a running closure of the renal parenchyma, using the sliding Hem-o-lok clip (Weck Surgical Instruments, Teleflex Medical, Durham, NC) technique. Otherwise, the renorrhaphy could be achieved by a direct running closure of the renal parenchyma with no suturing the tumor beds. Demographic, clinical and perioperative outcomes were retrospectively compared between patients with two different type of suture material.
Results: Baseline demographic characteristics including age, body mass index, tumor size, and R.E.N.A.L nephrometry score were identical between the two groups. Multivariable analysis showed that there were no significant differences between the two groups with regard to operative time, estimated blood loss, transfusion rates, rates of surgical complications, volume of postoperative drainage and length of postoperative hospital stay. However, the mean warm ischemia time (WIT) was significantly shorter in the V-Loc™ group compared with the Vicryl™ group (18.2 ± 1.5 v.s. 24.7 ± 1.2 minutes, $p = 0.047$).
Conclusions: Our initial retrospective results may indicate that the use of V-Loc™ suture for renorrhaphy during RLPN for patients with renal cell carcinoma is safe and feasible and significantly reduces WIT compared with conventional absorbable Vicryl™ polyglactin suture. Further large prospective studies to confirm the value of V-Loc™ suture in minimally invasive partial nephrectomy are warranted.

MP11-16 Laparoscopic versus percutaneous cryoablation for T1 renal masses: an Italian multicentric study

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Introduction & Objectives: Detection of localized RCC has increased over the past 2 decades and both laparoscopic (LCA) and percutaneous cryoablation (PCA) have demonstrated decreased morbidity with acceptable rates of oncologic success above all in elderly patients, who usually present with a number of comorbidities. The aim of our study was to evaluate the short and medium long term oncologic outcome of LCA and PCA of T1 renal tumors.
Material & Methods: We performed an Italian multicentric prospective study of patients who underwent cryoablation (LCA or PCA) as their primary ablative treatment for cT1 solid renal masses. Indications for cryoablation treatment included solitary kidney, transplanted kidney, medical comorbidity, multiple renal masses and patient and surgeon preference. A total of 158 patients (180 masses) were identified: 22 undergoing LCA and 136 PCA. We used PADUA Score System for preoperative tumors classification. Follow-up included serial abdominal imaging (CT, MRI or CEUS), serum creatinine and eGFR. Recurrence-free survival (RFS) was defined by absence of evidence of local disease recurrence on follow-up imaging.

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Results: Mean oncologic follow-up was 27.7 (±21.6) months for LCA and 13.2 (±11.8) for PCA. Kaplan-Meier estimated RFS curves for both groups demonstreated no difference (24-months RFS were 90% for LCA and 86% for PCA) even if stratified by biopsy-proven RCC. A total of 8 patients experienced disease recurrence with no difference between the two groups. The treatment success rate is 90% (mean 28 months) for LCA and 95% (mean 13 months) for PCA. 133 biopsy were performed. Malignant features were demonstrated in the 86% in the LCA and 75% in the PCA group respectively. Mean hospital stay was shorter in the PCA group. Postoperative complications rate (Clavien-Dindo > 1) was 13.6% in LCA and 2.2% in PCA groups. No patient required conversion to open surgery. Only 1 patient in PCA group required a reintervention performed by radiological embolization. Both groups had a comparable mean postoperative serum creatinine and eGFR was stable over time in both groups. According to Clinical Practice Guideline for Acute Kidney Injury (AKI) only 5% of patients had an acute compromise renal function (AKI Stage 1) which resolved in a few days. At Univariate and Multivariate analysis predictors of Recurrence Disease (RD) included PADUA Score ≥8 (HR = 9.99) and ASA risk ≥4 (HR = 11.23). Limitations of our study are: limited follow-up, oncologic outcomes based only on radiographic criteria and lack of pathologic data in some cases.
Conclusions: Our multicentric analysis shows that oncologic outcomes in PCA treatment and LCA treatment have no statistical difference. The postoperative complications were low for both groups and we demonstread that both treatments are safe and effective in the management of cT1 solid renal masses in patients who are poor candidates for conventional surgery. Longer follow-up is required to truly interpret oncologic outcomes after cryoablation.

MP11-17 Renal Nephrometry score predicts surgical outcomes in partial nephrectomy

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Introduction: Small renal masses are common and represent a clinical and therapeutic challenge. Where technically feasible, nephron-sparing surgery (NSS) is recommended. We evaluated the RENAL Nephrometry scoring system in terms of achieving the NSS trifecta of minimal blood loss, short warm ischaemia time (WIT) and negative surgical margins.
Methods: The records of patients scheduled for NSS were reviewed between April 2003 and April 2015. Perioperative data and tumour complexity using the RENAL nephrometry score were collected. Tumours were categorised into low- (nephrometry score 4–6), intermediate- (score 7–9) and high-complexity (score 10–12) lesions.
Results: A total of 88 patient were identified with a mean age of 56 years and hospital stay of 5 days. Conversion from laparoscopic to open NSS occurred in 12%, and conversion from NSS to radical nephrectomy was necessary in 14% of the cases. The positive surgical margin rate was 13.1%. Median estimated blood loss (EBL) was 150 ml (range < 50 – 2000 ml). Median WIT was 19 minutes (range 0–50). Median change in eGFR was 0 (range – 27 - + 12). Four patients had significant post-operative haemorrhage requiring angiography or return to theatre. Five patients developed urine leak, all of which resolved spontaneously after a period of drainage.

Radiological data was complete in 68 patients. 41 (60.3%) were low-, 22 (32.3%) intermediate and 5 (7.4%) were high complexity lesions. The mean EBL was 205 ml for low complexity compared with 471 ml and 450 ml for intermediate and high complexity lesions respectively ($p = 0.04$). We found no statistically significant difference in warm ischaemic times amongst the groups ($p = 0.12$). Positive surgical margins were more common in lesions with high compared with low complexity ($p = 0.008$).

We found that NSS for high complexity lesions was associated with a greater deleterious effect on eGFR compared to intermediate ($p = 0.012$) and low complexity lesions ($p = 0.008$). No patient in the cohort is currently receiving renal replacement therapy.

The average length of stay was significantly longer ($p = 0.003$) in high complexity lesions (10.7 d) vs. low complexity lesions (5.1 d) but there was no statistically significant difference in conversion rates or major complication rates across the groups.
Conclusion: This study shows that RENAL nephrometry scores correlate with blood loss, positive surgical margin rate, length of hospital stay as well as changes in eGFR. There was no difference in warm ischaemic times or major complication rates in our study based on nephrometry scores.

MP11-18 Positive Surgical Margins are Associated with Increased Risk of Recurrence after Partial Nephrectomy for Localized Renal Tumors

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Background and Objectives: Complete tumor resection constitutes a cardinal principle in the surgical management of malignancies. A strong emphasis placed on renal preservation has led to increasing utilization of reduced resection margins during nephron sparing surgery for localized renal tumors. The clinical significance of positive surgical margins (PSM) at time of partial nephrectomy, however, remains controversial. Herein, we evaluate the association of PSM and the risk of recurrence among patients with localized renal tumors undergoing partial nephrectomy (PN).
Materials and Methods: We performed a multi-institutional retrospective review of 1240 patients undergoing PN (open or laparoscopic) for localized renal malignancy between from 2002 to 2013. Recurrence-free survival was estimated using the Kaplan-Meier method and evaluated as a function of PSM with log-rank test and Cox proportional hazards models adjusting for tumor size, grade, histology, pathologic stage, focality, and laterality. Site of recurrence (local or distant) as a function of PSM was tested with Fisher's exact test.
Results: A total of 97 (8%) patients had PSM. PSM was unrelated to tumor size, grade, histology, pathologic stage, focality or laterality (all $P > 0.05$). A total of 69 (6%) patients developed recurrence over a median follow up of 33 months (interquartile range [IQR] = 15–57). Of these, 42 (61%) were local and 27 (39%) were distant recurrences. The median time to recurrence was 19 months (IQR = 12–35). On univariable analysis, PSM was associated with higher recurrence rates (Figure, $P = 0.002$). On multivariable analysis, PSM remained associated with higher recurrence rates (hazard ratio = 2.91, 95% confidence interval = 1.25–6.78,

P = 0.013). PSM was not associated with site of recurrence (P = 0.52).
Conclusions: PSM is associated with an increased risk of recurrence after PN. Urologists should strive to obtain negative surgical margins in order to maximize disease-free survival. For patients with PSM, close follow-up is advisable given their higher risk of disease recurrence.

MP11-19 Renal functional outcomes after laparoscopic partial nephrectomy using dynamic renal scintigraphy

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Introduction: Laparoscopic partial nephrectomy (LPN) is a feasible surgical procedure for selected patients with localized renal cell carcinoma (RCC) whose tumor less than or equal to 4 cm. However, LPN will affect postoperative renal function according to the several technical difficulties, such as intracorporeal tumor resection and suturing. The present study aimed to explore postoperative renal functional outcomes of LPN using dynamic renal scintigraphy.
Materials and Methods: Between July 2006 and December 2013, 100 consecutive patients with localized RCC received ischemic LPN at our institution. Preoperartive, 6 months postoperative, and 12 months postoperative renal function were assessed by dynamic renal scintigraphy. Among 100 patients, 74 patients examined dynamic renal scintigraphy at 6 months after LPN, and 54 patients examined at 12 months after LPN. Postoperative operation side renal function was calculated: postoperative/preoperative (%). To assess the correlation between several factors and postoperative operation side renal function, simple regression analyses were carried out.
Results: Postoperative operation side renal functions were significantly decreased to 86.9% at 6 months and 86.6% at 12 months after LPN ($P < 0.0001$, respectively). At 6 months after LPN, simple regression analyses revealed no significant correlation. At 12 months after LPN, simple regression analyses revealed that postoperative operation side renal function significantly decreased with prolonged operative time ($P = 0.0356$) and prolonged warm ischemic time ($P < 0.0001$).
Conclusions: Prolongation of operative time and warm ischemic time of LPN, postoperative operation side renal function was significantly decreased. To avoid the renal functional change after LPN, shorter operative time and warm ischemic time should be required.

MP11-20 Can Aspirin safely be continued during Laparoscopic Partial Nephrectomy?

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Introduction: The surgical population is aging, and patients are increasingly on antiplatelet therapy for secondary prevention of cardiac and thromboembolic events. Traditionally, antiplatelet therapy is discontinued one week prior to laparoscopic partial nephrectomy (LPN) for fear of increased perioperative hemorrhage and complications. However, this practice is not evidence-based, while there is level one evidence showing a decrease in acute coronary events when aspirin is continued perioperatively. We are aware of no reports evaluating LPN in patients continuing aspirin. To this end, we sought to review our LPN experience and to compare outcomes and complications in patients continuing aspirin therapy to those stopping it perioperatively.
Patients and Methods: An IRB-approved retrospective review was performed of 434 consecutive LPN cases done between January 2012 and October 2014. All patients on chronic aspirin therapy were identified and separated into two groups. The on-therapy group consisted of patients continuing aspirin throughout the perioperative period. The off-therapy group had aspirin held temporarily in the perioperative period. Surgical outcomes and complications were compared between groups using the Fisher's Exact Test for categorical variables and the Kruskal-Wallis Test for continuous variables.
Results: Of 434 patients, 112 (26%) were on chronic aspirin therapy. Of those, 17 (15%) continued aspirin perioperatively while the remaining 95 (85%) held aspirin an average of 11.4 days preoperatively. Eighty-eight patients were taking aspirin 81 mg daily, 23 were taking 325 mg daily and one patient was taking 162 mg daily. There was no significant difference between the two groups (off therapy vs. on therapy) in terms of post-operative complications (p = 0.57), major complications (Clavien 3 or above) (p = 0.43), hemoglobin change (3.0 vs. 2.2 g/dl, p = 0.67), length of stay (2.9 vs. 2.4 days, p = 0.54), mean blood loss (399 vs. 484 ml, p = 0.20), number transfused (8 vs. 3, p = 0.34), number readmitted (7 vs. 1, p = 0.72), post-operative bleeding (3 vs. 8, p = 0.11) or perioperative cardiac and thromboembolic events (0 vs. 1, p = 0.65).
Conclusions: Though further prospective evaluation in a larger cohort is necessary, it appears continuation of aspirin perioperatively in patients undergoing LPN is safe and does not result in more blood loss, transfusions, readmissions, or complications.

MP11-21 Predictors of Delayed Intervention (DI) for Patients on Active Surveillance (AS) for Small Renal Masses: Does Renal Mass Biopsy (RMB) Influence our Decision?

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Introduction: Although AS is increasingly utilized in the management of small renal masses, established predictors for DI while on AS are limited to mass growth rate. RMB has the ability to provide further stratification. We reviewed a prospective AS cohort to determine whether RMB was associated with avoidance of DI.
Materials and Methods: From our prospectively maintained database we identified patients starting AS from 6/09 to 12/11 who had at least 5 months of radiologic follow up, unless limited by unexpected death or DI. Only patients who underwent RMB at the onset of AS were included in the RMB group, and the primary outcome was DI. Clinical, radiologic, and pathologic variables were compared using chi-squared, Mann-Whitney U, and student's t-tests. Kaplan-Meier survival curves for maintenance of AS were constructed and time was measured from the initiation of AS. Cox multivariable regression analysis was performed to assess predictors of DI.

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Results: Of 132 AS patients, 14 were excluded due to lack of follow up. Median radiologic follow-up in the 118 remaining patients was 29.5 months. Comparing the DI group to the continued AS group with univariate analyses, the DI group had greater initial mass size and faster growth rate, with a trend towards greater eGFR. Patient demographics and rate of RMB was similar between the 2 groups. In the multivariable analysis, size > 2 cm (HR 3.65, 95% CI 1.28–10.38, p = 0.015), growth rate (continuous by mm/yr: HR 1.26, 95% CI 1.12–1.41, p < 0.001), but not RMB (HR 1.52, 95% CI 0.70–3.30, p = 0.29), were associated with increased risk of DI. Time-to-event curves also showed that size was closely associated with DI whereas RMB was not. 8 patients (7%) died during surveillance, none from disease, and 1 (1%) patient progressed to metastatic disease.
Conclusion: At our institution, factors such as growth rate and initial tumor size appear to be more influential than RMB in determining DI after a period of AS. Further analysis is required to determine the role of RMB in the management of patients being considered for AS.

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MP11-22 Percutaneous biopsy of renal masses: an assessment of diagnostic capabilities and complications in relation to RENAL nephrometry

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Introduction: Percutaneous core biopsy (PCB) of renal masses can be used to risk-stratify patients. Diagnostic outcomes and complications of PCB have not previously been correlated to the R.E.N.A.L. (Radius, Endophyticity, Nearness to collecting system, Location relative to polar lines) nephrometry score (RNS). We evaluated our PCB experience at a tertiary center with relation to RNS.
Patients and methods: A total of 118 image-guided PCBs were performed and retrospectively reviewed. Univariate and Cochran-Armitage trends analyses were conducted to determine predictive factors for diagnostic yield, histologic accuracy, and complications.
Result: The diagnostic yield of PCB was 90.7%. Concordance between PCB and final pathology for histology and Fuhrman grade was 76.9% and 54.2%, respectively. Complications occurred with 10 biopsies (8.5%), four (3.4%) requiring admission and/or intervention. Total RNS did not correlate to yield, accuracy, or complications. However, decreasing tumor size, both categorically as R (p = 0.003) and as a continuous variable (p = 0.011), was significantly associated with complications (Table 1). Decreasing value of L also correlated with complications. Compared to solid tumors, PCB of partially cystic tumors had equivalent diagnostic rates (81.8% vs 92.7%, p = 0.122) but significantly higher complication rates (22.7% vs. 5.2%, p = 0.019). Number of cores taken, needle gauge, BMI, and anticoagulant use were not significantly associated with outcomes.
Conclusion: The diagnostic yield of PCB was found to be high, consistent with recent literature. While PCB appears to be generally safe, smaller continuous tumor size, lesser R, lesser L, and cystic consistency may increase the risk of complications. Thus, components of RNS may be used to better counsel patients referred for PCB.

Table 1. Correlation of RNS to biopsy outcomes

	Diagnostic?			Complication?		
Variables (n)	**No (11)**	**Yes (107)**	**p-value**	**No (108)**	**Yes (10)**	**p-value**
Size of mass, mean (cm)	7.3	6.2	0.289	6.5	3.7	**0.011**
Total RNS, mean	8.6	9.4	0.331	9.4	8.4	0.093
R						
1 (35)	5.7%	94.3%	0.166	82.9%	17.1%	**0.003**
2 (40)	7.5%	92.5%		90.0%	10.0%	
3 (40)	15.0%	85.0%		100%	0%	
E						
1 (34)	20.6%	79.4%	**0.004**	100%	0%	0.110
2 (46)	8.7%	91.3%		84.8%	15.2%	
3(35)	0%	100%		91.4%	8.6%	
N						
1 (10)	20.0%	80.0%	0.177	90.0%	10.0%	0.783
2 (6)	16.7%	83.3%		83.3%	16.7%	
3 (99)	8.1%	91.9%		91.9%	8.1%	
L						
1 (18)	16.7%	83.3%	0.462	77.8%	22.2%	**0.045**
2 (19)	5.3%	94.7%		89.5%	10.5%	
3 (78)	9.0%	91.0%		94.9%	5.1%	

MP11-23 The efficacy comparing of selective laparoscopic nephron-sparing surgery and radical nephrectomy for early renal cell carcinoma

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Objective: The oncologic safety of Nephron-sparing surgery (NSS) for small renal masses replacing radical nephrectomy (RN) has been recognized, elective NSS has become the gold standard for patients with renal tumors < 4 cm. The aim of this study is to compare the efficacy of laparoscopic selectivity NSS and RN in the treatment of early stage renal cell carcinoma and observation the long-term renal function.
Methods: Reviewing and summarizing from March 2009 to June 2014, due to renal cell carcinoma in Multi center for selective laparoscopic urological surgery and kidneys, there were patients treated with radical nephrectomy 113 cases, which is divided into elective laparoscopic nephron-sparing surgery (LNSS) group (Phase T1a 45 cases,) and Laparoscopic radical nephrectomy (LRN) group (Phase T1a 63 cases and T1b 5 cases,). Age, tumor size, tumor stage, pathological type, operation time, intraoperative bleeding volume, postoperative drainage, postoperative hospital stay, complications related to operation, before and after the operation of hemoglobin (Hb), renal function (serum Cr), recurrence and survival status were compared.
Results: All patients were successfully treated with operation, no peri operation period death cases. Through observation, in the treatment group, the tendency of postoperative drainage volume and hospitalization time was slightly higher than the control group, but the differences were not significant($P\Delta > 0.05$). The tumor size, pathological type has no obvious difference($P\Delta > 0.05$). No significant difference between the two groups before treatment Hb, serum Cr contrast ($P > 0.05$), two groups of Hb were reduced to varying degrees after treatment,($P > 0.05$). While in the control group, after treatment serum Cr significantly increased, and 15 (22.1%) cases had acute renal insufficiency of evidence, there were significant difference between the different stages of serum Cr follow-up between the groups ($P < 0.05$). During the follow-up of 12–70 months, no patients with abnormal renal function, 3 (6.67%) patients died of cardio cerebral vascular disease and other reasons, during follow-up; 9 (13.23%) cases had renal insufficiency signs, without dialysis treatment, 6 (8.82%) cases died of cardio cerebral

vascular disease and other reasons. During the follow-up period, the two groups had no local recurrence cases and cancer specific death patients.
Conclusion: NSS under laparoscopy is safe for patients with less than 4 cm of early localized renal cell carcinoma. Compared with LRN, the long-term curative effect of elective LNSS for the treatment of renal cell carcinoma and tumor had no significant differences. But patients with postoperative renal function recovered faster and obtained good long-term effect of renal function.

MP12 - ROBOTIC SURGERY: LOWER TRACT - BENIGN

MP12-1 Comparative Analysis of Robot-Assisted Simple Prostatectomy and Greenlight Photoselective Vaporization for Prostates Greater than 100 CC: A Matched- Pair Analysis

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Introduction and Objective: Photoselective vaporization of the prostate (PVP) with lasers is gradually gaining popularity due to decreased morbidity while maintaining excellent urinary outcomes. As laser technology has improved, it has become more feasible to treat larger glands effectively. Similarly, advances in robotic technology have facilitated simple prostatectomy via a minimally invasive approach. We report our experience with GreenLight PVP (PVP) and robot-assisted simple prostatectomy (RASP) for treating prostates greater than 100 cc.
Methods: A total of 24 procedures were evaluated between August 2012 and July 2014, of which 12 PVP were matched with 12 RASP procedures based on patient age, BMI, ASA, and prostate volume. All cases were performed at a tertiary care medical center. Data was prospectively collected and maintained in a database that was routinely updated. All demographic and perioperative parameters were analyzed.
Results: Mean age was 71.3 (PVP) and 68.5 (RASP) [P = 0.42], mean BMI was 27 (PVP) and 28 (RASP) [P = 0.31], and mean ASA was 2 (2–3) (PVP) and 2 (2–3) (RASP) [P = 0.39]. The mean prostate volume was 144.6 cc (110–195) (PVP) and 140.8 cc (90–189) (RASP) [P = 0.49]. The mean total operating time was 101 min (PVP) and 155 min (RASP) [P < 0.01], blood loss was 39 mL (PVP) and 177 mL (RASP) [P < 0.01], and hospital stay was 1.0 days (PVP) and 4.0 days (RASP) [P < 0.01]. The mean Foley catheter duration time was 2.6 days (PVP) and 10.8 days (RASP) [P < 0.01]. The pre-op IPSS was 25.8 (PVP) and 31.0 (RASP) [P = 0.15] and 12 month IPSS was 6.3 (PVP) and 8.1 (RASP) [P = 0.27]. The pre-op Qmax was 4.8 ml/s (PVP) and 11.3 ml/s (RASP) and the post-op Qmax was 15.3 ml/s (PVP) and 17.6 ml/s (RASP) [p = 0.37] For the PVP cohort, there were 2 complications including a capsular perforation (n = 1) and intraoperative bleed (n = 1) that required fulguration. For the RASP cohort, there were 4 complications, including urethral stricture (n = 2), bladder neck contracture (n = 1), and parietal infarct (n = 1).
Conclusions: GreenLight PVP and robot-assisted simple prostatectomy are effective therapies for treating large prostate glands greater than 100 cc. Both procedures are minimally invasive and have durable results. The advantages of PVP include less bleeding, shorter catherization, and shorter hospitalization while the advantage of RASP is the ability to obtain a specimen for pathological evaluation. Surgeon experience must be considered when choosing the optimal technique.

MP12-2 Boari Flap Ureteral re-implantation: Replicating the techniques of open surgery in robotics

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Objective: To describe details of our approach of a Robotic assisted Boari Flap Ureteral Reimplantation (RA-BFUR) and its feasibility as a technique in a video.
Patients and methods: 11 patients underwent a Robotic assisted Boari Flap Ureteral Reimplantation (RA-BFUR). The clinical indications for the procedure included ureteral stricture due to previous malignant disease in the pelvis or abdomen (n = 5), ureteral stricture due to iatrogenic injury (n = 4), recurrent ureteral stricture after multiple endoscopic stone management procedures (n = 1), and ureteral stricture due to trauma (n = 1). Seven cases were located in the left side and 4 cases in the right side. The technique of RA-BFUR is presented in the accompanying video. The follow-up of the patients included the performance of renal ultrasound at 4 weeks, 3, 6 and 12 months after the procedure.
Results: Mean age of the patients was 49.9 (range 35–62) years and mean Body Mass Index of 26.4 (range 23.22–29.29) kg/m^2. Operative time ranged 115 and 240 (mean 166.8) min. Mean blood loss was 155.5 (50–250) ml. Conversion to open surgery did not occur in the current series. No intra-operative complications were observed. Post-operative complications included one case of prolonged anastomotic leakage
Conclusion: RA-BFUR is safe and effective method with low blood loss, short catheterization time, and low complication rate. The short-term reconstructive outcomes are excellent with the robotic approach.

MP12-3 Robotic Assisted Vesico-Vaginal Fistula Repair: Our Technique

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Aim and Scope: Endoscopic (laparoscopic or robotic assisted) vesico-vaginal fistula (VVF) repair is a demanding surgical procedure due to the increased needs for intracorporeal dissection and suturing of the involved organs (urinary bladder, vagina and omentum). Robotic assistance during VVF repair is a tool allowing a precise tissue dissection and an improved vision and surgical dexterity during reconstruction that can provide optimum outcomes. In this video presentation we describe our

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technique of robotic assisted VVF repair that can be employed for almost all variations of this clinical entity.

Materials and Methods: Preoperatively all patients with a VVF at the level of bladder trigone undergo a bilateral placement of a JJ stent to ensure proper identification of the ureteral orifices during VVF dissection. In total, 5 trocars (3x8 mm robotic trocars, 1x12 mm camera port and one 12 mm assisting trocar) are introduced in the peritoneal cavity in a conventional manner for a lower track surgery. The lower anterior peritoneum is excised exposing urinary bladder. A medial incision of bladder wall from the level of bladder dome up to the level of fistula is being created. A circumferential incision around fistular defect is being performed excising the fistula over a healthy bladder and vaginal tissue. The vaginal wall defect is then closed horizontally using absorbable sutures. An omental flap is being prepared and its deepest aspect is being sutured over the vaginal suture line. The bladder wall is finally closed longitudinally in a continuous watertight manner using barbed sutures.

Results: The expansion of bladder incision up to the level of fistular defect assists the exposure of fistula and allows its precise excision. The interposition of an omentum flap within vagina and bladder is an important surgical step necessary to minimize the recurrence of fistula, acting as a barrier for new fistula formation and potentially via increasing the vascularization of the healing tissue. Based on our experience in several cases of VVF with a concomitant morbid obesity, robotic assistance might represent the ideal approach for such reconstruction, as the wide abdominal wall and the longer distance from port to surgical field does not possess any limitation to the efficiency of long robotic instruments.

Conclusions: VVF repair can be significantly aided by robotic assistance. Despite the significant variations of this clinical entity the proposed standardized approach can be employed in the vast majority of cases and can ensure the safety and efficacy of restoration.

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MP12-4 Side-Docking for Simultaneous Robot-assisted and Endourological Surgery

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Introduction: Side docking for robot-assisted urologic pelvic surgery, including radical or partial cystectomy, ureteroneocystostomy and prostatectomy, has been described with success given a positioning alternative with easier access to the perineum and urethra.[1,2] Simultaneous endoscopic examination and procedures can be performed without need of redraping or repositioning. Here we present a video demonstrating side-docking for simultaneous robot-assisted and endourological surgery.

Patients and Methods: Two patients have undergone robot-assisted urologic pelvic surgery using a side-docking technique with success at our institution. In the first case, the patient was a 52-year-old female who presented with persistent right flank pain in the three months following ureteroscopic laser lithotripsy for the right ureteral calculus. The abdominal CT scan confirmed a right mid ureteral stricture causing hydroureteronephrosis. The patient was placed in the lithotomy-Trendelenburg position with the table tilted to the left. Side-docking robot-assisted segmental ureterectomy with ureteroureterostomy was done and diagnostic ureteroscopy with retrograde stent placement was performed simultaneously to confirm the preoperative diagnosis and ensure fluoroless intraluminal JJ stenting. The second patient was a 51-year-old female who had a bladder tumor observed incidentally by transabdominal ultrasonography. Cystoscopy showed a submucosal tumor covered with a normal mucosa. Histological diagnosis was leiomyoma of the urinary bladder by transurethral biopsy. Side-docking robot-assisted partial cystectomy was done in the lithotomy-Trendelenburg position, and simultaneous cystourethroscopy was performed to demarcate the tumor margin and secure the watertight closure.

Results and Conclusions: The procedures were uneventful without intraoperative or perioperative complications. The side-docking technique provides full access to the perineum, and promotes simultaneous execution of the endourological procedures. This modified approach will facilitate robot-assisted reconstructive urologic procedures, without compromising the performance of the robotic surgical system.

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MP12-5 Feasibility and Outcomes of Combined Holmium Laser Enucleation of the Prostate (HoLEP) and Robotic Bladder Diverticulectomy

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Background: Holmium laser enucleation of the prostate (HoLEP) is a valid surgical option for men with benign prostatic hyperplasia (BPH) related symptoms. Urinary bladder diverticuli are commonly acquired secondary to BPH and bladder outlet obstruction. Urinary bladder diverticulectomy can be performed laparoscopically using the assistance of the DaVinci robot system. We sought to describe the feasibility and outcomes of combined holmium laser enucleation of the prostate (HoLEP) and robotic assisted laparoscopic bladder diverticulectomy.

Material and Methods: We performed a retrospective review of three patients who underwent combined HoLEP and robotic bladder diverticulectomy. Indications for surgery included BPH/urinary retention and bladder diverticulum with or without bladder calculi. Pre-operative work up included urodynamic studies, transrectal ultrasound of the prostate size, and cystoscopy. Variables analyzed include operative time, estimated blood loss, weight of prostate after enucleation, length of hospitalization, post-operative narcotic usage, as well as surgical complications.

Results: Average age of the patients was 73.3 years. The mean prostate size measured pre-operatively was 44.1 gms whereas the mean prostate enucleation weight was 27.6 gms. The maximum detrusor pressure during pressure flow was 133, 1.1, and 118.9 cm of water and average urine flow rate was 0, 0, and 4.2 ml/s in the three patients respectively. The average length of hospitalization was 4.67 days. Mean operative time for both procedures combined was 438 minutes. Individual mean operative times for HoLEP was 130.2 minutes, while the robotic bladder diverticulectomy was 300 minutes. Mean estimated blood loss was 150 cc. No intra-operative complications

occurred. One patient had a prolonged urine leak post-operatively which was managed conservatively with catheter drainage. The post-operative average morphine milligram equivalents of narcotic usage on day one and day of discharge was 26.67 and 3.33 respectively.
Conclusion: Treating patients with BPH and urinary bladder diverticuli with combined HoLEP and robotic bladder diverticulectomy is a feasible surgical option.

MP12-6 Concomitant Management of Lower Urinary Tract Obstruction and Bladder Diverticulum with Robot Assistance: Simplifying the Procedure with Easier Identification of the Diverticulum

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Purpose: Reporting our experience in robot assisted bladder diverticulectomy (RABD) with concomitant combined transurethral prostatectomy (TUR-P) and photoselective vaporization of prostate (PVP) with a technique for easier identification of diverticulum.
Material-Methods: Between 2008 and 2015, 9 patients had undergone RABD with concomitant treatment of bladder outlet obstruction. Three patients had bladder stones and holmium laser lithotripsy was performed. Eight patients underwent combined TUR-P and PVP. One patient underwent bladder neck incision. JJ stents were placed in 4 patients; 3 unilateral, 1 bilateral. An optical urethrotome was directly inserted inside the diverticulum under direct vision. Outer sheath was left inside the diverticulum and working element was removed together with optical part. A 16F silicone Foley catheter was inserted into the diverticulum via previously inserted outer sheath of the urethrotome. The balloon was inflated with 20 ml. saline and pulled back to the neck of the diverticulum under fluoroscopic guidance. Another 16F silicone Foley catheter was introduced into the bladder for urinary drainage and the balloon was inflated with 20 ml. saline. Same procedure was performed for the patients with two or three diverticula.

Port design was similar to extraperitoneal robot assisted radical prostatectomy operation. Diverticula were distended with saline infusion via the Foley catheter inside them and localized under fluoroscopic control. Diverticulum neck was identified and incised. Bladder was closed in two layers.
Results: Mean patient age was 62 (46–76)and mean prostate volume was 70 ± 26 (40–110) ml. Mean largest dimension of the diverticulum was 72 (45–100) mm. Mean time for endourological procedure (TUR-P + PVP plus stent placement) was 77 (30–140) minutes. Mean console and total operative time were 108 (64–180) and 186 (120–270) minutes, respectively. Estimated blood loss was low with a mean of 71 (20–150) ml. No complications were observed. Postoperative period was uneventful in all cases. Mean hospitalization and catheter removal time was 5 (3–13) and 8 (5–13) days, respectively.
Conclusion: Bladder outlet obstruction is the main cause of acquired bladder diverticulum and most of the bladder outlet obstruction is due to BPH. Combination of TUR-P and PVP provides a good quality bloodless prostatic cavity. Since PVP has good hemostatic properties, bladder irrigation was not needed. Hence combination therapy (TUR-P + PVP) and RABD can be concomitantly performed in the same session. Easier identification of the diverticulum with our technique enables the procedure to be performed with reasonable operative time even in the presence of more than one diverticulum.

MP12-7 Robot assisted laparoscopic repair of spontaneous appendicovesical fistula

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Introduction: Appendicovesical fistula (AVF) is a rarecondition which causes reccurent urinary tract infections. It is mostly reported as a complication of acut appendicitis. The other causes are adenocarcinom, Chron's disease, cyctisfibrosis, Hirschprung's disease and appendicaeal diverticulutis. Spontaneous AVF is very rare condition. With this video presentation we would like to share our robotic surgical experience in a spontaneous AVF case.
Case report: A 29-year old man applied to our clinic with persistent bacteriuria, dysuria and urgency. The patient has used several antibiotics for reccurent urinary tract infections in his 20 years history. Pyuria in urinalysis and Escherichia Coli-Enterobacter growth combination in urine culture are detected. Fistula tract which is nearly 1 cm lenght was shown on the right lateral wall of bladder in cystoscopic examination. Voiding cystography was performed and a fistula tract on the right lateral wall of the bladder was detected. We have found some air bubble in the bladder and a suspicious communicating tract between the appendix and bladder on the computed tomography.
Results: Robot assisted laparoscopic surgery was performed to remove the AVF. The surgery was performed through 4 abdominal ports (one 12 mm camera port placed at 2 cm above the umblicus, two 8 mm robotic ports to lateral sides of rectus abdominis muscle and one 10 mm assistant port) tranperiyoneally. After docking appendix was identified attached to the right side of the anterior abdominal wall and dissected. After dropping the appendix, approximately 2 cm fistula tract was shown. Appendix side of the fistula tract was ligated with 3.0 Vicryl and 3.0 Monocryl sutures. The bladder side of the fistula tract was dissected and ligated with 10 mm hemolock clip and 3.0 Vicryl suture. Appendectomy was performed. Appendix and fistula tract were removed without any complications. The bladder was filled with saline and water-tightness was checked. The drain was placed to surgical region. The drain was removed 3 days and the urethral catheter removed 7 days after the surgery.
Conclusions: AVF is extremely rare and it was seen less than 5% of all enterovesical fistulas. It is mostly seen between ages of 10–40 and occures most often in males. To our knowledge there have not been reported robot assisted laparoscopic treatment of AVF. This is the first spontaneous AVF case threated with robotic surgery.

MP12-8 Extraperitoneal Robot-Assisted Repair of a Pelvic Fracture Associated Urethral Injury

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Introduction and Objectives: The gold standard for management of posterior urethral injuries has been a topic of debate. In this video, we demonstrate to our knowledge, the first case of

successful management of a pelvic fracture associated urethral injury in a young male, with utilization of robot-assisted surgery.
Methods: Twenty-four hours following pelvic injury, a 25-year-old man underwent an extraperitoneal robotic bladder and urethral repair. Primary repair of the membranous urethra was performed with a concomitant extraperitoneal bladder injury repair. A suprapubic tube, Foley catheter and Blake drain were left in place.
Results: Follow-up cystogram and peri-catheter urethrogram three weeks later showed no contrast extravasation. The suprapubic and urethral catheters were removed at 3 weeks and 5 weeks post-op respectively. Flexible cystoscopy demonstrated a well-healed anastomosis. At the 3 and 6 months follow-up, the patients reports normal voiding and erectile function.
Conclusions: We present to our knowledge the first case of immediate management of a pelvic fracture associated urethral injury using robot-assistance. This contrasts with the traditional practice of immediate SP tube diversion and delayed urethroplasty 3- 6 months following injury. Immediate repair using a robot-assisted approach is worth considering as we seek to shorten the convalescence of our affected patients, with no long-term sequelae.

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MP12-9 Robotic Surgery used as First-Line Treatment for Iatrogenic Ureteral Injuries

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Objectives: To report our surgical findings using the robotic surgical system to repair iatrogenic ureteral injuries.
Methods: We retrospectively reviewed over a 22 month period 14 patients who underwent robotic assisted laparoscopic ureteroneocystostomy and ureteroureterostomy performed for iatrogenic ureteral injuries. The etiology of the strictures, intraoperative and postoperative outcomes were established.
Results: A total of 14 patients with both proximal and distal ureteral injuries were treated at one institution. Three of the 14 patients underwent a hemicolectomy for diverticular disease and 11 underwent a hysterectomy. Ten of the 11 patients had undergone laparoscopic or robotic hysterectomy while the eleventh patient had undergone an open hysterectomy. All surgical cases involving the ureter were completed with the use of the robotic system with no conversion to open surgery being required. The mean patient age was 52.7 years (range, 41–73 years), the mean operative time was 176 minutes (range, 132–234 minutes), and the mean hospital stay was 2.4 days, (range 2–5 days). The Lich-Gregoir reimplantation technique was used in all patients undergoing ureteroneocystostomy. All patients had a double pigtail catheter inserted and left in place for a mean of 33 days (range, 27–42 days). All patients completed a ct urogram between 2–3 months after surgery.
Conclusions: Open ureteral surgery remains the gold standard for repair of ureteral injuries in the post operative period. Our initial reports reveal that robotic assisted laparoscopic ureteral surgery is a safe and effective method in treating iatrogenic ureteral injuries.

MP12-10 Robotic-assisted simple prostatectomy: outcomes of a modified operative technique

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Introduction: Laparoscopic simple prostatectomy has been associated with decreased blood loss and post-operative catheter time as well as shorter hospital stay compared to open simple prostatectomy. In recent years, the robotic-assisted approach has gained popularity among urologists and has been shown to further decrease hospital stay compared to the laparoscopic approach. Traditionally, robotic-assisted simple prostatectomies have begun with dropping the bladder to enter the space of Retzius. In this case-series, we demonstrate an alternative approach in which robotic simple prostatectomies were performed without dropping the bladder, aiming to decrease operative time, perioperative blood loss and improve visualization of operative field.
Patients and Methods: We retrospectively analyzed the records of three patients who underwent robotic-assisted simple prostatectomy with this modified operative technique from October 2014 to March 2015 by the same surgeon at our institution. We used a standard suprapubic transvesical approach with the modification that the space of Retzius was not entered prior to cystotomy. Demographics, operative time, estimated blood loss, length of hospital stay, and complications of surgery were reviewed.
Results: The patients' average age was 59.7 (57–62) years; the mean estimated prostate volume on transrectal ultrasonography (TRUS) was 84 (75–91) grams. The mean estimated blood loss was 83 (50–100) milliliters and the mean operative time was 140 (121–161) minutes. Average hospital stay was 1.7 days with no patients requiring continuous bladder irrigation postoperatively. No blood transfusions or perioperative complications were reported. The mean weight of the surgical specimen was 84 (27–114) grams. Histopathological evaluation revealed benign glandular and stromal hyperplasia in all cases, as well as chronic inflammation in two specimens and acute and chronic prostatitis in one.
Conclusions: Robotic-assisted simple prostatectomy can be performed safely and efficiently without dropping the bladder with less average operative time (140 vs. 172 minutes), hospital stay (1.7 vs. 2.3 days) and perioperative blood loss (83 vs. 357 mL) when compared to published series of robotic-assisted simple prostatectomies performed in the traditional manner.

MP12-11 "Cupid and Psyche": a novel technique for Robotic Hysterosacropexy in the treatment of Pelvic Organ Prolapse

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Introduction: The purpose of any surgical repair of Pelvic Organ Prolapse (POP) is to restore pelvic anatomy, preserving urinary, intestinal and sexual functions while avoiding complications. For apical prolapse, repair by abdominal sacrocolpopexy using a MESH is recommended for its excellent anatomical and functional outcomes. MESH exposure or extrusion are conditions in which epithelial integrity is lost. They may be due to primary incomplete or failed closure of the vagina, inappropriate insertion with passage through the vagina, and other still undetermined secondary mechanisms, e.g., infection and folding.

We present a novel robotic approach to hysterosacropexy in the treatment of POP.
Materials & Methods: We named the above technique "***Cupid and Psyche***", recalling as it does the famous sculpture by Canova, in which Cupid embraces Psyche from above and behind, while her arms encircle his head and shoulders. In the same way, with our technique, the two branches of the MESH encircle the uterus from behind, lifting and supporting it.

The aim of this technique is to resolve POP, minimizing the risk of vaginal erosion: the posterior ''embrace'' of the uterus limits the direct contact of the mesh with the vagina, thus reducing any risk of erosion/extrusion at this level. We performed 10 cases of robotic HSP.

Results: All procedures are completed robotically. Median operative time (skin-to-skin) is 125 min (IQR: 85–145), including port placement, robot docking and console time. Median blood loss is insignificant. We have never had any cases of intra- or post-operative complications.

As regards short-term follow-up, analysis of outcomes is limited; in any case, we have never had any cases of MESH erosion or other complications, and no sexually active woman complained of dyspareunia.

Conclusions: Maintaining sufficient motility of the vagina is another advantage of ''***Cupid and Psyche***'', avoiding as it does any negative effects on patients' later sexual activity. In comparison with other proposed techniques, the placement of the MESH around the uterus avoids distal fixation on either side of the levator muscle and the posterior wall of the vagina, granting more natural motility of both uterus and vagina but resolving the prolapse. In addition, minimizing dissection of the peritoneal area between bladder and vagina, this technique can reduce the risk of some intra- and post-operative complications, such as vaginal or bladder injuries, or erosion/extrusion of MESH.

Further prospective studies comparing the long-term functional outcomes of the various RSC techniques are needed to confirm these findings.

MP12-12 Robot-Assisted Laparoscopic Bladder Diverticulectomy with Intraoperative Cystoscopy: Surgical Technique and Long Term Follow Up

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Introduction and Objectives: Bladder diverticula can represent significant morbidity to patients. Traditional treatment involved open surgical excision; however, this procedure can be preformed via a minimally invasive approach. In this video, we report our technique of robot-assisted laparoscopic transperitoneal extravesical diverticulectomy and report our post-surgical outcomes.

Methods: Data was gathered on 9 patients who underwent robot-assisted laparoscopic bladder diverticulectomy for acquired bladder diverticula between 2003 and 2015. Pre-operative imaging and intraoperative cystoscopy were used to guide diverticulum dissection. The excised diverticulum was removed via endocatch bag and the bladder repaired in a 2 layer, watertight fashion. One case necessitated ureteral reimplantation carried out via the robotic platform with stent placement under direct vision via the cystoscope.

Results: The mean age was 59.9 years and mean body mass index was 27.5 kg/m2. Six patients underwent previous urologic surgery. The mean bladder diverticulum size was 7.5 cm, the mean operating time was 191.2 minutes, and estimated blood loss was 67.8 mL. The mean length of stay was 1.9 days and mean Foley catheter duration was 8.8 days. Pre and post-operative American Urologic Association Symptom Score were, 26.8 and 3.5, respectively. No post-operative complications have been encountered with mean follow up of 31.4 months (range: 3–66 months).

Conclusions: This study represents the largest reported cohort examining the efficacy of a single robotic approach for acquired bladder diverticula. We conclude this represents a viable surgical intervention for symptomatic bladder diverticula with good outcomes and no post-surgical complications observed during long term follow up.

MP13 - NEW TECHNOLOGY 1

MP13-1 Use of Head Mounted Wearable Technologies in Surgery

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Introduction: With rapid advancements in technology, wearable head mounted displays have been adopted for various uses, ranging from simple devices used in imaging to other more complex devices used in assisting surgery. A head mounted display (HMD) is defined as any device that provides a visual screen in front of the users vision and allows hands free interactions with the device. This study aims to outline the different applications of HMD in the surgical field.

Materials and Methods: A broad search of the current literature was performed using PUBMED until April 2015. The search included a combination of terms such as of ''wearable technology'' and ''head mounted display'' and ''portable devices''. Relevant articles were identified, the full text for each obtained and further screened for relevance to the study.

Results: A total of 13 studies were included in the review for HMD. These were further categorised into HMD in clinical use (n = 7), Imaging (n = 3) and Simulation & Education (n = 3). In urology HMD has bee utilised as a surgical guide system for transurethral resection of the prostate where the live imaging information obtained from the cystoscope along with transurethral ultrasonography and live video feed from the HMD and relevant patient imaging are presented on the HMD as a four-way split screen, allowing the operating surgeons to continuously monitor different aspects of the procedure in an ergonomically efficient posture. The Google GLASS ahs been utilized to provide clear and precise surgical margins in cancer resection surgery. The tumor site is injected with fluoresce; software on the HMD then determines the coordinates of the tumor margin and transfers images to the HMD. This was concluded to identify residual tumor foci and hence reduce the risk of recurrent pathology following surgery. Other uses of HMD have been identified including in ultrasonography, as vital signs monitoring and vision-based index finger tracking.

Conclusion: There is a potential role of head mounted wearable technology in routine surgical practice. However there is little scientific evidence available, which prove that the application of such technologies improves surgical performance of patient satisfaction, further studies need to be conducted prior to a clear conclusion.

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MP13-2 SinHapticMed: a new Gesture-controlled tool to assist navigation of kidney anatomy in three-dimension during minimally invasive nephron sparing surgery

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Introduction: Minimally invasive nephron sparing surgery (MINSS) is an option in the treatment of T1 renal tumors with low complication rates and similar oncological outcomes to radical nephrectomy. For preoperative planning and surgery radiologic images are required to identify the exact relationship between tumor, arteries and collecting system to perform a precise surgery. However all these tools are not available for direct control of the surgeon during the laparoscopic procedure.
Objective: To present the development and initial clinical experience of an innovative device and software that enables surgeons to have direct touchless navigation of renal three-dimensional images with standardized free-hand movements during MINSS.
Methods: From December 2014 to June 2015, three patients with complex cT1N0M0 renal tumors were selected for laparoscopic ultra-selective partial nephrectomy. All tumors were classified as highly complex by R.E.N.A.L. nephrometry score ($\geq$10). Preoperative computed tomography was acquired from a 64 multi-detector-row CT-scan with 5 mm step interval. Images obtained were exported to Vitrea fX Workstation (Vital Images Corporation – Toshiba Medical Images)®. A skilled genitourinary radiologist performed the analysis and segmentation of the images. Segmented images were exported in a CAD compatible format (.STL) to a 3D mesh processing software (Meshlab v. 1.3.3- ISTI – CNR research center, Pisa University, Italy®.) At this software it was assigned different colors to different anatomical structures to facilitate the identification upon visual analysis. All three dimensional models were exported to a new software developed by our team named SinHapticMed, designed to work with Leap Motion (Leap Motion Society, San Francisco, CA). This tool capture movements of the surgeon's hand and allows the control of rotation, zoom and selection of any 3D object touchless. The software was tested preoperatively in the first two patients and during the surgery in the last patient.
Results: During surgical procedures, SinHapticMed demonstrated high simplicity of use, excellent quality of graphics, allowing a precise 3D visualization of individual or grouped collecting system, arteries, and renal tumor surface as well as the rotation and zoom of all these structures. In all cases, the surgeons were well satisfied with performance of the device.
Conclusion: SinHapticMed enables the surgeon to easily have interactive intangible control renal three-dimensional images during MINSS, enhancing intraoperative orientation and may improve outcome. The system has promising potential to be applied for various kinds of distant manipulations.

MP13-3 Prostate cancer in 140 characters: A time-trend analysis of prostate cancer on Twitter

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Introduction: Twitter provides users with the opportunity to share information and opinions on a range of matters in real-time. The role of Twitter to inform on specific health concerns is largely unexplored. We performed a time-trend analysis of Twitter activity related to prostate cancer, and in particular the discussion around screening guidelines from the United States Preventive Services Task Force (USPSTF) and American Urological Association (AUA).
Materials and Methods: Since March 2011, we have prospectively collected tweets through Gardenhose, Twitter's Streaming Application Programming Interface, which provides a 10% random sample of all tweets worldwide. For this study, we analyzed tweets that contained the words 'prostate' and 'cancer(s)', appearing in any order and not necessarily adjacent, from 3 October 2011 to 31 December 2013. We analyzed the unadjusted frequency of tweets as well as the adjusted volume as a proportion of total estimated tweet volume. We checked dates with greatest peaks in activity against prostate cancer topics trending on Google News for that day. We then identified a sub-population of all tweets containing the word ''screening'' and independently classified content using a previously established Twitter-specific classification system.
Results: Out of 43 billion tweets, we identified 108,896 tweets containing ''prostate cancer'' or ''prostatecancer''. Marked differences were noted between unadjusted and adjusted volumes of tweets over time. Adjusted time-trend analysis of tweets demonstrated peaks in activity for news topics on prostate cancer surrounding: Warren Buffet, Movember campaign, Testosterone therapy, Vitamin E, and USPSTF guidelines. Publication of the draft USPSTF screening guidelines resulted in the 10th highest adjusted twitter activity. Of 1,776 tweets containing ''screening'', 69% were informative to the screening debate. The remaining were uninformative and consisted of: opinion (16%), advertisement (8%), query (6%) and direct message/status (1%) tweets. The USPSTF was mentioned in 20% of screening related tweets, while the AUA and other professional bodies were noted in less than 1%.
Conclusions: Twitter may be used as a tool to gauge trends in public discourse about prostate cancer and health policies. Adjusting for Twitter growth may account for the bias in reporting raw volumes and provide data for comparison with other information sources. For prostate cancer, spikes in Twitter activity surrounded specific campaigns and topical news items. Guidelines such as those by the AUA, had minimal impact on Twitter.

MP13-4 A review of the current trends in urology smartphone applications

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Introduction: The introduction of smartphone applications (''apps'') has given doctors and patients access to portable information and digital tools to help them manage health conditions easier. Since healthcare apps are rapidly increasing in all smartphone app stores, there is a need to update our understanding of current app availability and trends. We investigated the urological smartphone apps on both Android and Apple smartphone stores.
Materials and Methods: The Android (''Google Play Store'') and Apple (''App Store'') platforms were searched for urological apps with the following four keywords: *urology*; *prostate*; *kidney*

and *bladder*. The search was conducted between 14th and 18th June 2015. Apps relevant to both urological healthcare professionals and patients were included. Inclusion criteria included apps that were relevant to one specialty, were in English, provided sufficient explanation of functionality and purpose, and was found within the first 150 apps searched per keyword. The store language was set as English (UK).
Results: A total of 264 apps were found on both stores; 142 applications on the App Store and 122 apps on the Google Play Store. There were 150 apps targeted towards healthcare professionals, 113 applications targeted towards urological patients and one app targeted towards both target groups, across both stores. The majority of apps were available to download for free (70.4%). Amongst both target groups, most apps were informative or provided the user with a digital functionality such as medical calculators or symptom diaries. Others included conference apps and clinic specific apps. The vast majority of apps had few to no user reviews, many had few downloads and many had not been updated for over six months.
Conclusion: There is a significant growth in the number of urological smartphone apps and these are targeted towards both patients and various healthcare professionals within urology. Although a high percentage of professionals use apps, there is poor penetration of many apps into the healthcare setting as indicated by few downloads. There is a necessity for high quality apps to be developed for both patients and healthcare professionals to promote usage.

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MP13-5 Smartphones: the rise and rise of urological apps

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Introduction: The rise of new technology has seen smartphones reach near-ubiquity in the developed world. In the UK in 2015 there are 69.6 million smartphones, and the number worldwide is expected to reach 2 billion in 2016. With the recent release of wearable technologies, such as the Apple™ watch, the use of internet-ready mobile technology continues to rise. Software applications for these devices, or 'apps', have provided the opportunity for medical technology development. This study aimed to review the rise in urology apps available from both the Apple™ App Store and Android Google Play™ market.
Materials and Methods: Using the search tab in the Apple™ App Store and Google Play™ Market (accessed in UK; June 2015), a keyword search of the terms 'urology', 'urological', 'kidney stones', 'kidney', 'bladder' and 'prostate' was conducted. All returned apps related to urological disease were included. Apps with a focus on nephrology and complementary or alternative treatments in urology were excluded.
Results: A total of 191 apps were identified. The earliest posted app identified in our study was released on 19th November 2009, with a further five following in the same year. Since then there has been a steady mean increase of 33 new apps per year (range 20 – 53), demonstrating a consistent and continuing rise in urological app technology.

126 of the apps were downloadable for free. Of the remaining 65, the mean price was £5.83 (range £0.69- £59.99). Of the apps identified, 37 were released by individual urologists, with the remaining 154 released by organisations such as publishing companies, urological societies and conference organisers.

Of the 191 apps, 80 were for reference, 39 for patient information, 24 for urological conferences, 17 for self-storage of patient records (such as PSA results). The remaining apps were for urological news, logbooks, drawing tools, social networking, careers, decision support and journals. 69% of the apps found were aimed at physicians and 31% at patients.

Three apps for use in wearable technologies were identified, all of which were aimed at patients for use as bladder diaries.
Conclusions: Ubiquitous use of smartphone technology and the advent of wearable devices has provided the opportunity for urologists to engage with patients and clinicians alike through medical technology. The consistent rise in app development reflects the increasing ease with which both patients and clinicians can access information via mobile devices.

MP13-6 The use of Google GLASS in Surgery and Effect on Performance

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Introduction: With rapid advancements in technology, various wearable devices have been adopted and used, ranging from simple devices to aid fitness and encourage daily walking to other more complex devices. The Google GLASS is a novel device, with capabilities of displaying detailed smartphone-like information on a screen whilst simultaneously allowing users to remain hands-free. This opens an array of uses including the potential to interact with the device whilst maintaining sterility. This study aims to evaluate the use of Google GLASS within surgery, its effect on surgical performance, and whether such devices are intrusive or detrimental to the surgeon's vision.
Materials and Methods: This prospective, observational and comparative study recruited novice ($n=24$), intermediate ($n=8$) and expert urologists ($n=5$) from various institutions in the United Kingdom. Novice candidates performed 20-minute training sessions with a standard vital signs monitor, whilst performing a PVP procedure using the GreenLight Simulator. This was followed by a 20-minute session using the Google GLASS as a vital signs monitor. The time taken to respond to the abnormal vital signs during both sessions was recorded. Intermediate and expert candidates also performed two sittings, lasting 10-minutes each. The surgical performance was evaluated using the metrics provided by the simulator. Non-technical skills were evaluated through the use of the NOTSS scale and heart rate monitoring in the case of adverse events. A quantitative survey was distributed to assess the feasibility and acceptability of the Google GLASS in surgery.
Results: 84% of participants responded to abnormal vital signs quicker when using the Google GLASS compared to a standard monitor ($p=0.0267$). The average simulation score during a standard-monitor and the Google GLASS as vital signs monitor was scored as statistically insignificant ($p=0.253$); indicating that surgical performance between both sessions was similar and not hampered by the GLASS. Furthermore, all parameters of simulation were also noted to be similar in both sessions including average sweep speed ($p=0.594$), average blood loss ($p=0.761$) and average grams vaporised ($p=0.102$). Furthermore 81% of candidates believed that the GLASS was comfortable to wear during the procedure.
Conclusion: This study has demonstrated that the Google GLASS is potentially useful in a operative setting, to aid patient care without hampering surgical performance. It is hoped that the

innovation and evolution of these devices trigger the potential future application of such devices within the medical field.

MP13-7 Three-dimensional printing of surgical clips: a pilot study and trial of efficacy

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Introduction and Objectives: Three-dimensional (3D) printing, or additive manufacturing, was first introduced in 1984. Since then, there has been a dramatic increase in its application, from the automobile and aircraft industry to construction to use in apparel. In medicine, 3D printing has been used to print prosthetics, organs for education and surgical planning purposes, and printing of surgical instruments such as retractors and ureteral stents. The widespread use of surgical clips and its simple design allow for a pilot study to assess the feasibility of rapid prototyping surgical instruments and study its functionality.
Materials and Methods: 10 mm Weck® Hem-o-lok® Polymer clips (Teleflex Inc., Wayne, PA, USA) were used as a model for rapid prototyping. A 3D CAD model of the Hem-o-lok® clip was reverse-engineered using commercial microscopy. Its nominal shape was selectively modified to increase feature strength in key locations. This step was necessary due to weaker materials available for additive manufacturing. Printing was done using an Objet Connex 500 multi-jetting system (Stratasys Inc., Eden Prairie, MN, USA). Dozens of copies of the clips were produced and tested with different features and material combinations to render usable RP versions of the production clip.

The 3D printed clips were then tested by applying them across a ¼ '' width Penrose drain. Leak pressures were measured using a digital pressure gauge. Results were compared to commercially available 10 mm Weck® Hem-o-lok® Polymer clips.
Results: Initial 3D printed clips were non-functional as they would split at the hinge upon closure of the jaws of the clip. Design changes were made to use a different material mix at the hinge from the rest of the body of the clip. Additional modifications were made to allow for clips to be compatible with the Hem-o-lok® endoscopic clip applier.

3D printed clips all leaked fluid when applied across a ¼ '' width Penrose drain at mean 2.37 PSI. Meanwhile, 10 mm Weck® Hem-o-lok® Polymer clips did not leak. Mean 7.92 PSI was reached until the Penrose drain burst.
Conclusions: This pilot study to 3D print surgical clips using a commercially available surgical clip as a model shows there is limitation in the applicability of rapid prototyping of certain surgical instruments at this time. Refinement in printers and materials available may allow for customization of surgical instruments and decrease costs in the future.

MP13-8 A new semi-rigid device for females self urethral catheterization

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Introduction: Self catheterization in females is often needed in urological practice. Most available devices have limitations of storage, usage, cleaning, durability and affordability. We innovated a new L-shaped semirigid device to circumvent these limitations.
Material & methods: The device, 14 cm long, comprise – tip portion, main shaft, handle, rear portion having nozzle adaptor. This tip is 14 F, softer than rest of the device for flexibility & non-traumatic entry in urethra. The shaft gradually widens to 24F. An 8F channel runs through entire length of shaft. The handle is flat, non-slippery, attached to the side of the shaft. The rear end has a syringe nozzle adaptor to permit syringe attachment to flush the drainage channel by air or clean water. Twenty women (age 17–67 yrs) having hypocontractile bladder used this new device after training in insertion, cleaning and storage. The same device was used 3 to 4 times per day for 30 days. All patients were closely monitored at monthly interval for three months evaluating ease of insertion, morbidity, device durability and maintenance.
Results: No patient failed to insert it. Mild pain (score) was appreciated by all in first week but later all tolerated it. No cases of UTI occurred. Two cases reported mild self limiting haematuria. The flow time to empty about 350 cc was about 2 minutes. No device breakage or loss of smoothness or tip erosion or channel blockade was noted.
Conclusion: The patients found the device user friendly, effective and durable.

MP13-9 Flexor® Vue™ Deflecting Ureteral Access Sheath: a promising addition to the endourological armamentarium

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Introduction: The Flexor® Vue™ Deflecting Endoscopic System (Cook, Bloomington, USA) has been marketed as a single-use, cost-effective means of achieving endoscopic management of renal stones. By avoiding the processing and equipment costs associated with flexible ureterorenoscopy the system may have specific appeal in resource-limited settings.
Aims: The aim of this study was to assess the Flexor® Vue™ system in terms of functionality, ease of use and potential utility for stone management in an ex-vivo setting.
Methods: Expert endourologists, urology trainees, urology theatre nurses and medical students were invited to the study. Participants were introduced to the Flexor® Vue™ access sheath via a video presentation. This was followed by a qualitative assessment on a silicone model of the urinary tract. Assessed domains included ease of sheath insertion, orientation, deflection, dilator removal, control and stone removal, with a score between 1 (poor) and 10 (excellent) recorded via questionnaire. Participants were asked if they could inspect the entire pelvicalyceal system, whether Flexor® Vue™ could be used in the fragmentation and removal of small renal stones and how it compared to flexible ureterorenoscopy.
Results: Responses were collected from three endourologists, five trainees, six theatre nurses and six medical students. All participants successfully inserted the sheath, navigated to the renal pelvis, achieved orientation within the pelvicalyceal system and removed stones. Generally, the trainee group rated the system highest across all domains, with a mean score of 8.8 for ease of insertion and 8 for orientation. The expert group delivered scores of 5.3 and 5 respectively for these domains. Free comments were generally positive, including that the system was 'intuitive', 'more simple' to use than flexible ureterorenoscope

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and that it exhibited potential for use in stone management. Negative comments included that it took longer to orientate once in the pelvicalyceal system and that the system permitted a lesser degree of manipulation than the flexible ureterorenoscope.
Conclusions: As the first assessment we have found the Flexor® Vue™ to have potential for use in upper tract access and management of stones. It does not offer full options of the flexible ureterorenoscope but it may have a significant role to play in the management of small renal stones, potentially representing a more cost-effective option in carefully selected patients. The system requires further evaluation. The learning curve for proficiency of use remains unknown and the nature of deflection offered by the system may bear a significant influence on this process.

MP13-10 Utilization of The Single-Use, Disposable ProSurg Neo-Cystosheath® In Outpatient Cystoscopic Procedures

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Introduction: Office cystoscopy is the mainstay of the current urological practice. Sterilization of equipment has become more challenging and new cost-effective options are necessary. The use of a sterile, disposable cystoscopic sheath may offer an inexpensive way to protect patients and guarantee sterility while removing the scope optics from contact with the patient or surgical fluids.
Methods and Materials: Using the 17Fr Neo-Cystosheath® from ProSurg® with a 5Fr working channel, along with the standard 30° Karl Storz® optic, outpatient cystoscopy was performed without the need of the reusable cystoscopic sheath and bridge. The scope optics is introduced into the sterile single-use sheath and is completely isolated from patient contact and surgical fluids. Cystoscopic optics and be reused after an alcohol-wipe cleansing and drying, prior to the next case, with a new surgical sheath.
Results: The ability to rapidly turnover the endoscopy suite cases allows for the efficient use of the urological office. Guaranteed sterility, in a disposable cystoscope sheath and bridge, ensures that ability. With most damage done to endoscopes during the cleansing process, use of an alcohol wipe prior to insertion into the Neo-Cystosheath® reduces the risk of damage and removes the need for sterilization of the standard cystoscope sheath, bridge, and optics.
Conclusion: A device which isolates the cystoscopic optics from the patient allows for rapid cleansing, reduced risk of damage, reduced turnover time, and reuse of the optics in the most efficient manner. A disposable cystoscopic sheath and bridge guarantees sterility at the start of the case and facilitates maximum office efficiency and patient safety. Further investigation of this device and concept is warranted.

MP13-11 Efficacy of Antegrade and Retrograde Warm Saline Perfusion during Renal Cryoablation For Ureteral Preservation

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Objectives: Percutaneous renal cryoablation of tumors adjacent to the ureter or pelvicalyceal system, risk collecting system injury due to freezing. Although cold antegrade perfusion has been described for microwave and radiofrequency ablation, antegrade and retrograde warm saline perfusion for renal cryoablation has not been well characterized. The purpose of this study was to describe the safety and feasibility of antegrade and retrograde warm saline perfusion to protect the collecting system during renal cryoablation.
Materials and Methods: A retrospective review was performed of 136 patients treated with percutaneous renal cryoablation at a single academic institution between 2009 and 2015. From this series, six patients undergoing antegrade ($n=3$) or retrograde ($n=3$) warm saline perfusion for protection of the collecting system were identified. The antegrade technique was performed by perfusion of warm saline through a 3 French catheter under continuous gravity drainage. The retrograde technique was performed using an open-ended ureteral catheter inserted into the ureter, and used to instill warm saline. Follow-up consisted of contrast enhanced cross-sectional imaging performed at 3–12 month intervals depending on tumor pathology. Primary outcomes were success of urothelial preservation and tumor ablation. Secondary outcomes included hospital stay, blood loss, operating time, and complication rate.
Results: Among the six patients who underwent antegrade or retrograde warm saline perfusion four were diagnosed with renal cell carcinoma and two patients had benign tumors. 4/6 tumors were in the lower pole and two tumors were in the middle pole. The mean distance from tumor to ureter was 0.68 cm (0.08–1.15 cm). There were two complications including one patient who suffered a urine leak at the site of the antegrade perfusion (Clavien 1) which was managed expectantly and resolved after two days. The second complication was a patient who suffered a pulmonary embolism the day following surgery (Clavien 2), and was discharged after 5 days of anticoagulation. No patients developed ureteral strictures following cryoablation. There was no recurrence of renal tumors at a mean follow-up of 15.6 months (1–27). The mean operative time was 3 hours and 9 minutes. There was no statistical difference between the complication rate in those who underwent antegrade or retrograde perfusion ($p>0.05$).
Conclusions: This study demonstrates the feasibility of both antegrade and retrograde warm saline perfusion for ureteral preservation during cryoablation. Future prospective studies could help identify the relative merits of each approach and the appropriate indications.

MP13-12 Treatment of parapelvic cyst by internal drainage using flexible ureteroscopy and holmium laser

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Background: The aim of parapelvic cyst treatment is to have completely drainage of hydatid fluid and prevent its further suppression on the kidney and collective system. However, little work has enough number of cases and long time of follow-up. This work would explore the surgical approaches, its efficacy and safety of holmium laser ureteroscopic internal drainage in the treatment of parapelvic cyst.
Methods: The suppression effect of parapelvic cyst on the renal collective system was observed by flexible ureteroscope and

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using retrograde ureteroscopic technology. In the condition of direct vision, the cyst wall on the obvious parapelvic suppression site was carved. The diameter of cyst wall carved was about 1 cm. Also, the internal drainage was set by double-J tubes.
Results: In 28 cases of operation, 27 cases were successful. The cyst treatment time was 8–40 min, and the average is 26 min. During the operation, no massive hemorrhage, damage of organ around and ureter, or other complications happened. The time of follow-up was 10–72 months, and the average was 39 months. The results of follow-up showed that the cyst in 22 cases was disappeared; the diameter of cyst in 4 cases reduced for more than 1/2, and 1 case had recurrence among the 27 successful cases.
Conclusion: The treatment of parapelvic cyst by internal drainage operation using holmium laser and flexible ureteroscopy had definite effect with high safety.
Keywords: parapelvic cyst; ureteroscopy; holmium laser

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MP13-13 A Swellable Drug-Eluting Stent to Target Fibrosis-Induced Ureteral Stricture

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Ureteral stricture is a serious urological disease which results in the difficulty for urine to pass through the ureter from kidney to bladder. Consequently, this results in hydronephrosis, morbidity and loss of a functioning kidney. This study reports on a swellable bilayer drug-eluting stent to be placed in ureter post-operatively to enhance localized delivery of anti-fibrotic drug into the proximate disease area with sustained delivery over the period of time when the stent is left in-situ.

The swellable bilayer stents were prepared by spray-coating the bare polyurethane stent with a biodegradable polymer loaded with Mitomycin C, and the hydrogel is coated via in-situ cross-linking onto the biodegradable polymer that was pre-treated with oxygen plasma.

The results show the adhesion of hydrogel onto the polymeric stent coating remained firm for 28 days and the bilayer coated stent can swell up to comparable ureteric diameters of 4–5 mm. Moreover, the release profile may be manipulated by thickness of PLC and the drug loading, to achieve about 10% to 50% of cumulative MMC release over 28 days; The hydrogel itself does not have any effect on this release profile. Finally, the release of MMC from selected coated stent is able to inhibit human bladder stroma fibroblast cells *in vitro.*

In conclusion, a swellable coated stent is developed in our work. The release of MMC from selected coated stent is able to inhibit human bladder stroma fibroblast cells *in vitro.* Therefore, a swellable coated stent can have significant benefit in managing fibrosis-induced ureteral strictures.

MP13-14 The Efficacy of a Ureteral Stent with Polymeric Flap Valve for Preventing Urinary Reflux: A Pilot Study in a Porcine Model

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Introduction: Ureteral stent is one of the most commonly used tool which helps urinary drainage in obstructed ureteral conditions. However, the stent may cause vesicoureteral reflux (VUR) under the state of elevated intravesical pressure, subsequently occurring complications. Herein, we developed a ureteral stent with polymeric flap valve and applied it in a porcine model to evaluate the efficacy for preventing urinary reflux.
Material and Method: A female porcine model (49 kg) under general anesthesia was used in this study. We inserted a ureteral stent with polymeric flap valve (6 Fr, 28 cm) in the right ureter and a conventional ureteral stent (6 Fr, 28 cm) in the left. A suprapubic puncture was done with a spinal needle which was connected to a digital pressure gauge to measure the intravesical pressure. The bladder was filled with contrast media mixed saline until the intravesical pressure reached 20 cmH_2O. Subsequently, simulated voiding cystourethrography (VCUG) was performed 50 times by manually compressing the suprapubic area until the intravesical pressure reached 50 cmH_2O. We graded the VUR and the differences between the two ureters were statistically analyzed using the chi-square test. Intravenous pyelography (IVP) was also performed after emptying the bladder.
Results: The volume of contrast media mixed saline to reach the intravesical pressure of 20 cmH_2O was 1,740 mL. Simulated VCUG at 50 cmH_2O has displayed 82.0% ($n=41$) and 18.0% ($n=9$) of no VUR and VUR grade I, respectively, at right ureter (stent with polymeric flap valve) and 14.0% ($n=7$), 82.0% ($n=41$), and 4.0% ($n=2$) of VUR grade I, II, and III, respectively, at left ureter (conventional stent). The tendency of VUR grade in simulated VCUG showed statistically significant difference between the two ureters ($p<0.001$). VUR occurring pressure of right ureter tended to be greater than the left. Also, proper urinary drainage without sign of hydronephrosis was seen in ureteral stent with polymeric flap valve by IVP.
Conclusion: A ureteral stent with polymeric flap valve efficiently prevented VUR in the condition of elevated intravesical pressure without sign of urinary obstruction.

MP13-15 The use of Cook Resonance® metallic ureteric stent in cases of obstructive uropathy from persistent neo-ureteric stenosis, following kidney transplantation

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Introduction: Following kidney transplantation, persistent cases of obstructive uropathy from neo-ureteric stenosis, at the re-implantation site, may require management with permanent, long-term JJ stenting, following failed open surgical and minimally-invasive procedures. We report our experience of the use of Cook Resonance®metallic ureteric stent to manage such cases endourologically.
Materials and Methods: Our clinical experience and results using Cook Resonance®metallic ureteric stents, in transplanted kidneys requiring long term ureteric stenting, is described. Medical records were reviewed including operative details, radiological data and follow up consultations. Primary outcome was relief of obstructive uropathy, and secondary outcomes included clinico-radiological complications, as well as length of radiation screening and exposure.
Results: Case 1 - A 45-year-old lady underwent an uneventful live-related-donor renal transplantation. Due to persistent obstruction, despite open surgery and following multiple distal stent migration and expulsion, necessitating frequent nephrostomy insertion, she underwent successful retrograde insertion of a 12 cm

6F Cook Resonance® metallic ureteric stent, under general anaesthesia. Difficult retrograde access of the transplanted ureter required intra-operative support of uro-radiologist, with radiation exposure dose of 520 CGy cm^2 and fluoroscopy duration of 4 mins and 58s. Following 2 years follow up, relief of obstructive uropathy has been maintained. The patient has tolerated the stent well, with no radiological or clinical evidence of complications. Annual stent exchange, on two separate occasions, has been uneventful, with significantly decreased operative and radiation exposure times. Case 2 - A 44-year-old lady underwent an uneventful cadaveric renal transplantation. Ureteric obstruction secondary to stenosis at reimplantation site, required required nephrostomy and laparotomy with ureteric reimplantation. Recurrent ureteric stricture resulted in long term management with JJ stenting. Subsequently, the traditional JJ stent was successfully exchanged to a 12 cm 6F Cook Resonance® Metallic stent, at our centre (Radiation exposure 356 CGy cm^2 and fluoroscopy time 2 mins 29s). No clinico-radiological complications or stent-related symptoms have occurred in follow up. The current management plan is to exchange the metallic stent on yearly basis as recommended by manufacturer.
Conclusion: From our early experience, use of metallic stents in transplanted kidneys is safe and feasible, with both patients having successful relief of obstructive uropathy (primary outcome). This stent appears to be well tolerated and is associated with minimal clinico-radiological complications (secondary outcomes). Metallic stent replacement may also be cost-effective, requiring annual, rather than 6 monthly stent changes.

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MP13-16 The new concept of ureteral access sheath with guidewire disengagement: one wire does it all

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Fundació Puigvert
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Introduction: Ureteral access sheaths (UAS) are commonly used in flexible ureteroscopy (fURS), and in such cases it is usually recommended to use both a working guidewire through the sheath and a safety guidewire placed outside the UAS. We prospectively evaluated the new Flexor©Parallel™ Rapid Release™ (Cook® Ireland) UAS which allows the use of a single wire to serve both as safety and working guide.
Material and Methods: Between June and September 2014 adult patients from five European centers who underwent fURS for therapeutic and diagnostic purposes where included. The 12/14Fr Flexor©Parallel™ UAS was evaluated. Data was collected and examined by both univariate and multivariate analysis. The UAS material and usage characteristics were rated per case by the surgeons on a scale from very bad to very good.
Results: 134 UASs were used in 67 male and 67 female patients. 50% of ureters (67 patients) were pre-stented. 90% of the procedures were therapeutic. The overall successful insertion rate was 94%. Pre-stenting status was the only independent factor for a successful access sheath insertion: 98.5% of the pre-stented patients had a successful UAS placement vs. 82% of non pre-stented ($p = 0.001$, C.I. 95%: 1.2). Evaluation of the material and radiopacity was considered very good in over 90% of cases. Release of the guide wire, hydrophilic coating, gliding of the endoscope and repeatability were considered very good in over 80%. There were two (1.4%) UAS malfunctions and one submucosal lesion reported.
Conclusions: The use of the Flexor©Parallel™ Rapid Release™ (Cook® Ireland) ureteral access sheath with usage of a single guidewire in a prospective multicentric scenario was clinically applicable in the majority of cases. Pre-stenting increased the chance of a successful UAS insertion from 82% in non pre-stented patients to 98.5% in pre-stented patients.

MP13-17 Prospective outcomes of Duowire Bi-Flex (Nitinol hydrophilic flexible ends PTFE guidewire): Combined results from two UK Endourology centers

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Introduction: Ureteric guidewires are standard armamentarium for Urologists performing ureteroscopy (URS) or for stent insertion. They vary widely from simple PTFE-coated to completely Nitinol coated hydrophilic guidewire with a hybrid version of PTFE guidewire with a hydrophilic proximal end. We wanted to test the new Coloplast Duowire B-Flex - a combination of a PTFE guidewire with hydrophilic proximal and distal ends.
Material and Methods: Over a 4-month period between March and June 2015, twenty-five Duowire bi-flex guide wires were used in two UK centers. Data was prospectively collected for indication of use, stone size and location. A surgeon led evaluation was collected and scored for the features of the guidewire (material, radiopacity, rigidity, proximal and distal hydrophilic ends handling and global handling) and placement of a ureteric stent (insertion of guidewire, stent over the wire and advancement of stent). The scoring sheet varied from 'very good' to 'very bad' plus comments for any difficulties encountered.
Results: Twenty of the 25 (80%) were for treatment of kidney or ureteric stones, with seven patients with multiple stones. Two patients with bilateral stones had bilateral URS using the same guidewire. The mean stone size was 11 mm (6–26 mm. A flexible URS was used in most cases with no reported scope breakages. The guidewire was classed 'very good' for material, radiopacity and rigidity of the wire itself and for the placement of stent. The hydrophilic and flexible tips both ranked 'very good' in 92% cases ($N = 23$), while still being 'good' in the remaining cases. The overall handling of the wire was rated as 'very good' in 24 cases, and 'good' in the remaining case. While there were no complications recorded, the guidewire was noted to slip (from the kidney to upper ureter) during stone manipulation in one case but this was easily re-positioned. All 25 cases were done as day cases with patients going home the same day.
Conclusions: The preliminary results show that the new Duowire Bi-Flex seems to be a good guide wire for performing Endourology cases with the advantage of having flexible nitinol hydrophilic ends proximally and distally. Potentially this is not only advantageous in negotiating difficult ureters, but it might also be protective to the flexible ureteroscopes and is a good addition to the urologist's armamentarium.
Conflict of interest: These guide wires were given free of charge from coloplast but there was no other financial support for this.

MP13-18 A new kind of stent for conservative treatment of ureteral fistulas

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Introduction and Objectives: Ureteral fistula's treatment often includes long and complex surgical and endoscopic therapies and represent a challenge for the urologist often with disappointing
Results: UVENTA® stent placement could represent a new option of conservative treatment for ureteral fistulas.
Methods: UVENTA® self-expanding ureteral stent are able to restore urinary flow in ureteral stenosis and to facilitate the closure of ureteral fistulas thanks to its triple layer structure made of two layers of metal mesh with interposed a PTFE membrane.

UVENTA® stents are available in different lengths and diameters, and allow the coaxial overlap of the ends of multiple stents, providing a lumen of large caliber able to ensure the proper urinary flow and the possibility of further endoscopic procedures. We show the case of 65 years old man that in September 2014, undergone to pelvic surgery for an adenocarcinoma of the sigma in advaced stage.

The postoperative period revealed a urinary lekeage, dealt initially in conservative way by the general surgeon. Due to unsatisfactory results, the patient was then evaluated by the urologist and subjected to bilateral ascending pyelography highlighting the presence of a high flow left ureteral fistula in pelvic tract; he case was managed immediately with Bilateral ureteral stenting prior to placement of a UVENTA® stent. The subsequent step was a retrograde pyelography through the left stent, used to identify the site of the ureteral fistula. After hydrophilic guidewire positioning and Mono-J stent removal, the delivery system of the UVENTA® stent is advanced coaxially to the guidewire under radiologia control. Once reached the desired position the stent is released from its delivery system whit pull-back technique playing a UVENTA® stent 9Fr x 20 cm allowing its simultaneous self-expansion. The next ureteroscopic control has shown the need to placement of an additional UVENTA® stent to complete fistula's coverage.

Following the insertion of a hydrophilic nitinol guidewire a new UVENTA® stent 9Fr x 12 cm has been positioned further in order that the ends of the two stent's overlap for a lenght of at least 3 cm.
Results: Intraoperative retrograde pyelography showed that the stent have effectively excluded the fistula. The absence of contrast medium lekage was also documented by retrograde cystography performed after 7 days from stents positioning.
Conclusions: In our experience, the application of UVENTA® stent has proven to be an effective option in the conservative treatment of minimally invasive ureteral fistulas.

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MP13-19 Comparison of initial experiences between full-length metallic stent and segmental metallic stent in malignant ureteral obstruction

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Purpose: Metal ureteral stents are a relatively new version of a device for relieving ureteral stricture or obstruction. We present our single institution initial experiences with metal stent placement according to full-length and segmental stent in patients with malignant ureteral obstruction
Materials and Methods: A total of 20 patients underwent placement of metal ureteral stents between June 2013 and June 2014. Full-length (Resonance®) and segmental metal stents (Memokath™) are 14 (17 ureteral units) and 6 patients (6 ureteral units), respectively. Data collected included patient age, sexuality, cause of obstruction, laterality, operation time, duration of indwelling metal stent, early failures or stent changes, complications and ureteral stent symptom questionnaire at 1 year after operations.
Results: Baseline characteristics were well matched. The mean ages of full-length and segmental stents were 52.5 ± 15.6 (29–76) and 69.8 ± 11.4 (52–82) year-old, respectively. The mean follow-up durations were 15.7 ± 2.1 (13–20) and 19.3 ± 3.2 (16–23) months, respectively. The early failure rates were similar to 14.36% (2/14) and 16.7% (1/6), respectively. The self-administered ureteral stent symptom questionnaire (USSQ) is insignificant between full-length and segmental stents. However, operation times are significantly different as full-length and segmental stent were 43.6 ± 14.1 and 117.7 ± 99.1 minutes ($p = 0.006$).
Conclusions: Full-length metal stents were as effective as segmental metal stents for patients with malignant ureteral obstruction. The self-administered USSQ produced similar results for both stents. Good tolerability and faster stent insertion make Full-length metal stents an appealing alternative for patients with malignant ureteral obstruction.

MP13-20 Preliminary experience with Uventa: a new coated metallic ureteric stent

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Introduction: We present our initial observations on the technical feasibility of insertion, immediate patency and upper tract decompression with this new metallic ureteric stent.
Materials and Method: Following the approval of the ethics committee, we have begun a pilot study of this new, coated NiTinol ureteric stent - Uventa. Ten patients with advanced malignancy causing ureteric obstruction will be recruited if they have a life span of over 6 months. We have placed 3 stents so far. All were inserted from below. Two patients had colorectal and the third ovarian malignancy. The obstruction was in the distal 1/3 of the ureter in all cases. Two patients had nephrostomies in place and the third a JJ stent. Rendezvous technique was used to get a guide wire across the obstruction, Uventa stent of a suitable length was placed and nephrostomies were clamped and removed the next day.
Result: No immediate complications have been observed in the short period of follow up of 10 weeks. None of the patients have reported pain, with no urinary tract infections so far. The stents were easy to insert. No adjustment was required in any patient. Contrast study through the stent was satisfactory in all cases. The renal function for all patients has remained stable.
Conclusion: This, very preliminary experience with this new stent appears satisfactory. The ease of insertion and immediate patency rates are encouraging.

MP13-21 The 17-gene Genomic Prostate Score vs. the Kattan & Partin Nomograms to predict Non-Organ Confined Prostate Cancer

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Introduction: We sought to compare the prognostic value of the Onco*type* DX Genomic Prostate Score (GPS) to two major

established prostate cancer nomograms for the prediction of non-organ confined disease (NOCD) at radical prostatectomy (RP) (Kattan and Partin).
Materials and Methods: Men enrolled in a multicenter decision impact study were followed and pathologic data recorded for those who ultimately underwent RP from 5/13–8/14. Inclusion criteria were newly diagnosed prostate cancer, NCCN classification as low-risk (LR) or low volume-intermediate risk (LIR). Adverse pathology (AP) was defined as any pT3 stage and primary Gleason grade 4 or any pattern 5. Receiver operating curve (ROC) analysis was used to compare the performance of each predictive tool for NOCD (i.e. ≥pT3).
Results: Eighty-two patients were enrolled and 35 patients (43%) underwent RP. AP was found in 34%; NOCD was found in 25.7%; and high-grade (i.e. primary Gleason ≥4) disease was found in 11%. NCCN risk group did not affect these outcomes. ROC analysis to compare methods for prediction of LAD demonstrated area under the curve (AUC) 0.65 for GPS, compared to 0.64 for Kattan ($p = 0.94$) and 0.60 for Partin ($p = 0.72$). Substratification by NCCN risk group did not yield any additional findings. GPS had much higher ROC AUC (0.88) for prediction of Gleason ≥4 disease at RP.
Conclusion: In this small cohort, GPS does not appear to offer additional efficacy for predicting non-organ-confined disease alone beyond that of clinically validated nomograms. GPS effectively predicts high-grade disease, however, which goes beyond the capabilities of the other predictive tools.

MP13-22 Office-based Ultrasound Guided Percutaneous Renal Mass Biopsy

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Introduction: We prospectively evaluated the feasibility, safety and efficacy of office-based, ultrasound-guided percutaneous biopsy of renal cortical neoplasms (RCN).
Materials and Methods: After obtaining IRB approval, patients with RCN were consented to undergo office-based, ultrasound-guided percutaneous biopsy. Patients were instructed to apply EMLA cream to a defined area of the flank two hours before the procedure. Procedures were performed in a prone position. After the flank was prepared and draped, a Hitachi-Aloka alpha 7 ultrasound device with a 9135T 2.5–5.5 MHz probe which incorporates facilitated ultrasound targeting (FUT) technology was used to visualize the tumor. The probe was positioned such that the tumor was in the virtual needle path as projected by the FUT technology on the ultrasound (US) screen. After injection of 1% lidocaine, an 18G biopsy needle was inserted through a needle guide on the transducer probe and advanced toward the RCN under US guidance; 3 to 5 cores were taken. US evaluation was then repeated one hour later to assess for hematoma prior to discharge home. We assessed patient pain on a ten point scale (0 = no pain, 10 = severe pain) before and immediately after the procedure, and at the time of the follow which was typically one week later. Patient demographics, tumor characteristics, procedure time, complications, and histopathological diagnosis were documented.
Results: Twenty-five patients with a mean age of 69 yrs. (range 49–89 yrs.) underwent renal biopsy. There were 10 (40%) males and 15 (60%) females. The mean tumor size was 3.7 cm (range 1.8–6.2). The mean R.E.N.A.L. nephrometry score was 8 (6–11). Twenty (80%) of the 25 biopsies were diagnostic. Diagnostic biopsies included 12 (60%) renal cell cancer and 8 (40%) patients with benign histopathology (5 oncocytomas and 3 angiomiolypomas). The patients with benign histopathology elected active surveillance. There were no complications during or after the biopsy procedure. None of the patients reported pain before the procedure. Mean pain score immediately after the procedure was 1.2/10(0–3) and 0.47/10(0–3) at one hour after the procedure and 0 at three week follow up ($p = 0.657$, $0 = 1.433$).
Conclusions: Our pilot data demonstrates that office-based, FUT facilitated ultrasound guided biopsy of selected renal cortical neoplasms is technically feasible and safe. In our initial experience, this approach precluded a thermoablative or surgical procedure in 40% of patients.

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MP14 - METABOLIC STONE DISEASE 2

MP14-1 Evaluation of Student Athlete Kidney Stone Risk via 24 Hour Urine Collection

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Background: Dehydration is a known risk factor for kidney stone formation. High-caliber athletes have prolonged dehydrated states during routine training; however, there is no clear increased risk of stone formation in this population during competition and training. We aimed to determine why athletes do not see an increased incidence of nephrolithiasis. To do this we performed a study to evaluate urinary risk factors for kidney stones in student athletes.
Methods: After IRB and NCAA compliance office approval, twenty eight student athletes (ages 19–22) were enrolled in and completed the study. Demographics, body mass index, medical and surgical history, medications, and specific sport were recorded. All participants collected at least one 24 hour urine specimen. Standard stone risk parameters were assessed. Summary statistics were calculated to define the normal trends for young adult athletes. Descriptive analyses were then performed comparing this population to standard normal lab values, including variations by gender.
Results: The average age of the athletes was 20 years old with a median body mass index of 21.63. There were 17 females and 11 males in the study. Median urine volume was 1.29 liters with 75% of the subjects having volumes less than 2 liters. Median calcium excretion in females was 220 with almost 60% having abnormally high excretions compared to normal values. 63% of male student athletes had high uric acid levels and 71% of all student athletes had high sodium excretion. 50% of subjects had above normal magnesium levels. 58% of female subjects and 36% of male subjects had above normal citrate levels.

Conclusions: Student athletes appear to have a high prevalence of urinary risk factors for stone formation such as low volume, high calcium, high uric acid and high salt. Overall stone risk in this population may be offset by increased levels of stone-protective factors such as magnesium and citrate, potentially explaining the lack of increased incidence of nephrolithiasis in athletes. Further study is needed.

MP14-2 Consequences of Non-Adherence to Preventive Pharmacological Therapy among Patients with Kidney Stones

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Purpose: Rates of adherence to thiazide diuretics, alkali citrate therapy, and allopurinol—collectively referred to as preventive pharmacological therapy—among patients with kidney stones are low. This may reduce the effectiveness of secondary prevention efforts, leading to poorer clinical health outcomes in patients with kidney stones.
Methods: Using medical and pharmacy claims data, we identified adult patients with a physician-coded diagnosis for kidney stones. Among the subset with a prescription fill for a preventive pharmacological therapy agent, we then measured adherence to therapy within the first six months of initiating treatment using the proportion of days covered (PDC) formula. We defined adherence as a PDC value at or above 80%. Finally, we fitted multivariable logistic regression models to examine the association between medication adherence and the occurrence of stone-related clinical health outcome [an emergency department (ED) visit, hospitalization, or surgery for stone disease].
Results: Among the 8,950 patients who met study eligibility criteria, slightly more than half (51.1%) were adherent to preventive pharmacological therapy. The frequency of ED visit, hospitalization, and surgery for stone disease was significantly lower among adherent patients. After controlling for sociodemographic factors and the level of comorbid illness, patients who were adherent to therapy had 27% lower odds of an ED visit [odds ratio (OR), 0.73; 95% confidence interval (CI), 0.64–0.84], 41% lower odds of hospital admission (OR, 0.59; 95% CI, 0.49–0.71), and 23% lower odds of surgery for stone disease (OR, 0.77; 95% CI, 0.69–0.85) than non-adherent patients.
Conclusion: Our data highlight the consequences of non-adherence to preventive pharmacological therapy among patients with kidney stones. In order to improve adherence, further research is needed to understand patient- and provider-level factors that contribute to lower adherence.

MP14-3 Compliance and Metabolic Stone Disease. Does Distance to Care Matter?

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Introduction: Due to a dry climate and unique patient demographic, metabolic stone disease is prevalent in New Mexico. University of New Mexico Hospital is the only tertiary referral center for urologic disease in the state, therefore, comprehensive stone surveillance and treatment is crucial. It has been anecdotally suggested that distance from a care center is a factor in patient noncompliance. Our study aims to show this phenomenon.
Materials and Methods: All upper tract stone diagnoses of the last 5 years were reviewed, including patients who received medical expulsive therapy, ureteroscopy or percutaneous nephrolithotomy. Of those, only patients who submitted a 24-hour urine for metabolic stone surveillance were analyzed. This yielded 225 unique patients for final review. Compliance with follow up was determined by chart review. Patients were stratified into groups based on their distance from UNMH. Fisher tests and odds ratios were used to compare groups.
Results: One hundred fifty seven were compliant with follow up while 68 were not. Patients were more likely to be compliant who lived within 40 miles (OR: 4.45, CI: 2.03 – 9.61, $P = 0.0002$), 30 miles (OR: 3.83, CI: 2.05 – 7.16, $P < 0.0001$), and 20 miles (OR: 3.83 CI: 2.09 – 7.02, $P < 0.0001$) of our institution. In contrast, those living within 15 miles of UNMH were not statistically different than all other patients living farther away ($P = 0.18$).
Conclusion: Urolithiasis is a common problem in the southwest United States, and the need for comprehensive follow up care is crucial for treatment. To our knowledge, this is the first study of its kind to show how distance from point of care relates to compliance in stone disease. Patients living greater than 20 miles from our center demonstrated significantly decreased compliance. Stone disease is distressing to patients and economically costly, and our study highlights the need for further research in strategies to improve compliance.

MP14-4 A prospective analysis of patient knowledge regarding risk factors and prevention of nephrolithiasis

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Introduction: The prevalence of nephrolithiasis is increasing worldwide. Factors such as diet, ethnicity and socioeconomic class have all been proven to affect the incidence of kidney stone disease. We investigated the knowledge of our patients regarding the dietary risk factors leading to kidney stone formation and assessed their awareness of preventive measures.
Materials and Methods: A 20-question survey was developed to determine knowledge of diet related nephrolithiasis risk factors. This research tool was administered to urology clinic patients who volunteered to participate. Subjects were > 18 years of age, whose primary language was English, Spanish, Chinese, or Russian. Responses were summarized with frequency and percent. Statistical comparisons were made using chi-square tests.
Results: A total of 534 participants completed the survey. Approximately one third, 27.9% ($n = 149$) reported a prior episode of nephrolithiasis. Over half of respondents were male (60.8%, $n = 319$) and 40.2% ($n = 215$) were aged 60–79 years. Most respondents had obtained a high school level of education (49.6%, $n = 265$) or less (13.5%, $n = 72$). The majority of respondents were Hispanic (49.8%, $n = 266$), followed by Black/African American (17.6%, $n = 94$). A significant portion of subjects was either under insured (Medicaid, 39.7%, $n = 212$) or had no insurance (3.6%, $n = 72$). Compared to respondents without nephrolithiasis, those with a history of kidney stones had more knowledge regarding diet (40.3% vs 19.0%, $p = 0.001$). Participants indicated their awareness of water consumption (37.6% vs 25.6%, $p = 0.0115$), sodium consumption (34.8% vs 22.0%,

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p = 0.0044), and meat consumption (24% vs 12%, p = 0.2447) as risk factors for stone formation. Only 35% (n = 52) of stone formers reported receiving nutrition education from their urologist and 7% (n = 10) received education from their primary care physician. Of note, 65% (n = 347) of respondents indicated that they would be willing to make lifestyle/diet changes to decrease stone risk had they been aware of the effect of dietary modifications.
Conclusion: This study demonstrates the limited patient knowledge of dietary risks for kidney stone development. Knowledge of nephrolithiasis risk factors is higher in those with kidney stones than those unaffected suggesting nutrition guidance is given to only those with the disease, rather than in a preventive manner. In addition, our results indicate that Urologists demonstrate a low rate of providing nutrition counseling to patients with nephrolithiasis. The majority of patients would make dietary modifications necessary to lower their risks. These findings highlight the necessity to increase patient nutrition education to both stone formers and stone naïve to decrease the occurrence of nephrolithiasis.

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MP14-5 The Kidney stone and Increased Water Intake Pilot Study in Steel Workers

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Introduction: Nephrolithiasis incidence is impacted by environment and dehydration is a major risk factor for kidney stones. Prevention of stone events requires identification of high risk cohorts. Occupations such as steel workers are exposed to high temperatures and dehydration. The purpose of the pilot trial was to assess stone risk of steel plant workers based on post-shift spot urine osmolarity and 24 hour urine parameters.
Materials and Methods: The pilot trial was conducted at the Gerdau Midlothian, TX steel mill on 11/14/14 and 12/5/14 with 100 participants. Clinical and demographic data including a post-shift spot urine sample was obtained. Participants were asked to provide a 24-hr urine sample within 4 weeks of enrollment.
Results: The mean age of participants was 41 and 95% were men. The majority of subjects were white (75%) with other races including African-American (9%) and Hispanic (10%). The subjects average body mass index was 30.1 and 47% were obese or morbidly obese. Overall, 16% had a history of prior stone disease. The mean post-shift spot urine osmolality was 704.5 (169–1165) and 39% had spot urine osmolality over 800 mosm and 57% over 700 mosm. In 24 hour urines (n = 59), average urine volume was 1.89 ± 0.92 l/day and 56% had less than 2 liters and 17% less than 1 liter of urine in a day. 24 hour urine calcium (> 250 mg/TV) was elevated in 29% and uric acid (> 700 mg/TV) was elevated in 39% of participants. Oxalate (> 45 mg/TV) was elevated in 25% and sodium/chloride (> 200 meq/TV) was elevated in over 50% of participants. The average Tiselius score was 1.15 (0.1–3.7) and 18 subjects (31%) had an abnormal score (> 1.5).
Conclusions: These results demonstrate that there is a significantly higher rate of stone disease among steel workers than the general population. A significant number of workers had concentrated urine post-shift and abnormal 24 hour urine parameters. Due to the novel nature of this study, it is not known the correlation of spot urine post-shift with risk of future stone disease and further study in this population is planned to assess the ability of increased fluids to reduce stone risk.

MP14-6 Cystine Stone-Formers have Impaired Health Related Quality of Life Compared to Non-Cystine Stone-Formers

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Purpose*:* Cystinuria is rare, comprising < 1% of all stone formers with a median age of onset of 12 years and is known to have a high rate of stone recurrence due to poor compliance to medical therapy. The objective of this study is to compare the health-related quality of life (HRQOL) of patients with cystinuria to patients with other etiologies of stone formation using the disease-specific Wisconsin Stone Quality of Life (WiSQoL) questionnaire.
Materials and Methods: With IRB approval, we identified 35 patients with cystinuria through our stone clinics and performed a matched case-control study of non-cystine stone-formers, who were matched according to gender, age, and co-morbidities. Patients were asked to complete the WiSQoL questionnaire and a medical/stone history form that included questions about disease age of onset, number of stone episodes, date of last stone episode and number of surgical interventions.
Results: Patients (n = 13, 3 male: 10 female) with an average age of 50.6 ± 16.7 were control-matched with non-cystine stone-formers (n = 13, 3 male: 10 female) with an average age of 53.5 ± 16.8. Cystine stone formers had more prior stone episodes and a greater number of surgical interventions. Cystine stone-formers had significantly lower total WiSQoL scores compared to non-cystine stone-formers, 95.6 ± 31.8 vs. 124.5 ± 9.3, respectively, (p < 0.01). Compared to non-cystine stone formers, cystine stone-formers reported significantly worse nocturia (p = 0.03), difficulty returning to sleep (p = 0.02), feeling tired or fatigued (p = 0.05), limited activity (p = 0.04), missed work or family time (p = 0.03), urinary frequency (p = 0.04), anxiety about the future (p = 0.02) and feeling more irritable than usual (p = 0.04). Cystine stone-formers with current stones (n = 6) were found to have significantly lower overall WiSQoL scores compared to non-cystine stone-formers with current stones (n = 5), 83.0 vs 120.8 respectively, (p = 0.03).
Conclusions: Using a stone-specific questionnaire, patients who form cystine stones have lower HRQOL compared to non-cystine stone formers. Identifying and addressing specific areas of decrement in these patients may improve disease management and patients' HRQOL.

MP14-7 Education alone does not improve adherence to metabolic stone screen guidelines: are we missing uric acid abnormalities?

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Introduction: The lifetime recurrence rate for individuals with a diagnosis of renal calculi is 60–80% and it is a highly recurrent disease is over 10% of patients.

Several metabolic factors have been associated with stone formation, highlighting the need for metabolic screening to

define the probability of recurrent stone formation and guide preventative measures. The European Association of Urology recommends that all patients diagnosed with renal stones should have a succinct biochemical work-up. We reviewed our local practice within the stone department and the implications of poor metabolic screening with recommendations for more robust changes to current local practice.

Patients and methods: This was a retrospective study of all patients attending the outpatient stone clinic over two 3 week periods 4 months apart. The stone clinic lists over this period where reviewed using electronic patient records. Individual patient records where reviewed for any historical (as far back as 5 years) blood sample results for serum calcium, urate and phosphate.

Any abnormal results where noted and follow-up with regards to this clarified by reviewing clinic letters and any further investigations.

Results: Initial results of the 150 patients identified with a diagnosis of renal calculi revealed that 84% of patients had a recorded calcium, phosphate or urate serum level whilst 16% had no historical record of a metabolic stone screen. the results were presented at the stone multidisciplinary team meeting to raise awareness and educate the department. Following this the study was repeated after a 4 month period. The second review identified 185 patients with a diagnosis of renal calculi with 82% of patients with recorded calcium, phosphate or urate serum level and no historical record of a metabolic stone screen in 18%. An abnormal metabolic blood screen was noted in 34% of those tested, of which majority had raised serum urate levels (56%). Raised calcium levels accounted for 15% of abnormal results of which 3 patients were diagnosed with hyperparathyroidism.

Conclusions: No improvement was noted despite our initial interventions, highlighting that education alone does not improve adherence to the above guidelines.

Incomplete screening was the main problem identified with urate levels being the most missed, attributed to the fact that urate levels require a separate request form and do not form part of the local bone profile screen which is the order set for calcium and phosphate. This highlights the need for more robust changes to help improve screening.

MP14-8 5 year performance of a patient information website for cystinuria

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Introduction: Online information is often unreliable and inaccurate, producing confusion and anxiety. This was highlighted as a particular concern by our patients with cystinuria. In 2010 we setup a patient information website with the aim of providing a reliable, accessible source of information to improve patient understanding.

Methods: Using standard web design software and working closely with patients, we created the website www.CystinuriaUK.co.uk. Our multidisciplinary team provided input into content to ensure a broad range of information. Quantitative/ qualitative assessment was made through monitoring of website analytics since inception as well as using an online feedback questionnaire assessing 5 domains (ease of use; finding information; understanding information; visually appealing; overall impression).

Results: There have been 8792 unique users logged, 10,861 sessions and 27,000 page views. Our website is the fifth result on a 'Google' search (in UK) with the search term ''cystinuria''. Visitor rate continues to grow over time with 550, 966, 2456, 2316 and 2593(to date) users for years 1 to 5 respectively. 41% of visits are from the UK with 20% from the US with a total of 140 countries accessing the site at least once. On average 2.54 pages are viewed per visit spending 2 minutes 30 seconds on the site. We received positive feedback with high scores (scale 1–5) from visitors (mean 4.4) and staff (mean 4.5). There have been 122 comments on the website from a mixture of health care professionals, patients and family members.

Conclusion: Numbers of visits to the website has continued to grow although may be reaching a plateau between 2500 to 3000 users per year. Analytics suggest that readers are staying on the site to access information. Feedback suggests the site continues to meet patient demands for not only our patients in our specialist clinic but nationally and internationally. Incorporating feedback and multidisciplinary input remains key to maintaining up-to-date information.

MP14-9 Hypertension and renal impairment in patients with cystinuria: findings from a specialist cystinuria centre

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Introduction: In the normal adult population, incidence of hypertension (BP ≥ 140/90 mmHg) is 31% in men and 27% in women, and increases with age. Patients with urolithiasis are found to have significantly higher blood pressures compared to matched individuals, with a mean systolic difference of 16.8 mmHg. We present the incidence of hypertension and renal impairment in a large cohort of cystinuric patients.

Materials & Methods: A database was created to include all patients with cystinuria who attend a specialist cystinuria service. Data included basic demographics, diagnosis of hypertension, serum creatinine, eGFR, incidence of a poorly functioning kidney or nephrectomy. The CKD (chronic kidney disease) stage was recorded as per Kidney Disease Outcomes Quality Initiative guidelines.

Results: There are a total of 131 patients with cystinuria who attend the service, 6 patients were excluded due to incomplete data, leaving 125 patients to be included. There were 57 female and 68 male patients, mean age of 40.3 yrs (range 3.5–76 yrs). Incidence of hypertension was 48.8% (n = 61), with male preponderance being double that of females (67.2% vs. 32.8%). Of these, 50 were taking regular antihypertensive medication.

Ten patients had previous nephrectomy and 18 had a poorly functioning or atrophic kidney. Mean creatinine was 87.4 μmol/l and eGFR was 77.6 (range 32–127). Patients were categorised by CKD stage, which revealed only 25% (27% vs. 21%, M vs. F) of patients having eGFR > 89 and thus normal renal function. 58% (56% vs. 60%, M vs. F) patients were CKD stage 2, and 18% (17% vs. 19%, M vs. F) were CKD stage 3. Females have a slightly greater incidence of renal impairment, even though prevalence of hypertension is significantly greater in males than females.

All patients with a previous nephrectomy or a poorly functioning kidney have a degree of renal impairment (CKD stage 2 or 3). 90% of patients with a nephrectomy had CKD stage 2 and 10% CKD stage 3. There were 61% of patients with a poorly functioning kidney who had CKD stage 2 and the remaining 39% were CKD stage 3.

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Conclusions: Incidence of hypertension in patients with cystinuria is significantly greater than that of the normal population, with a strong male preponderance. A large proportion of cystinuria patients have evidence of renal impairment, with a slightly higher incidence in females than males. This preliminary data highlights the long-term renal and cardiovascular risks in the cystinuric population, in addition to challenges of managing recurrent urolithiasis.

MP14-10 Nutritional Recommendations for Stone Prevention: What Do Patients Remember?

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Introduction: Dietary recommendations to prevent kidney stones are effective only if followed. Compliance may depend on patient recall of recommendations, on the type of dietary changes recommended, or on the number of recommendations provided. We examined patients' recall of individualized dietary recommendations provided at metabolic evaluation.
Patients and Methods: Patients from clinic appointments ($n = 275$) over an 18-month period were identified from those who saw a registered dietitian nutritionist during a clinic appointment. In concert with the nephrologist, the dietitian designed an individualized nutrition regimen for each patient based on his/her dietary risk factors for stones and on his/her lithogenic risk profile. Following the appointment, patients were surveyed and asked to identify from a checklist the dietary recommendation(s) they received from the dietitian. Responses were compared to dietitians' notes to determine correct recall. Variables such as time since the appointment, number of recommendations provided, and patient factors (age, gender) were assessed. Questions about implementation were also asked.
Results: Patients were mailed surveys 42 ± 27 days after their appointments. Surveys from 113 (62% male, 56 ± 13 y; 38% female, 52 ± 14 y) were received. Patients were provided 3.4 ± 1.0 recommendations (min-max, 1–6) and overall recalled 69% of recommendations. Highest recalls were for (1.) lower meat/fish/poultry intake, (2.) higher fluid intake, and (3.) lower sodium intake (≥71% recall for all). Lowest recalls were for weight loss, using citrus juices, and increasing fruits/vegetables (≤63% for all). Only 36% of patients correctly recalled 100% of recommendations provided them. Among patients who had been given 1–3 recommendations, 43% recalled 100% of the recommendations while only 27% of those given 4–6 recommendations did so ($P = 0.07$). Certain dietary recommendations were associated with higher patient-reported difficulty in implementation (table), and these were not related to patients' recall. Time from appointment (min-max, 6–118 days) did not affect recall.
Conclusion: Higher patient recall is associated with ≤3 dietary recommendations. Certain recommendations are better recalled than others. For some patients, prioritizing and parsing the number of dietary recommendations to be given at an appointment may be helpful. Certain dietary recommendations are associated with more patient-reported difficulty in implementation. Patients may benefit from practical strategies to aid in compliance with these.

Patient-reported difficulty in implementing certain dietary recommendations

Dietary recommendation	% of patients provided the recommendation who reported difficulty with implementation
Increase fluid intake	28%
Increase intake of fruits & vegetables	25%
Decrease sodium (salt) intake	18%
Reduce portion sizes or frequency of intake of meats/fish/poultry/seafood	12%

MP14-11 The high prevalence of co-morbidities and concurrent metabolic abnormalities in recurrent kidney stone formers with idiopathic hypercalciuria

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Introduction: Kidney stone disease has a prevalence of 10%. Hypercalciuria is commonly found on investigation of recurrent calcium stone formers. Treatment of hypercalciuria reduces stone recurrence risk. Other co-morbidities and metabolic abnormalities are thought to contribute to renal stone risk. Our objective is to measure the prevalence of related co-morbidities and concurrent metabolic abnormalities in recurrent kidney stone formers with idiopathic hypercalciuria.
Materials and Methods: Recurrent renal stone formers with idiopathic hypercalciuria (>7.5 mmol/24 hr) were identified. 24 hr urine collections were analysed for calcium, sodium, uric acid, oxalate and citrate levels. Serum analysis assessed vitamin D status. Further investigations undertaken included dual energy xray absorptiometry (DEXA), TmP/GFR calculation and furosemide acidification test to assess bone mineral density, renal phosphate leak (RPL) and presence of distal renal tubular acidosis (dRTA).
Results: Thirty-five recurrent renal stone formers were diagnosed with hypercalciuria (mean age 54.5 yrs; 83% male). Prevalent baseline comorbidities included obesity (59%), hypertension (26%) and diabetes (20%). On 24 hr urine biochemistry the commonest concurrent abnormalities were hyperuricosuria (69%), hyperoxaluria (54%), hypernatriuria (43%) and hypocitraturia (29%). Furthermore 63% of patients had ≥3 abnormalities on urine biochemistry. Low vitamin D (25OHD < 50 nmol/L) was seen in 51%. TmP/GFR calculation in 18 patients confirmed RPL in 44%. Furosemide acidification test, performed on 26 patients, was positive for dRTA in 35%. DEXA, performed on 20 patients, revealed osteopenia in 55%.
Conclusion: Idiopathic hypercalciuria is an important risk factor in renal stone formers but rarely occurs in isolation. Comprehensive metabolic testing should be undertaken to establish appropriate dietary and pharmacological treatment.

MP14-12 Urine Biochemistry and Stone outcomes in recurrent renal stone formers with concurrent hypercalciuria and hyperuricosuria

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Introduction and Objective: Idiopathic hypercalcicuria is a known risk factor in recurrent renal calculi formation. It is rare for hypercalciuria to be an isolated abnormality on 24 hr urine testing with hyperuricosuria also implicated in the recurrent stone former. Management involves dietary advice and pharmacotherapy. We aim to evaluate the effect on urine

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biochemistry and new stone growth of treatment in patients with concurrent hypercalciuria and hyperuricosuria in a metabolic stone clinic.

Materials & Methods: Retrospective review revealed 35 recurrent renal stone formers with as hypercalcuria (≥7.5 mmol/24 hr). 24 patients (66%) also had hyperuricosuria (≥4.5 mmol/24 hrs) on 24-hr urine testing. Mean follow up was 27 months. 24 hr urine calcium (Ca_u), uric acid (Ur_u) and new stone growth were recorded before and after metabolic treatment interventions.

Results: Of the 24 patients, 16 achieved reduction in Ca_u following dietary advice alone and 4 achieved normocalciuria with mean Ca_u dropping from10.1 mmol/24 hr to 9.1 mmol/24 hrs ($p = 0.03$). A further 7 patients achieved normal Ca_u after pharmacotherapy with either a thiazide diuretic and/or potassium citrate. 11 patients have achieved normal Ca_u and 13 patients have persistent hypercalciuria. Overall mean Ca_u fell from 10.2 mmol/24 hr to 8.2 mmol/24 hr ($p = 0.001$).

New stone growth was seen in 6/13 (46%) patients with persisting hypercalciuria but only 1/11 (9%) who achieved normocalciuria ($p = 0.047$). 14 patients achieved reduction in Ur_u after dietary manipulation with 7 achieving normal levels. Mean Ur_u fell from 5.79 mmol/24 hr to 4.93 mmol/24 hr ($p = 0.02$). 11 patients were subsequently prescribed allopurinol with 8 achieving normal Ur_u levels. 15/23 patients achieved normal Ur_u and 8/23 had persistent hyperuricosuria. Overall mean Ur_u fell from 5.79 mmol/24 hr to 3.63 mmol/24 hr ($p < 0.001$). New stone growth was seen in 4/8 (50%) patients with persisting hyperuricosuria but only 3/16 (19%) of patients achieving normal Ur_u ($p = 0.1$). Furthermore 75% (3/4) of patients with persistently high Ca_u and Ur_u developed new stone growth whilst the 7 patients who achieved normal Ca_u and Ur_u exhibited no stone growth ($p = 0.02$).

Conclusions: Concurrent hyperuricosuria is commonly found in hypercalciuric stone formers. Dietary manipulation and pharmacological adjuncts are effective in lowering urine metabolites. Correction of Ca_u and Ur_u is a predictor of stone growth or recurrence.

MP14-13 Recurrence of uric acid stones in the modern era: Results from a 15-year stone database

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Introduction: Uric acid (UA) containing stones comprise approximately 10% of all urinary tract calculi. Recurrence rates are not well reported in the literature but are anecdotally high compared with other stone types. We undertook a retrospective, single centre review of recurrence rates in patients with UA stones.

Patients and methods: From 1400 patients who have had stones sent for quantitative analysis since 1999, 94 patients were identified with UA stones. Clinical information was obtained from electronic patient records. Complete data was available for 84 patients. Recurrence was defined as new stone formation or stone growth on follow-up imaging (ultrasound or computed tomography). The Chi-square test was used to calculate the statistical significance between risk factors with regard to likelihood of recurrent disease.

Results: The mean follow-up was 9 years (median 27 years) with a male: female ratio of 6:1. The overall recurrence rate was 64% but this was much higher (80%) for those patients with a follow-up of > 10 years. The mean time to recurrence was 25 months. The frequency of recurrence was 0.9 episodes/year in the first 3 years of follow-up but this gradually reduced to 0.3 episodes/year for patients with follow-up of > 11 years. The mean BMI was 30 kg/m2, with 46% having type II diabetes and 20% having gout. Bowel disease was seen in 21% and was the only risk factor that conferred a significant risk of recurrent stone formation ($p = 0.0223$).

Conclusions: Our results show that recurrence rates in UA stones are higher than those previously reported for all stone types. Patients are more frequently male and obese. Type II diabetes is prevalent. Recurrent disease is even more likely in patients with bowel disease.

MP14-14 Patient Attitudes toward Medical Management for Recurrent Urolithiasis

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Introduction and Objective: Compliance with preventive regimens for stone recurrence may be influenced by patients' attitudes. Understanding factors that influence patient compliance with and acceptance of prevention may help us design optimal management strategies. We examined patients' attitudes about medical management.

Methods: We adapted a questionnaire (HG Tiselius, Urol Res 2006;34:255–60) and surveyed both new and returning patients in our stone clinic as well as patients reporting to the Emergency Department (ED) for an acute stone event (n = 358; M:F, 1.3; mean age, 51 ± 15 y). We queried about both nutrition and pharmacologic therapy, examining patients' understanding of and compliance with prevention regimens (clinic patients) or their attitudes toward prevention (ED patients).

Results: Slightly more than half of new patients in our clinic were one-time stone formers (59%) whereas 79% of those already being followed were recurrent. New patients had a lower incidence of prior stone removal surgery (43%) than returning clinic patients (79%). Patients from the ED were largely recurrent (58%), but only 24% had required previous stone removal surgery. New clinic patients as well as those from the ED stated wanting to know what caused their stones (98 and 91%, respectively) and stated interest in lifelong prevention vs. repeated stone removal procedures (94 and 93%, respectively). However, only 66% of patients from the ED said they would be willing to be followed in clinic over time. While 99% stated interest in changing their diets to prevent stones, significantly fewer (73%) supported both dietary changes and medication. Among patients returning to clinic for follow-up (duration of stones, 16 ± 13 y; min-max, 0–63 y), understanding the rationale for therapy was high (91 and 88% for diet and medication therapy, respectively). However, difficulty in following the dietary and medication regimens was admitted (42 and 25% for diet and medication, respectively). Women reported lower compliance with prescribed medication regimens (63 vs. 90% of men) and reported that the rationale for medication therapy was not explained well (31 vs. 6% of men).

Conclusions: A desire for prevention opportunities was expressed by nearly all new and ED patients. Among returning clinic patients, understanding the rationale for a therapeutic intervention may influence patient-perceived difficulty in following the regimen and/or compliance over time. Knowledge about patients' attitudes toward

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prevention regimens may identify specific challenges or barriers to compliance, which, if addressed, may enhance clinical outcomes and patient quality of life.

MP14-15 Primary Care Utilization for Kidney Stone Disease

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Introduction: Urinary lithiasis is a highly prevalent condition in the United States, affecting nearly 1 in 11 persons in their lifetime. Many stones pass without requiring surgical intervention, and uneven workforce distribution reduces access to urologic care in many areas. Patients may be initially evaluated or managed by primary care physicians. Given this context, we sought to characterize the utilization of primary care visits for patients with urinary stones.
Methods: We performed a cross-sectional analysis of ambulatory visits for patients with upper tract stones between 2008 and 2010 using the National Ambulatory Care Survey (NAMCS). NAMCS is a multistage probability survey of non-hospital-based outpatient visits in the United States. It is specifically designed to provide nationally representative estimates of healthcare utilization. The survey includes information regarding patient demographics, health conditions, services and physician specialty. Visits were identified using ICD-9-CM diagnostic codes. National estimates were compared using the Rao-Scott chi square test or univariate linear regression, as appropriate. All analyses accounted for the complex sampling structure of the NAMCS.
Results: During the study period, an estimated 10.6 million ambulatory visits for patients with upper tract stones occurred. Urologists provided care at just more than half of these visits (56%), and primary care physicians provided care during 33% of visits. Patients seen in primary care were younger (46.4 vs. 53.0 years, $p = 0.01$) and more likely to be of non-white ethnicity (26% vs 11%, $p = 0.007$) than those seen by a urologist. Patients seen by a urologist were more likely to have imaging (30.7% vs. 11.1%, $p = 0.02$) and urinalysis completed (38.4% vs. 10.5%, $p < 0.001$) than those seen by a primary care physician. There were no differences in visits by patient sex or metropolitan location. Most visits (61%) to primary care were for a new presentation of a stone, with a smaller proportion for a recurrence of chronic stone disease (16%). In contrast, only about one-third of visits to urologists represented new presentation of a stone ($p < 0.001$ vs primary care).
Conclusion: A substantial portion of ambulatory visits for patients with kidney stones occurs in the primary care setting. Many of these visits are for new onset of a symptomatic stone. Further research is required to gain a better understanding of utilization, variation, and outcomes of care for these patients. For patients not requiring surgical intervention, treatment in a primary care setting may provide a lever to reduce the overall cost of care for kidney stones.

MP14-16 Is there a difference between body height and age in patients with calcium oxalate and cystine stones?

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Purpose: Our aim was to detect the differences in age, weight and height between calcium oxalate (Ca Ox) and cystine stone formers
Materials and Methods: We retrospectively reviewed all patients with a result of calcium oxalate or cystine in stone analysis report (> 60% predominant mineral) from January 2010 to July 2015, for whom, age, sex, weight and height was available. Patients less than 18 years were excluded. Patients were characterized by gender and the major component of their stone analysis. A Wilcoxon rank-sum test for continuous variables were used to detect the significant differences
Results: We identified103 patients with cystine stones and 279 with Ca Ox stone. Males with Ca Ox stones were taller than those with cystine by 4 cm ($p = 0.02$), while women with Ca Ox didn't show a significant statistical difference ($p = 0.06$). Males with cystine stone are 10 years younger than those with Ca Ox ($p = 0.0001$), while female with cystine stone are 8 years younger than those with Ca Ox ($p = 0.002$). Neither weight nor BMI did show any statistically significant difference in between the two groups.

Males	Cystine (62)	CA Ox(153)	P value
Age	47±15	57±15	0.0001
Weight	89±22	93±20	0.6
BMI	29±5	29±6	0.8
Height	174±16	178±7	0.02
Female	**Cystine(41)**	**CA Ox(126)**	**P value**
Age	45±15	53±16	0.002
Weight	78±24	82±25	0.6
BMI	30±9	31±9	0.9
Height	160±10	164±7	0.06

Conclusions: Cystine stone formation is more common in shorter stature men and younger men or women in relation to those with calcium oxalate stones.

MP14-17 Quality of care of uric acid stone formers: single center review

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Introduction/Objectives: Uric acid nephrolithiasis (UAn) comprises roughly 8–10% of nephrolithiasis. Three main urinary abnormalities are: hyperuricosuria, low urinary pH and low volume. To improve quality of care of these patients, we reviewed the treatment, compliance, and outcomes of an institutional UAn cohort.
Methods: Retrospective study of a 24 hr urine collection database of hyperuricosuric patients in our stone clinic from 2000–2014. Patient's demographics, medical management, compliance, ED visits, intervention, and 24-hour urine data were reviewed.
Results: 614 patients with hyperuricosuria, of which, 45(11 female) had stone data analysis confirming UAn. Average UA stone composition was 63.4%(5–100%). Mean age at presentation was 55.4 y(32–77 y). Average patient f/u was 3.8 y(max11.9 y), seen approximately every 7.2 mo.

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73.3% of patients were diagnosed after an endourological procedure (116 total), remainder referred after spontaneous passage. Females/male underwent an average of 4 vs 2.7 procedures. 65 ED visits for renal colic; 84.6% occurred in those patients eventually requiring surgery, whereas only 15.4% occurred in those with spontaneous stone passage.

Postoperatively, patients were alkalized with Kcitrate and/or NaHCO3 at 89.2% and 13.5%, respectively. All patients receiving alkalization therapy experienced stone recurrence prompting investigation for treatment compliance. Follow-up in clinic only resulted in 55.6% repeating their 24-hour collections. Trends were seen, but were not statistically significant: volume increase 160 mL(2.19 Lto2.35 L), pH increase 0.075(5.68 to 5.76), and UA decreased by 0.065 g/day(0.976 g/day to 0.911 g/day).

Conclusions: Despite a comprehensive stone clinic, patients *had* only modest improvements in 24- hour urine parameters, high recurrence, and low compliance. Opportunity for quality improvement and treatment adherence in UAn patients remain a challenge.

MP14-18 Guidelines for preventing the recurrence of uric acid stones: where is the evidence?

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Introduction: Urolithiasis is a common disorder affecting 1 in 10 worldwide. Recurrence rates are reported as 35% at 10 years, rising to 70% at 20 years. It is estimated that urolithiasis costs around $2 billion each year in the United States of America. Comprising around 10% of all urinary tract calculi, uric acid stones are known to have high recurrence rates relative to other stone types. Prophylaxis of recurrence is therefore an important management strategy for these patients. We undertook a systematic review of the current guidelines to appraise the evidence behind them.

Materials and Methods: We identified three sets of guidelines for the prophylaxis of uric acid stone formation. These guidelines are widely acknowledged and are commonly referred to by urologists worldwide. We appraised the levels of evidence given for guidance published and hand searched reference lists. We methodologically appraised cited studies and graded the evidence used to support the guidelines according to the system described by the Centre for Evidence Based Medicine, Oxford.

Results:

	TREATMENT (level of evidence)				
GUIDELINE	**DIET**	**FLUID VOLUME**	**URINARY ALKALINISATION**	**ALLOPURINOL**	**OTHER**
AUA	Limit intake of non-dairy animal protein (5)	No comment	Potassium citrate to increase pH to 6 (5)	Second line if alkalinisation fails (5)	No comment
EAU	Limit intake of urate-rich food to ≤500mg/day (5)	'General measures' (5)	Alkaline citrates or sodium bicarbonate pH 6.2-6.8 (4)	For patients with hyperuricosuria (100mg/day) + hyperuricaemia (300mg/day) (5)	No comment
CARI	Re: purines – 'curb overindulgence' (5)	Promote 'large urine volumes' (5)	Increase urine pH (4)	Recommended (300-600mg) (4)	Mentions acetazolamide for nocturnal urine alkalinisation (not recommended) (5)

Conclusions: A complete lack of controlled trial evidence may preclude consensus between guidelines. The guidelines are based on evidence from case series at best. It has been suggested that the well-established role of allopurinol in the treatment of this condition has prevented randomised trials in recent years but it is clear that evidence based medicine is not being practiced in the treatment of these patients.

MP14-19 How Much Information is Lost When Only 24-Hour Urine is collected as Part of the Initial Metabolic Evaluation?

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Introduction: During the initial metabolic evaluation, the need for one versus two 24-hour urine collections is debated. While data suggest that mean urine biochemistries are similar on two consecutive samples, it remains unknown how much, if any, information is lost when only one is collected. To fill this knowledge gap, we conducted a study using data from a large central laboratory that provides 24-hour urine services to kidney stone patients.

Patients and Methods: Using analytical files from Litholink (1995–2013), we identified adults with kidney stones, who underwent initial metabolic testing. Next, we determined the subset of patients that collected two 24-hour urine samples with urine creatinine varying by 10% or less during a seven-day time window. We then analyzed the urinary biochemistry profiles, comparing differences in means between the two samples. Finally, we calculated the mean absolute value of the difference between samples, as well as the percent difference for individual urine parameters (calcium, citrate, oxalate uric acid, pH, and volume).

Results: We identified 70,192 patients meeting our eligibility criteria. Consistent with prior studies, we found that the overall means for individual urine parameters did not vary significantly between samples; however, the percent difference in urinary parameters varied widely between two consecutive samples. The Table shows the percentage of patients with a given percent difference between samples for each urine parameter. In fact, nearly one in three patients had a 30% or more difference in urine calcium and volume, and a 20% or more difference in urine citrate and oxalate between two consecutive samples. We noted that inconsistencies between samples often involved multiple parameters. For instance, 29% and 25% of patients had a 20% difference in two and three or more parameters, respectively.

Conclusions: We observed substantial differences between consecutive 24-hour urine samples that could affect provider decision-making. In light of these findings, providers must weigh the information lost from only one collection versus the burden to the patient of collecting two.

Table: The percentage of patients with a given percent difference between two samples.

	% Difference between Consecutive Samples			
Parameter	**≥20%**	**≥30%**	**≥40%**	**≥50%**
Calcium	48.1%	30.2%	18.0%	10.2%
Citrate	32.5%	17.2%	9.4%	5.7%
Oxalate	30.1%	14.1%	6.2%	2.8%
Uric Acid	21.3%	8.3%	3.6%	2.0%
Volume	42.4%	25.0%	13.9%	7.4%

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MP14-20 Litholink: a novel 24 hour urine analysis service for metabolic stone evaluation

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Introduction: Urine analysis is important in determining stone aetiology and risk of future stone formation, thereby helping to determine future treatment and management strategies. Collection of at least two 24-hour urine samples is recommended by the EAU in the management of urolithiasis.

Litholink is a premier metabolic stone investigation service in USA, with proven peer reviewed outcomes. Given that 24 Hour urine collection for stone profiling is not standardised in the UK, we sought to investigate whether the Litholink service would be feasible within an NHS stone service.

Materials and Methods: With the help of Cellmark (UK partner of LabCorp, USA) we designed a pathway for 24 hour urine collection. Following appropriate consenting and instruction via a dedicated call centre, collection containers, collection aids, shipping boxes and patient information leaflets were delivered to all enrolled patients. All returned samples were batched at Cellmark and shipped to Litholink USA for analysis.

Results: A pilot study of 10 patients was set up to prove process. Between 1–2 collections were performed for each patient. No patient reported technical or satisfaction issues with the pathway and all results were posted back to the referring clinician within 4 weeks. Litholink is unique service, providing in addition to standard urine metabolic analysis; supersaturating levels for Calcium Oxalate, Calcium Phosphate and uric acid are measured. Furthermore, the results are extrapolated with clear analysis-specific recommendations made for dietary and medical adjustments.

Conclusion: Litholink provides a potential gold standard for urine analysis, and the determination of the likelihood of recurrent stone formation. This is not currently available at the trust. We currently are investigating a UK rollout of this service.

MP14-21 Factors associated with development of stones in the octogenarians and nonagenarians based on the 24-hour urine analysis

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Introduction: The incidence of stone disease is increasing in the elderly population but there is a paucity of data on what factors drive stone formation in the elderly. We therefore sought to evaluate factors associated with stone disease in octagenarians and nonagenarians compared to younger patients.

Methods: From a database of 2983 consecutive stone formers presenting between 01/1996 and 08/2014, we analyzed serum chemistries, stone-analysis and 24-hour urine tests performed prior to treatment. GFR was calculated using MDRD equation, incorporating the serum creatinine at the time of urine collection. Subjects were categorized by age < 80 versus = > 80 years, stone type, gender and = > 80 year old were further categorized by GFR of > 60 (group 1) versus < 60 mL/min/1.73 m^2 (group 2). Chi-square and Mann-Whitney U test was used to compare proportions and medians respectively.

24 hour urine parameters among =>80 year old.

Parameter	Male Group 1	Male Group 2	Female Group 1	Female Group 2
Vol 24	1.5(1-2.1)	1.41(1.3-1.9)	1.4(1.2-1.7)	1.5(1-1.9)
SSCaOx	5.5(1.9-9.8)	3.2(2.5-6.1)	7.9(5-11)	5.2(2.5-6)
Ca24	94.4(46-200)	66.7(32.5-131.6)	140.8(80.3-218)	65.4(53.7-136)
Ox24	35.7(27.5-40.1)	31(22.7-40.9)	27.8(21.4-35.4)	25.9(19.8-39.5)
Cit24	351.2(192.6-645.2)	243.7(135.3-354.1)	317.4(201.6-639)	395.8(240-562.7)
pH	6.1(5.4-6.8)	6(5.4-6.5)	6(5.5-6.9)	6.6(6-6.8)
Cr24	1133.9(917.4-1410.3)	1137.7(845.5-1502.4)	775.4(682.2-1067.8)	721.5(640.4-878.4)
Cr24Kg	16.4(12.6-17.9)	16.7(13.3-20.3)	13.1(11.6-17)	13.7(10.3-15.5)
Ca24Kg	1.3(0.6-2.6)	0.8(0.5-1.3)	2.1(1.1-3.3)	1.4(0.9-2)
Ca24Cr24	81.9(48.9-151.8)	49.2(37.9-93.3)	192.3(91.7-250.1)	98.8(61.9-173.4)
GFR	80.4(70.5-94.8)	43.9(27.3-51.4)	76.5(72.5-87.4)	50.1(36.5-52.6)

Percent hypercalciuria, hyperoxaluria and hypocitraturia. (*p<0.05;**p<0.01)

	Male<80y	Male=>80y	Male=>80y Group 2	Female<80y	Female=>80y	Female=>80y Group 2
Hypercalciuria	433/1513(28.6%)*	4/39(10.3%)*	1/15(6.7%)	485/1373(35.3%)**	7/29(24/1%)**	2/12(16.7%)
Hyperoxaluria	770/1513(50.8%)**	10/39(25.6%)**	4/15(26.7%)	353/1373(25.7%)	5/29(17.2%)	3/12(25%)
Hypocitraturia	633/1513(41.8%)**	28/39(71.8%)**	12/15(80%)	719/1373(52.3%)*	21/29(72.4%)*	8/12(66.7%)

Results: We identified 68 calcium-oxalate stone formers aged = > 80 years, including 39 men and 29 women, of whom, 15 and 12 respecively had GFR < 60 mL/min/1.73 m^2. Compared to < 80 year olds, octagenarians and nonagenarians were significantly less likely to have hypercalciuria and more likely to have hypocitraturia, and men had a lower incidence of hyperoxaluria. Among = > 80 year old, there was no significant difference between groups 1 and 2 in any of the 24-hour urinary parameters except for ammonia excretion being higher in group 1 for both men and women. In addition, there was no difference in the proportion of hypercalciurics, hyperoxalurics, and hypocitraturics between groups for both men and women.

Conclusions: The driving factors for calcium-oxalate stone disease in the elderly is less likely to be hypercalciuria and hyperoxaluria, and more likely to be hypocitraturia compared to younger patients. These findings are not significantly influenced by gender or renal function impairment.

MP14-22 Association of metabolic syndrome traits with struvite stone formers: a comparison with calcium stone formers

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Introduction: Metabolic syndrome (MetS) is usually associated with uric acid stone formers, however this increasing medical condition may be also linked to other kidneys stones, particularly struvite stones. Herein, we aim to compare the prevalence of MetS traits (Obesity, Hypertension, Diabetes, and Dyslipidemia) between calcium stone and struvite stone formers.

Methods: We reviewed our stone database from Jun-06 to Jun-2014 searching for patients with struvite stones who also had complete demographic records and metabolic evaluation (24-hour urine analysis and serum exams) of stone disease. These patients were randomly matched to calcium stone formers. Groups were compared for demographic data, presence of hypertension, diabetes, dyslipidemia, 24-hour urine parameters, and serum calcium, uric acid, sodium, citrate, creatinine, glucose, glycated hemoglobin (HbA1c), and lipid profile (total cholesterol, HDL, LDL, VLDL, and triglycerides). Statistical analysis was performed with SPSS version 20.0 (SPSS Inc., Chicago, IL) and significance level was set up at p < 0.05.

Results: One hundred and fifty-six patients were enrolled (78 patients in each group). Patients with struvite stones were significantly older than patients with calcium stones (56.4 ± 14.0 vs. 46.1 ± 15.1 years; $p < 0.001$). There were no differences in gender (71.4% vs. 66.7% male; $p = 0.521$) and BMI (29.8 ± 6.7 vs. 28.6 ± 6.2; $p = 0.317$) between the groups. There were a higher prevalence of hypertension (45.5% vs. 29.5%; $p = 0.040$), diabetes (14.3% vs. 6.4%; $p = 0.107$), and dyslipidemia (10.4% vs. 3.80%; $p = 0.113$) in struvite stone formers, although it was only statistically significant for hypertension. Struvite stone formers had a significant higher HbA1c level (6.3% vs. 5.5%; $p = 0.028$). 24-hour urine parameters and other serum exams were not significantly different between the groups.
Conclusion: Hypertension and glucose level are associated with struvite stone formers. MetS may play a significant role on struvite stone formation.

MP15 - SURGICAL OUTCOMES 3

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MP15-1 Frailty is Associated with Increased One-Year Mortality in Patients Undergoing Major Surgery

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Introduction: Frailty is an objective measurement capable of preoperatively identifying patients with increased risk of 30-day morbidity and mortality, though less is known about its utility beyond that timeframe. We hypothesize that preoperative frailty is associated with an increased risk of one-year mortality in patients undergoing major intraabdominal surgery.
Patients and Methods: Preoperative frailty was evaluated using the Fried criteria. Postoperative complications were defined by Clavien-Dindo Classification. One-year data was gathered from phone calls, medical records, and the National Death Index.
Results: This study included 189 patients, mean age 62 years, 59.8% male, and 71.4% Caucasian. At enrollment, 139 (73.5%) patients were ''not frail'', while 50 (26.5%) were ''intermediately frail'' or ''frail''. A total of 73 (38.6%) experienced a 30-day postoperative complication. At 1-year, 15 (8.0%) patients had died, 5 (3.6%) not frail and 10 (13.7%) intermediately frail/frail patients, 3 (20%) within 30 days of surgery, 4 (26.7%) between days 31–100, and 8 (53.3%) > 100 days postop. Malignant neoplasm was the underlying cause of death in 11 (73%) patients and 4 (27%) patients had postoperative complications contributing to death. All 30-day mortalities occurred in intermediately frail/frail patients that had a postoperative complications contributing to death. Excluding these early mortalities, 30-day complications were not significantly associated with 1-yr mortality, though an intermediately frail/frail status was significant (odds ratio (OR) = 4.69, 95% CI = 1.41 – 15.58, p-value = 0.012).
Conclusions: Postoperative complications in frail patients directly contribute to death within 30-days postop. Beyond this period they do not contribute significantly to 1-year mortality. However, preoperative frailty is associated with an increased risk of mortality.

MP15-2 How Fit is Your Patient? Using Activity Monitoring to Assess the Surgical Patient

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Introduction: Historically, urological surgeons are early adopters of new technology. This has helped improve many technical aspects of surgery. However, given the ageing and increasingly co-morbid patient population, surgical involvement will be key to advancing perioperative care and ensuring optimal postoperative outcomes. The importance of preoperative evaluation to assess 'fitness for surgery' is well recognised but there is no consensus on the best methods of risk assessment nor on how we can best optimise patients before surgery. We are investigating a novel method using wearable home activity monitoring in collaboration with McLaren Applied Technologies (MAP). From their experience in Formula 1 racing, MAP have built up extensive expertise in areas of high-performance hardware and software engineering, and analysis of human monitoring data. This collaboration is an excellent way to enable delivery of the benefits of innovation and technology to patients.
Methods: 32 patients undergoing major surgery were recruited for this feasibility observational study. Patients underwent cardiopulmonary exercise testing (CPET) and home activity monitoring using an accelerometer device for 3 continuous days preoperatively. In conjunction with MAP, a software based statistical approach was used to analyse the activity. This data was compared with CPET and patient quality of life and activity level questionnaires.
Results: Weight adjusted peak oxygen consumption achieved during CPET correlated well with both maximum activity score ($r = 0.671$, $n = 32$, $p = < 0.0001$) and mean activity score ($r = 0.537$, $n = 32$, $p = 0.002$) derived from home activity monitoring over 3 days. A threshold of peak oxygen consumption of less than 15 ml/kg/min has been shown to confer higher risk from non-cardiac surgery. There was also a significant difference in both maximum activity score ($t(30) = 3.24$, $p = 0.003$) and mean activity score b ($t(30) = 2.18$, $p = 0.037$) between the two groups of patients who achieved either less or more than 15 ml/kg/min peak oxygen consumption.
Discussion: Results from this study suggest home activity monitoring does correlate with existing methods of preoperative assessment, and offers the potential to be used as an inexpensive and informative tool in preoperative assessment. This is the first study of its kind which has looked at the utility and acceptability of modern wearable technology for surgical patient assessment. We are investigating its utility in a 'prehabilitation' program to improve patient fitness preoperatively as well as a tool for measuring objective surgical outcomes based on activity levels before and after the operation.

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MP15-3 Health Related Quality of Life in Patients Undergoing Laparoscopic Adrenalectomy

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Introduction: Minimally invasive approaches to adrenal surgery are widely utilized in an attempt to reduce surgical morbidity. Despite widespread use, few studies objectively evaluate Health Related Quality of Life (HRQOL) in patients undergoing laparoscopic adrenalectomy. We assessed health status and recovery after laparoscopic adrenalectomy with the use of validated patient-reported outcome questionnaires.
Patients and Methods: We enrolled patients scheduled to undergo adrenal surgery at our institution in an IRB-approved, prospective, longitudinal quality of life study. Informed consent was obtained for all subjects. We administered HRQOL questionnaires at pretreatment baseline, and at 2, 4, 8, 12 and 52 weeks after surgery. We assessed surgical convalescence using Convalescence And Recovery Evaluation (CARE), an abdominal/pelvic surgery questionnaire, and general HRQOL with the Short Form 12 (SF-12) instrument.
Results: We analyzed 26 patients who underwent laparoscopic adrenalectomy since 2009. Patient characteristics are described in Table 1. Quality of life reflected by the CARE survey was most significantly reduced at 2 weeks postoperative (-14.82) and had returned to baseline by 4 weeks. Second week pain, gastrointestinal and activity domains of CARE showed significant average decrease from baseline (-17.01, −5.17, −36.61 respectively). Significant decrease in the physical component summary of the SF-12 questionnaire at 2 and 4 weeks reflected the impact of surgery on activity level during the first 4 weeks of recovery.
Conclusions: Despite a minimally invasive approach, surgery-related pain in the first two weeks after laparoscopic adrenalectomy may significantly limit patients' physical activity and may extend complete convalescence up to 4 weeks.

Table 1. Patient demographics and characteristics.

	Mean (Std)/N (%)
N patients	26
Age at entry	53.5 (14.5)
Male	9 (34.6%)
BMI	30.5 (5.1)
Charlson score [median(IQR)]	2.5 (2.0-5.0)
Tumor size [median(IQR)]	2.7 (1.7-4.23)
Operation time	102.7 (63.2)
Estimate blood loss	50 (20-100)
Length of hospital stay [median(IQR)]	1 (1-2)
Transfusion	0 (0%)
Clavien Score	
None	24 (92.3%)
1-2	1 (3.8%)
3-5	1 (3.8%)

MP15-4 Outcomes of Holmium Laser Enucleation of the Prostate (HoLEP) in chronic urinary retention

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Introduction: HoLEP has emerged as an alternative to conventional transurethral resection of the prostate (TURP), in patients with lower urinary tract symptoms (LUTS) secondary to benign prostatic obstruction (BPO), with comparable results. The aim of our study was to assess the outcomes of HoLEP in patients with chronic retention, who are perceived to fare less well with surgery.
Materials & Methods: A retrospective analysis of prospective data collected for patients undergoing HoLEP under the care of a single surgeon in a high volume UK HoLEP centre was performed. Patients were stratified according to their indication for surgery and preoperative residual urine volume. Four groups were defined: Group 1 were patients undergoing surgery due to LUTS with preoperative post-void residuals (PVR) < 300 mls; Group 2 were patients with catheters for urinary retention and residual volume < 1000 mls; Group 3 were patients with LUTS and preoperative PVR > 300 mls; Group 4 were patients with urinary retention and residual volume > 1000 mls. Variables assessed were length of hospital stay, complications, postoperative maximum flow (Qmax), PVR, IPSS and QoL score. Outcome variables between groups were compared using Mann-Whitney U tests.
Result: From 2003 to 2013, 478 patients underwent HoLEP. 256 patients were included in Group 1, 73 patients in Group 2, 92 in Group 3 and 57 in Group 4. Length of hospital stay and overall complication rate were comparable between groups. Median postoperative Qmax showed no significant differences between groups (18.2 ml/s Group 1, 19.0 ml/s Group 2, 18.2 ml/s Group 3 and 20.0 ml/s Group 4). Postoperative PVR was significantly lower in groups 1 and 2. Postoperative IPSS score was significantly lower for patients with retention irrespective of their residual volume (Groups 2 and 4). QoL score favored patients with chronic retention (Group 4) over patients with LUTS and low residual volumes (Group 1), with no significant differences between the other groups. 3 patients in each of groups 3 and 4 needed to perform ISC postoperatively, whereas none in groups 1 and 2.
Conclusion: This study indicates that HoLEP is equally efficacious for patients irrespective of their primary indication for surgery (LUTS or retention) and their preoperative residual urine volumes. Patients with urinary retention had the most symptomatic benefit from surgery and patients with chronic retention and large residual volumes were the most satisfied with the results.

Group 1	LUTS and PVR<300mls
Group 2	Retention < 1000mls
Group 3	LUTS and PVR >300mls
Group 4	Retention >1000mls

MP15-5 Creating an "Acute Renal Colic Pathway" in a Teaching Hospital, a Quality Improvement Project

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Introduction: The aim of this Quality Improvement Project (QUIP) was to set out our own acute renal colic pathway with the advise for the pathway based on our patient population and what management they had received in the acute setting. Resulting in standardized care with reduced hopsital admissions and better follow-up for our patients.

Patients and Method: Patients were identified retrospectively from our hospital Radiology reporting software (INSIGNIA) over a one year period coverin 2014–2015. Their imaging was reviewed and data on their stones analysed, including; size < 4 mm, 4 mm-7 mm and > 7 mm; position (Pelvico-ureteric Junction (PUJ), Upper Ureteric, Middle Ureteric, Distal Ureteric and Vesico-ureteric (VUJ) and compared this to their resulting acute admission management.
Results: 123 patients from 2014 were identified as CT proven renal colic acute admissions. 98 had proven ureteric stones on CT. Of these 24% (23) required acute management, the rest 76% were managed conservatively in the acute setting. The following table shows the breakdown of the ureteric stones found including size and position:

Stone size vs position

Position	Number	Average Size	Median
PUJ	10	8.2	8
Upper	18	6.2	6
Mid	10	4.8	5
Lower	9	3.5	3
VUJ	47	4.1	3.5

This shows and as expected stone size reduced the further distal they were found on CT. The following table shows how quickly patients were scanned and when they were discharged:

Stone Size	% scanned same day	% discharged same day as scan
<4mm	56	30
4-7mm	64	26
>7mm	63	10

On average almost 2/3 of our patients were scanned on the same day as their admission, however at best a 1/3 are dischaged the same day. The following table shows how our stones were managed in the acute setting:

Management	**Conservative** *(analgesia and Outpatient follow-up)* **Vs Surgical** *(stent/ureteroscopy and LASER fragmentation)*	
<4mm	Conservative	100%
	Surgical	0%
4-7mm	Conservative	86%
	Surgical	14%
7-10mm	Conservative	30%
	Surgical	70%
>10mm	**Surgical**	**100%**

Therefore, for stones under 7 mm, the majority were managed conservatively in the acute setting.
Conlusion: We devised an acute renal colic pathway in conjunction with our radiology department to aid our acute surgical colleagues better triage and standardize management. The pathway will be embeded in all postive CT reports and suggest that the default management for those with asymptomatic stones under 10 mm should be to discharge with defined OPD follow-up, unless red flag symptoms are present (single kidney/ sepsis/ uncontrolled pain/ severe acute kidney injury).

MP15-6 Long term follow-up for Rendezvous procedures

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United Kingdom

Introduction: Minimally invasive techniques are usually the first line approach to treat iatrogenic or malignant ureteric strictures. In the cases of a failed antegrade or retrograde approaches to inserting a ureteric stent, the rendezvous procedure, a combined antegrade and retrograde approach, is used to increase the success rate. The Rendezvous procedure involves a Uro-Radiologist using a variety of wires and catheters antegradely down to the ureteric stricture while the Urologist ureteroscopes the distal ureter to visualize and attempt to straigthen the stricture and to aid passage of the guidewire across the obstruction. The Urologist may need to laser through a dense ureteric stricture, laser to release a tied suture or traverse a missing section of the ureter to reach the antegrade guidewire to externalise it. Pressure can then be applied to straighten the ureter to aid placement of a stent.
Material and methods: We retrospectively reviewed patients undergoing a Rendezvous procedure for ureteric stricture, treated between 2005 and 2014 at our Institution and completing at least a 12 month-follow up. We divided patients into two groups: late oncological/post-surgical stricture (group A), or early post-surgical obstruction, leakage or detachment (group B). If appropriate, we performed a retrograde study + /- rigid ureteroscopy to assess the stricture after 3 month from the procedure, followed by a MAG3 renogram at 6 and 12 months.
Results: 32 patients have been treated, 22 in group A (Mean age 59.35, range: 49–74), 10 in group B (Mean age 52.44, range: 36–63). Strictures were successfully stented in 18 out of 22 patient (82%) in the group A, 7 out of 10 in group B (70%). After successful stenting, at 12 month 9/18 of group A required no further interventions and were stent free (50%), 5 (28%) were maintained with long term stenting. Only 2 (11%) required major reconstruction, 2 patients (11%) died during follow up from malignancy. In group B, 4/8 (50%) were stent free with no further interventions, 3/8 (38%) were maintained on long term stenting, only 1 required reconstruction.
Conclusion: With a combined antegrade and retrograde approach, the majority of complex ureteric stricture can be bridged and stented, avoiding major surgery in unfavourable circumstances and allows time for stabilisation and recovery of the patient. If successful, further interventions later may be unnecessary in up to 50% of patients.

MP15-7 Is acute ureteroscopy for painful ureteric colic cost effective and beneficial for patients? A cost effectiveness analysis

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Introduction*:* Admissions for ureteric colic are relatively common, with up to 80% of stones passing spontaneously. In patients with refractory pain, drainage with stenting, percutaneous nephrostomy or stone removal can be performed. Due to the financial restrictions on the NHS, it is paramount to ensure patients are receiving optimal cost effective care. We present a cost effectiveness analysis between primary ureteric stenting and emergency ureteroscopic stone removal in patients with refractory pain secondary to acute ureteric calculi.

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Material & Methods: We retrospectively analyzed 50 patients who underwent either primary ureteric stenting or emergency ureteroscopic stone removal (URS) in our institution. Each group contained 25 consecutive patients. Patients with sepsis, renal dysfunction, solitary kidney or anatomical urological abnormalities were excluded. The primary outcomes compared were: time to stone-free status, number of hospital re-admissions, operative costs and overall cost of treatment until stone free. Statistical analysis was performed using Mann-Whitney *U*-test.
Results*:* Both stenting (n = 25) and URS (n = 25) groups were comparable with respect to age, sex, stone size and location. In the URS group, the primary procedural stone free rate was 92%. The total number of overnight hospital admissions until stone free was shorter in the URS (2.0 days Vs 3.4 days). The hospital re-admission rate secondary to stone specific issues was significantly lower in the URS group, 8% versus 80%. Patients became stone free significantly quicker in the URS group (3.2 days vs 68.3 days). The operative cost, until deemed stone free was £2,753.30 for the URS group and £4387.57 for the stent group. The total overall cost, until been declared stone free was significantly cheaper in the URS group (£3443.70 vs £5648.07, $p = 0.02$).

All patients were eventually stone free in both groups.
Conclusions*:* This study highlights the significant extra costs and patient journey time for those patients who undergo primary ureteric stenting compared to ureteroscopy and stone removal. Those patients undergoing ureteric stenting take significantly longer to become stone free, leading to increased hospital re-admissions, potentially increased morbidity and inevitably greater cost implications. We advocate that primary URS should be consider instead of ureteric stenting in patients with ongoing, painful ureteric colic.

MP15-8 Predictors of Unplanned Hospital Readmission after Major Urologic Inpatient Surgery

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Introduction and Objective: Under the Patient Protection and Affordable Care Act, surgical outcomes and hospital readmission rates are linked to Medicare reimbursement. Our study objective was to provide a multi-institutional multivariate analysis of patient factors that contribute to, and predictors of, unplanned hospital readmission after major inpatient urologic surgery.
Materials and Methods: The American College of Surgeons National Surgical Quality Improvement Program (NSQIP) is a risk-adjusted data collection mechanism for analyzing clinical outcomes data including 30-day peri-operative readmissions and complications. Using the 2011 and 2012 NSQIP database, we identified 23,115 patients who underwent major inpatient urologic surgery. Multiple logistic regression was used to predict 30-day unplanned hospital readmissions controlling for demographics, clinical and operative characteristics, and complications. Readmission rates were stratified by procedure type and sub-analysis of open vs laparoscopic/robotic procedures was performed. Rates of postoperative complications were calculated.
Results: Overall readmission rate was 5.8%. Procedures with the highest readmission rates were ureteral reconstruction (20.6%) and cystectomy (17.5%) (Figure 1). Risk adjusted multivariable regression indicated that organ space infection (OR 15.23), pulmonary embolism (OR 12.14), DVT (OR 10.96), and return to the operating room (OR 8.46) were among the significant predictors of readmission. Laparoscopic/robotic procedures had statistically lower readmission rates compared to open for prostatectomy, partial nephrectomy, and nephrectomy (all $p < 0.01$). Readmitted patients had statistically more postoperative complications (all $p < 0.001$) compared to open.
Conclusions: Readmission after outpatient urological surgery occurs at a rate of 5.8%. Infection, PE, DVT, and return to the operating room were associated with readmission. Readmitted patients appear to have significantly more complications while laparoscopic/robotic procedures appear to have lower readmission rates. Our results may help guide risk reduction initiatives and prevent costly readmissions.

MP15-9 Audit of Emergency Re-attendance Post-Ureteroscopy at a District General Hospital

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Introduction: The British Association of Urological Surgeons (BAUS) and European Association of Urology (EAU) published guidelines regarding the use of forceps, stone baskets and postoperative stenting when extracting renal or ureteral stones. Surgical practice is variable and this study sought to audit:

1. Trends in initial ureteroscopy procedures
2. The timing of re-attendance
3. Common causes of re-attendance
4. Instrumentation used in the initial ureteroscopy procedure; is there a relationship with re-attendance?
5. Subsequent management

Patients and Methods: Retrospective audit was conducted of all patients who underwent ureteroscopy at Kent and Canterbury Hospital (England) and had a subsequent re-attendance in an emergency setting from November 2013 to October 2014. Data regarding timing, symptoms, investigation and management was systematically extracted from patient records and analysed to reveal trends in relevant patients.
Results: In one year 237 ureteroscopies were undertaken with an emergency re-attendance rate of 11.81%. 78.6% of these patients had a postoperative stent following their first procedure. Overall, patients were most likely to re-attend the emergency department within one week of their initial presentation (range 2–38 days) due to stent symptoms, most frequently flank pain (67.9%).

72.22% patients had undergone stone extraction via instrumentation of the urinary tract though causality with emergency re-attendance could not be directly confirmed. Among the reattndeing patients, there was a total instrumentation rate of 46.4%; 14.3% had had a stone basked used and 32.1% stone-grabbing foreceps. Of those who re-attended, 28.57% underwent a subsequent procedure.
Conclusions: Ureteroscopy was largely undertaken to address the presence of stones within the urinary tract. Emergency re-attendance was most frequently attributable to stent symptoms, though causality with instrument use for stone retraction could not be confirmed. Future work should focus on prospective assessment of overall use of stone baskets and forceps in ureteroscopy and promoting thorough annotation in surgical records. Furthermore, patient education regarding common

post-operative symptoms may reduce emergency reattendence for symptoms which are to be expected, such as mild haematuria.

MP15-10 Enhancing life or prolonging death? Indications and outcomes for nephrostomy insertion for malignant ureteric obstruction

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Introduction: Urologists are regularly involved in the management of ureteric obstruction due to cancer. Decisions are frequently requested of urologists but driven by oncologists, with further treatments seemingly often on offer. For this reason, we reviewed the indications and outcomes of nephrostomy insertion for oncological conditions in all patients at our institution over a two year period.
Methods: A prospectively-maintained interventional radiology database was interrogated to identify all patients undergoing nephrostomy insertion for an oncological cause, from January 2011 to December 2012. The Electronic Patient Records were then searched to gather information on indications and outcomes. Minimum follow-up was one year.
Results: 107 patients were identified; 54.2%(58) male, 45.8%(49) female; mean age 63.4 years (SD+/-14.7). Nephrostomies were unilateral in 63.6%(68) and bilateral in 36.4%(39). Cancer types were: bladder 30.8%(33), gynaecological 25.2%(27), prostate 21.5%(23), colorectal 7.5%(8), retroperitoneal metastases 6.5%(7), miscellaneous 5.6%(6) and upper tract TCC 2.8%(3). The indications for nephrostomy were imaging findings 55.1%(59) and impaired renal function 44.9%(48). In addition, 19.6%(21) patients had pain attributable to obstruction. Following nephrostomy, further management was: chemotherapy 28.7%(30), surgery 20.4%(22), palliative care 15.7%(17), no further treatment 14%(15), radiotherapy 6.6%(7), hormone therapy 6.5%(7), haemodialysis 0.9%(1) and unknown 0.9%(1). Within 12 months of nephrostomy insertion, 68.5%(74) patients died. There was no significant difference in survival between cancer types in this study. In those with impaired renal function (n=74), 59.5%(44) improved.
Conclusion: This is the largest series of patients undergoing nephrostomy insertion for malignant ureteric obstruction reported to date. Given the high mortality rate in this patient cohort, careful consideration needs to be given to the decision to insert nephrostomies in these patients. Intervention in malignant ureteric obstruction should be decided on a case-by-case basis, with input from a multi-disciplinary team and a frank discussion with the patient and their family. Quality of life data is urgently needed to aid patient and doctor decision making.

MP15-11 Spinal Anaesthesia facilitates the early recognition of TUR Syndrome

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Introduction: TUR syndrome is a rare but potentially dangerous complication of Trans-urethral resection (TUR) of the prostate (TURP) or bladder tumor (TURBT). Early recognition of the tell tale signs and symptoms is important. This can be facilitated by the use of spinal anaesthesia.
Methods: Between 1997 and 2014, forty eight patients were identified in our centre from prospectively maintained records and the case records were reviewed retrospectively. All TURs are routinely performed under spinal anaesthesia and follow a standardised set up. Glycine 1.5% was used as the irrigation fluid in all operations.
Results: Forty eight patients displayed symptoms and signs of TUR syndrome. Trainees of varying experience caused all but one case. Median resection time, resection weight and volume of intraoperative glycine irrigation fluid were 55 min (range 40–75), 44 gms (range 24–65), 28 litres (24–48) respectively. Only 16/48 TURPs had a recorded capsular perforation. Pre vs post op median haematocrit, haemoglobin and serum sodium were 0.42 vs 0.33, 14.2 g/dl vs 10.1 g/dl and 142 mmol/l vs 121 mmol/l respectively. Patients presented with nausea 44/48, vomiting 28/48, visual disturbance 29/48, apprehension 37/48, disorientation 17/48, breathing difficulties 17/48, and bradycardia 19/48. The earliest observed sign was nausea 21/48, bradycardia 11/48, visual disturbance 10/48 and apprehension 11/48 after which the procedure was abandoned. None of the patients developed stupor, coma or seizures. 9/48 patients were treated in HDU and all were treated with furosemide. 1 patient required a blood transfusion. All patients recovered within 48 hrs (range 18–48) and none had any long term complications on follow up.
Conclusion: Trainees almost exclusively caused TUR syndrome. Spinal anaesthesia enables early recognition of signs and symptoms of the complication before further damage ensues.

MP15-12 Transperineal Biopsy of Prostate as default diagnostic modality – Is it feasible in practice?

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Introduction: Magnetic Resonance Imaging (MRI) followed by transperineal template prostate biopsy (TP) is known to result in higher cancer detection rate. TP biopsy also has lower sepsis rates compared to transrectal biopsy (TRUS). However, the potentially longer time to arrange and to reach diagnosis of this could potentially cause breaches of the targets of the cancer pathway, and pose a challenge to services and resources. At our institution, we implemented a new pathway where an MRI prostate followed by a 20-core TP biopsy is the default diagnostic protocol for patients with suspected prostate cancer. This study aims to identify the feasibility of this in patients on the cancer pathway.
Methods: All patients who had a prostate biopsy for suspected prostate cancer were retrieved from a prospectively maintained cancer database. We then identified all patients who were referred via the 2 week-wait (2WW) cancer pathway. We conducted the study over two separate years to compare our diagnostic protocol: 2012-TRUS biopsy followed by imaging; 2014-MRI followed by TP biopsy. (Patients with a clinically malignant prostate underwent a limited TRUS biopsy (2–3 cores). We analysed the number of patients diagnosed with prostate cancer and number of breaches.

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Results:

Table 1: Two week wait referrals and breaches for prostate cancer

	2012	2014
Total TRUS Biopsy	83	6
Total TP Biopsy	-	95
Referred via 2WW pathway for A. raised PSA B. abnormal DRE	29	39 2
Total number of 2WW prostate cancers diagnosed (including on MRI, clinical diagnosis)	12	26
Breaches on 2WW pathway for prostate cancer	3 (10.3%)	2 (4.8%)

Conclusion: Despite the more arduous process, we had minimal breaches (4.8%) in 2014. With the combined effort of the multidisciplinary team, this protocol implementing MRI and TP biopsy can be achieved, which provides more accurate staging and a safer service for our patients.

MP15-13 High Value Hematuria Care: Identifying Costs of a Novel Care Pathway

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Introduction: Asymptomatic microhematuria (AMH) is a common incidental finding. Evaluation often involves two patient encounters (consultation and subsequent procedure), which increases time from referral to workup conclusion, is burdensome to patients and may increase costs of care. Using the health system perspective, we compared costs of our traditional two-visit evaluation process with those of a novel single encounter process.
Materials and Methods: We created a cost identification model to compare overall costs of the traditional and single-encounter pathways. First, a multidisciplinary team of primary care and urology providers and administrative leaders developed care process maps of the delivery value chain for microhematuria. Using the novel strategy of time-driven activity-based costing (TDABC), we then estimated indirect costs; direct costs were based on Medicare fees for the appropriate encounters. The team captured variables such as operational costs and process times in both evaluation pathway models to calculate personnel capacity costs. These calculations were applied to the evaluation pathway models to determine total cycle costs.
Result: In the traditional evaluation cycle, the average total costs were $430; 70% were direct costs and 30% were indirect costs. By comparison, the single episode-based encounter reduced total costs by 15%. The majority of the savings accrued from lower indirect costs involved in the second visit of the traditional pathway. A number of modifiable personnel factors influence indirect costs. Assistance of resident physicians in the evaluation & management visit reduced indirect costs by 21%. Use of certified medical assistants in patient care reduced indirect costs incurred by registered nurses by 65%. From the patient perspective, projected time savings are substantial, including elimination of at least one office visit and the associated travel and opportunity costs.
Conclusion: Using the novel costing approach of TDABC, we estimate that the cost of hematuria evaluation may be reduced by 15% through an innovative care delivery pathway. The new pathway may also improve value by freeing up additional return appointment slots. Our cost identification strategy identifies multiple opportunities to improve healthcare value and increase patient satisfaction by streamlining healthcare delivery. As the new pathway is implemented, future studies will assess actual costs, referral to completion time, patient satisfaction and clinical outcomes.

MP15-14 Independent Risk Factors for Contralateral Patent Processus Vaginalis Undetected by Preoperative Ultrasonography in Boys with Unilateral Inguinal Hernia

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Introduction: We investigated the incidence and the independent risk factors for contralateral patent processus vaginalis (CPPV) in unilateral inguinal hernia diagnosed by preoperative inguinal ultrasonography (USG).
Materials and Methods: Between June 2009 and December 2014, a total of 302 boys with clinically unilateral inguinal hernia underwent preoperative USG and 41 (13.6%) of them were reviled bilateral hernia. The remained boys (261) underwent transinguinal laparoscopy during ipsilateral herniorrhaphy for detecting contralateral CPPV. All data were collected prospectively.
Results: The incidence of CPPV confirmed by transinguinal laparoscopy was 27.5% (72/261). The width of hernia sac and mother's age at birth were significant risk factors in the univariate analysis. However, in the multivariate analysis the width of hernia (>1 cm) sac was only an independent risk factor for CPPV (odds ratio 2.335; $p=0.03$). The laterality, type of hernia, age, preterm, low birth weight, twin, blood type, father's and mother's age at birth, and the type of delivery were insignificant.
Conclusion: In this study the width of hernia sac was the independent risk factor for CPPV. This result suggests that the transinguinal laparoscopic examination should be considered to find potential contralateral inguinal hernia in boys who have large hernia sac on preoperative USG.

MP15-15 Gentamicin resistance mirrors increased Ciprofloxacin resistance but multidrug resistance does not necessarily translate as increased infection and sepsis rates after TRUS biopsy

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Aim: The aim of the study is to look at the incidence of urinary infection, sepsis and patterns of antibiotic resistance following TRUS biopsy. The secondary objective is to review antibiotic policy for prophylaxis or treatment of sepsis post biopsy. Application of Clavein-Dindo classification for reporting TRUS sepsis was also evaluated.
Materials and Methods: In this retrospective study, online records of 1406 patients, who underwent TRUS biopsy in a single calendar year, were looked into. Standard antibiotic prophylaxis policy was in place- Metronidazole 1 gm per rectally and Ciprofloxacin 500 mg orally given atleast 40 min before the procedure. Ciprofloxacin was continued for 3 days. Sepsis protocal

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when these patietns were admitted included blood and Urine cultures, Ertapenem 1 gram once daily and later stepped down to oral Co-amoxyclav, unless resistance seen in cultures. For the study any UTI that happened within 30 days of procedure was considered procedure related. Patient demographics were recorded. Morbidity of patients admitted was graded using Clavein–Dindo system.

Results: Of the 1406 patients, 35 patients developed signs and symptoms of UTI (2.5%) and 14(0.99%) of them needed hospitalisation for sepsis. One patient needed ITU support. Nine out of 34 (26%) MSU's and 7 out of 13 (53%) blood cultures had positive cultures. E.coli was the only organism isolated and 9/16 (56%) showed Ciprofloxacin resistance. Due to mixed resistance, addition of gentamicin could have avoided culture positive infection in only 5 additional patients out of 1406 making NNT for prophylaxis with additional gentamicin at 352 patients (95% CI: 335 to 381), to avoid 1 infection.

All positive cultures showed sensitivity to Ertapenem and all patients with sepsis improved with Ertapenem. Average hospital stay was 4 days. Applying Clavein – Dindo system, 29 out of 35 were Grade 2 but had a very varied course of recovery. The average hospital stay was 4 days. No mortality noted.

Conclusion: This study reiterates that Ciprofloxacin resistance is on the increase but interestingly increasing resistance to gentamicin is also seen in this group, in spite of a standard antibiotic practice. But this did not translate into increased incidence of UTI/sepsis or isolation of atypical organisms. This regimen effectively treats culture negative group of patients. Regular audits and adherence to agreed local antibiotic policy with Microbiologists is key in fighting this challenge. Clavein Dindo classification is not a reliable marker for the severity of the infection or for the course of recovery.

MP15-16 Detection of asymptomatic locally advanced and high risk prostate cancer (PCa) through PSA testing: clinical outcomes in men excluded from the ProtecT Trial

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Introduction: To investigate the impact of early detection by PSA testing on survival in men who were not eligible for the ProtecT trial because of high-risk locally advanced prostate cancer.

Patients and Methods: The cases were 515 men detected through PSA testing in the ProtecT trial between 1999- 2009, aged 50–72 years. Controls consisted of 3,978 clinically-detected men from the Anglia Cancer Network (ACN), aged 50–72 years, between 2000 and 2010. Groups were matched on age, year of diagnosis, PSA, Gleason score and clinical stage. PCa specific and all-cause deaths were compared using Kaplan Meier survival analysis. This study also reports on the survival across the radically treated groups in the ProtecT advanced cases.

Results: The ProtecT study advanced cases had a lower risk of death from PrCa (HR 0.29, 95%CI 0.38–0.53, $P < 0.0001$) and all-causes (HR 0.46, 95%CI 0.48–0.63, $P < 0.0001$) compared to the unmatched ACN controls with a median follow-up of 7.4 and 5 years, respectively. The unmatched controls had more high-risk features at baseline. After matching, there remained a 45% reduction in the risk of death from PrCa (HR 0.55, CI95% 0.38 – 0.83, $P = 0.0037$) in the ProtecT study advanced cases at median follow-up of 7.4 years in each group. There was no difference in the proportion of men who died from prostate cancer (HR 0.95, CI95% 0.22–4.12, $P = 0.94$) or all-causes (HR 0.69, 95%CI 0.29–1.67, $P = 0.41$) within the ProtecT advanced cases treated with primary RP compared to primary RT plus hormones after a median follow-up of 6.9 and 7.7 years, respectively.

Conclusion: Detection of high risk locally advanced prostate cancer through PSA testing improves survival from the disease. The future lies in better tests, which identify men with life threatening prostate cancer at an earlier stage. Such tests would be applied to younger men who are likely to benefit from early radical treatments.

MP15-17 EORTC risk tables: usefulness in our daily urological practice

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Introduction: The aim of the study was to assess the EORTC risk tables usefulness in daily urological practice.

Materials and Methods: 444 patients treated for non-muscle invasive bladder cancer with WL bipolar TURBT were analyzed. After performed WL TURBT using the EORTC scoring system the total score for recurrence and progression for each patient was calculated separately.

Patients were divided into 4 recurrence risk groups. Patients with total recurrence score 0 were classified to group I, 1–4 points to group II, 5–9 to group III, and 10–17 to group IV risk of recurrence. Follow-up and adiuvant therapy were done in according to EAU guidelines.

Results: 106 patients (23,8'%) developed recurrent bladder tumor in 12 months of follow-up. Statistical analysis showed statistically relationship between the occurrence of recurrence after one year and recurrence risk groups. The risk of bladder tumor recurrence was statistically higher in intermediate-risk group. The recurrence rate was 0%, 28,6%, 44.7%, and 17,4% in I, II, III and IV recurrence risk group, respectively. About the staging and grading we observed a recurrence rate in PUNMPL group of 3,48%, in pTaLG of 6,55%, in pTaHG of 9,42%, in pT1LG of 1,02%, in pT1HG of 6,96% and in pCISHG dell'1,84%.

If we evaluate the progression, as an increasing recurrence in staging and grading of the primary lesion but always non-muscle invasive, in the analyzed group within one year occurred in 52 patients (11,7%). The risk of bladder tumor progression was statistically higher in intermediate-risk group. The recurrence rate was 0%, 19,2%, 55.7%, and 25,0% in I, II, III and IV progression risk group, respectively. Stratifying these data for staging (pT) and grading, we observed a progression in the 1,9% of PUNMPL, in the 53,8% of the pTaLG, in the 36,5% of the pTaHG, in the 1,92% of the pT1LG and in the 7,6% of the pCISHG.

Instead if we consider the progression as the transition to a stage pT2 or more, we observed it in 3 patients 0,67%, two in the II and one in the other III risk group, both of them in the pTaHG group.

Conclusions: EORTC risk tables are useful to predict the possibility risk of recurrence and progression in patients with non-muscle invasive bladder cancer

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MP15-18 Patient Frailty is a Strong Predictor for Complications after Renal Cancer surgery– Analysis from the NSQIP Database

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Background: In the United States, over 61,000 persons will be diagnosed with renal cancer in 2015. Traditional chemotherapy and radiation are ineffective, leaving surgical extirpation or needle ablation as the only curative options. However, postoperative complications are not uncommon in these patients because the mean age at diagnosis is 65, and many patients are former smokers with multiple comorbid conditions. Patient frailty has been demonstrated to be a powerful predictor for postoperative complications in other surgical fields, thus we aimed to determine if patient frailty could independently predict for complications after renal cancer surgery using the American College of Surgeons' National Surgical Quality Improvement Project (NSQIP) database, which captures approximately 70% of all inpatient surgical procedures performed in the United States.
Materials and Methods: We identified all patients in the NSQIP database who underwent open or minimally invasive renal cancer surgery from 2005–2013. The Modified Frailty Index (calculated using eleven preoperative variables and additively scored as 0, 1, 2, 3 or ≥4) was calculated for each patient, and the incidence of 30-day postoperative complications was determined for patients at each Frailty Index. Univariate analysis and multivariate logistic regression were used to determine the independent predictors of these complications.
Results: Between 2005 and 2013, 11,755 open or minimally invasive renal cancer operations were included in the NSQIP database. Table 1 shows the distribution of the Modified Frailty Index and ASA Classification in these patients. Using the referent Frailty Index = 0, univariate analysis demonstrated that patients with Frailty Index 1, 2, 3, ≥4 had monotonically increasing, statistically significant odds ratios of complications of 1.6, 2.1, 3.3 and 5.1, respectively. On multivariable analysis including patient age, Frailty Index, operative time, body mass index and preoperative serum albumin, all variables were statistically significant independent predictors for 30-day complications except body mass index and Frailty Index of 1.
Conclusions: The Modified Frailty Index is simple to calculate and it is an independent predictor of both the severity and number of postoperative complications in patients undergoing renal cancer surgery.

Frailty Index		
0	4167	35.4%
1	6177	52.5%
2	1064	9.1%
3	262	2.2%
≥4	85	0.7%
ASA Classification		
1	268	2.3%
2	4311	36.7%
3	6512	55.4%
4	644	5.5%
5	3	<0.1%
Unknown	17	0.1%

MP15-19 Same day discharge with an early recovery after surgery protocol is safe and applicable for patients undergoing robot assisted laparoscopic surgery

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Introduction: With the advent of laparoscopy, many procedures that were completed via an open approach can now be performed in a minimally invasive manner. The advantages conferred by the laparoscopic or robotic approach are a decreased blood loss during surgery, less pain during recovery and a shorter length of stay. At our center, we have started to offer patients same day discharge for any robot assisted laparoscopic surgery through an early recovery after surgery protocol (ERAS).
Methods: Patient information was gathered as part of an IRB approved database. We have only recently begun an ERAS protocol at our medical center, which includes limitation of intraoperative narcotics and the use of local, regional and spinal anesthesia as well as early ambulation and extended recovery for patients undergoing robotic surgery. The perioperative and intraoperative data on all patients who underwent robot assisted laparoscopic surgery were reviewed and those who were discharged on the same day as their procedure were included in the data analysis.
Results: Since implementing our protocol, 5 of 7 patients who have been offered it have been discharged on the same day. The two who were admitted stayed only overnight and were discharged the following day. The five patients who were discharged on the same day underwent the following robot assisted laparoscopic procedures: radical prostatectomy (2), right nephroureterectomy (1), left retroperitoneal partial nephrectomy (1) and sacrocolpopexy (1). The mean age, BMI, EBL and robotic console time were 64.6 years, 30.88, 140 mL and 136.2 minutes, respectively. Follow up ranges from 14–60 days. There have been no reported complications or readmissions for any of the five patients.
Conclusions: Early recovery with same day discharge is safe and possible for patients undergoing robot assisted laparoscopic surgery and may help improve patient satisfaction and reduce cost for hospitals. Further research with a greater number of patients is needed to verify these **Conclusions**.

MP15-20 Hepatic–coagulopathy: do we really need to correct it prior to urological interventions? Experience from an apex hepatobiliary referal hospital in India

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Introduction and Objective: Hepatic-coagulopathy is a common entity seen in 70–80% of patients with chronic liver disease (CLD). These patients, when are referred to urologist for various urological interventions, pose a unique challenge, as majority of endourological interventions are contraindicated in the presence of ''uncorrected'' coagulopathy. We share our experience of urological intervention in these patients.
Methods: We reviewed the medical records of 43 CLD patients with ''uncorrected'' coaguloapathy, as evident by thrombocytopenia and prolonged INR, at the time of intervention, who

underwent 50 urological interventions between Jul 2012 and May 2015.
Results: Thirty three males and 10 females, in the age range of 34–80 years (mean, 39.4 years), CLD patients underwent 50 interventions, which included PCNL (5 patients), per-cutaneous drain placement in renal abscess (2), uretero-renoscopy (16), double J stenting (4), ESWL (8), orchiectomy with drainage of scrotal abscess & SPC (1), cystolithotripsy (1), transurethral deroofing of prostatic abscess (1), RIRS(8), TURP(3) and TURBT(1). All patients underwent detailed evaluation, risk assessment and stratification using Child Class and Mayo Clinic post-operative mortality in patient with cirrhosis. They were optimized by Hepatologist and received adequate blood products based on thromboelastogram (TEG) in the peri-operative period. Hospital stay ranged from 1–34 days (average, 4 days). One patient underwent successful liver transplant after ureteroscopic removal of obstructing ureteric stone. There were two mortalities and two patients had post-operative hepatic decompensation, requiring prolonged ICU care.
Conclusions: Urological Interventions in patients with chronic liver disease with ''uncorrected'' coagulopathy requires a teamwork and adequate pre-operative planning to prevent post-operative decompensation and bleeding. Risk of bleeding in these patients is not as high as perceived due to underlying abnormal laboratory parameters. These patients maintain a more fragile balance of hemostasis than normal subjects due to deficiencies in both prohemostatic and antihemostatic drivers, as a result standard laboratory tests of hemostasis such as INR do not adequately assess this state of rebalance, and hence need not be coreected prior to intervntion. More global assays such as TEG are more informative and should be should used in clinical practice to guide transfusion requirements in these patients.

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MP15-21 A Trial without Catheter (TWOC) Protocol - A Simple Way to Reduce Transurethral Resection of Prostate (TURP) Post-Operative Length of Stay (LoS)

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Introduction: A recent departmental audit demonstrated that our TURP patients' median LoS was 3.4 days. We aimed to reduce the TURP post-operative LoS following the **Introduction** of post-operative day 2 6am TWOC protocol and discharge the majority of patients on post-operative day 2.
Patients and Methods: Retrospective review of all TURPs performed November 2014 – February 2015. Patient demographics, indication for operation, pre-operative catheter, additional procedures performed, successful TWOC, length of stay in days and reasons for delayed discharge were recorded for all patients.
Result: 54 TURPS were performed over a 3 month period. 23 (43%) were performed on weekend waiting list initiatives. Median post-operative LoS was reduced to 2.3 days (IQR 1.7 – 3.1 days). Hospital stays longer than 3 days were usually due to sepsis or co-morbidity.
Conclusion: Simple and inexpensive methods can lead to very effective change in hospital practice. The introduction of this simple protocol form, which can be easily completed by the junior doctors, has reduced our TURP patients' LoS by 1 day. Thus not only improving patient care but allowing better bed management.

MP15-22 Laser prostatectomy; HoLEP is an effective bladder outflow surgery with better clinical outcome– Our experience in district general settings

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Introduction: TURP is considered as gold standard and benchmark for surgical therapies. European Urological Association considers TURP the treatment of choice for prostates sized 30 to 80 mL. We compared HoLEP vs TURP surgery outcome.
Methods: A prospective data was collected from June 2014 till May 2015 on patients who had HoLEP due to the > 80 gm size of prostate and TURP.
Results: 33 patients had HoLEP vs 31 TURP surgery. 7 (21%) patients were on aspirin and 4 (12%) on warfarin in HoLEP vs 10 (32%) on Aspirin, 5 (16%) on clopidogrel and 4(12%) on warfarin in TURP, who stopped the medication prior to surgery. 2 patients has bladder stone in HoLEP group/ (Table 1). During follow up over 8–12 weeks' time, 3(9%) vs 8 (25%- 5 were known ca). 3 patients had mild short term stress incontinence in HoLEP patients which was treated conservatively, while none in TURP but one patient required re-do TURP. 2 patients had urgency with urge incontinence required anticholinergic, and 2 (6%) still complained of nocturia. All patients had perioperative antibiotics. (Table 2)

Pre-operative: (Table- 1)

Operation	HoLEP		TURP
Total no	33		31
Age in yrs (Mean)	73.9 (57- 89)		73 (54- 90)
Pre op symptoms	15 LUTS, 18 AUR		20 LUTS, 11 AUR
Pre op IPSS (Mean)	26.9 (20- 34)		25.8 (18- 33)
Pre op Q Max (Mean)	7.05 ml/sec (2.7- 11.9)		8.2 ml/sec (4.0- 15.2)
Post void residual	401 mls (35- 800)		250 mls (175- 820)
Prostate size on DRE	>80gms		46.5 cc (20- 80cc)
Failed medical therapy	15 (45.4%)		1 7 (54.8%)

Per- operative & early post-operative: (Table 2)

Operation	HoLEP		TURP
Total no	33		31
Surgeon grade	Cons + trainee (100%)		Cons + trainee (100%)
Resection time (mean)	69 min (30- 100)		66.9 min (25- 110)
Irrigation required	3 (9%)		26 (83%)
Intraoperative complication	0		0
TUR syndrome	0		0
Sepsis	0		0
Blood transfusion	0		0
Hospital Stay (mean)	27.6 hrs (24-48 hrs)		51.87 hrs (24-120)
Successful TWOC	22 (66%)		17 (54.8%)

Conclusion: Our data has suggested that HoLEP is safe and a very effective operation even for very large gland sizes. Our results are comparable with already published data and we suggest that HoLEP should be the operation of choice for prostates of all sizes due to its high efficacy and less duration of hospital stay and ealry removal of catheter.

MP16 - SURGICAL OUTCOMES 4

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MP16-1 Utilization of prostate cryoablation has decreased over time in Gleason 6 prostate cancer: Results from the SEER database

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Introduction: Prostate cryotherapy provides a less invasive option for management of prostate cancer. The outcomes of cryotherapy have had mixed results and it is unclear which patients benefit from this treatment modality. We aimed to evaluate the utilization of cryotherapy as primary therapy for Gleason 6 prostate cancer.
Methods: SEER-18 registries database was used to identify all cases of biopsy proven Gleason 6 prostate cancer that either underwent no treatment, prostatectomy or cryoablation between the years of 2004 and 2012. Patients were excluded that had radiation therapy. Patient demographics were compared between the groups and survival curves were generated for overall and cancer-specific survival.
Results: There were 67,764, 60,439 and 2,240 patients treated with prostatectomy, undergoing surveillance and cryoablation, respectively. Patients undergoing cryoablation were older with a mean age of 69 years compared to 67.8 and 60 years for patients undergoing surveillance or prostatectomy, respectively ($p < 0.0001$). Cryoablation utilization peaked in 2007 with 15.6% of all cryo cases occurring this year and has steadily declined to 5.8% in 2012. Patients had a decreased overall survival when treated with cryoablation or surgery, but there was no difference seen in cancer-specific survival between any groups (Figure 1).
Conclusions: Cryoablation of prostate cancer is not frequently utilized compared to prostatectomy of surveillance of these cancers. Those patients that are decided to undergo cryoablation appear to be older and have a decreased overall survival. Interestingly, there was no difference seen in nine year cancer-specific survival as all groups experienced > 97% survival rate. Further studies are required to determine which patients may benefit from this treatment modality.

MP16-2 Poorer Quality of Life is Associated with Increased Healthcare Utilization in Men Following Robotic-Assisted Radical Prostatectomy

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Introduction: Management strategies for prostate cancer patients have become increasingly focused on maximizing health-related quality of life (HRQOL). The purpose of this study was to evaluate whether differences in HRQOL after robot-assisted radical prostatectomy (RARP) are associated with variations in healthcare utilization.
Methods: We enrolled all men who underwent a RARP for prostate cancer within Southern California Kaiser Permanente from March 2011 to September 2013. Men completed the Expanded Prostate Cancer Index Composite (EPIC)-26, a validated HRQOL survey, at baseline (time of diagnosis) and 90 days following surgery. Patients were stratified according to change in EPIC-26 scores into good (decline < 40 points), Intermediate (decline 40–60 points), and poor (decline > 60 points) groups. Post-operative hospital and clinician utilization were compared between groups using the Chi-squared and Wilcoxon Rank-Sum tests.
Results: With respect to the EPIC-26 sexual domain, there were 173 (42.1%), 90 (21.9%), and 148 (36.0%) men with good, intermediate, and poor scores at 90-days post-op respectively. Men with good scores were significantly older and were more likely to be married ($p < 0.05$). Multivariate analysis revealed significantly more clinician email encounters from men with the poorest scores ($p = 0.039$). In regards to the urinary incontinence domain, there were 142 (34.9%), 109 (26.8%), and 156 (38.3%) men with good, intermediate, and poor scores at 90-days post-op respectively. All groups were similar in regards to patient demographic and clinical characteristics. The multivariate model showed significantly more physical therapy visits in men with the poorest scores ($P = 0.0007$). There were no differences in clinician office visits, ER visits, or telephone encounters.
Conclusions: Men with the poorest HRQOL at three-months following RARP were more likely to seek care via email and physical therapy encounters related to sexual function and urinary incontinence respectively. This suggests that achieving good post-treatment HRQOL outcomes for patients can potentially reduce clinician workload and healthcare utilization costs.

MP16-3 The Efficacy and Safety of Tadalafil 5 mg Once Daily for the Treatment of Erectile Dysfunction Related to the Vascular Causes after Robot-assisted Radical Prostatectomy: 2 Year Follow-up

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Purpose: To evaluate the efficacy and safety of tadalafil 5 mg once daily use in the treatment of erectile dysfunction (ED) based on the vascular cause after robot-assisted radical prostatectomy (RARP).
Materials and Methods: The study retrospectively evaluated 92 patients who underwent RARP and had a penile rehabilitation by tadalafil 5 mg once daily use at our medical center. The patients were surveyed based on the abridged five-item version of the International Index of Erectile Function (IIEF-5) Questionnaire, which was self-administered before the surgery, and at 6 months, 1 year and 2 years after the surgery. The 92 patients were classified into the tadalafil group ($n = 47$) and the non-tadalafil group ($n = 45$). Each group was then classified depending on the nerve-sparing (NS) procedure: bilateral NS and unilateral NS. Additionally, patients who underwent a penile color-duplex U/S study to evaluate the cause of erectile dysfunction were also analysed..
Results: At 6 months, 1 year, and 2 years, the total IIEF score of the tadalafil group and that of the non-tadalafil group were 10.0 ± 3.4 vs. 7.0 ± 4.0, 13.2 ± 5.6 vs. 7.7 ± 4.8, and 13.8 ± 4.7 vs.

8.1 ± 4.2, respectively. Statistically significant improvements ($P < 0.05$) were observed in the tadalafil group for all 5 domains of IIEF-5 score, while in the non-tadalafil group there was no significant improvement in any of the domains at 1 and 2 years. Fifty three patients had a penile color-duplex U/S study. Arteriogenic and venogenic ED was seen in 31 patients (58.5%) and 7 patients (13.2%). Fifteen patients (28.3%) showed unremarkable findings. Venogenic ED patients had little response compared to arteriogeinc ED patients by tadalafil 5 mg once daily use (0% vs 22.5%). The overall side effects were hot flushing in 8.5%, headache in 4.3%, and dizziness in 2.1%.
Conclusions: In ED patients after NS RALP, a once daily dosage of tadalafil 5 mg was well tolerated and significantly improved EF compared with the non-tadalafil group until two years. But in the venogenic ED patients, response to a once daily dosage of tadalafil 5 mg was relatively limited compared to the arteriogenic ED patients.

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MP16-4 Comparative Peri-operative, Oncologic and Continence study after 300 cases of Retzius-sparing Robot-assisted Radical Prostatectomy

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Introduction: We compared the initial 300 cases of peri-operative, oncologic and continence results of posterior approach Retzius-sparing robot-assisted radical prostatectomy (RS-RARP) with those of anterior approach RARP.
Methods: Three hundred patients who underwent posterior approach, RS-RARP between Nov 2012 to Apr 2015 were included. All peri-operative, oncologic, continence data was prospectively collected and compared with a database of total 1100 patients who underwent anterior approach RARP. To eliminate the learning curve effect and selection bias, 300 patients of posterior approach RARP were matched to most recent 500 cases of anterior approach RARP. Pre-operative variables including age, body mass index, preoperative PSA, Gleason score, clinical T stage and prostate volume were collected for propensity score matching of two groups. Continence was defined as use of no pad or as one safety liner. Biochemical recurrence was defined as two consecutive PSA > 0.2 ng/ml. Peri-operative results, oncologic outcomes and continence rates were analyzed.
Results: The mean patient age was 65.1 year. Pre-operative variables were similar between two groups ($p > 0.05$) after propensity score matching. Mean console time was less in posterior RS-RARP group, 97.3 min (post.) vs 121.6 min (ant.), $p = 0.005$. Complication rate (Clavien-dindo classification over II) was comparable between two groups (4% vs 5%, $p = 0.522$). 1-year biochemical recurrence free survival rate of posterior RS-RARP and anterior RARP were 81.9% 83.6%, respectively (Log rank test $p = 0.215$), and positive surgical margin rate were 24% and 26.3% ($p = 0.164$). The continence rate of posterior RS-RARP on 1, 6, 12 months were 85%, 91%, 95%, and those of anterior RARP were 55%, 74%, 81.7% respectively.
Conclusion: We demonstrated posterior approach Retzius-sparing RARP to be oncologically safe and to result in high continence rate and reduced operation time by no need for reconstruction techniques. Long-term, prospective and randomized controlled studies are needed.

Table 1. Comparison of Prei-operative, oncologic and continence outcomes.

	Anterior-RARP (n=300	Posterior(RS)-RARP (n=300)	P-value
Mean age±SD, year	64.88±7.38	65.61±7.88	0.179
Mean BMI±SD, km/m^2	24.25±2.84	24.23±2.74	0.95
Mean PSA±SD, ng/dl	14.7±46.29	13.2±14.08	0.537
Mean Prostate volume± SD, gm	34.88±17.06	32.71±14.79	0.072
Mean Console time±SD (minute)	121.6±87.3	97.3±39.4	0.005
Estimated blood loss±SD (cc)	308.5±223	249.8±190	0.002
Complication n, (%)	15 (5)	12 (4)	0.522
1-year BCR free survival rate (%)	83.6	81.9	0.215
Positive surgical margin rate (%)	79 (26.3)	72 (24)	0.164
Continence rate (1 month) (%)	55%	85%	0.005
Continence rate (6 month) (%)	74%	91%	0.015
Continence rate (12 month) (%)	81.7%	95%	0.029

MP16-5 Using the EPIC 26 QOL questionnaire to detect and assess depression in patients with prostate cancer

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Introduction and Objectives: Depression is an increasing problem in older men especially with prostate cancer. The EPIC 26 HR-QOL questionnaire is a standardized measurement of patient's urinary and sexual recovery after prostate cancer treatment. However, it is unknown whether this questionnaire may be used to monitor and asses prostate cancer patient's depression. The PHQ-2 and PHQ- 9 are validated questionnaires employed by primary care physicians. The PHQ-9 is used to assess and screen depression and the PHQ-2 is an abbreviated version used to quickly screen depression. We examine whether the EPIC 26 question on depression may be used as a surrogate for the PHQ-2 and 9 questionnaires.
Methods: 4538 men with a positive biopsy between March 2011 and April 2013 were enrolled in the EPIC 26 QOL study. Men who completed a PHQ-2 or PHQ-9 as well as an EPIC 26 HR-QOL were included. Men were excluded if they had more than 90 days between the time they answered the PHQ questionnaire and EPIC 26 or if they received treatment between taking the two questionnaires. The responses on the PHQ-2 or PHQ-9 were compared with the same patient's responses on the EPIC 26.
Results: After the inclusion and exclusion criteria, 220 matched surveys were compared. 124 patients had PHQ2 questionnaires that were compared to their most recent EPIC 26 scores. The PHQ2 responses were not significantly associated with the EPIC 26 responses: Spearman's correlation coefficient = 0.058, $p = 0.520$. 96 patients with PHQ9 and EPIC 26 responses were compared. There was a strong correlation between these two tests: Spearman's Rank correlation coefficient = 0.471 with $p < 0.0001$.

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Conclusion: The EPIC 26 did not correlate with the PHQ2, the abbreviated screening questionnaire for depression. However, it has a strong correlation with the PHQ9 the longer and more validated questionnaire for screening and assessing patients with depression. This may allow us to better screen and assess depression in patients with prostate cancer, and better track how different prostate cancer treatments affect patient's mental health in the future.

MP16-6 Targeted prophylactic antimicrobial therapy prior to TRUS biopsy: A systematic review of literature

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Introduction: Prostate cancer diagnosis involves transrectal ultrasound-guided (TRUS) guided biopsy that carries a high risk of infective complication. We also looked at the prevalence of fluoroquinolone resistance and the incidence of post-TRUS biopsy infective complications following both empirical and tailored antibiotic prophylaxis.
Methods: A systematic review was conducted for English language articles in accordance with the Cochrane systematic review guidelines and PRISMA checklist between 1946 and March 2014. We included all patients undergoing TRUS biopsy that received targeted antimicrobial therapy based on the results of pre-procedural rectal swabs or stool cultures. The primary outcome measure was risk reduction in groups who received targeted antimicrobial prophylaxis compared with groups receiving empiric antibiotic prophylaxis. A secondary outcome measure was baseline prevalence of fluoroquinolone resistance (FQ-R) prior to TRUS biopsy.
Results: After screening 121 studies, a total of 9 studies (2745 patients) formed the basis of our final review. Of these, 887(32%) patients received empirical fluoroquinolone prophylaxis whilst 1858(68%) patients had pre-biopsy rectal swabs. Overall, the mean fluoroquinolone resistance was found to be 12.3%. Overall infection rates were significantly higher in groups given empirical prophylaxis (5.73%) compared with groups receiving targeted antimicrobial prophylaxis (0.65%) based on the results of rectal culture. With an absolute risk reduction of 5.08% ($p < 0.0001$), 20 men would need to receive targeted antimicrobial prophylaxis to prevent 1 infective complication.

Incidence and rate of non-septic and septic post-TRUS biopsy infective complications (PTBICs)

	No. of patients	Total no. of PTBIC (rate)	No. of non-septic infectious complications (rate)	No. of septic complications (sepsis rate)
Groups receiving empirical prophylaxis	908	52 (5.73%)	42 (5.22%)	10 (1.10%)
Groups receiving targeted prophylaxis	1858	12 (0.65%)	8 (0.57%)	4 (0.22%)

Conclusion: TRUS biopsy with empirical antimicrobial prophylaxis is a high risk procedure. It is imperative that steps are taken to lower the risk associated with obtaining prostate biopsies. Our systematic review of contemporary studies suggests that rates of sepsis can be significantly reduced by the use of targeted prophylactic antimicrobial therapy, and therefore supports its use prior to TRUS biopsy.

MP16-7 Prospective assessment of time-dependent changes in quality of life of Japanese patients with prostate cancer following robot-assisted radical prostatectomy

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Background: The objective of this study was to characterize changes in the quality of life (QOL) following robot-assisted radical prostatectomy (RARP).
Methods: The health-related and disease-specific QOL in 298 consecutive prostate cancer patients were prospectively assessed using The Medical Outcomes Study 8–Item Short Form (SF-8) and The Extended Prostate Cancer Index Composite (EPIC), respectively, before and 1, 3, 6, 12 and 24 months after RARP.
Results: In the SF-8, all 8 scores on all postoperative surveys, except for 4 scores at 1 month after RARP, showed no significant differences from baseline scores. In the EPIC, the urinary summary scores at 1 and 3 months after RARP and sexual summary scores at 1, 3 and 6 months after RARP were significantly inferior to those of baseline scores.
Conclusions: Despite favorable preservation of the health-related QOL, urinary and sexual functions as the disease-specific QOL appeared to be significantly impaired after RARP.

MP16-8 Focal Cryo-Ablation in Localized Radiation Failure Prostate Cancer

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Introduction & Objectives: Treatment of radiation failure prostate cancer remains a challenge. In this prospective pilot study we sought to determine the role of focal cryo-ablation in the setting of localized unilateral radiation failure prostate cancer.
Material & Methods: Between January 2012 and June 2014, patients over the age of 65 affected by radio-recurrent unilateral prostate cancer were offered focal cryo-hemi-ablation. Unilateral disease was defined as positive unilateral magnetic resonance (MR) followed by prostate biopsy concordance, or negative MR with unilateral positive biopsy (minimum 12 cores). Furthermore PSA < 10 with slow doubling time and a negative metastatic workup were deemed necessary. Patients were followed with PSA every three months and a protocol biopsy at 6 months. Oncologic and functional outcomes were analyzed.
Results: Fourteen patients with a mean age of 71 and mean PSA at recurrence of 5.2 underwent hemi-cryoablation. There were 8 (57%) patients with concordance between MR and biopsy and 6 (43%) with completely negative MR and unilateral prostate cancer on biopsy. Gleason (GL) score could not be calculated by the pathologist in 10/14 patients due to radiation artefacts, although 90% of the patients had a pre-radiation treatment GL < 8. One patient had a single core GL 6 and three patients had a unilateral GL7 recurrence. Mean follow-up was 13 months with a mean PSA of 1.0 and no biochemical recurrence to date (as per

Phoenix criteria). On postoperative protocol biopsy one patient (7%) had minimal persistence of disease on the same lobe treated with a stable PSA. There were no intra-operative and two post-operative (14%) complications (UTI's). Furthermore, 13 out of 14 (93%) patients were continent at catheter removal and 4/14 (28.5%) remained potent.
Conclusions: Focal cryotherapy in the settings of salvage prostate cancer treatment appears to be safe in selected patients. Oncologic outcomes are encouraging but need further investigation.

MP16-9 Long Term Effect of Neoadjuvant Leuprolide Injection on Quality of Life Following Radical Prostatectomy

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Introduction: Neoadjuvant leuprolide acetate injection is commonly used prior to radical prostatectomy in patients with locally advanced disease. While literature shows its ability to decrease the positive margin rates, it is unknown whether neoadjuvant leuprolide can have long term effects on quality of life. We examine neoadjuvant leuprolide injection's effect on patient's long term recovery following surgery.
Methods: From March 2011 to April 2013, 4538 men with a positive prostate biopsy were enrolled and followed up to 24 months. A cohort of the men with one dose of leuprolide acetate injection, 22.5 mg, prior to robotic prostatectomy (n = 51) was compared 1:3 to a matched group of men who underwent robotic prostatectomy as their primary therapy (n = 153). Patients were matched on Charlson comorbidities, biopsy Gleason score, and node status on final pathology. The Kruskall-Wallis test was used to compare the groups on the basis of their bowel, urinary, sexual, and hormonal domains of the EPIC 26 HR-QOL at Baseline, 1,3,6,12,18 and 24 months.
Results: The urinary and bowel domains were similar in the neoadjuvant and control groups at each point during the 24 months. The neoadjuvant group did persistently worse as compared to the matched cohort in the sexual domain up to two years following surgery, these differences were statistically significant at 3 and 12 months. In the hormonal domain the results were even more apparent with the neoadjuvant group having continued worse QOL scores up to two years and reaching statistically significance at 1, 3, 6 and 18 months.
Conclusion: Patients who receive neoadjuvant leuprolide injection have worse outcomes for up to two years after robotic prostatectomy with respect to sexual and hormonal domains of quality of life. Patients who underwent neoadjuvant leuprolide have similar outcomes in the urinary and bowel domains after prostatectomy when compared to controls. Neoadjuvant leuprolide can have a lasting negative impact on a patient's sexual and hormonal recovery after surgery and these effects should be considered prior to administering this treatment.

MP16-10 Robotic Radical Prostatectomy for High Risk Prostate Cancer in Men Greater than 70 Years Old

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Introduction: Despite PSA screening, approximately 15–26% of patients with prostate cancer present with high risk disease. Although traditionally treated with radiotherapy and/or androgen deprivation therapy, radical prostatectomy has gained increasing favor in the treatment paradigm of this patient population. A definite stage and grade, early detection of treatment failure, and reducing the risk of metastatic progression to a greater extent than radiation therapy has made robot assisted radical prostatectomy (RARP) an attractive option. As a shift occurs in the management of high risk prostate cancer and with more Americans living to advanced age, it is of upmost importance to examine this subgroup of me who would benefit from surgical intervention and which patients may have more favorable outcomes from non-surgical interventions.
Materials and Methods: High risk disease, is defined by the widely accepted D'Amico criteria as Gleason score ≥8, a clinical stage ≥T2c, or a presenting PSA level ≥20 ng/mL and is understood to be a significant predictor of progressive, symptomatic disease or death from prostate cancer. We reviewed our database of 3,433 patients who underwent Robot-Assisted Radical Prostatectomy (RARP) at a single institution by a single surgeon (DIL). For RARP patients with high risk prostate cancer at an age greater than 70, we analyzed perioperative data and biochemical recurrence free survival.
Result: We analyzed 46 patients who qualified for high risk prostate cancer who were age 70 or above at the time of RARP. The median age and BMI were 72 and 28.21, respectively. The follow-up dates ranged from 3 to 83 months. 1-year biochemical recurrence free survival (1-RFS) was 74.4%, while 2-year biochemical recurrence free survival (2-RFS) was 65.1%. The most common pre-operative high-risk identifier was a Gleason Score of ≥8 (74%). Lymph node dissections were performed in 85% of this cohort with 10.3% positive lymph node involvement. Positive surgical margins and extracapsular extension were present in 32.61% and 41.30% of patients, respectively.
Conclusion: Patients over the age of 70 with high risk prostate cancer appear to benefit from RARP. As our patient population ages, it is important we tailor our treatment approach to each individual case.

MP16-11 Preoperative prediction of biochemical recurrence in high-risk prostate cancer patients who underwent robot-assisted radical prostatectomy

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Introduction: Treatment of high-risk prostate cancer is controversial. The salvage therapies such as radiation therapy and hormone therapy in early postoperative period are considered to be effective. Additionally it is important to determine whether it is necessary for the patient to undergo such therapies. Therefore we evaluated the preoperative risk factors for biochemical recurrence (BCR) after robot-assisted laparoscopic radical prostatectomy (RARP) in high-risk prostate cancer patients.
Patients and Methods: Medical records of 216 patients who underwent RARP from October 2010 to August 2014 were reviewed. BCR was defined as PSA ≥0.2 ng/ml or adjuvant therapy. Kaplan Meier curves and Log Rank test were used to compare the risk of BCR. Cox's proportional hazards regression univariate and multivariate analyses were performed in order to

define the prognostic factors. Biochemical recurrence free survival rate and postoperative urinary incontinence rate were also evaluated.
Results: The median follow-up time was 18 months. Of all patients, 89 patients had high-risk prostate cancer defined as presenting with at least one of the following high-risk factors: PSA > 20 ng/ml, clinical T3 and Gleason score (GS) ≥8. Median age at surgery was 65.0 years, and median body mass index was 24.1. Among 89 patients, 70 had one high-risk factor and 19 had two or more high-risk factors. BCR occurred in 16 (7.4%) patients. On univariate analysis, clinical T stage ($p < 0.001$), biopsy GS ($p = 0.005$) and NCCN risk stratification ($p = 0.017$) were significant risk factors for BCR. On multivariate analysis using Cox proportional hazards model, clinical T stage (hazard ratio [HR] = 4.690; $p = 0.004$) and biopsy GS (HR = 3.034; $p = 0.048$) were significant risk factors for BCR. The one year PSA failure-free survivals of patients with one high-risk factor only and more than two high-risk factors were 95.4% and 61.2% ($P < 0.001$), respectively. Furthermore, the patients with more than two high-risk factors had a tendency for higher postoperative urinary incontinence rate than other patients ($p = 0.07$).
Conclusions: According to the finding of the present study, patients who have only one high-risk factor can be considered as candidate to undergo RARP. However, patients who have more than two high-risk factors should be considered as part of a multimodal treatment strategy.

MP16-12 Cost-Benefit Comparison of Robotic-assisted Simple Prostatectomy (RASP), Open Simple Prostatectomy (OSP), Bipolar Transurethral Resection (TURP), and Photovaporization (PVP) for Benign Prostatic Obstruction (BPO)

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In recent years, RASP has gained popularity as ablative therapy for LUTS due to BPO. As with all novel therapies, it is important to evaluate outcomes and value of RASP. We sought to compare perioperative variables between RASP, OP, TURP, and PVP at our institution. Additionally, we reviewed charges for cost-benefit analysis. Charges were correlated with perioperative data to explore the economic impact of RASP versus TURP, OP and PVP.

We reviewed surgeries performed between 9/2012–9/2014 at our institution. Patients were grouped by procedure. Operative duration, EBL, length of stay, and Foley duration, and resected weight data were retrieved. Mean values were compared using ANOVA with $p < 0.05$ representing significance.

232 patients were treated: RASP (43), PVP (62), OP (5) and TURP (122). Mean values for operative duration, EBL, catheter duration, and total charges were significantly greater for RASP when compared to TURP and PVP. There was no significant difference in length of stay among procedures. The PVP group had a shorter catheter duration and lower EBL when compared to TURP. There was no significant difference in charges between TURP ($23,059), OP ($27,337) and PVP ($25,148) whereas RASP total charges were over 2.5x greater ($54,734).

RASP is associated with significantly greater operative charges when compared to TURP, OP and PVP. OP and RASP showed greater EBL and catheter duration than PVP or TURP. It will be important to consider these findings, along with emerging clinical outcomes data, when counseling patients with BPH who desire definitive management.

MP16-13 Assessment of functional, oncological and population-based complications surveillance following extraperitoneal laparoscopic prostatectomy using record-linkage methodology

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Purpose: To assess the functional, oncological and population-based surveillance of complications within 90 days following extraperitoneal laparoscopic prostatectomy (ELRP).
Methods: 200 consecutive men who underwent ELPR at a teaching hospital between 2010 and 2015 were prospectively followed up using validated electronic record-linkage methodology across community and tertiary settings. Data collected included demographic, perioperative, post-operative, complications, quality assurance, and follow-up on functional and oncological outcomes using standardized self-administered questionnaires and third party assessment.
Results: Mean operating time was 240 minutes 8 men had postoperative complications, 3 patients developed bladder neck strictures, 2 men of them had surgical clips migrated into anastomosis. 72 had positive surgical margins (49 with pT3a or more) and of which 21 men had biochemical relapse and required adjuvant treatment. Biochemical recurrence-free survival rate was 96.8% at 12 months. Record-linkage methodology showed 18 patients had re-admissions within 90 days of the procedure for various indications including urinary infection, haematuria, urinary leakage and pelvic collections. 14 of these men required percutaneous drainage and hospital stay following re-admissions ranged between 3–12 days. 22 men reported to primary care physicians for various indications. 91.5% of men were continent and 40.6% of those with nerve preservation surgery were potent at 12 months.
Conclusion: The study reports comparable functional and oncological outcomes, but first to detail community-population based complications post ELRP. One in ten men needed community physician/healthcare referral for procedure related problems. Community based surveillance of complications should be part of assessment when planning early discharge from the hospital.

MP16-14 Radical prostatectomy outcomes in Germany: an analysis of a surgeon independent database of 20.067 patients subjected to open, laparoscopic and robotic assisted procedures.

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Aim of the study: To compare open, laparoscopic and robotic assisted radical prostatectomy (RP) based on the outcomes of a surgeon independent database.
Materials and Methods: Data on RP operations performed in the German health care system during a 3 year period (2010–

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2012) were retrieved from the database of AOK insurance company. AOK is one of the largest insurance companies in Germany, covering almost 1/3 of German population. Evaluated parameters were patient demographic information, 30-day mortality, transfusion and perioperative complications rates, as well as one-year reintervention rates.
Results: In total we identified 20,067 cases subjected to radical prostatectomy during the study period, of which 14741 (73.5%) were operated by an open, 2831 (14.1%) by a laparoscopic and 2495 (12.4%) by a robotic assisted approach. Open and robotic assisted RP were associated with a higher incident of concomitant pelvic lymph node dissections as compared with laparoscopic approach (86% and 85.5% for open and robotic assisted vs 62.5% for lap) while robotic assisted approach delivered more nerve sparing approaches compared to the other two (58% ns for robot vs 42% for both open and lap). A bias in patient selection in favor of robotic assisted approach was evident, with patients submitted to the technique being younger and with lower incident of comorbidities. No difference in 30d mortality among techniques was revealed. Still, endoscopic approaches demonstrated a more favorable safety profile as compared to the open approach with lower 30d transfusion rates, lower early and late complication rates and 1 y reintervention rates. Multivariate analysis revealed that increased age, presence of comorbidities and lymph node dissection increased the incidence of transfusion, complication and 1 y reintervention rates while a nerve sparing approach appeared protective in terms of lowering the risk for transfusion and 1 y re-intervention rates. In addition, when controlling for the factors for which a bias is present (eg in patients with robotic RP younger age and fewer comorbidities) in multivariate models, robotic and laparoscopic RP still showed favourable results as compared to open RP for transfusion and reintervention rates.
Conclusion: The use of minimally invasive approaches in RP (open and laparoscopic) is increasing during the years 2010–2012 in Germany. Their implication has a positive impact in the morbidity of the operation. A bias in patients selected for robotic assisted approach was evident.

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MP16-15 The effect of smoking on sexual function after robotic prostatectomy

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Introduction: Smoking is a well-established cause of erectile dysfunction. It can also delay wound healing and recovery after surgery. Smoking cessation education has become a focal point of smoker's visits to physicians. Currently, it is unknown exactly what effect smoking has on patients after robotic prostatectomy, and if smoking cessation after diagnosis can help with recovery. Using the EPIC 26 HR-QOL study we examined how a patient's smoking habits would affect recovery after robotic prostatectomy.
Methods: All patients who underwent robotic prostatectomy between March 2011 and April 2013 in our healthcare system and who were current smokers were included. Patients were categorized into 2 groups based on their smoking habits: continued smokers (n = 355) and quitters (n = 184). The ''quit'' group stopped smoking after the diagnosis of prostate cancer. Patients filled out the EPIC 26 HR-QOL study at baseline and during their recovery, up to two years. Patients' age, Charlson comorbidity score, preop and postop clinicopathology were also examined. A linear regression model was also used to predict sexual function recovery.
Results: All demographics and clinicopathology were similar between the two groups. Smoking cessation was not associated with significant difference in urinary or hormonal domains of the EPIC 26. Patients that stopped smoking had more improvement in their sexual function as compared to patients who continued. At 6 months post prostatectomy the quit group had a statistically significant improvement as compared to the smokers ($p = 0.0509$) and this continued throughout follow-up (as seen in the graph below), though never again reaching statistical significance.
Conclusions: Patients that stop smoking even after the diagnosis of prostate cancer have improved recovery of sexual function as compared to their smoking counterparts as measured by the EPIC 26 survey. This information is an additional reason for patients to quit smoking when planning on undergoing radical prostatectomy, and should be used to help counsel patients in the future.

MP16-16 Ureteral stone surgery in the United Kingdom: early results of a National Registry

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Introduction: Rigid ureterorenoscopy (URS) is a commonly used modality to manage medium and large ureteral stones. Extracorporeal shock wave lithotripsy remains the initial treatment of choice for the majority of smaller stones, however, the continual reduction in telescope calibre and improvement in optical quality is increasingly encouraging the use of URS first-line for all ureteral stones. Prospective data collection and evaluation provides up to date outcomes to aid patient counselling as well as ensure surgeons are maintaining best practice. We evaluate current practice and surgical outcomes of ureteral stone surgery in the United Kingdom (UK).
Materials and Methods: Urologists were invited to participate in the British Association of Urological Surgeons (BAUS) URS stone surgery online data registry. Patient demographics and stone characteristics, as well as surgical outcomes were recorded on a standardised proforma.
Results: From January 2012 to December 2014, URS data was submitted by 72 surgeons from 61 centres, for 1779 patients in the UK. The median number of URS performed per surgeon was 10 (range 1–216). Median patient age was 54 yr, and 1256 of 1777 patients (70%) were male. The majority were elective procedures, 1546 of 1778 patients (87%). Stone side was comparable with 58% on the left and 42% on the right. Lower third stones accounted for 46% of the patients, 41% upper third and 13% middle third.

Complete stone clearance was described in 1576 of 1768 patients (89%). The incidence of postoperative urinary sepsis was 0.4% and fever in 2% of patients. There were no reported deaths.
Conclusion: Although a voluntary data registry, the use of URS appears a safe and effective modality in treating ureteral stones. The need for documented patient outcomes is becoming more apparent and is likely to become a necessity for most surgical procedures. As results are scrutinised, a review of required numbers of procedures to be performed annually is probable to certify surgical proficiency. Further analysis of stone characteristics with

operative technique is likely to aid development of recommendations to ensure highest patient outcomes.

MP16-17 Baseline continence of men undergoing radical prostatectomy in the UK – do we start with a level playing field?

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Introduction: Now minimally invasive radical prostatectomy is performed safely with minimal early complications, the long term outcomes - (continence, erectile dysfunction) are becoming the markers of excellence. Published 12 month continence rates from the US/Europe in a PSA-screened population are reported as high as 93% but those who are preoperatively incontinent are normally removed from the analysis or have a tiny fraction designated as ''pre-operatively incontinent''. In the UK we have an unscreened population of patients who normally present for PSA testing due to the presence of bothersome lower urinary tract symptoms (LUTS).
Methods: At the Bristol Urological Institute it is normal practice, prior to robotic radical prostatectomy, the patients preoperative LUTS are evaluated using the internationally validated mLUTS (short) 14 point form.
Results: 232 patients fully completed the mLUTS questionnaire in the preoperative period. 31% reported they had any urge urinary incontinence, with moderate/severe urge urinary incontinence in 1%. 12% reported they had stress urinary incontinence with moderate/severe stress incontinence in 0%. Overall 35% reported some form of preoperative urinary incontinence.
Conclusions: We believe it is essential to record baseline urinary incontinence as otherwise it is very difficult to interpret post-operative urinary incontinence rates. Also it raises the point that in our unscreened UK population we are operating on a different cohort of patients to those published series in US/Europe and thus ***post-operative*** continence rates will differ if we include ***all*** patients.

MP16-18 Extraperitoneal Robot-Assisted Radical Prostatectomy: Oncologic Outcomes at>Five-year Follow-up

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Introduction and Objectives: To date, only 6 studies have reported post robotic prostatectomy oncologic outcomes of 5 years or longer, with only one reporting outcomes at 10 years. All of these reports were on procedures performed using a transperitoneal (TP) approach. Our objective is to assess > 5-year oncologic outcomes of patients who underwent extraperitoneal (EP)-Robot assisted radical prostatectomy (RARP) for localized prostate cancer, with an emphasis on biochemical recurrence-free survival (BCRFS).
Methods: In this IRB-approved study, we analyzed prospectively collected data on men with localized prostate cancer who underwent EP-RARP at a high-volume tertiary center by a single surgeon. 1426 EP-RARP were performed between Jul. 2003 and Jul. 2009. Data on 617 patients with a minimum follow-up of 5 years was available. Variables predictive of BCR were identified using Cox proportional hazard regression analysis models.
Results: The median (interquartile range) follow-up was 82.5 (60–130) months. Overall, 5, 7, and 10-yr BCRFS rate were 81.5% (95% CI:78.2–84.3%), 77.9% (95% CI:74.3–81%), and 74.9% (95% CI:70.1–79%) respectively. On multivariable Cox proportional hazard regression analysis, pathologic Gleason score ≥7 (HR = 0.38, p = 0.01), pathologic stage T3b (HR 0.36, p = 0.006) and positive surgical margin status (HR = 0.5, p = 0.006) were predictive of BCR. Age, clinical T-stage, biopsy Gleason score, nerve sparing status, whether pelvic lymphadenectomy was carried out, and prostate volume were not predictive of BCR.
Conclusions: Medium term oncologic outcomes of EP-RARP are equivalent to published outcomes of TP-RARP. Stage and surgical margin status remain strong predictors of biochemical recurrence. This case-series adds to the limited existing literature on oncologic outcomes following RARP with a minimum of 5 years follow-up. 5-yr BCRFS stratified according to pT stage, Gleason score, and surgical margin status are shown in table 1. On multivariable Cox proportional hazard regression analysis, pathologic Gleason score ≥7 (HR = 0.38, p = 0.01), pathologic stage T3b (HR 0.36, p = 0.006) and positive surgical margin status (HR = 0.5, p = 0.006) were predictive of BCR. Age, clinical T-stage, biopsy Gleason score, nerve sparing status, whether pelvic lymphadenectomy was carried out, and prostate volume were not predictive of BCR.

MP16-19 Factors improving lymph node invasion detection during pelvic lymph node dissection for prostate cancer: outcomes of 2160 lymph node dissections

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Scope of the study: During the last decade, few things have changed more in the surgical management of prostate cancer (PCa) than our attitude against pelvic lymph node dissection (PLND) during radical prostatectomy (RP). During this period, internationally established trends in the management of pelvic lymph nodes (LNs) during RP were adopted by our center and we herein report our experience in PLND in an attempt to define factors that improve lymph node invasion (LNI) detection.
Materials and Methods: The full records of all patients subjected to RP in the Department of Urology in the University Hospital of Leipzig in Germany between 2003–2014 were retrospectively reviewed. In total 4132 patients had been subjected to RP during this period and 2160 underwent a concomitant PLND procedure. Perioperative and postoperative data including frozen sections and complete pathological results were available for analysis.
Results: The incorporation of PLND in RP grew rapidly in our cohort from nearly 30% of PRs including PLND in 2003 to up to 58% in 2008 and remained to a level above 50% thereafter. The incidence of LN + disease demonstrated a constant increase throughout our study period. The latter can be attributed to changes in basic characteristics of treated population (increase in pT3 disease treated throughout study), to an improved targeting of patients harvesting LN metastases and to improvements in the efficacy of provided PLND throughout the years. Transperitoneal PLND was found superior than extraperitoneal PLND in terms of revealing more LN + patients when offered in similar risk stratified groups of patients. Robotic assistance demonstrated similar efficacy with conventional laparoscopic approach.

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Conclusions: The employment of PLND during RP is constantly increasing. With RP gaining additional indications in the management of locally advanced disease further increase in PLND rates should be expected. The efficacy of PLND to reveal LN + disease by modifications in our practice is constantly improving. Extraperitoneal approach provides inferior LNI detection rates than the transperitoneal approach. Robotic assistance had no impact in overall efficacy of PLND.

MP16-20 The Impact of Surgical Caseload Volume on Quality of Life in Men after Robot-Assisted Radical Prostatectomy

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Introduction: Increased robotic surgical volumes correlate to better peri-operative outcomes, such as reduced positive surgical margin rates (PSMRs). The impact of surgeon experience on long-term cancer-specific and functional outcomes is less evident. The study objective was to evaluate whether caseload volume for robot-assisted radical prostatectomy (RARP) impacts quality of life in prostate cancer patients.
Methods: From March 2011 to September 2013, we enrolled men who underwent a RARP within the Kaiser Permanente Southern California Healthcare system. All surgeons with robotic privileges had undergone a rigorous credentialing process and had extensive training in robotics in fellowship and/or residency. Patients completed the Expanded Prostate Cancer Index Composite (EPIC)-26, a validated quality of life survey, at baseline (time of diagnosis) and at 1, 3, 6, 12, 18, and 24 months following surgery. EPIC-26 scores were then compared between ''low-volume'' surgeons (who completed < 100 career RARPs) and ''high-volume'' surgeons (who completed ≥ 100 career RARPs) using the Chi-squared and Wilcoxon Rank-Sum tests. RARPs were performed using a standard 6-port transperitoneal approach with one console surgeon and one assistant surgeon.
Results: A total of 1675 men underwent a RARP during the study period. Fifteen low- and ten high-volume urologists performed 1082 and 593 RARPs respectively as the console surgeon. The average number of RARPs performed was 15.9 in the low- and 146.7 in the high-volume groups. High-volume surgeons assisted the majority of low-volume surgeons in their respective cases. Patients were similar in clinico-pathological traits, apart from older men in the high-volume group (61.3 vs. 60.8 years, $p = 0.035$). High-volume group patients had less intraoperative blood loss (97.0 vs 136.8 mL, $p < 0.0001$) and underwent more bladder-neck reconstructions (253 vs. 237 cases, $p < 0.0001$). PSMRs were similar for high- and low-volume surgeons (21.3% vs. 24.4%, $p = 0.2$). There were no differences in EPIC-26 scores throughout the entire 24-month follow-up period.
Conclusions: Surgical volume did not appear to impact quality of life in men who underwent RARP after 2 years follow-up. In our robotics program, high-volume surgeons may have acted as proctors in low-volume surgeons' cases, positively influencing peri-operative and long-term outcomes. These results support the benefit of having experienced assistants, in order to assure equal outcomes, not at the expense of excluding lower-volume credentialed surgeons.

MP16-21 Reduced Length of Stay following Implementation of a Standardized Robotic Assisted Laparoscopic Radical Prostatectomy Clinical Care Pathway

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Introduction: Clinical care pathways reduce length of stay and variability in practice and costs while avoiding compromise of the quality of care that is delivered. This study examines the role of a standardized care pathway, which focuses on pre- and post-operative education as well as immediate post-operative patient management, in improving clinical outcomes among patients undergoing Robotic Assisted Laparoscopic Radical Prostatectomy (RALRP).
Materials & Methods: All patients undergoing RALRP at our institution between 1/1/2014 and 12/31/2014 were enrolled in this retrospective chart review. A standardized RALRP care pathway, including the use of immediate post-op belladonna and opium suppositories, post-op acetaminophen and ketorolac the reduce narcotic burden, and early initiation of ambulation and solid food diet was introduced at our institution in July 2014. Data regarding pertinent patient history, length of stay and number of unplanned calls to the urology office or visits to the emergency room were collected. The pre-care pathway cohort of patients undergoing RALRP from January to June 2014 was compared to the post-care pathway cohort of patients undergoing RALRP from July to December 2014.
Results: Among 105 men who underwent RALRP in 2014, 45% of the population underwent surgery after implementation of our standardized care pathway. Demographic, pre-operative risk and intra-operative parameters between the two cohorts including age, BMI, baseline PSA, NCCN risk stratification, blood loss, nor performance of lymph node dissection or nerve sparng were not significantly different across cohorts. Men who underwent RALRP following implementation of the care pathway were 7.6 times more likely to be discharged from the hospital within 24–35 hours of surgery compared to men who had surgery before the care pathways was implemented ($p < .01$). Despite more rapid discharges, there was no statistically significant difference in the frequency with which patients called the urology office, visited the urology office or visited the emergency department for post operative concerns.
Conclusions: Implementation of RALRP standardized care pathway significantly reduced length of stay but our data demonstrates these earlier discharges were not performed hastily as there was no evidence of increase utiization of post discharge services (Office/ER) amongst the care pathway cohort. We plan to further validate the effectiveness of our care pathway by studying patient self-reported quality of life in future work.

MP16-22 Critical appraisal of literature comparing minimally invasive extra-peritoneal and trans-peritoneal radical prostatectomy - a systematic review and meta-analysis

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Aim of the study: To systematically review the studies comparing extra-peritoneal (E-RP) and trans-peritoneal radical prostatectomy (T-RP).

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Evidence Acquisition: The systematic review was performed according to the Cochrane guidelines. Databases searched were MEDLINE (2000- August 2013), EMBASE (2000- August 2013), Cochrane Central Register of Controlled Trials - CENTRAL (in The Cochrane Library - Issue 1, 2013), CINAHL (2000- August 2013) and individual urological journals. All studies comparing E-RP and T-RP (both Laparoscopy and robotic approach) were evaluated.
Evidence Synthesis: 1256 records were identified after the initial database search. 20 studies (2625 patients) met the inclusion criteria. The hospital stay was significantly lower in the extra peritoneal cohort ($p < 0.001$). Early continence rates favoured the extra-peritoneal cohort although difference was statistical significant only in the laparoscopic group ($p < 0.001$). There was no statistically significant difference between the extra-peritoneal and trans-peritoneal cohort for 12-month continence rates for both laparoscopic (p-0.12) and robotic groups (0.21). The overall complication rates and ileus rates were significantly lower in the extra-peritoneal cohort for both laparoscopic and robotic groups. The symptomatic lyphmocele rates favoured the trans-peritoneal cohort although this was statistically significant only in the laparoscopic group (p-0.01).
Conclusion and Patient Summary: This review suggests that the extra-peritoneal approach is associated with a shorter hospital stay; lower overall complication rates and earlier return to continence when compared to the trans-peritoneal approach. The trans-peritoneal approaches have lower lyphmocele rates. The authors would recommend a risk-stratified approach where the extra-peritoneal approach is employed for low-risk prostate cancer and the trans-peritoneal approach is employed for intermediate and high-risk prostate cancer given the lower rate of lymphocele formation following lymphadenectomy.

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MP17 - STONES SWL

MP17-1 Comparison of Renal Stone Fragmentation and Stone Clearance with Shockwave Lithotripsy at 60 Shocks / min and 120 Shocks / Min

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Introduction: The success of ESWL for kidney stones depends on a number of factors including stone size, location, multiplicity, composition as well as on the type of lithotripter, energy setting and frequency of shockwave delivery.

We evaluated the outcomes of renal stone fragmentation and stone clearance with shock wave lithotripsy utilizing shock wave frequency of 60 SW/minute as compared to 120 SW/minute in patients with renal stones of comparable size and clinical features.

- Number of shock waves required for renal stone fragmentation and stone clearance utilizing shock wave frequency of 60 SW/minute and 120 SW/minute was done
- Procedure time at 60 & 120 shock wave frequencies was recorded
- Renal stone clearance was assessed by radiological imaging (One month post procedure)
- Complications like ureteric colic, hematuria, fever and vomiting were noted

Material and Methods: This was a prospective study conducted at Apollo Hospital, Hyderabad, India from June 2013 to June 2014 using Dornier Compact Sigma Lithotriptor for ESWL. Patients with single stone size 0.5 to 2 cm, uncomplicated and previously untreated were included in study. A total of 180 patients of renal calculus disease were included and assigned to two groups- one group of 100 patients were enrolled for SWL at 60 shocks per minute and another of 80 patients underwent SWL at 120 SW/Min.
Results: The overall success rate after 15 days was 69% in group 1 patients with 59% stone free and 10% having fragments < 2 mm and in group 2 overall success rate was 68.75% with 55% stone free and 11% having fragments < 2 mm. The success rate was 76% in group 1 patients with 66% stone free and 10% having fragments < 2 mm at 1 month post treatment and in group 2 overall success rate was 77.5% with 65% stone free and 12.5.% having fragments < 2 mm at one month post treatment. We found no significant difference in stone fragmentation and stone clearance at these two frequencies.
Conclusion: With comparable results of SWL at 60 and 120 SW/Minute we can shorten treatment time, reduce analgesia requirement and can treat more number of patients with renal stones at higher frequency of 120 SW/Minute. There was no increase in adverse events by increasing the frequency of shockwaves per minute (safe).

MP17-2 Optimising the Angle of Shockwave Lithotripsy

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Background: Shockwave Lithotripsy (SWL) is a highly effective first line technique used for the fragmentation of kidney stones. It is a non-invasive procedure that can be performed without anaesthesia and has few side effects. In this study, computer modelling was used to assess the energy loss of the shockwave at differing angles of entry into the body.
Methods: Non-contrast CT Scans from 50 patients booked for SWL were analysed using a customised MatLab program. Each voxel was segmented into: bone, fat, air and other soft tissue and the acoustic absorption of the shockwave cone before it reached its focal point (the site of the stone) was calculated. Absorption was compared as a function of shock wave angle starting from an angle perpendicular to the back (0°) and increasing by up to 45° on the flank. A one-way ANOVA analysis with Bonferroni correction was used to calculate the optimal angle in which to direct the shock waves to minimise acoustic absorption.
Results: The acoustic absorption at each angle for each patient was standardised to loss at 0° to allow for the results from different patients to be directly comparable. It was found that a shock wave absorption was at a minimum at 35° (28.5% reduction in absorption). However, there was significant spread in the

data with the estimated absorption at 35° varying from 30% to 125% of that at 0°, of particular note was that 5 patients (10%) suffered more attenuation at 35° than at 0°.
Conclusion: These results suggest that the angle that which a shock wave is directed towards a kidney can have a large impact on the acoustic energy delivered to a kidney stone with the effective absorption varying by up to a factor of four. The effect is highly patient dependent and suggests that shock wave placement should be patient specific in order to best direct the shock wave on the stone and consequently improve fragmentation.

MP17-3 Comparison of Escalating, Constant and Reduction energy output in SWL for renal stones: Multi-arm Prospective Randomized study

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Introduction: Herein we study the effect of dose adjustment strategies on success rate of Shock wave lithotripsy (SWL) in the clinical setting to optimize the conditions for successful SWL.
Materials and Methods: 150 patients referred to the SWL unit are evaluated for eligibility to be randomized into three groups: A) Dose escalation, 1500 SW at 18 kv, followed by 1500 SW at 20 kv and the following 1500 SW at 22 kv. B) Dose reduction, 1500 SW at 22 kv, followed by 1500 SW at 20 kv and the following at 18 kv. C) Constant dose at 20 kv. All patients undergo KUB plain x-ray film at day 1, 14 and 90 to assess stone free rate.
Results: No significant difference was detected between the three groups. Nearly one third (34.7%) received general anaesthesia, 44% spinal while epidural was used in 14.7%. The remaining 6.6% received intra-venous sedation. Two patients in each treatment arm required redo SWL session and were counted as failures.

The SWL treatment was successful in 82%, 90% and 84% in the escalating, constant and reduction energy groups respectively at day 90. Although, the successful rate was better in the constant energy group, this difference was not statistically significant ($x2 = 1.38$, p level = 0.28).
Conclusions: There were no significant difference was detected between the three groups. Although, the successful rate was better in the constant energy group, this difference was not statistically significant.

MP17-4 Comparison of high, intermediate, and low frequency shock wave lithotripsy for urinary tract stone disease: A systematic review and network meta-analysis

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Introduction: To perform a systematic review and network meta-analysis of randomized controlled trials (RCTs) to determine the optimal shock wave lithotripsy (SWL) frequency range for treating urinary stones, i.e.high-frequency (100–120 waves/minute), intermediate-frequency (80–90 waves/minute), and low-frequency (60–70 waves/minute) lithotripsy.
Materials and Methods: Relevant RCTs were identified from electronic databases for meta-analysis of SWL success and complication rates. Using pairwise and network meta-analyses, comparisons were made by qualitative and quantitative syntheses. Outcome variables are provided as odds ratios (ORs) with 95% confidence intervals (CIs).
Result: Thirteen articles were included in the qualitative and quantitative synthesis using pairwise and network meta-analyses. In network meta-analyses, the success rate of high-frequency SWL was lower than intermediate-frequency SWL (OR 0.39; 95% CI 0.21–0.79) and low-frequency SWL (OR 0.45; 95% CI 0.27–0.69). Forest plots from network meta-analyses showed no significant difference in success rate between intermediate-frequency versus low-frequency SWL (OR 1.15; 95% CI 0.56–1.99). There were no differences in complication rate across different SWL frequency ranges. By rank-probability testing, intermediate-frequency SWL was ranked highest for success rate, followed by low-frequency and high-frequency SWL. Low-frequency SWL was also ranked highest for low complication rate, with high- and intermediate-frequency SWL ranked lower.
Conclusion: Intermediate- and low-frequency SWL have better treatment outcomes than high-frequency SWL when considering both efficacy and complication. We were unable to establish superiority of either intermediate-frequency SWL or low-frequency SWL over one another.

MP17-5 Safety and efficacy of a mobile third generation lithotripsy service at a DGH: a one year review

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Introduction: Extracorporeal Shock Wave Lithotripsy (ESWL) is considered first-line treatment for intra-renal and many ureteric calculi. Newer models facilitate outpatient treatment, with lower analgesic requirements and morbidity, though are variable in their ability to fragment stones. Our aim was to assess the efficacy and safety of a transportable ESWL machine; the Modulith SLK F2 (Storz Medical, Switzerland), in a typical clinical setting at a District General Hospital, using a mobile service provider.
Methods: We analysed data from 80 consecutive patients who underwent ESWL in a single DGH over 12 months. Selected patients underwent ureteric stenting before treatment, and all patients were treated with no anaesthesia.

Patients were assessed after 3 months by plain abdominal film renal ultrasonography as well a non-contrast computerised tomography for radiolucent calculi. Hospital admission, complications and auxiliary procedures were evaluated. ESWL success was defined as patients being stone-free (SF) or with remaining fragments of < 4 mm, which were considered as clinically insignificant residual fragments (CIRF).
Results: The mean (range) patient age was 52.1 (22–83) years, and 69% were male. In all, 73 (91%) of the calculi were localised in the kidney, and 7 (9%) in the ureter. Renal stones were localised in the upper, middle, and the lower calyx and the renal pelvis in 9, 21, 52 and 9% of patients, respectively. Ureteric stones were localised in the upper, mid- and distal ureter in 3, 5 and 1% of patients, respectively. Of these, 27 (33.1%) patients had multiple stones. The median (range) stone size was 6.0 mm (4–13 mm).

The clinical success rate was 73% (73% for renal calculi and 71% for ureteric calculi); the mean number of sessions required to achieve this rate was 2.7.

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In 27% of the patients (n = 20) post-interventional auxiliary procedures were necessary – comprising Ureteroscopy or Percutaneous Nephrolithotomy (PCNL), and further ESWL/surveillance at 6 patients' requests. Univariate analysis of different variables, including size, location and Hounsfield Units, showed that size significantly affected the success rate ($p < 0.05$).

We observed 3 (4%) complications, all of which were emergency ureteric stent insertions for ureteric calculi causing obstruction/intractable pain.

Conclusion: The SLK-F2 is effective in fragmenting stones with a 73% clinical success rate, and an efficiency quotient of 0.57, that is comparable to other new generation lithotripters, with stone size significantly affecting success rate. Use of a mobile lithotripsy service presents a cost-effective, safe and efficacious method to provide a definitive, ambulatory and non-invasive treatment for renal calculi.

MP17-6 Will SWL lead to long-term renal fibrosis? A prospective randomized study to investigate the effect of SWL on renal fibrosis under different kidney treatment protocols

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Introduction: Although extracorporeal shockwave lithotripsy (SWL) is regarded as the most minimally invasive stone treatment procedure, increasing evidence suggests that SWL could lead to various short- and long-term renal complications. Therefore, we would like to undergo a prospective study to evaluate the effect of SWL on renal fibrosis in human subjects, under different treatment protocols.

Patient and Methods: Three hundred and twenty patients with a solitary radiopaque renal stone < 15 mm, were recruited. Patients were then randomized to receive one of four shockwave (SW) protocols: (1) receiving 80% power (19.2 kV) from beginning until the end of treatment; (2) receiving the first 100 SWs at 40% power (9.6 kV), followed by SWs at 80% power until the end of treatment; (3) receiving 100 shocks at 40% power, followed by a 3-minute pause and then further SWs at 80% power until the end of treatment; and (4) receiving 100 shocks at 80% power, followed by a 3-minute pause and then further SWs at 80% power until the end of treatment. Spot urine samples were collected before and after treatment till 1 year, to measure urinary procollagen III amino-terminal propeptide levels for the assessment of renal fibrosis.

Results: The baseline information and treatment parameters of the 4 groups were comparable. There was no difference between the baseline levels of PIIINP among the four treatment groups. However, the mean levels of PIIINP for patients with one or no previous SWL treatments and those with two previous SWL treatments were 5.49 ± 4.10 mg/mol and 7.17 ± 4.74 mg/mol, respectively ($p = 0.017$). There was a significant rise in PIIINP from 6 weeks until 1 year after SWL in all four groups ($p < 0.05$).

Conclusion: Urinary levels of renal fibrosis were increased after SWL under various treatment protocols. ThIs effect of on renal fibrosis after SWL could last for more than 1 year and could be cumulative. (The study was supported by the Hong Kong RGC General Research Fund (Grant No. 472111) of the Research Grants Council, Hong Kong)

MP17-7 Optimising the angle of shockwave lithotripsy

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Introduction: Shockwave Lithotripsy (SWL) is a highly effective first line technique used for the fragmentation of kidney stones. It is a non-invasive procedure that can be performed without anaesthesia and has few side effects. In this study, computer modelling was used to assess the energy loss of the shockwave at differing angles of entry into the body.

Methods: Non-contrast CT Scans from 50 patients booked for SWL were analysed using a customised MatLab program. Each voxel was segmented into: bone, fat, air and other soft tissue and the acoustic absorption of the shockwave cone before it reached its focal point (the site of the stone) was calculated. Absorption was compared as a function of shock wave angle starting from an angle perpendicular to the back (0°) and increasing by up to 45° on the flank. A one-way ANOVA analysis with Bonferroni correction was used to calculate the optimal angle in which to direct the shock waves to minimise acoustic absorption.

Results: The acoustic absorption at each angle for each patient was standardised to loss at 0° to allow for the results from different patients to be directly comparable. It was found that a shock wave absorption was at a minimum at 35° (28.5% reduction in absorption). However, there was significant spread in the data with the estimated absorption at 35° varying from 30% to 125% of that at 0°; of particular note was that 5 patients (10%) suffered more attenuation at 35° than at 0°.

Conclusion: These results suggest that the angle at which a shock wave is directed towards a kidney can have a large impact on the acoustic energy delivered to a kidney stone with the effective absorption varying by up to a factor of four. The effect is highly patient-dependent and suggests that shock wave placement should be patient-specific in order to best direct the shock wave on the stone and consequently improve fragmentation.

MP17-8 Is Extracorporeal Shockwave Lithotripsy for the Treatment of Kidney Stones a Risk Factor for the Development of Diabetes Mellitus? A Population-Based Cohort Study

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Introduction and Objective: The existing literature is conflicting with regard to the potential long term adverse effects associated with SWL, specifically the development of diabetes mellitus (DM). Our objective was to perform a population-based retrospective cohort study to determine if patients treated with extracorporeal shockwave lithotripsy (SWL) are at a greater risk for the development of DM than those treated with ureteroscopy (URS)

Methods: All SWL and URS treatments performed in the province of Ontario between January 1994 and December 2012 were identified using linked administrative healthcare databases. The primary outcome was the development of DM following treatment. Unadjusted statistical analysis with the Kaplan Meier method was used to examine the time to development of DM across the SWL and URS groups. Multivariable analysis with Cox proportional hazards regression was utilized to assess the risk for DM between SWL and URS groups while controlling for age, gender, region of residence, income quintile and comorbidity index.

Results: We identified 46,318 SWL patients and 47,773 URS patients over the study period. The groups had similar baseline

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characteristics (Table 1). The incidence of DM in the overall cohort was 14.2%; 17% in the SWL group and 11% in the URS group. Unadjusted survival analysis demonstrated an increased risk for the development of DM in the SWL group compared to the URS group ($p < 0.0008$). Similarly, multivariable analysis demonstrated an increased risk of DM in the SWL cohort (HR 1.08, 95% CI 1.04–1.12; $p < 0.0001$).

Conclusions: Our population-based cohort study demonstrated a small, but significant increased risk of DM in patients undergoing SWL compared to URS.

Table 1. Baseline Characteristics for all Patients Treated with SWL and URS from January 1, 1994 – December 31, 2012.

Characteristic	SWL n=46,318	URS n=47,773
Demographics		
Age (years)		
Median (IQR)	49 (39-59)	49 (38-61)
Sex, n (%)		
Female	16,740 (36.1%)	18,391 (38.5%)
Male	29,578 (63.9%)	29,382 (61.5%)
Income quintile, n (%)		
Missing	122 (0.3%)	119 (0.2%)
1 - Lowest	8,585 (18.5%)	9,195 (19.2%)
2	8,884 (19.2%)	9,755 (20.4%)
3	9,173 (19.8%)	9,621 (20.1%)
4	9,632 (20.8%)	9,907 (20.7%)
5 - Highest	9,922 (21.4%)	9,176 (19.2%)
Geographic Data		
Rural residence, n (%)	4,896 (10.6%)	6,403 (13.4%)
Comorbidity		
ADG, n (%)		
0-1	322 (0.7%)	380 (0.8%)
2-3	3,187 (6.9%)	2,904 (6.1%)
4-6	14,414 (31.1%)	13,746 (28.8%)
7+	28,395 (61.3%)	30,743 (64.4%)

MP17-9 Extracorporeal shockwave lithotripsy monitored by an integrated ultrasound system: Could this technique broaden SWL application in kidney calculi?

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Introduction: The shock-wave lithotripsy (SWL) treatment has been successfully applied since early 1980s. In the new lithotripters ultrasound image is a standard method for SWL monitoring. Different issues are still limiting a wider adoption of SWL as treatment option for kidney stones. Mainly, the detection of the small or low density stones using X-ray and skeletal deformities are important limitations. In addition, the limited fluoroscopy time is associated to worse results[i]. We present our experience in shock-wave lithotripsy monitored by an ultrasound system.

Methods: An optimizer beam focusing ultrasound integrated into a Dornier Gemini lithotripter was used to treat a series of patients from June 2012 to May 2015. The lithotripsy was performed in caliceal lithiasis, lithiasis ≤ 10 mm or stones difficult to be targeted by fluoroscopy (radiolucency, obesity, skeletal malformations). The stone free rate (SFR) was defined as the absence of residual fragments greater than 3 mm.

Results: The SFR after initial treatment was 40% (20 of 50 stones), which increased to 68.2% with the second SWL session (30 of 44 stones). A total of 34.5% (10 of 29 stones) were awaiting a re-treatment or a 65.5% (10 of 29 stones) an image evaluation. A 3.9% (3 of 76 stones) were lost in follow up. In only a 1.3% (1 of 76 stones) a flexible ureteroscope was performed and a 2.6% (2 of 76) were under observation. The mean stone size was 8.2 +/-4.5 mm. A subcapsular haematoma was described in one case that was self-limited and no blood transfusion was needed (complication clavien I).

Conclusion: Our results demonstrate that SWL monitored by ultrasound was an effective treatment for lithiasis in cases where lithotripsy has reported limitations. The application of this technique in selected cases would improve the success rate of extracorporeal lithotripsy.

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MP17-10 Antibiotic Prophylaxis and Extracorporeal Shock Wave Lithotripsy (ESWL) – A Complete Audit Cycle

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Antibiotic prophylaxis before ESWL is controversial, with differing recommendations in American and European guidelines. (1,2) We audited our current practice of universal prophylaxis and compared to prophylaxis in targeted cases only. We then completed the audit cycle with antibiotics given only at the discretion of the Urologist.

A prospective, single centre audit was performed from October 2013 to March 2014, with the re-audit taking place from March 2015 to May 2015. All patients attending for ESWL received either universal antibiotic prophylaxis or targeted antibiotics, alternating every six weeks. Targeted prophylaxis was given in cases with positive urine dipstick, symptoms suggestive of urinary tract infection (UTI), staghorn calculi or indwelling stents or nephrostomy tubes. Urine dipstick and culture were performed prior to each ESWL treatment and urine culture sent one week post treatment. Endpoints were asymptomatic bacteriuria, urinary tract infections requiring treatment and hospital admission for urinary sepsis. Patients were excluded if they had recent or concurrent antibiotic therapy. Completing the audit cycle involved antibiotics being given at the discretion of the Urologist in specific cases.

76 patients were included. 29 patients had no antibiotics pre-ESWL. None of these patients had positive post-treatment urine cultures or symptoms of UTI. 47 patients received prophylactic antibiotics. Eight had a positive pre-treatment urine culture. Six of these had asymptomatic bacteriuria. Three of these patients had asymptomatic bacteriuria post-treatment. Five others developed asymptomatic bacteriuria post-ESWL. No patients developed a symptomatic UTI.

45 patients were included in the re-audit. 39 patients had no antibiotics pre-ESWL. 1 of these patients had a positive post-treatment urine culture but was asymptomatic of UTI. Excluding the patients with stents in-situ – 2 patients received prophylactic antibiotics. Neither of these patients had bacteriuria post-treatment. Three others developed asymptomatic bacteriuria post-ESWL. No patients developed a symptomatic UTI. Using targeted antibiotics pre-ESWL is safe. Patients with negative urine

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dipsticks pre-ESWL do not require routine prophylaxis. In cases with positive dipstick who receive prophylaxis, the rates of symptomatic UTI after ESWL are low.

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MP17-11 Etoricoxib provides adequate anaglesia with minimal side effects for outpatient extracorporeal shock wave lithotripsy (ESWL)

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Introduction: Etoricoxib is an oral NSAID with fast onset and effective analgesia for moderate pain. This study aims to evaluate the effectiveness of Etoricoxib alone as analgesia for ESWL.
Method: ESWL is an outpatient procedure at the Dept of Urology, Singapore General Hospital, with IV pethidine/ maxolon given just prior to treatment. In this study, 40 consecutive patients were treated using a third generation lithotripter (Dornier MedTech Gemini), with a single dose of oral Etoricoxib 120 mg 30 minutes prior to ESWL. A top up bolus of IV pethidine/ maxolon was administered during treatment when intolerable discomfort was reported. The site and size of the stone, maximum energy used and number of shocks were recorded. Standing and sitting blood pressure, and visual analog scale pain scores were taken before and after ESWL, with symptoms of giddiness and nausea post treatment recorded.
Results: Twenty eight patients (70%) were able to complete the planned ESWL treatment on Etoricoxib alone. Between the 2 groups of patients (Etoricoxib alone vs Etoricoxib/ pethidine), they were demographically similar with no differences in the mean stone size, energy level or stone site. The mean change in VAS pain scores were not notably different in both groups ($p = 0.66$). In the Etoricoxib only group, there was no drop in mean arterial pressure (MAP) compared with the Etoricoxib/ pethidine group, which had a higher incidence of giddiness (50%) and nausea (8.33%)
Conclusion: Etoricoxib is an effective analgesic therapy for ESWL with minimal side effects.

MP17-12 The effect of renal cysts on the fragmentation of renal stones during Shockwave Lithotripsy: A comparative in vitro study

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Objective: To examine the integrity of a new in vitro model simulating simple renal cysts (SRC) for shock wave lithotripsy (SWL) basic studies, and assess the potential effect of SRC on stone fragmentation during SWL in an in vitro model.

Materials and Methods: The in vitro model was constructed using 10% Ordnance Gelatin (OG) and basic household equipment. Initially, the integrity of the cystic gel was examined under a standardized SWL protocol after filling the cystic cavity with methylene blue and loading the stone wells with contrast material. Subsequently, different models were created to mimic 4 clinical scenarios: Model A - With an air-filled cavity (suboptimal for stone fragmentation); Model B - Without a cavity (to represent normal anatomy); Model C - With a 3 cm serum filled cavity (to represent a small SRC); Model D - With a 4 cm serum filled cavity (to represent a larger SRC). SWL was applied to 12 standardized phantom stones (weight of 2 ± 0.1 g) in model A using a standardized protocol, while in each of the remaining models (B, C & D) 24 stones were subjected to the same SWL protocol. Following the SWL experiments, stone fragments were retrieved then dried over-night at room air temperature. Fragmentation Coefficient (FC) was calculated for each stone, for fragments < 4 mm and < 2 mm, using the formula, FC = (wt pre SWL – wt post SWL) $\times$ 100 / wt pre SWL
Results: The OG in vitro model was robust enough for the proposed research. No leak of blue dye or contrast material was noted after the integrity test. There was no fragmentation evident in model A as expected. A total of 72 stones were shocked in the remaining models. The mean FC was 29.7 (± 20.5) and 39.7 (± 23.7) for < 4 mm fragments ($p = 0.069$) and 7.6 (± 4.1) and 10.6 (± 6.7) for < 2 mm fragments ($p = 0.047$), for non-cystic and cystic models respectively. The mean FC was 29.7 (± 20.5), 38.8 (± 26.2) and 40.7 (± 21.3) for < 4 mm fragments ($p = 0.213$) and 7.6 (± 4.1), 11.1 (± 8) and 10.2 (± 5.3) for < 2 mm fragments ($p = 0.138$), for models B, C and D respectively.
Conclusion: The model employed allowed simulation of SRC in an in vitro setting. Stone fragmentation was enhanced in those models subjected to SWL in the presence of adjacent SRC.

MP17-13 Does routine renography after SWL have any practical impact?

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Introduction: In our institution we traditionally have performed 99mTc-DTPA renography routinely one month after SWL. The argument for this has been to reveal significant obstruction and/ or ipsilateral deterioration in renal function. The aim of this study was to investigate if routine renography performed after otherwise uneventful SWL had any practical consequences.
Material & Methods: 195 patients with solitary kidney stones treated with first time SWL (Siemens Lithostar). In all cases a renography was routinely scheduled 1 month later. Prospective treatment data and retrospective follow-up data were analyzed.

15 patients were excluded since the planned renography was never performed or performed > 90 days following SWL. 170 patients were included in the analysis. Median age: 48.5 years (range: 19–88 years). Male: F emale ratio was 106:64. Median stone size was 10 mm (range: 3–27 mm) and median stone area 64 mm2 (range: 9 – 378 mm2). Stone location: pelvis 58, upper calyx: 21, middle calyx: 30, and lower calyx: 61. Right: Left ratio: 65:105. Median number of shockwaves: 2250 (range 449–6000). Stone status at 1-month follow-up: 54 patients (32%) were stone free, 21 patients (12%) had clinically insignificant residual fragments (≤ 3 mm) and 94 (55%) had residual fragments. In 1 case stone status was not unknown. Imaging modality used at 1-month follow-up: 163 KUB, 3 NCCT and 4 IVU.

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Results: In 8 patients (4.7%) intervention occurred prior to the scheduled renography (3 JJ-stent, 1 nephrostomy, 2 URS and 2 re-SWL). Renography was afterwards performed as scheduled in 7 cases, and accelerated in 1 case. In 162 cases (95.3%) no intervention took place prior to renography, which was performed as scheduled in 149 cases, and accelerated in 13 cases. The duration from SWL to post-SWL renography was median 30 days (range 4–76 days) overall, and 32 days (range 17–76 days) in patients in which it was not accelerated due to symptoms or intervention. In the 156 patients in which post-SWL renography was performed as scheduled, it had minor consequences (repeated renography and/or additional imaging) in 12 cases (7.7%), and major consequences (URS and/or JJ-stent) in 3 cases (1.9%). The renographic findings leading to intervention in 3 cases were significant decrease in function in addition to obstruction. These patients all had residual fragments in the ureter.
Conclusions: Routine post-SWL renography after otherwise uneventful ESWL have low practical impact, leading to intervention in only 1.9%.

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MP17-14 Standardized grading of shock wave lithotripsy complications with modified Clavien system

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Introduction: There is still no consensus on how to define and grade complications of shock wave lithotripsy (SWL), which hampers comparison of outcome data among different centers. The objective of the present study was to grade complications of SWL in relation to different stone and shock wave parameters, according to modified Clavien system.
Materials and Methods: SWL was performed in total 2648 patients between January 2003 and May 2014. All SWL were performed with electromagnetic lithotripters. All records were retrospectively reviewed focusing on stone and shock wave parameters. The complications observed were evaluated statistically and stratified into five grades by modified Clavien system.
Results: SWL was performed renal and upper ureteric stones in total 2648 patients. The mean age of the patients was 42.4 ± 12.9 years (range 5 – 85 years). A chi-square test analysis revealed statistically significant association between SWL outcome and stone and shock wave parameters. Higher grade complications were observed in patients with inferior calyceal, larger diameter, higher density, complex stone, requiring higher number, energy and sessions of shock waves. According to modified Clavien system, grade I, II, IIIa, IIIb, IV and V complications were observed in 1811 (68.39%), 619 (23.37%), 183 (6.91%), 34 (1.28%), nil (0.00%) and 1 (0.03%) patients, respectively. Overall success rate at 3 months was 87.72%.
Conclusions: The modified Clavien system provides a standardized grading of SWL complications and can be used to standardize procedural errors and maintain quality, thereby preventing associated complications and improving overall management and hence outcome of SWL.

MP17-15 Do renal stones that fail ESWL require treatment?

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Introduction: The tolerability of ESWL has led to an increase in the treatment of renal calculi. However, there is little evidence on the natural history of these calculi if this fails. We looked at the effectiveness of ESWL & whether conservative management after failed ESWL is suitable management option.
Material & Methods: We prospectively reviewed our ESWL database of patients undergoing a 1st treatment for a single renal stone.

Outcomes after ESWL were categorised as:

- Success
- Subsequent intervention
- Conservative management

The medical records of patients managed conservatively were reviewed to determine whether further intervention was required & why.
Results: 313 patients fitted the inclusion criteria.

Of these, 144 were treated successfully.

Of the 170 patients with a residual stone, 51 went on to fURS directly at their next clinical review for a variety of reasons.

79 patients were managed conservatively & for 39 follow-up data was unavailable.

63 patients (80%) were successfully managed conservatively with no recurrence of symptoms over the follow-up period (mean 2y4m / range 1–3y8 m)

16 (20%) patients that were initially managed conservatively underwent subsequent early intervention. Of these, 87% had a stone in an upper pole calyx.
Conclusion: Conservative management of renal stones after failed ESWL is a suitable option for asymptomatic patients. For 80% of these, no further intervention is needed. For patients with upper pole stones, early intervention is warranted due to the high risk of complications (ongoing symptoms and ureteric colic).

MP17-16 Extracorporeal Shockwave Lithotripsy – Current Practices in the UK

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Introduction: Shock wave lithotripsy (SWL) is currently recommended by the European Association of Urology as first-line treatment for the majority of renal and ureteric stones and SWL is a frequently performed procedure. There is an immediate need to describe the current treatment policies of UK SWL centres within the context of existing international guidelines, and to identify discrepancies to inform future research and assess the potential benefit of UK-based SWL guidelines.
Methods: Fixed-site lithotriptor centres in the UK were identified via the national Therapeutic Interventions for Stones of the Ureter (TISU) study ($n = 25$). Questionnaires were completed regarding current SWL protocols for each centre, including management of anticoagulation, use of antibiotics and analgesia, urine testing, pacemakers and arterial aneurysms. Data was collected regarding service delivery.
Results: Responses were obtained for 21 centres. Most centres use the Storz Modulith (85.7%). Wide variation was observed in clinical contraindications to SWL, with 47.6% centres performing SWL in patients with an abdominal aortic aneurysm, 66.7% performing SWL in patients with a pacemaker, and 66.7% of centres not performing SWL in asymptomatic patients with a urine dipstick positive for nitrites and leucocytes. The

management of anticoagulation pre- and post-SWL showed wide variation, with omission of anticoagulation ranging from 0–10 days pre-SWL.

Seventeen distinct analgesia regimens were reported and prophylactic antibiotics are routinely administered in 25.0% of centres. Tamsulosin is prescribed to all patients in 20.0% of centres and a further 15.0% of centres routinely prescribe tamsulosin post-SWL of ureteric stones.

The included centres undertake SWL a median of four days per week and treat a median of six patients per list. Emergency SWL is unavailable in 30.0% of centres.

Conclusion: This study has identified significant disparity in the delivery of SWL throughout the UK, despite high numbers of patients with renal and ureteric stones being treated with this modality. Further studies should address the key areas of controversy and develop national guidelines to ensure a high level of standardized care for SWL patients.

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MP17-17 The new versus the old: Comparison of outcomes of extracorporeal shockwave lithotripsy (ESWL) treatment using two different lithotripters

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Introduction: ESWL is a popular treatment option for renal stones. The Storz Modulith SLK Inline lithotripter was purchased in March 2014. Prior to this the 'prone' Storz Modulith was used. ESWL is usually required for a maximum of three sessions. The primary outcome of this study was to compare stone-free rates from a cohort of patients treated with the old versus the new lithotripter. The 2nd phase of the study involved a prospective structured questionnaire recording the patient experience before, during and after lithotripsy using the new lithotripter.

Patients and Methods: Data was retrospectively collected from electronic hospital databases for 50 patients treated between December 2013 and March 2014 (old lithotripter) with 50 treated between April and July 2014 (new lithotripter). Pre-treatment data collected included stone size, site and Hounsfield unit density. Treatment data included shockwave power and frequency, and number of treatment sessions. Stone-free rate was determined by post-treatment KUB, USS and/or CTKUB. The prospective patient questionnaires were completed before and after the first treatment, then four weeks after the first treatment. Questions involved 1–5 likert scales and blank space questions and covered their understanding and experience of the treatment and their symptoms after discharge.

Results: Age, gender, stone history and stone characteristics were similar in each group. Stone-free rates for the old and the new lithotripter respectively were: 26% vs 29% after the first session, 42% vs 48% after the second and 56% vs 75% after the third. Four patients from the old (all elective) and three (1 elective, 2 acute) from the new lithotripter group needed subsequent ureteroscopy. Patients were satisfied with the lithotripsy they received with the new lithotripter. Their experience of pain was variable but they had less urine infection symptoms and skin changes in comparison to expectations based on the BAUS information leaflet. Areas for improvement were better pre-treatment information, headphones with music during the procedure and a helpline for questions following discharge.

Conclusions: The new lithotripter appears to achieve a higher clearance rate after both two and three sessions. Some patients having imaging prior to their 3rd planned session would improve the efficiency of the lists. On-going patient feedback is allowing us to make improvements to our service, optimise the patient experience and provide more accurate information when counselling and consenting patients for ESWL.

MP17-18 Shock-wave lithotripsy and traditional Chinese medicine: friend or foe?

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Introduction: In Taiwan, patients who have urological problems may also consult traditional Chinese medicine (TCM) practitioners. TCM is covered by the compulsory National Health Insurance of Taiwan, but whether TCM has a positive or negative effect on stone disease is controversial. We investigated the relationship between patients who were treated with TCM and subsequent efficacy of stone treatment.

Materials and Methods: We analyzed data from the National Health Insurance Database of Taiwan, which is a randomized sample of the billing information of > 99% of Taiwanese patients. The total number of cases was 6,073. The study cohort included 1,693 patients with ureteral stones who underwent lithotripsy or lithotomy in between 2000 to 2006 who were also treated with TCM, and the compared cohort included 4,380 patients with the same parameters who did not see a TCM practitioner. We compared whether there was a difference in the incident rate ratio (IRR) of a subsequent lithotripsy or lithotomy at 45 days and 90 days after the first operation.

Results: Within 90 days of the first operation, 12.9% of non-TCM users and 10.7% of TCM user underwent a second lithotripsy or lithotomy ($p = 0.02$). In particular, among recipients of primary extracorporeal shock-wave lithotripsy (SWL), the IRR of a subsequent operation in TCM users was 0.79 ($p = 0.03$) when compared to non-TCM users. In recipients of ureteroscopy, nephroscopic lithotomy and other operations, there were no significant differences between the two groups. There were no statistically significant findings when the two groups were compared at 45 days after the first operation.

Conclusion: Although there are limitations to this study, our results suggest that TCM may increase the efficacy of SWL. Subsequent studies to identify specific TCM procedures or medications that may aid stone passage or dissolution are necessary to explain our findings. At least, this study finds no evidence that TCM exacerbates stone recurrence.

MP17-19 99mTc-DTPA renography before and after SWL

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Introduction: The aim of this study was to compare renographic values before and after SWL.

Material and methods: 156 patients with solitary kidney stones treated with SWL (Siemens Lithostar) were included. 99mTc-DTPA renography was performed pre- and post SWL.

GFR in treated kidney was estimated from the uptake phase of 99mTc-DTPA renography.

Median stone size: 10 mm (range 3–27 mm), median stone area: 64 mm2 (range 9 – 378 mm2). Median age: 49.5 years (range: 19–88 years). Prospective treatment data and retrospective follow-up data were analyzed. Statistics: Dependent two-tailed t-test for paired samples.

Results: Of 156 patients, 145 had post-SWL renography performed as routinely scheduled. 11 patients had an accelerated renography performed, due to pain, hydronephrosis, and/or steinstrasse. In 7 patients intervention (in form of either ureteral stenting, nephrostomy, ureteroscopy and/or re-SWL) occurred prior to post-SWL renography. Median duration from pre-SWL renography to SWL was 20 days (range 1–83 days). Median duration from SWL to post-SWL renography was 31 days (range 4–76 days). In the total population GFR concerning the treated kidney decreased from 51.83 to 48.47 ml/min ($p = 0.0006$), total transit time in the kidney (parenchyma transit time + pelvic transit time) increased from 4.69 to 6.09 min ($p = 0.0026$) and pelvic transit time increased from 1.88 to 3.31 min ($p = 0.0007$), when comparing pre- and post-renography in all patients. The patients were divided into two groups: Group I: 17 patients, who had an intervention and/or accelerated renography performed median 8 days after SWL. Group II: 139 patients with an uneventful course who had post-renography performed as routinely scheduled median 33 days after SWL. In Gr. I mean GFR decreased significantly from 54.82 to 39.82 ml /min ($p = 0.0013$). In Gr. II there was no significant decrease in mean GFR, but a significant increase in pelvis transit time on the treated kidney from 1.81 min to 2.69 min ($p = 0.0029$) was observed.

Conclusions: A significant difference was observed in renographic values (GFR, total transit time and pelvic transit time) before and after SWL in the total population. A clinical significant decrease in GFR was only observed in the group of patients who required intervention and/or accelerated renography post-SWL due to pain, hydronephrosis and/or steinstrasse.

MP17-20 Urine beta2-microglobulin changes after extracorporeal shock wave lithotripsy (ESWL)

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Aim: There are reports indicating tubular injury after ESWL. In this study, we evaluated urine beta2-microglobulin (an index of tubular injury) changes after ESWL.

Methods: In this cross-sectional study, during a 12 months period, from April 2012 to Mars 2013, 91 patients who underwent ESWLwere included in study. Urine beta2-microglobulin before and after ESWL, demographic data and procedure parameters all were gathered and analysed by SPSS17.

Results: The mean patients age was 48.93 ± 14.03 years and 58.2 were male. Mean urine beta2-microglobulin before and after ESWL were 0.08 ± 0.07 and 0.22 ± 0.71 respectively. The difference was statistically significant ($p = 0.00$) according to Wilcoxon Signed Ranks Test. In multivariate analysis, hypertension and history of previous ESWL had positive correlation with urine beta2-microglobulin changes. In univariate analysis serum glomerular filtration rate (GFR) had negative correlation with urine beta2-microglobulin changes

Conclusion: ESWL can increase urine beta2-microglobulin level probably due to tubular damage. Some factors including hypertention, previous ESWL and low GFR may exacerbate the damage.

MP17-21 Evaluation of serum Cystatin C, Creatinine and microalbuminuria as biomarkers of acute kidney injury after shock wave lithotripsy

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Introduction: Acute kidney injury (AKI) could occur after exposure to shockwave lithotripsy (SWL). Cystatin C (Cys C) has been proposed as a filtration marker for the early detection of acute kidney injury. The aim of this study was to determine the serum levels of Cys C, Creatinine and micro-albuminuria in patients underwent a single session of SWL.

Materials and Methods: A total of 89 adult patients were included in thE study. Each kidney unit received a single session of SWL by using Modulith SLX lithotripter (2500 shocks, 60 shocks/minute and energy levels 1–3) for solitary renal pelvis stone (< 15 mm in transverse diameter). Serum samples for estimation of Cystatin C and creatinine were withdrawn two hours, before and after SWL session and the estimation was repeated after 7 days post-lithotripsy. Urine analysis for microalbuminuria was performed before and 2 hours after each session and was repeated for the same purpose after one week. Routine renal ultrasound was carried out before lithotripsy and 7 days after the SWL session. Patients with malignancy and urinary tract infection were excluded. Data were analyzed by using SPSS software.

Results: There were 70 (78.7%) males and 19 (21.3%) females. The mean age was 41 ± 11.2 years. Serum creatinine was normal (98.9%) pre-SWL in all patients except one. The micro-albuminuria was detected post-SWL session in 67 (75.3%) patients and 22 (24.7%) had no microalbuminuria. Microalbuminuria disappeared after 7 days in 87 (97.8%) and persisted in 2 (2.2%) patients. The mean serum Cys C was 0.95 ± 0.67, 1.0 ± 0.88 and 0.95 ± 0.67 mg/l, pre-, post- and 7 days after SWL respectively. The Cys C was elevated immediately after SWL in 11 (12.35%) patients who had associated co-morbidity (Hypertension, Diabetes and Obesity) and returned to normal value after one week.

Conclusion: Serum Cys C is a reliable biomarker for prediction of AKI after SWL. SWL affected the kidney function temporarily as evidenced by high Cys C and microalbuminuria. Most of the serum and urine markers resumed its normal values after one week of SWL. There were significant changes in the biomarkers in patients with associated co-morbidity. Seven days is a feasible rest gap between SWL sessions for the kidney to recover from possible SWL injurious effects.

MP17-22 Ultrasound imaging feedback to control kidney injury caused by burst wave lithotripsy

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Introduction: Burst wave lithotripsy (BWL) is a new, non-invasive approach for consistently breaking kidney stones into small, passable fragments with short bursts of ultrasound (Maxwell et al. J Urol 2015; 193:338–44). In clinical ESWL, the rate of shock wave delivery is typically limited to 1–2 Hz because

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faster rates can cause the proliferation of bubbles that shield the stone and/or lead to hemorrhagic injury. Though initial *in vivo* experiments in a pig model suggest that energy can be delivered to the stone at much faster rates with BWL pulses, it is important to minimize the potential for tissue injury. In this effort, the use of ultrasound imaging feedback to control injury is explored.
Materials and Methods: Twenty-one *in vivo* BWL treatments at either 170 or 335 kHz were delivered to kidneys from 4 pigs. Treatments were monitored and recorded with B-mode and Doppler-based ultrasound imaging sequences, using either a Philips HDI P7-4 or P4-2 probe driven by a Verasonics ultrasound engine (Kirkland, WA). Treated kidneys were perfusion fixed before undergoing MRI scans to acquire T1-weighted, T2-weighted and susceptibility weighted images using a 3T scanner (Achieva, Philips Healthcare, The Netherlands). The MR scans were designed to identify sites of hemorrhagic injury, and the presence/absence of such sites was correlated with observations of apparent cavitation activity in the ultrasound images. To facilitate a physical interpretation of the ultrasound imaging data, additional experiments were performed in water and in a gel tissue phantom; bubbles excited by BWL exposures were characterized by high-speed photography and ultrasound imaging.
Result: During some *in vivo* treatments, the rapid onset and evolution of hyperechoic regions was readily visible in B-mode images. Doppler-based imaging was very sensitive to such events, with Doppler power in the focal region typically changing by more than 2 orders of magnitude. High-speed photography in water and gels demonstrated that BWL exposures can generate cavitation clouds that grow with successive pulses; in ultrasound images, these clouds look like the hyperechoic regions observed *in vivo*. With regard to injury, 6 clear hemorrhagic lesions were identified in MR images, and all of these lesions corresponded to observed cavitation activity in ultrasound images.
Conclusion: It was confirmed that ultrasound imaging (especially Doppler) is a very sensitive detector of BWL-induced cavitation activity, which in turn correlates with hemorrhagic tissue injury. Consequently, ultrasound imaging shows promise as a modality for providing real-time feedback to limit injury in BWL treatments.

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MP18 - ENDOSCOPIC EDUCATION: SIMULATOR TRAINING, VIRTUAL REALITY 2

MP18-1 Surgical Theatre – A Systematic Review of Live Surgical Demonstrations within Urological Surgery

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Introduction: Live surgery is a common practice at surgical conferences, however it has been suggested that patient safety may be at risk when being conducted. Additionally, little is known about the true educational value which can be gained to the observer by observing these procedures. Therefore, this systematic review aimed to explore the current evidence within the literature and: (1) explore the evidence that exists for live surgery as a training tool, (2) identify the patient safety of live procedures, and (3) highlight what guidelines are currently provided by urological societies for live surgical procedures.
Materials and Methods: A systematic review of the literature was performed using PubMed, EMBASE and the Cochrane library for studies analysing patient safety and educational value of live procedures. Additionally, urological societies were searched for guidelines on live procedures.
Results: A total of 1107 articles were identified through the search with a final of 16 studies included within the final systematic review. In total six studies analysed the educational value of live demonstrations. These studies demonstrated the feasibility, acceptability, construct and concurrent validity of live surgery. Eight studies analysed the patient safety of live procedures and whilst most did not identify an increased risk due to complication rates ($p < 0.05$), two studies identified a lower success rate (6.6 – 17% lower in live cases) during live ERCP procedures. Within urology, clear guidance has been provided on conducting live surgery by two societies. The European Association of Urology (EAU) and the American Urological Association (AUA) have released statements endorsing live surgery if conducted along to their guidelines, with the EAU additionally, requiring approval from a live surgery committee for endorsement.
Conclusions: Currently there is a lack of good quality data supporting the educational value of live surgery and more research is certainly required to ensure these procedures are educationally worthwhile to conduct. The evidence regarding the patient safety of these procedures needs to be considered due to lower lower success rates demonstrated. Clear guidance is currently in place for conducting live surgery in urology, however this is not often the case within other specialties. An independent and central pan-specialty regulatory body is required to ensure regulations are being adhered.

MP18-2 3D Printed Renal Models with Extensive Urolithiasis: A Novel Resident Educational Tool for Planning Percutaneous Nephrolithotomy

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Introduction: Percutaneous nephrolithotomy (PCNL) is the gold standard for the treatment of large kidney stones. Planning and performing PCNL in patients with extensive urolithiasis can be challenging for urology trainees. We hypothesized that the use of novel 3D printing technology may improve trainee's understanding of stone anatomy and surgical approaches used during PCNL procedures. Herein, we evaluated the feasibility and

utility of using 3D printed renal models as resident educational tools when planning PCNL for patients with large, complex kidney stones.

Materials and Methods: We used specialized medical imaging processing software (Mimics, Materialise Inc., Belgium) to convert 64 serial axial CT images of a complete staghorn kidney stone into patient-specific 3D computer-aided designs (CAD) of renal and stone anatomy. Three 3D printing technologies were used to manufacture three different stone-containing renal models: fused deposition modeling, polyjet printing of rubber-like TangoPlus elastomers, and polyjet printing of rigid VeroClear thermoplastics (Stratasys Ltd. MN, USA). Finally, we assessed the educational utility of our VeroClear model by administering a questionnaire to 10 urology residents and fellows at our institution after they viewed the 3D printed model and conventional CT imaging (Group A) or conventional imaging alone (Group B). The questionnaire consisted of 5 questions assessing the participant's familiarity with the staghorn stone location, stone shape and orientation, their ability to determine the optimal calyx of entry, their ability to make an operative plan, and their overall confidence in performing PCNL using a Likert rating system from 1 (no confidence) to 10 (very confident).

Results: We successfully manufactured 3 patient-specific 3D kidney models containing anatomically-accurate staghorn stones using three different 3D printing technologies. Average trainee questionnaire scores were 38/50 and 30.4/50 for Group A and Group B, respectively ($p = 0.23$). Group A trended toward higher familiarity with the shape and orientation of the stone (8.2/10 vs. 6.4/10, $p = 0.22$) and trended toward greater overall confidence in performing PCNL (6.4/10 vs. 5/10, $p = 0.26$); however, these differences did not achieve statistical significance. All trainees (5/5) using the renal model reported that a 3D printed model could be a useful tool in planning PCNL.

Conclusions: We successfully constructed patient-specific renal models containing staghorn calculi using conventional CT imaging and 3D printing technologies. Our pilot data were compatible with a trend favoring the 3D printed models as a useful education and training tool for urology residents and fellows. Further study is in progress with a larger cohort of trainees.

MP18-3 A renal simulator (TRISTANS-II) advances nephrostomy & PCNL training

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Introduction: Percutaneous entry is the initial and most important part of percutaneous nephrolithotomy (PCNL). The nephrostomy is safely performed while looking at three images (the endoscopic, fluoroscopic and ultrasonic images). We created a new fluoroscopy-less simulator. We examined its use as a training method and as an educational tool.

Materials & Methods: The Ultrasound Percutaneous Nephrostomy Trainer (Limbs and Things) was modified with insertion of the Flexor ureteral access sheath (COOK Medical) to allow a flexible ureterorenoscope (Olympus) to be passed into calyes. We named this training simulator TRISTANS-II. Six urologists received hands-on training in 2014. Two urologists performed nephrostomy formation on the TRISTANS-II. The assistant first performed retrograde ureterorenoscopy to search the desired calyx. The operator obtained antegrade access to the calyx of interest under ultrasonic guidance. Six nephrostomy was formed by a couple of 6 urologists and operative times from the ureterorenoscope insertion to through and through access with guidewire were recorded.

Results: Recorded operative times were 144 ~ 273 sec. (ave. 201 sec.). Side-by-side display of the ureterorenoscopic image (narrow band image) and the ultrasound image allows the trainee to confirm real penetration of the fornix with the needle and clearly visualize the relationship between the 2D image on the screen and the underlying 3D anatomy of the kidney.

Conclusions: The TRISTANS-II, a new training simulator, is promise as an educational tool and cost-effective for re-usage during training. Greater experience is required to determine if this simulator will be most efficacious in the nephrostomy & PCNL training.

MP18-4 Use of a novel radiation-free fluoroscopy emulator (iPERC) to improve surgical skills in percutaneous nephrolithotomy

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Introduction: Percutaneous nephrolithotomy (PNL) is a fluoroscopy-guided surgical procedure for kidney stones extraction requiring a high level of precision and skill. Currently available training models using animals and fluoroscopy are costly and have the disadvantage of radiation exposure. I-PERC is an ex-vivo model that does not use fluoroscopy, designed to train urologists in PNL. Our objective was to evaluate the efficacy of this model in improving PNL skills among urological surgeons.

Materials and Methods: Prospective study assesing the performance of 30 urologists with less than 5 in vivo PNL procedures (14 urology residents and 16 urologists in practice) using the i-PERC model. Participants were scored before and after 20 attempts at the i-PERC model using the triangulation technique. Evaluated parameters included access time, number of angle-of-vision shifts and number of needle adjustments at 0 and 30 degrees.

Table 1. Improvement of evaluated parameters

	Before Median (IQR)	After Mediana (IQR)	p*
All subjects, n=30			
KAT	148 (112.5-185.2)	77 (70-110.7)	0.000
ERT	101.5 (63.2-132.5)	45.5 (36-63.2)	0.000
No. C-arm movements	9 (5.7-10.2)	5 (3-7)	0.004
No. Needle adjustements(0º)	3 (3-6.2)	2 (1-3)	0.000
No. Needle adjustements(30º)	6(3.7-7)	4 (3-4.2)	0.001
Residents, n=14			
KAT	121.50 (106.25-158.25)	75.5 (50.00-87.75)	0.001
ERT	82 (40.50-107-75)	37 (27.00-46.25)	0.001
No. C-arm movements	6.5 (3.00-9.25)	3.5 (3.00-5.00)	0.008
No. Needle adjustements(0º)	3 (1.00-4.00)	1.5 (0.5-2.00)	0.009
No. Needle adjustements(30º)	4.5 (1.50-7.00)	3.5 (2.00-4.25)	0.137
Urologists, n= 16			
KAT	163.50 (123.50-195.00)	106 (63.10-150.00)	0.005
ERT	117.50 (57.40-141.25)	63 (35.40-89.50)	0.003
No. C-arm movements	10 (5.70-11.75)	6 (4.40-9.75)	0.105
No. Needle adjustements(0º)	4.50 (2.70-7.75)	3 (1.00-4.00)	0.006
No. Needle adjustements(30º)	6 (3.70-9.00)	4 (2.00-4.75)	0.005

KAT: Kidney Access Time in seconds, ERT: Emulated Radiation Time in seconds, IQR: Interquartile range
* Wilcoxon´s sum rank test

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Results: At the end of the training program the time required to complete the evaluated tasks decreased significantly: kidney access time from a median of 148 to 77 seconds ($p = 0.000$), the median emulated radiation time from 101.5 a 45.5 seconds ($p = 0.000$), the median number of C-arm adjustments from 9 to 5 ($p = 0.004$), and of needle adjustments at 0 and 30 degrees from 3 to 2 ($p = 0.000$), and 6 to 4 ($p = 0.001$), respectively.
Conclusions: The iPERC model constitutes a safe and effective device in PNL training. Not only does this novel tool avoids radiation exposure and the use of laboratory animals, but adequately simulates the challenges encountered a surgeon faces while performing this complex procedure.

MP18-5 Ureterorenoscopy Training on Cadavers Embalmed by Thiel's Method: Simulation or a Further Step towards Reality? Initial Report

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Introduction: Ureterorenoscopy has a significant learning curve. Thiel-emblamed Cadavers have been successfully used in simulation training in urology and other specialties. Here we present the first report to assess the plausibility of using Thiel cadavers in ureterorenoscopy simulation.
Materials and Methods: The two day inaugural 'Masterclass in Flexible Ureterorenoscopy' involved six participants performing ureterorenoscopy on Thiel cadavers under the guidance of experienced endourologists. A qualitative questionnaire using a Likert score was delivered to the participants and faculty. This assessed tissue characteristics (colour, consistency, vulnerability) of the cadaveric bladder, ureter and pelvicalyceal system, anatomical features and procedural aspects. Video recordings of the procedures were made.
Result: 8 responses were collected. 75% reported the overall quality of tissue in the cadaveric urinary tract as high or excellent. 50% reported the cadaveric bladder as being softer than in a live patient whilst five out of eight thought that the cadaveric ureter was softer and more prone to trauma. Overall, the tissues were reported as being paler than in live patients. Seven out of eight reported overall satisfaction with the model, one remained neutral. The quality of vision and irrigation in the upper urinary tracts were reported as high.
Conclusion: Thiel cadavers have been shown to have excellent tissue characteristics, as well as being durable and reusable. We have described the first use of Thiel cadavers in a designated ureterorenoscopy course, with high levels of delegate satisfaction. Further work is required to develop the role of Thiel cadavers as part of integrated, modular urology training.

MP18-6 Laparoscopic IVC Injury Management Training – Evaluating Technical & Non-technical Skills

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Introduction: Major vascular injuries during laparoscopic surgery, though rare, can lead to significant morbidity. Simulation-based crisis resource management training provides an opportunity to experience rare OR crisis scenarios in a safe environment. We developed a unique OR laparoscopic IVC injury crisis scenario and conducted an observational study to determine predictors of surgeon performance.
Methods: Urology residents from our institution were recruited to participate in a simulation-based laparoscopic nephrectomy scenario. Residents completed both a demographic & multidimensional personality questionnaire (Big Five Index – BFI) and were instructed to play the role of staff urologist. A vasovagal response to pneumoperitoneum and an IVC injury event were scripted into the scenario, unbeknownst to trainees. Resident performance in managing these events was video-recorded. All scenarios ended upon either successful repair of IVC injury, decision to convert to open repair, or max blood loss (2.5L). Technical & non-technical skills were assessed by expert lap surgeons using task-specific checklists, global-rating scales and other validated tools. The Chi-square, Mann-Whitney U, ANOVA, and Pearson & Spearman correlations were utilized as indicated for statistical analysis.
Results: Fifteen urology residents participated (10 Jr & 5 Sr). Mean EBL was 1.98L and 5 residents were unable to complete the scenario safely. Sr residents had more lap nephrectomy experience ($p < 0.01$) but were similar to Jr residents in prior simulation-based training experience and on baseline BFI personality scores. Sr residents outperformed Jrs on both technical (15.1 vs 9.9, $p < 0.01$ and 18.0 vs 13.3 $p < 0.01$) and non-technical performance (13.8 vs 10.1, $p = 0.03$). Technical scores correlated with non-technical scores ($p < 0.01$). Of the 4 non-technical skill domains assessed, level of training correlated with situation awareness, decision-making & leadership scores but not with communication scores ($p = 0.09$). Innate personality traits as assessed by the BFI tool did not correlate with performance during the simulated OR crisis scenario. Residents were able to accurately assess their own technical skill level but not communication skills.
Conclusions: Resident level of training and prior laparoscopic nephrectomy experience correlated with technical skills and most non-technical skills during a simulated laparoscopic IVC injury scenario. Level of training alone does not seem to predict communication & teamwork skills.

MP18-7 Smartphone Torch-App "Shadows-Play" For Learning Of Calyx Puncture Without Radiation Exposure

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Introduction and Objectives: We present a video of a latex glove model using the principle of shadows, for initial learning of percutaneous calyx puncture, without radiation exposure. The smatphone torch Application is used as the source of light.
Materials and Methods: A Foam box is used. A latex glove is inflated with air, and it is inserted in the slit in the box's side, thus, the fingers are horizontal. The Torch application of a smartphone is lighted. The phone is inserted below the glove. The box is covered with a paper. The shadows of the fingers and the puncture needle are projected on the paper. The puncture needle is used through the lateral side opposite the glove. The beam of light is perpendicular to the tract, so it gives orientation in the frontal plan. The needle is aligned with the glove's tip in the frontal plan, then it is moved from down to up in the transversal

plan, with little thrusting movements, until the finger moves. The fingers' tips are used as calyxes; puncture is to push the finger's tip in the middle until it is invaginated. The gloves' fingers can be shortened using ligation in the middle, and then the glove is inversed inside out. Thus, the shape will be similar to the shape of a hydronephrotic kidney.

Results: The torch-app-model is simple and rapid to set up. It is economical, by using very cheap and widely available material. It can be used in classrooms and workshops without the risks of radiation exposure, and there is no limit of training time. It allows beginners the initial use of the puncture needle and its orientation in the space. However, dilation and Amplatz sheath insertion are impossible. There is a limitation in terms of ''tissue feeling'' and for anatomic relations. Ultrasound-imaging guidance cannot be used.

Conclusions: The smartphone-torch-app. model allows beginners the initial use of the puncture needle and its orientation in the space. It can be used in classrooms and workshops without the risks of radiation exposure, and there is no limit of training time. However, further studies are needed for validation.

MP18-8 CUT Laparoscopic Skills Assessment Study – Developing National Technical Skills Milestones

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Introduction: As we move from the traditional apprenticeship model to a more competency-based surgical training paradigm, it is necessary to develop objective milestones against which we can assess our trainees. To develop a validated set of technical skills milestones for Canadian urology trainees, we initiated a longitudinal, national assessment study focusing first on basic laparoscopic skills. We present the initial results of this assessment study.

Methods: Between Feb 2014 and Mar 2015, the basic laparoscopic skills of Canadian urology trainees were assessed using the 4 validated tasks from the BLUS curriculum. Participants at 3 different stages of urology training (PGY0, PGY3, PGY5) were asked to complete the 4 standardized BLUS tasks (peg transfer, pattern cutting, suturing & knot-tying, and clip applying). All performances were video-recorded. Objective time plus error-based (TE) scores were calculated for each performance and a global rating score, using a validated tool (GOALS), was also obtained for each performance.

Results: A total of 87 Canadian urology trainees (47 PGY0, 15 PGY3, 25 PGY5), along with 5 Canadian faculty urologists, completed the testing. Prior clinical laparoscopic experience correlated well with mean performance on all 4 BLUS tasks ($p < 0.01$). Mean faculty performance, using both TE and GOALS scoring, was significantly different from any level trainee on all 4 BLUS tasks ($p < 0.05$, Table 1). Among the trainees only, level of training also correlated with mean performance scores for most tasks. Based on geographic region of training, differences were seen among trainees only for the suturing & knot-tying task.

Table 1

Mean task scores	PGY0 (n=47)	PGY3 (n=15)	PGY5 (n=25)	Faculty (n=5)	p value
Peg Transfer					
TE score (max300)	166.1 ±58.4	127.0 ±44.8	93.4 ±29.8	55.8 ±3.4	<0.001
GOALS score (max20)	12.1 ±2.0	13.3 ±1.2	14.1 ±2.1	15.9 ±1.2	<0.001
Pattern Cutting					
TE score (max300)	292.2 ±22.8	260.8 ±69.0	208.0 ±51.9	96.6 ±9.8	<0.001
GOALS score (max20)	10.4 ±1.5	11.4 ±1.7	12.8 ±1.7	14.6 ±0.8	<0.001
Suturing&KnotTying					
TE score (max300)	290.6 ±28.3	176.9 ±84.1	132.4 ±35.9	56.6 ±5.0	<0.001
GOALS score (max20)	10.6 ±1.5	13.6 ±2.0	13.7 ±1.6	16.5 ±1.3	<0.001
Clip Applying					
TE score (max90)	71.0 ±17.1	64.6 ±21.1	50.5 ±16.8	22.4 ±1.9	<0.001
GOALS score (max20)	12.8 ±1.1	13.5 ±1.4	14.5 ±2.2	16.7 ±1.6	<0.001

Conclusions: Canadian urology trainee performance on the 4 BLUS tasks correlated well with level of training (construct validity evidence). Based on a large cohort of Canadian urology trainees, mean performance scores for these 4 BLUS tasks have been established, at 3 different levels of training, and can now be used to develop basic laparoscopic skills milestones.

MP18-9 Reflective Practice in Surgical Training: Does the Integrated Surgical Curriculum Programme work?

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Introduction: Reflective practice is increasingly used in medical curricula to cultivate effective learning (Mann et al. 2009, *Advances in health sciences education: theory and practice*, 14(4), pp.595–62; Song & Stewart 2012, *Medical teacher*, 34(11), pp.955–956). To foster ''regular reflective practice'' in UK core surgical trainees, the Intercollegiate Surgical Curriculum Programme (ISCP) has introduced a reflective component to work-based assessments. We present a survey assessing surgical trainees' engagement with reflective practice through the ISCP.

Methods: An internet-based survey was designed using 5 point Likert scales. Based on the Groningen Reflection Ability Scale (Aukes et al. 2007, *Medical teacher*, 29(2–3), pp.177–182.), a set of questions were devised to specifically evaluate the trainees' perceptions of reflective practice in relation to the ISCP. 100 surgical trainees (CT1 & 2) in the London deanery were asked to participate.

Results: 40 trainees completed the survey. In general trainees valued reflective practice. 63% (n = 24) felt that reflection was a valuable aspect of training and 82% (n = 31) felt reflection was important for developing surgical practice. The majority of trainees also regularly reflected (62%, n = 24). However 82% (n = 31) thought that the ISCP never or only rarely motivated them to reflect and 71% (n = 31) found that trainers rarely or never commented on their reflections.

Discussion: Our survey shows that trainees acknowledge the important role of reflective practice in learning. However currently trainees do not feel that the ISCP effectively supports reflective learning. Portfolios have been shown to encourage reflection (Beecher et al. 1997, *Teaching and Learning in Medicine*, 9(1), pp.56–59) however it also requires engaged trainees and proactive trainers. Further emphasis needs to be placed on reflective practice within surgical training to ensure such an important learning tool is not lost.

MP18-10 Development of a Simulation-based Ureteroenoscopy Curriculum

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Introduction: Over the last two decades, increasing number of training models have been developed and validated for use in endourology. These have employed virtual reality (VR), dry-lab and wet-lab simulation modalities. Furthermore, these training models have often been used alone whilst recent developments in the literature suggest that training using different modalities, within a curriculum, to be more effective. Furthermore, emphasis has also been placed on training non-technical skills. Thus, the aim of this study is to develop a simulation-based training curriculum for ureterorenoscopy (URS), employing different modalities of training including VR, dry-lab, wet-lab and full immersion simulation.
Methods: A review of the literature revealed the URO Mentor and Uro-Scopic Trainer to be the most thoroughly validated VR simulator and dry-lab model for URS training, respectively. An online survey was developed (www.surveymonkey.com) for dissemination to residents and specialists in the UK. The survey described the features of each of the modalities: VR, Dry-lab, cadaveric and full immersion simulation. Residents and Specialists were asked to rate the relevance of the basic tasks and cases of the VR simulator on a 5-point Likert scale. They were also asked to make suggestions for cases to be performed on the dry-lab model, cadavers and inside the full immersion simulation environment. Finally, respondents were asked to rate the order within which each modality should be utilised in the curriculum.
Results: A total of 46 Residents (n = 25), with URS experience, and Specialists (n = 21) responded to the survey. All ten basic tasks on the VR simulator scored a mean of > 3/5. Respondents selected ten stones cases to be performed by beginner residents, 59% of whom suggested that the cases were repeated 3–5 times. A number of semi-rigid URS tasks were suggested for dry- and wet-lab simulation including ureteral orifice cannulation, guidewire placement, basket extraction and laser fragmentation of stones. For flexible URS, diagnostic inspection of calyces, laser stone fragmentation and basket extraction were suggested. A range of scenarios were put forward to be carried out in the Full Immersion Simulation environment including management of inexperienced teams, use of complex sequences or equipment and management of complications. Respondents selected that the curriculum began with VR (52%) followed by dry-lab (48%), then full immersion (53%) and concluded with cadaveric simulation (55%).
Conclusion: Expert opinion and trainee experience were utilised to develop a simulation-based URS training curriculum for beginner residents, utilising different modalities of simulation. The curriculum requires formal validation.

MP18-11 Implementation of the Curriculum of Robotic Educational Simulation & Training (CREST): The Brown University Experience

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Introduction: Over the last decade, the incorporation of high definition 3D imaging with optimal dexterity and intuitive instrument control through the use of robotic assisted laparoscopic surgery has resulted in shorter recovery times, less blood loss and reduced post-operative pain for patients. In response to such clinical benefits, robotic surgery has become a prominent part of surgical practice and resident training. The Curriculum of Robotic Educational Simulation and Training (CREST) program aims to enrich the learning experience of Brown University Urology Residents by providing a structured lesson plan, combining didactic review with surgical skill videos and hands-on robotic training, to supplement practical operating room experience.
Methods: Residents begin the CREST curriculum during PGY-2 year with the expectation of meeting knowledge and performance benchmarks generated by Division of Urology faculty, in accordance with AUA University recommendations, prior to completion of each academic year. In successive years, target skills become more advanced, building resident independence and comfort in troubleshooting and utilizing the robotic system. Residents use the Robotic Skills Simulator in preparation for operative cases as well as quarterly Skill Assessments to objectively track their progress. The CREST program also stresses the value of education as senior residents are taught to become effective instructors and mentors to junior residents in robotic-specific skills.
Results: Senior residents (PGY-4/5) generally outperformed junior residents (PGY 2/3) on common basic skill modules (avg 4.5 points higher score) at the initation of the CREST program. Significant score improvements were noted following implementation of routine simulator practice sessions, most notably amongst PGY-2 residents, with score improvements up to 15 points noted between their baseline testing and first structred skills assessment test. Additional longitudinal data will be available to assess the short-term impact of the program following July and September skill assessments.
Conclusions: The national and international utilization of robotic assisted minimally invasive surgery has grown significantly of late, especially within the field of Urology. Through the implementation of the CREST educational program, we aim to provide individuals in Brown University's Urology Residency Program a strong foundation in robotic knowledge and capabilities that can serve as either a starting point to pursue further specialized training in Minimally Invasive Urology, or, as a sufficient skill set to complement a newly graduated resident's general practice in Urology.

MP18-12 The Impact of Remote Monitoring and Supervision on Resident Endoscopic Training Using New ACGME Urology Milestone Criteria

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Introduction: The objective was to determine the impact of remote monitoring and supervision (RMS) in integrated endourology suites (IES) on residents achieving endoscopic training milestones.
Methods: 21 urology residents evaluated RMS in IES using a 25-question survey. IES provided audio-visual communication for faculty to supervise residents remotely. Questionnaire used a linear visual scale of 1–10 to assess acceptability (8 questions), training impact (10 questions), supervision level (1 question), and pre- and post-training milestone self-assessments (6 questions). Improvements in Patient Care Milestone #7 (upper and lower tract endoscopic procedures) and Patient Care Milestone #9 (office-based procedures) were analyzed.
Results: 21 urology residents (out of potential 23) evaluated RMS in IES using a 25-question survey (91.3% response rate). Overall RMS acceptability and satisfaction was high (mean score = 9.1/10) with a majority (95.2%) feeling comfortable

being alone with the patient. Residents reported positively on the following parameters: autonomy without compromising safety (8.7), supervision level (8.6), achieving independence (8.4), education quality (8.3), learning rate (8.1), clinical decision-making (8.0), and reducing case numbers to achieve proficiency (7.6). Residents perceived no issues with under- or over-supervision, and a majority (76.2%) expressed that RMS should be standard of training in residency programs. Residents reported mean level increases of 2.5 and 2.8 (out of 5) in Patient Care Milestones for endoscopic procedures and office-based procedures, respectively ($p < 0.0001$).
Conclusions: Remote monitoring and supervision in integrated endourology suites may enhance resident education and endoscopic training. The study demonstrated an increase in competency levels reported by residents trained using RMS.

MP18-13 Fundamentals of endourology: the resident perspective

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Introduction: The endoscopic management of urologic disease is a core area of both medical knowledge and surgical skill for urology residents. In recognition of this fundamental role, these key concepts and skills are included in the ACGME Urology Milestones. In addition to expert input, curricular development should also be informed by the perspective of the learners. Published data regarding early-stage urology residents' perception of learning needs around key knowledge and skills for endourology is lacking. The objective of the study was to describe the range of learner perspectives regarding core endourology skills and concepts among junior urology residents.
Materials and Methods: We anonymously surveyed junior urology residents regarding their perceptions of the most important endourology related surgical skills and knowledge. We analyzed survey responses using a multistage, cutting-and-sorting technique to qualitatively assess and categorize the data.
Results: 21 junior urology residents from 6 residency programs in the southeastern US completed the survey. 60% of the residents were PGY2, 30% were PGY3, and 1 participant was PGY1. The survey responses were sorted into 13 categories. Ninety-five percent of the participants had responses that fell into the ''indications'' category, defined as selection of an intervention from various surgical options, including criteria and decision-making process for that selection. Sixty-seven percent of the residents had answers that were categorized as ''basic access skill'', defined as gaining antegrade access or retrograde access to the upper urinary tract. Forty-eight of participants responded with answers that were categorized as ''complications'', defined as management or avoidance of complications that result or may arise from endourologic procedures. Other categories that emerged based on resident survey responses included basic and complex endoscopic skill, developing endoscopic experience, complex access skill, equipment handling and safety, anatomy, imaging, management of infected stones, and non-surgical management.
Conclusions: A substantial majority of junior urology residents in our cohort believe that it is important to learn indications for endourologic procedures. Avoiding and managing complications of endourologic procedures, in addition to gaining access to the urologic system, are other areas that these residents feel are particularly significant. Focusing on these specific themes in educating junior urology residents may increase confidence and ability in performing endourologic procedures.

MP18-14 Discrepancies in perception of residency training between residents and staff urologists: Results from a North-America and Europe wide survey

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Introduction: In the past decade, resident's working hour restrictions have been instituted internationally with the goal of improving the residents' quality of life and preventing burnout. It is widely debated whether or not these restrictions impact residency training and residents' level of competence at graduation. With a potentially reduced caseload, simulation based training gains importance. With this survey, we aimed to assess and compare how staff and residents perceive these working hour restrictions and how this influences their perception of competence.
Materials and Methods: An invitation for a web-based survey was sent out via email to urology staff and residents in Europe through the EAU and in North-America through the Endourological Society. One reminder was sent 3 weeks after the invitation and the survey was available for 5 weeks. The survey inquired about demographic data, workload and balance of hours spent on different residency tasks, caseload of endourological procedures, perception of cases needed to reach competence and finally about the use and usefulness of simulation based training for different endourological procedures.
Results: A total of 923 residents and 526 staff urologists responded to the survey, accounting for a response rate of 22.6% and 7.5% respectively. Whereas staff urologists estimated that residents work on average 53.4 hours per week, residents reported to work on average 64 hours per week. Overall, staff and residents have a similar equivocal perception of the balance of time spent on different tasks during residency. There is however a significant difference between residents and staff urologists among the European respondents, with residents mainly disagreeing (58.4%) and staff urologists being on average equivocal on the matter. Although the majority (91.8 – 92.6%) of staff feel that residents should have dedicated simulation based training prior to joining in laparoscopic or robotic surgery, only a minority (28.9–33.7%) of residents feel that simulation based training is available enough.
Conclusion: Staff urologists underestimate a resident's total weekly hours worked by approximately 10 hours per week. Although overall residents and staff feel similar about the work balance, European residents mainly disagree that time spent on different tasks is well balanced. Although the value of simulation based training is acknowledged, availability appears to be lacking according to the residents. There is a case to be made to incorporate dedicated simulation based training in the standard urology residency curriculum.

MP18-15 Simulation-based Urological Training – A Quantitative Study of Practice and Opinions amongst UK Residents and Specialists

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Introduction: Surgical training has changed considerably over the past few decades due to a number of factors including recent advance in technology, reduced working hours and greater patient expectations. As a result, simulation-based training has rapidly been adopted by many centres for effective technical and non-technical skills training, as a supplementary method to the traditional operating room experience. The aim of this study is to assess the current and future role of simulation in urological training.
Materials & Methods: A cross sectional survey was designed and distributed amongst expert and trainee urological surgeons. The survey consisted of twenty-two questions that were split into three sections; Demographics (6), Technical Skills training in urology (10) and Non-technical skills training in urology (6).
Results: A total of 91 residents and 172 specialists completed the survey. Only 25% of trainees rated ≥4/5 (agreed or strongly agreed) that their training was sufficient for their first day in the speciality in comparison to 88% of consultants. In both groups, there was an agreed consensus that laparoscopic training and exposure was insufficient as only 21% of trainees and 23% of consultants believed (agreed and strongly agreed) that they had sufficient training in this area. Furthermore, both groups lacked simulation-based training in common urological procedures including nephrectomy (62%), cystoscopy (69–74%), ureteroscopy (47–59%), transurethral resection of the prostate (56–65%) and percutaneous renal surgery (76–73%). Furthermore, 41% of trainees rated ≥4/5 (agreed or strongly agreed) that their non-technical skills training was sufficient for their first day in the speciality in comparison to 78% of consultants. 90% of trainees and 70% of consultants believed (agreed and strongly agreed) that there is a role for non-technical skills simulation in urological training.
Conclusions: Simulation training has been under-used thus far and trainees face an uphill challenge to enhance their skills and technical abilities in the operating fields. There is a consensus amongst trainees and consultants that simulation should have a role in surgical training.

MP18-16 Training in Urolithiasis: outlook of Portuguese Residents

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Introduction: Urology Residents are expected to become inured and confident performing extracorporeal shock wave lithotripsy (ESWL), semirigid/flexible ureterorenoscopy (URS/fURS), and percutaneous nephrolithotomy (PCNL). However, there are no international guidelines regarding specific training in Urolithiasis during Residency.
Objective: To portray Portuguese Residents' standpoint regarding their experience and confidence on the surgical management of Urolithiasis.
Methods: An online survey was presented to 61 Portuguese Urology Residents assessing their personal experience and confidence, and their Department's work volume. Statistical analysis was performed on STATA 13™.
Results: Twenty two Residents (36.1%) from twelve different Institutions (including five University Hospitals) replied, whose age averaged 29.4 ± 2.3 years old. Those institutions have no simulator training available. Eight (36.4%) participants belong to three hospitals that have an autonomous Urolithiasis Unit. Twelve (54.6%) Residents were on the last two years of training. Seventeen (77.8%) declared a particular interest on Urolithiasis. Twelve (54.6%) participants expect an official Urolithiasis internship during Residency. Most Residents labelled daily clinical practice as the best learning tool for Urolithiasis. On average, each resident performs 4.2 ESWL, 23.3 URS, 5.5 fURS, and 8.2 PCNL annually. There is a positive correlation between the year of Residency and the number of procedures ($p < 0.05$). Centres harbouring a Urolithiasis Unit perform more fURS procedures annually (> 100) as opposed to other hospitals (< 50) ($p = 0.017$). Residents at those institutions participate in fURS three times as often as other residents ($p = 0.01$). There were no significant differences for ESWL, URS, or PCNL. Regarding performance confidence, the average score was 2.5 for ESWL, 4.0 for URS, 2.4 for fURS, and 2.3 for PCNL, on a 1–5 scale. Final year Residents are more confident performing these techniques ($p < 0.05$). According to participants, to become autonomous during Residency one should execute at least 21.5 ± 14.0 ESWL, 24.9 ± 10.8 URS, 26.1 ± 14.0 fURS, and 34.7 ± 18.7 PCNL. Participants who had already surpassed their own set minimum (35.0% participants for ESWL, 72.7% for URS, 22.7% for fURS, and 4.6% for PCNL) ranked 2 points higher on the confidence scale ($p < 0.001$). The total number of procedures is also positively associated with higher confidence ($p = 0.003$). Concerning factors that may result in Residents becoming devoted to Urolithiasis, sixteen (72.7%) consider important an internship at a Urolithiasis Unit, and twenty (90.9%) regard Residency experience as very important.
Conclusions: Internships at Urolithiasis Units can help Residents improve their skills and confidence. International goals for Residency regarding Urolithiasis should be set to certify Residents as apt to execute these procedures.

MP18-17 Current Status of Endourology Simulation: A Systematic Review

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Introduction: Simulation has gained wide acceptance as a method of reducing the initial phase of the learning curve. In urology, endourology has been particularly suited to simulation training and a staggering number of simulators have been produced in the recent years. This study aims to identify the available training models for endourology training and their status of validation.
Materials and Methods: A review of the current literature was performed between 1990 and 2015 on the Medline and EMBASE databases. Several keywords and phrases were searched including ''urology'' followed by combinations of of the terms ''training'', ''simulat*'' and ''model'' with ''TURP'', ''TURBT'', ''HoLEP'', ''holmium'', ''PVP'', ''PCNL'', ''Laser'', ''diode'', and ''GreenLight''. Furthermore, relevant abstracts from the AUA, SIU, WCE, EAU, and BAUS meetings, between 2009 and 2014, were included.
Results: A total of 81 studies were identified describing models and simulators for urethrocystoscopy ($n = 8$), ureterorenoscopy ($n = 12$), transurethral resection of the prostate ($n = 9$), transurethral resection of the bladder tumour ($n = 2$), laser prostatectomy ($n = 4$) percutaneous renal surgery ($n = 8$), transrectal ultrasound ($n = 2$) intravesical BOTOX injection ($n = 1$), bladder biopsy ($n = 1$) and retrograde ureteropyelogram ($n = 1$). A further two studies were identified, describing non-technical skills training during endourological simulation training. Face ($n = 38$), content ($n = 32$), construct ($n = 69$), concurrent ($n = 1$) and predictive

(n = 4) validities have been demonstrated for many of the described models.
Conclusions: Endourology has had an astounding number of training models described and validated over the past few decades. However, very few randomised controlled trials have been performed in the subject to highlight their real efficacy and produce Level one evidence. Furthermore, utilising the available models in curriculum-based training programme may prove to be much more effective.

MP18-18 Evaluation of Global Urology Residency Training Discrepancies and Perceived Resident Competencies

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Introduction: We sought to evaluate urology residency training on an international basis in an effort to discern both similarities and discrepancies.
Materials and Methods: Fifty-eight questions pertinent to the residency training program were distributed to all 120 US programs, and to selected international urology programs.
Results: A total of 58 residents from 25 countries completed the questionnaire (USA 34, Europe 11 countries, Asia 5, Africa 2, South America 5, and Australia 1). Of these, 81% had 6 years of medical training before their urology training; 71% included general surgery training (average-1.5). Programs differed in duration with a mean of 3.8 years (1–5). The methods for resident selection were highly variable: 65% of residents went through match/interview, 22% interview only, 13% examination only, and 5% were on the waiting and volunteer list in order to be accepted a program. Endoscopic training was reported in 92% of programs, laparoscopic in 78% and robotics in 21%. 85% of residents were always supervised in the operating room. Only 39% of residents reported being supervised while providing patient care; 78% of residents noted that the level of supervision decreased as their level of training increased. A maximum number of 60 work hours per week was reported by 46%, of which half noted this rule was not respected. Overall, 92% participated in national meetings. With regard to research, 79% were involved in a project however only 34% had formal research time during their training. Only half of the programs had a laboratory training facility. In the laboratory setting 58% had a laparoscopic simulator while only 1 place had a robotic simulator. With regard to standardized testing, 59% needed to take an annual exam to assess their learning and 89% needed to pass a final exam to become certified. At the end of their training, 100% reported feeling competent in performing cystoscopy/ureteroscopy, scrotal/inguinal surgery, and transurethral resection. For nephrectomy, 50% felt competent. A minority felt competent in renal/retroperitoneal ultrasound (30%), laparoscopic prostatectomy 12%, partial nephrectomy 21%, cystectomy 12%, retroperitoneal lymphadenectomy 13%, ureteral implantation 20%, and pyeloplasty 31%. None felt competent in robotic cystectomy or retroperitoneal lymphadenectomy. More than half (54%) pursued fellowship training.
Conclusions: There are significant discrepancies in resident training curricula and in the resources available to residents. Evaluating these discrepancies internationally is the first step in an effort to establish a standardized global core curriculum in urology which would allow for consistency in training and patient care.

MP18-19 Differences between European and North-American residency training: Results from a Europe and North-America wide residency survey.

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Introduction: In the past decade, resident's working hour restrictions have been instituted internationally with the goal of improving the quality of life of residents. It is widely debated whether or not these restrictions impact residency training and their level of competence at graduation. We aimed to evaluate this issue and identify differences between North American (NA) and European (EU) residency training.
Materials and Methods: Residents from NA and EU were invited by email (through Endourological Society and EAU respectively) to complete a web-based survey. The survey inquired about demographic data, workload and hours spent on different tasks, caseload of endourological procedures as assistant or primary surgeon, perception of cases needed to reach competence and about the use and availability of simulation based training (SIM) for different endourological procedures. Student-t, Chi^2, ANOVA and linear regressions were performed for statistical analysis.
Results: A total of 923 residents (22.6% response rate) responded to the survey. NA residents are allowed to perform significantly more hours per week compared to the EU residents (79.4 vs 46.4, $P < 0.001$). Significantly more EU residents report to actually work more hours than is allowed (75% EU vs 15% NA; EU: 58.2 h/week, NA: 74.1 h/week). NA residents spend significantly more time in the operating room (EU: 8.1, NA: 10.8 h $P < 0.001$), which translates into significantly more cases performed as primary surgeon and a higher level of confidence in performing certain procedures when compared to European residents. NA residents are more confident that they will be able to perform certain procedures by the end of their training as compared to EU residents. NA residents also spend significantly more time on SIM with a predominance of robotic SIM. For EU residents, availability of SIM is the most reported limiting factor for its use, compared to time constraints for NA residents.
Conclusions: North American residents report a higher level of confidence in performing certain surgical procedures than European Residents. This may be partly due to the limited working hours in Europe and perhaps a lack of availability of simulation based training models. if further research corroborates these results on a larger scale, these results may encourage European governments and residency programs to re-evaluate working hour restrictions and distribution of time spent on different tasks in order for residents to reach a higher level of confidence at performing surgeries when graduating, thus increasing the level of urological care, while maintaining quality of life.

MP18-20 A randomized exposure study demonstrates that ultrasound-guided percutaneous renal access is a teachable skill

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Introduction and Objectives: Ultrasound (US)-guided percutaneous renal access minimizes radiation exposure, but is not widely performed by urologists in the United States. Urologic trainees acquire varying amounts of US experience. This randomized control trial evaluated the effect of a hands-on US training session on US-guided percutaneous needle placement accuracy.
Methods: PGY1-6 trainees of the UCSF urology residency program were randomized into three groups. All groups completed a time trial of placing a needle into a modeled target under US guidance. Group 1's time trial occurred prior to any training, group 2's after experiencing a hands-on training module, and group 3's after exposure to both the training module and 1-on-1 attending feedback. Time until needle placement, number of repositioning attempts and needle placement accuracy were measured. A confidence survey was taken before and after module exposure. Statistical analyses were performed using Student's t tests.
Results: Seven trainees were randomized to group 1, three to group 2, and five to group 3. All residents reported minimal prior US training. Overall confidence scores (scale: 1–40; 40 = most confident) improved significantly after completing the module (16.8 before vs. 25.1 after, $p < 0.01$). This improvement was most significant in PGY1-3 residents (12.1 vs. 21.1, $p < 0.01$). Time to needle placement was fastest and most accurate after attending feedback in group 3 (46.6 sec in group 1 vs. 82.4 sec in groups 2 and 3, $p < 0.01$; 80% accuracy in group 1 vs. 38% accuracy in groups 2 and 3, $p < 0.01$). Number of repositioning attempts did not differ significantly between the three groups.
Conclusions: Hands-on training modules increased resident confidence in their use of US-guided needle placement for percutaneous renal access. However, attending teaching and feedback is critical for improving accuracy in guiding a needle toward its intended target. Short, formalized training sessions in US use can be readily implemented in urologic training to improve resident skill and confidence. US-guided percutaneous renal access is a teachable, achievable skill.

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MP19 - LAPAROSCOPY: LOWER TRACT - ONCOLOGY

MP19-1 Laparoscopic and robotic-assisted radical cystectomy and urinary diversion: Results and complications on 50 cases

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Introduction & Objectives: Laparoscopic radical cystectomy (LRC) with intra or extracorporeal urinary diversion is still challenging surgery for urologists even with a long experience in laparoscopy. This technique was proved to be feasible and now is approaching standardization. We describe our experience with this procedure on 50 patients, focusing on the results and the complications according to Clavien-Dindo classification.
Material & Methods: From March 2006 to January 2015, 50 Patients (35 men and 15 women) underwent LRC with extracorporeal urinary diversion for transitional cell carcinoma of the bladder. The last 15 ones had robot-assisted laparoscopic radical cystectomy (RRC). 17 patients had ortotopic neobladders (10 VIP, 5 Y, 1 Camey II and 1 Reddy), 28 ileal conduit (Bricker and Wallace) and 5 ureterostomy. Here we report our experience with this technique with special concern to the technical points that may make the procedure more feasible and reproducible and focusing on the results and the complications.
Results: The mean total operative time was 370 minutes for the LRC including extended pelvic lymphadenectomy and 440 minutes for the RRC, including pelvic lymphadenectomy. The mean operative time for laparoscopic cystectomy was 142 minutes, the mean blood loss was 407 ml. The majority of preoperative ASA Phisical Status was included in the third grade. About half of the patients had complications of type I by Clavien-Dindo, such as fever and pain. The transfusion rate was 28.9% (Clavien II). 47% of patients had complications of Clavien IIIa (wound dehiscence 13.3%, abdominal pain 13.3%, dyspnea 11.1%, pain in the leg 6.7%, pelvic lymphocele 2.2% and one (2%) had EGDS because of hematemesis). One patients (2%) had urinary leakage due to accidental removal of a ureteral stent, managed surgically; eight (16%) underwent laparotomy: five because of leakage from the intestinal anastomosis and three because of retroperitoneal hematoma (Clavien IIIb). 4.4% had respiratory failure (Clavien Iva). Two patients (4%) had multiorgan dysfunction (Clavien IVb) and one (2%) patient died in the postoperative period due to fecal fistula and septicemia (Clavien V).

In only one case the procedure for cystectomy needed conversion from laparosocopy to laparotomy.

The histopathological analysis revealed no residual malignancy after TURB in 20% of patients, organ confined transitional cell carcinoma in 57.6% and locally advanced disease in 22.1%. All patients had negative surgical margins. Extended lymphadenectomy (18 lymphonode average) detected lymph node metastasis in seven patients.
Conclusions: Our experience shows that Llparoscopic-assisted radical cystectomy is feasible, safe, and reproducible procedure. However, it is technically challenging and must be confined to centers with long experience in laparoscopy.

MP19-2 Our experience in laparoscopic radical cystectomy

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Introduction: Laparoscopic radical cystectomy (LRC) is an alternative to open surgical procedure in patients with muscle invasive bladder cancer. In this video we aimed to share our experience in (LRC).
Methods: The medical records of the patients, who underwent LRC between March 2004 and June 2015 in a single tertiary referral center was reviewed retrospectively. Perioperative and oncological outcomes were evaluated.
Results: A total of 125 patients underwent LRC, lymphadenectomy and urinary diversion. One hundred and sixteen patients

were male and 9 were female. Mean age of patients was 62,08 (41–90) years. Mean total operative time was 348 (210–540) minutes, whereas mean time for laparoscopic cystectomy and lymph node dissection was 218 (90–310) minutes. Extracorporeal ileal conduit was performed in 115 patients as urinary diversion and orthotopic neobladder was constructed in 10. Mean blood loss was 257 (50–550) and intraoperative blood transfusion was necessary in ten patients. Mean postoperative hospitalization was 16,3 (7–42) days. No intraoperative complication was experienced and no conversion to open surgery was needed. Superficial wound infection and dehiscence occured in 14 patients, prolonged ileus was encountered in 4 patients, enterocutaneous fistula occured in 2 patients and evisceration in three patients. Histological examination revealed organ confined (pT0/pT1/pT2/pT3a) disease in 84, extravesical (pT3b/pT4) disease in 41 (20,4%), and lymph node involvement in 21 patients. Three patients with squamous cell cancer, and 1 patient with neuroendocrin carcinoma received adjuvant chemotherapy. Within a mean time period of 17,8 (1–54) months, 84% of patients, including patients who were given adjuvant chemotherapy, were survived. No port site metastasis has been experienced during the follow-up period.
Conclusions: Our clinical experience confirms that LRS can be performed safely without compromising the oncological principles.

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MP19-3 Laparoscopic radical cystectomy with intracorporeal orthotopic ileal neobladder

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Introduction: Currently most intracorporeal neobladder reconstruction was performed using robotic-assisted manner while the purely laparoscopic surgeries were seldom reported. This study is to evaluate the feasibility of purely laparoscopic procedure and to study the functional outcomes of ileal neobladder.
Materials and Methods: Forty-seven patients with bladder cancer underwent laparoscopic radical cystectomy with intracorporeal orthotopic ileal neobladder. Extended pelvic lymph node dissection was performed before cystectomy. An ileal segment of 50 cm was harvested to construct a U-shaped reservoir. The bottom of the U-shaped reservoir was anastomosed with the posterior urethra. Two aligned 20-cm ileal arms were detubularized and re-anastomosed using endoscopic staples, leaving two limbs of 5 cm at each end for ureteroileal anastomosis. The ureters were spatulated for about 1.5 cm and then end-to-side anastomosed with the 2 ileal limbs.
Results: The mean operative time was 321 minutes, and mean neobladder construction time was 206 minutes. The median estimated blood loss was 450 ml, and 16 patients received intraoperative transfusion. Postoperative complications included 3 cases of urine leakage, 5 cases of pyelonephritis, 2 cases of incomplete bowel obstruction, 1 case of anastomotic stricture. During the median of 20 months follow-up, three patients were found neobladder stones formation using flexible cystoscopic examination. Neobladder function was evaluated at 6 mo postoperatively. Among 47 patients, 42 patients (89.4%) recovered daytime continence requiring less than one pad. 26 patients (55.3%) had nighttime continence requiring less than 1 pad every night. Four patients (8.5%) had moderate nighttime incontinence requiring 2–4 pads at 6 mo postoperatively. Ultrasonographic study 12 mo after the operations revealed that the maximal reservoir volume was more than 300 ml in 91.5% patients and the median residue volume of neobladder was 60 ml (20–160 ml).
Conclusions: Laparoscopic radical cystectomy with intracorporeal orthotopic neobladder is safe and feasible for experienced laparoscopic surgeons. The U-shape neobladder constructed by endoscopic stapler provides satisfactory functional outcomes during the intermediate-term follow-up.

MP19-4 Improvement in surgical skills in laparoscopic radical cystectomy

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Objective: To present with some motion video demonstration, the surgical technique devised to ease the procedure required for laparoscopic radical cystectomy with extracorporal urinary diversion.
Method: Laparoscopic radical cystectomy is performed on 2 patients with invasive bladder cancer and laparoscopic nephroureterocystectomy is performed on 1 patient with recurrent low grade bladder cancer with coexsisting lower ureteral cancer. The bladder resection and the lymphadenectomy are done completely laparoscopically. The intesitinal anastomoses is done extracorporally thorough a small incision which is then formed to be the urinary stoma. The ileal conduit is returned back to the abdominal cavity. The ureterointestinal anastomoses is Bricker anastomoses. It is achieved laparoscopically including the diversion of the left ureter from the retroperitoneum to the right lower quadrant. The anastomoses are then stented.
Results: Short term perioperative outcomes are as good as open radical cystectomy if not better, with no apparent urinary leakage nor renal function deterioration.
Conclusion: Laparoscopic radical cystectomy is technically feasible. More improvement in technical skills may enable minimally invasive radical cystectomy to be more endurable to broader range of patients. Every little means to ease the laparoscopic procedure are worth sharing for faster progress in young surgeons' surgical skills.

MP19-5 Comparison of laparoscopic and open cystectomy: a single centre experience

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Introduction: We compared the operative time, blood loss, duration of hospital stay and complication rates of laparoscopic versus open radical cystectomy for benign and malignant bladder pathology.
Patients and Methods; This non-randomised study was conducted between October 2008 and September 2014 in 181 patients (44 females and 137 males) who underwent simple or radical cystectomy. Data was collected prospectively and analysed retrospectively. A total of 44 cystectomies were performed laparoscopically and 137 by open surgery. Mean patient age was 67.6 years. Median pre-operative ASA score was 2 in both groups. Open cystectomy was performed by 3 surgeons. Laparoscopic surgery was performed by a single surgeon.

Results Intra-operative blood loss was significantly lower in the laparoscopic surgery group: 500 mL (100–2500 mL) vs. 1680 mL (100–13500 mL). Mean haemoglobin drop post-operatively was also lower in this group (19.2 g/L vs. 29.4 g/L). However, operative time was lower in the open surgery group: 342 min (120–480 min) vs. 456 min (425–545 min). Median duration of hospitalisation was shorter in the laparoscopic surgery group (10.5 days vs. 13.0 days).
Conclusion Laparoscopic cystectomy has a lower morbidity rate than cystectomy by open surgery. In our experience, it reduces intra-operative blood loss significantly with a lower transfusion rate and a shorter duration of hospital stay. Laparoscopic cystectomy however requires more operative time. The introduction of robotic assisted laparoscopic surgery will be audited prospectively for comparison.

MP19-6 Laparoscopic Radical Cystectomy: Early Postoperative Complications and Long term Survival Results

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Purpose: To report early surgical and long term survival outcomes of laparoscopic radical cystectomy (LRC) with extracorporeal urinary diversion in patients with urothelial carcinoma of the bladder (UCB).
Materials and Methods: The electronic records of patients who underwent LRC at a tertiary referral center were retrospectively reviewed between August 2003 and December 2011. All procedures were performed by a single surgeon. Patients' demographics, perioperative variables and postoperative outcomes were recorded and analyzed. Patients were followed up every 3 months in the 1st year and every 6 months thereafter. Axial imaging was performed annually to detect local tumor recurrence.
Results: We evaluated 39 patients with a mean age of 56 (39–70). The median operating time was 420 minutes, with a median estimated blood loss of 500 ml. Conversion to open surgery was indicated in 3 patients. Intraoperative complications were encountered in 4 patients, 2 had rectal injury, 1 had injury to the sigmoid colon and 1 had vascular injury.

Orthotopic diversion was performed in 28 patients, ileal conduit in 10 and continent cutaneous diversion in 1. The median length of hospital stay was 20 days (8–58). Overall complication rate was 48.7% (19/39) **(Table1)**. Urothelial carcinoma and squamous carcinoma were seen in 32 (82%) and 7(18%) patients respectively. The median number of retrieved lymph nodes was 11(2–30). Nineteen patients had non organ confined disease (pT3a-T4a). Seven patients had metastatic lymph node deposits.

Table 1. Postoperative complications of laparoscopic radical cystectomy stratified by Dindo-Clavien system

Complication Category	No (%)	Management	Clavien Grade
Anaemia	13 (33%)	Blood transfusion	II
Paralytic ileus	4 (10%)	Nasogastric tube, prokinetic drugs	II
Urine Leakage	1 (2.5%) 2 (5%)	Conservative Nephrostomy tube	I IIIa
Ureteroileal anastomotic stricture	1 (2.5%)	Endoscopic meatotomy	IIIa
Neovesicourethral anastmotic stricture	1 (2.5%)	Endoscopic incision	IIIa
Prerenal oliguria	1 (2.5%)	Intravenous Fluids	I
Anastomotic bowel leakage	1 (2.5%)	NPO, nasogastric tube	II
Pelvic lymphocele	2 (5%)	Percutaneous tube drain	IIIa
Septic Shock	2 (5%)	ICU admission	IVa

The median (IQR) follow-up duration was 32(3–139) months. Seven patients (18%) developed local pelvic recurrence. The median time (IQR) for development of local recurrence was 10 months (4–34). The 5 year and 10 year overall survival (OS) was 60% and 30% respectively.
Conclusion: Laparoscopic radical cystectomy is a challenging procedure, but it is safe and reliable. Postoperative complications and long term survival outcomes are comparable to those reported in open radical cystectomy series.

MP19-7 Impact of learning curve on perioperative complications in laparoscopic radical prostatectomy: A single center experience

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To assess the impact of learning curve on perioperative complications in laparoscopic radical prostatectomy by a series of consecutive 200 cases in a single centre. Methods: We retrospectively evaluated 200 patients who were biopsy proved prostatic carcinoma and performed radical prostatectomy. All operations were performed by Prof. Ma LuLin. The patients were divided into four teams according the time of operation. All patients had complete information for clinical variables, including age, body mass index (BMI), preoperative PSA level, biopsy Gleason score, clinical stage. Operative parameters and peri-operative complications were evaluated, including operative time, blood loss, transfusion rate, perioperative complications. The complications were evaluated by Clavien classification system. Rsults: Age, BMI, PSA, prostate volume, biopsy Gleason score and clinical stage had no statistic difference in four groups. The operative duration was gradually lowered from group one to group four. Significantly less blood loss occurred after every 50 cases of LRP ($p < 0.001$). The complication rate was 15.5% in this series, 24%, 14%, 6% and 4% for group one to group four separately. There was evidence that the complication rate reduced as experience was gained ($p = 0.008$). The rate of mild complications were 24%, 14%, 6% and 4%, and severe complication rate was 4%, 4%, 6% and 0, respectively. Conclusion With experience was gained and technique was improved, the operative time and blood loss decreased and complication rate reduced substantially.

MP19-8 Salvage Robotic-Assisted Laparoscopic Prostatectomy

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Objective: Salvage robotic-assisted laparoscopic prostatectomy (sRALP) remains as a serious challenge even for very experienced robotic surgeons. We aim to stratify the main features of the procedure according to different primary ablative therapies.
Materials and Methods: 53 patients underwent sRALP at our institution. Perioperative, functional and oncological outcomes were evaluated. The mean follow-up was 27.2 ± 17.7 months.
Results: Salvage RARP patients undergoing surgery have more high risk disease. 7 patients (13.2%) did not undergo nerve sparing, 42 (79.3%) underwent partial nerve sparing and 4

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(7.6%) full nerve sparing. The mean total operative time was of 130.0 ± 17.0 minutes. Mean estimated blood loss was of 120.4 ± 57.2 mL. There were no blood transfusions administered. There were neither intraoperative or anesthesia-related complications, nor open conversions, rectal or bowel injuries reported. The average duration of Foley catheterization was 10.8 ± 6.9 days, length of hospital stay- 1.2 ± 0.9 days, biochemical cancer free survival as of 67%, respectively. The quality of life issue with preservation of continence in 64% and potency – in 26%, respectively. Delayed healing of the urethral anastomosis was noticed with radiological leaks occurring in 18 patients (34.0%). All postoperative leaks resolved within 6 weeks. Ultimately, we noticed a significant correlation between type of primary treatment and outcomes of salvage surgery. In our experience, the hardest one was performed after proton beam radiation therapy followed by HIFU, combined brachytherapy and IMRT, cryoablation, brachytherapy or IMRT alone.

Conclusions: Our series on 53 patients performed by single surgeon represents the largest cohort published in literature. It demonstrates an acceptable complication rate, oncological and quality of life outcomes. Salvage robotic prostatectomy is a feasible option with particular consideration of local tissue changes after concrete primary radiation/ ablation treatment.

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MP19-9 A two-year oncological and functional study between extraperitonial and transvesical intrafascial nerve-sparing laparoscopic radical prostatectomy for patients with low-risk prostate cancer

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Introduction: To compare the two-year oncological and functional outcomes of extraperitoneal intrafascial nerve-sparing laparoscopic radical prostatectomy (extraperitoneal group) with transvesical intrafascial nerve-sparing laparoscopic radical prostatectomy (Transvesical group) for low-risk prostate cancer.

Materials and Methods:129 cases with low-risk prostate cancer (T1-T2a, PSA < 10 ng/ml, Gleason score ≤ 6) in our hospital from January 2011 to May 2013 were enrolled and underwent extraperitoneal intrafascial nerve-sparing laparoscopic radical prostatectomy(90 cases) or transvesical intrafascial nerve-sparing laparoscopic radical prostatectomy(39 cases). Preoperative potency were considered as candidates for nerve-sparing intervention. All surgery procedures were performed laparoscopically by a single surgeon (Gao X). The perioperative and functional outcome data were analyzed. Intra-operative and postoperative complications assessed according to the modified Clavien system were recorded. All patients were followed up for a minimum of 24 mo postoperatively through PSA detection, daily pads, the International Index of Erectile Function 6 (IIEF-6) score and urography. Patients not requiring any pads or requiring 1 pad for safety were defined as continent. Patients with an IIEF-6 score ≥18 were considered as potent.

Results: Preoperative data were comparable between two groups. No significant difference between groups was observed in estimated blood loss (110 ± 42.42 *VS* 132 ± 54.32 ml), transfusion rate (3.1% *VS* 2.7%); no intra-operative complications(Clavien grade III or more) and no positive surgical margins were recorded. Significantly, less operation duration (151.46 ± 40.68 *VS* 105.92 ± 26.21 min), Catheter removal time and hospital stay were observed in transvesical group than extraperitoneal group ($p < 0.05$). The continence rates in extrafascial group and transvesical one were 52% *VS* 84% ($p < 0.05$), 84% *VS* 100%, 96% *VS* 100%, 96% *VS* 100% and 100% VS 100% at the removal of the catheter, 1 mo, 3 mo, 6 mo, 12 mo and 24 mo respectively after the surgery. The potency rates were 28% *VS* 48% ($P < 0.05$), 52% *VS* 64%, 68% *VS* 76% and 69% VS 76% at 3 mo, 6 mo, 12 mo and 24 mo postoperatively, respectively. The postoperative complication (Clavien, grade II) rates were 40% VS 32% ($p\Delta > 0.05$, respectively). Two cases demonstrated biochemical recurrence in transvesical group while 11 cases were defined as biochemical recurrence in extraperitoneal group during the minimum of two year follow up.

Conclusions: Two-year functional analysis for patients with lwo risk prostate cancer demonstrated that transvesical approach provides significantly better functional outcomes and quickly recovering utility compared with extraperitoneal approach. Importantly the transvesical approach had identical oncological control as the extraperitoneal group.

MP19-10 Laparoscopic radical prostatectomy after previous transurethral resection of the prostate in clinical T1b and T2a prostate cancer - a matched-pair analysis

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Introduction: To analyze and compare surgical, oncological and functional outcomes of laparoscopic radical prostatectomy (LRP) in patients with and without previous transurethral resection of the prostate (TURP).

Methods: In total, 785 men underwent LRP at our institution from January 2002 to December 2012. TURP had been performed previously in 35 of these patients (TURP group) who underwentLRP via a transperitoneal or extraperitoneal approach. For identification of bladder neck, we dissected the bilateral seminal vesiclesfirst, then consecutively resected the anterior and posterior wall of bladder neck between the seminal vesicles as it is clear to anatomically recognize where the bladder neck used to be. In addition, amatched-pair analysis identified 35 additional men without previous TURP who exhibited equivalent clinicopathological characteristics to serve as a control group. Perioperative complications and surgical, functional and oncological outcomes were compared between the two groups.

Result: The groups were similar in age, BMI, prostate-specific antigen (PSA) level, and pre- and post-operative Gleason scores. Patients in the TURP group had greater blood loss (231 vs. 139 mL), longer operative times (262 vs. 213 min), a greater probability of transfusion (8.6% vs. 0%), and a higher rate of complications (37.1% vs. 11.4%) compared with the control group. The positive surgical margin rate was higher in the TURP group, but this difference was not significant ($P = 0.179$). The continence rates at one year after surgery were similar, but a lower continence rate was identified in the TURP group (42.9% vs. 68.6%) at 3 months. Biochemical recurrence developed in 17.1% and 11.4% of the patients in the TURP and control groups, respectively, after a mean follow-up of 57.6 months.

Conclusions: LRP is feasible but challenging after TURP. LRP entails longer operating times, greater blood loss, higher complication rates and worse short-term continence outcomes. However, the radical nature of this cancer surgery is not compromised.

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MP19-11 Effect of prostate volume on histopathologicol outcomes in patients after laparoscopie radical prostatectomy

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Objective: To compare the clinical characteristic and postoperative histopathologieal parameters in different prostate size and to assess the effect of prostate volume oa histopathological outcomes in patients after laparoseopic radical prostatectomy.
Methods: Two hundred and sixteen patients from 2006 to 2011 who were proved prostatic carcinoma by biopsy and performed laparoscopic radical prostatectomy were retrospectively evaluated. All patients were divided into the small group(< 30 ml, 103 cases), intermediate group(30—60 ml, 71 eases)and large group(> 60 ml,42 cases)according to prostate volume. Clinical variables included age, body mass index(BMl), preoperative PSA level, prostate volume, percent age of positive needles, clinical stage. and biopsy Gleason score(GS). Histopathological parameter8 ineluded pathological GS, upgrading or not compared to biopsy GS, pathological stage and SUrgicol margins status. Preoperative clinical variables and postoperative histepatholgogical parameters were compared among the 3 prostate groups.
Results: Patients with smaller prostates had lower PSA levels than those with intermediate and larger prostates (P = 0.000). They also had worse histopathological outcomes such as pathological GS (P = 0.034), upgrading ofGS(P = O.037), and pathological stage(P = 0.025).35. O%of patients in smaller prostate group had a positive SU, sicol margin compare to 33. 8%and 19. O% in intermediate and farger prostate groups, but there WaS ao significant difference(P = 0. 152).
Conclusion Men with smaller prostate may have more high-grade cancer and more advanced disease after laparoscopie radical prostatectomy·

MP19-12 NOTES-Assisted Pure Laparoscopic Radical Cystectomy with Intracorporeal Construction of Orthotopic Sigmoid Neobladder: Technique and Results

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Introduction: Laparoscopic radical cystectomy (LRC) is recognized as an alternative approach for patients with muscle-invasive bladder cancer, with less blood loss and earlier recovery while comparing with open approach. Although feasibility and advantages of intracorporeal urinary diversion were demonstrated, it remains a skill-challenging procedure. Sigmoid colon may be ideal for intracorporeal construction of neobladder as the procedure is simple under laparoscope, and the specimen can be extracted through the natural orifice like anus in male patients without additional incision. Only few center report the experience of pure LRC and orthotopic sigmoid neobladder. We herein report our experience of NOTES-assisted pure laparoscopic radical cysectomy with sigmoid neobladder
Patients and Methods: Between 2011 and 2015, 15 male patients and 6 female patients (aged 42–76) underwent NOTES-assisted pure LRC with intracorporeal construction of sigmoid neobladder for bladder cancer. After laparoscopic cystectomy with standard lymphadenectomy (extended lymphadenectomy in 2 patients). We utilized natural orifices like anus (and vagina in female) for specimen extraction and bowel-continuity restoration. The sigmoid colon was transected about 10–15 cm proximal to the anus. The specimen was extracted through the anus in male patients (or vagina in female patients). A 15 cm sigmoid was isolated and continuity of the bowel was restored with stapler from anus. After that, the isolated sigmoid was detubularized and anchored with urethral stump, then sutured as U-shaped neobladder before anastomosed with ureters by freehand. The perioperative outcomes and follow-up results were evaluated.
Results: All 21 operations were finished unevenfully, without conversion to open surgery or extracorporeal diversion. The average operating time was 350 minutes (270–450 minutes). The average estimated blood loss is 140 ml (50–300 ml). None of the patient needs transfusion. The average time to flatus was 2.1 days repspectively. No major perioperative complication (Grade 3–5) was recorded except two cases of pelvic abscess managed by percutaneous drainage. Two cases of anastomostic leakage were recorded and managed by prolonged drainage. The median time of follow-up is 12 months (1–44 months). Four patients were demonstrated mild hydronephrosis. All patients were satisfied in terms of cosmesis. All patients were alive at the last follow up without evidence of recurrence.
Conclusion: Our results show that NOTES-assisted pure LRC with intracorporeal construction of orthotopic sigmoid neobladder is feasible, especially for female patients, with excellent cosmetic effect and acceptable clinical outcomes.

MP19-13 The Learning Course for Improving Early Continence Control after Our Minimally Invasive Radical Prostatectomy - Personal Experience in a Low Volume Center

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Introduction: Prostate cancer has evolved to be a major cancer death for male and radical prostatectomy has also become a daily work for a surgical urologist. The development of minimal invasive approach methods (both laparoscopic radical prostatectomy and robotic-assisted radical prostatectomy) offers better postoperative recovery of these patients but the steep learning curve is a drawback for urologists in low volume centers. The surgical complications, especially stress urinary incontinence, also hamper the acceptance for these patients. Many surgical techniques had been published to help a better continence outcome during the laparoscopic radical prostatectomy (LRP) and robotic-assisted radical prostatectomy (RARP).
Patients and Methods: Retrospectively we collected our 150 cases of both LRP and RARP in recent 10 years performed by a single surgeon and reviewed the surgical tricks involved during the procedures aiming to improve the continence control. Through the multivariate analysis to see which single skill has major benefit for early continence control. Immediately continence control is defined as no need of pad use within one week after removal of catheters while early continence control is defined as no need of pad use within three months after removal of catheters.
Results: The immediately continence control rate is 27.3% (41/150) while early continence control rate is 88% (132/150). Multiple techniques involved in a single procedure contribute to

a better continence control. The only single technique has most benefit for early continence control is Retieus-sparing approach.
Conclusion: Many different techniques during the minimally invasive radical prostatectomy can improve continence outcome and one can expect a better result if as many techniques as possible are used simultaneously.

MP19-14 Laparoscopic Retzius-sparing posterior approach radical prostatectomy: Reversed evolution from Robotic-assisted radical prostatectomy

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Introduction: Robot-assisted radical prostatectomy (RaRP) is viewed as the main surgical option in patients with localized prostate cancer. Robotic-assisted Retzius-sparing radical prostatectomy (Retzius-sparing RaRP) is also in development to achieve the trifecta (cancer free, continence and potency). For economic consideration, we modified the methodology using the same Retzius-sparing approach but with laparoscope.
Patients and Methods: A total of 3 patients underwent Retzius-sparing LRP in May 2015. General characters of patients, perioperative parameters, functional and oncologic datas were collected. Patient position and trocar placement is identical with our conventional LRP. The steps of whole procedure were very similar to the method that SK Lim, et al. (BJU Int 2014; 114: 236–244) had published to describe the process of Retzius-sparing RaRP. Continence was defined as no need for pad in daily life.
Result: The average operative time was 233 minutes and the average amount of blood loss was 266 ml. One patient received bilateral NVB preserving while the other two patients received unilateral partial preserving. Two patients got immediate continence control at the first day of Foley removal. The other one had post-operative anastomotic leakage and initial mild stress urine incontinence but got recovery in 2 weeks.
Conclusions: At the very first time we show the Retzius-sparing LRP is a feasible option for localized prostate cancer. It might result in early continence control in our initial experience and with less economic cost for patients. Further long-term prospective studies are needed to define the benefits of this technical method.

MP19-15 Laparoscopic Radical Prostatectomy- continence and oncological outcomes in 268 cases

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Introduction: There is little radical prostatectomy data to benchmark realistic outcomes to inform patient treatment choice.
Methods: A prospective database of 268 laparoscopic prostatectomies (single centre, single surgeon, 2003–2009) was reviewed for age, stage and grade, continence, clinical recurrence time, positive margins, metastases and death. Complications reported previously.
Results: 268 cases evaluated. Mean age 60.2 years (range 36-73). Average follow-up duration 48.6 months (median 48 months)**.** 259 patients < 70 years. 46.7% Gleason 3 + 4 or lower, 53.3% Gleason 4 + 3 or higher. 50.1% T2 (positive margins 7.3%). 49.9% T3 or above (positive margins 13.1%). Biochemical free recurrence rate 82.5% (60% T3 or greater). The average time to recurrence 31.8 months. Metastases were present in 11 cases. There were six deaths (5 unrelated, 1 metastatic prostate disease). Average time to continence 4.5 months. 7 cases required artificial urinary spincter, 3 male slings, 4 injected with bulking agents, 2 botox injections (6% requiring continence interventions), 3 urethral dilatations. There were 9 patients > 70 years. The biochemical free recurrence rate was 100%. All patients were alive, with no deaths or metastases. Average time to continence 5.7 months. One patient (11%) required injection of bulking agent, another urethral dilation.
Conclusions: Patients need realistic data to make choices. Radical prostatectomy is a good cancer treatment. Incontinence is a real long-term issue especially in the learning curve.

MP19-16 Impact of the body mass index on perioperative results of the laparoscopic radical prostatectomy in the locally advanced prostate cancer

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Introduction: Radical prostatectomy is one of the methods of the multimodal treatment of the locally advanced prostate cancer (PCa) patients. The surgery in these cases may have technical difficulties. The complications of the most kinds of surgery depend on operative time, blood loss and transfusion rates. The patient's characteristic such as body mass index (BMI) can affect the perioperative results, especially using laparoscopic approach.
Objective: To study the impact of the BMI on perioperative results of the extraperitoneal laparoscopic radical prostatectomy (LRPE) in locally advanced PCa.
Materials and Methods: There were 94 patients with locally advanced PCa who underwent RPE as a first step of the threatment,42 patients had pT3b stage and 52 patients had pT3a, 79 patients were operated on the retropubic approach (RRPE), extraperitoneal LRPE was performed in 15 patients. The average age of patients in the retropubic group was 61 ± 6 yr., in extraperitoneal laparoscopic – 58 ± 8 yr.
Results: The analysis revealed 79.8% locally advanced prostate cancer patients had BMI higher normal. The perioperative results is compared in both surgical approach in patients with different BMI. The operative time in patients with BMI □ 25 were 229 ± 23 min on the RRPE (n = 16) and 280 ± 76 min on the LRPE (p □ 0, 005). The operative time in patients with BMI □ 25 were 295 ± 35 min on the RRPE (n = 3) and 325 ± 75 min on the LRPE (n = 12) (p □ 0, 05). The blood loss were 618 ± 95 ml on the RRPE and 250 ± 50 ml on the LRPE in patients with BMI □ 25, 857 ± 135 ml on the RRPE and 275 ± 36 ml on the LRPE in patients with BMI □ 25 (p□ 0, 001). The blood products transfusion rate was 32.1% in patients with BMI □ 25 and 42.8% in patients with BMI □ 25 (p □ 0, 005) and was used only RRPE. Patients with high BMI required longer operative time. They had statistically significant more blood loss when they were operated on the retropubic approach.
Conclusion. The perioperative results of the extraperitoneal LRPE were independent of BMI, while the perioperative results RRPE were worse in the patients with high BMI. Patients with locally advanced PCa with high BMI have better perioperative results, if the extraperitoneal LRPE have been performed.

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MP19-17 Our experience in laparoscopic radical prostatectomy

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Introduction: We aimed to share our experience in laparoscopic radical prostatectomy (LRP) in terms of perioperative, functional and oncological outcomes.
Methods: A total of 450 patients underwent LRP between March 2004 and May 2015 in a single center and 390 patients completed one-year follow-up. Perioperative outcomes were determined in all patients. Pathological and functional outcomes and biochemical recurrence were determined in patients with at least one-year follow up.
Results: Mean length of operation was 156 (65–570) minutes, mean length of hospital stay was 3.4 (1–22) days and mean duration of catheterization was 9 (7–20) days. Mean estimated blood loss was 128,8 (30–450) ml. Pathological examination revealed benign in 12, pT2 in 233, pT3 in 143 and pT4 in 2 patients. Sixty-three patients received adjuvant radiotherapy due to positive surgical margins. Biochemical recurrence rate was 8,4% (33 patients) in a 34 month mean follow up. At first year follow up 88% of the patients remained continent and 7% had minimal stress urinary incontinence. Sixty-five percent of the patients remained potency who had no impotence before the surgery.
Conclusions: LRP is a well-established operation with proper oncological and functional results.

MP19-18 Laparoscopic Radical Prostatecomy with Extended Lymphadenectomy for Treatment of High Risk Prostate Cancer

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Introduction: Laparoscopic preperitoneal radical prostatectomy (LPPRP) is a safe and reproducible technique. High risk prostate cancer requires an extended lymphadenectomy. A transperitoneal approach allows to combine mininvasive procedure with an extended lymphadenectomy.
Material and Methods: A transperitoneal approach is realized. Pelvic bilateral pelvic lymphadenectomy is performed including iliac and obturator nodes. We proceed with dissection between bladder and prostate; endopelvic fascia is opened and separated by prostate. Bladder neck is spared and urethra is cut. Dissection moves to a depth plane towards Denonvilliers fascia; deferens vas are isolated, clipped and then cut. Mobilization of seminal vesicles and incision of Denonvilliers' fascia. Section of the prostatic pedicles is realized with Harmonic Ace^{tm}. Lateral blunt dissection proceed towards prostatic apex. Urethra is cut and the prostate is placed in endobag. A water-tight urethrovesical anastomosis with running suture is performed.
Results: 112 high risk PCa patients underwent laparoscopic radical prostatectomy. Mean age, mean PSA are 66, 9 years and 13,4 ng/ml, respectively. Histological evaluation revealed pT2aN0 (11 pts), pT2bN0 (10), pT2cN0 (65), pT3aN0 (31), pT3aN1 (1), pT3bN0 (16), pT3bN1 (7), pT4N0 (2). Surgical margins were positive in 25 (22.3%) patients. Mean number of nodes removed was 18,6 (+/- 9,3).
Conclusion: A transperitoneal laparoscopic radical prostatectomy allows to combine mininvasive procedure with an extended lymphadenectomy.

MP19-19 Conservative Treatment of a Rectal Injury Complication Following Laparoscopic Radical Prostatectomy

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Introduction: Rectal perforation is a rare complication which can be seen following radical prostate surgery. It may cause additional surgical instrumentations like permanent or temporary colostomy opening. In this study we aimed to report the conservative management and successful treatment of a rectal injury following laparoscopic radical prostatectomy.
Patients and methods: A 62 year-old male patient was admitted to our outpatient clinic with increased PSA levels (7,5 ng/ml). TRUS guided prostate biopsy revealed Gleason 3 + 3 prostate carcinoma in five cores, and the patient underwent laparoscopic radical prostatectomy.
Results: No intraoperative complications was documented during the procedure. But acute hemoglobin level decrease was documented on postoperative second day, and oral contrast enhanced pelvic tomography was performed. CT revealed not surprisingly a 10X7 cm hematoma but interestingly a rectal injury (minimal contrast extravasation) (fig 1). The patient had a mild leucocytosis and subfebrile fewer which was not persistent. With these signs and after a consultation with general surgeons, we decided to manage the patient conservatively. Broad spectrum antibiotics were introduced and the oral intake was discontinued. On the postoperative seventh day all laboratory and radiologic findings was resolved and the patient was discharged. The patient had no symptoms on his 2 months follow up visit.
Discussion: According to the patient symptoms and the severity of rectal injury, some patients with rectal perforation following laparoscopic radical prostatectomy may be managed and treated with conservative approaches.

MP19-20 endGIA decreased Positive Margin of Apex in Laparoscopic Radical Prostatectomy

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Introduction and Objectives: Positive surgical margins after radical prostatectomy are a significant predictor for biochemical failure, disease progression, and cancer mortality. To evaluate whether endGIA technique to control the dorsal venous complex (DVC) leads to minimize positive margin rates.
Methods: Between July 2006 and November 2014, 270 patients received laparoscopic radical prostatectomy (LRP) with or without endGIA technique (n = 42 endGIA; n = 211 no endGIA). Median patient age was 65 years (IQR: 40 – 77) and median pre-operative PSA 7.4 ng/ml (IQR: 1.3 ~ 56.0), LRP was performed under retroperitoneal space. DVC was treated by endGIA (COVIDIEN) in endGIA group or ligated by 3–0 vicryl in no endGIA group.
Results: Mean operative time was 278 min., mean blood bleeding amount 98 ml, post operative hospitalization 6 days. Pathological

findings was pT2a 26%, pT2b 6.8%, pT2c 19%, pT3a 47%, pT3b 3.6% respectively. Mean observation period was 25.1 months. Positive surgical margin was 28% in pT2, 48% in pT3a. in pT2 patients, positive surgical margin was 12.5% in endGIA, 25.8% in no endGIA group. In pT3a patients, positive surgical margin was 27.8% in endGIA, 42.8% in no endGIA group.
Conclusions: EndGIA technique to DVC might help to keep the positive surgical margin rate in LRP as low as possible. And also it will help later step of prostatectomy by increasing morbility of the prostate.

MP19-21 Laparoscopic retroperitoneal lymph node dissection for non seminomatous germ cell tumors: indications and repass of the surgical technique

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Introduction: Testicular cancer is the most common solid organ malignancy in men between 15 and 35 years old. For non seminomatous germ cell tumors (NSGCT) radiotherapy is not an option after orchiectomy; therapeutic options are limited to close surveillance, chemotherapy and/or retroperitoneal lymph node dissection (RPLND). The focus is to resume indications, repass the surgical technique with surgical boundaries and to evaluate risks and benefits of the laparoscopic technique. Most germ-cell tumors (GCTs) spread in a highly predictable manner via the retroperitoneal lymphatic chains. The laparoscopic approach for RPLDN (L-RPLND) has the propose to reduce the morbidity of the open technique.
Methods: Indications for RPLND are considered in: 1) patients with stage I who don't accept chemoterapy, 2) stage IIa and low-volume IIb NSGCTs with negative serum tumor markers, 3) residual mass post chemotherapy greater 1 centimeter.

We realize modified RPLND template with laparoscopic approach: the lymph nodes between the kidneys, ureters and common iliac bifurcations were all removed, except the lymph nodes below the contralateral inferior mesenteric artery.
Results: Advantages of a laparoscopic approach include magnified view of delicate retroperitoneal structures including the sympathetic plexus, in addition to decreased blood loss, shorter postoperative stay, decreased pain, improved cosmesis with the equivalence of oncologic aspect. Complications are the same to the open technique, included uncontrollable bleeding and vascular injury as the most common intraoperative complication, lymphocele, ileus, injury to the sympathetic trunk or nerve plexus and ureteral injury.
Conclusions: The L-RPLND technique can be performed in hospitals with no robotic equipment to decrease the morbidity of open surgery; laparoscopic skills are required to avoid complications and associated risks. This technique represents a feasible and secure procedure with good oncological outcome in patients with low grade NSGCT.

MP19-22 Laparoscopic Transvesical Resection of an En Bloc Bladder Cuff and Distal Ureter for Treatment of Distal Ureter Tumor during Nephroureterectomy

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Introduction: To management of en bloc bladder cuff and distal ureter duing nephroureterectomy in the case of distal ureter transitional cell carcinoma (TCC) is still evolving. Here we report a noval laparoscopically transvesical resection of en bloc bladder cuff and distal ureter followed by radical nephroureterectomy for 12 cases with TCC in lower part of ureter.
Materials and Methods: From May 2008 to October 2013, 12 cases with TCC in lower part of ureter were admitted to 3rd Hospital of Sun Yat-Sen University. 7 male with mean age at 66 yr and 5 female with mean age at 54 yr respectively. Distal ureter TCC diagnosis were achieved in all cases with endoscopic examination integrating to urine FISH analysis. Of 12 patients with ureter TCC, 7 had ipsilateral hydronephrosis. The major surgical procedure was composed of transvesical resection of en bloc bladder cuff and distal ureter during nephroureterectomy. In brief, the bladder was irrigated with saline fluid and three ports was inserted into the bladder. Subsequently, pneumovesicum was established at 13 mmHg. Using 10 mm Olympus laparoscope, transvesical laparoscopic circumferential detachment of the bladder cuff and en bloc mobilization of the distal ureter including a segment of lower part of ureter were performed, followed by the closure of the distal ureter with 12 mm Hem-Lock clip. A continuous suturing was used to close the bladder defect. In accordance, a radical nephroureterectomy was completed. Adjuvant chemotherapy for intravesical instillation at the interval of a month was undertaken for consecutive 12 month.
Results: The mean surgical time including transvesical management and radical nephroureterectomy was 210 (180 ~243) min; Blood loss was 245(156 ~330)ml; No positive margin in distal end of ureter was recorded and no ureter defect or urine extrasation during the transvesical procedures and radical nephroureterctomy was noted. Investigation of perioperative complications demonstrated that only 8 cases experienced Clavien grade II.

Ureter TCC diagnosis was arrived at samples from all the 12 patients. The mean time for follow up was 4 years. No tumor recurrence was observed in all of 12 patinets.
Conclusion: Transvesical approach is an effective means to manage the patients with lower segment ureter tumor.

MP20 - PCNL: TECHNIQUE

MP20-1 Ultrasonography guided percutaneous nephrolithotripsy

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Introduction: The study was aimed to the evaluation of the effectiveness and results of ultrasound guided percutaneous nephrolithotripsy (PNL) for the treatment of patients with large stones in renal pelvis.
Materials and Methods: The results of PNL in 138 patients who underwent surgery for kidney stones from 2011 to 2014 were

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analyzed. Seventy patients (Group 1) underwent surgery with combined ultrasound and radiological guidance, and 68 patients (Group 2) - only with ultrasound guidance. The study included patients with large renal pelvic stones larger than 2.2 cm, requiring the formation of a single laparoscopic approach. Using the comparative analysis, the timing of surgery, the number of intra- and postoperative complications, blood loss and length of stay were evaluated.
Results: Percutaneous access was successfully performed in all patients. Postoperative complications (exacerbation of chronic pyelonephritis, gross hematuria) were observed in 14.3% of patients in Group 1 and in 14.7% of patients in Group 2. Bleeding requiring blood transfusion, and injuries of adjacent organs were not registered. Efficacy of PNL in the Group 1 was 95.7%; 3 (4.3%) patients required additional interventions. In Group 2, the effectiveness of PNL was 94.1%, 4 (5.9%) patients additionally underwent extracorporeal lithotripsy. There were no significant differences in the effectiveness of PNL, the volume of blood loss and duration of hospitalization.
Conclusions: Ultrasound guided PNL can be performed in large pelvic stones and sufficient expansion of renal cavities, thus reducing radiation exposure of patients and medical staff.

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MP20-2 Total Tubeless Percuteneous Nephrolithotomy (PCNL) - Safe and Effective Treatment for Large Renal Calculi

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Introduction: With the advent of RIRS and the existing shock wave lithotripsy, PCNL is considered less frequently currently: but with the advantages of safety and stone clearance PCNL still stands as a procedure of choice, particularly with the economics and ease of performance. Since its introduction the PCNL technique has been steadily refined and improved. We undertook this study to determine the safety, efficacy and advantages of totally tubeless percutaneous nephrolithotomy in the management of large renal calculi.
Methods: From March 2006 to March 2015, 200 patients underwent totally tubeless PCNL for renal calculi. Urethral catheter was the sole means of drainage for the first 24 hours post op. Nephrostomy tubes, ureteral catheter or stents were not used. Patient needing more than one tract, significant bleeding, residual stone burden and pelvicalyceal perforation were excluded from the study. These patients were analyzed for analgesia requirement, hospital stay, intra operative, post operative complications and cost of the treatment with regards to stone clearance.
Results: Two hundred patients underwent tubeless PCNL. Mean stone size was 2.76 cms (range 1.5 cm-3.8 cms). All patients treated by infra-costal approach. Standard PCNL was performed. Mean hospital stay was 35 hours and analgesia requirement was 156 mg injection Ketoralac. Stone was cleared in 90% cases with 38 patients showing insignificant residual fragments (0.4 cms). 8 of these patients required blood transfusions and overall antibiotic requirement was much less (3 doses of IV antibiotics).
Conclusions: Total tubeless PCNL was safe and effective in most of patients. Absence of tube helps in decreasing morbidity, reduction of hospital stay without compromising the outcome of stone clearance; elimination of nephrostomy tube reduces infection, loin pain and avoids subsequent procedures and their costs. In selected patients we recommend the totally tubeless percuteneous nephrolithotomy be considered with advantages of stone clearance, and safety. We found that it was also cost effective.

MP20-3 Upper Pole Urologist-Obtained Percutaneous Renal Access for PCNL is Safe and Efficacious

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Introduction: Interventional radiologists may be hesitant to obtain upper pole access for percutaneous nephrolithotomy (PCNL) due to a higher complication rate. Renal access gained by a urologist may achieve higher stone-free rates with similar complication rates. We discuss our institution's contemporary results of percutaneous renal access in the upper pole for nephrolithotomy by a urologist. We believe that urologist-obtained upper pole access for PCNL is both safe and efficacious.
Patients and Methods: We performed a retrospective chart review of PCNL performed by 2 fellowship-trained endourologists from 2003 to 2014 at a single institution. The inclusion criteria included patients in which renal access was obtained by the urologist via the upper pole for subsequent nephrolithotomy. Variables analyzed include age, gender, BMI, ASA, operative time, rib level, initial stone size, change in hemoglobin (Hgb), length of stay (LOS), and post-op complications. Stone-free status was determined by either KUB or CT scan on POD #1. Patients without stones visible on KUB or stones less than 4 mm on CT were considered stone-free.
Results: A total of 144 renal units were accessed via the upper pole for subsequent nephrolithotomy. Baseline demographics included, mean age of 52.7 years, 51 males, 93 females, mean BMI of 29.7, median ASA of 3, mean Hgb change on postoperative day 1 of 1.8 g/dL, and a mean hospital stay of 2.5 days. There were a total of 53 (36.8%) stones classified as a staghorn calculi, of which 35 (24.3%) were partial staghorn stones. Renal access was obtained above 11^{th} rib in 12.5% (n = 18), above 12^{th} rib in 57.6% (n = 83), subcostal in 14.6% (n = 21) and undetermined in the rest. Complications were seen in 18 (12.5%) of patients. Hydropneumothorax requiring chest tube was seen in 8 (5.5%) patients. Postoperative imaging confirmed 93 (64.6%) patients stone-free, and 35 (24.3%) required a second look PCNL.
Conclusions: Our experience demonstrates urologist-obtained upper pole percutaneous renal access for nephrolithotomy has a reasonable stone-free rate with acceptable complications.

MP20-4 Pneumopyelogram- an aid to puncture in fluroscopic guided PCNL

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Introduction: Radio opaque Iodine contrast in different concenteration has been the favoured material for puncturing the pelvicaliceal system (PCS) under fluroscopy in PCNL for several decades. The air is instilled to locate posterior middle calyx as double contrast for definite puncture. But, many a times either contrast is not available or there is a fear of extravasation both during retrograde instillation and also during leak from puncture resulting in abondoning of procedure. We have been successfully

utilising the air not only for visualising the PCS but also to enter PCS under vision in case of lost track.
Material and methods: The study has been performed in a total of 325 patients undergoing PCNL in the period Jan 2013- June 2015. All patients were given regional anaesthesia. After cystoscopy and uretereic catheterisation they are turned prone to perform fluroscopy guided PCNL using air to visualise PCS. We use bull's eye technique to puncture the PCS and a safety guidewire is placed in all patients.
Result: In all but 6(1.86%) patients the air could not localise PCS. Out of them, the uretric catheter could not by-pass the large impacted upper ureteric stone in 3 patients and in one the system was so spidery that proper pelvicaliceal anatomy could not be ascertained. In two other patients there was perforation in the PCS possibly due to increased retrograde pressure. In all these situation we could use contrast as an aid to visualise PCS and do the procedure. In 15 patients (4.61%) the track was lost either in the initial phase or during the procedure wherein the retrograde air instillation by ureteric catheter helped us to locate PCS and we could enter PCS under vision. In 8 out of 15 patients we used endoscopic scissiors to cut the wall of pelvis and enter PCS by locating the air bubbles.
Conclusion: The localisation of PCS by contrast under fluroscopy is the keystone for successful PCNL. The air is conventionally used as guide for posterior middle caliceal puncture. But, we have successfully used only air to delineate PCS not only for initial puncture but also to enter the lost track and in tracks which fall short of PCS and the guide wire is inside the PCS using endoscopic scissiors with air bubbles as a guide to successfuly enter the PCS. It has not only reduced radiation but also the cost of contrast.

MP20-5 Lessons from supine PCNL series in Scottish District General Hospital and description of ureteric balloon catheter technique to manage difficult access

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Introduction: Supine percutaneous nephrolithotomy (SPCNL) is gaining popularity due to anaesthetic and surgical advantages over prone PCNL (PPCNL). However concerns remain regarding stone clearance rates, operative time and access. We present our experience of SPCNLs and describe a technique we developed to deal with difficult access.
Materials and Methods: All patients who had SPCNL in Monklands District General Hospital from June 2013 to October 2014 were included in this series. Data was collected regarding patient demographics, stone parameters, stone clearance rates, post operative stay and complications.
Results: 42 patients (24 male and 18 female) underwent 46 SPCNL procedures performed by two surgeons between June 2013 and October 2014. Average age of patients was 54 years (range 27–85). Mean hospital stay was 3.9 days (range 1–10). The stone size ranged from 13 mm to 70 mm including multiple stones, complete staghorn calculi and stones on stents. Percutaneous access was gained into upper pole calyx (5), mid pole calyx (10) and lower pole calyx (31). If there was difficulty in access due to supracostal calyces, we used our ureteric balloon catheter (UBC) technique to displace the kidney inferiorly by gentle traction at pelviureteric junction. 2 patients (4%) required transfusion and 4 patients (8%) developed septicaemia. Complete stone clearance was achieved in 71% of patients.
Conclusions: To our knowledge, this is the largest SPCNL series from Scotland. SPCNL is safe with comparable outcomes and additional advantages over PPCNL. Calyceal access is thought to be difficult in SPCNLs. However we have 100% success rate, partly due to UBC technique. UBC technique for displacing supra-costal calyces is only the 3rd such technique described in worldwide literature to date. In our experience there is minimal learning curve for practising endourologists to change from prone to supine PCNL.

MP20-6 Percutaneous Nephrolithotomy (PCNL) as an outpatient procedure

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Introduction: Percutaneuos nephrolithotomy (PCNL) has stood the test of time as the procedure of choice for the management of many renal calculi. In most centers, it is performed as an inpatient procedure with at least one day of post operative hospital stay. The limited resources of many health care systems and the large volume of cases requiring this procedure together with the improved armamentarium and experties have lead us to consider reducing the length of post operative hospital stay. In this study, we assessed the feasibility and safety of performing PCNL as an outpatient procedure.
Patients and methods: Between January 2013 and March 2015, 186 kidney stone patients underwent PCNL in our institution. All were done in supine position. Track was established with balloon dilator and stones were fragmented with pneumatic lithotriptor. Ureteric stent was placed in 79 patients and a 20 Fr Foley's catheter was placed as a nephrostomy tube at the end of the porcedure in all cases. Nephrostomy tube was closed postoperatively for two hours, opened for drainage for another four hours and once no significant haematuria is present, the tube is removed. Urethral catheter is then removed two hours later and the patient is discharged from the hospital on parentral antibiotic and strong analgesic for five days. All patients receive follow up phone calls on post operative days zero, two and seven checking for heamaturia, fever and leakage.
Results: The mean patient age was 42 years and mean stone diameter was 27 mm. The procedure was performed under spinal anaesthesia in 57 patients, supracostal puncture was used in 45 patients and multiple punctures were needed in 43 patients. Blood transfusion was needed in seven patients. We had to keep 24 patients overnight (7 transfused patients, 6 for high grade fever, 8 for significant heamaturia and 3 for uncontrolled blood suger level) while we discharged 162 patients on same day. No patient needed re-hospitalisation and all minor complications as fever and mild heamaturia were successfully managed over the phone.
Conclusion: PCNL is a minimally invasive and safe procedure that can be performed on an out patient basis with great convinience and cost reduction.

MP20-7 A novel technique for accessing deep-seated calyceal calculi during percutaneous nephrolithotomy

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Introduction: Accessing calculi located in deep calyces during percutaneous nephrolithotomy can be technically challenging. Additional tracts often have to be inserted and retrograde intrarenal surgery (RIRS) may be necessary as an ancillary procedure. The use of flexible endoscopes during PCNL has been described to improve stone clearance. This technique has limitations due to restricted bending especially when the angles to the calyces are acute. We describe a simple technique to improve the clearance of such calculi during PCNL.
Method: The Amplatz sheath is modified before insertion with a side hole cut into the sheath with a scalpel. This hole is 1 cm from the bevelled end of the sheath and is 1 cm x 0.6 cm in size. The modified sheath is inserted in a usual manner after dilatation of the tract. Once the main stone burden in the renal pelvis is cleared, a flexible endoscope is passed into the Amplatz sheath. This is guided into the desired calyx through the side port without the need to withdraw the sheath. Once passed through the side port into the required calyx, a laser fibre and/or dormia can be used either to fragment or retrieve the stone fragments. The modified sheath can be rotated within the renal pelvis to guide the endoscope into the desired calyx.
Results: This technique has been used in 30 cases in our department. The stone burden included multiple and stag-horn calculi. Main puncture was into a middle or lower pole calyx in all cases. The adaptation allowed access to all calyces in all cases compared to only 93% access to all calyces in the preceeding 30 PCNL cases performed before the adapted sheath was introduced. This has been translated into higher stone free rates (95% vs 88%) and avoided the need for additional tracts or adjuvant procedures such as RIRS.
Conclusion: This technique is a simple modification to the standard equipment used and improves calyceal access. There is no additional cost required to modify the Amplatz sheath and the modification is easily made. In our case series there has been a significant reduction in morbidity as a result of the sheath modification.

MP20-8 Ureteropelvic junction stent: a novel adjunct to percutaneous nephrolithotomy

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Introduction: In standard percutaneous nephrolithotomy a nephrostomy tube is left in situ to tamponade the tract, divert urine, and allow for 2nd-look nephroscopy. In select patients tubeless PCNL is an alternative to reduce post-op pain and length of stay. Ureteral stent placement however may cause significant morbidity, can become dislodged and can require cystoscopy to remove. In patients appropriate for tubeless PCNL, we trialed the use of a UPJ stent to minimize pain, stent discomfort, and maintain access.
Materials and Methods: Retrospective review of 25 patients undergoing PCNL with UPJ stent was performed. Patients were considered for such if they had no significant bleeding, single-tract access, complete stone clearance and nephrostogram demonstrating ureteral patency. Access and stone extraction were performed as usual. At the conclusion of the case a UPJ stent was inserted: the tapered end of a double-J ureteral stent was cut and removed, with a string left attached to the remaining curl. The stent was inserted anterograde under fluoroscopic guidance over wire with its cut end in the mid ureter and proximal end in renal pelvis. The string was brought through the tract, Floseal applied, and pressure held.
Results: Average maximum stone diameter was 1.81 + 0.20 cm. Mean operating time was 118 + 33 min with EBL 58 + 42 cc. LOS was 2.28 + 0.97 days, with 3 patients discharged on POD0. 22 patients tolerated UPJ stent with minimal symptoms and removed it on day 4.79 + 1.13. 2 patients returned to the ER. One presented with persistent nausea, vomiting, and flank pain on POD4. Ultrasound showed no hydronephrosis, with stent position confirmed by KUB. The stent was removed, symptoms resolved and she returned in 2 weeks without further complaints. The second patient presented POD2 with nephrostomy site leakage. CT showed the stent to be in place. Anterograde nephrostogram revealed obstruction distal to the stent. The UPJ stent was exchanged over wire for a double-J. She was discharged home and stent removed 2 weeks later. A third patient was found on post-operative CT to have cut the string while leaving the stent in place. The stent was removed without difficulty with a zero tip basket during ureteroscopy.
Conclusion: PCNL with UPJ stent is a technique that can be offered to select patients to minimize nephrostomy site pain and stent discomfort, while maintaining anterograde access to the collecting system. Further studies should be performed to determine optimal candidate selection and safety.

MP20-9 Questioning the Wisdom of Puncture at the Calyceal Fornix in Percutaneous Nephrolithotripsy: Our Experience with 137 Patients Operated Via a Non Calyceal Percutaneous Track.

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Aim of the study: Access through the tip of the calyx during percutaneous nephrolithotripsy (PCNL) has been traditionally considered as the less traumatic site of percutaneous entrance into the collecting system. Despite the absence of evidence that non calyceal percutaneous tracts could be a risk factor of complications, the concept of calyceal puncture has been worldwide adopted by PCNL surgeons and currently the calyceal fornix is presented as the sole safe entrance into the collective system. During the last years in our high volume center we have adopted a complete non calyceal puncture protocol for PCNL access. We herein present our experience with the approach in an attempt to question the wisdom of calyceal puncture panacea in PCNL.
Materials and Methods: During 2012 a total of 137 consecutive, unselected patients were subjected to PCNL in our department. Non calyceal punctures and subsequent track dilations were performed to all cases. Perioperative and postoperative data were prospectively collected and analyzed.
Results: Mean operative time (from puncture to nephrostomy tube placement) was 48.13 ± 14.80 min. Patients with single, multiple and staghorn stones had primary stone-free rates of 89.2%, 80.4% and 66.7% after PCNL, respectively. The overall complication rate was 10.2% while bleeding complications were minimal. Only 4 patients (2.9%) required blood transfusion. Five patients (3.6%) had Clavien Grade IIIa complications requiring an intervention for their management and none Grade IV or V.
Conclusions: Based on our experience, accessing the system through a more central position increase the freedom of atraumatic bending of the scope towards distal calyces reducing operative times, improving stone free rates without any effect in complication rates such as clinical significant bleeding.

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MP20-10 Tubeless Percutaneous Nephrolithotomy with Retrograde Tethered Stent

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Introduction & Objectives: The adoption of ''tubeless'' percutaneous nephrolithotomy (tPCNL) has decreased the morbidity of PCNL by eliminating the need for nephrostomy and nephroureterostomy tubes, in exchange for a ureteric stent. However, the need to perform a cystoscopic procedure to remove this stent remains a source of inconvenience and discomfort for patients. The objective of this study was to present our experience with tPCNL using retrograde stenting with a tether. We compared rates of stent related complications to those of a similar cohort of tPCNL patients in whom an un-tethered stent was placed.
Methods: We performed a chart review of 231 patients undergoing tPCNL at our institution between 2011 and 2014. Patients undergoing tPCNL with an un-tethered stent (Group 1) and those with a tethered stent (Group 2) were identified. All tethered stents were placed in a retrograde fashion. Pre-operative and intra-operative variables were compared between the groups. The decision to leave a tethered or un-tethered stent was based on surgeon preference. Post-operative stent complications including premature stent removal (prior to planned f/u at 1 week), emergency room (ER) visits, adjunctive procedures for renal drainage, and urinary tract infections (UTI) diagnosed in the week following discharge were compared.
Results: A total of 239 patients underwent tPCNL during the study period (Group 1 = 38, Group 2 = 193). Pre-operative and intra-operative characteristics were similar between the groups. No premature stent removals occurred in Group 1. In Group 2 there were 13 premature stent removals (6.7%), leading to 6 ER presentations (3.1%), and 1 patient requiring stent replacement (0.5%). UTIs were identified in the week following discharge in 5.3% of Group 1 and 7.3% of Group 2 ($p = 0.67$).
Conclusions: tPCNL with a retrograde tethered stent appears to be a safe, with a low risk of stent related complications or need for adjunctive procedures when compared to stents without tethers.

MP20-11 Percutaneous Nephrolithotomy for Staghorn Stones: A Randomized Trial Comparing High Power Holmium Laser versus Ultrasonic Lithotripsy

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Objective: To compare high power holmium Laser lithotripsy (HP-HLL) and ultrasonic lithotripsy (US-L) in disintegration of staghorn stones during percutaneous nephrolithotomy (PNL).
Patients and Methods: A Randomized trial was conducted between August 2011 and September 2014. Inclusion criteria were patients' age > 18 years who had complete staghorn stones (branching to the three major calyces) without contraindications to PNL. Eligible patients were randomized between 2 groups (HP-HLL and US-L). A Standard PNL in prone position was performed for all patients. The only difference between treatment groups was method of stone disintegration. In the first group, Laser power of 40–60 Watt (2 Joules, 20–30 Hertz) through 550 micron end-firing Laser fiber was used to pulverize the staghorn stone into very small fragments that can pass through the Amplatz sheath with the irrigation fluid. Ultrasonic lithotripsy with suction of the fragments was used in the second group. Success rates were evaluated with non-contrast CT after 3 months. Complication, success rates, blood transfusion, operative time and haemoglobin deficit were compared.
Results: The study included 70 patients (35 in each group). The base line characters (age, sex, BMI, side, stone volume and density) and operative technique (number, size of tracts and need for second PNL session) were comparable for both groups. Operative time was significantly shorter in US-L (130 +/- 34 versus 148.7 +/- 35 minutes, $P = 0.028$). Mean hemoglobin deficit was significantly more with US-L (1.7 +/- 0.9 versus 1.3 +/- 0.6, $P = 0.037$). Blood transfusion was more in US-L (17.1% versus 11.4%) and the overall complication rate was also higher for US-L (34.3% versus 22.9%) but the difference was not significant ($P = 0.495$ and 0.290 respectively). The success rates were comparable (71.4% for HPL-L and 65.7% for US-L, $P = 0.607$).
Conclusions: Compared with US-L for intracorporeal lithotripsy of staghorn stone during PNL, HP-HLL showed comparable safety and efficacy with lower hemoglobin deficit but longer operative time.

MP20-12 Laser with suction as an energy source in Mini PCNL: MPUH experience

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Introduction: Laser is the preferred method of stone fragmentation in mini PCNL (percutaneous nephrolithotomy). Laser with Suction in PCNL has been used but the size of the unit available in market is 10 Fr or more, making it unsuitable to be used in Mini PCNL. Laser is an optimal energy source in mini PCNL but the dust generated along with clots pose significant difficulty in visualization during the procedure. If the stone dust were suctioned in would expedite the procedure. To validate this we propose use of Laser with suction device, which can be used in mini PCNL.
Material and method: We retrospectively evaluated data of patients who underwent mini PCNL using laser with suction from February 2014 to May 2015. A total of 60 patients were operated using suction with laser by EMS™ using standard mini PCNL (percutaneous nephrolithotomy) assembly by storz. For doing mini PCNL standard steps were followed and after nephroscopy laser with suction device manufactured by EMS ™ was used, it is a 4.5 fr device which houses suction and laser sheath through which a 200–365 micron fiber can pass. It can be passed from working channel of mini PCNL storz scope (MIP-M, 12fr), which has a working channel of 6.7 fr. A 365 micron end firing optical fiber with pulsed holmium:yttrium-aluminum-garnet (Ho:YAG) laser was used with setting long pulse, 0.5–1.5J and 6–20 hz.
Results: The average age of the patient was 38 years, and the mean stone size was 20.26-mm ± 12.58 mm. Average operative time was 55.5 min ± 15.2 min, and average hospital stay was 1.87 days. Average tract size was 16.82 ± 4.92 fr and stone clearance rate was 100%. There was no major postoperative complication. The Vision during nephroscopy was markedly improved and the

nephroscopy time shortened as compared to our standard mini PCNL and clearance rate comparable.
Conclusion: From this initial study, EMS™ Laser with suction is a useful device. It improves vision, significantly decreases the operative time as compared to the standard literature and has comparable clearance rates. We propose a randomized control trial to prove the efficacy of this device.

MP20-13 High energy holmium laser combined with suction for large renal stone lithotripsy

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Introduction and Objectives: The most common method for treatment of large burden kidney stones utilizes a direct approach to the kidney by percutaneous nephrolithotomy (PCNL). In order to achieve stone clearance, remaining fragments need to be collected and removed. When treating large stone burdens, this can be a tedious and time consuming. The objective of this study was to demonstrate the use of high power holmium laser lithotripsy with simultaneous aspiration for the removal of large kidney stones.
Methods: This is a prospective, open, single center study of twenty patients with large burden kidney stone > 2 cm size treated with PCNL. A single procedure incorporating high powered holmium laser combined with suction and laser suction probe was performed. Stone clearance was demonstrated at the 1 month follow-up visit.
Results: PCNL was performed in 20 patients aged 52.5 ± 23.5 years. There were 18 male patients and 2 female patients. The mean stone size was 35.67 ± 23.74 mm. All lithotripsy procedures were performed using holmium laser using high power and simultaneous aspiration using a laser suction handpiece. Graspers were required in 4 procedures. No laser related adverse events occurred. The mean operative time was 57.5 ± 27.9 minutes. The mean Lithotripsy time was 24.15 ± 19.25 minutes. The mean hospital stay was around 4 days. The mean Hb drop was 1.2 gms%. Four patients had post-operative fever and 2 patients had hematuria o of which 1 required angio-embolisation. Five patients had partial clearance requiring second staged procedure. Complete stone clearance was achieved in 15 patients, as determined at the 1 month follow-up visit.
Conclusions: Removal of large burden kidney stone with high power holmium laser and simultaneous aspiration was efficient and safe. Calculi could be broken into fine dust reducing the need for fragment collection and resulted in shorter procedure time.

MP20-14 Initial Clinical Outcomes Employing the Novel Laser Direct Alignment Radiation Reduction Technique (DARRT) For Percutaneous Nephrolithotomy Access

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Introduction: Percutaneous nephrolithotomy (PCNL) access may be technically challenging and can result in significant radiation exposure to both the surgeon and patient. In an attempt to reduce the radiation exposure during percutaneous nephrolithotomy (PCNL), a novel laser Direct Alignment Radiation Reduction Technique (DARRT) was developed where the renal access was guided by a laser sight placed upon the C-arm (similar to the laser targeting system mounted on a rifle). The purpose of this study was to review the initial 10 patients treated using this novel technique.
Materials & Methods: A retrospective chart review of the first 10 consecutive patients treated using the Laser DARRT was performed. Primary surgical outcomes were fluoroscopy time required for percutaneous renal access and total procedure fluoroscopy time. Secondary outcomes included stone burden, degree of hydronephrosis, skin to stone distance, operative time, estimated blood loss, retreatment rate and stone free status. Patients with residual fragments ≤ 4 mm were considered to be stone free.
Results: The initial 10 patients treated using the Laser DARRT were reviewed. There were 6 male and 4 female patients. The outcomes were expressed in median values with associated (range). The patient age was 43 years (26–63) and the BMI was 29.95 (23.3–42.6). Total stone burden was 652 mm^2 with 40% partial and 60% full staghorn calculi. The grade of hydronephrosis was minimal in 40% of patients, mild in 10%, and moderate in 50%. The skin to stone distance was 10.4 cm (5.1–17.5). The access fluoroscopy time was 7 seconds (1.6–34.5) and the total fluoroscopy time was 18 seconds (5–52). The operative time was 215 minutes (130–431), the estimated blood loss was 87.5 mL (40–350) and the hospital stay was 4 days (1–7). 7 out of 10 patients (70%) were rendered stone free postoperatively. 3 out of 10 patients (30%) required a second look procedure. There were 2 minor complications (Clavien 1) for prolonged ileus (20%).
Conclusions: This study demonstrates the safety and feasibility of the Laser DARRT for PCNL. Using this technique, total fluoroscopy time was reduced to a median of 18 seconds. The procedure is easy to learn, utilizes conventional fluoroscopic techniques which are familiar to most urologists and may allow the surgeon to significantly reduce radiation exposure to their patients, staff, and themselves.

MP20-15 Minipercutaneous Nephrolithotomy versus Retrograde Intrarenal Surgery for Renal Stones Larger than 10 mm: A Prospective Randomized Controlled Trial

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Objectives: To compare mini-percutaneous nephrolithotomy (mini-PCNL) and retrograde intrarenal surgery (RIRS) in the management of renal stones larger than 10 mm in a single session.
Materials and Methods: Seventy patients presenting with renal stones > 10 mm were randomized to a mini-PCNL or a RIRS group in a ratio of 1:1. Randomization was performed by a biostatistician and opened to the surgeon at the time of the patient's admission on the day before surgery. Patient and stone characteristics, perioperative outcomes, and complications were compared between the two groups. The primary end point of ''stone-free'' which was defined as no residual stone or stones < 2 mm on computed tomography within 3 months postoperatively.
Results: Thirty-five patients (Mini-PCNL) and 33 (RIRS) were included in the final analysis. Mini-PCNL and RIRS had a stone free rate of 85.7% and 97.0%, respectively (P = 0.199). Operation

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time (P = 0.148), hemoglobin decline (P = 0.323), and hospital stay (P = 0.728) were similar between the two groups. Pain visual analogue score at 1 hour postoperatively (P = 0.029) and analgesic requirement (P = 0.050) were higher in the RIRS group. Two patients in the mini-PCNL group and one in the RIRS group had minor pelvic or ureter perforation. One patient in each of the two groups had hypertension and urinary tract infection.
Conclusion: Mini-PCNL and RIRS are safe and feasible surgical options to manage renal stones larger than 10 mm. RIRS produced a slightly higher stone free rate, but more immediate postoperative pain and higher analgesic requirement compared with mini-PCNL.

MP20-16 Preliminary results from treatment of upper urinary tract calculi with ultrasound guided percutaneous nephrolithotomy using Ultraminiperc technique (UMP) under local infiltration anesthesia

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Objective: To discuss the efficacy and safety of treatment of upper urinary tract calculi with ultrasound guided percutaneous nephrolithotomy using UMP technique under local infiltration anesthesia.
Method: A retrospective review was performed of 30 patients with upper urinary tract calculi sized < 3 cm undergoing ultrasound guided percutaneous nephrolithotomy using UMP technique between June 2013 and June 2014. 75 ml Pethidine hydrochloride and 25 ml promethazine hydrochloride were given to patients 30 min prior to the operation. The operations were carried out through a 10- to 12-Fr metal sheath and tubeless procedures were done at the end.
Results: 27 (90%) operations were performed with single channel while 3 (10%) with double channels. The operative time was 63 ± 24 minutes, and postoperative visual analog scale (VAS) ratings were 2.63, 1.47, 1.27 and 1.07, respectively. A 0.2 ± 0.15 g/dl decrease in postoperative hemoglobin level was observed while no postoperative complications of chills, fever or secondary hemorrhage were identified. Total stone clearance rate was 93.3% and postoperative hospital stay was 1.67 ± 0.4 days. Reactions to anesthesia after the operation including vomiting, headache and abdominal distension were not observed.
Conclusions: Ultrasound guided percutaneous nephrolithotomy using UMP under local infiltration anesthesia is proven to be an effective and safe treatment for upper urinary tract calculi and also expected to be performed as a same-day surgery in the future.

MP20-17 Early UK experience of ultra-mini PCNL

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Background: Ultra-mini PCNL (UMP) is a novel minimally invasive treatment for the treatment of renal stones. We review the early practice of this technique in the UK.
Materials and Methods: All units who have undertaken UMP in the UK were contacted. Retrospective data was obtained from a total of 9 units out of 11 who have performed UMP. Stone, patient, operative and post-operative parameters were recorded.
Results: 42 UMP cases were performed between July 2013 and December 2014. Mean maximum measured stone length was 12.8 mm (stone size ranged from 6 × 4 mm to 24 × 24 mm). 36 cases were performed in the prone position. The stone-free rate was 90%. 31 patients had no nephrostomy tube post operatively. Complications were uncommon: 1 patient was readmitted with pain, 1 had a peri-nephric haematoma successfully managed conservatively and 1 equipment failure led to conversion to the standard technique. Average Hb drop was 0.8 g/dl. Length of stay (LOS) was one day for 32 patients, 2 days for six and 3 or more days for 4 patients.
Conclusions: UMP is a safe and effective means of treating renal stones. It is associated with a short LOS and few complications. These benefits are seen even in the early experience of surgeons, suggesting that there is no significant learning curve. Its use is likely to be become more widespread for the treatment of intermediate sized renal stones and those patients wishing to avoid a ureteroscopy.

MP20-18 Prospective randomized comparison of Microperc and RIRS for lower calyceal (LC) calculus<15 mm

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Introduction: The management of lower calyceal calculus has always been a matter of debate. The objective of this study is to compare the outcome of retrograde intrarenal surgery (RIRS) and microperc for LC stone less then 15 mm.
Material and method: After institutional ethical committee approval and informed consent, we prospectively randomized 32 patients having LC stone less then 15 mm into RIRS and microperc. Various parameters were noted prospectively.
Results: Out of the 32 patients, 17 patients were randomized to Microperc (Group A) and 15 to RIRS(Group B). Age, stone size, operative time and hospital stay were comparable in both the groups (39.0 ± 19.2 Vs 41.1 ± 11.2 years, 9.7 ± 2.5 Vs 10.26 ± 2.63 mm, 30 ± 12.74 minVs 35.5 ± 10.1 minutes, 74 ± 20 hours vs 62 ± 12 hours respectively). The haemoglobin drop, and pain score as calculated by VAS at 24 hours was significantly low in the RIRS group (0.7 ± 0.36 Vs 0.08 ± 0.22 gm/dl, P value-0.02 and 3.43 ± 1.13 vs 2.6 ± 0.7, P-0.04). Four patients in RIRS required conversion to other procedures (microperc in 2 and miniperc in 2) in view of difficult access. One patients in Microperc group required conversion to miniperc in view of bleeding and poor vision. DJ stenting was required in 29% in microperc group and in 73% in RIRS group. Two patients in Microperc group and 3 patients in RIRS group had postoperative fever (Clavein Grade 1 complication) which settled with conservative measures and one patient in Microperc group required postop DJ stenting (Clavein Grade 3a complication) in view of solitary kidney and pain with dilatation. In both groups the stone free rate at 1 month was 100%.
Conclusion: Both Microperc and RIRS are efficient and comparable procedures for LC calculus. Microperc is associated with lesser conversion to other procedures and lesser need for DJ stenting. RIRS patients had no complications and minimal blood loss. Further large multicentric randomized controlled trials are necessary.

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MP20-19 Ultramini PCNL – A Welcome Addition to the Endourologist's Armamentarium; Results From A Large Single Centre UK Case Series

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Introduction: Greater emphasis is placed on minimally invasive techniques in the management of renal stones. More minimally invasive percutaneous modalities have emerged with the premise of achieving equivalent stone free rates with less morbidity.

The authors present a 10 month case series analysis where 30 ultramini PCNL (UMP) cases were performed. Contemporaneous data collection of all UMP cases by the authors is performed, and the main results and technique is described.

Methods: The technique employed for UMP involves insertion of ureteric and urethral catheter, and then transferring to the prone position. All punctures are performed by the urologists under fluoroscopic guidance. Upon successful puncture, a hydrophilic guidewire (Zip) is placed into the calyceal system, and the track dilated with Alken dilators. The 13Fr LUT ultramini PCNL system is then inserted over the guidewire. Once successful entry into the calyceal system is confirmed endoscopically, this guidewire is removed. Track access has never been lost once the nephroscope has been placed into the calyx. Stone fragmentation proceeds with a 200μm Holmium laser. Fragments are removed via the Venturi effect, and remaining fragments with N-Gage basket.

Results: In 10 months to June 2015, 30 UMP cases were performed. The mean maximum stone size was 10.5 mm (range 5 mm-17 mm). 15/30 (50%) patients had stones in the lower pole, 8/30 (26.7%) in the renal pelvis, 4/30 (13.3%) in the upper pole, 2/30 (6.67%) in the PUJ, and 1/30 (3.3%) in the middle pole. 21/30 (70%) of punctures were lower pole, 5/30 (16.67%) middle pole, 4/30 (13.3%) upper pole. 30/30 (100%) patients were tubeless; 100% were stone free upon endoscopic evaluation corroborated by fluoroscopy. 25/30 patients were discharged postoperative day 1; 3 postoperative day 2, and 2 were performed as daycases. The average Hb drop was 1.3 g/dl. There were 6 complications; one patient dropped their Hb by 4.4 g/dl and was transfused 2 units; 1 was readmitted after 48 hours with pain and shortness of breath and found to have a haematoma and pleural effusion that were managed conservatively, one readmission after 24 hours with pain, and 2 acute urinary retention.

Conclusion: This case series shows that UMP is useful in the management of renal stones. The main benefits over previous modalities include stone free rates, and lesser morbidity from a tubeless procedure resulting in improved length of stay.

MP20-20 Complete supine position for percutaneous nephrolithotomy (PCNL)

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Background: The prone position has been the traditional and most widely used position since PCNL emerged in the mid-1970s, but PCNL in supine position offers several advantages, including less operation time, less patient handling, easier access to the ureter and upper calyces, facilitation of drainage of stone fragment with the Amplatz sheath. We report our first experience regarding supine PCNL.

Materials and Methods: From March 2010 to September 2012 we performed PCNL in 80 consecutive patients who were candidate for PCNL under general or spinal anesthesia in complete supine position with guide of fluoroscopy. Patients with uncontrolled coagulopathy, skeletal deformity, ectopic kidneys and morbid obesity were excluded from study. The intra-operative and postoperative anesthetic and surgical outcomes were evaluated.

Results: The mean age of the patients was 34.0 ± 15.2 years and mean stone size was 30.3 ± 8.4 mm. Mean access time was 6.2 ± 2.1 minutes and the mean operative time was 67.3 ± 24.8 minutes. Three patients had staghorn calculi with mean size of 4.8 ± 1.3 cm and mean operative time of 130 ± 30 minutes. Five patients had proximal ureteral stone that completely were crushed and removed in supine position(mean stone size 18.3 ± 7.3 mm). seven patients had superior calyx stone((mean stone size 20.5 ± 5.4 mm) that 4 of them crush and removed completely and one patient need one session ESWL. Six patients (7.5%) needed blood transfusion. Seventy five percent of the patients had complete clearance of calculus or no significant residual calculi larger than 5 mm on follow-up ultrasonography. In two patients (first 10 cases) access failed and PCNL was done in prone position by standard technique. There was no visceral or pulmonary complication.

Conclusion: Complete supine pcnl is safe, feasible with suitable efficacy and less complication that can be used instead of prone position.

Keywords: PCNL, Position, Supine

MP20-21 Use of a novel flexible mini-nephroscope during mini-PCNL: a pilot study

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Objective: Mini-PCNL has now been established as an important technological advancement to reduce the morbidity and invasiveness of percutaneous nephrolithotomy (PCNL). It is also understood that limiting the number of tracts has the potential of decreasing the morbidity in PCNL. We present the initial results of use of a novel flexible mini-nephroscope for improving clearance and accessing multiple stones through a single tract in mini-PCNL.

Methods: A pilot study of use of a novel flexible mini-nephroscope of 6F diameter (Karl Storz, Germany) in patients with multiple kidney stones in different calices, individual stone size not exceeding 1.5 cm in largest dimension, was performed. All patients underwent mini-PCNL using metal mini-perc Amplatz sheath (Karl Storz, Germany) with a tract size of 15 Fr. The initial puncture and one-step tract dilatation process was same as standard PCNL. Following clearance of the target stone-containing calyx with rigid 12 Fr mini-nephroscope, flexible mini-nephroscope was introduced through the same sheath and all the remaining calices situated at acute and inaccessible angles were accessed. All the secondary stones and any fragments were fragmented with holmium laser and cleared. All procedures were done in a 'tubeless' manner, leaving only a ureteric catheter indwelling overnight. Total operating time, stone clearance rates, postoperative pain, morbidity, hospital stay, time to recovery and complication rates were recorded.

Results: A total of 30 patients were included in this prospective observational study. The age ranged between 12 and 73 year, male: female ratio being 1.7:1. The number of stones varied from 2–5 (mean 3.2), while the mean stone size for the largest stone was 1.2 cm. The average operating time was 44.3 ± 14.4 minutes. All patients had complete clearance of stones confirmed by post-operative non-contrast CT. Postoperative pain and analgesia requirement in these patients was minimal. The average hospital stay was 21.4 ± 3.2 hours. Majority of patients reported back to work within 7 days. There were no significant complications in the perioperative or postoperative period in the short term follow up.
Conclusion: Our initial results indicate that flexible mini-nephroscope is an effective adjuvant to mini-PCNL in patients with multiple calculi, where morbidity can be kept low by avoiding multi-tract PCNL. To the best of our knowledge, this is the first clinical experience with this technique reported anywhere in the world.

MP20-22 A prospective and randomized comparison of fluoroscopic, sonographic or combined approach for renal access in minimally invasive percutaneous nephrolithotomy

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Purpose: To compare the safety and efficacy of fluoroscopic, sonographic and combined approach for renal access in minimally invasive percutaneous nephrolithotomy (MPCNL).
Methods: A total of 450 patients with renal stones were prospectively randomized and enrolled in the study at a single institution between April 2014 and May 2015. Eligible patients were assigned by a computer-generated randomization schedule to fluoroscopy, ultrasonography (US) or combined US and fluoroscopy guided MPCNL. The primary endpoints were the stone free rate(SFR) after one stage operation in terms of efficacy and hemoglobin drop after surgery as equivalents of safety. This trial is registered, number NCT02266381.
Results: The baseline characteristics of the three groups were comparable. No significant difference was found concerning SFR, decrease in hemoglobin, transfusion rate, operative time, hospital stay, failure access rate, re-treatment rate and auxiliary procedure rate. Access time was longer in combined approach group than in US or fluoroscopy group ($p = 0.003$). The mean fluoroscopy times were significantly greater in the fluoroscopy group than in the other groups ($p < 0.001$). More patients underwent multiple tracts MPCNL in fluoroscopy group than that in US group. Postoperative fever was more prevalent in fluoroscopy group than in US group ($p = 0.028$). No significant difference was observed in other complications between the three group.
Conclusion: MPCNL under ultrasonographic guidance or combined ultrasonographic and fluoroscopic guidance are as safe and relatively effective as fluoroscopic guidance in experienced hands. Preference of the surgeon and proper case selection for each procedure is very important and necessary.

MP20-23 Super-Mini Percutaneous Nephrolithotomy (SMP): A new concept in technique and instrumentation

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Aim: We designed a novel miniature endoscopic system to improve the safety and efficacy of the percutaneous nephrolithotomy. We named our procedure the ''Super-Mini Percutaneous nephrolithotomy'' (SMP).
Patients and Methods: Our endoscopic system consists of a 7 Fr. nephroscope with enhanced irrigation and a modified 10–14 Fr. access sheath with suction-evacuation function. This system was tested in patients with renal stones up to 2.5 cm in size in a multi-center prospective non randomized clinical trial. We accrued a total of 146 patients in 14 centers. Nephrostomy tract dilation was carried out to 10–14 Fr. we performed lithotripsy using either Holmium laser or pneumatic lithotripter. Nephrostomy tube or double J stent was placed only if clinically indicated.
Results: SMP was completed successfully in 141 of 146 patients. Five patients required conversion to the larger nephrostomy tracts. The mean stone size was 2.2 ± 0.6 cm. Mean operative time was 45.6 minutes. The initial stone free rate (SFR) was 90.1%. SFR at three months follow up was 95.8%. Three patients required auxiliary procedures for residual stones. We documented 12.8%complications, all Clavien grade II or less. There was no transfusion. 72.3% of the patients did not require any kind of catheters. 19.8% of the patients had double J stents and 5.7% had nephrostomy tubes placed. The average hospital stay was 2.1 days.
Conclusions: SMP is a safe and effective treatment for renal stones up to 2.5 cm. Pediatric patients and patients who failed previous surgical intervention might be the prime candidates for this procedure.

MP21 - ROBOTIC SURGERY: UPPER TRACT - ONCOLOGY 1

MP21-1 Comparison of Short Term and Technical Outcomes of Robotic and Open Partial Nephrectomy for clinical T2 renal mass

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Introduction: Partial Nephrectomy (PN) for clinical T2 (> 7 cm) renal mass has been demonstrated to have equivalent oncological outcomes to radical nephrectomy in contemporary series. Most PN in published reports have been done by open approach. Robotic partial nephrectomy (RPN) has evolved as the minimally invasive standard for small renal masses; however its overall outcomes have not been compared to OPN for larger

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renal masses. We compared outcomes of RPN and OPN for clinical T2a renal masses.

Patients and Methods: We studied a cohort of patients who underwent RPN (N = 32) and OPN (N = 82) for cT2a renal mass from 7/2008 to 6/2015. RPN was carried out retroperitoneoscopically (16) and transperitoneally (16); OPN was carried out through flank/subcostal approaches. 27 RPN underwent warm ischemia, 5 underwent regional ischemia with the Simon clamp. 67 OPN underwent warm or cold ischemia, 15 OPN underwent clampless approach. Demographics, tumor characteristics/RENAL nephrometry scores, perioperative variables, and complications were compared between the two methods. Main outcome was change in eGFR from baseline to 6 month mark; secondary outcomes included de novo rate of Stage III-CKD (eGFR < 60 mL/min/1.73M2 by MDRD equation), complication rate, positive margin rate, and length of hospital stay (days). Multivariable analysis was performed to identify factors predicting de novo estimated glomerular filtration rate 60.

Result: Patient characteristics were similar between groups. Median RENAL score was similar between groups (RPN 8, OPN 8, p = 0.141). Mean ischemia time (min) was 28.3 minutes for RPN and 25.4 for OPN (p = 0.364). Change in GFR (eGFR < 60 mL/min/1.73M2) was 3.7 in RPN and 3.4 in OPN (p = 0.543). There were no differences in overall complication rate (p = 0.430) and urine leaks (RPN 3.1% vs. OPN 9.8%, p = 0.278) were similar. Median estimated blood loss (EBL) was significantly less in RPN (100 mL) vs. OPN (200 mL), p = 0.015, as was Median length of hospital stay (RPN 2 days vs. OPN 4 days, p = 0.04). No difference was noted in rate of margin positivity (RPN 3.1% vs. OPN 1.2%, p = 0.484) and de novo Stage III-CKD (RPN 9.4%, OPN 11%, p = 1.000). Multivariable analysis of the entire cohort revealed increasing body mass index (OR 1.1, p = 0.42) and RENAL score (OR 1.61, p = 0.002) as being independently associated with development of postoperative de novo Stage III-CKD.

Conclusion: RPN provides similar short term renal and technical outcomes to OPN, while conferring benefit of minimally invasive surgery. Longer term follow up is necessary to confirm oncological and durable renal functional benefit.

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MP21-2 Renal Mass Biopsy Influences the Management of Small Renal Masses

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Introduction: As minimally-invasive treatment options for small renal masses (SRMs) evolve, the optimal strategy for the use of renal mass biopsy (RMB) has yet to be established.

Patients and Methods: We conducted a retrospective review of prospectively collected data from our SRM database of 943 subjects undergoing partial nephrectomy, radical nephrectomy and ablative therapies from 2007 to 2015. Of these, 353 had RMB with interpretable findings and constitute the study cohort. We categorized RMB pathology into 3 groups: benign, favorable/intermediate, and unfavorable. We classified unfavorable pathology as clear cell renal cell carcinoma (RCC) grade 3 or 4, papillary RCC type 2, collecting duct carcinoma, renal rhabdoid tumor, sarcomatoid variant of urothelial carcinoma, epitheliod angiomyolipoma, or unclassified malignancy. We used multivariable logistic analyses to characterize the association of RMB result with the use of any intervention as well as the specific type of intervention.

Table 1. Demographic and tumor characteristics on intervention for SRMs

Demographic and tumor characteristics*	Multivariable	*P*-value
	Adjusted OR (95% CI)	
Age 55 – 75 years old	0.57 (0.29, 1.1)	0.10
Age ≥ 75 years	0.23 (0.10, 0.51)	0.0003
Female	0.78 (0.47, 1.3)	0.35
Non-White	1.7 (0.77, 3.7)	0.19
BMI	1.00 (0.96, 1.03)	0.77
Tumor size 2-4 cm	1.9 (1.1, 3.2)	0.02
Benign biopsy pathology	0.045 (0.02, 0.13)	<0.0001
Intermediate biopsy pathology	0.67 (0.31, 1.4)	0.29

* Referent groups are patients aged ≤ 55 years old, male, white, tumor size 0 to 2 centimeters, and unfavorable pathology

Results: The finding of any malignancy on RMB was associated with increased rate of surgical intervention, and among patients aged 55 to 75 years old, unfavorable pathology on RMB was associated with increased rate of radical nephrectomy (both $P < 0.0001$). Those with 2–4 cm tumors had greater odds of intervention compared to patients with tumors < 2 cm. When controlling for RMB result, older patients had significantly lower chance of intervention. Intermediate pathology did not predict a specific intervention and resulted in a similar rate of intervention when compared with unfavorable pathology (Table 1).

Conclusions: Pathology on RMB appears to drive treatment choice in patients with SRM, both with respect to any intervention and, in patients with malignancy, type of intervention. Age > 75 is the strongest predictor of avoiding intervention. The clinical utility of RMB appears to be greatest in patients under 75 years of age and with 2–4 cm tumors.

MP21-3 Outcomes of robotic assisted partial nephrectomy after prior open abdominal surgery in a multi-center cohort.

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Introduction & Objectives: To evaluate outcomes of robotic partial nephrectomy (RPN) after major abdominal surgery through an open ipsilateral/midline abdominal incision.

Material & Methods: 1686 consecutive RPN procedures with information on past surgical history were identified from a database from 5 academic centers. A total of 219 patients had previously undergone major abdominal surgery, defined as having an open upper midline/ipsilateral incision. Perioperative outcomes were compared to 1467 patients who had no previous major abdominal surgery.

Results: Table 1. Patient characteristics and perioperative outcomes of 1686 RPN patients with and without prior major open abdominal surgery.

Although age and BMI were higher in patients with previous major abdominal surgery, there was no difference in Charlson comorbidity index, tumor size, RENAL score or pre-operative eGFR. The major abdominal surgery group had a higher EBL but this did not lead to a higher transfusion rate. A retroperitoneal approach was utilized more than twice as often in patients with previous major abdominal surgery (11.2% v 5.4%). Prior abdominal surgery group had lower number of posterior tumor compared to no prior abdominal surgery group (28.7% vs. 33.7%). Operative time, warm ischemia time and length of stay were not significantly different between the 2 groups. Complications, positive surgical margins and percentage change in eGFR were also not significantly different

Table 1. Patient characteristics and perioperative outcomes of 1686 RPN patients with and without prior major open abdominal surgery.

	Previous major abdominal surgery (n=219)	No major abdominal surgery (n=1467)	p value
Age	63 (54.8-69)	60 (52-67)	0.008
Male Sex	112 (51.1%)	904 (61.6%)	0.003
BMI	30.3 (25.7-35)	29 (25.7-33)	0.036
Age adjusted Charlson comorbidity index	5 (3-7)	5 (3-6)	0.181
Tumor size (cm)	2.75 (1.8-4)	2.70 (2-3.8)	0.975
RENAL nephrometry score	7 (6-9)	7 (6-9)	0.642
Pre-operative eGFR	80.8 (62.1-98.5)	83.1 (68.5-98.9)	0.098
Retroperitoneal approach	24 (11.2%)	79 (5.4%)	<0.001
Operating room time (mins)	172 (132-224)	169(139-208)	0.497
Estimated blood loss (ml)	150 (100-200)	100 (25-200)	0.039
Warm ischemia time (mins)	20 (14.6-25)	19 (14-24)	0.307
Length of stay (days)	2 (2-3)	2 (2-3)	0.068
% change in eGFR	-12.8% (-26-0)	-11.6% (-23.6-1.2)	0.414
Positive surgical margins	9 (4.1%)	46 (3.2%)	0.443
Blood transfusion	10 (5.1%)	51 (4.3%)	0.587
Intraoperative Complications	5 (2.3%)	27 (1.8%)	0.655
Post operative complications (Clavien 3 or above)	8 (3.9%)	48 (3.4%)	0.687

Conclusions: In this cohort from 5 high volume centers, RPN is safe in patients after major abdominal surgery through an open ipsilateral/midline abdominal incision. Retroperitoneal approach was twice as common in patients with prior abdominal surgery.

MP21-4 Renal Functional Outcomes Between Off-Clamp, On-Clamp and Selective-Clamp Techniques in Partial Nephrectomy

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Introduction: Minimally invasive surgery for small renal masses continues to explore new methodologies for decreasing ischemia time during robotic partial nephrectomy. Both selective and off clamp techniques have been described, however, a methodologically sound comparison between selective clamp, off clamp, and on clamp techniques has yet to be reported. We sought to compare functional outcomes between on clamp, selective clamp, and off clamp techniques within a high volume, multi-institutional, cohort of men undergoing partial nephrectomy.
Methods: Within a cohort of 1,836 partial nephrectomy patients, 1,522 had standard clamping technique, 110 had segmental clamping and 204 were performed off clamped. Multinomial logistic regression model was used to determine the pre-operative clinical variables that were associated with probability of getting a surgical treatment. Inverse-probability weighting was then employed to compare treatment effects based on clamping method. Differences in kidney function post-operatively at day 3, 1 month and 3 months were estimated after adjusting for clinicopathologic variables that predicted probability of receiving a specific treatment.
Results: In comparison to the on clamp technique, patients who received off clamp had better post-operative creatinine (average 1.14 vs. 1.19; $p=0.03$) and GFR (average 73.41 vs. 69.85; $p=0.01$) on day 3. Individuals who had segmental clamping had had lower creatinine on day 3 compared to on clamp but these findings were not significant. There were no statistical differences between the off clamp and segmental clamping cohorts. There were no significant differences between any treatment arm with regard to renal function at the 1 and 3 month follow up period.
Conclusions: Partial nephrectomy performed off clamp demonstrates a modest benefit in immediate postoperative renal function that seems to wash out after 1 month. Segmental clamping preforms similarly to on clamp techniques although numbers in this study were small for these two modalities. Further studies are needed to clarify long-term benefit of ischemia sparing partial nephrectomy.

MP21-5 Robot assisted NSS for tumors with high RENAL nephrometry score: A paradigm shift from radical extirpation to functional preservation

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Introduction: The RENAL nephrometry score (RNS) currently categorizes enhancing renal tumors into low, moderate or high complexity, which objectively guides for decision making whether to perform NSS or radical nephrectomy. Robotic assistance is increasingly being used for NSS with RNS of ≤ 7. However, there is insufficient data regarding outcome of robot assisted NSS in renal tumors with RNS ≥ 8. We present our experience of 8 such cases with RNS of ≥ 8.
Materials and Methods: Robot assisted facility was introduced at our institute in November 2014. Prospectively maintained data of all robot assisted NSS was reviewed and those with RNS of ≥ 8 were identified. Eight out of 23 cases met the above criteria. Videos of all the cases were reviewed and compiled together.
Results: Mean age was 51.25 years (M:F = 1:1). There were 4 left and 4 right sided tumors. Mean diameter of tumor was 5.69 cm (3.3 – 10.5 cm). RNS was 8 in two, 9 in three and 11 in the other three patients. All eight underwent NSS with robotic assistance with zero conversion rate. Mean preoperative and postoperative hemoglobin levels were 12.9 g/dl and 11.4 g/dl respectively. Mean preoperative and postoperative creatinine levels were 0.73 mg/dl (0.5 to 0.9 mg/dl) and 0.86 mg/dl (0.7 to 1.2 mg/dl) respectively. Mean operative time was 204.25 minutes (145 to 280 minutes). Mean warm ischemia time was 31.9 minutes (18 to 44 minutes). Mean estimated blood loss was 387.5 ml (150–700 ml). Pelvicalyceal system was entered in all but one case. Postoperative complications were of Clavein Dindo grade I and II. Mean postoperative hospital stay was 6.25 days (3–9 days). Histopathology revealed clear cell carcinoma in 6, papillary carcinoma in one and oncocytoma in the other patient. Surgical margins were free in all cases.
Conclusion: Our data shows feasibility and safety of robot assisted NSS in achieving reasonable trifecta outcome in renal tumors with high RNS viz. adequate functional preservation with minimal complications and negative margins. Since robotic assistance has expanded the current indications of NSS, there is a need for revisiting the scoring system for preoperative decision making in the management of enhancing renal tumors.

MP21-6 A comparison of Operative Outcomes of Open, Laparoscopic and Robotic Partoial Nephrectomy for Nephrometry-Score Matched Renal Tumors

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Objectives: The prevalence of robotic partial nephrectomy (RPN) for treatment of malignant renal tumors has been increasing due to similar or improved perioperative outcomes, complication rates and oncologic outcomes when compared to laparoscopic partial nephrectomy (LPN) or open partial nephrectomy (OPN). It is uncertain whether RPN offers improved outcomes for renal tumors categorized based on a consistent, reproducible and standardized scoring system. In this study, perioperative outcomes, change in renal function and hospital readmission rates were compared between RPN, LPN and OPN.
Materials and Methods: Patients aged 16 to 85 who underwent RPN, LPN or OPN from 2007–2014 for a malignant renal mass within the Kaiser Permanente Southern California healthcare system were enrolled. Age, sex, body mass index and Charlson comorbidity index as well as perioperative outcomes of estimated blood loss (EBL), length of hospital stay (LOS), ischemia time (IT), change in creatinine, positive margin rate, operative time and hospital readmission rates were compared between RPN, LPN and OPN for each nephrometry score.
Results: A total of 862 patients underwent partial nephrectomy (523 LPN, 176 OPN and 163 RPN). There was no difference between age, sex, body mass index and Charlson comorbidity index between RPN, LPN and OPN. EBL ($p < 0.001$), LOS ($p < 0.001$), IT ($p < 0.001$) and change in creatinine ($p < 0.001$) were lower in patients who underwent RPN or LPN compared to OPN in nephrometry score matched groups. There was no difference in positive margin rate ($p = 0.9$), operative time ($p = 0.8$) or 30 and 90 day hospital readmission rates ($p = 0.8$) between RPN, LPN and OPN. Patients who underwent RPN had lower LOS ($p < 0.001$), IT ($p < 0.001$) and operative time ($p < 0.001$) but similar EBL ($p = 0.7$), change in creatinine ($p = 0.5$), positive margin rate ($p = 0.9$) and 30 and 90 day hospital readmission rates ($p = 0.4$) when compared to LPN in nephrometry score matched groups.
Conclusions: When compared to OPN, minimally invasive partial nephrectomy offers similar or improved operative outcomes overall and for kidney tumors matched according to nephrometry score. RPN offers similar operative outcomes to LPN with the added advantage of shorter hospital stay, ischemia time and operative time.

MP21-7 Early unclamping technique significantly increases the probability of achieving pentafecta after robot-assisted laparoscopic partial nephrectomy

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Introduction: Robot-assisted laparoscopic partial nephrectomy (RAPN) has been widely used. The goal of this minimally invasive surgery is to provide an optimal outcome for patients. Trifecta or pentafecta have been recently used to comprehensively evaluate the comprehensive surgical outcome of partial nephrectomy, which allows better oncological control, better functional preservation, and minimal invasiveness. In the present study, we retrospectively evaluated the factors that influenced the achievement of pentafecta in patients who underwent RAPN.
Methods: We performed RAPN for 156 patients with renal tumors between January 2013 and May 2015. We employed the early unclamping technique for surgeries performed after November 2013. In this technique, the renal arteries were unclamped after an inner suture was placed. Postoperative complications included unruptured asymptomatic pseudoaneurysms detected via computed tomography at 3–4 days after surgery. Achievement of pentafecta was defined as preservation of ≥95% of the predicted postoperative estimated glomerular filtration rate (eGFR), warm ischemic time (WIT) of < 25 min, no chronic kidney disease (CKD) upstaging, negative surgical margin, and no postoperative complications. Predicted postoperative eGFR was calculated using the preoperative eGFR and the percentage of preserved renal parenchyma. Univariate and multivariate logistic regression models were used to determine variables that independently correlated with the achievement of pentafecta.
Results: Mean preoperative eGFR was 65.1 ml/min/1.73 m^2; mean tumor size was 28 mm; and mean WIT was 19 min. Early unclamping technique was employed in 116 patients (74%). Pentafecta was achieved in 70 patients (44.8%). Probabilities of achieving each factor were as follows: 66% for the preservation of ≥95% of the predicted postoperative eGFR, 80% for WIT of < 25 minutes, 86% for no CKD upstage, 100% for negative surgical margin, and 77% for no complications. The univariate analysis showed that the following 5 factors significantly increased the probability of achieving pentafecta: use of the early unclamping technique, shorter operation time, reduced intraoperative hemorrhage, higher preoperative eGFR, and no renal sinus opening. Multivariate analysis showed that early unclamping (odds ratio [OR]: 3.51, $p = 0.002$) and higher preoperative eGFR (OR: 1.02, $p = 0.02$) were independent factors that increased the probability of achieving pentafecta.
Conclusions: Early unclamping technique significantly improves the surgical outcome of RAPN, as indicated by the achievement of pentafecta. This improvement may be attributed to the shorter WIT and lower rate of postoperative complications, especially unruptured asymptomatic pseudoaneurysms.

MP21-8 The Relationship between Perienal Fat and the Clinicopathological Features of Patients with Small Renal Masses

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Introduction: Visceral fat (VFA), the fat contained in the abdominal compartment, has recently become a topic of interest in renal physiology. Previous investigations have reported significant associations between VFA and fuhrman grade as well as renal function. We sought to investigate what role differing amounts of perirenal fat (PRF), the fat directly surrounding the kidney, might have on individuals with T1a lesions being evaluated for partial nephrectomy.
Methods: From 2002 through 2011, 144 patients undergoing minimally invasive partial nephrectomy were retrospectively reviewed by a uro-radiologist for VFA, subcutaneous fat (SQF), and PRF measurements using standard software. Results were broken down into tertiles of low, intermediate, and high PNF contents and compared to demographic and clinicopathological characteristics. Associations between covariables were analyzed using univariate followed by multivariate linear regression models with a logarithmic output for PNF in order to correct for skewed distribution.
Results: On multivariate analysis, increasing age, male gender, VFA, and BMI, were significant independent predictors of

increasing PRF. Smaller tumor size along with decreasing post-op glomerular filtration rate was also associated with increasing amounts of PRF. Fuhrman grade and tumor stage were not significantly associated with PRF.
Conclusions: Increasing age, VFA, BMI and male gender may be associated with increasing amounts of PRF. Those individuals with high amounts PRF also exhibited smaller tumor sizes and worse post op renal function. Interestingly, fuhrman grade was not affected by PRF despite reports that VFA does alter tumor grade. This small study proposes an interesting physiologic link between PRF and the biology both kidney function and tumor physiology.

MP21-9 Pushing the boundaries of robotic partial nephrectomy: A multi-centre comparison of the functional and oncological outcomes for T1a and T1b tumours

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Introduction: Partial nephrectomy remains the gold standard treatment of T1a renal tumours with RPN gaining popularity. We assessed whether outcomes achieved using RPN in T1a tumours could be successfully reproduced in T1b tumours.
Patients and Methods: Using a prospective database of 242 elective cases, the peri-operative, oncological, and functional outcomes of 187 T1a tumours were compared with 55 T1b tumours including a single T2a tumour. Data was collected from Guy's Hospital in London, Peter MacCallum Cancer Centre and Epworth Hospital in Melbourne.
Results: Mean age was 57.1 years (T1a) and 54.8 years (T1b), mean tumour size 2.6 cm vs. 4.7 cm, ASA scores 1.9 vs. 1.7, BMI 29.1 vs. 27.6 and mean PADUA scores 7.6 (T1a) vs. 8.3 (T1b). Despite there being an increase in warm ischaemic times, 17.4 min (T1a) vs 20.7 mins (T1b)($p < 0.05$) and estimated blood loss (132 mls vs. 265 mls)($p < 0.05$), there were no significant changes in creatinine rise (4.9 mol/l vs. 9.7 mmol/l) nor a significant difference in subsequent haemoglobin drop (1.48 vs. 1.7 g/dl). The larger, more complex T1b's only added an average of 12 mins to the total operative time (163 mins vs. 175 mins) and there was no significant difference in hospital stay (3.1 days vs. 3.3 days). There were 4 positive margins early in the T1a group and 1 in the T1b group but no radiological recurrences on follow up. There was 1 conversion to radical nephrectomy and transfusion in both groups and 1 conversion to an open in the T1b group. The T1a group had three Clavien IIIa (angio-embolisation), two IIIb (ureteric stent, missing needle) and one Clavien IV (NSTEMI). The T1b group had two Clavien IIIa's (Angio-embolisation) and two IIIb's (Ureteric stents).
Conclusions: We report the largest RPN series in the UK and Australia and show in the elective setting RPN can be performed safely on carefully selected T1b tumours achieving equivalent oncological and functional results to T1a tumours, extending indications for RPN. Advantages offered by the robot may overcome the limitations previously posed by other approaches.

MP21-10 Critical Analysis of Robotic-Assisted and Laparoscopic Rafical Nephrectomy: A Matched-Pair Analysis

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Introduction and Objective: Robot-assisted renal surgery is gaining popularity relative to the more established open and laparoscopic approaches. We performed a matched-pair analysis comparing our experience with robot-assisted radical nephrectomy (RARN) and laparoscopic radical nephrectomy (LRN), and evaluated perioperative variables, outcomes, and complications.
Methods: A total of 40 radical nephrectomy procedures were evaluated between January 2013 and December 2014, of which twenty RARN were matched with 20 LRN procedures based on patient age, BMI, ASA, and tumor size. All cases were performed by a single surgeon in a tertiary care medical center. Data was prospectively collected and maintained in a database that was routinely updated. All demographic and perioperative parameters were analyzed.
Results: The age, BMI, and ASA were statistically similar between the cohorts. Mean age was 64.3 (RARN) and 60.6 (LRN) [$P = 0.28$], mean BMI was 32 (RARN) and 31 (LRN) [$P = 0.81$], and mean ASA was 3 (2–4) (RARN) and 3 (2–4) (LRN) [$P = 0.95$]. The mean tumor size was 4.9 cm (1.5–11.0) (RARN) and 6.0 cm (2.5–12.3) (LRN) [$P = 0.21$], and negative margins were achieved in all cases. The mean total operating time was 199 min (RARN) and 196 min (LRN) [$P = 0.86$], blood loss was 202 mL (RARN) and 145 mL (LRN) [$P = 0.43$], and hospital stay was 2.9 days (RARN) and 3.1 days (LRN) [$P = 0.76$]. The kidney/tumor specimen weight was 555 g (105–2116 g) (RARN) and 521 g (129–1423 g) (LRN) [$P = 0.77$]. For the LRN cohort, 3 complications (15%) occurred, including pneumonia ($n = 1$), wound infection ($n = 1$), and ileus ($n = 1$). For the RARN cohort, 2 complications (10%) occurred, including renal vein laceration ($n = 1$) and acute tubular necrosis ($n = 1$). Two conversions to open ($n = 1$) and conventional laparoscopic surgery ($n = 1$) occurred in the RARN group.
Conclusions: Robot-assisted renal surgery is gaining popularity by surgeons of various skill levels particularly for procedures that require reconstruction. Our experience demonstrates that robot-assisted radical nephrectomy is safe, effective, and comparable to a laparoscopic approach. The distinct advantages of robotics over conventional laparoscopy for radical nephrectomy are not readily evident from the results of this study. Surgeon preference and experience, along with cost, must be considered when choosing between the two approaches.

MP21-11 Urinary fistula after robotic partial nephrectomy: a multicenter analysis of 1791 patients

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Introduction: Urinary leak is a well-described complication of partial nephrectomy (PN). We sought to evaluate the incidence of and risk factors for urine leak in a large multicenter, prospective database of robotic partial nephrectomy (RPN).
Patients and Methods: A database of 1791 RPN from five centers was reviewed for urine leak as a complication of RPN. Patients with postoperative urine leaks were compared to patients without postoperative urine leaks on a variety of patient and tumor characteristics. Fisher's Exact test was used for qualitative variables and Wilcoxon Sum-Rank tests were used

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for quantitative variables. A review of the literature on partial nephrectomy and urine leak was conducted.
Results: Urine leak was noted in 14/1791 (0.78%) patients who underwent RPN. Mean nephrometry score of the entire cohort was 7.2 ± 1.9, and 8.0 ± 1.9 in patients who developed urine leak. The median postoperative day of presentation was 13 (range 3–32). Patients with urine leak presented in delayed fashion with fever (14%), gastrointestinal complaints (29%), and pain (36%). Eight patients required admission (57%), while eight (57%) and nine (64%) had a drain or stent placed, respectively. Drains and stents were removed after a median of eight (range 4–13) and 21 days (8–83), respectively. Variables associated with urine leak included tumor size ($p = 0.021$), hilar location ($p = 0.025$), operative time ($p = 0.006$), warm ischemia time ($p = 0.005$), and pelvicaliceal repair ($p = 0.018$). Upon literature review, the historical incidence of leak ranged from 1.0–17.4% for OPN and 1.6–16.5% for LPN.
Conclusion: The incidence of urine leak after RPN is very low and may be predicted by some preoperative factors, affording better patient counseling of risks. The low urine leak may be attributed to the enhanced visualization and suturing technique that accompanies the robotic approach.

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MP21-12 Selective renal artery clamp during robot-assisted laparoscopic partial nephrectomy

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Introduction: The usefulness of robot-assisted partial nephrectomy (RPN) has been reported in Europe and the United States. However, in Japan, this procedure has not become covered by health insurance. In our hospital, RPN was introduced in March 2014.
Subjects and Methods: RPN was performed in 11 patients between March 2014 and April 2015. They consisted of 10 males and 1 female. The right kidney was affected in 3 patients, and the left kidney in 8. The mean tumor diameter was 33 mm (11–57). The mean R.E.N.A.L. nephrometry score was 7.3 (4–10). Transperitoneal approaches were adopted for all patients using the da Vinci Si.
Results: The median console time was 179 minutes (108–258). The median warm ischemic time was 20 minutes (12–34). Furthermore, selective renal artery clamping was performed in 7 patients. The median volume of blood loss was 150 cc (5–600). There were no intraoperative complications. As postoperative complications, hematuria (G1), hematoma (G1), and wound dehiscence (G1) were observed in 1 patient each. Histopathological findings suggested RCC in 10 patients and oncocytoma in 1. The median interval from surgery until discharge was 6 days (4–9). The mean rate of decrease in the eGFR three months after surgery was 3.7% (-11.1–14.9). In addition, the results were compared between the selective clamping (Group S, $n = 7$) and total clamping (Group T, $n = 4$) groups. The rates of decrease in the eGFR after 1 month were 11 and − 7.3% in Groups T and S, respectively ($p < 0.05$). After 3 months, the values were 0 and − 5.4%, respectively ($p = 0.225$).
Conclusion: RPN could be safely introduced. In the initial patients, both the operative and warm ischemic times were short. Selective arterial clamping influenced the eGFR early after surgery, but its long-term effects may not be marked. In the future, RPN may also be selected for a larger number of patients in Japan.

MP21-13 Impact of primary histology on oncologic outcomes after minimally invasive adrenalectomy for metastatic cancer

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Introduction: The adrenal gland is a site of metastasis for several malignancies. Metastasectomy with the achievement of a no evidence of disease (NED) status demonstrated to positively impact the oncological outcome. We report oncologic results of a single centre 10-year experience with minimally invasive adrenalectomy for isolated adrenal metastasis.
Methods: From May 2004 to May 2014, 162 patients underwent laparoscopic or robotic adrenalectomy. Pathological examination showed a metastasis in 36 patients. Baseline demographics, perioperative and follow up data were prospectively collected. Univariable and multivariable cox regression analyses were performed to identify predictors of NED status.
Results: Median follow up was 28 months. Tumor histology was renal cell carcinoma (RCC) in 27 patients (75%). (Table 1) At univariable analysis bilateral adrenalectomy and primary tumor histology were predictors of NED status ($p = 0.048$ and $p = 0.003$, respectively). At multivariable cox analysis the only independent predictor of NED status was primary tumor histology ($p = 0.008$). Lung cancer displayed similar survival compared to RCC (reference category), while colon cancer ($p = 0.021$; HR 7.08 [95% CI 0.96–1.28]), bladder cancer ($p = 0.001$; HR102.6 [95% CI 7.3–1440]) and melanoma ($p = 0.01$; HR 26.3 [95% CI 2.17–319], were associated with increased risk of disease recurrence.
Conclusions: Oncologic outcomes after adrenalectomy for metastatic cancer mainly depends on the primary tumor histology.

Data	Mean (SD)
Age	56 (25)
Side	
Right	14 (38.8)
Left	16 (44.4)
Bilateral	6 (16.8)
Histology	
RCC	27 (75)
Lung	4 (11.1)
Urothelial Carcinoma	2 (5.5)
Colo-rectal	2 (5.5)
Melanoma	1 (2.7)
Adrenal size (cm)	6.2 (2.7)
Tumour size (cm)	5.4 (2.9)

MP21-14 Margin, ischemia, and complications rate after Robotic Assisted Laparoscopic Partial Nephrectomy: an early experience in a tertiary centre

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Introduction: Robotic technology has increasingly been used in urological surgery. Because of its unique characters robotic surgery facilitates complex surgeries, such as partial nephrectomy. Since early experience reported by Gettman et al (2004), more series has been published showing the feasibility of Robotic Assisted Laparoscopic Partial Nephrectomy (RALPN).
Aim: to report and assess our early experience in RALPN, by comparing it to published data at centre of excellence.
Matreial and methods: From all our 120 robotic cases that took place in our unit between March 2014 and May 2015, we have conducted a retrospective study on all RALPN took place, at the Royal Free Hospital. Results published by Kaouk et al (2012) from Cleveland Clinic (CC) was used as standard for our Audit.
Results: In total 55 patients (mean age: 57 years/58 years at CC), mean renal tumour size was (3.1 cm [SD:1.1] / 3.17 cm at CC), and mean RENAL score (6 [SD: 1.6]/ 7.2 at CC). Mean total operating time was (223 minutes [SD:51]/ 190 minutes at CC), and mean warm ischemia time was (25 minutes [SD:8]/ 19.2 miutes at CC). Most renal masses were malignant (79% / 74% at CC), Clear Cell RCC was the most common malignant histology (%62 / 64% at CC). Positive margin was observed in 4 cases (7%/ 2.7% at CC). Conversion to open was required in four cases (7% / 1.5% at CC). 10 patients had postoperative complication (18% / 15% at CC), all the complication were grade I-III. of all the patients 19 (35%), had WIT less than 25 minutes with no positive margin or significant complication i.e Trifecta
Conclusion: our results are very comparable with that of CC, with slightly raised operating time and WIT, however since this cohort include our learning curve experience it is plausible to assume that our results will improve, a re-auditing will be necessary to high light that progress.

MP21-15 Robot Assisted Heminephrectomy for Renal Cell Carcinoma in L-shaped Crossed Fused Ectopia

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We describe robot-assisted heminephrectomy as a renal salvage procedure in a case of L-shaped fused crossed ectopic kidney with tumor in the native moiety. A 55-year female presented with dull aching pain and a palpable lump in right lumbar region. Tri-phasic CECT abdomen revealed right kidney in normal position opposite L1-L4 vertebrae and left moiety lying horizontally opposite the L4-L5 vertebrae with fusion to lower pole of right kidney. A 15-cm lobulated mass was arising from antero-medial aspect of right kidney involving inter and lower polar region and adjacent left moiety. CT-angiography depicted three renal arteries arising from aorta; the proximal arising at L1-level supplying right kidney and tumor. The middle arising at upper border of L3 supplied the tumor and the ectopic kidney. The distal one originating at mid L3 supplied the ectopic moiety only. Right ureter was seen coursing between the mass and left renal moiety. Robot-assisted surgery was performed with patient in left lateral decubitus position. A 12 mm-trocar was inserted at umbilicus and a 30-degree scope was introduced. Two 8-mm robotic working ports were placed at lateral border of rectus, one between xiphoid process and umbilicus and the other between umbilicus and pubic symphysis. Another 12-mm assistant port was placed in midline supra-umbilical location. Right colon was mobilized medially. Using blunt and sharp dissection, right kidney and the renal mass were mobilized starting superiorly followed by mobilization inferiorly. The right renal artery was clipped. Right ureter was identified between the renal mass and ectopic kidney where it was clipped and divided. Feeding vessels to the tumor at that level were also controlled. The lower limit of the tumor was meticulously dissected off from the ectopic moiety and dissection was carried on close to the tumor to avoid inadvertent injury to vasculature of the ectopic kidney. The renal fusion site behind the crossing of the right ureter was divided and sutured. Total operating time was 120 min. Blood loss was 600 ml. Patient was ambulatory by second post-operative day. On histopathology the tumor was chromophobe renal cell carcinoma with negative surgical resection margins. Serum creatinine was 1.2 mg/dl at one month follow up. The present case is a unique report which highlights the importance of three-dimensional vision and enhanced maneuverability with endowrist of robotic surgical system for precise dissection. Preoperative contrast enhanced computed tomography with three-dimensional arterial reconstruction is helpful for planning of surgery.

MP21-16 Robot-assisted partial nephrectomy: a comparison of the transperitoneal and retroperitoneal approaches

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Introduction: Robot-assisted retroperitoneoscopic partial nephrectomy (RARPN) may be used for posterior renal masses or with prior abdominal surgery; however, there is relatively less familiarity with RARPN.
Methods: Prospective literature review using the pub med for all comparative studies
Results: When retroperitoneal and transperitoneal approaches were compared, 4 studies found, with equal number of patients on both arms; there was no significant difference in warm ischemic time but a significant reduction in both estimated blood loss and total operative time in the retroperitoneal group.
Conclusion: Robot-assisted retroperitoneoscopic partial nephrectomy has acceptable morbidity and oncologic outcomes.

MP21-17 Amount of resected healthy margin does not account for total volume loss after partial nephrectomy

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Objective: To compare the amount of healthy margin resected during partial nephrectomy to total volume loss by four months postoperatively.
Patients and Methods: Whole mount analysis of freshly resected renal masses was used to calculate the amount of healthy kidney removed during partial nephrectomy. Total volume loss was determined by comparing preoperative and postoperative CT scans. CT based volumes were calculated using a semi-automatic segmentation algorithm where perfused renal parenchyma was selected in each axial slice to build a three-dimensional model. Stata 13.1 was used for all statistical analyses (Stata Corp. LP, College Station, TX).
Results: Thirty-nine robotic partial nephrectomies performed between 2010 and 2014 were found to have both whole mount images and the necessary pre- and postoperative CT scans for analysis. A two-layer suture closure was used in 27 (69%) while

base-layer only renorrhaphy was used in 12 (31%). The median (IQR) age and diameter were 64.8 years (54–69) and 2.9 cm (2.4–4.5). The median (IQR) nephrometry score was 7 (6–8). The median (IQR) BMI and Charlson comorbidity index were 31 kg/m^2 (27–36) and 2 cm (2–3). The median (range) warm ischemia time was 15 minutes (0–28). The median (range) healthy margin length was 6 mm (2–11). The median (range) total volume loss and healthy margin volume loss were 25.8 cm^3 (3–79) and 5.7 cm^3 (1–22), respectively. The two-layer renorrhaphy cases had a larger total volume loss than base-layer only (31.4 vs. 21.6, $p = 0.03$) by Man-Whitney U-test. The healthy margin length was not different between renorrhaphy types ($p = 0.58$).
Conclusion: The healthy margin resected during modern robotic partial nephrectomy does not account for the total volume loss seen by CT based calculations. Future studies evaluating renal function should control for reconstruction injury in addition to resected margin and warm ischemia time.

MP21-18 The clinical application of the sliding loop technique for renorrhaphy during robot-assisted laparoscopic partial nephrectomy: surgical technique and outcomes

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Introduction: Renorrhaphy during robot-assisted laparoscopic partial nephrectomy (RALPN) remains a challenging procedure and should be performed in a time-sensitive manner, while securing closing tension. We previously reported that, compared to the conventional sliding clip technique, the newly devised renorrhaphy technique sliding loop technique (SLT) showed improved feasibility in a porcine model. In this study, we aimed to report the initial clinical outcomes of the newly devised sliding loop technique (SLT) used for renorrhaphy in patients who underwent robot-assisted laparoscopic partial nephrectomy (RALPN) for small renal mass.
Materials and Methods: We reviewed the surgical videos and medical charts of 31 patients who had undergone RALPN with the SLT renorrhaphy performed by two surgeons (CWJ and CK) between January 2014 and October 2014. SLT renorrhaphy was performed after tumor excision and renal parenchymal defect repair. Assessed outcomes included renorrhaphy time (RT), warm ischemic time, perioperative complications, and perioperative renal function change. RT was defined as interval from the end of bed suture to the renal artery declamping
Results: In all patients, sliding loop renorrhaphy was successfully conducted without conversions to radical nephrectomy or open approaches. Mean renorrhaphy and warm ischemic time were 9.0 and 22.6 min, respectively. After completing renorrhaphy, there were no adverse events such as dehiscence of approximated renal parenchyma, renal parenchymal tearing, or significant bleeding. Furthermore, no postoperative complications or significant renal function decline were observed as of the last follow-up for all patients. The limitations of this study include the small volume case series, the retrospective nature of the study, and the heterogeneity of surgeons.
Conclusions: From our initial clinical experience, SLT may be an efficient and safe renorrhaphy method in real clinical practice. Further large scale, prospective, long-term follow-up, and direct comparative studies with other techniques are required to confirm the clinical applicability of SLT.

MP21-19 Robot-Assisted Partial Nephrectomy Verus Laparoscopic Partial Nephrectomy: Comparison of Initial Case Series at a Single Institution in Japan

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Introduction and Objectives: Minimally invasive partial nephrectomy for renal tumor is technically challenging, especially for less-experienced surgeons, or teams. We have sequentially set up laparoscopic partial nephrectomy (LPN) and robot-assisted partial nephrectomy (RAPN) in a short period of time at our institution. We retrospectively compared perioperative outcomes of LPN and RAPN in terms of safety and feasibility during initial setting-up periods.
Methods: Perioperative records of initial 19 cases of LPN from November 2012 by 5 surgeons, and 15 cases of RAPN from June 2014 by 2 surgeons were collected. Compared parameters included operation time (OT), warm ischemic time (WIT), estimated blood loss (EBL), and adverse events (AE) graded by Clavian-Dindo classification.
Results: Median patient age, BMI, tumor size, and R.E.N.A.L nephrometry score for all 34 cases were 63.5 years (range 31.8–78.8 years), 23.0 kg/m^2 (range 15.4–31.1 kg/m^2), 25 mm (range 14–75 mm), and 6 (range 4–10), respectively. There was no difference of backgrounds between RAPN and LPN series. Median OTs, WITs (excluding cases with selective or no clamping), and EBLs for RAPN series were 338 min (range 208–421 min), 26 min (range 16–33 min), and 130 ml (range 11–600 ml), while these were 304 min (range 244–510 min), 36 min (range 9–61 min), and 103 ml (range 7–3160 ml), for LPN series, respectively. These results suggested statistically significant reduction of WITs with robot-assistance ($P < 0.05$). This reduction of WITs is also statistically significant when compared only with cases of a single surgeon (T.S, RAPN: $n = 14$, LPN: $n = 9$). The rate of AEs graded > 2 were 6.7% (one case with pseudoaneurysm requiring the selective arterial embolization), and 5.3% (one case with urinoma requiring the drainage with ureteral stent) for RAPN and LPNseries, respectively. One LPN was converted to laparoscopic radical nephrectomy due to the uncontrolled bleeding.
Conclusions: WITs in minimally invasive partial nephrectomy were reduced by the aids of robotics in the initial setting-up periods of an institution, while OTs, EBLs, AEs were similar even with the assistances of robotics.

MP21-20 Comparison of the Trifecta Outcomes of Robotic and Open Nephron-Sparing Surgeries Performed in the Robotic Era of a Single Institution

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Purpose: In this study we aimed to report a comparative analysis between open and robotic nephron sparing surgeries (NSS) from a single institutional database.
Methods: Patients who have undergone NSS during the robotic era of our institution (May 2010 - July 2015) were included in this study. Open ($n = 87$) and robotic ($n = 64$) groups were compared regarding trifecta outcome. Trifecta was defined as; warm

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ischemia time (WIT) < 25 minutes, negative surgical margins and the absence of perioperative complications.
Results: A total of 66 (75.8%) and 50 (78.1%) patients in the open and robotic groups, respectively achieved the trifecta outcome. Overall trifecta rate was 76.8% (n = 116/151). The only statistically significant difference between trifecta positive and trifecta negative patients was the length of hospitalization (LOH). Except LOH; none of the tested parameters (including surgical approach) were shown to be predictive of trifecta outcome on univariate and multivariate analyses.

Concerning trifecta positive patients; those in the open surgery group had larger tumors with a higher degree of morphometric complexity and were hospitalized for a longer period of time. Additionally, operative duration was significantly higher in the robotic group.

A total of 30 and 17 Clavien grade ≥2 complications were recorded in 19 and 11 patients in the open and robotic NSS groups, respectively. The reason for the failure to achieve trifecta was; the presence of complications (n = 19), surgical margin positivity (n = 1) and prolonged WIT (44 minutes) in addition to the presence of complications (n = 1) in the open NSS group. On the other hand, complications (n = 9), prolonged WIT (n = 3, mean value of 31.6 minutes), surgical margin positivity in addition to the presence of complications (n = 1) and prolonged WIT (36 minutes) in addition to the presence of complications (n = 1) constituted the causes of trifecta negativity in the robotic NSS group.
Conclusions: In our cohort, no significant difference in achieving the trifecta outcome was reported after open and robotic NSS. Length of hospitalization was the only parameter that differed significantly between trifecta positive and trifecta negative patients. Surgical approach was not a significant predictor of simultaneous achievement of trifecta outcomes. Irrespective of the trifecta definition; larger and more complicated tumors were handled via open NSS.

MP21-21 Robotic Partial Nephrectomy for Renal Tumors Using Indocyanine Green with Near Infra-red Fluorescence Image: Preliminary Result

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Introduction: Minimally invasive partial nephrectomy is a viable alternative of surgical management for small renal mass. Robotic partial nephrectomy has become a popular option. Near infra-red fluorescence image (NIRF) with indocyanine green (ICG) has been described to be useful in robotic partial nephrectomy to delineate the vascular structure and resection margin. We, herein, report our preliminary experience with this technology.
Material and Method: Fourteen robotic partial nephrectomies (RPNs) were performed with NIRF with ICG. The dosage of injection was 5 mg as test dose and 5 mg before resection and completion of renorrhaphy. Transperitoneal approach was employed in 12 cases and retroperitoneal approach in 2 case. The peri-operative parameters were collected.
Results: All 14 RPNs were successfully performed without conversion. The mean operative time was 3.1 (2.5–5) hours. The warm ischemia time was 25.3 (0–64). No intra-operative complication was noted. ICG was used without side effects and NIRF image was well functioned. The doses of ICG used were 5 mg, 5 mg and 5 mg as test dose, before resection, and completion of the renorrhaphy, respectively. Renal artery and vein were clearly identified with NIRF with ICG in all 14 cases. The pathological report revealed 5 renal cell carcinoma (RCC), 3 angiomyolipoma (AML), 3 hemorrhagic cysts, 1 hematoma, 1 aneurysm, and 1 oncocytoma. The 5 RCCs and 3 hemorrhagic cyst were not enhanced under NIRF with ICG. The hematoma and aneurysm were not enhanced either. Two AML and the oncocytoma were weakly enhanced. One AML was strongly enhanced. The completion dose demonstrated well for the parenchymal perfusion after renorrhaphy.
Conclusion: RPN under NIRF with ICG is useful in identifying the vascular structure and post-renorrhaphy perfusion status. For tumor characteristic and margin status identification, this technology may be possible to provide information. More experience is required for verifying the advantages of the NIRF image with ICG in RPN.

MP21-22 Robot-assisted partial nephrectomy for renal tumors in obese patients: perioperative and functional outcomes in a multi-institutional analysis

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Introduction and Objective: Obesity has been suggested as a risk factor for adverse surgical and functional outcomes following minimally invasive abdominal surgeries. We report our experience with robot-assisted partial nephrectomy (RAPN) in obese patients compared with a contemporary cohort of non-obese patients.
Material and Methods: Patients who were obese (BMI > 30 kg/m^2) or morbidly obese (BMI > 40 kg/m^2) were identified from a cohort of 1,836 patients who underwent RAPN at five high-volume centers between 2006 and 2014 and outcomes were compared with non-obese patients. Multivariate logistic and linear regression models assessed the impact of obesity on the perioperative and functional outcomes, controlling for baseline patient and tumor characteristics.
Results: A total of 806 (43.9%) patients were obese (mean BMI = 35.53, standard deviation = 5.39), of which 17.1% were morbidly obese and 59.6% were males. The percentage of obese patients did not vary significantly over the study period (range 37.4% to 45.7% over 2 year intervals). Obese patients had higher mean RENAL nephrometry score (7.3 vs. 7.1, p = 0.04), along with greater median tumor size on imaging (2.9 vs. 2.5 cm) and higher median American Society of Anesthesiology score (3 vs. 2; all p < 0.001), compared to non-obese patients. Perioperatively, obese patients had longer median operating room (OR) time (176 vs. 165 min) and estimated blood loss (EBL) (150 vs. 100 ml, both p = 0.002), but no difference in warm ischemia time (WIT), intra- or post-operative complications, transfusions, positive surgical margins, or % change in eGFR (as measured at the last available follow-up [median = 17.83 months]). However, on linear regression analyses, obesity was not an independent predictor of OR time or EBL. A subset analysis of the obese cohort by gender showed that males had a lower median BMI (33 vs. 35, p < 0.001) and less morbid obesity (12.1% vs. 24.5) compared to females, yet had significantly greater EBL, OR time and WIT. For obese patients, male gender independently predicted greater EBL, longer OR time and WIT, whereas morbid obesity was predictive only for EBL.
Conclusions: Almost half of patients undergoing RAPN in a large multi-center study were obese. Our results indicate that obesity should not preclude consideration for RAPN. However, within the obese cohort, male gender and morbid obesity may warrant appropriate surgical consideration.

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MP22 - ROBOTIC SURGERY: UPPER TRACT - BENIGN

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MP22-1 A multicenter evaluation of zero-fragment nephrolithotomy: robotic pyelolithotomy and nephrolithotomy for treating renal stones

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Introduction: Robotic pyelolithotomy and nephrolithotomy may be utilized for removing kidney stones as an alternate to percutaneous nephrolithotomy or flexible ureteroscopy. The purpose of this study is to present outcomes for these robotic procedures from a multi-center collaborative.
Patients and Methods: We performed a retrospective review of cases performed at five academic centers. The procedures studied were robotic pyelolithotomy (RP) and robotic nephrolithotomy (RN), without a need for renal ischemia. RP was performed either transperitoneal or retroperitoneal approach. RN was performed using retroperitoneal approach. Patient characteristics and outcomes assessed include stone size (maximum diameter), stone volume (cm^3), estimated blood loss (EBL), operative time, length of stay (LOS), stone-free rate (SFR) (zero-fragment rate), complications (Clavien grade), use of ureteral stent, and renal function. Patients on anti-coagulants were bridged on Lovenox.
Results: 28 patients underwent 29 procedures (17 right-sided, 10 left sided, and 1 bilateral) for mean stone size and volume of 2.8 cm (range 1.0–5.8) and 21 cm3 (range 4.5–92.7), respectively. RP accounted for 26 of these procedures, RN for 2; one was a combined RP-RN. Indications included failed endourological management (8), failed ESWL (4), staghorn calculi (5), gas-containing infection (1), uretero-pelvic junction obstruction (2), calyceal diverticulum (1), previous/concomitant urinary tract reconstruction (2) and patient preference (6). Mean patient age was 37.9 years (range 1–77). Mean total operative and console times were 187 (range 101–300) and 138 minutes (range 48–245), respectively. Mean EBL was 56 ml (range 5–502). Two patients were on anti-coagulants and one patient was a Jehovah's Witness. Median LOS was 1.5 day (range 1–4). There was no significant change in pre- and post-operative serum creatinine. Two patients developed complications postoperatively (both Clavien grade 2); one patient had ileus whilst another had dislodged malecot catheter. Overall complication rate was 7%. Stents were placed in 18 patients. The SFR rate was 100%.
Conclusions: Robotic pyelolithotomy and nephrolithotomy are safe and reasonable options for removing large renal stones in select patients. Robotic pyelolithotomy allows removal of stones without transgressing the parenchyma which is a potential cause for bleeding and nephron loss. The robotic approach permits zero-fragment nephrolithomy where the stone is removed in toto thereby maximizing chances for complete stone clearance.

MP22-2 Multi-institutional study of robotic assisted buccal mucosa graft ureteroplasty: inital results

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Purpose: Established techniques for treatment of long proximal or multifocal ureteral strictures such as ileal ureter or autotransplantation have considerable associated morbidity. We previously presented robotic buccal mucosa graft ureteroplasty as an alternative approach to surgically manage complex strictures. We now present the initial results of a multi-institutional study of robotic buccal mucosa graft ureteroplasty.
Methods: Between October 2013 and June 2015, robotic assisted ureteral reconstructions using buccal mucosa graft were performed at five institutions in fourteen patients (mean age 46.9, range 19–76). The indication for surgery was a proximal or multifocal stricture not amenable to ureteroureterostomy or pyeloplasty.
Results: All fourteen patients underwent successful robotic assisted reconstruction of the ureter using buccal mucosa graft. There were no intra-operative complications. Mean operative time was 258 minutes (range 179–363) and mean estimated blood loss was 76.7 mLs (range 5–200). Mean length of hospitalization was 2.2 days (range 1–3). At a median follow up of 206 days (Range 0 – 575) there have been three complications. One stent migration requiring replacement with eventual successful removal. One patient developed a stricture at the ureterovesicular junction that was successfully balloon dilated. One patient had a ureteral narrowing on retrograde pyelogram requiring balloon dilation. Ten of the patients underwent retrograde or antegrade pyelogram at 6–7 weeks at the time of their stent removal, which confirmed patent anastomoses. Nine patients underwent diuretic renal scans at 3–4 months post-operatively to confirm absence of obstruction. Further imaging is pending on the remaining patients.
Conclusions: Robotic buccal mucosa graft is a feasible and reproducible option for reconstruction of complex ureteral strictures. Given the rarity of complex ureteral strictures requiring this type of reconstruction, multi-institutional studies are necessary to further study and optimize the procedure.

MP22-3 Robotic pyeloplasty using barbed suture: technique, controversies and considerations

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Introduction: Despite use of the barbed suture during robot-assisted radical prostatectomy or partial nephrectomy, concerns have been raised about a high early failure rate when used during minimally-invasive pyeloplasty (MIP). In this video, we present our technique of robotic pyeloplasty using barbed suture, review the literature on barbed suture for MIP and discuss the controversies, tips, and tricks.
Materials and Methods: We present a case of 55 year old man with right-sided uretero-pelvic junction obstruction (UPJO). The patient was placed in the modified flank position. Port placement was a 12 mm camera port, two 8 mm robotic ports, and a 5 mm assistant port. The robot was docked at a 30-degree angle to the flank. A robotic cautery hook was used to aid with fine hemostatic dissection. The renal pelvis and upper ureter were mobilized to reveal a crossing vessel. Round tip scissors was used to perform dismemberment and spatulation (Anderson-Hynes

technique). The ureter was transposed over the crossing vessel and anastomosis was performed using a unidirectional barbed suture (3-0 Stratafix™; Ethicon, Somerville, NJ, USA) in a running fashion. Following completion of the posterior layer, an antegrade ureteral stent was placed followed by closing the anterior layer in a similar fashion.
Results: Strategies for successful robotic pyeloplasty using barbed suture include: (1) selection of appropriate barbed suture – suture composition, absorbability, distribution of barbs and needle type vary between manufacturers (2) minimizing tension during suture placement to avoid tissue necrosis (3) use of round tip scissors to avoid spiral spatulation of the ureter (4) use of the obstructing UPJ tissue as a handle-hold for manipulation (5) avoid use of 12 mm assistant port for needle entry by utilizing needle placement via a robotic port. Advantages of barbed suture include no loss of tension as seen in non-barbed monofilament suture with possibility of suture loosening, and use of a ''continuous interrupted'' method; the barbs allow the anastomotic tension to be evenly spread to avoid gaps and mimic interrupted suture. Of 18 patients who have undergone laparoscopic or robotic pyeloplasty using barbed suture at our institution, the success rate was 17/18 (94%).
Conclusions: Barbed suture for MIP provides a watertight anastomosis that is technically easier to perform. A key principle is to know your barbed suture as incorrect suture selection may compromise success. Our results demonstrate excellent success rates when using the barbed suture for MIP.

MP22-4 The Role of Robotic Surgery in the Treatment of Complex Kidney Stones – A SingleCenter Experience

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Introduction and Objectives: The use of robotic-assisted treatment modalities for complex staghorn kidney stones has recently been reported in the literature. We report our initial experience and outcomes with robotic anatrophic nephrolithotomy (RAN) and robotic pyelolithotomy (RP) for the treatment of complex kidney stones.
Methods: Between October 2012 and August 2014, 13 patients underwent 14 robotic surgeries for complex kidney stones (RAN n = 8; RP n = 6). One patient underwent bilateral RP in a single setting for bilateral renal pelvic stones. RAN was mostly performed in patients with full staghorn stones, and RP was offered to patients with large stones located in an extra renal pelvis. Most patients failed previous endoscopic intervention or had an anatomic variation that precluded such intervention. Variables of interest included demographic (age, gender, body mass index (BMI))and perioperative (pre, post-op day 1 and most recent) creatinine (Cr), warm ischemia time (WIT), robotic time, operative time, estimated blood loss (EBL), length of stay (LOS)) outcomes. Stone free rates and median follow-up are reported.
Results: Among 13 patients undergoing robotic procedures, the median age was 54 (IQR 41–57) years, BMI was 31.2 (IQR 25.1–33.2) kg/m2 and preoperative Cr was 0.87 (IQR 0.81–1.25) mg/dL. Operatively, median WIT was 36 (IQR 31–42) min (for RAN patients only), robotic time was 158 (IQR 150–210) min, operative time was 195 (IQR 185–255) min, and EBL was 100 (IQR 75–100) mL. Median LOS was 2 (IQR 1–4) days, post-op day 1 Cr was 1.28 (IQR 0.84–1.51) mg/dL, and most recent follow-up Cr was 1.13 (IQR 0.81–1.41) mg/dL. All patients undergoing RP were completely stone free, while 50% of patients undergoing RAN were completely stone free. There were no perioperative complications. Three of five patients undergoing RP had known kidney anomalies (ectopic pelvic kidney, back-to-back pelvic fused kidneys, and ureteral pelvic junction obstruction). Median follow-up time was 2.0 (IQR 0.7–9.6) months.
Conclusions: Robotic-assisted surgery of complex kidney stones is an emerging minimally invasive modality. Our RAN experience is encouraging, however early results suggest subsequent procedures may be necessary to achieve complete stone free rates in complex cases. Patients undergoing RP for renal pelvic stones have excellent stone free rates. Specifically, this approach may be indicated in patients with anatomic renal anomalies that are not amenable to traditional endoscopic options.

MP22-5 10 Year Experience of Robot Assisted Laparoscopic Pyeloplasty

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Introduction: Minimally invasive techniques have largely replaced open pyeloplasty in managing adult pelvi-ureteric junction obstruction (PUJO). Laparoscopic pyeloplasty offers excellent results but remains technically challenging. Robot assisted surgery has helped to overcome these challenges and robot assisted laparoscopic pyeloplasty is fast becoming the preferred approach. We present our 10 year, single centre experience of robot assisted laparoscopic pyeloplasty (RALP).
Patients and Methods: Between April 2005 and December 2014 80 patients underwent RALP for pelvi-ureteric junction obstruction (PUJO). A retrospective analysis of a prospectively collected database was performed. In all patients diagnosis was made on the basis of clinical assessment, renal scintigraphy and CT intravenous urogram. An Anderson-Hynes dismembered pyeloplasty was performed in all cases. Follow-up comprised repeat renal scintigraphy and clinical review. Demographic, preoperative, operative and postoperative outcome measures were recorded. Success was determined as an unobstructed renogram and an subjective improvement in symptoms.
Results: Mean age ± standard deviation was 38.8 ± 13.1 years. Complicating factors included 10 patients with concurrent stone disease, two horseshoe kidneys, one duplex collecting system and two patients with a single functioning kidney. Mean Charlson comorbidity score was 1 ± 1.6. Mean operative time and blood loss was 149.4 min ± 42.7 min and 35.7 ml ± 51.4 ml respectively. One case was converted to open (1.25%) and four patients (5%) had Clavien III complications. Average inpatient stay was 2.8 days ± 1.5 days. Mean length of follow up was 22.1 month. 94% (n = 75) of cases demonstrated radiological success with improved drainage and no residual obstruction. 93% (n = 6) experienced symptomatic improvement following RALP. Three patients required further surgery (open pyeloplasty, balloon dilatation and nephrectomy and one patient required subsequent nephroureterectomy for a malignant stricture.
Conclusion: Our results compare favourably to previous studies and support RALP as an effective technique for treating PUJO. It can be safely offered to patients at centres where robotic technology is available.

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MP22-6 Evaluation of robotic-assisted repair of pelviureteric junction obstruction

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Introduction: Minimally invasive techniques for the repair of pelviureteric junction obstruction (PUJO) have been established over the previous decades. The use of robotic-assisted pyeloplasty for the treatment of PUJO using the da Vinci system has increased across Europe, with demonstrable advantages of shorter operating time and shorter learning curve. All pyeloplasty procedures carried out at the Broadgreen hospital are robotically assisted.
Design: From 1stSept 2011 date all pyeloplasty's at the institution were performed robotically by a single surgeon. Clinical, biochemical and radiological outcome data was collected on 28 consecutive patients. PUJO was confirmed using mercaptoacetyltriglycine (MAGIII) test preoperatively and the test repeated six month post operatively. Median post operative length of stay was calculated. Patients were evaluated for symptomatic improvement, renal function preservation and resolution of PUJO post operatively.
Results: 28 patients underwent a robotic-assisted pyeloplasty at Broadgreen hospital, with 7 of these patients being referred from other trusts. The median length of stay was 2 (range 1–5). 23 patients complained of pain preoperatively, with 91.3% experiencing resolution of symptoms post operatively. Ten patients experienced UTIs and 4 haematuria preoperatively, with 80% and 100% post-operative resolution. Only one patient did not demonstrate improved drainage on post-operative MAGIII. Average estimated glomerular filtration rate improvement was 7 ml/min/1.73 m^2. Five patients were lost to follow up, 2 for non-attendance of appointments and 3 at patients request for follow up to be transferred locally.
Conclusions: Robotic-assisted pyeloplasty for the treatment of PUJO is a viable treatment option for both symptom control and renal function preservation, with a rapid post operative recovery.

MP22-7 Robotic Pyeloplasty: a series of 120 consecutive patients

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Introduction: We present our technique for dismembered pyeloplasty performed with da Vinci robotic system and concurrent endoscopic removal of stones.
Material & Methods: Currently, we perform the procedure using only three robotic arms. In our technique, after the mobilization of the ureteropelvic junction (UPJ), we routinely place two stay stitches on the renal pelvis to facilitate handling of the tissues during dismembering of the UPJ. We perform an incision of the pelvis 1 cm above the UPJ. The incision is then carried along the anterior and posterior walls of the pelvis, extending until the lateral edge of the UPJ is reached and completing the dismemberment. We divide the ureter removing the UPJ. In case of lower-pole crossing vessel, the ureter is widely mobilized and then the crossing vessel is transposed posteriorly and its position tested to ensure that the final position is not causing tension on the anastomotic line. After the spatulation of the ureter, we perform the anastomosis using three (!) continuous sutures.
Results: A total of 120 patients underwent robotic pyeloplasty. Of these patients, 66.7% was female. Mean age was 37 years (4–83): 19 patients (15.8%) were < 17 years old. A retrograde ureteral stent was placed preoperatively in 84% of cases; in the other patients the stent was passed antegrade through a laparoscopic trocar. All procedures were performed transperitoneally. In all cases we performed a dismembered pyeloplasty. A lower-pole crossing vessel was found in 22.5% of patients. All cases were successfully completed robotically with no open conversions and no intraoperative complications. Concurrent endoscopy to stone removal was performed in 27 patients (22.5%). The median operating room time was 180 minutes overall (90–360). There were 2 (1.7%) major (Grade 3 according Clavien) complications: in both cases urine leakage occurs during the early postoperative period because an ostructed stent (due to blood clot); the stent was adjusted ureteroscopically. In 10 patients (8.3%) we reported fever in the postoperative period treated successfully with intravenous antibiotic therapy. There were no major (Clavien > 3) complications.
Conclusions: Robotic reconstruction of the UPJ is feasible, safe, effective, and able to replicate techniques of open surgery, also in pediatric patients and when there are stones to be removed.

MP22-8 Living donor nephrectomy: comparison between robotic and hand-assisted retro-peritoneoscopy

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Introduction: Minimally invasive living donor nephrectomy (LDN) has been efficiently performed at our institution over the last 11 years. Reported by few teams, Da Vinci LDN has become the option of choice in our Division although it still remains questionable in terms of outcome and instrumental costs. Therefore it remains an open matter still under evaluation. In order to assess this issue, we compare our series of Da Vinci LDN with our last patients who underwent hand-assisted retro-peritoneoscopic LDN
Patients and Methods: Retrospective non randomized single analysis of all patients undergoing robotic assisted living donor nephrectomy. Perioperative data were analysed to assess outcomes in terms of donor morbidity and recovery. Complications were recorded according to the Clavien classification.
Results: Since December 2013, 21 robotic LDN were performed with a transperitoneal da Vinci technique. There were 14 women and 7 men with a mean age of 54 ± 10 (39–70) years. Left nephrectomy was performed in 19 cases. Mean operative time was 311 ± 52 (244–427) minutes; mean warm ischemia times was 219 ± 72 (122–405) seconds. Median post operative functional discharge time from hospital was 4 ± 2 (2–10) days. There were 4 minor complications: two grade I (prolonged post-operative pain, cornea lesion) and two grade II (wound infection, pneumonia), none requiring operative management nor conversion. In terms of comparison with the last 21 patients who underwent retroperitoneoscopic hand-assisted nephrectomy (out of 119 patients), groups were comparable regarding preoperative parameters. In this latter group, mean operative time was slightly shorter (244 versus 311 min; $p = 0.007$), so as mean warm ischemia time (170 versus 219 seconds; $p = 0.01$) as compared to the robotic group. However median hospital stay was shorter in the robotic group (4 versus 5 days), this trend however not reaching significance ($p = 0.24$)

Conclusion: the data show that robotic LDN has a slightly longer warm ischemia and operative time as compared to the retro-peritoneoscopic technique. However, the shorter hospital stay may, with an increasing number of patients, become significant and confirm, as observed on the clinical field, that donors come back to their regular activities slightly faster than after hand-assisted retro-peritoneoscopy.

MP22-9 Robotic Ureterolithotomy in the 21st Century

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Objectives: To report our surgical findings for the treatment of large ureteral (> 15 mm) stones in the proximal ureter.
Methods: We retrospectively reviewed 15 patients treated at our institution with initial treatment of either robotic assisted laparoscopic ureterolithotomy (RALU) or laparoscopic ureterolithotomy (LU) for large proximal ureteral stones, greater than 15 mm. We reviewed American Urological Association (AUA) and European Urological Association (EUA) guidelines and results of treatment for large proximal ureteral stones.
Results: Initial treatment for large proximal ureteral stones, > 15 mm included both laparoscopic and robotic assisted laparoscopic surgery for 15 patients in the last year. Twelve of 15 patients had a preoperative stent and 2 patients had nephrostomy tubes. Operative time averaged < 60 minutes and 14 patients were discharged home the same day. There were no intraoperative or postoperative complications. All patients were discharged home with a jackson pratt drain and double pigtailed ureteral stent. The drain was removed on the first postoperative visit. No patient required any further treatment for stone disease.
Conclusions: According to the AUA and EUA guidelines in 2007 patients treated for large proximal ureteral stones were defined as those with calculi > 10 mm. Initial treatment using extracorporeal shock wave lithotripsy (ESWL) required 2.3x the procedures to become stone free. Initial treatment with ureteroscopy and laser lithotripsy (URSL) required 1.7x the procedures to become stone free. Complications of ESWL or URSL led to complications of sepsis, steinstrasse, ureteral stricture, ureteral injury and urinary tract infection in 2–6% of studies reviewed. Using either RALU or LU as the primary treatment of choice for large proximal ureteral stones resulted in no additional treatments and no intraoperative or post-operative complications. Today with cost containment and patient satisfaction being of utmost importance it is time to re-evaluate our initial treatment options for large proximal ureteral stones.

MP22-10 Innovation in Robotics and Pediatric Urology: Robotic Ureteroureterostomy

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Introduction & Objective: Robotic technology has increasingly been utilized for complicated reconstructive surgeries in pediatric urology, such as ureteroureterostomy (UU). There are only 9 publications, encompassing 45 patients, regarding pediatric minimally invasive UU. We sought to evaluate and report on our pediatric experience with robot-assisted laparoscopic UU.
Methods: With approval from the Institutional Review Board, a retrospective chart review was performed of all pediatric patients who underwent a robot-assisted laparoscopic UU by 2 pediatric urologists at our institution over a two-year period, from March 2013 to March 2015. An externalized ureteral catheter was kept overnight and was generally removed with the indwelling urinary catheter on post-operative day #1. Intraoperative as well as postoperative complications including hematuria, fever, and urinary tract infections (UTIs) were recorded. Follow up renal ultrasound was done at 3 months.
Results: Overall, 12 patients (4 male, 8 female) underwent robotic UU at a mean age of 19.4 months (range 9–48 months) during the study time period. The majority of patients (81.8%) initially presented with antenatal hydronephrosis and all were found to have ureteral ectopia. One child had bilateral surgery. Mean weight of the cohort was 11.8 kg (range 9–14.2 kg). Mean operative time was 167 minutes (range 100–345 minutes) and mean estimated blood loss was 1.5 cc (range 0–3). There were no intraoperative complications and no case required open conversion. Mean length of hospital stay was 1 day. One patient developed a febrile UTI postoperatively. All patients experienced improvement in symptoms and/or became dry. Overall success rate was 100%.
Conclusion: Our institutional results demonstrate that robot-assisted laparoscopic ureteroureterostomy is a safe and effective technique to manage duplicated, ectopic ureters in children.

MP22-11 Advantages Of Robot-Assisted Laparoscopic nephrolithotomy for complete staghorn calculus

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China

Objectives: Staghorn stones represent a therapeutic challenge to urologists. We present our experience with robot-assisted laparoscopic nephrolithotomy for treatment of complete staghorn calculus.
Materials: From September 2009 to February 2015, robotic nephrolithotomy has been performed by transperitoneal approach in 15 patients with complete staghorn calculus. (Calculus average size 8 cm). All patients had pre-operative and postoperative imaging including KUB and computed tomography. Patient demographics, warm ischemia time and peri-operative results were analyzed. GFR levels were also recorded preoperatively, and at 3 months postoperatively to evaluate the renal function.
Results: All procedures were technically successful without need for open conversion. Mean warm ischemia time is 20 min (range 15–35 min), estimated blood loss was 175 ml (range 50–300 ml), and mean operative time was 92 min (range80 –150 min). The mean hospitalization stay was 12.6 days. All the postoperative imaging confirmed complete stone clearance. The mean GFR at 3 months postoperatively was comparable with the preoperative GFR.
Conclusion: Our experiences have showed that robotic nephrolithotomy is a feasible and efficacious procedure for treatment of complete staghorn calculus. This approach might limit the role of open surgery for these calculus, but further publications with more cases are necessary to further determine the benefits of this procedure and its role in stone management.

MP22-12 Robotic surgery for giant pheochromacytomy extending to retrovena cava space

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Aim: To evaluate the efficacy and safety of robot-assisted laparoscopic adrenalectomy (RALA) for giant pheochromacytomy extending to retrovena cava space.
Methods: From September 2009 to February 2015, 15 RALA were performed on patients with giant pheochromacytomy extending to retrovena cava space. The mean tumor size was 7.6 cm (range: 5–11). The preoperative Imaging data suggested that all the tumors extended to retrovena cava space. The mean age of the patients was 32 yr, and the mean body mass index was 26.5. Positioning and port placement is designed for adequate reach and visualization of the upper retroperitoneum. The tumor is dissected away carefully from both the inferior vena cava and normal adrenal cortex, preserving normal adrenal tissue.
Results: All the 15 cases were completed robotically. The mean operative time was 65 min (range: 60–130), the median estimated blood loss was 95 ml (range: 50–250), There was no conversion to an open procedure. At a median follow-up of 12.3 mo (range: 6–38), there were no recurrences or metastatic events.
Conclusions: RALA for the treatment of giant pheochromacytomy extending to retrovena cava space is feasible and safe and provides encouraging functional and oncologic outcomes. However, if local invasion is detected by the preoperative imaging studies, robotic surgery is no longer a preferred option.

MP23 - LESS & NOTES

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MP23-1 Evaluation of a New Mechanized Computer Assisted Single Port Bedside "Robot" in a Porcine Model: SurgiBot

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Introduction: Laparo-endoscopic-single-site surgery (LESS) has been fraught with limitations due to the use of rigid or curved instruments leading to clashing, limited triangulation and hand crossing. We introduce a new internally deployable, flexible, robotic system that is delivered by a single incision and is operated at the bedside by the surgeon with assistance of a computerized interface. The SurgiBot® (Transenterix, Research Triangle, NC) was developed as an advancement of an existing catheter based, flexible instrument, with intra-abdominal triangulation. (SPIDER®). The SurgiBot System utilizes flexible articulating channels to drive catheter based instruments with mechanized assistance. The system utilizes a single insertion tube to deploy an articulating scope and multiple instruments.
Methods: A study was performed utilizing female Yorkshire pigs by 5 surgeons. 9 animals underwent unilateral nephrectomy and endobag extraction under sterile protocol and general anesthetic with the SurgiBot system.
Results: All operations were completed as planned including specimen extraction. Renal Hilar vessels were secured with 2-0 silk with intracorporeal knot tying, or 5 mm vascular clips (Hemo-lock, Teleflex, wayne, PA, USA). There were no conversions to open or conventional multiport laparoscopy. All procedures were performed via a single incision, and no additional ports were added in order to complete the procedures. Mean time from insertion of device to bag/organ retrieval was 141 min with standard deviation of 48 min. The mean estimated blood loss was 25cc with standard deviation of 19cc. Incision size to introduce the device was measured at 2.5 cm by caliper for all procedures, and there were no adverse intraoperative events.
Conclusion: LESS surgery has been investigated over the past decade on many surgical fronts. LESS surgery with the SurgiBot system is feasible. The technical advances of SurgiBot observed in this proof of concept study were instrument dexterity, ability to adjust hand position via clutching mechanism, articulating visualization, single incision without the need for additional ports, and surgeon proximity to the field. This study contains the first cases by five surgeons on a novel device, and times are reflective of learning curve– with additional experience procedural times are expected to continue to improve. Further study of this new platform is recommended.
Disclosures: This study was supported by TransEnterix, Inc.

MP23-2 Robotic Natural Orifice Translumenal Endoscopic Surgery (R-NOTES) in Urology: current progress and future challenges

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Introduction: Urology has been one of the first surgical specialties to embrace minimally invasive techniques in the path towards scarless surgery. The use of natural orifice translumenal endoscopic surgery (NOTES) in Urology has been documented both in animal as well as human models, most commonly in the form of hybrid NOTES nephrectomy using the transvaginal access. However, one of its greatest limitations is the loss of triangulation and maneuverability in a limited space. Robotic surgery can potentially provide a solution by applying use of robotic arms in a new form of surgery, robotic NOTES (R-NOTES).
Methods: Review of published literature.
Results: NOTES has been heralded as the next big step towards completely scarless surgery. Urology is one of the first specialties to use NOTES, especially in the form of transvaginal hybrid NOTES (use of vaginal port with one or more abdominal ports) during the last decade. NOTES nephrectomies, both pure and hybrid, have been performed successfully in humans. However, the loss of triangulation and abscence of instrument flexibility make dissection, suturing and intracorporeal suturing a challenge. The use of robotic equipment has been advocated by many as the solution to this issue. The prebent, flexible robotic arms and the development of new magnetic docking systems enable surgeons to perform operations through a single port and limited space safely. The first reports of robotic-assisted NOTES appeared after 2008, when authors reported successful completion of pyeloplasties, adrenalectomies, partial and radical nephrectomies and prostatectomies in animal models using the transvaginal and transrectal routes. Operating time was less than 3 hrs and estimated blood loss less than 100 mls, with no complications in most series. Other authors progressed to human cadaveric models, where, although instrument clashing was still an issue, it was overcome with changes in patient positioning. In

2009, the first human robotic NOTES nephrectomy was performed successfully.
Conclusion: R-NOTES promises to be the next big step towards scarless surgery. It provides solutions for the technical issues arising from loss of instrument triangulation with the use of prebent robotic arms as well as the development of magnetic docking systems. Urological procedures have already been safely performed in animal and cadaveric models and even some select human patients. There are still many issues to be resolved in order to progress from animal models to human candidates, but current practice shows that pure robotic NOTES is safe, feasible and beneficial to patients.

MP23-3 Initial Experience and Outcomes of Natural Orifice Translumenal Endoscopic Radical Prostatectomy

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Introduction: Pre-clinical studies have demonstrated natural orifice translumenal endoscopic radical prostatectomy (NOTES-RP) is feasible. To date, no assessment of long-term oncologic or functional outcomes have been described in human patients undergoing this procedure.
Materials and Methods: Five patients with low-risk prostate cancer underwent NOTES RP between 2011 and 2013. A 100W, 550μm Holmium laser (Versapulse®; Lumenis Surgical, USA) was used to dissect the prostate through a 28F laser resectoscope. Once free, the gland was removed via cystotomy. Vesicourethral anastomoses were performed through an offset nephroscope using an endoscopic suturing device (LSI Solutions, USA). Outcomes were assessed at 3, 6, and 12 months.
Results: Dissection was successfully performed solely using the laser in all cases. Immediate complications were minimal with only one patient requiring transfusion. Two patients had positive margins though at over two years mean follow-up there have been no biochemical recurrences. The most common post-operative complication was bladder neck contracture. Four patients underwent a total of nine bladder neck incisions. Two of three men with pre-operative erectile function regained potency by 1 year. Four patients noted persistent stress incontinence at one year.
Conclusions: Oncologic efficacy of NOTES RP appears encouraging. High rates of anastamotic related complications are likely due to difficulty with endoscopic suturing and indicate that modifications in technique are necessary.

Table 1: Patient demographic and peri-operative data for patients undergoing NOTES RP

	N=5
Mean follow-up (months)	29 (18-40)
Age (years)	56.6 (46 – 67)
BMI (kg/m^2)	31.4 (27.4 – 39.7)
Transrectal ultrasound prostate volume (cc)	29.3 (19 – 43)
Preoperative PSA	5.6 (2.1 – 8.1)
Preoperative positive cores on biopsy	1.8 (1-4)
Maximum % of core involved	
<5%	2 (40%)
5-10%	3 (60%)
Clinical stage	
T1C	4 (80%)
T2A	1 (20%)
Biopsy Gleason score (3+3 = 6)	5 (100%)
Operative time (min)	360.2 (272 – 506)
Operative estimated blood loss (cc)	29.3 (30 – 50)
Pathologic stage	
pT2a	3 (60%)
pT2c	2 (40%
Pathologic Gleason score	
3+3 = 6	2 (40%)
3+4 = 7	3 (60%)
Negative margins	3 (60%)
Length of stay (days)	3 (1-5)
Hospital complications	
Transfusion	1 (20%)
Fever	1 (20%)
Pulmonary edema	1 (20%)
Catheter duration (days)	20.8 (13-30)

MP23-4 NOTES nephrectomy: From animal models to pure NOTES, current practice and future considerations

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Introduction: Natural Orifice Transluminal Endoscopic Surgery (NOTES) denotes the use of natural cavities for obtaining access and performing operations without abdominal wall incisions. In Urology, nephrectomy has been performed with the aid of a transvaginal approach, first as a means of specimen extraction and consequently by using the vaginal incision for placement of a working port. However, the development from animal models to NOTES in humans has been slow. We aim to summarize the current progress of NOTES nephrectomy and the challenges to be addressed in the future.
Methods: Review of current literature.
Results: The transvaginal approach was initially used for nephrectomy specimen extraction in 1993. Since 2003, more centers have performed conventional laparoscopic nephrectomies with specimen extraction through the vagina, to minimize the complications of an enlarged abdominal incision. Since 2009, the vaginal incision has been used for placement of a working port along with one or more umbilical or abdominal ports. This new procedure, described as hybrid NOTES, has made more surgeons familiar with the concept of obtaining access and operating thorugh a hollow viscus while performing a safe resection, both for benign disease and renal malignancies, with comparable results to standard laparoscopy but also increased cosmesis and decreased post-op pain. The main limitation of performing NOTES purely through a vaginal incision is the loss of instrument triangulation with subsequent clashing, inadequate instrument length and inability to perform a safe dissection due to limited visibility. Obtaining safe access without direct vision and possible post-op complications from the vaginal incision are also serious concerns, along with the extremely steep learning curve and surgical fatigue. However, pure NOTES nephrectomy has been successfully performed in select centers, where articulating, prebent and flexible instruments have been used to overcome the aforementioned difficulties. Data from more than 200 patients subjected to hybrid/pure NOTES indicate that the vaginal incision heals without issues, and previous concerns about dyspareunia and decreased sexuality have been disproven with the use of specially designed questionnaires.
Conclusion: NOTES nephrectomy is safe and can be performed both for malignant and benign indications, with similar results as conventional laparoscopy. Its benefits include speedier recovery, less post-op pain and improved cosmesis. However, its use is limited by the lack of appropriate instrumentation. The existing challenge is to provide surgeons with equipment specially designed to overcome these difficulties so it can gain widespread acceptance and use.

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MP23-5 Transumbilical laparoendoscopic single-site gonadectomy for complete androgen insensitivity syndrome

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Introduction: Laparoendoscopic single-site surgery (LESS), a minimally invasive procedure, is gaining widespread acknowledgment in urology. Androgen insensitivity syndrome (AIS) is a disorder of hormone resistance characterized by a female phenotype in an individual with an XY karyotype. The pathogenesis of AIS involves a defective androgen receptor gene located on X-chromosome at Xq11-12 and end organ insensitivity to androgens, although androgen concentrations are appropriate for the age of the patient. There are three major types of androgen insensitivity syndrome: Complete androgen insensitivity syndrome (CAIS), minimal androgen insensitivity syndrome, and partial androgen insensitivity syndrome. Management of AIS includes multidisciplinary approach and involves gonedectomy to avoid gonadal tumors in later life. Because these cases are frequently found in younger women, transumbilical laparoendoscopic single-site gonadectomy is an excellent choice for minimally invasive treatment. Aim of our study was to assess the safety and feasibility of treatment with LESS in CAIS.
Patients and Methods: we performed a prophylactic gonadectomy on six CAIS patients after carefully determining the correct diagnosis. We performed LESS for last two cases. Under general anesthesia a 25 mm long incision was performed without need of augmenting the skin or aponeurotic incision to introduce the SILS™ port and create the pneumoperitoneum. We performed conventional laparoscopic gonadectomy for four cases before we started to perform LESS in our hospital. We compared surgical outcomes between LESS and conventional laparoscopic gonadectomy.
Result: the operation time of gonadectomy using LESS was 166 ± 52 (129–203) min, while of conventional laparoscopic gonadectomy was 167 ± 46 (120–230) min. The operation time of gonadectomy using LESS was almost same as of conventional laparoscopic gonadectomy. Histological examination revealed intratubular germ cell neoplasia in only a patient performed LESS surgery, No malignant findings were found in other five cases. The cosmetic outcome was more excellent in LESS group because surgical wound was only the umbilicus. The surgery was successful in all 6 cases without complications.
Conclusions: although we performed LESS for only two CAIS patients, an umbilical laparoendoscopic single-site access for bilateral gonadectomy appears to be the first choice approach as leaves no visible incision and diminishes the psychological impact of surgery in a patient with CAIS absolutely reassured as female.

MP23-6 Laparoendoscopic Single-Site (LESS) distal ureterectomy of refluxing ectopic ureter

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LESS applications in urology are increasing. However, LESS has some limitations that restrict its wide use by urologists. We present a video that shows the feasibility of distal ureterectomy of refluxing ectopic ureter.

Materials and Methods: We present a female that is 32 years old. She presented with history of recurrent lower urinary tract symptoms and recurrent pyuria. She gave a history of right simple nephrectomy of non-functioning kidney 6 months ago. Thorough investigation of the patient revealed the presence of right refluxing ectopic ureter that opens at the bladder neck and was not diagnosed at the initial right simple nephrectomy. LESS right ureterectomy was done using Covedien port that was inserted through 2-cm skin incision at the umbilicus. During surgery we used both articulating and straight instruments as well as 5-mm EndoEye camera. Ureteric catheter was inserted at time of LESS ureterectomy. The distal ureter was dissected from its upper blind end at just above the scrum while the patient was placed in the semi-lateral position. Dissection of ureter was continued downward and delivered through a window behind the right round ligament into the pelvis. Then the patient was placed into the supine position and the intramural part of the ureter was dissected down to its site of insertion. The ureter was clipped and divided just above its site of insertion.
Results: Operative time was 75 minutes. Blood loss was less than 50 c.c. No conversion to open surgery or conventional laparoscopy. No extra-port was added. No intraoperative or postoperative complications were reported. Postoperative hospital stay was one day. Patient received only non-steriodal anti-inflammatory as postoperative analgesics. Visual analogue pain scale at discharge was 1. Follow-up of the patient for 15 months showed complete clinical cure and no recurrence of pyuria. The patient has invisible umbilical scare postoperatively.
Conclusion: In spite of technical limitation of currently available LESS instruments, LESS distal ureterectomy is technically feasible procedure even in ectopic located ureter. The procedure has low morbidity and high patient satisfaction.

MP23-7 Laparoendoscopic Single-Site Surgery (LESS) Sacrocolpopexy

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Introduction and **Objectives:** The applications of LESS as an option of treatment of various urologic pathologies are increasing. However, reconstructive LESS procedures are challenging. In this video we present the technique of LESS sacrocolpopexy for treatment of uterine prolapse in an obese patient.
Materials and Methods: The case that we present in this video is 41 years old female that was complaining of vaginal bulge, dyspareunia and stress urinary incontinence (SUI). She was G4P2 + 2. Her BMI was 32.5. She gave a history of hypertension, diagnostic laparoscopic for ovarian cysts and vaginal surgery for treatment of SUI using an autologous anterior vaginal wall flap in the year 2000. Clinical examination of the patient revealed the presence of grade 2 uterine prolapse. For this patient, LESS sacrocolpopexy was done using the R-port that was inserted through 1.5 cm skin incision at the inferior edge of the umbilicus. Both pre-bent and straight instruments were used. A rectangular polypropylene mesh (2x 5 cm) was used for fixation of the upper part of the posterior vaginal wall to the periosteum of sacral promontory using zero PDS sutures. Hand-free intracorporeal suturing was used. TOT for SUI was done after finishing LESS sacrocolpopexy.

Results: Operative time for LESS sacrocolpopexy was 135 minutes. There was no conversion to open surgery or conventional laparoscopy. Blood loss was less than 50 c.c. No extra-port was added. There were no intraoperative or postoperative complications. Postoperative hospital stay was 1 day. Follow- up of the patient for 18 months showed complete clinical cure with no recurrence of her uterine prolapse and invisible umbilical scar.
Conclusions: LESS sacrocolpopexy is technically feasible, safe and effective procedure for treatment of uterine prolapse with significant low morbidity.

MP23-8 Transvesical laparoendoscopic single-site surgery (T-LESS) for treatment of selected urinary tract pathologies: a five-year single-center experience.

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Introduction: Recently, some efforts have been made to decrease morbidity related to laparoscopic port placement and improve cosmetic results while maintaining the same standards of surgical care. In this context, transvesical laparoendoscopic single-site surgery (T-LESS) has been developed.

We report our experience with transvesical laparoendoscopic single-site surgery (T-LESS) in 43 patients for different urological indications.
Materials and Methods: From November 2009 to July 2014 forty three patients (26 women and 17 men) aged 24 to 76 (mean age, 57) were operated on for various indications using the T-LESS. The procedures included removal of eroded surgical material (N = 13), diverticulectomy (N = 10), ureteral reimplantation (N = 2), vesicovaginal fistula (VVF) repair (N = 12), vesicorectal fistula (VRF) repair (N = 1) and bladder cuff excision following laparoscopic nephroureterectomy (N = 5). All procedures were performed using the TriPort® or TriPOrt + ® single-site access systems and a varying combination of standard and bent/articulating laparoscopic instruments.
Result: All procedures were completed successfully. No blood loss or complications were observed except for one conversion to an open surgery because of a perivesical abscess in the patient with polypropylene tape erosion and one wound abscess after nephroureterectpmy specimen removal. No extra port was added. The mean operative time was 54, 132, 195, 103, 155 and 59 minutes, and postoperative hospital stay was 2.6, 2.8, 3, 5.6, 3 and 5.2 days for surgical material removal, diverticulectomy, ureteral reimplantation, VVF repair, VRF repair and bladder cuff excision, respectively. The mean follow-up time of 30 months (range 7–65) showed no adverse events related to the method.
Conclusion: The T-LESS approach is a safe and efficacious technique, and confirms the expanding role of single-port access for treatment of various bladder disorders.

MP23-9 Application of Transurethral-Assisted technology in Transumbilical Laparoendoscopic Single-site Radical Prostatectomy and Radical cystectomy

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Introduction: Laparoscopic single-site surgery(LESS) is a technique in which the laparoscopic surgery is performed through a singe incision. To date, many urological surgeries, such as nephrectomy, adrenalectomy and nephroureterectomy have been performed successfully through this approach. However, due to the internal and external colliding instruments and the lack of triangulation with LESS, it is more difficult to perform in low urinary tract diseases. In our clinical practice, we designed transurethral assistant transumbilical LESS (TU-U-LESS). It greatly improved the safety of the operation and shortened the operation time. This abstract is to evaluate the feasibility and advantage of TU-U-LESS surgery for radical prostatectomy and radical cystectomy.
Methods: From Jan. 2014 to Jun. 2015, 34 patients were performed TU-U-LESS radical prostatectomy and 14 patients were performed TU-U-LESS radical cystectomy. Among them, 22 patients experienced lymph nodes dissection. A single-port with four channels was inserted into the 2.5 cm periumbilical incision. During all these operations, our home-made transurethral equipments were used. Suction and dissociation devices were inserted into transurethral equipment to assist the surgical operator. We performed laparoscopic radical prostatectomy and radical cystectomy by these two ports and the perioperative data were collected and analyzed.
Results: All the operations were accomplished. No conversion into conventional laparoscopic or open surgery was performed. According to our data, the mean operating time of TU-U-LESS radical prostatectomy was 2 h 25 min, the median estimated blood loss was 110 ml, and indwelling catheter time was 15 d without severe complications. For TU-U-LESS radical cystectomy and cutaneous ureterostomy, the mean operating time was 3 h 35 min, the median estimated blood loss was 170 ml. For TU-U-LESS radical cystectomy and orthotopic ileal neobladder, the operating time was 5 h 32 min, the median bleeding was 300 ml. The double J stent and catheter were removed in 2 and 3 weeks, respectively. All these patients had satisfied continent and with negative margin. For patients experienced lymph nodes dissection, the operating time was 36 min, the average lymph nodes was 10.6, and two patients with positive results (3/9 and 2/12).
Conclusions: TU-U-LESS is more feasible and safer for radical prostatectomy and radical cystectomy. The technology could minimize the interference between the laparoscopic equipments, shorten the operating time, decrease the risk and complications. Additional, the technology is the perfect combination of LESS and NOTES, and will promote the development of LESS.

MP23-10 Reduced port surgery in bilateral cyst decortication of autosomal dominant polycystic kidney disease: a case report

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Introduction: Chronic pain associated with autosomal dominant polycystic kidney disease (ADPKD) often affects the patient's quality of life. The initial management of pain in ADPKD patients starts with noninvasive and non-pharmacologic therapies, followed by high-dose opioid treatment and more invasive procedures, including surgery. Cyst decortication is one of the effective operative procedures. Recently, laparoscopic cyst decortication has become more common than open surgery because of less blood loss, short hospital stay, reduced postoperative pain and cosmetic outcome. We report our experience of reduced port surgery in bilateral cyst decortication for a patient with symptomatic ADPKD.

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Materials and Methods: A 47-year-old female visited our hospital with right back pain associated with ADPKD. Hypertension and chronic renal failure were found at that time. Although we treated with oral opioid to relieve the pain, the pain control became difficult due to enlargement of the cyst. We decided to perform cyst decortication to remove the pain.
Surgery: The surgery was started in the supine position under general anesthesia, and was performed by transperitoneal approach. We made the vertical incision in the umbilicus and mounted X-GATE®. 12 mm, 5 mm and 5 mm trocars were inserted from X-GATE®. An additional 3 mm port was placed on the left lower abdomen. First we approached the left kidney, unroofed the large renal cysts' walls, and sucked the cystic fluid. Subsequently, the same procedure was performed for the right renal cysts. After intraperitoneal lavage with saline, we placed 10Fr. drain intraperitoneally. The surgery time was 134 minutes, and blood loss was little. The patient was discharged from our hospital at eighth day after surgery in fair condition. The pain associated with ADPKD has not recurred in 6 months after the surgery.
Conclusion: Reduced port surgery in cyst decortication of ADPKD is superior in terms of cosmetic outcome and postoperative pain compared to conventional open or laparoscopic cyst decortication. It can be performed for both kidneys simultaneously and in the supine position without repositioning, which is considered to be an advantage compared to conventional procedures. Reduced port surgery is a promising option in cyst decortication of ADPKD.

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MP23-11 Laparoendoscopic Single-Site Surgery (LESS) Nephrectomy: Step by Step Technique

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Introduction and **Objectives:** Laparoendoscopic single-site surgery (LESS) has been recently reported as an alternative to conventional laparoscopy aiming to decrease the patients' morbidity and to improve cosmetic outcome. However, LESS has its own technical difficulties due to loss of triangulation. We present a video that shows the step by step technique of LESS right nephrectomy for non-functioning kidney with advanced hydronephrosis.
Materials and Methods: In this video we present 36 years old female that was complaining of right flank dull aching pain, Ultrasound showed right advanced hydronephrosis. Computed tomography of the abdomen and pelvis revealed right advanced hydronephrosis secondary to ureteropelvic junction obstruction. The kidney was occupying the right half of the abdomen and extending down to the pelvis. Renal isotope showed zero function of the right kidney. While the patient in the modified lateral position, about 2-cm skin incision was made in the umbilicus along the midline. Through this incision an access to peritoneal cavity was done. Covidien port was inserted and both articulating and straight instruments as well as 5-mm EndoEye camera were used. Peritoneum was incised along the Toldt line and the colon was reflected medially. The lower pole of the kidney was mobilized and the duodenum was reflected medially. Both the renal artery and vein were dissected and clipped. The kidney was mobilized by combining both sharp and blunt dissection. While dissecting its upper pole, the kidney was partially drained to facilitate its dissection. Homeostasis was checked at the renal bed. The kidney was completely drained and placed in a home made an endobag and removed through the port insertion site without need to increase the original umbilical incision.
Results: Operative time was 95 minutes. There were no intraoperative or postoperative complications. Blood loss was less than 50 c.c. No extra-port was added. No conversion to conventional laparoscopy or open surgery was done. The patient was discharged from the hospital after 1 day. Visual analog pain scale at discharge was 1.5. Follow-up of the patient showed invisible umbilical scar and high satisfaction.
Conclusion: In experienced hand, LESS nephrectomy is a safe procedure with significant low morbidity and high patient's cosmetic satisfaction.

MP23-12 Laparoendoscopic single-site surgery (LESS) and conventional laparoscopy for treatment of different upper urinary tract pathologies: outcome of a prospective multi-institutional comparative study

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Introduction and Objectives: Most of the reports comparing between LESS and conventional laparoscopy (CL) are retrospective case series. We present a prospective multi-institutional comparative study between LESS and CL for treatment of different upper urinary tract pathologies.
Material and Methods: This study included consecutive patients with different upper urinary tract pathologies who had LESS and CL at both Alexandria and Tanta Universities from December 2011 to June 2014. Procedures were done by two experienced laparoscopists. Exclusion criteria included absolute contraindications of laparoscopy and children less than 3 years. Data was independently collected by two persons in a standard data sheet. All procedures were approved by the Ethical Care Committee at both institutes.
Results: A total of 79 patients (LESS = 41, CL = 38) were included. Indications included pyeloplasty (LESS = 10, CL = 6), simple nephrectomy (LESS = 8, CL = 6), excision of renal cyst (LESS = 8, CL = 7; one patient had bilateral simultaneous LESS excision of renal cysts), nephroureterectomy (LESS = 2, CL = 1), ureterolithotomy (LESS = 2, CL = 5), radical nephrectomy (LESS = 5, CL = 4), adrenalectomy (LESS = 3, CL = 3), ureterectomy (LESS = 1, CL = 0), pyelolithotomy (LESS = 2, CL = 3), partial nephrectomy (LESS = 0, CL = 3). Mean age of the patients was 33.6 ± 14.9 and 44.7 ± 16.2 years for LESS and CL, respectively. Mean BMI was significantly higher in LESS group ($28.8 \pm 6.9\ kg/m^2$) compared to that of CL ($25.7 \pm 3.8\ 9\ kg/m^2$). Mean operative time was significantly less in LESS group compared to CL (141.9 ± 57.2 Vs. 180.6 ± 68 minutes). 5-mm extraport was added in 4.8% of LESS group. Conversion to open surgery was reported in 8.3% and 2.4% of CL and LESS groups respectively, while none was converted to CL in LESS group. Introperative complications were reported in 7.6% and 0% in both CL and LESS groups, respectively. Postoperative complications were reported in 10.2% and 2.4% both in CL and LESS groups, respectively Mean postoperative hospital stay was 4.6 ± 2.3 and 1.9 ± 0.9 days both in CL and LESS groups, respectively. Mean visual analog pain score was 4.6 ± 2.1 and 1.29 ± 0.9 both in CL and LESS groups, respectively. Patient satisfaction regarding postoperative scar was higher in LESS group.

Conclusion: LESS offers a safe and efficient alternative to CL for treatment of different upper urinary tract pathologies, with reduced pain, shorter hospital stay, less complications and better cosmetic outcome.

MP23-13 Comparison of outcomes between laparoendoscopic single site and mini-incision open living donor nephrectomy

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Introduction: Surgical practice has developed from open living donor nephrectomy (LDN), including mini-incision open LDN, to minimally invasive laparoscopic living donor nephrectomy (LLDN) with the aim of early convalescence after surgery. Several approaches of LLDN have been widely accepted as a standard procedures, however, the role of laparoendoscopic single site LDN (LESS-LDN) remains to be defined.
Patients and Methods: LESS-LDN was introduced after experience of mini-incision open LDN without experiencing standard LDN techniques in our institute. The aims of this study were to evaluate the surgical outcomes of our first 19 cases of LESS-LDN, and to compared to the consecutive historical data of mini-incision open LDN performed in the same single institute. A GelPOINT(®) was applied on a pararectal single incision in LESS-LDN procedures. Mini-incision open LDN was performed retroperitoneally through pararectal single incision.
Results: The median age of donor was 56 (40 – 68). The median operative time and isufflation time was 245 (192 – 390) and 213 (179 – 328) minutes, respectively. No patient was converted to reduced port surgery or open surgery. The median estimated blood loss (EBL) was 20 (10 – 200) ml and no blood transfusion was required. The median warm ischemic time was 4 (2 – 5) minutes and no major complications were recorded during perioperative and follow-up periods. The median estimated glomerular filtration rates of recipients at the post-operative weeks of 1 and 4 were 50.9 (36.3 – 129.5) and 45.9 (35.3 – 104.9) ml/min/173 m^2, respectively. In a comparison analysis between LESS-LDN and mini-incision open LDN, the median EBL of LESS-LDN was significantly less than that of mini-incision open LDN, and identified as the only significantly different factor between two operative procedures.
Conclusion: The LESS-LDN procedure was introduced safely and effectively without experiencing standard LDN techniques in our institute. It was suggested that LESS-LDN shows similar clinical outcomes in comparison with mini-incision open LDN without compromising the operative time, EBL, complication rate and graft function.

MP23-14 Laparoendoscopic single-site radical nephrectomy by Single-Cup or Single-Ring glove technique

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Introduction and Objectives: Compared with the traditional laparoscopic technique, LESS may have better results in cosmetic, less postoperative pain, better recovery and so on. However, commercially available single-port devices (Only Tri-port and X-cone available in China) have some defects such as expensive, disposable (for Tri-port), instruments crowding, etc. These features above limit its widespread use in our country. We present two new homemade single-site devices which had been successfully used in radical nephrectomy and other urological surgery. Aim of this study is to evaluate the efficacy and safety of laparoendoscopic single-site radical nephrectomy by homemade devices.
Methods: The clinical data of laparoscopic radical nephrectomy performed from June 2010 to Jan 2014 in Peking University Third Hospital were analyzed retrospectively. 22 cases underwent LESS radical nephrectomy and 34 cases received retroperitoneal laparoscopic radical nephrectomy. Data on general presentation, tumor size, tumor location, operative time, blood loss, complications, Visual Analog Pain Scale (VAPS), postoperative hospital stay, pathological results were collected to compare between two groups. Our homemade equipments are composed of Single-Cup device (inter-diameter of 2.5–5.5 cm, peripheral diameter of 4.0–6.0 cm, and 4.0 cm high) **or** Single-Ring device (inter-diameter of 4 cm, peripheral diameter of 5 cm) and a 6F sterile surgical glove. The thumb, middle, and ring fingers of the glove were implanted and fixed with 11 mm, 5 mm and 5 mm diameters' trocar respectively. The kidney was dissociated after cut off the renal vessel and extracted through the umbilical incision. The retroperitoneal approach followed the standard surgical procedures, the specimens were removed from the extended incision.
Results: All procedures were completed without conversion to open radical nephrectomy. Compare with traditional laparoscopic surgery, operative time ($P < 0.05$) and VAPS ($P < 0.05$) show significant difference in LESS group, and no difference was noted in other factors ($P > 0.05$). There was no secondary bleeding, wound infection, intestinal obstruction, incision hernia and other severe postoperative complication. Follow-up of 2 to 36 months shows no local recurrence.
Conclusions: Laparoendoscopic single-site radical nephrectomy by Single-Cup or Single-Ring glove technique is feasible, effective and safe. It gives a more mini-invasive and cosmetic option for young or female patients. The characteristics of lower-cost, more aesthetic, repeat use of the homemade devices appeared o be popularized. Further experience and longtime evaluation are required.

MP23-15 Total Transumbilical Laparoendoscopic Single-Site Nephroureterectomy for Upper Urinary Tract Urothelial Carcinoma

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Introduction: Laparoscopic single-site surgery(LESS) is a technique in which the laparoscopic surgery is performed through a singe incision. This study is to evaluated the feasibility and superiority of total transumbilical laparoendoscopic single-site (TU-LESS) nephroureterectomy for upper urinary tract urothelial carcinoma.
Methods: From January 2015 to June 2015, we performed total TU-LESS nephroureterectomy in nine patients with upper urinary tract urothelial carcinoma, including 7 males and 2 females. The mean age was 65.6 yrs. Of them, 6 cases were diagnosed with renal pelvis carcinoma, 2 in the left and 4 in the right. 3 cases

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were diagnosed with ureteral carcinoma, 1 in the left and 2 in the right. With the patients lying at the healthy side at 30°-45°, a single-port with four channels was placed into a 2.5 cm peri-umbilical incision. After removing the kidney, we separated the ureter down to the bladder wall. The specimen including kidney, ureter and partial bladder tissue was removed through the peri-umbilical incision. The perioperative and postoperative data were collected and analyzed prospectively.
Results: The operation was successfully completed in all the 9 cases without conversion to conventional laparoscopic or open surgery. The mean operative time was 170 minutes and estimated blood loss was 70 ml. The postoperative bowel function recovery time was 2–4 days. The postoperative hospital stay was 8–12 days. No severe peri-operative complications were occurred. The pathological report showed urothelial carcinoma in all cases, including 3 high grade and 6 low grade. All the surgical margins were tumor-free for these cases.
Conclusions: TU-LESS nephroureterectomy for upper urinary tract urothelial carcinoma is technically feasible and safe. Compared with conventional laparoscopic surgery, the patients do not need to change the body position during LESS surgery. Most importantly, LESS will result in short operative time, low blood loss, decreased postoperative pain and improved cosmesis.

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MP23-16 Simultaneous laparoendoscopic single-site surgery (LESS) for surgical treatment of intra-abdominal pathologies in two different organs

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Introduction & Objectives: The aim of the present study was to further evaluate our initial experience, including those two previously presented cases, of simultaneous LESS for the surgical treatment of intra-abdominal pathologies in two different organs.
Material & Methods: Five patients with bilateral renal cell carcinoma (RCC) (n = 2), bilateral aldosterone-producing adrenal adenoma (n = 1), right proximal ureter stone and left non-functioning kidney (n = 1), and synchronous left RCC and sigmoid colon cancer (n = 1) underwent simultaneous LESS with use of the umbilicus as the portal of entry. Perioperative outcomes including operative time, estimated blood loss, and complications were analyzed retrospectively.
Results: All procedures were completed successfully without conversion to conventional laparoscopic or open surgery and without the need for other extraumbilical incisions. The surgical outcomes are summarized in Table 1. All surgical procedures were completed within a reasonable operative time with minor bleeding; 1 patient whose preoperative hemoglobin level was 9.2 g/dL (reference range: 13–17 g/dL) required a blood transfusion. The mean incision length was 3.6 cm (range, 3–4 cm), and the mean postoperative pain score, as measured by use of a visual analogue scale, was 4.6 (range, 4–6) on postoperative day 1 and 1.8 (range, 1–2) on the day of discharge. There were no problems in resumption of oral intake. In all patients, the incisions were nearly hidden in the umbilicus, providing excellent cosmetic results.
Conclusions: Simultaneous LESS of intra-abdominal pathologies in two different organs was technically feasible and safe. The procedure could be performed with minimal morbidity and obvious cosmetic advantage.

Table 2. Surgical outcomes of the patients

Patient	Operative time (min)	EBL (ml)	Transfusion	Oral intake (days)	Hospital stay (days)	Narcotic usage (mg)	Pain score at day 1	Pain score at day 2	Pain score at discharge	Complications
1	355	300	-	1	5	125	4	3	2	-
2	235	300	RBC 2 units	1	5	75	5	3	1	-
3	160	50	-	1	2	25	4	2	2	-
4	265	100	-	2	11	150	6	5	2	Unknown origin of fever for 10 days
5	155	50	-	1	2	25	4	2	2	-

EBL = estimated blood loss.

MP23-17 Hybrid Laparoendoscopic Single-Site Surgery of Upper Urinary Tract with Use of Mini-Laparoscopic Instruments. Excellent Cosmetic Ouctome and Mid-Term Oncological Outcome.

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Background/Aims/Objectives: To evaluate the efficacy of mini-laparoscopic instruments in combination with LESS instruments for the performance of oncological urological surgery.
Patients and methods: 35 patients underwent oncological hybrid LESS. Mini-laparoscopic-assisted partial nephrectomy (LESS-PN, n = 12) mini-laparoscopic -assisted LESS radical nephrectomy (LESS-RN, n = 23). Peri-operative data were prospectively collected. The Patient and Observer Scar Assessment Scale (POSAS) was used for the evaluation of the cosmetic outcome.
Results: Mean tumor size treated by LESS-PNs was 28.8 (IQR:20.5–37.3)mm. Average operative time and blood loss were 123 (IQR: 112.5–145)min and 158.3 (IQR:100–200)ml, respectively. Renal artery clamping took place 7 cases. LESS-RN was performed in cases with a mean tumor size of 60 (IQR: 48–71.5)mm. The average operative time was 116.8 (IQR: 100–130)min. Average blood loss was 137 (IQR:100–150)ml. Complications were limited to Grade II according to Clavien classification. The oncological outcome, including mid-term results, was directly comparable to the literature. Patients reported low pain scores and high satisfaction in terms of postoperative scarring. The POSAS scores confirmed the excellent cosmetic outcome of hybrid LESS.
Conclusion: The combination of mini-laparoscopic and LESS instrumentation as routine equipment of oncological surgery provided an efficient option for urologic surgery with minimal scar formation.

MP23-18 Initial experience of laparoendoscopic single-site partial nephrectomy at Sapporo City General Hospital

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Introduction and Objectives: The Partial nephrectomy (PN) for the treatment of the patient with small renal mass is standard therapy. It has been reported that laparoendoscopic single-site (LESS) partial nephrectomy (LESS-PN) for the patient with

renal tumor was safe and feasible. LESS surgery has been introduced into our institute for the urologic disease since 2012. We compared the clinical outcome of LESS-PN with conventional laparoscopic partial nephrectomy (CL-PN).
Methods: From March 2014 to June 2015, we have performed LESS-PN for 6 patients with small renal mass, meanwhile CL-PN have been performed 28 patients during the same period. The patient backgrounds, operating time, estimated blood loss and peri- and post-operative complications were collected from the clinical records and comparative analysis was performed between the two groups.
Results: The patient age (52 vs 68) and laterality (L/R: 3/3 vs 20/8) were comparable between the two groups. LESS-PN were more performed in female patients compared to CL-PN (F/M: 5/1 vs 6/22 $p < 0.05$). No difference was seen in operating time (112.5 min vs 156.5 min), total ischemic time (14 min vs 13 min) and estimated blood loss (10 mL vs 20 mL) between two groups. No major complication or mortality was occurred in either group.
Conclusions: In our initial experience, LESS partial nephrectomy is safe and feasible treatment option for small renal mass compared with conventional laparoscopic partial nephrectomy. In addition, cosmetic outcome might be clinical advantage for LESS partial nephrectomy, especially in female patients.

MP23-19 Mini-laparoscopic partial nephrectomy combined with minimized umbilical access: A new concept in minimally invasive surgery for small renal tumor.

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Objectives: Umbilical laparoendoscopic single-site (U-LESS) surgery has been considered as an ideal minimally invasive surgery for patient with small renal tumor. Nevertheless, U-LESS partial nephrectomy has relatively high complication rate and has the highest rate of conversion to conventional laparoscopy among urological LESS surgeries. Thus, U-LESS partial nephrectomy is considered technically so complex that it has not gained widespread use. We propose the hybrid technique of umbilical access and mini-laparoscopic partial nephrectomy (U-MLPN).
Methods: For the hybrid technique of U-MLPN, two 3 mm trocars were inserted at upper abdomen following insertion of a single-site platform through minimized (1.5 to 2 cm) umbilical incision. A 5 mm trocar and a 12 mm trocar were inserted through umbilical access, then, 5 mm flexible scope was mandatory. Essential steps of this procedure included ureteral stenting and arterial clamping. Hemostasis was basically achieved with high-frequency soft coagulation and sealant patch, but occasionally with parenchymal suturing. The patient data was analyzed retrospectively.
Results: We performed 7 U-MLPNs from December 2014 to June 2015. Median tumor size was 20 mm and median R.E.N.A.L. score was 7.0. Two patients needed suture repair of collecting system, and the same patients were added parenchymal suture for hemostasis. Median operation time and insufflation time were 267 and 203 min, median blood loss was 125 ml, and median warm ischemic time was 18.5 min. There were no blood transfusions, no perioperative complications and no positive margins, resulting in 100% achievement of trifecta. One case was diagnosed as benign tumor (metanephric adenoma) and 6 were pT1a renal cell carcinomas.
Conclusions: Mini-laparoscopy with 3 mm instruments can reduce abdominal wall injury and postoperative scar compared with conventional laparoscopy. Moreover, the use of 3 mm instruments can minimize umbilical incision that keeps within umbilical ring, resulting better cosmetic outcome when compared with an U-LESS with large umbilical incision of 3 cm or more. Thus, U-MLPN can maintain at least almost same benefit compared with U-LESS partial nephrectomy in terms of cosmetic outcome. U-MLPN is technically simple, feasible, and safe procedure. This technique may be one of the best surgical options for patients with small renal tumor. Further evaluation of this procedure is needed.

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MP24 - BPH / LUTS 1

MP24-1 The effect of hyaluronic acid/carboxymethylcellulose instillation to prevent urethral stricture after transurethral bladder surgery

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Introduction: To evaluate the effects of hyaluronic acid/carboxymethylcellulose (HA/CMC) instillation on the occurrence of urethral stricture after transurethral bladder surgery
Materials and Methods: From January 2011 to June 2014, we retrospectively investigated records of patients who underwent transurethral bladder tumor surgery in our hospital. Among 174 patient, 74 patients received hyaluronic acid/carboxymethylcellulose instillation (Group A) and 100 patient did not (Group B). Each patient was evaluated at preoperation, postoperative 12 weeks. Baseline characteristics were compared and the effectiveness of hyaluronic acid/carboxymethylcellulose was evaluated by the International Prostate Symptom Score (IPSS), uroflowmetry parameters.
Results: Baseline characteristics of two group were not significantly different. Urethral stricture occurrence were 2 (2.7%) in Group A and 11 (11.0%) in Group B and significantly different ($p = 0.040$) (Table 1). IPSS total, obstructive subscore, irritative subscore and Quality of life (QoL) were significantly increased at 12 weeks from baseline in Group B ($p = 0.023$, 0.030, 0.029 and 0.011, respectively). Maximal flow rate was significantly decreased at the same period ($p = 0.018$). However, univariate and multivariate logistic regression analysis showed that GUARDIX-SL instillation was not significant protective factor for urethral stricture occurrence ($p = 0.057$ and 0.057).
Conclusions: During transurethral bladder tumor surgery, hyaluronic acid/carboxymethylcellulose instillation decreased the occurrence of urethral stricture, however it was not significant protective factor. Further well designed studies are needed.

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MP24-2 Height: Width Ratio – a novel parameter in predicting outcome after Transurethral resection of prostate – a pilot study

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Aims: The objective is to identify whether the overall growth pattern and shape, represented as Height: Width ratio (HWR), of the prostate measured by trans abdominal ultrasound could predict the outcome after TURP (transurethral resection of prostate). Correlation with subjective and objective measures, measured as IPSS (International prostate symptom score) and Uroflow respectively and few other variables are also studied.
Materials and Methods: This is a prospective study in patients undergoing elective TURP. The data collected included the following – age, body mass index (BMI), baseline IPSS, digital rectal examination (DRE), prostate specific anitigen (PSA), Uroflow, urine culture, duration of surgery, weight of the resected chips. Height & width of prostate was measured in transabdominal scan in the vertical and transverse plane respectively. Prostate volume (PV), transitional zone volume (TZ), transitional zone index (TZI) and intravesical prostatic protrusion (IVPP) were measured with transrectal and transabdominal ultrasound. Patients were followed up after 1 month with repeat IPSS, Uroflow and ultrasound measurement of above parameters.
Results: Data from the first 40 patients enrolled in the study were analysed. Overall HWR, had a weak correlation to the baseline IPSS and Qmax, and was not statistically significant. Out of 40 patients, 18 patients had HWR more than 1 and 22 had it less than or equal to 1. On subgroup analysis, no significant correlation of HWR to baseline IPSS and to improvement in IPSS post TURP ($p = 0.2$ and 0.28 respectively in t-test) is seen. However, a very strong correlation is seen in improvement in Qmax after TURP in patients with HWR > 1 ($p = 0.008$ in t-test). A significant correlation is also seen to baseline Qmax when HWR > 1 ($r = -0.73$, $p = 0.03$). IVPP had a significant positive correlation with IPSS ($r = 0.454$, $p = 0.034$), prostate volume ($r = 0.52$, $p = 0.011$), Qmax ($r = -0.61$, $p = < 0.05$). When subdivided as IVPP < 10 mm and greater than or equal to 10 mm, a statistically significant improvement in IPSS is seen after TURP in patients with increasing IVPP ($p = < 0.05$ in t-test). The power of the study is at 91% with α & β error at 0.05 & 0.09 respectively.
Conclusion: It appears that patients with lengthy prostates (HWR > 1) do well after TURP. It parallels the impact of IVPP. While IVPP seem to be related more to symptoms (IPSS), HWR seem related to objective measures like Qmax than symptom score. Multicentric study on this parameter is needed for more reliable conclusion but seems promising in this pilot study.

MP24-3 Bipolar plasma enucleation versus open prostectomy – long term follow-up

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Introduction: A long term, prospective, randomized-controlled trial assessed the viability of the bipolar plasma enucleation of the prostate (BPEP) by comparison to open transvesical prostatectomy (OP) in cases of large prostates.
Material and Methods: A total of 140 benign prostatic hyperplasia (BPH) patients with prostate volume over 80 mL, maximum flow rate (Q_{max}) below 10 mL/s and International Prostate Symptom Score (IPSS) over 19 were equally randomized in 2 study arms for BPEP and OP (70 cases each). All patients were evaluated every 6 months after surgery for a period of 4 years by IPSS, Q_{max}, quality of life score (QoL), post-voiding residual urinary volume (PVR), postoperative prostate volume and PSA level evolution.
Results: BPEP and OP emphasized similar mean operating times (91.4 versus 87.5 minutes) and resected tissue weights (108.3 versus 115.4 grams). The postoperative hematuria rate (2.9% versus 12.9%), mean hemoglobin level drop (1.7 versus 3.1 g/dL), catheterization period (1.5 versus 5.8 days) and hospital stay (2.1 versus 6.9 days) were significantly reduced in the BPEP group. Re-catheterization for acute urinary retention was more frequent after OP (8.6% versus 1.4%), while the early irritative symptoms' rates were similar subsequent to BPEP and OP (11.4% versus 7.1%). During the 4 year' follow-up, no statistically significant differences were determined in terms of IPSS, Q_{max}, QoL, PVR, PSA level and prostate volume between the two series. Consequently, the calculated prostate volume decreases and PSA level reductions by comparison to preoperative measurements were statistically equivalent in the BPEP and OP study arms.
Conclusion: BPEP was characterized by similar surgical efficiency as well as BPH tissue removal capabilities when compared to OP. Plasma enucleation patients benefited from a superior perioperative safety profile, significantly fewer complications, shorter convalescence period and satisfactory long term symptom scores and voiding parameters.

MP24-4 Prostate biopsy effects on lower urinary tract symptoms and potency

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Aim: Transrectal ultrasonography (TRUS) guided prostate biopsy is considered the gold standard for diagnosis of prostate cancer. We decided to assess the effects of this procedure on lower urinary tract symptoms (LUTS) and potency.
Methods: 70 patients with the PSA serum level above 4 ng/ml who were undergone the TRUS guided prostate biopsy at our center have been asked with IPSS (international prostate symptom score) and IIEF-5 (*international index of erectile function*) questionnaires the day before and also one month after procedure. Uroflowmetry was done for them at the same time to estimate Q max. Data were analyzed using SPSS 17 and p value less than 0.05 was considered significant.
Results: Finally 63 men remained for Q max, 63 men for IPSS and 55 for IIEF analysis.

Median age of patients was 67.47 ± 9.38. The median range of IIEF-5 score before biopsy was 20.19 and after biopsy was 20.25 that was not statistically significant ($p < 0.865$). The median range of IPSS score before and after biopsy was 11.48 and 9.88 which was statically significant ($p < 0.0001$). The median range of Qmax before and after biopsy was 7.35 and 7.74 that was not significant. ($p < 0.07$)

Conclusion: TRUS guided prostate biopsy has no important adverse effects on potency. Also Qmax parameter is not affected by it and even some patients feel improvement in their LUTS a month after procedure.

MP24-5 The burden of prostatic calculi is more important than the presence

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Introduction: To evaluate the association between prostatic calculi and lower urinary tract symptoms (LUTS) with a focus on calculi burden as an indicator.
Materials and Methods: A total of 606 participants who received transrectal prostate ultrasound were divided into two groups according to the presence of prostatic calculi. The International Prostatic Symptom Score (IPSS) and a quality of life (QoL) score were collected. Both groups were compared, and a multivariate analysis was performed to predict moderate/severe LUTS. We evaluated the linear correlation between calculi burden and IPSS in the calculi group.
Results: No differences in total IPSS, voiding IPSS, or QoL score were detected between the two groups but storage IPSS was significantly higher in the calculi group than that in the controls. The multivariate analysis showed that the presence of prostatic calculi was not an independent predictor of moderate/severe LUTS. A positive linear correlation was detected between calculi burden and storage IPSS in the calculi group ($r = 0.148$). However, no correlation was found between calculi burden and total IPSS, voiding IPSS, or QoL score.
Conclusion: our results show that the presence of prostatic calculi was not a significant factor predicting moderate/severe LUTS. However, an increased calculi burden may aggravate storage symptoms.

MP24-6 Conservative Treatment for Benign Prostatic Hyperplasia in Patients with Bladder Stones

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Objective: To determine whether conservative management of benign prostatic hyperplasia (BPH) is an appropriate option for patients with bladder stones.
Methods: The study cohort comprised 34 men who underwent endoscopic bladder stone removal with subsequent conservative management of BPH, including watchful waiting and medical therapy (alpha blocker ± dutasteride), between April 2006 and January 2014. We recorded BPH-related complications after stone removal and compared International Prostate Symptom Scores, Quality of Life scores, and postvoid residual urine volume before and after treatment. Cumulative BPH-related complication-free survival and the preoperative parameters associated with the occurrence of BPH-related complications were also analyzed.
Results: Twenty-six (76.5%) patients treated with conservative management had no BPH-related complications, during a mean follow-up of 52.6 ± 30.9 months. Mean International Prostate Symptom Scores fell from 13.5 ± 7.1 before treatment to 9.7 ± 6.3 after treatment ($P = 0.025$). One of the 34 patients (2.9%) experienced recurrent urinary infections, 2 (5.9%) had urinary retention, and 6 (17.6%) developed recurrent bladder stones. The cumulative BPH-related complication-free survival was 97.0% at 1 year, 81.8% at 3 years, and 70.5% at 5 years. Six of the men (17.6%) underwent invasive intervention for BPH after occurrence of these complications. Prostate volume was the only preoperative parameter associated with the occurrence of complications after stone removal ($P = 0.035$).
Conclusions: Conservative management of BPH can be an appropriate treatment option in men with bladder stones and concurrent mild-to-moderate lower urinary tract symptoms.

MP24-7 Measurement of Blood Loss during Thulium Laser Enucleasion of Prostate

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Introduction: Measurement of blood loss during urologic endoscopic surgery is difficult by surgeon experience or by the color of irrigant. As normal saline used as irrigant in laser prostate surgery doesn't result in RBC cell lysis, we calculated the blood loss through counting the total RBC cells in whole irrigant and the complete blood count test of the patient.
Material and methods: As RBC will keep the shapes while normal saline used as irrigant in laser prostate surgery, we calculated the the total RBC cells (ex. $6 \times 510.6 \times 10^4$ (/mL) $\times 28 \times 10^3$ (mL) $= 8.578 \times 10^{11}$) in whole irrigant by counting the RBC cells in in 9-cell counting chambers (get the average number after repeated measures, ex. $6 \times 510.6 \times 10^4$ per mL, 6 means 6 times dilution before measurement). Then we divided the total RBC cells by the RBC count from CBC data to get the blood loss during the surgery. (ex. $8.578 \times 10^{11} / 3.57 \times 10^9 = 240$ cc)We are also interested in how much the maceration procedure causes the weight loss of the resected prostate specimen. We collected the irrigant while prostate speciemen macerating and analysed the total protein by gm protein per mL irrigant.
Results: From October 2014 till June 2015, totally 22 patients received Thulium enucleation of prostate surgery by a single surgeon. Most of the patient are aged more than 70 years and received surgery due to urine retention. The reasons to receive laser surgery over traditional TURP are safety and less bleeding. We encleated the whole adenoma of transitional zone off. The mean pre-op prostate volume was 75 mL. The resection efficacy (resected weight/pre-op prostate volume) was 61% (28% ~ 87%). The estimated blood loss ranged from 6.3 mL to 468 mL and was related to resected prostate weight. We estimated the ratio of blood loss to resected prostate weight was 2.49 (mean value, ranged from 0.3 to 6). We also measured the protein loss while prostate specimen maceration was about 0.813 gm (mean value). It ranged from 0.44 gm to 2.4 gm, depending on the resected prostate size. However the protein loss was so small comparing with the resected prostate weight that it could be neglected.
Conclusions: The blood loss of laser enucleation of prostate was quite small comparing with our traditional thought of TURP. It could be roughly estimated by multiplying the resected prostate weight with 3 in milliliter.

MP24-8 Secondary Haemorrhage after Bipolar Transurethral Resection and Vaporization of Prostate

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Introduction: Secondary haemorrhage is a recognized complication after bipolar transurethral resection of prostate (TURP) and vaporization of prostate. We evaluated the factors associated with such complication.
Materials and Methods: The perioperative data of patients undergoing endoscopic surgery for benign prostatic hyperplasia (BPH) were prospectively collected. Procedures involved included bipolar TURP, bipolar vaporization of prostate and hybrid bipolar TURP / vaporization of prostate. Secondary haemorrhage is defined as bleeding between 48 hours and 30 days post-surgery requiring hospital attendance with or without admission. Risk factors for secondary haemorrhage were analysed.
Results: From 2010 to 2013, 316 patients underwent bipolar surgery for BPH. Mean age was 71.6 ± 8.8 years and mean prostate volume was 62.5 ± 32.5. Bipolar TURP accounted for 48.1% of the procedures, bipolar vaporization accounted for 20.3% of the procedures, and the rest were hybrid TURP / vaporization of prostate. Among this cohort of patients, 50 patients had secondary haemorrhage with hospital attendance. Upon multivariate analysis, age, prostate volume, operation type, the use of 5-alpha reductase inhibitors and being with a urethral catheter before operation were not found to be statistically significant risk factors for secondary haemorrhage. The only factor associated with secondary haemorrhage was the consumption of antiplatelet agents. (OR: 4.259, $p < 0.0005$).
Conclusions: Secondary haemorrhage after bipolar surgery for BPH is a common event. Consumption of antiplatelet agents is a risk factor for such complication.

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MP24-9 A study of position related chnages in uroflowmetric parameters before & after treatment in patients with benign prostatic hyperplasia and study of revised modifed LUTS questionnaire in these patients

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Objective: to compare the uroflowmetric parameters in 3 different voiding positions before initial treatment for LUTS, compare position specific uroflowmetric parameters before & after treatment & to compare IPSS/AUA symptom index with study questionnaire(PGIMER questionnaire) before & after treatment for LUTS.
Material & methods: 91 patients enrolled in this prospective controlled trial. The IPSS/AUA score was > 7/35 & QOL was > 2/6. Participants were asked to fill the IPSS/AUA questionnaire & study questionnaire (which we have named as PGIMER Questionnaire) on 2 occasions i.e. before starting treatment & 6W after treatment. Uroflowmetry & post void residual urine was checked in all 3 positions i.e. standing, sitting & squatting position both before & 6W after treatment.
Results: There was no significant difference ($p > 0.005$) in uroflowmetric parameters in various voiding positions both before & after treatment. Before treatment, strong correlation was found between IPSS voiding with PGIMER questionnaire voiding & moderate correlation between IPSS storage & PGIMER questionnaire storage symptom score. QOL in IPSS was moderately correlated with PGIMER questionnaire. After treatment, IPSS voiding score was strongly correlated with PGIMER voiding score & weakly correlation of IPSS storage & PGIMER questionnaire storage was found. QOL in IPSS was weakly correlated with PGIMER questionnaire.
Conclusion: There was no significant difference in uroflowmetric parameters in different voiding positions. Alpha blockers significantly improved the patient's symptom score & global QOL index. The PGIMER questionnaire showed significant correlation with IPSS questionnaire.

MP24-10 Comparing PSA & free PSA serum levels in fresh and freezed blood

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Introduction: PSA (prostate specific antigen) is a paragon for evaluation of prostate adenocarcinoma. In many industrial countries this antigen has been assayed immediately after sampling and the scale of it has been evaluated. But in many laboratories of our county the sample has been freezed for a long period about 72 to 96 hour or more in the freezer that the temperature is n't constant and usually is about ? 20 to ? 30°C, and after this period it is evaluated.

It seems that this way of freezing for the laboratory sample for the reason of long term preservation, regard to 1-structure of PSA, 2-period of sample preservation, 3-value of freezing and,4-way of preservation in our laboratories can effect on the scale of the sampling in the fresh and freezed PSA plasma. By the way, this study perform for the reason of effects of freezing & way of preservation in laboratories of our country survey on the scale of total & free PSA in the fresh & freezed plasma.
Materials & Methods: 110 Patient's with LUTS symptom that have been referred to the urology clinic from Nov 2008 to May2009 are elected and referred to one of two laboratories for four sampling: two sample for each laboratory that in each laboratory one sample has been freezed and evaluated after 72 hour and the other sample immediately evaluated and then the results were compared with each other.
Results:
I- By comparing the results of individual lab:
A- In lab1
1- There was not any significant difference between the level of PSA in the fresh and freezed samples of bloods with **Mono bind kit** (Eliza assaying). ($P_{AB} = 0.454$)
B- In lab 2:
2- There was not any significant difference between the level of PSA in the fresh and freezed samples of blood with **Immune tech kit** (Eliza assaying).($P_{AB} = 0.789$)
II- In comparison between two laboratories:
1- There was not any significant difference between the levels of PSA in fresh and freezed bloods with Mono bind kit and Immune tech kit (Eliza assaying).($P_{B2.1} = 0.791$, $P_{A2.1} = 0.908$)
2- Significant correlation has been observed between the level of f-PSA in the fresh and freezed samples ($P_{2,1} = 0.001$). In both lab1 and lab2, Besides, significant differences was observed between F PSA/ T PSA ratio in fresh and freezed sample (P value = 0.01)
Conclusion: At this time there is no difference between evaluating of fresh & freezed blood for PSA antigen but in free PSA there is difference and we advise that is better to evaluated the fresh blood sample.

MP24-11 Bipolar resection of prostate using Turis system: A study about 47 cases

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Objective: We reported the safety and efficacy of prostate bipolar resection using Turis system.
Materials & Methods: We report 47 cases of men with BHP who underwent a bipolar trans uretral resection using the Turis system
Results: The prostate median weight was 65 gr. The mean operative time was 65 min (40–110 min). There was no conversions and no complications for all the cases. The blader catheter was take out the second postoperative days, and the patients left the hospital in the third day. At the folow up, all patients had an IPSS amelioration without irritative symptoms.
Conclusion: TURis offers the patient the same results as monopolar technology guaranteeing maximum safety and reducing the bleeding

MP24-12 Impact of Blood Sugar Control on the Therapeutic Effect of Alpha Blockers in Patients with Benign Prostate Hyperplasia and Diabetes Mellitus: a Multicenter, Retrospective Study

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Purpose: We investigated the association of type 2 diabetes mellitus with the effect of alpha blocker in patients with benign prostate hyperplasia (BPH) > 45 years of age.
Materials and Methods: International Prostate Symptom Score (IPSS), maximum flow rate (Qmax), post-void residual urine volume (PVR) and hemoglobin A1c (HbA1c) were determined in 145 men with clinically diagnosed as BPH at baseline and after a 4 week treatment with alpha blockers. Patients with urinary retention history, previous prostate surgery, type 1 diabetes mellitus, 5 alpha reductase inhibitor and neurogenic bladder were excluded. Therapeutic effects of alpha blocker on lower urinary tract symptoms were compared between well controlled and poorly controlled diabetic patients. Poorly controlled diabetes was defined as baseline hemoglobin A1c ≥6.5%.
Results: The mean age of the patients was 64 years. Baseline characteristics including age, body mass index, IPSS, quality of life (QoL) score, Qmax, PVR, prostate specific antigen and prostate volume did not differ significantly between the two groups. After 4 weeks treatment with alpha blockers, IPSS total score, IPSS storage score and IPSS voiding score, QoL score and PVR were improved in both groups, however, there were no significant statistical difference between the two groups. Although Qmax was also improved in both groups, the improvement of Qmax in well controlled diabetic patients was significantly higher than in poorly controlled diabetic patients.
Conclusions: Alpha blocker treatment appears to be also useful for poorly controlled diabetic patients with BPH. Lower urinary tract symptom may not be affected by the blood sugar control with alpha blocker treatment in BPH patients.

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MP25 - ROBOTIC SURGERY: LOWER TRACT ONCOLOGY

MP25-1 Salvage Robot-Assisted Laparoscopic Prostatectomy after High-Intensity Focused Ultrasound Therapy for Clinically Localized Prostate Cancer

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Introduction: High-intensity focused ultrasound (HIFU) for primary treatment of localized prostate cancer has been steadily gaining popularity worldwide. As with other modalities of treatment, such as radiation therapy or cryotherapy, HIFU failures present a challenge for the optimal approach to salvage therapy. We present our technique of salvage robot-assisted laparoscopic prostatectomy (RALP) following failed HIFU therapy for localized prostate cancer.
Material and Methods: The patient is a 65 year-old male with an elevated PSA of 3.2 ng/ml in November 2010. Transrectal ultrasound (TRUS) guided prostate biopsy revealed Gleason 6 (3 + 3) adenocarcinoma of the prostate in 2 of 12 cores. Cross sectional imaging revealed no evidence of metastatic disease. In 2011, the patient underwent HIFU therapy with a postoperative PSA nadir of 0.3 ng/ml. Between August 2013 and August 2014 the PSA rose to 0.6 ng/ml. Repeat TRUS guided prostate biopsy revealed Gleason 6 (3 + 3) adenocarcinoma in 2 of 5 cores in the right base and left peripheral biopsies, and a prostate volume of 7.4 g. The patient elected to undergo salvage RALP for treatment. Standard patient positioning and a 5 trocar template for RALP was used. The surgical planes along the lateral aspects of the prostate and endopelvic fascia/levator musculature were noted to be fibrotic and the dissection was extremely difficult. The bladder neck dissection was unremarkable. The rectal dissection in the posterior plane along Denonvilliers' fascia was performed with moderate difficulty. The apical dissection and urethrovesical anastomosis were unremarkable.
Results: The total operative time was 334 minutes and estimated blood loss was 75 ml. There were no intraoperative or postoperative complications. The patient was discharged on the first postoperative day. Final pathology revealed Gleason 7 (3 + 4) adenocarcinoma bilaterally with extracapsular extension at the right lateral aspect of the prostate. The final pathologic stage was pT3a and the nadir postoperative PSA level remains < 0.1 ng/ml. The patient uses a vacuum erection device for erectile dysfunction, and currently uses 2 pads per day for urinary incontinence with progressive improvement.
Conclusion: Salvage RALP after HIFU is safe and technically feasible when performed by surgeons with extensive robotic

prostatectomy experience. However, as with salvage RALP after cryotherapy or radiation therapy, RALP after HIFU can be very challenging due to the obliteration of tissue planes, especially lateral and posterior to the prostate. Adherence to basic surgical principles and expert knowledge of pelvic anatomy are necessary for successfully performing this procedure.

MP25-2 Prolonged console time during robotic prostatectomy increases estimated blood loss in the initial experience with daVinci Xi machine

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Introduction: Many authors have reported a wide range of estimated blood loss (EBL) in their initial experience with robotic prostatectomy (RP).

In this study we aim to look at our EBL in our initial experience with daVinci Xi RP and the impact of console time on EBL. Since EBL is confounded by multiple parameters we analysed the post op blood results to see whether EBL reliably measures the blood loss.
Materials and Methods: This is a retrospective study into the prospectively collected data of the first 68 patients who underwent RP with daVinci Xi machine. The data collected included age, length of stay, total operating time, console time, estimated blood loss, drop in hemoglobin, drop in hematocrit, additional lymphadenectomy, conversion to open, transfusion rate, final histology, re-admission and complication rates. The data were analysed using SPSS software version 16.0.
Results: The console time varied between 120 min to 300 min with a median of 150 min (57.50). Average EBL was 300 ml. With increasing console time a statistically significant increase in EBL is noted ($p < 0.001$). Post op hemoglobin and hematocrit drop was seen in all patients and this correlated significantly with the EBL ($p = 0.03$ and 0.02 respectively). Median Hb drop was about 250 gm/l. No patient needed transfusion.
Conclusions: A very strong correlation is seen between the console time in RP and estimated blood loss. Every effort should be made to reduce console time without compromising the surgery as such. Further prospective and large scale studies could help in developing nomograms to predict or to measure EBL in RP.

MP25-3 Intra-Surgical Total and Re-Constructible Pathological Prostate Examination for Safer Margins and Nerve Preservation: ISTANBUL Preserve

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Introduction: Performing frozen section (FS) analysis during radical prostatectomy improves nerve-sparing without compromising cancer control. Techniques described focus on FS of tissue adjacent to the neurovascular bundle (NB) and result in significant tissue loss not allowing for perfect reconstruction for final whole-mount evaluation. We describe a novel FS technique in which the entire prostate is examined for margins and perfect reconstruction is conceivable.

Methods: 54 patients underwent **I**ntra-**S**urgical **T**otal **an**d Re-Constructi**bl**e Pathological **Pr**ostate **E**xamination for **S**afer Margins and N**erve** Preservation (ISTANBUL Preserve) during nerve-sparing robot-assisted radical prostatectomy between 10/2014 and 6/2015. Prostate was removed via extending the lateral 12-mm. assistant port and incision re-tightened with suturing. Hemostasis, lymphadenectomy (LND) and anastomosis were performed during FS. A genitourinary pathologist and 2 technicians were involved. Prostate tissue adjacent to NVB was inked with 3 different colors depicting apex, mid and base. The right and left lobes were also inked separately. Prostate was entirely sectioned at 3–4 mm intervals from apex to bladder neck. The margins of the prostate were excised in two halves (R & L) at a width of 4–5 mm. Tissue was embedded in freezing media on a cryostamp and frozen. 5–7μ cryosections were cut from each half border, hematoxylin and eosin stained, and reviewed. If margin was positive (R1) extensively, further resection was performed from the corresponding NB area until negative margins were reached. If R1 was a small focus, excised tissue from corresponding area was sent for permanent analysis. In large prostates, anterior zone was not always examined.
Results: The risk categories were low, medium and high in 8, 31, and 16 patients, respectively. LND was performed in 52 (96%). Median time for pathologic analysis was 55 (35–95) minutes; overall operative time was 34 mins longer in cases with FS and LND. Twenty-four patients (44%) had R1 at surgery and further tissue was resected; 25%, 41% and 60% with increasing risk category. Malignant tissue was found in 8% of resected bundle tissue. Two patients had R1 at permanent pathology. False negative rate of R1 at FS was zero. All prostates were reconstructed with negligible tissue loss for final whole mount examination.
Conclusion: ISTANBUL Preserve allows for intrasurgical complete pathological examination of the prostate for margin status and for perfect re-construction for whole mount permanent examination. It guarantees safer margins together with increased rate of nerve sparing.

MP25-4 Open versus robotic surgery – a single centre comparison of 1000 consective radical prostatectomies

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Introduction: Robotic prostatectomy has become widespread internationally. We present the UK's first single centre comparison of open versus robotic surgery in 1000 consecutive patients.
Patients: 558 consecutive patients underwent open prostatectomy (ORP) by single surgeon between March 1997 and April 2011. Following introduction of robotic surgery in May 2011, 442 patients, in a fellowship trained single surgeon series, underwent robotic assisted laparoscopic prostatectomies (RALP) from May 2011 to date.
Methods: A comprehensive electronic database was used by both surgeons to prospectively collect data at point of care. We reviewed patient demographics, surgical, oncological and functional outcomes.
Results: The mean age was 61 vs. 63.9 years and patients were matched for pre-operative PSA (10 vs. 8.8) in the ORP and RALP group respectively. The operative time was similar at 163

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vs. 168 minutes. The estimated blood loss was 1597 mls vs. 262 mls reflecting a higher transfusion rate of 14% in the ORP group vs. 1.5% in the RALP group (p = <0.0001). The overall positive margin rate was 34% vs. 24% (ORP vs. RALP) (p = <0.0001). The overall complication rate was 31% vs. 12.2% (p = <0.0001), T2 margin rate of 20% vs. 12% and mean hospital stay was 3.8 vs. 1.1 days in ORP and RALP respectively. Earlier recovery of continence was seen in the RALP group.
Conclusion: This is the first UK comparative study between ORP and RALP. We have shown how safe implementation of robotic surgery has led to a shorter hospital stay, lower blood loss, transfusion rates and complication rates and improved functional outcomes.

MP25-5 Innovative Application of Instant Toggling of Endoscope in Challenging Cases during Robot Assisted Radical Prostatectomy Using Xi da Vinci Robotic Surgical System

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Objective: In this video, we will demonstrate the innovative role of instant toggling of endoscope in key steps of nerve sparing (NS), modified posterior reconstruction and vesicourethral anastomosis, (VUA) in presence of challenging scenarios during robot assisted radical prostatectomy using Xi da Vinci Robotic Surgical System.
Materials and Methods: We have demonstrated our technique of nerve sparing - athermal, early retrograde release, minimization of tension with identification of landmark artery in the best case scenario using 30 down scope. Then, the role of instant toggling of endoscope (from 30 down to up) in Xi da-Vinci robotic surgical system during bilateral complete NS in challenging scenarios of RARP has also been highlighted. Further, we demonstrated our technique of modified posterior reconstruction and modified von Volthoven vesico-urethral anastomosis (VUA) in ideal scenario. Subsequently, we highlighted the role of instant toggling of endoscope (from 30 down to up and vice versa) in Xi da-Vinci robotic surgical system, in presence of challenging scenario of morbidly obese patient with deep and narrow pelvis, during posterior reconstruction and VUA.
Results: Twenty patients were included in the study from January 2015 to May 2015. Using the instant toggling of endoscope in Xi da Vinci robotic surgical system, the mean time for NS was 12.3 min versus 18.1 min in standard procedure (p < 0.005). There were no intraoperative/postoperative complications. The modified posterior reconstruction and vesico-urethral anastomosis could be completed efficiently in all cases.
Conclusions: The use of instant toggling of endoscope using Xi da-Vinci robotic surgical system during RARP is feasible and safe. It Improves visualization of anatomical landmarks and quality of NS. It also facilitates other key steps of modified posterior reconstruction and VUA in challenging scenario- obese patient, with deep narrow pelvis. The short-term perioperative results are encouraging. However, long term randomized controlled trials are required to evaluate benefits in functional outcomes over longer period of time and potential negative events.

MP25-6 Prediction of 30-d Clavien grade ≥3 complication rate in Robot-Assisted Radical Cystectomy with totally intracorporeal urinary diversion

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Introduction: Minimally invasive radical cystectomy with totally intracorporeal urinary diversion (UD) is a challenging procedure that is gaining popularity thanks to robotic platform. In this study we analyzed a cohort of 100 consecutive cases of Robot-Assisted Radical Cystectomies (RARCs) to identify predictors of 30-d severe complications.
Materials and Methods: Between August 2012 and September 2014 100 patients underwent RARC with totally intracorporeal UD. All procedures were performed by the same surgical team. Baseline, and perioperative outcomes were collected and analyzed. Univariable and multivariable Cox analyses were performed to identify predictors of 30-d Clavien grade ≥3 complications.
Results: The overall incidence of 30-d complications was 50%, while the 30-d Clavien grade ≥3 complications rate was 21%. At univariable Cox analysis, age (continuous, p < 0.001), learning curve (each unit increase; p < 0.001), ASA score (p < 0.001), body mass index (p < 0.001), preoperative hemoglobin levels (p < 0.001), estimated glomerular filtration rate (e-GFR) (p = 0.001) and UD (p = 0.004) were significant predictors of 30-d grade ≥3 Clavien complications occurrence (Table 1). At multivariable Cox analysis, the number of procedures performed (each unit increase) and the UD performed (ileal conduit vs. orthotopic ileal neobladder) were the only independent predictors of lower 30-d grade ≥3 complications rate (p = 0.03 [HR 0.978, 95%CI 0.96–0.99] and p = 0.039 [HR 0.10, 95% CI 0.12–0.89], respectively) (Table 2).
Conclusions: Learning curve and orthotopic neobladder are independent predictors of severe complications after RARC with totally intracorporeal UD.

Table 1. Univariable Cox analysis

	HR	95% CI	p
Age	1.02	1.01-1.03	<0.001
BMI	1.05	1.03-1.06	<0.001
ASA	1.44	1.27-1.55	<0.001
Hgb levels	0.92	0.89-0.96	<0.001
eGFR	0.99	0.98-0.994	0.001
UD	0.053	0.01-0.39	0.004
Learning curve	0.97	0.96-0.98	<0.001

Table 2. Multivariable Cox analysis

	HR	95% CI	p
Age	0.998	0.969-1.027	0.87
BMI	0.972	0.914-1.034	0.37
ASA	1.126	0.483-2.625	0.78
Hgb levels	1.074	0.95-1.214	0.25
eGFR	0.709	0.981-1.013	0.71
UD	0.103	0.012-0.894	0.039
Learning curve	0.978	0.959-0.998	0.03

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MP25-7 Robot-Assisted urinary undiversion from Orthotopic Neobladder to ileal conduit

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Introduction: This video highlights the surgical steps of a robot assisted undiversion from othotopic neobladder to ileal conduit in a 76 yr-old female with upper urinary tract stones and previous episode of sepsis triggered from recurrent UTI.
Materials and Methods: With the patient in a steep Trendelemburg position, the Retzius space was developed and the orthotopic neobladder easily identified. The first step was the meticulous energy free dissection of ileal adhesions with the pubic bone and with the neobladder combining sharp and blunt dissections. The lateral aspect of the neobladder was completely mobilized and the posterior attachments with the anterior wall of the vagina dissected. Finally the neobladder neck was transected in touch with the pubic bone. Both ureters were identified, transected and spatulated. Finally, the neobladder mesentery was divided with a motorized stapler and the specimen placed into endocatch bag. A laterolateral anastomosis of the ureters was performed according to the Wallace technique and the ileal conduit was now pulled through the preoperatively identified stoma site. Ureteroileal anastomoses were performed and 2 single-j stents inserted on a guidewire. Finally the anterior aspect of the anastomosis was completed and irrigation of the conduit was performed to ensure the absence of any leakage.
Results: Perioperative course was uneventful. Patient was discharged in seventh post-operative day; at 6-mo evaluation no uretero-ileal stenosis were observed and neither stones nor UTI occurred.
Conclusions: Robot-assisted urinary undiversion from orthotopic neobladder to ileal conduit is a safe, feasible and minimally invasive procedure.

MP25-8 Robotic cystectomy with intracorporeal diversion is better tolerated by patients with low cardiorespiratory fitness: A cohort study

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Background: Data on the role of cardiopulmonary exercise testing (CPET) in predicting complications following robotic assisted radical cystectomy (RARC) and intracorporeal diversion (ID) is lacking. RARC with ID is standard practice at our institution, and all patients undergo CPET prior to surgery. Our objective was to test whether CPET outcomes are associated with complications and LOS in patients undergoing RARC with ID due to the minimally invasive approach of this procedure.
Patients and Methods: All patients who underwent CPET prior to RARC with intracorporeal diversion were eligible for inclusion. Exclusions for CPET were patients with inoperable disease, those unable to perform CPET, or where no measure of AT was obtained. All patients underwent trans-peritoneal radical cystectomy via a 6-port approach with removal of specimen via the vagina in females or a modified gridiron incision in males. All diversions were performed intracorporeally. Standard preoperative assessment and CPET was conducted using a cycle ergometer. Data on CPET parameters (AT, VE/VCO2 (AT), Peak VO2), patient demographics and BMI were prospectively collected. Data on LOS and 30-day major complications (30DMC) were retrospectively collected from case notes.
Results: From 10/2010–05/2015 82 patients underwent CPET prior to RARC and intracorporeal diversion. Median (IQR): Age = 65 (58–73); BMI = 27 (23–30); AT = 10.0 (9–11), Peak VO2 = 15.0 (13–18.5), VE/VC02 (AT) = 33.0 (30–38). 30DMC = 12/82 (15%): Death = 1, Multi organ failure = 2, Wound infection = 2, Gastrointestinal = 1, Renal = 6; 90-day mortality 3/82 (3.6%). No significant correlation between 30DMC or length of stay for BMI, AT, Peak VO2, or VE/VC02 (all $P > 0.05$). Regarding comparison between patients with and without 30DMC, no significant difference was found in BMI, AT, Peak VO2, nor VE/VC02 (at AT) (all $P > 0.05$), there was a significant difference in LOS (27.3 vs. 11.8 days; $P < 0.001$).
Conclusions: In open and RARC series with extracorporeal diversion CPET parameters are associated with LOS and 30DMC. Our results suggest that poor cardiorespiratory fitness does not predict LOS or 30DMC rate, suggesting that RARC with intracorporeal diversion may be better tolerated by patients with poor cardiorespiratory fitness. 90-day mortality of 3.6% and 30DMC rate of 15% are comparable with other series despite 3/4 of patients having an AT ≤ 11, previously shown to predict increased complications. This study is limited by lack of a comparison (e.g. extracorporeal diversion), retrospective data collection, and further work is needed to collect data on 90-day complications. However, this is the largest series looking at CPET in RARC with intracorporeal diversion, and as such the results are interesting.

MP25–9 Surgical complications of robot-assisted radical prostatectomy: Initial experience in 70 cases of Osaka University Hospital

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Background: A robot-assisted laparoscopic radical prostatectomy (RALP) is being adopted increasingly worldwide for the treatment of localized prostate cancer (PCa). Complications assessment is essential to the objective evaluation of any new procedure for any institution. This study aimed to assess the surgical complications encountered during the implementation of RALP in our initial series.
Methods: A prospective data collection for all men with a diagnosis of PCa who underwent RALP using the 4-arm da Vinci-S surgical robot between Nov. 2012 and Jul. 2014 in our department was achieved. Together with perioperative data, all the perioperative complications encountered were specifically recorded, including prolonged urinary stress incontinence. To assess the perioperative complications, the Clavien-Dindo classification of surgical procedures was used. Three surgeons were involved in these procedures.
Results: Overall, 13 complications were reported in 12 of 70 patients (17.1%) including 9 minor complications (Clavien grade 1–2) and 4 major complications (Clavien grade 3; compartment syndrome requiring fasciotomy, infectious lymphocele requiring percutaneous drainage, severe subcutaneous emphysema and hypercarbia requiring stay in ICU and deep vein thrombosis requiring caval filter). In the initial 35 cases, 11 complications

(31.4% complication rate) were recorded, while only 2 complications (5.7% complication rate) in following 35 cases. Especially, no positioning injury such as compartment syndrome, rhabdomyolysis or femoral nerve paralysis, was recorded in last 20 cases after introduction of appropriate Trendelenburg position using the sophisticated devices.
Conclusions: With increasing institutional experience, the incidence of overall and positioning-related complications was prevented after 50 procedures. The authors believe that the reliability of surgical issues should be comprehensively discussed and close coordination between the anesthesia and surgical teams is required for a successful surgery.

MP25-10 Reducing length of stay and complication rate following robotic radical cystectomy: the Royal Surrey County Hospital experience

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Introduction - Objectives: Radical cystectomy is the standard of care for muscle invasive bladder cancer in fit patients. However, it is associated with significant morbidity (48%) and mortality (4.2%), and long hospital stay (median in UK: 13 days). A carefully designed service combining minimally invasive surgery with an Enhanced Recovery Programme may reduce length of stay, complications, readmission rate and mortality. We describe our experience in implementing a new regional service, combining minimally invasive surgery with an Enhanced Recovery Programme.
Materials - methods: Between April 2013 and June 2015, 60 patients (55 men and 10 women), average age 72 years old (range: 44–85 years old), median ASA grade II (range: I-III), underwent robot assisted radical cystectomy with extended pelvic lymph node dissection. 62 of the patients had ileal conduit and 3 orthotopic neobladder formation. An Enhanced Recovery Programme was devised, where patient education, prehabilitation, pre-operative carbohydrate drinks, spinal analgesia, goal-directed fluid therapy, early feeding with nutritional supplementation and intensive early mobilisation were applied, while opioid analgesics and nasogastric tube insertion were avoided.
Results: Median surgical time was 6 h 30 min (range: 3 h 37 min-8 h 53 min), median blood loss was 200 ml (range: 30–800 ml) and median length of stay was 5 days (range: 3–29 days). Thirteen patients had complications (three: Clavien I, six: Clavien II, three: Clavien 3 and one: Clavien V), and only two patients were readmitted.
Conclusion: In our experience, minimally invasive surgery in combination with a well designed Enhanced Recovery Programme seems to be a safe and effective way to improve complications and length of stay compared to the national standards, even from its beginning. Long term results are awaited.

MP25-11 Transition to robot-assisted laparoscopic prostatectomy is associated with a reduction of positive surgical margin

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Introduction: In spite of the increasing use of robot-assisted laparoscopic prostatectomy (RALP) worldwide, it is still controversial whether RALP contributes to surgical margin status. The objective of this study is to compare the surgical outcomes including surgical margin status between RALP and pure laparoscopic radical prostatectomy (LRP).
Patients and methods: In 663 consecutive patients with localized prostate cancer who underwent LRP (n = 563) or RALP (n = 100) between February 2000 and March 2015 at single institution, were comprised in this study. The demographic data, surgical outcomes, including surgical margin status, and postoperative complications in the two groups were analyzed and compared.
Results: Preoperative patient data indicated that both groups were comparable in body mass index and prostate-specific antigen (PSA) levels. However, gleason score, clinical stage of the RALP group were significantly higher than those of LRP group, and therefore there are more high risk patients in the RALP group (42% vs 24%, p = 0.0001). The positive surgical margin rate was significantly lower in the RALP group (22.0%) compared with LRP group (33.4%, p = 0.026). Positive surgical margins were detected in the apex (76.5%), mid (11.7%) and in the base (11.7%) in the LRP group. In the RALP group, however all positive surgical margins were in the apex (100%). Multivariate analysis revealed that preoperative PSA level ≥ 10 ng/mL, pathologic T2 vs T3, prostate volume (> 40 g), and surgical approach (LRP vs RALP) were significantly associated with positive surgical margin. There were no differences in rate of continence between the 2 groups.
Conclusions: Robotic assistance using an intraperitoneal approach offers better results than pure laparoscopy in terms of surgical margins. Distribution of positive surgical margins in RALP group is also different from that in LRP group.

MP25-12 Introduction of Robotic Prostatectomy in a Community Hospital Setting

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Purpose: Most robotic prostatectomy data has emerged from tertiary referral centers where robotic technology was introduced. Robotics has now disseminated into community and private practice, and outcomes data in this setting are under active study.
Materials and Methods: Patient data was restrospectively reviewed for 100 robotic prostatectomy cases conducted at a 260-bed community hospital between January 2013 through June 2015. All cases were performed by a single surgeon and one of two physician assistants who were trained by the surgeon beginning at the time of program initiation.
Results: In total 100 cases were conducted. Median age was 64.2 (range 43–75), and median PSA was 5.76 (Range 1.2–23). Biopsy Gleason scores of 6, 7, 8, and 9 + occurred in 31%, 53%, 10% and 6% of patients, respectively. Specimen pathology Gleason scores of 6, 7, 8, 9 + were observed in 12%, 68%, 1%, and 19%, respectively. Stage 2a/b, 2c, 3a and 3b disease was observed in 14%, 61%, 14% and 11% of patients respectively. Node positivity was detected in 3% of patients, all of whom had high risk disease. D'Amico risk classification after surgery decreased in 8% of patients and increased in 41%. Positive margins occurred at rates of 0%, 19% and 50% in patients with low, intermediate and high risk disease, respectively (total rate = 21%). Mean operative blood loss was 235 ml (SD ± 130 ml), mean operative time was 1.9 hours (SD ± 0.5 h), and mean length of stay was 1.9 days (SD ± 1).

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Complications occurred at a rate of 6%, 4% were Clavien grade 1–2 events and 2% were Clavien grade 3–4 events. PSA recurrence at 12 months occurred in 0%, 4% and 33% of men with low, intermediate and high risk disease (total rate = 6%). Continence success (no pads) at 6 weeks and 6 and 12 months was 64%, 90% and 92%, respectively. Of men with leakage at 12 months, 66% had high risk disease. Potency success in men with normal to mild ED at baseline was 66% and 80% at 6 and 12 months, respectively.
Conclusions: The introduction of robotic prostatectomy into a community hospital practice has proven to be safe and effective. Robotics affords surgeons more control over visualization and retraction, with decreased dependency on assistance. As such, it is a valuable tool for solo surgeons in a community hospital setting.

MP25-13 Robotic radical prostatectomy for patients of high risks

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Objective: To discuss the advantages of robot-assisted laparoscopic radical prostatectomy (RALRP) in the treatment for high-risk prostate cancer after neoadjuvant hormonal therapy (NHT), as compared to laparoscopic radical prostatectomy (LRP) or retropubic radical prostatectomy (RRP).
Methods: Analyses the clinical data of 56 patients with high-risk prostate cancer from March 2010 to December 2014 retrospectively. After NHT with the regimen of maximal androgrn blockage (MAB), 25 patients received RALRP, and another 15 patients underwent LRP, whereas RRP was performed for the other 16. For those whose PSA < 0.2 ng/ml after NHT and maintain lower level after surgery, adjuvant hormonal therapy was not recommended, but adjuvant radiotherapy was administrated for those pathology demonstated $\geq T_3$. However, adjuvant radiotherapy plus hormonal therapy was actively given to those PSA > 0.2 ng/ml after NHT.
Results: The median operating time (OT), estimated blood loss (EBL) and hospital stay (HS) was 125 minutes (including docking time 15 minutes), 250 ml, 7 days in RALRP group, and 220 minutes, 900 ml, 7 days in LRP group, and 150 minutes, 550 ml, 14.5 days in RRP group, respectively. The drainage tube was withdrawn 10 days postoperatively and urinary leakage was not identified. A negative margin was reported in all pathological diagnosis. One case in each group had to receive adjuvant hormonal therapy because of PSA relapse after three months of surgery. All but five patients in RRP group and two patients in LRP group were continent 3 months postoperatively.
Conclusion: For patients of high-risk prostate cancer receiving NHT, RALRP is also a better consideration compared to LRP or RRP.

MP25-14 Robotic-assisted Laparoscopic Stump Ureterectomy for Transitional Cell Carcinoma after Radical Nephrectomy

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Introduction: Transitional cell carcinoma of the ureteral stump after radical nephrectomy is rare with limited reports on minimally invasive approaches for a completion ureterectomy. To our knowledge, we present a video of the first reported case of a robotic-assisted laparoscopic stump ureterectomy.
Patient: This is an 86 year-old male with a history of severe carotid artery stenosis requiring full dose Aspirin and Plavix and a right radical nephrectomy for papillary renal cell carcinoma performed 5 years prior at an outside hospital through a paramedian incision. After presenting with hematuria, cystoscopy with right retrograde pyelogram demonstrated tumor emanating from the right ureteral orifice with multiple ureteral filling defects up to a surgical clip. Pathologic analysis of tumor resection revealed high grade urothelial carcinoma. Staging workup demonstrated no lymphadenopathy nor metastatic disease.
Results: The patient underwent a robotic-assisted laparoscopic right stump ureterectomy with extended right pelvic lymph node dissection. Port placement resembled that of a standard robotic prostatectomy. The right ureteral stump was visualized inferior to the iliac vessels and dissected free using the third robotic arm for traction. A dense fibrotic reaction was noted around the ureteral stump. A wide bladder cuff was included in the resection and the cystotomy was closed in 2 layers with running V-lock sutures. Operative time was 188 minutes and estimated blood loss was 25 cc – despite continuing full dose asprin. The patient had an uneventful hospital course and was discharged on postoperative day 2 after the drain was removed. A week later CT cystogram demonstrated no extravasation and the foley was removed with instillation of Mitomycin C. The pathology revealed T2N0 high grade urothelial cancer confined to the ureteral stump. At 2 month follow up the patient was doing well.
Conclusion: Robotic-assisted laparoscopic stump ureterectomy is a feasible and safe approach for ureteral stump urothelial cancer.

MP25-15 Concomitant Mesh Free Repair of Inguinal Hernia during Robot Assisted Radical Prostatectomy

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Objective: To report our experience with concomitant hernia repair during robot assisted radical prostatectomy (RARP) with a mesh-free suturing technique.
Methods: We conducted a retrospective review of 1005 consecutive patients who underwent RARP between the years 2005–2015. Twenty-nine patients who underwent 37 concurrent inguinal hernia repair were identified (group 1) and were matched with a group of 29 patients who underwent RARP without a hernia repair (group 2). The match was for age, BMI and pathologic stage. The repair was mesh-free and consisted of suturing lateral part of the rectus abdominis muscle sheath with ileopectineal ligament (Cooper's ligament) with a continuous loose prolene suture secured after every two bites at the same level. The suturing line starts and ends in the same position. The two edges of the continuous suture were secured with clips. This technique provided a tension free repair and the final reinforcement of the floor was expected to be via the secondary fibrotic tissue which would develop and mature between the sutures.
Results: From the total of 1005 patients who underwent RARP, 29 (2.8%) were identified pre-operatively with direct inguinal hernia and underwent inguinal herniorrhaphy during RARP. Operative time for group 1 was 146.62 mins. vs 143.31 mins. for group 2 ($p = 0.785$), whereas estimated blood loss was 175 ml. for

the group with the hernia repair vs 200 ml for the group without repair ($p = 0.337$). There were no complications observed in either group. Mean follow-up period for group 1 was 32.1 vs. 33.3 months for group 2 ($p = 0.835$) and in that period no hernia recurrences were observed.
Conclusions: Inguinal hernias represent an important surgical issue and may be repaired concurrently during radical prostatectomy in order to minimize the risks of post-operative complications. The concomitant repair of inguinal hernias during robotic radical prostatectomy utilizing suture technique and no mesh aids to the above mentioned goal without affecting intra and post- operative results. This technique is safe and feasible.

MP25-16 Robotic prostatectomy and psychosexual care-a systematic review

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Introduction: Prostate cancer is the most common cancer in men. With advances in surgery, more and more patients are undergoing radical prostatectomy and one important side effect of surgery is erectile dysfunction. Current literature demonstrates men undergoing surgery for prostate cancer have significant unmet needs including psychosexual care.
Objectives: To assess mens' post operative psychosexual needs in two cancer centres in England; co-design and implement a psychosexual pathway in one centre and compare patient experiences and outcomes between the bespoke and usual care pathways.
Design: A systematic review was conducted of psychosexual care post robotic prostatectomy.

Outcome measurements: impact of pathway on psychosexual care to be assessed using IIEF, secondary outcomes health related quality of life and acute and chronic co-morbidities to be assessed.
Results and limitations: The systematic review elicited over 1200 papers, 27 of which conformed to the search criteria. The psychosexual concerns after prostate cancer surgery were identified from the systematic review by patients as an unmet need. Additionally, very few papers addressed interventions to manage psychosexual concerns for men post robotic prostate cancer surgery. These findings were confirmed by existing systematic reviews and conference papers.
Conclusions: This systematic review demonstrated a large unmet need for psychosexual care in men with prostate cancer post-surgery. Poor health related quality of life was also strongly associated with psychosexual concerns and also co-morbidities, within the systematic review

MP25-17 Neoadjvant hormone therapy for localized prostate cancer: initial experiences in intermittent-and high-risk patients in the robotic surgery era

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Introduction: Current guidelines suggest that patients with intermediate- or high-risk prostate cancer (CaP) could be offered neoadjuvant hormone therapy (NHT) before they receive definitive radiation therapy. However, no powerful evidences showed NHT has prognostic benefits to patients receiving robotic-assisted laparoscopic radical prostatectomy (RaLRP) yet. This study was to compare the results of RaLRP in patients who did and did not receive NHT, especially focus on intermediate- and high-risk patients.
Patients and Methods: Patients received NHT prior to RaLRP by a single surgeon were identified from the VGHTC Prostate Cancer Database. Control group was picked out via computerized 1:1 ratio matching with the following criteria: (1) prostate specific antigen (PSA) level at diagnosis (2) initial Gleason score (3) clinical stage (4) Age. NHT regimens include combination of Luteinising hormone-releasing hormone (LHRH) agonist with anti-androgens and individual use of either LHRH agonist or anti-androgens. General characters of patients, peri-operative parameters, functional and oncologic outcome were prospectively recorded.
Result: Total 48 patients with D'Amico intermediate- and high-risk CaP were analyzed. The mean patient age, BMI, preoperative PSA, and Gleason score at biopsy appears equivalent but there're significant statistic higher percentage of cT2c in control group and a trend of higher percentage of cT3b in NHT group. Shorter operative time (153.5 minutes v.s. 113.3 minutes, $p = 0.0002$) and lesser amount of blood loss (147.08 ml v.s. 93.75 ml, $p = 0.131$) were found in NHT group. The average period of biochemical recurrence (BCR) was similar (5.33 months v.s. 6.54 months, $p = 0.523$) but the overall BCR rate was significantly lower in NHT group (87.5% v.s. 54.2%, $p = 0.026$). In sub-group analysis, BCR rate was significant lower in NHT group if preoperative PSA level were between 10 to 20 ng/ml (66.67% v.s. 0%, $p = 0.035$) and >50 ng/ml (100% v.s. 55.56%, $p = 0.018$) while BCR rate was 81.82% v.s. 80% ($p = 0.916$) in PSA 20–50 ng/ml. However, average follow-up period was significantly insufficient in NHT group (49.46 months v.s. 20.29 months, $p < 0.001$) although BCR usually happened in the postoperative first year in our study.
Conclusions: Neoadjuvant NHT followed by RaLRP seems to provide some potential benefits in shorter operative time, lesser amount of blood loss, and lower rate of BCR during postoperative two years in patients with intermediate- or high-risk localized CaP.

MP25-18 Points of technique to facilitate the dissection in very large prostates during robot assisted radical prostatectomy

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Introduction: Robot assisted radical prostatectomy has become the gold standard for the treatment of localised prostate cancer. With increasing experience surgeons are tackling more difficult cases. Radiation oncologists are reluctant to treat prostate cancer in very large glands with external beam radition therapy (EBRT) hence the need for another curative approach. Excision of very large prostates is associated with technical difficulty as demonstrated by the operative times, blood loss and transfusion rates.
Materials and Methods: We present video footage from two cases of radical prostatectomy in prostates with resected specimen weight of 200 g and 240 g. We have edited the video to demonstrate points of technique to facilitate dissection highlighting the difference in technique compared to removal of normal sized prostates.
Results: The average volume of 653 prostate glands treated with radical prostatectomy in our institution between November 2008 and May 2015 was 56.5cc (range 11–169cc). In June 2015 two prostates of 200 g and 240 g respectively were

removed using the Da Vinci Robotic system. Initially with very large prostates, room to retract the prostate anteriorly is very limited and an alternative approach is required. Our approach involves beginning with an anterior dissection including dividing the DVC and urethra allowing the prostate to be rotated out of the true pelvis and creating space in which the posterior dissection can then proceed. Both patients stayed in hospital for two post-operative nights (compared with an average of 1 night in our series). Neither had a blood transfusion or suffered any peri-operative complications.
Conclusions: Robot assisted radical prostatectomy is a safe and effective treatment for localized prostate cancer. Use of simple technical modifications can facilitate removal of extremely large prostate glands safely.

MP25-19 Combined inguinal hernia repair with a synthetic mesh during robot assisted laparoscopic radical prostatectomy

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Aim: About 10% of patients undergoing radical prostatectomy (RP) present with an inguinal hernia. Its cure simultaneously with RP remains a concern with respect to the type of technique, and the risk to infect an eventual mesh The aim of this study was to evaluate the feasability, morbidity and efficacy of combined inguinal hernia synthetic mesh repair during robot assisted radical prostatectomy (RARP).
Methods: 526 medical records of patients who underwent transperitoneal RARP from 2006 to 2015 were reviewed. Demographics and peri-operative datas were analyzed for two groups (RARP alone vs RARP and hernia repair). Pre-operative iv cefazoline and gentamycine was given to all patients. Cure was performed using a polyester mesh (Parietex - Covidien, New Haven, USA), placing the porous side against the wall for an efficient tissue integration, and the smooth side facing the structures on which tissular attachment had to be limited. The mesh was cut in a rectangle of approximately 10×8 cm or 18×8 cm for respectively unilateral and bilateral cures, and was anchored with absorbable staples (Absorbatack – Covidien), so as non absorbable sutures around the iliac vessels. Early complications were classified using Clavien-Dindo classification. Hernia recurrence was assessed during regular follow-up, or self-reported by patients.
Results: 49 patients (9%) had a hernia repair associated with RARP (35 unilateral and 14 bilateral). Median age, BMI and ASA score were the same in both groups. Total operative time was 278 min for RARP vs 290 min for combined procedure. Postoperative length of stay (median 4 days) and blood loss were not affected by the combined procedure. There were no mesh infections nor migrations. Complication rate was identical in both groups. After a median follow-up of 44 months (IQR 17–86), 46 patients (94%) were hernia-free, while 3 (6%) presented a hernia reccurence.
Conclusions: Combined inguinal hernia repair with a synthetic mesh during RARP is a feasible and efficient procedure which added no morbidity to standard RARP. Placing the mesh during an operation with urine spillage led to no infections. Efficacy after median-term follow-up is similar to laparoscopic hernia repair alone. Combined hernia repair should therefore be discussed for patients undergoing RARP suffering from inguinal hernia.

MP25-20 Impact of an Experienced Bedside Assistant on Outcomes during Robotic Prostatectomy

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Introduction and Objective: Robotic prostatectomy (RALP) has become the most common surgical method to treat prostate cancer in North America. The goal of the study is to analyze the impact of the experience of the bedside assistant during RALP.
Methods: RALP from 2013 to 2015 performed by a single surgeon were analyzed. Patient demographic information and tumor characteristics were recorded. Outcome variables include estimated blood loss (EBL), console time, and positive surgical margin status. Outcomes were stratified by bedside assistant experience: novice assistants (residents) having assisted < 50 cases and experienced assistants (physician assistants from a privately contracted firm) having assisted ≥ 50 cases. Multivariate linear and logistic regression analysis was performed to assess for predictive factors for EBL, console time, and positive surgical margin status.
Results: There were 142 RALP identified. 30.1% of cases were performed with an experienced bedside assistant. Variables thought to influence the difficulty of surgery were similar between the two groups, including BMI (28.7 vs. 28.7, $p = 0.99$), prostate size (48.2 g vs. 45.6 g, $p = 0.55$), preoperative PSA (8.27 vs. 10.2, $p = 0.20$), and Gleason ≥ 8 (15.4% vs. 18.7% $p = 0.94$). There was no significant difference between experienced assistants and novice assistants in terms of console time (215 min vs. 223 min, $p = 0.59$). However, EBL (276 mL vs. 435 mL, $p = 0.002$) and margin rate (26.1% vs. 36.6%, $p = 0.03$) were significantly different, favoring the experienced assistant. On multivariate regression analysis, a novice bedside assistant experience remains a significant predictor of increased EBL (increased EBL of 139 ml, 95% CI 16.6 ml to 261 ml, $p = 0.026$).
Conclusions: An experienced bedside assistant is associated with less blood loss during RALP. This suggests that having dedicated bedside assistants along with implementing a standardized curriculum and training program for assistants may maximize outcomes for robotic surgery.

MP25-21 Bladder neck sparing (BNS) robot assisted laparoscopic prostatectomy (RALP); does it improve continence?

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Introduction: Maintaining continence, without compromising oncological outcome, remains one of the major challenges of radical surgery to the prostate. No consensus on technique is seen in literature. The urethral sphincter complex consists of two parts. The internal smooth muscle lissospincter and the external striated rhabdosphincter. The aim of a BNS is to preserve as much of the internal lissosphincter as possible.
Methods: We report a prospective study of 213 consecutive RALPs performed by a single surgeon at a regional cancer centre from Jan 2013 – Dec 2014. There were $n = 86$ RALPS in bladder neck spare (BNS) versus 127 in the non bladder neck

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spare group (nBNS). Both groups were comparable in terms of patient factors and prostate disease specifics. Continence was our primary outcome. It was measured using the ICIQ validated questionnaire along with a quantitative measure of pad usage at 6 weeks, 3, 6,12 months. We also compared positive margin rates (PMR).
Results: For the nBNS group the **mean ICIQ values** were: 8.39, 6.39, 3.44, 3.48 at 6 weeks, 3, 6, 12 months respectively. For the BNS group they were 6.88, 3.44, 3.09, 2.73 at 6 weeks, 3, 6, 12 months respectively. **Mean pad use:** 1.5, 0.73, 0.31, 0.294 for nBNS and 0.92, 0.34, 0.186, 0.057 for BNS at 6 weeks, 3, 6, 12 months. **Pad free rate:** 36%, 58%, 78%, 88% for nBNS and 61%, 75%, 87%, 94% for BNS at 6 weeks, 3, 6, 12 months. A statistically significant difference in the above parameters was noted between BNS and nBNS groups. **Overall positive margin rate:** 21.3% for nBNS and 32.6% for BNS. T2 and T3 PMR for nBNS was 10.1% and 33.3% respectively. T2 and T3 PMR for BNS was 22% and 48.8%. The majority of positive margins were sited peripherally rather than basally.
Conclusion: BNS is feasible for establishing early continence post RALP. 61% of BNS were continent at 6 weeks. Note is made of a more complex dissection and anastomosis at the posterior bladder neck in the BNS group. The increased PMR is concerning. The majority however, were peripherally sited rather than basally as one may expect for a BNS technique. Further clarification of pre-op patient selection for BNS is required through randomized control trials.

MP25-22 View from the Head end: A prospective analysis of the respiratory changes and challenges encountered during Robotic assisted Radical Prostatectomy (RALP)

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Introduction: RALP is among the most performed robotic-assisted surgical procedure worldwide with Intuitive Surgical estimating that approximately 98,000 procedures were done in 2010. The anesthetic management of RALP does present significant challenges in understanding and managing the physiological effects and risks of pneumoperitoneum in the steep Trendelenburg position. The aim of our study was to prospectively analyse intraoperative data and strategies adopted to maintain optimum homeostasis.
Materials and Methods: The cohort included 50 patients undergoing RALP for prostate cancer. All patients were managed by the same anaesthetist with standard premedications, induction and maintainence of anaesthesia. Ventilation was maintained using pressure control mode with airway pressure and respiratory rate manipulated to ensure normocarbia. Changes in lung compliance, mean airway pressure, arterial pCO2 and respiratory rate, blood loss and volume of fluid administered were monitored along with other vital parameters. Postoperatively facial and orbital oedema and pain control using a visual analogue scale were recorded along with other parameters.
Results: The mean age, ASA grade and BMI were 60.9, 2 and 27 respectively. The mean angle of tilt was recorded as 26.4 degrees. The average change in compliance was 41.7 ml/cmH2O (61%) with mean airway pressure and respiratory rate noted at 25.4 cm and 15/ min respectively. Transient hypercarbia (> 6.0 kpa) was seen in 11 patients. Orbital and facial oedema was seen in 20 patients and the average pain scores were 3.5, 2.5 and 2 at 0.5, 6 and 24 hrs post surgery.
Discussion: The combination of pneumoperitoneum and the steep Trendelenburg position does impair respiratory mechanics. A decreases in FRC and pulmonary compliance along with increases in peak and plateau airway pressures and the risk of barotrauma should be anticipated and managed proactively. Intraoperative fluids and blood pressure should be closely managed to maintain CVP, reduce cardiac strain and decrease postoperative oedema. Close co-ordination between the surgeon and the anaesthetist is critical to ensure a successful outcome of surgery.

MP25-23 High-tech or high-risk? An analysis of media reports about robotic surgery

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Introduction: Robotic surgery continues to increase in popularity and prevalence. This study examines American news coverage of surgical robotics to characterize its objectivity and potential impact on patients and their surgical decision-making.
Methods: Articles about robotic surgery indexed in LexisNexis and Factiva databases and published during 2010–2015 in the three highest-circulation national American newspapers or in New England-based local newspapers were reviewed. Letters, duplicates, and stock reports were excluded. Two independent reviewers performed content analysis and assessed headline bias with strong reliability ($\kappa = 0.88$).
Results: 82 articles were analyzed (Table). Among surgical specialties, urological and gynecologic procedures were the most cited (54% and 57% respectively). Commonly discussed aspects of robotic surgery included easier recovery, decreased pain, and

Table. Characteristics of American News Articles about Robotic Surgery.

Article Characteristics	Overall (n=82)	Overall %	National (n=51)	Local (n=31)
Surgical procedures				
Gynecologic	47	57.3	30	17
Urological	44	53.7	23	21
Non-specific	15	18.3	8	7
Other	38	46.3	19	19
Advantages and disadvantages of robotics				
Easier recovery	32	39	18	14
Less pain	23	28	11	12
Shorter length of stay	22	26.8	11	11
Ability to do complex cases less invasively	19	23.2	14	5
Less blood loss	18	22	7	11
Increased cost	45	54.9	36	9
Increased complications	38	46.3	30	8
Lack of evidence at being better than old methods	29	35.4	21	8
Headline tone				
Neutral	35	42.7	24	11
Positive	15	18.3	7	8
Negative	29	35.4	20	9

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shorter length of stay, as well as increased cost and complications. A minority of headlines (42%) had a neutral/unbiased tone. National newspapers were significantly more likely to report robotic surgery unfavorably by discussing disadvantages of the technology, only quoting surgeons with negative opinions, or citing scientific studies discrediting the robot (all $p < 0.05$). 33% of news articles (27) referenced research studies, citing 1.7 studies on average. 100% of those articles quoted studies about disadvantages of robotic surgery, but only 26% mentioned findings favoring robotic approaches. However, quoted studies were frequently about procedures for benign disease.
Conclusions: US national newspapers tended to report more unfavorable aspects of robotic surgery compared to local sources. Research studies underscoring disadvantages of robotic surgery were much more extensively reported in the media compared to more favorable findings. Biased reporting may affect patients' perceptions of robotic surgery and clinicians should be aware of these reporting biases.

MP26 - BPH / LUTS 2

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MP26-1 Short-term Outcomes of a Prostatic Urethral Lift Procedure (PUL)

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Introduction and Objectives: The prostatic urethral lift procedure (PUL) is a minimally invasive treatment for the management of benign prostatic hypertrophy (BPH). It is a novel surgical intervention in selected patients offering relief of bothersome lower urinary tract symptoms (LUTS) whilst preserving sexual function and allowing a rapid return to normal activity. We present our short term experience of this procedure.
Materials and Methods: Case notes of all patients undergoing the PUL procedure between 2012 and 2015 were retrospectively reviewed. International Prostate Symptom Scores (IPSS) and Quality of Life (QoL) scores were recorded preoperatively, at 3 weeks, 3 months and 6 months postoperatively. Flow rate (Qmax), post-void residual (PVR) and presence of sexual dysfunction were evaluated preoperatively and at 3 months.
Results: 53 patients were identified has having undergone the PUL procedure. Median age was 61 (range 41–84), with mean preoperative IPSS and QOL score of 20 (6–34) and 4 (2–6) with a QMax mean of 10 ml/s. A mean of 3 implants were deployed (2–6). 5 patients went into urinary retention postoperatively and were discharged with catheters. One developed prostatitis and two developed urinary tract infections, one requiring admission. Three had delayed onset haematuria, eventually requiring repositioning of implants.

Patients reported a mean improvement in IPSS score of 60% at 3 weeks, 55% at 3 months and 45% at 6 months. The mean QOL score was reported as 2, at 3 weeks and sustained at 6 months. Qmax at 6 months was 56% better than baseline. No patients described permanent change in ejaculatory function or erectile function; one patient described transient decrease in ejaculatory volume.
Conclusion: PUL offers a minimally invasive option for management of BPH. This large single centre series of this new procedure describes improvements in symptoms and flow rate in line with the published data and confirms the rapidity of those improvements and lack of effect on sexual function. Long-term data will be required to determine if these positive outcomes will have sufficient longevity.

MP26-2 Enucleation of the Transition Zone and the Effect on PSA in Patients with LUTS

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Introduction and Objectives: Rising prostate specific antigen (PSA) levels in patients with lower urinary tract symptoms (LUTS) can be a cause of concern to patients, especially those on active surveillance (AS) for low-risk prostate cancer (PCa). Holmium laser enucleation of the prostate (HoLEP) is an effective treatment of bladder outflow obstruction (BOO) in large glands. We aimed to evaluate the impact of enucleation of the transition zone (TZ) and implications of PSA observations and active surveillance.
Methods: We performed retrospective analysis of 498 patients who underwent HoLEP for BOO at our institution from January 2003 – January 2014. Pre-operatively all patients underwent digital rectal examination, PSA testing, trans-rectal-guided extended biopsy and transperineal biopsy if indicated. PSA density, IPSS & Qmax was measured pre- and post –operatively. 111 (22%) patients were identified for LUTS with complete PSA data who had undergone a complete HoLEP by a single surgeon. 81/111 (73%) with LUTS had benign disease on pre-HoLEP histology and 30/111 (27%) had low-risk PCa on AS. Analysis of variance was performed to determine statistical difference ($p < 0.05$)
Results: Overall mean PSA density was 0.07. PSA decreased following HoLEP from 7.0 ng/mL to 1.17 ng/mL (83% decrease). Clinically symptoms improved, Qmax increased from 9.6 ml-s to 21.4 ml-s, PVR decreased from 112 ml to 52 ml and IPSS reduced from 22 to 7 ($p < 0.05$). Prostate volumes were comparable in both BPH and PCa-AS cohorts, 100 ml and 103 ml respectively. Pre-HoLEP PSA in BPH was 8.34 ng/mL and in PCa AS was 7.86 ng/mL. Median PSA density in BPH was 0.07 and PCa-AS was 0.08. Median enucleated weight in BPH was 71 g whereas in PCa-AS it was 94 g. Post HoLEP PSA in BPH was 0.85 ng/mL and in PCa AS was 1.18 ng/mL ($p < 0.05$), a reduction of 89 and 85% respectively.
Conclusions: PSA often reflects transition zone hyperplasia in large prostates even with co-existing low risk PCa. Thus biopsy protocols should concentrate on peripheral zone targeting & minimise TZ sampling. Removal of the TZ following HoLEP may resolve the dilemma of PSA changes with PSA becoming more cancer specific.

MP26-3 Histotripsy for Treatment of Benign Prostatic Hyperplasia using the VORTX RX®: Safety and Initial Efficacy Results

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Introduction: Histotripsy is a non-thermal, non-invasive acoustic energy modality that induces controlled cavitation to homogenize targeted tissue. Feasibility of prostate tissue debulking has been previously demonstrated in a canine model with the Vortx R_X system. The objectives of this first-in-human study were primarily to assess safety of the Vortx R_X system for treatment of benign prostatic hyperplasia (BPH) and secondarily to gather initial efficacy data.
Methods: Twenty-five male subjects with moderate to severe lower urinary tract symptoms (LUTS), prostate size between 30 and 80 grams on transrectal ultrasound (TRUS) and no evidence of prostate cancer were enrolled at two sites in a prospective, single-arm study. Under anesthesia or sedation, treatment using the Vortx R_X consisted of delivery of acoustic energy through the perineum to the prostatic adenoma with real-time TRUS monitoring. Follow-up evaluations were performed on post-op day one and 1, 3 and 6-months and included a physical exam, uroflowmetry, International Prostate Symptom Score (IPSS), quality of life and sexual health questionnaires.
Results: Delivery of acoustic energy resulted in intraprostatic bubble cloud formation (cavitation) in all subjects. Device-related adverse events (definitely or probably related, as adjudicated by a DSMB) were limited to 3 cases of transient retention (<3 days), 1 case of retention (8 days), a minor anal abrasion and 1 case of microscopic hematuria. Average IPSS improvement at one month was 12.5 (52.4%) $\pm$ 6.6 (n = 25), at three months was 11.9 (50.8%) $\pm$ 7.6 (n = 24), and at six months was 10.4 (44.0%) $\pm$ 7.6 (n = 24). Uroflow and post-void residual improvements were marginal to minimal. Inconsistent homogenization of the targeted prostate volume was apparent on TRUS, suggesting that optimal acoustic pressures were not achieved at the target focal point. Urinary symptoms, quality of life and sexual health questionnaires however demonstrated overall post-procedure improvement.
Conclusions: Prostate histotripsy was well tolerated and safe in this first-in-human trial. Optimal tissue effects have not yet been achieved and system modifications are underway to optimize dose and better replicate the tissue homogenization seen in pre-clinical canine studies. Despite this, pronounced LUTS improvement was noted. These results provide a basis for technology safety, system modification, and future study design.

WWR has equity, royalty and consulting interests with HistoSonics, Inc.

MP26-4 Relationship between bladder wall thickness and lower urinary tract symptoms: Does bladder wall thickness change after alpha-blocker therapy with tamsulosin?

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Purposes: To evaluate the efficacy of alpha blocker in patients with lower urinary tract symptoms (LUTS) and benign prostatic hyperplasia (BPH), and to investigate whether the treatment changes bladder wall thickness (BWT) in patients with benign prostatic hyperplasia (BPH).
Methods: Patients (n = 100, mean age = 67.6 years) presenting with LUTS with BPH medicated with tamsulosin 0.4 mg were prospectively analyzed. Follow-up evaluation for International Prostatic Symptom Score (IPSS) and uroflowmetric parameters of maximal flow rate (MFR), postvoid residual urine (PVR) and bladder wall thickness (BWT) were performed before and after the treatment of tamsulosin 0.4 mg daily for 24 weeks. None of these patients had undergone invasive treatment or surgery for BPH.
Results: After treatment, significant improvements were evident in IPSS-total (20.1 $\pm$ 5.68 to 15.5 $\pm$ 6.28, $p = 0.04$, voiding symptom (10.2 $\pm$ 3.72 to 8.23 $\pm$ 4.27, $p = 0.03$) and storage symptom score (9.92 $\pm$ 3.15 to 7.72 $\pm$ 3.44, $p = 0.02$). Significant post-treatment improvements were evident in uroflowmetric parameters of MFR (12.1 $\pm$ 6.9 ml to 17.4 $\pm$ 7.3 ml, $p = 0.001$) and PVR (62.5 $\pm$ 42.3 ml to 44.2 $\pm$ 28.8 ml, $p = 0.001$). The bladder wall thickness was not significantly different after 3 months of treatment, but a more obvious difference was found after 6 months treatment (baseline: 3.23 $\pm$ 0.86 mm, 3 months : 3.11 $\pm$ 1.06 mm, 6 months : 2.98 $\pm$ 1.24 mm, $p = 0.01$).
Conclusion: Tamsulosin 0.4 mg improves overall symptom score, uroflowmetric parameters increasing Qmax and reducing residual urine percentage in patients with BPH. Tamsulosin 0.4 mg also reduced the bladder wall thickness later than the symptom improvement for the treatment of LUTS with BPH in men.

MP26-5 Relationship between body mass index and prostate specific antigen in patient with lower urinary tract symptoms

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Background: In recent years the use of Prostate Specific Antigen test (PSA) has reduced the mortality rate of prostate cancer. Certain factors by affecting the levels of PSA, decrease or increase prostate cancer detection. Some studies suggest the effect of body weight and Body Mass Index (BMI) on PSA, while some others are contrary to the opinion mentioned. Hence, in this study we examined the relationship between BMI and PSA.
Material & Methods: In the present study 140 patients with LUTS (Lower Urinary Tract Symptoms) that had referred to the Urology clinic of Imam Reza Hospital (affiliated to Mashhad University of Medical Sciences), were studied. Patients with prostate cancer, prostatitis, recurrent UTI, taking finasteride and history of prostate surgery were excluded. The data of body weight, BMI, prostate volume, PSA and Free PSA were collected. Patients were divided in two groups; group A with a BMI less than 27 and group B with BMI equal and greater than 27. The data were analyzed with T-test, Correlation and SPSS (version 15).
Results: Mean of age in patients was 63.6 $\pm$ 9.98. Two groups in regard to age, prostate volume, and Free PSA did not differ statistically. Mean PSA level in group A was 3.9 $\pm$ 4.3 and in group B is 2.7 $\pm$ 1.3. There is a significant difference in mean PSA level between two groups ($p = 0.04$). We tested the correlation between PSA levels and BMI which were inversely correlated with increased BMI ($p = 0.04$, $R = -0.175$).
Conclusions: This study showed that PSA is reduced with increasing BMI. However BMI does not affect Free PSA, thus the ratio between total PSA and free PSA rises, delaying prostate cancer diagnosis. The result of the present study showed that in different BMI levels physicians need different PSA cut points to decide on performing prostate biopsy.

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MP26-6 Prostatic urethral lift versus prostate arterial embolisation: Novel non-ablative strategies in the management of LUTS secondary to BPH

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Aim: To evaluate the safety and efficacy of prostate urethral lift (PUL) and prostate artery embolisation (PAE): two minimally invasive therapies for the surgical treatment of lower urinary tract symptoms secondary (LUTS) to benign prostate hyperplasia (BPH).
Materials and Methods: A search of eletronic databases was carried out for studies with a minimum follow up of 12 months to allow for short and long term follow up of efficacy and safety. Data was retrieved on both objective (Qmax, PSA, PVR) and subjective (IPSS, QoL) outcomes. Information was also collected on technical steps, evolution of the procedure, patient selection and complications.
Results: 9 studies on PUL and 5 studies on PAE were identified, which met our pre-defined inclusion criteria. PUL and PAE represent two evolving techniques with contrasting mechanisms of action (mechanical decompression versus angiographic embolisation) but which are both able to yield rapid relief of LUTS. They achieve symptom resolution through contrasting mechanisms of action. They display similar safety profiles with self limiting pelvic discomfort characterising the commonest minor adverse event. However, there is a lack of systematic reporting on complications using standardised grading tools. Both procedures have the potential to be carried out under local anaesthesia and in the outpatient setting with suitability for patients with cardiovascular comorbities. Neither of the procedures have been found to cause degradation of sexual function. Preservation of this important disease aspect is likely to prove a key advantage in the diffusion of these procedures. Further randomised studies are needed in order to delineate the fomal position of these techniques in the surgical management of benign prostate hyperplasia.
Conclusions: Prostate urethral lift and prostate artery embolisation are two inaugral techniques, which can improve efficacy outcomes including IPSS, QoL and Qmax, which evidence suggests are durable at 12 months follow up.

MP26-7 Early Multicenter Experience using Aquablation, an image guided robot-assisted water jet ablation of the prostate, for the treatment of BPH

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Introduction: To report the initial multicenter clinical experience in males with BPH undergoing ablation of prostatic adenoma using a novel image-guided waterjet tissue ablation modality called Aquablation.
Methods: The AquaBeam System (PROCEPT BioRobotics, Redwood Shores, CA) is an image-guided robotic system delivering Aquablation, a minimally invasive waterjet therapy for the targeted removal of prostate tissue without the production of heat. Using the real-time transrectal ultrasound image and an integrated conformal planning station, the target region of the prostate is identified and the contour and depth of resection are programmed into the system by the surgeon. The AquaBeam System delivers a controlled resection ablating the prostatic tissue accurately by following the programmed routine, and the ablated prostatic tissue is simultaneously collected for histological analysis. Focal electrocautery is used for hemostasis as required.
Results: Twenty-one males with symptomatic BPH were enrolled and treated with Aquablation under general anesthesia. Monitored data are available on all twenty-one males treated with twenty patients followed through six months. The mean age was 70 ± 5 years (range 62 – 78) with a mean prostate size of 57 ± 19 ml (range 30 – 102) and the presence of a median lobe in twelve of the twenty-one (57%) patients. All procedures were technically successful with a mean total operative time of 38 ± 9 minutes (range 23 to 56) and Aquablation resection time of 5 ± 3 minutes (range 2 to 13). All patients were catheterized post-procedure and catheters were removed within 24 hours in twenty of twenty-one patients with a median catheterization time of one day. Hemoglobin reduced by 5.5% from 143.8 to 135.7 g/l at time of discharge. There were no intra-operative complications and adverse events were typically mild and transient. Other peri-operative complications were comparable to those observed with other available BPH therapies. There were no procedure related cases of retrograde ejaculation, urinary incontinence, or erectile dysfunction. At six month follow-up, statistically significant improvement was observed in IPSS, Qmax, QoL, and PVR. The IPSS improved from 23.0 to 7.1, Qmax from 8.6 to 18.9 ml/s, QoL from 5.0 to 1.7, and PVR from 143 to 39 ml. Prostate size reduced to 35 ml and Pdet@Qmax decreased from 65 to 39 cmH_20.
Conclusions: The results of this multicenter experience are promising and Aquablation appears to be safe and feasible. The combination of the surgical mapping, high velocity saline with robotic guidance shortens the ablation time.

MP26-8 Present Practice and Treatment Strategies in the Transurethral Treatment of Benign Prostatic Hyperplasia (BPH) under oral Anticoagulants: a National-wide Survey

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Introduction: Although a generally aging population leads to an increased cardiovascular risk with concomitant use of oral anticoagulants (OA), only few series have assessed the safety and efficacy of transurethral surgery for the treatment of BPH in patients on ongoing OA. We conducted this national-wide survey to identify treatment strategies, current practice, and trends in complications rates among German departments of urology.
Materials & Methods: A total of 300 German departments of urology received an e-mail with a link for an online survey; 75 (23.4%) departments answered the survey. The questionnaire assessed the present practice of transurethral surgery for BPH in patients on OA, the occurrence of complications, and its current management strategies.
Results: A total of 94.7% of the respondents performed transurethral surgery under OA. 42.7% of the respondents answered that more than 30 prostate surgeries/year were performed under OA in their departments. The respondents indicated that surgeries were performed under aspirin (96%), clopidogrel (46.7%) or coumadin (26.7%), respectively. Indications for surgeries under OA were made by cardiologist recommendation (82.7%), the surgeon itself (37.3%), need for emergency surgery (52%), or patient's will (10.7%), respectively. 62 (82.7%) of the

respondents answered to perform bipolar or monopolar transurethral resection of the prostate (TURP) in patients on OA. Only 52 (69.3%) of the respondents indicated to perform laser prostatectomy in patients on OA (thulium 24%, Greenlight 24%, holmium 16%, and diode laser 5.3%). The respondents indicated transfusion rates ranging from 0–5% (77.3%), reintervention rates from 0–5% (73.3%), catheter times from 2–4 days (74.7%) and hospital stay > 4 days (60%) in patients on OA, respectively. Cardiovascular complications occurred despite ongoing therapy with OA in 12% of the respondents.
Conclusions: Despite the poor evidence for performing transurethral surgery of BPH under OA in the literature, our survey showed surprising results transurethral surgery of BPH in patients on OA is widely accepted and performed, especially conventional bipolar/monopolar TUR-P. Although this data was obtained from a web-based survey with its known limitations, the complication rates appear to be lower in this high-risk group of patients than previously thought. Prospective multicentric registry studies are necessary to evaluate this subgroup of high-risk patients on OA precisely.

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MP26-9 The Functional Anaylsis of Patient Outcomes Following Different Surgical Interventions for Benign Prostate Hyperplasia Through the Administration of an Independent Survey.

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Objective: To assess patient-reported functional and quality of life outcomes associated with various forms of benign prostatic hyperplasia (BPH) surgical treatment over a 5 year period from a single institution and an independent third party survey center.
Materials and Methods: An independent third party survey center was employed to send a comprehensive questionnaire to all patients who underwent any form of surgical treatment for BPH at our institution between January 2007 to January 2013. Overall satisfaction, urinary and sexual functional outcomes were evaluated. After IRB approval, the validated instruments were Sexual Health Inventory for Men (SHIM), International Prostate Symptoms Score (IPSS) and International Continence Society – Short Form questionnaires (ICSmaleSF). Overall SHIM, IPSS and ICS scores were analyzed as were the individual domains in each questionnaire, comparing them individually and as a function of the specific patient procedure.
Results: Nine hundred and six patients underwent surgery for BPH at our institution during the study interval. Forty four were deceased. Response rate was 55.6% (479/862). Among responders there were 214 Holmium Laser Enucleation of the Prostate (HoLEP), 210 Transurethral Resection of the Prostate (TURP), 21 Holmium Laser Ablation of the Prostate (HoLAP), 18 Photoselective Vaporization (PVP), 9 transurethral Incision of the Prostate (TUIP) and 7 open simple prostatectomy (OSP) patients. Preoperative continence rates were 55.3%, 58.2%, 71.4%, 57.1%, 66.7% and 80%, respectively (P = 0.651). Postoperatively, there were no significant differences in SHIM scores. However, total IPSS varied significantly among surgical technique ($p < 0.0001$). Mean (±SD) IPSS was lowest for OSP 4.0 (±2.6) followed by HoLEP 5.8 (±5.4). When Individual IPSS domains of urinary function were analyzed, there were significant differences in intermittency ($p = 0.0004$), weak stream ($p = 0.0029$), straining ($p < 0.0001$) and quality of life QoL ($p = 0.001$) among the groups. In all of these domains HoLEP patients had the lowest scores. Regarding ICSmaleSF, there was a statistically significant difference in favor of TURP in the incontinence domain (ICSmaleIS) ($p < 0.0001$) and in favor of HoLEP in the voiding (ICSmaleVS) ($p = 0.0192$) and QoL domains ($p = 0.0344$). The majority of the patients were satisfied with their intervention. There was a significant difference in regret rates in favor of HoLEP (64.1% strongly agreed with desire to undergo the same procedure ($p = 0.0175$).
Conclusion: Patients generally expressed satisfaction with surgical intervention for their BPH. However, HoLEP patients tended to have the best functional outcomes and highest quality of life scores when independently assessed on a third party survey.

MP26-10 Health information seeking behaviour in a contemporary cohort of Benign Prostate Hyperplasia patients: Results from an Independent Survey

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Objective: The purpose of this research was to determine the pre and post-operative information seeking behaviors (ISB) of patients through an independent third party survey center for these different interventions.
Methods: Following IRB approval, all BPH patients who underwent surgical intervention at our institute between January 2007 and January 2013 were included in this study. A comprehensive questionnaire regarding perioperative ISB was sent through a third party survey center. The questionnaire covered patients functional, QoL and satisfaction outcomes in addition to patients' perioperative ISB. The latter included questions about their opinions regarding ease of obtaining information about BPH and its surgical treatments and the specific information sources utilized. The websites examined included: online search engines, American Urological Association, Mayo Clinic, patient discussion board, BPH support groups, medical journals and other websites. A composite score that represented the total number of the resources each patient utilized was generated. Patients who utilized more sources were considered to have more extensive ISB. At the end of the study the following outcomes were examined: (1) Patient's opinion regarding information sources of BPH and its treatment (2) The extent of ISB in relation to the type of surgical intervention (3) The relationship between the extent of ISB and satisfaction.
Result: There were 862 living patients included in this study and 479 patients (55.6%) responded to the survey. Respondents included 214 HoLEP, 210 TURP, 21 HoLAP, 18 PVP, nine TUIP and seven simple prostatectomy patients. Patients who underwent HoLAP, PVP, TUIP and simple prostatectomy were excluded due to their small numbers. Among the remaining respondents the majority had neutral opinions regarding the ease of obtaining information about BPH and its various treatment options. The most commonly utilized preoperative source of information was general online search engines for TURP and our Institutional website for HoLEP. There was a significant difference in the frequency of utilization of several websites with a higher tendency for HoLEP patients to use these websites. There was no correlation between the extent of information seeking behavior and overall satisfaction and regret.
Conclusion: The majority of patient finds it easy to obtain information about BPH. Patients who has a more extensive seeking

behavior may eventually choose a more advanced procedure. Post-operative satisfaction and regret is not related to ISB and is likely multifactorial. The weight of ISB on that is to be determined in future studies.

MP26-11 Wolf Piranha Versus Lumenis Versacut Prostate Morcellation Devices: A prostective Randomized trial

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Introduction: Holmium laser enucleation of the prostate (HoLEP) for the management of benign prostatic hyperplasia (BPH) involves two steps: enucleation and morcellation. Few prostate morcellation devices (PMDs) are available. We sought to compare the safety, efficacy, and cost of the Wolf Piranha and Lumenis VersaCut PMD.
Materials and Methods: After IRB approval and patients' informed consent, a prospective, randomized trial was initiated for men with symptomatic BPH undergoing HoLEP. All procedures were performed by a single surgeon at a single institution using either the Piranha or VersaCut PMD as designated by the randomization process. Demographic, preoperative, intraoperative, and postoperative data for the two treatment groups were analyzed and compared.
Results: Seventy-four patients were enrolled and randomized to either the Piranha or Versacut treatment arm. There was no significant difference between groups in terms of age (69 vs. 68), baseline prostate-specific antigen (PSA) (6.8 ng/mL vs. 6.5 ng/mL), and estimated prostate size (100 gm vs. 100 gm). The Piranha achieved a slightly higher morcellation rate (5.6 gm/min) compared to the VersaCut (4.8 gm/min). However, the difference was not statistically significant ($p = 0.14$). There was no significant difference in either patient or device related complications with only one instance of each during the entire study. Finally, cost per procedure (USD/patient) favored the VersaCut ($241 vs. $471, $p < 0.001$).
Conclusions: The Piranha and VersaCut PMD are comparable in terms of safety and efficacy though the Piranha was associated with greater cost on a per procedure basis.

	Richard Wolf Piranha		Lumenis VersaCut		P value
	N		n		
Enucleation time (min)	37	60 (15 – 98)	37	57 (18 – 130)	0.689
Morcellation time (min)	37	13 (2 – 44)	37	11 (3 – 100)	0.545
Pathological HoLEP specimen weight (g)	37	68 (3 – 161)	37	71 (4 – 335)	0.596
Enucleation rate (g/min)	37	1.2 (0.2 – 2.7)	37	1.3 (0.2 – 4.0)	0.797
Morcellation rate (g/min)	37	5.6 (1.4 – 18)	37	4.8 (1.3 – 9.5)	0.141
Complications	37		37		
Bladder injury (mucosal)		0 (0%)		1 (2.7%)	1.0
Beach ball identified		2 (5.4%)		0 (0%)	0.474
Difficult visualization		0 (0%)		1 (2.7%)	1.0
Difficult morcellation		2 (5.4%)		2 (5.4%)	1.0
Device malfunction		1 (2.7%)		0 (0%)	1.0
Duration of catheterization (h)	36	15 (9 – 19.3)	37	14.5 (8.5 – 33.8)	0.470
LOS (h)	37	28 (21 – 80)	37	27.8 (22 – 332)	0.866
Cost of disposable instruments (USD/patient)	37	471	37	241	< 0.001

MP26-12 Thulium VapoEnucleation of the Prostate (ThuVEP): long-term results during 6-year follow-up of 500 procedures

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Introduction and Objectives: To analyze the long-term outcomes and complication rates of ThuVEP in patients with lower urinary tract symptoms (LUTS) secondary to benign prostatic obstruction (BPO).
Methods: We retrospectively evaluated 500 consecutive patients with LUTS secondary to BPO undergoing ThuVEP from January 2007 until January 2010 at our institution. All patients underwent ThuVEP combined with mechanical morcellation by a total of nine surgeons. Preoperative status, surgical details, the immediate and the long-term outcomes were recorded for each patient, respectively. Patients were assessed by maximum urinary flow rate (Qmax), post-void residual urine (PVR), international prostate symptom score (IPSS), and quality of life (QoL) 12-, 36-, and 72-months after ThuVEP. A subgroup analysis of patients with prostates ≥80 ml was carried out. Improvement in the assessed parameters was calculated using the paired *t*-test. A two-sided *p*-value < 0.05 was considered statistically significant. Patient data were expressed as mean ± SD.
Results: The mean follow-up was 39.79 ± 22.4 (12–84) months. Mean age at surgery was 71.30 ± 7.68 yrs. Mean American Society of Anesthesiologists Score was 2.23 ± 0.53. Mean preoperative PVR, Qmax, IPSS, and QoL were 395.89 ± 593.79 ml, 7.64 ± 5.9 ml/s, 21.69 ± 6.98 and 4.4 ± 1.2, respectively. Postoperatively, all variables showed significant improvement starting at discharge and remained improved until last follow-up at 72-month follow-up (≤ 0.004). Postoperative PVR, Qmax, IPSS, and QoL were 38.74 ± 52.38 ml, 19.14 ± 10.74 ml/s, 6.23 ± 5.69, and 1.33 ± 1.32 at 12-months, 51.62 ± 62.58 ml, 17.34 ± 10.29 ml/s, 6.52 ± 6.2, and 1.27 ± 1.32 at 36-months, 53.16 ± 37.11 ml, 17.43 ± 12.23 ml/s, 5 ± 6.1, and 1.1 ± 1.2 at 72-months, respectively. In patients with prostates ≥80 ml, mean IPSS (23.7 vs. 4.5), QoL (4.4 vs. 1), Qmax (7.99 vs. 24.7 ml/s), PVR (232.40 vs. 16.78 ml), and PSA (11.21 vs. 0.81 ng/dl) improved significantly in comparison to preoperative assessment ($p < 0.001$) at 12-month follow-up and remained improved until 60-month follow-up (≤ 0.001). Bladder-neck contractures and urethral strictures (in patients with prostates ≥80 ml) developed 1.8% (1.1%) and 1.6% (1.1%) of the patients, respectively. Three patients (0.6%) were re-treated during follow-up for recurrent prostatic tissue. To note, one of those patients had a prostate ≥80 ml (1.1%).
Conclusions: ThuVEP appears to be a safe, efficacious, and durable modern alternative to open prostatectomy for patients with symptomatic BPO. The incidence of complications with ThuVEP during long-term follow-up was low.

MP26-13 Thulium laser prostatectomy: Another Rookie, Same Crown

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Introduction: Thulium laser prostatectomy is the latest addition to the arsenal of minimally invasive therapies available for the surgical treatment of lower urinary tract symptoms secondary to benign prostate hyperplasia. The aim of this review was to

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elucidate the technology, safety and efficacy of this novel laser based intervention.
Materials and Methods: Literature search was conducted across a number of electonic databases including Medline, Emabase, Cochrane library, Web of Science and Scopus.
Results: Thulium laser technogy is multi-modal, operating in both continuous wave (CW) and pulsed mode (in contrast to HoLEP). The former propagates smoother vaporization of tissue and restricts collateral destruction of neighboring structures. Reduced thermal damage enables resected tissue samples to be collected for histologic analysis as it leaves only a very thin carbonized layer on the surface of samples. With no morcellation, injuries to the superficial bladder and ureteral ostia are avoided. Irrigation with saline 0.9% reduces the incidence of Trans Urethral Resection (TUR) syndrome. The learning curve for Thulium laser prostatetcomy is considered more favorable than for HoLEP. Owing to heterogeneity among existing studies, which have lacked use of validated tools to enable longitudinal assessment of sexual function, comprehensive understanding of Thuium prostatetcomy in respect to this important disease aspect is awaited. Bare ended quartz fibres can be re-used, which adds to the low running costs of this rival laser system. Data from a limited number of studies has shown it to be as efficacious as Transurethral Resection of the Prostate (TURP) at short term (3 month) follow up in regards to both subjective (IPSS and QoL) and objective (Qmax and PVR) outcome measures. Short term data also revealed its safety profile rivals TURP and is even superior in terms of blood loss and its affect on fluid balance.
Conclusion: Thulium laser prostatectomy is an evolving, high performance technique, which has gained increased attention for its positive effects on urinary symptoms. It carries notable, theoretical advantages with potential feasibility in elderly patients with multiple co-morbidities. Further large scale randomized trials using standardized endpoints and disease status parameters are warranted in order to define its long-term durability.

MP26-14 A comparison of the costs of different surgical techniques for transurethral prostate surgery

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Introduction: Greenlight photoselective vaporisation of prostate (PVP) is increasingly used in bladder outflow surgery. It has the advantage of being a day case procedure, however costs are thought to be higher than traditional alternatives. At our district general hospital, we perform over 200 cases annually for management of benign prostate hyperplasia. Largely these operations are composed of bipolar transurethral resection of prostate (TURP) and PVP. We compared the overall costs of the different surgical techniques with a view to determining which was more cost effective.
Method: All bladder outflow procedures in 2013 were retrospectively identified and case notes reviewed. Demographic data, as well as length of stay and information on any complications that occurred were collected. With assistance from the hospital financial department, we calculated costings including staff wages, equipment costs and hospital overhead, accounting for length of stay and operative time. Financial implications of any subsequent readmission were also included.
Result: In 2013, our district general hospital performed 214 bladder outflow operations, 144 of which were bipolar TURP and 70 PVP. Average length of stay for TURP was 2.64 days (range 1–16) with 21 patients subsequently developing persistent haematuria and two developing acute urinary retention. 12 (8.3%) were later readmitted, with an average length of stay of 4.18 days (0–16)

Average length of stay for PVP patients was 0.46 days (0.5–3), with two subsequent complications (haematuria and acute retention). 9 patients (11.43%) were readmitted, staying an average of 3.13 days (1–7). TURP cost was £2198 and, when factoring in readmission rates increased to £2293. PVP cost was £1763 and allowing for readmission, £1859.
Conclusion: Our DGH has a complication rate that is consistent with published data, although our readmission rate was slightly higher than expected. Even allowing for this, our data supports PVP as an excellent day case alternative to TURP with comparable cost and complication rates.

MP26-15 Infectious Considerations with the use of temporary prostatic urethral stents in patient with benign prostatic hyperplasia

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Background: To examine the infectious outcomes after the insertion of the temporary prostatic urethral stent (TPUS).
Methods: Between January 2008 and January 2013, all patient who had been treated with TPUS (Spanner ™, Abby Moore, city, state) temporarily relieve bladder outlet obstructiondut to BPH at our institute were included. All patients had negative urine cultures prior to 1st stent insertion. At the time of stent removal (or exchange), previous TPUS were sent for culture regardless of patient symptomatology. Patients who were symptomatic at time of removal or exchange were treated with an organism specific course of antibiotics. Stents were removed at the time of definite surgical intervention, at 3–6 weeks, or when patients became intolerant or elected another course of treatment. After IRB approval, we retrospectively analyzed the rates of symptomatic infections requiring treatment, and the rates of asymptomatic colonization. Both rates were determined based on the first five exchanges for any subject. The infection rates and specific type of organisms were reported. Logistic regression was used to examine the predictors of infection at any point. Predictors examined were age, BMI, history of prostate cancer, Diabetes Mellitus, hyperlipidemia, Coronary artery disease, Neurologic Disorder, Erectile Dysfunction and the sequence of the stent if it was first, second placement etc. We then reported the incidence of colonization for each stent.
Results: There were 69 stents that were inserted or exchanged in 33 subjects. The majority of the subjects had had one to two insertions where 72%of subjects (24/33) had 1–2 stents, 9.0% (3/33) had 2–4 stents, 6.0% (2/33) had 5–6 stents, and 12% (4/33) had more than 6 stents. The symptomatic infection rate was 16% (11/69) (95% CI 8.2%-26.7%). The colonization rate was 58% (40/69) (95%CI: 45.5%-69.7). None of the predictors examined in this model were identified as a predictor of infection. The relationship between the duration of catheterization and the TPUS colonization rate showed that there was no colonization prior to 20 days. Colonization rate ranged between 40–100% for every 10 day period following the first 20 days after insertion which suggest that the risk of colonization increases after 20 days.
Conclusion: This study suggests that symptomatic infection is rare with the first utilization. Compared to known infection rates in indwelling catheter, this may represent an advantage. These **Results** provide reasonable data to council patients receiving these stents, but more research is needed to better document outcomes and infection rates.

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MP26-16 The "Scalpel and Scissors Effect" using infrared lasers – Visiualisation of a principle and deduction of operative consequences in transurethral prostate enucleation

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Introduction: During transurethral enucleation of the prostate using infrared lasers, specific phenomena that are typical for each laser type can be observed. The aim of this in vitro study was to visualize and objectify these phenomena and develop operative concepts for laser enucleations.
Materials and Methods: The mechanical and thermal effects as well as the cutting precision of the two infrared laser types commonly used for prostate enucleation (the continuous wave (cw) Tm-YAG and the pulsed Ho-YAG) were visualized and objectified. In a water basin the effects of different power-settings were measured in vitro using fine sand, zucchini, bovine liver and sausage: The fiber-tip was fixed in defined distances (10, 5, 1.4 and 0 mm) and angles (90°, 45° and 15°) and the materials were fired at in a stationary mode or the fiber was pulled at a constant speed of 6 mm / sec.
Result:

1. Mechanical Effect: The pure mechanically dissecting „Blow-effect" (scissors) reaches an effective distance of up to 34 mm at a 3.5 J Ho-pulse and decreases with lowering pulse energy to 15 mm at 0.5 J. The effect is independent of the frequency. There is no macroscopically relevant mechanical effect with the cw laser.
2. Thermal Effects: Coagulation or vaporization are seen only at a very small distance (max. 5.5 mm with the Tm-laser, 5 mm with the Ho-laser) and are proportionally related to the total beam power.
3. Punctual accuracy (cutting precision): The punctual accuracy rises with increasing frequency and decreasing pulse energy and is perfect with the cw laser.

Conclusion: With an existing capsular plain like in BPH adenoma, the mechanically dissecting effect of the Holmium laser („spreading scissors") can be maximized with a higher pulse energy and total power. If there is no capsular plain and / or hard tissue like in a palliative prostate cancer setting, the cutting effect of the cw laser („scalpel") is advantageous. In clinical aspect conclusion the HoLEP 111W and the palliative ThuVEP were developed.

MP26-17 High power (200W) Thulium Laser Vaporization of the prostate with the Oyster Technique: Initial experience and early postoperative outcomes.

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Aim of the study: To report our initial experience with 200W high power thulium assisted prostatectomy aiming to document the safety and early postoperative outcomes of the approach.
Patients and Methods: From September of 2014 till May 2015, 19 patients were subjected to 200W Thulium assisted vaporization of the prostate (ThuVAP) by a single surgeon in our department. No inclusion criteria were applied apart from prostate volume > 40 ml and lack of detrusor underactivity on preoperative urodynamic evaluation. In accordance to our standard BPO preoperative evaluation protocol, prior to the procedure all patients were subjected to typical blood tests, sonographic examination of bladder and data on International Prostate Symptom Score and quality of Life (IPSS and QoL score) and International Index of Erectile Function (IIEF-5) score were acquired,. In addition, all patients underwent a complete urodynamic study. A follow-up evaluation at 3 months was available for all patients.
Results: Mean prostatic volume was 87 gr. All operations were completed uneventfully. Mean laser time duration was 32.5 min and mean laser energy applied to tissue was 292 Joules. Decrease in serum sodium levels was insignificant. Blood loss was also minimal in all cases with mean hemoglobin drop between preoperative and 1st postoperative day levels of 0.71 g/dL (values from 0 to 1.7). No patient required bladder irrigation for more than a day and 14 out of 19 patients were catheter free on the first postoperative day. One case of recatheterization after fail to void was documented. No patient required re-intervention during the 3 months of follow-up. The vast majority of patients were discharged on the first or second postoperative day (mean hospitalization 1.95 days after surgery) while postpone of discharge was deemed necessary only in two cases (a case requiring recatheterization and a case of post-operative fever requiring IV antibiotic treatment for 5 days). At 3 months a reduction of mean IPSS by 62.8% and an improvement of mean Qmax by 58% was documented (Table 3). Regarding post-operative complications during follow-up, 58% (n = 11) of patients suffered from mild dysuria (lasting from 7 to 90 days) which in three of them (15.7%) was attributed to a concomitant urinary tract infection (UTI). No cases of post-operative incontinence or urethral strictures or serious post-voided residual (PVR) were documented.
Conclusions: ThuVAP using 200W Thulium laser is a safe and effective tool in the management of benign prostatic obstruction characterized by fast tissue vaporization and excellent hemostasis.

MP26-18 Efficacy and safety of Thulium laser vapoenucleation of the prostate compared with Holmium laser enucleation of the prostate for benign prostatic hyperplasia

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Background: This study compared the efficacy and safety between Thulium laser vapoenucleation of prostate (ThuVEP) and Holmium laser enucleation of the prostate (HoLEP) for patients with the low urinary tract symptoms due to benign prostatic hyperplasia (BPH).
Methods: A retrospective analysis of consecutive 88 patients with symptomatic BPH who underwent either ThuVEP or HoLEP non-randomly was carried out. Patient demographics and perioperative and 12-month follow-up data were analysed by International Prostate Symptom Score (IPSS), quality of life (QoL) score, maximum flow rate (Qmax), postvoid residual urine volume (PVR) and rate of perioperative and late complications.
Results: The patients in each group showed no significant difference in preoperative parameters. Compared with HoLEP The ThuVEP required significantly shorter time of laser enucleation (58.3 ± 12.8 min vs. 70.5 ± 22.3 min, $P = 0.003$), and resulted in a significant superiority in laser efficiency (resected prostate weight/laser enucleation time) of Tm:YAG laser to Ho:YAG laser (0.69 ± 0.18 vs. 0.61 ± 0.19, $P = 0.048$). During the 1, 6, and 12 months of followup, the procedures did not demonstrate a significant difference in IPSS, QoL score, Qmax, and PVR ($P > 0.05$). The mean perioperative decrease of hemoglobin in

HoLEP group was similar to that in ThuVEP group (17.1 ± 12.0 g/L vs. 15.2 ± 10.1 g/L, $P = 0.415$). The early and late incidence of complications was low and did not differ significantly between ThuVEP and HoLEP groups ($P > 0.05$).
Conclusions: ThuVEP and HoLEP are capably safe and efficient minimally invasive surgical modalities for patients with LUTS due to BPH. Compared with HoLEP, ThuVEP offers advantages in reduction of laser enucleation time and improvement of laser efficiency.
Keywords thulium; holmium Lasers; laser surgery; benign prostatic hyperplasia; prostatectomy, transurethral

MP26-19 Efficacy and Impact on Erectile Function between Holmium laser versus Thulium laser Enucleation of the Prostate

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Objectiv: This study compared the efficacy and the impact on erectile function between Holmium laser enucleation of the prostate (HoLEP) and 120-W Thulium:YAG vapoenucleation of prostate (ThuVEP) for benign prostatic hyperplasia (BPH).
Methods: A retrospective analysis of consecutive 93 patients with symptomatic BPH who underwent either HoLEP or 120W ThuVEP non-randomly was carried out. Patient demographics and perioperative and 12-month follow-up data were analysed by International Prostate Symptom Score (IPSS), quality of life (QoL) score, maximum flow rate (Qmax), postvoid residual urine volume (PVR), erectile function domain of the international index of erectile function (IIEF-EF) score and rate of perioperative and late complications.
Results: Without significant difference in preoperative parameters, the 120-W ThuVEP required significantly shorter time of laser enucleation ((57.6 ± 12.8) min vs. (70.4 ± 21.8) min, P = 0.001) compared with HoLEP, and resulted in a significant superiority in laser efficiency of 120W Tm:YAG laser to Ho:YAG laser ((0.71 ± 0.18) g/min vs. (0.62 ± 0.19) g/min, P = 0.021). During the 1, 6, and 12 months of followup, the procedures did not demonstrate a significant difference in IPSS, QoL score, Qmax, and PVR (P > 0.05). The early and late incidence of complications was low and did not differ significantly between HoLEP and ThuVEP groups (P > 0.05). An insignificant improvement was found in 12-month postoperative IIEF-EF score both in HoLEP and ThuVEP groups (P > 0.05). But after HoLEP, the mean IIEF-EF score reduced in those with relatively normal erectile functions before operation (pre- (22.8 ± 2.2) vs. post- (21.0 ± 2.7), P = 0.036).
Conclusions: HoLEP and 120W ThuVEP are capably safe and efficient minimally invasive surgical modalities for patients with BPH. Compared with HoLEP, 120W ThuVEP shows superiorty in laser efficiency. Though both modalities offer insignificant improvement in erectile function, HoLEP has the negative impact on relatively normal erectile function during 12-month followup.
Keywords: thulium; holmium Lasers; laser surgery; benign prostatic hyperplasia; erectile function

MP26-20 Various treatments on bladder stone: analysis of clinical outcomes and cost

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Introduction: Management of bladder stone has evolved over the last decades from open surgery, to the novel approach intracoporeal cystholithotripsy and also extracorporeal shockwave lithotripsy ESWL. This study was conducted to evaluate the safety and cost effectiveness of ESWL, intracoporeal lithotripsy and open vesicolithotomy for bladder stone treatment.
Patients and methods: From 2011 to 2014, a total of 92 patients with bladder stone who underwent ESWL (n = 49), intracoporeal lithotripsy (n = 33) and open vesicolithotomy (n = 10) by two experienced urologists were retrospectively evaluated by groups. Demographic data, stone size, stone free rate, duration of hospitalization, side effects, and cost related to diagnostic and treatment were collected.
Results: The mean age of ESWL group, intracorporeal lithotripsy group and open vesicolithotomy group were 53.4 ± 10.8 y.o, 53.3 ± 12.5 y.o and 36.9 ± 22.8 y.o. respectively. Stone size for ESWL group was smaller (24 ± 19 mm) compare to intracorporeal lithotriypsy (41 ± 29 mm) and open vesicolithotomy (71 ± 52 mm). The stone free rate for ESWL, intracorporeal lithotripsy and open vesicolithotomy were 93.9%, 97.0% and 100% respectively. No hospitalization needed in ESWL group, while in intracorporeal lithotripsy was shorter (4.8 ± 3.1 days) compare to open vesicolithotomy (10.6 ± 7.8 days). No serious side effects were observed in those three groups of treatment. Total medical treatment costs in ESWL group were USD 466, while intracoporeal lithotripsy and open vesicolithotomy were USD 1215 and USD 770 respectively.
Conclusions: ESWL can treat bladder stone cost effectively. However, open vesicolithotomy still applicable for big stone (> 50 mm).

MP27 - IMAGING CT & ULTRASOUND

MP27-1 Stone specific ultrasound imaging of human subjects

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Introduction: Ultrasound is a valuable tool for the detection of kidney stones, especially for vulnerable populations where CT exposure is undesirable. However, B-mode suffers from a broad range of sensitivity (78%-96%) and specificity (31–100%). Color-Doppler twinkling-artifact (TA) has been used to distinguish between renal calculi and other hyperechoic regions in the kidney. TA has a greater specificity compared with B-mode

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ultrasound (74% vs 48%), but lower sensitivity (56% vs 71%). We have optimized the Doppler transmit parameters and receive signal processing to combine the sensitivity of B-mode with the specificity of TA. The purpose of this study was to evaluate the signal to noise (SNR) of the new stone specific imaging algorithm, S-mode, to B-mode in human subjects.

Materials & Methods: Forty sets of B-mode and S-mode imaging data were collected from 16 patients using a Philips HDI C5-2 imaging probe and Verasonics research ultrasound system. S-mode allows for imaging kidney stones over the entire image unrestricted by a Doppler imaging box. In S-mode, a refined and filtered color map is overlaid on B-mode, and the brightest objects in both maps are displayed. This is very different from Doppler where color is added to dark areas in the B-mode. For both B-mode and S-mode raw data, we calculate a signal-to-noise ratio (SNR) of the magnitude (brightness) of the stone signal compared to the second highest magnitude in the image.

Results: All imaging data sets contained a B-mode image of the stone and the appearance of stone twinkling. The mean and standard deviation of the SNR was 1.6 ± 0.7 for B-mode and 37 ± 24 for S-mode, with 1 being the stone is equally bright as, and difficult to distinguish from, background.

Conclusion: We have developed S-mode to improve the sensitivity and specificity of ultrasound in detecting kidney stones. In this human study the stones appeared over 30 times brighter than background and with over 20 times the contrast to background seen in B-mode. Work supported by NIH NIDDK grants DK043881 and DK092197, and National Space Biomedical Research Institute through NASA NCC 9-58.

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MP27-2 Evaluating and Improving the Diagnostic Accuracy of USS for Urolithiasis in Hospital and in the Community: a 12 month Study

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Introduction: Ultrasound and CT KUB are both used for the diagnosis and surveillance of upper tract calculi. In our service, the perception of a high rate of false positive ultrasound scans for renal stones led to this formal evaluation of the predictive values of ultrasound, using CT as the gold standard.

Patients and Methods: Records of all adult patients undergoing both ultrasound and CT KUB in 2014 were retrieved. Patients were included in analysis, regardless of whether any of their investigations indicated the presence of stones. Intervals between USS and CT were calculated and only intervals of less than 90 days (in either direction) were included. Electronic records were checked for any surgical intervention to remove stones in the interval between scans.

Results: 703 scans (373 ultrasound and 330 CT KUB) were performed on 283 adult patients in 2014. Approximately 33 ultrasound scans from this dataset were performed at community centres. The mean age of patients scanned was 63. Overall, 157 patients had a diagnosis of urolithiasis on CT KUB, with a mean reported stone diameter of 7.6 mm (range = 3.0 – 70 mm). The diagnostic accuracy of ultrasound is summarised in table 1.

Table 1 (* among population having both USS and CT KUB)

Statistic	Value	95% CI
Sensitivity	57.14%	40.96% - 72.28%
Specificity	80.95%	65.88 - 91.40%
Disease prevalence*	50.00%	38.89% - 61.11%
Positive predictive value	75.00%	56.60% - 88.54%
Negative predictive value	65.38%	50.91% - 78.03%

The specificity of community ultrasound was lower than the overall specificity (50.00%, 15.7–84.30%). When separately considering only stones < 5 mm on CTKUB, the sensitivity of ultrasound was 21.05% (6.05% - 45.57%) and the specificity 91.89% (78.09 – 98.30%). For stones ≥5 mm, sensitivity = 58.82% (40.70% - 75.35%) and specificity was 89.47% (75.20% - 97.06%).

Conclusions: Overall, ultrasound performed much better than expected, with reference to current guidelines[1]. Specificity was notably lower among ultrasound scans performed at outlying community centres, but was not affected by stone size. For stones less than 5 mm in diameter, sensitivity was substantially lower.

This information is useful for the interpretation of ultrasound in our organisation. Improving the specificity of community ultrasound, through training and outreach with urology and radiology may, in future avoid unnecessary onward referral of false positive findings.

MP27-3 Comparing the Diagnostic Accuracy of Ultrasound in the Community and in the Hospital Setting for Urolithiasis: a Prospective Cohort Study

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Introduction: As recommended by the European Association of Urology, urinary tract ultrasonography scan (USS) is the initial imaging modality for those with suspected urolithiasis. There has been occasional controversy as to whether USS performed in the community (e.g. in GP surgeries or private centres) is as reliable as USS carried out by hospital sonographers. Posited factors include the use of differing sonography equipment and, to some authors, a perceived lack of senior supervision and difficulty in obtaining peer review in the community. This paper therefore contrasts the accuracy of USS performed in the hospital setting with USS performed in the community, using follow up non-contrast computed tomography (NCCT) as the gold standard.

Materials and Methods: This was a seven month, prospective study of all patients referred to the East Kent Hospitals University NHS Foundation Trust for suspected urolithiasis following USS. Patients were grouped according to whether their initial USS was performed within or outside the hospital setting. An USS was considered to be inaccurate if it differed from the subsequent NCCT report (either negative USS with positive NCCT for urolithiasis, or vice versa). Fisher's test was utilised to assess whether one group of patients had USS results that were significantly more inaccurate than the other. The null hypothesis therefore was that there was no difference in the accuracy of USS regardless of whether it was performed in the hospital or elsewhere.

Results: Between the months of August, 2014, and February, 2015, 92 patients were included in our study. Of these, 47 and 45 patients had an USS performed by sonographers in the community or hospital setting, respectively. It was noted that 40.2% of the total USS results were inaccurate when compared with NCCT. When sorted by place of scan, 42.2% and 38.3% of community and hospital USS was inaccurate, respectively. A two-tailed fisher test demonstrated no significant difference in

accuracy between USS performed in the community or in the hospital when compared to the NCCT result (n = 92, p = 0.388).
Conclusions: USS referrals are an important, if sometimes inaccurate, method of identifying patients with urolithiasis. However, we demonstrate here that performing the USS in the community or in the hospital setting makes no significant difference to the accuracy of the result.

MP27-4 Efficacy of contrast-enhanced renal ultrasound in the management of complex renal cysts

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Background: Contrast-enhanced renal ultrasound (CEUS) is a sonographic diagnostic technique utilised in the surgical management of complex renal cysts (Bosniak IIF, III, IV). Western Hospital Urology Unit began regularly using CEUS 4 years ago, as part of the assessment protocol for these renal lesions. This study assesses the diagnostic utility, learning curve, and efficacy of CEUS in our hospital during this period.
Methods: All CEUS scans performed to better characterise renal masses between Jan 2011 - March 2015 at Western Health were identified. Retrospective review of patient records was conducted to identify, patient demographic details, likely diagnosis (i.e. likely malignant or likely benign renal complex cyst based on CEUS) and treatment outcome for this patient cohort (i.e. surveillance, biopsy, or surgery).
Results: N = 72 renal CEUS studies were identified. Median patient age 57 y (range 30–87). There was an increase in the numbers of CEUS performed from 2011 to 2014 (N = 2 to N = 43), in keeping with increasing radiological expertise with the technology. 73% of the CEUS were performed to further characterise renal complex cysts and 27% to investigate atypical appearing solid renal masses. The timing of CEUS in the investigation protocol varied during the study period; 54% after initial CT and standard ultrasound imaging, 32% after CT alone, and in 14% following a non-contrast ultrasound. N = 27 likely malignancies were detected. 44% of the patients who underwent CEUS for a suspected malignant renal cyst, proceeded to surgery and carcinoma was identified in 73% of these cases.
Conclusions: CEUS acts as a useful adjunct to conventional radiological diagnostic techniques in the management of complex renal cysts, providing additional diagnostic value, and assisting with further management. Over the 4 year study period, CEUS has become a heavily utilised part of the diagnostic workup for complex renal cysts at our institution, as radiologists' confidence in performing the study and reporting have grown. We would recommend it as a second line investigation in this setting.

MP27-5 The outcomes of interspecialty utilization of non-contrast computer tomography of the renal tract in the diagnosis of the suspected ureteric colic

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Clinical diagnosis of ureteric colic is frequently unreliable, with many patients having negative confirmatory imaging studies. Non-contrast computer tomography of the renal tract (CT KUB) is both highly sensitive and highly specific for the confirmation of this diagnosis, yet unhindered access to CT KUB has prompted concerns about the excessive radiation exposure of patients presenting with suspected ureteric colic and low diagnostic yield.

We thought to establish the yield of CT KUB in a cohort of patients with no previous history of kidney stones undergoing this test for a suspected ureteric colic, as an in-patient over a three months period at a busy district general hospital.

The search of radiological database yielded 91 non-contrast CT KUB, of which 18 were performed for indications other than ureteric colic and further 21 were performed for patients with a known kidney stones. The remaining 52 scans were performed in 52 individual patients with a median age of 45 years, of whom 54% were women. The scans were performed with a median delay of 15 hours between admission and scan. The overall diagnostic yield of CT KUB for ureteric stones and/or signs of recent stone passage was 29%, with further 7 scans detecting an alternative cause for patient's symptoms. The highest yield was in a group of patients undergoing CT KUB requested by urology (35%) and the lowest (26%) by other specialties.

In Conclusion, the yield of CT KUB in our cohort was low, suggesting that this imaging modality is used liberally in our practice, often before attempting to rule out other likely causes of patient's symptoms.

MP27-6 Utilisation of Computed Tomography in the Asessment of Urinary Tract Calculi to Predict Extracorporeal Shockwave Lithotripsy Success

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Introduction: Urolithiasis represents a major clinical and economic burden to the NHS. Consequently it is paramount that efficacy of treatment is optimised. ESWL is one of the main treatment modalities, however its success rate can be variable depending on stone size and stone composition. In this study we set out to assess how the use of CT KUB could help select patients preoperatively who would benefit from ESWL. To do this stones were assessed *in vitro* with CT KUB, utilising both abdominal windows (AW) and bone windows (BW) to assess stone volume and composition as suggested by Hounsfield Unit (HU) value. The second part involved collected stones undergoing ESWL in a phantom model.
Materials and Methods: Whole stones or stone fragments retrieved at PCNL underwent CT KUB and X-ray KUB either set within gelatin or within a pork loin phantom. The images were subsequently analysed for their HU value and volume. They then underwent ESWL.
Results: In total 57 stones were collected, 54 underwent CT KUB and biochemical analysis, whilst 23 underwent *in vitro* ESWL also. The results showed that CT can be used to predict stone composition by HU values and that there is a significant difference between HU values for all stones except cystine when analysed with bone and abdominal windows. The mean HU values were collated for each stone group and averaged as follows:

cystine (n = 3) 374.15 (302.02–473.25) AW, 429.55 (302.85–573.58) BW;

urate (n = 5) 305.42 (272.44–347.17) AW, 335.887 (279.32–412.97) BW;

calcium oxalate (n = 5) 583.7 (412.00–675.82) AW, 822.14 (592.60–962.90) BW;

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calcium phosphate (n = 8) 678.28 (312.64–1043.41) AW, 882.95 (574.66–1180.63) BW;

Mixed stone 100% calcium (n = 18) 646.19 (421.55–1189.65) AW; 937.82 (469.83–1486.72) BW;

Mixed stone > 50% calcium (n = 7) 555.03 (363.56–791.37) AW; 676.08 (370.68–1116.07) BW;

Mixed stone < 50% calcium (n = 8) 422.59 (325.86–526.82) AW; 529.07 (337.15–752.33) BW.

Furthermore, bone windows are more accurate for assessing stone volume than abdominal windows, with a significant difference when comparing calculated volume with volume from abdominal windows with a p value of 0.0001.

Conclusion: This study shows that CT KUB can be used in clinical practice to predict stone composition and the use of bone windows for analysis can provide more accurate stone information than abdominal windows. Therefore we suggest that analysis of stone characteristics on CT KUB should be routinely performed utilising bone windows.

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MP27-7 Ureteral Stone Diameter on Computerized Tomography Coronal Reconstructions is Clinically Important and Under Reported

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Introduction: It is well known that spontaneous passage of ureteral stones is dependent on stone size. Ureteral stone diameter evaluated with computerized tomography (CT) is frequently reported in the axial plane only. The aim of this study is to compare the coronal maximum stone diameter to the axial and determine the clinical significance of the coronal diameter.

Methods: A retrospective chart review was performed on patients seen in clinic between February 2014 and February 2015 to identify those with history of ureteral stones. Patients were included if they had a history of ureteral stone noted on CT scan performed with coronal reconstructions. Patients were excluded if they required urgent intervention with decompression, stone treatment within seven day of the onset of symptoms or had multiple ureteral stones. Management of the ureteral stone and pertinent medical history related to their stone disease including stone diameter on axial and coronal CT imaging, gender, age, BMI, height, creatinine, stone location within the ureter, stone composition, use of medical expulsive therapy, and history related to stone disease including whether they were a recurrent stone former, had history of prior stone passage, and if they had ever had a stent placed on the side of their ureteral stone. A statistical analysis was performed to assess which factors were associated with stone passage.

Results: One hundred patients qualified for this study. Forty-five spontaneously passed stones and 55 required surgery. In 70% of cases the coronal diameter was larger than the axial diameter by an average of 1.6 mm. Coronal diameter was reported by the reading radiologist in only 18% of cases. On univariate analysis stone passage was associated with axial diameter ($P < 0.0001$), coronal diameter ($P < 0.0001$), stone location within the ureter ($P = 0.0003$), patient age ($P = 0.010$), and medical expulsion therapy ($P = 0.009$). On multivariate analysis axial diameter, coronal diameter and stone location remained significant factors associated with spontaneous stone passage.

Conclusions: Coronal diameter of ureteral stones is significantly under-reported. As stone size is a significant predictor of stone passage and an important factor in determining management of the stone, failure to report the axial and coronal diameters could lead to inappropriate treatment. We strongly recommend obtaining coronal reconstructions when CT is performed for suspected ureteral stone to guide management decisions.

MP27-8 Digital Tomosynthesis: A viable alternative to non-contrasted computed tomography for the follow up of nephrolithiasis?

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Objective: Digital tomosynthesis (DT) is a new X-ray based, imaging technique that allows image enhancement with minimal increase in radiation exposure. The purpose of this study was to compare DT with non-contrasted computed tomography (NCCT) and to evaluate its potential role for the follow up of patients with nephrolithiasis in a non-emergent setting.

Methods: A retrospective review of patients with nephrolithiasis at our institution that underwent NCCT and DT from July 2012 to September 2013 was performed. Renal units that did not undergo treatment or stone passage were randomly assigned to two blinded readers, who recorded stone count, size area (mm^2), maximum stone length (mm) and location, for both DT and NCCT. Mean differences per renal unit were compared. Stone size was further classified for the largest stone per renal unit detected by NCCT into the following categories: < 5 mm, 5–10 mm and > 10 mm. Potential variables affecting stone detection rate including, stone size and BMI were evaluated. Inter-observer agreement was determined using the intra-class correlation coefficient (ICC).

Results: Of the 79 renal units assessed, 41 exhibited exact stone counts on DT and NCCT. At total of 352 and 337 stones were detected on DT and NCCT, respectively, of which more than 50% were ≤ 3 mm in size. Mean stone count per renal unit was 4.46 and 4.27 for DT and NCCT respectively. The mean difference in stone area was 16.5 mm^2 (-4.6–38.5), p = 0.121. Stratification by stone size showed minimal difference in stone count and size, especially for smaller stones < 5 mm. Correlation between BMI and stone detection rates was 0.06 and 0.05 for stone count and stone area (mm^2), respectively. ICC for stone size was 0.89 and 0.86 for DT and NCCT, indicating strong correlation between readers and adequate reproducibility

Conclusion: We found DT to be a comparable imaging modality to NCCT for the detection of intra-renal stones, without a significant effect from stone size and BMI and adequate reproducibility between multiple readers. DT appears to be an ideal alternative for following patients with nephrolithiasis due to its acceptable stone detection rates, low radiation exposure and decreased cost as compared to NCCT.

MP27-9 Size measurement of residual stone fragments with the Uro Dyna-CT

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Introduction: Residual stones after endourological treatment of urolithiasis may cause second look interventions. The gold standard for detection of residual stones is a multidetector computed

tomography (CT)[1]. The Uro Dyna-CT (Siemens Helathcare, Erlangen, Germany) offers the opportunity of cross sectional 3D imaging during the endourological intervention. First ex vivo studies with stone models have shown, that size measurement of stones with the Uro Dyna-CT is very precise[2]. Our aim was to evaluate wether the quality of stone depiction and size measurement is related to different stone compositions which would enable us to identify patients that might profit from intraoperative Dyna-CT scans at the end of the procedure in the future.

Material and Methods: We took 34 stones of different compositions from 5 patients after endoscopic stone treatment. Largest diameter of the real stone size was measured with a digital caliper. Afterwards we performed Uro Dyna-CT scans with our customized stone examination protocols (standard and low-dose) to measure the largest diameter in the cross sectional images and 3D reconstruction. These measurements were compared to size measurements performed with the goldstandard CT scans that were reconstructed with different protocols (bone scan and soft tissue). Paired t-test and testing of intraclass correlation coefficient were performed for statistical analyses.

Results: Bone scan CT and both Uro Dyna-CT protocols enabled precise stone size measurement independently from stone composition without significant difference ($p = 0.69$). Intraclass correlation coefficient was between 0.78 and 0.92 for all imaging methods and proved high correlation compared to real stone size with these examination protocols. Stone size was underestimated with all imaging techniques compared to the digital caliper. There was a significant difference in size measurement with the CT soft tissue protocol.

Conclusion: Exact size measurement of residual fragments is possible with the Uro Dyna CT and is comparable to standard CT. Accuracy of stone size measurement is independent from stone composition.

[1] European Association of Urology Guidelines 2014 Edition, Urolithiasis

[2] Meister B et al.- Accuracy in detecting and measuring residual fragments with the Uro Dyna-CT; World J Urol. 2014 Aug 28

MP27-10 How do we fare using CT KUB as the key radiological investigation in diagnosing renal calculi?

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United Kingdom

Introduction: The role of computed tomography kidneys, ureters and bladder (CTKUB) in diagnosing renal colic is now well established**.** However, with increasing availability of this modality, it is important that physicians ensure that radiation exposure associated with this test are kept to a minimum. This study looked at local practice with the aim to assess the diagnostic yield of CT KUB in diagnosing renal calculi as a marker of appropriate use.

Patients and Methods: This was a retrospective study looking at all patients seen in the Ambulatory Emergency Care Centre in a busy tertiary centre over a 4 month period. Using data collected by the Ambulatory Care Centre based on presenting complaints, patients presenting with a ''renal problem / renal colic'' were selected as the main study group.

Imaging for those selected patients was reviewed using the Picture Archiving and Communication System (PACS), an electronic image reporting system. Data on the modality of imaging used, date it was conducted in relation to first presentation and outcome was collated and analysed.

Results: From the 168 patients presenting with ''renal colic/ renal problem'' as their presenting complaint 76% ($n = 128$) received some form of imaging of which CT KUB formed 93% of this ($n = 119$). All the CT KUBs done were performed within 24 hrs of review at the Ambulatory Emergency Care Centre. The detection rate from CT KUB of renal calculi was 52%, with an alternative diagnosis made based on the CT KUB findings in 12%.

Conclusions: Current recommendations state that all patients with suspected renal calculi should be investigated using CT KUB. At our institution 93% of patients with suspected renal calculi underwent a CT KUB, allowing for contraindications this demonstrates adherence to the current guidelines. When considering whether this use was appropriate, we achieved a pick up rate of renal tract calculi within the current recommendation range of 44–64%, with an alternative diagnosis being made in 12% of our cohort (recommended figure 6–18%). This highlights appropriate use of CT KUB within our institution.

MP27-11 A feasibility study to compare two different attenuation measurement methods and their predictive value of stone composition

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Introduction and Objective: To investigate whether there is significant difference in Hounsfield Units (HU) at the centre of the stone in the transverse diameter compared to all other cross sections on CT KUB and evaluate the relation to stone composition.

Materials and Methods: Between July 2014 and May 2015, stone analysis was available for 131 patients. A sample size of 10% was identified to run the feasibility study. Patient identification was used to re-evaluate the most recent contrast or non-contrast CT prior to stone removal. As standard method, the biggest stone diameter on the transversal images was used for HU measurement. We utilized the Region of Interest (ROI) tool, integral to PACS Viewer (Spectra) software, to measure the HU maximum in the center of the stone in the transversal maximal diameter at first. Then, the whole stone was measured in each available cross section (coronal, sagittal and transversal) using the statistic circle tool. The delta between the HU maxima form those two measurement-methods was calculated.

Results: Over all, mean attenuation was 695 HU (Range 478 – 909 HU) for the standard method. The maximum HU calculated with the second method was on average 271 HU (Range 27 – 719 HU) higher. Uric Acid stones were underestimated by 5.8% using standard method compared to max HU of stone, whereas Cacium Phospahte stones were underestimated by 79%, Calcium Oxalate stones by 49%, Calcium Hydroxyapatite by 31% and Cystine Stones by 24%.

Conclusion: The feasibility study showed that HU of stones are on average underestimated by 39% if the standard method is utilised. Furthermore, we identified great differences in relation to stone composition. The method of measuring HU might have been a confounder in previous studies where stone composition was difficult to predict by calculating attenuation. Analysis of the whole patient sample is likely to produce statistically significant results and lead to robust conclusions.

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MP27-12 Can we predict stone composition from radiodensity?

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Introduction: Non-contrast computed tomography (NCCT) is the gold standard in investigating suspected urinary calculi. By using radio density measurements (Hounsfield Units, HUs) we aimed to reliably predict renal calculi composition prior to biochemical analysis of stones.
Patients and Methods: All patients treated with PCNL for renal calculi between 2012 – 2014 were retrospectively reviewed. NCCT had been undertaken less than 24 months prior to PCNL. Stones were measured along long axis in order to gain HU density (HU/ length in mm), as higher radio density is linked with larger size. Statistical analysis was undertaken with one way ANOVA in SPSS V22, with significance $p < 0.05$.
Results: 102 patients were included with mean size of calculi on CT 1.7 cm (range 0.4–4.4 cm). Stones were of mixed composition in 49(48%). There were 33% (N = 34) calcium phosphate stones, 46% (N = 47) calcium oxalate stones, 11% (N = 11) of magnesium ammonium phosphate (struvite) and 10 uric acid stones (10%.) Uric acid and struvite stones had a significantly lower HU density compared to calcium oxalate and calcium phosphate stones ($p < 0.01$ F = 12.6–13.6.) No uric acid or struvite stone had a density higher than 50 u/mm. Of the 12 cases where density was less than 50 u/mm where primary composite was calcium phosphate / calcium oxalate 83% of these (10/12) were mixed stones with partial uric acid or magnesium in their composition.
Conclusion: Radio density, as measured on pre treatment CT scan, shows significant difference between calcium stones and both struvite and uric acid stones. A density of < 50 u/mm can reliably predict composition of stones containing uric acid or struvite stones. This can be used clinically to commence medical therapy in appropriate cases prior to PCNL.

MP27-13 Computed Tomography for Nephrolithiasis: Radiation Dose is Widely Variable within the Healthcare System

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Introduction: Computed Tomography (CT) is the most accurate imaging test for nephrolithiasis. Unfortunately, CT uses ionizing radiation, and all medical professionals aim to follow the ALARA (As low as reasonably achievable) principle. However, there is evidence that radiation dose length product (DLP) varies widely between CT scanners, hospitals, and imaging sequence used. In this study, we determined radiation dose exposure among patients receiving unenhanced ''CT Stone protocol'' within our four hospital healthcare system.
Methods: We retrospectively obtained all CT stone protocol DLP's for patients scanned in June 2010 and June 2014 at our four hospitals. Patient demographics and body mass index (BMI) were also collected.
Results: In 2010, there were 942 patients who met inclusion criteria and 851 patients in 2014. There were no baseline differences in age and mean BMI. There was a significant trend from the use of 16, 64 head GE CT scanners to 64, and 128 head Siemens scanners over the 4 year time period. Table 1 demonstrates a significantly lower DLP in younger patients, women, lower BMI and Siemens over GE scanners. Furthermore, patients who underwent CT at SK hospital received significantly higher DLP than at our other 3 hospitals. Table 2 shows the multivariate analysis controlling for potential confounders, and this demonstrates that gender, BMI, Hospital and the scanner are each statistically significant independent predictors for higher DLP.
Conclusions: As expected, DLP increased with BMI, but surprisingly, male gender, hospital and CT scanner used were independent predictors of higher ionizing radiation dose within our institution. Further quality control work needs to be done within and between institutions for stricter enforcement and monitoring of ALARA regulations.

Table 1 - DLP by patient and hospital characteristics

	Mean DLP	SD	*p value*
Age			
<18	489.8	232.2	
18-39	735.2	330.5	
40-54	796.7	344.0	*<.0001*
55-70	821.8	387.2	
>70	727.7	316.4	
Gender			
Male	814.1	363.9	*<.0001*
Female	726.6	328.9	
BMI			
Underweight	373.2	133.6	
Normal	546.1	170.2	*<.0001*
Overweight	728.8	203.8	
Obese	1048.3	415.8	
Hospital			
EV	740.9	288.7	
GB	753.6	365.9	*<.0001*
HP	719.4	289.7	
SK	927.3	431.1	

Table 2 - Multivaraite analysis for variables associated with DLP

Predictor	Degrees Freedom	F Statistic	*p value*
Age	4	2.03	*0.0877*
Gender	1	26.23	*<.0001*
BMI	3	309.55	*<.0001*
Hospital	1	4.47	*0.0346*
Scanner	12	14.84	*<.0001*
Year	1	2.96	*0.0854*

MP27-14 Is NCCT safe to use as the primary imaging modality in females with suspected renal colic?

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Introduction: NCCT is routinely used as the primary imaging modality in patients with suspected renal colic despite concerns regarding radiation exposure. In females other diagnoses such as uti and pyelonephritis often present with microscopic haematuria and loin pain. These diagnoses may be excluded with ultrasound kub therefore eliminating unecessary radiation exposure from NCCT
Aims: To establish the number of calculi identified on NCCT in female patients with positive dipstick haematuria and symptoms of renal colic.

Method: A Retrospective audit over 3 months was performed of all female patients seen in the E.D department with symptoms of renal colic. All patients had a dipstick urine performed. All NCCTs were performed during the acute presentation and were reported by Consultant Radiologists.

Results:

Total number = 57 females, age range 16 – 83 yrs mean = 40 yrs

Dipstick positive 44/57 = 77%

NCCT positive for calculi in 11/57 = 19%, 4 renal, 7 ureteric

Stone size range 1 mm-4 mm, mean 3 mm, 2 patients bilateral renal stones

44 patients had dipstick haematuria, only 11/44 (25%) had a calculus identified on NCCT.

Other urological diagnoses were present in 14/57 patients (25%)

10/57 (18%) non-urological diagnoses, 22(38%) no cause found

Conclusion: 81% of females had an unnecessary NCCT and therefore unnecessary radiation exposure. Our audit shows that microscopic haematuria associated with loin pain correlates poorly with a finding of a calculus on NCCT with only 19% of females having a renal or ureteric calculus at presentation. USKUB should therefore be used as an alternative primary imaging modality in order to minimise unnecessary radiation to this group of patients.

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MP27-15 Ureteric stone 3 diameter measurements and its Clinical Significance

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Israel

Objective: Ureteric stone 3 diameter measurements on NCCT and, the correlation with clinical parameters.

Methods: All patients who were presented to Emergency Room (ER) with acute renal colic and were diagnosed with single obstructing ureteric stone by non-contrast computed tomography (NCCT) were evaluated. Treatment decision was based on stone maximal diameter evaluation (crude) by the urologist on axial plan only at presentation. In addition stone dimensions were measured in 3 planes (axial, coronal and sagittal) by radiologist (Blinded). The maximal difference in dimension was recorded as both an absolute value and as a relative change (stone ration). All patients were followed up to 12 months for clinical outcome. Matrix and scatter plots of all ureteral measurements were performed to evaluate the correlation between all the measurements. Multivariance analysis and One-way ANOVA for Max-Min versus all parameters and stone location.

Results: A cohort of 160 patients (80% males) with single ureteral stone were evaluated. The Stone was located in the distal ureter in 52%. There was decreased renal function and fever in 40% and 10% correspondingly. Comparing proximal stones vs. distal, no significant difference was found in age or side of impaction. 61 patients (38%) were treated by medical expulsive therapy only, 46 (29%) were drained with ureteral stent, 37 (23%) underwent ureteroscopy, and, 16 (10%) underwent extracorporeal shock wave lithotripsy. There was no significant correlation between the type of measurements or the relative change (max-min) and clinical outcome. We found significant change in stone ration between proximal and distal stone ($p < 0.002$). Proximal stone had larger stone ration then distal stones at presentation.

Conclusion: Proximal ureteral stones are more likely to be larger and elongated compared to distal stones which were more rounded and smaller at presenting to ER. Type of measurement did not predict different outcome.

MP27-16 Perinephric Fat Distribution and Anatomical Considerations when Performing Percutaneous Nephrolithotomy in Obese Patients

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Introduction and Objectives: Knowledge of renal and retroperitoneal anatomy is essential to performing percutaneous nephrolithotomy (PCNL) with minimal patient morbidity. The kidneys are oblique in reference to the sagittal, coronal, and axial planes of the body with the lower pole more anterior and freely mobile, accounting for the difficulty in puncture as the lower pole may move away from the needle and dilators during PCNL. Our objective is to study the difference in the distribution of perinephric fat and its impact on the skin – calyx length and renal angle during PCNL in obese patients.

Methods: We reviewed 71 consecutive abdominal CT scans done at our institution with 135 kidneys included. We performed several measurements in relation to the anatomy of the kidneys including: Renal Angle, upper pole to skin (UPS), lower pole to skin (LPS), upper pole to muscle (UPM) - representing the upper pole perinephric fat - and lower pole to muscle (LPM). We excluded patients with missing demographic data such as body mass index (BMI) or any abnormality on CT that would change the position of the kidney in the retroperitoneum such as large renal cysts.

Results: The mean BMI was 28.6 ± 8.5. The UPS distance was significantly higher in the obese patients (BMI > 30) compared to the non-obese (87.9 ± 24.8, 56.3 ± 12.3; P value < 0.01), the same was noticed in the LPS distance (144.4 ± 37.1, 93.4 ± 18.2; P value < 0.01). The perinephric fat distribution measured by the UPM and LPM were both significantly higher in the obese population (P value < 0.01 for both) but the obese patient had significantly more fat surrounding the lower pole (P value = 0.011), which caused the lower pole to shift more anterior in the obese population changing the renal angle from 22.5 ± 8.2 to 33 ± 11.3 on the sagittal access (P value < 0.01).

Conclusion: There is a significant change in the perinephric fat distribution in the obese patients which is more pronounced in the lower pole making lower pole access longer and at a more difficult angle in these patients. This supports our recommendation for an upper pole approach in the obese patient population.

MP27-17 Combining Mean and Standard Deviation of Hounsfield Unit Measurements from Preoperative CT Allows More Accurate Prediction of Urinary Stone Composition Than Mean Hounsfield Units Alone

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Introduction and Objectives: The chemical composition of a urinary stone may influence its surgical and medical treatment. Previous attempts at identifying stone composition based on mean Hounsfield Units (HUm) have had varied success. We aimed to evaluate the additional use of standard deviation of HU (HUsd) to more accurately predict stone composition.

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Methods: We identified patients from two centers that had undergone urinary stone treatment between 2006 and 2013 and had chemical stone analysis and a computed tomography available. HUm and HUsd of the stones were compared with ANOVA. Receiver Operater Characteristic analysis with Area Under the Curve (AUC) and Youden Index were calculated. Finally likelihood ratio calculations were performed and probability charts created for each stone type.
Results: Data was available for 466 patients. The major component was Calcium Oxalate Monohydrate (COM), Uric Acid, Hydroxy Apatite, Struvite, Brushite, Cystine and Calcium Oxalate Dihydrate (COD) in 41.4%, 19.3%, 12.4%, 7.5%, 5.8%, 5.4% and 4.7% of patients respectively. The HUm of Uric Acid and Brushite were respectively significantly lower and higher than the HUm of any other stone type. HUm and HUsd were most accurate in predicting Uric Acid with an AUC of 0.969 and 0.851 respectively. The combined use of HUm and HUsd resulted in increased positive predictive value and higher likelihood ratios for identifying a stone's chemical composition for all stone types but COM. Any stone with a HUm of < 500 has an 80% probability of being a Uric Acid stone. A stone with a HUm of < 500 and HUsd of < 70, has an 91% probability of being a Uric Acid stone.
Conclusions: To the best of our knowledge this is the largest series to date using CT data to predict stone composition and the first report of this data aiding in the prediction of Brushite stone composition. Both mean and standard deviation of Hounsfield Units can help predict stone composition and their combined use results in higher likelihood ratios influencing probability and a more accurate prediction of stone composition.

MP27-18 Withdrawn

MP27-19 Analysis of the Skin to Calyceal Distance (SCD) to the Upper Pole Calyx among Filipino Patients: A Guide to Upper Pole Access PCNL

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Introduction: Precise entry to the upper posterior calyx is key to a successful and safe upper pole access PCNL. The bull's-eye technique that is typically employed to advance the access needle into the upper pole calyx does not show evidently the depth of puncture until after an oblique view has been obtained. Therefore, the surgeon's knowledge of the average skin to calyceal distance can serve as a guide to avoid inadvertent injury to both the kidney and collateral organs during the percutaneous puncture.
Materials and Methods: We analyzed the radiologic images of patients who underwent unenhanced 64-slice helical CT Scan (Toshiba®) from January 2010 to September 2014. We then measured the skin-to-calyceal distance (SCD) to the upper posterior calyx using the Vitrea® software inherent to the CT scan and through the supervision of a licensed and board-certified CT radiologist.
Results: A total of 118 patients, comprising 54 males and 64 females, underwent CT scan during the study period. The patients were classified to those without hydronephrosis (Group 1) or with hydronephrosis (Group 2). Seventy-five patients were included in Group 1 while forty-three patients were included in Group 2. The mean SCD in Group 1 were 54.9 ± 13.7 mm and 61.4 ± 12.5 mm on the right and left, respectively while in Group 2, the mean SCD was 60.3 ± 11.8 mm and 58.6 ± 13.1 mm on the right and left, respectively. There was no statistically significant difference between the right and left upper pole calyces in both groups ($p = 0.11$).
Conclusion: The mean SCD to the upper posterior calyx among Filipino adults is less than 6.0 cm. By limiting the depth of the initial puncture to within this distance, the endourologist may avoid overshooting the targeted calyx, thus avoiding undue injury to the kidney or intraabdominal structures.

MP27-20 Contrast Computed Tomography in 100 clear cell renal cell - cancers - an analysis of enhancement, tumour size and survival

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Aim: To investigate the relationship between computed tomography contrast enhancement of clear cell renal tumours and clinicopathological measures including tumour size, stage, grade, presence of necrosis and disease-specific survival.
Materials and Methods: Patients who had radical nephrectomy for clear cell RCC in the period 2004–2007 and who had CECT at diagnosis were included. Pathological records and radiological imaging were reviewed. Maximum contrast enhancement (MACE) in Hounsfield units (HU) was calculated as the difference between the highest value on pre-contrast and post-contrast imaging in at least three regions of interest within the tumour. MACE was correlated with pathological measures (size, stage, grade, necrosis) and 5 year disease specific survival (DSS).
Results In total, 100 patients with clear cell RCC (median follow-up 40 months) were included with median age of 64 years. MACE values ranged from $21 - 155$ Hounsfield units (HU) with a median of 60.5 HU. There was weak negative correlation between increasing tumour size and MACE ($r = -0.2$, $p = 0.045$). Patient with necrosis on pathology had lower MACE (71.3 HU vs 57.5 HU, $p = 0.03$). There was no significant correlation between tumour grade or stage and MACE. Kaplan Meier plots showed significant survival differences with 5 yr DSS for MACE < 50 HU 100% vs. 5 yr DSS for MACE > 50 HU 82% (log rank $p = 0.025$).
Conclusion: MACE decreased with increasing tumour size and was associated tumour necrosis. MACE > 50 HU was associated with a worse 5 yr DSS

MP27-21 Diagnostic Significance of Ureteric Thickening on Multi-detector Computed Tomography Urography in patients with Frank Haematuria

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Introduction: Computed tomography urography (CTU) has become the imaging modality of choice for investigating the upper urinary tract in patients with frank haematuria. The aim of this study is to determine the significance of abnormal ureteric wall thickening found on CTU in this group of patients.
Patients and Methods: Between January 2013 and December 2014, 519 patients underwent multidectector- row (MD) CTU

for frank haematuria in our institution. The MD CTU examinations showing abnormality in the upper tracts were subsequently reviewed by uro-radiologist in a multidisciplinary meeting and findings confirmed as: focal ureteric wall enhancement or thickening; presence of filling defects of various sizes; associated hydronephrosis; and site of lesions in the upper tract. Further evaluation of suspected lesions required ureteroscopic biopsies, follow-up or nephroureterectomy. Analyses of per-MD CTU and per-lesion basis were performed, assessing receiver operating characteristic analysis for combining excretory phases.
Results: In 28 (5.4%) patients, MDCT findings were positive for upper tract abnormalities. Of the positive results, ureteric thickening alone was seen in 14 patients. In 8 of these patients, we were able to compare MDCTU findings with histological analysis and found only 1 patient (12.5%) had a histologically confirmed ureteric transition cell carcinoma. One patient proceeded directly to nephroureterectomy and final histopathology was negative for cancer. There was a good agreement between two radiologists for presence of filling defects, however for ureteric thickening, agreement was poor.
Conclusion: Despite CT urograms reported as being highly sensitive for the diagnosis of upper tract urothelial cancers, findings of ureteric thickening poorly correlate with the histology and presence of malignancy in patients presenting with frank haematuria. This merits further ureteroscopic inspection and biopsies to avoid unnecessary radical surgery.

MP27-22 Three-Dimensional Evaluation of Perirenal Adipose Tissue Volume Predicts Renal Cortical Neoplasm Histopathology

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Introduction: Contemporary imaging technology allows for advanced three-dimensional (3D) volumetric measurement of organs. Visceral and perirenal adipose tissue (PAT) have been shown to be metabolically active. Previously we have demonstrated that two-dimensional PAT measurements are associated with more aggressive renal cell carcinoma (RCC) subtypes. In this study, we evaluated 3D volumetric total PAT volume as a predictor of renal tumor histopathology using novel 3D imaging software Vitrea LT (Vital Images, Inc., Minnetonka, MN).
Methods: We retrospectively evaluated patients who underwent laparoscopic radical/partial nephrectomy or laparoscopic/percutaneous cryoablation for renal cortical neoplasms (RCN). PAT volume was measured by post-processing of preoperative CT images using Vitrea software. Total perirenal space volume was measured by manual contouring. Structures with densities greater than adipose tissue were subtracted out using organ segmentation, thereby yielding only a total PAT volume. Demographic, clinical and operative parameters, PAT volume, and their association with tumor histopathology were evaluated.
Results: In this pilot analysis, a total of 69 patients were included. There were 30 (43%) men and 39 (57%) women included in this study. The median tumor size was 2.6 cm (SD: 1.6–3.6 cm). According to R.E.N.A.L. Nephrometry Scoring System, there were 37%, 53% and 10%, of low, moderate, and high complexity lesions, respectively. Median PAT volume was 408 cm^3. Mean PAT for malignant and benign histopathology was 459.2 cm^3 and 285.9 cm^3 respectively ($p = 0.008$). There was no significant difference in the mean PAT volumes between the low, medium and high complexity nephrometry tumors.
Conclusions: In this preliminary analysis, increased PAT volume is a significant predictor of malignant histopathology over a benign RCN. Further analysis with more patients is in progress to confirm our initial findings, and to compare PAT volume to other predictive metrics.

MP28 - SURGICAL OUTCOMES 5

MP28-1 Treatment of Small Renal Cancers: Less is More

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Introduction: Due in part to the ever-increasing use of CT scans, the diagnosis of small renal cancers (SRC, ≤ 3 cm) continues to rise. Treatment of these cancers varies from radical nephrectomy (RN), to partial nephrectomy (PN), to the more recent introduction of needle-guided thermal ablation (TA). The question of whether the more aggressive surgical modalities are associated with better outcomes remains unanswered. Herein we analyze data from the Surveillance, Epidemiology, and End Results Program (SEER) to determine current practice trends as well as survival analysis for the most common treatment modalities of SRC, stratified by patient age and renal tumor size.
Methods: All SRCs diagnosed from 2005 to 2010 were identified in the Surveillance, Epidemiology, and End Results Program (SEER). SRCs were stratified by patient age and renal mass size. Frequency distributions of demographic and clinical characteristics were compared by surgery type. Multivariate logistic regression was used to identify factors related to optimal surgery. Survival comparison was analyzed using Kaplan–Meier method and multivariate Cox proportional hazards model. Propensity score analysis was used to compare survival by treatment type and cause of death.
Results: SEER data contained 17,716 SRCs that underwent treatment. Of note, over the 5-year period the performance of RN fell from 51.1% to 30.5%, while PN rose from 42.9% to 56.5% and TA rose from 6.1% to 13.0%. For masses < 1 cm and masses 1–2 cm, regardless of patient age, there was an overall survival advantage for PN over RN (HR 2.22, 95% CI 1.46- 3.37), (2.51, 2.09–3.01), respectively. For cancers < 2 cm overall survivial for TA was equivalent to PN. For cancers in the 2–3 cm range, regardless of patient age, PN showed an overall survival advantage over both RN (1.72, 1.49- 1.98) and TA (1.67, 1.34–2.07). For all SRCs, cancer-specific survival for PN was significantly better than RN (1.98, 1.57–2.48) but the same as TA (0.94, 0.64–1.39). Death from cardiovascular disease was significantly less for PN than for either RN or TA.

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Conclusions: Radical nephrectomy results in poorer overall, cancer-specific, and cardiovascular survival than partial nephrectomy for all renal cancers < 3 cm. Needle based thermal ablation provides similar results to PN for cancers that are ≤ 2 cm. For renal cancers < 3 cm, whenever possible, radical nephrectomy should not be used.

MP28-2 The role of cytoreductive nephrectomy in patients with synchronous metastatic renal cell carcinoma and prognostic factors of overall survival

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Introduction: To determine whether patients with metastatic renal cell carcinoma (RCC) treated with targeted therapies benefit from cytoreductive nephrectomy (CN) and identify prognostic factors for overall survival (OS)
Materials and Methods: Patients with synchronous metastatic RCC at initial presentation (1 January 2005 to 31 December 2014) who received targeted therapy were identified from a prospectively maintained cancer registry. We proceeded to evaluate the role of CN in these patients and identify prognostic factors for OS using univariate and multivariate analyses.
Results: 120 suitable patients were included in this study, with a median age of 61 years (range: 18 to 82 years). 32.0% of the patients (n = 39/120) underwent CN. The difference in IMDC profiles between both groups were not satistically significant.

The median OS for this study population was 22.5 months (95% CI; 18.5 to 26.6 months); 31.9 months in patients with CN compared to 20.9 months in patients without CN ($p < 0.05$). However, when adjusted for IMDC criteria and potential confounders, the difference in median OS was not statistically significant ($p = 0.875$). On multivariate analysis, the number of sites of metastasis and the time interval from diagnosis to treatment < 1 year were independent predictors of OS ($p < 0.05$).
Conclusion: CN can provide OS benefit in adjunct to targeted therapy in a selected group of patients with mRCC. The time interval from initial diagnosis to treatment < 1 year and number of sites of metastasis were found to be independent predictors of OS.

MP28-3 Predictive Factors for Benign Pathology in Renal Tumours Suspicious of Malignancy on Radiological Imaging

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Introduction: The incidence of benign renal masses has increased along with the incidence of renal cell carcinoma as a result of increased usage of radiological imaging. This study aims to determine parameters to predict benign pathology for patients with suspected renal cell carcinoma in our local population.
Methods: A review of patients with radiological imaging suspicious of renal cell carcinoma and histological diagnoses was performed. Demographic features, symptoms at presentation and computed tomography (CT) scan findings were analysed.
Results: 89 patients were included in the analysis. There were 12 (13.8%) patients with benign renal lesions. Of which, 8 lesions were angiomyolipomas, 2 were oncocytomas and 1 patient each had an encapsulated hematoma and papillary adenoma respectively.

On univariate analysis, female gender (p = 0.018), non-smokers (p < 0.001), patients with incidental findings (p = 0.026), smaller tumours < 3 cm (p = 0.006) and lower pole tumours (p = 0.006) were more likely to be diagnosed with benign lesions. After multivariate analysis, polar location and size of tumour remained statistically significant.

Receiver operating characteristic (ROC) analysis using 2 of 4 predictive values showed an excellent discriminating power for predicting benign lesions in our cohort. (Area under curve = 0.745). When external validation is done using an external institution database, ROC analysis using 2 predictive factors still showed good discriminating power for predicting benign lesions (Area under curve = 0.694)
Conclusion: Based on the predictive factors of female gender, non-smoking history, size and location of lesion, patients with 2 or more factors are predictive of a benign pathology. These factors can be taken into account for management decisions.

MP28-4 Degree of Kidney Tumor Enhancement Predicts Radiofrequency Ablation Failure

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Introduction and Objective: Radiofrequency ablation (RFA) is a minimally invasive technique to treat small renal masses. RFA failure is associated with tumor size and tumor histology, with larger size and clear cell histopathology on biopsy associated with higher rates of RFA failure. We hypothesize that kidney tumors that enhance greatly on contrast imaging may be at higher risk for RFA failure due to its vascularity.
Methods: Retrospective review of patients who underwent RFA for kidney tumors at our institution from 2005 to 2014 was performed. A computed tomography (CT) scan with and without contrast pre-procedure must be available to be included in the analysis. Patient demographic data and tumor characteristics were recorded. RFA failure is defined as incomplete ablation. The change in Hounsfield units (HU) of the tumor from the non-contrast phase and the contrast-enhanced phase was recorded. RFA failure rates of continuous variables were compared using the student's T-test, while categorical variables were compared using the chi-squared test. Multivariate logistic analysis was performed to assess predictive variables for RFA failure.
Results: There were 158 patients with pre-procedure contrast enhanced CT scans available for review. RFA failure rate is significantly less for tumors that enhance < 60 HU vs. ≥60 HU (1.2% vs. 9.5%, p = 0.018). RFA failure rate is not significantly different in tumors with size < 3 cm vs. ≥3 cm, NS < 6 vs. NS ≥6, and clear cell vs. non-clear cell type. On multivariate logistic regression analysis, tumor enhancement ≥60 HU (OR 1.10, p = 0.013) remained significant predictor for RFA failure. 5 year DFS for size < 3 cm was 100% vs. 74.3% for size ≥3 cm, p < 0.01. 5 year DFS for HU change < 60 was 86.7% compared to 94.8% for HU change ≥60, p = 0.71. 5 year DFS for non-clear cell tumors was 100% vs. 86.3% for clear cell tumors, p = 0.02.
Conclusion: Kidney tumor enhancement of ≥60 HU predicts higher rate of RFA failure.

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MP28-5 Off-clamp partial nephrectomy: Initial experience using a novel transection device in an academic centre

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Introduction and objective: Partial nephrectomy (PN) is the gold standard of treatment for small renal tumors. Recently, we performed off-clamp PN in patients with the aid of a novel thermal tissue fusion system. The objective of the present study was to report our initial results and evaluate the feasibility of the procedure.
Methods: Patients were prospectively evaluated from December 2012 to March 2015 and underwent a PN with the aid of the Altrus® device. Demographic, clinical, radiological and perioperative data were collected for analysis. Descriptive statistics and paired T-test were used as appropriate. Complications were classified according to Clavien-Dindo classification.
Results: Of the 12 patients included in the study, 7 had chronic kidney disease (CKD) and 3 had solitary kidneys. Median values for age, Charlson comorbidity index and hospital stay were 62 years (range 39–78), 3.5 (2–8) and 4.5 days (3–15), respectively. Median largest diameter of the tumors was 32.5 mm with a median R.E.N.A.L. nephrometry score of 7. All but the three patients with solitary kidneys underwent preoperative nuclear imaging to assess split renal function. All cases were completed without hilar clamping and only two patients required blood transfusion, one patient under chronic anticoagulation and the second patient with a 5 cm complex mass with nephrometry score of 10p. RCC was diagnosed in 11 of 12 cases and one patient with a pT3a RCC had a positive margin. Two Clavien 3a complications occurred. Mean preoperative and pre-discharge creatinine were not statistical significantly different (101 vs 130 umol/L, $p = 0.27$). MAG-3 renograms revealed a similar split renal function of the affected side before and 6 weeks after surgery (49% vs 46%, $p = 0.08$).
Conclusions: Although our clinical experience is limited, results are promising that off-clamp PN using the Altrus device is a feasible and safe option for treatment of small renal masses of moderate complexity.

MP28-6 The influence of tumor location on postoperative renal function after laparoscopic partial nephrectomy

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Introduction: Although laparoscopic partial nephrectomy (LPN) is now increasingly performed as a minimally invasive nephron-sparing surgery for kidney cancer, it requires advanced surgical techniques, particularly in cases with renal hilar, endophytic or large tumors. Tumor location in the upper kidney may influence the difficulty of LPN because the laparoscopic procedure imposes restrictions on port placement and forceps-handling. Previous reports have shown that renal scoring systems, such as the RENAL nephrometry score, PADUA score and C-index, are associated with postoperative renal function. However, these scoring systems do not factor in tumor location (i.e., upper or lower kidney). To determine the influence of tumor location on renal function after LPN, we analyzed relationships between postoperative renal function, perioperative outcomes and preoperative features; renal scoring included tumor location, which was classified as upper, middle or lower kidney.
Methods: From January 2008 to December 2013, 80 patients were diagnosed with renal cell carcinoma and treated with LPN at a single institute. To determine the procedure's influence on postoperative renal function, renal function was evaluated preoperatively and 1 week postoperatively by renal scintigraphy using 99mTc-MAG3. Residual renal function in the affected kidney was calculated as the ratio of affected renal MAG3 clearance to contralateral clearance.
Results: The median percentage of residual renal function 1 week after LPN was 64.6 (54.1–78.8). Residual renal function in the affected kidney was classified into 2 groups based on mean values: $\square 65$ and ≥ 65. In univariate analysis according to decreased renal function status, there were significant differences in the following variables between the groups: tumor size, ischemic time, nearness and anterior/posterior (classified by RENAL nephrometry score) as well as location (classified as upper, middle or lower kidney). In logistic regression analysis, the independent predictors of decreased renal function were tumor size, ischemic time and tumor location.
Conclusion: Tumor location is associated with postoperative renal function after LPN and should be considered, among other factors, when forecasting post-LPN renal function.

MP28-7 Baseline estimated Glomerular Filtration rate influences need for intervention in small renal masses

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Background: Management of small renal masses (SRMs), mostly detected incidentally is a challenge. The prediction of growth trajectory as a surrogate marker for malignancy and aggressiveness remains poor. The study was aimed at finding out growth prediction and need of interventions in SRMs in patients opting for active surveillance in a stable population.
Patients and Methods: 151 consecutive patients diagnosed with SRMs between January 2012 and December 2014 opting for active surveillance after discussions in a multidisciplinary settings were recruited into this study. Patients were followed up using imaging at intervals of 6–12 months and progression was recorded in a database. A number of factors were evaluated as predictors of growth in size including age, sex, baseline size, co-morbidities, laterality, socioeconomic status and base line eGFR. Univariate and multivariate analyses were carried out using cox-proportional hazard model to assess the best predictor/s of growth.
Results: Mean age of population was 69.9 (± 13.3) with more than half were males (87 (57.6%). Forty five (29.8%) cases showed progression with 38 (25.2%) showing increase in size of tumours size and 7 cases (4.6%) metastasized. Our multivariate analyses have shown that lower eGFR alone have significant association with increase in tumour size ($chi2 = 5.903$, $p = < .05$) with an odd ratio of 2.9 more likely of getting SRM if patient eGFR is less than 60. None of the other factors such as baseline size, age, sex, bilateralism and socioeconomic status showed any significance. Commonest intervention was surgical excision followed by minimally invasive ablation-most commonly RFA.
Conclusions: Poor renal function is associated with significant increase in progression of size in patients with small renal masses and need for interventions.

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MP28-8 A 10-year experience of ablative treatment for small renal masses

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Introduction: Radiofrequency ablation (RFA) and cryoablation are alternative and less invasive treatment options for small renal tumours compared to nephron-sparing surgery.
Materials and Methods: All patients who experienced ablation treatment for small renal masses from 2004- June 2015 at our institution underwent post-ablative surveillance imaging at regular intervals at the first and third month, and regular intervals thereafter. Surveillance imaging was performed with computed tomography (CT) or magnetic resonance imaging (MRI). Tumour recurrence was identified as either an increase in tumour size and/or heterogeneous enhancing lesion at the lesion site post-ablation.
Results: Thirty-nine patients were identified, with a median age of 74 years (range = 52 to 90 years), median Charlson comorbidity score 6 (range = 4–12). Median tumour size was 3.0 cm (range = 1.2 – 4.6 cm); median RENAL nephrometry score was 5 (range = 4 to 10). The median follow-up time was 26 months. Three patients required repeat ablation treatment, with a maximum of 2 further sessions. A total of 43 ablative treatments were performed, of which 37 were RFA and 6 were cryoablation. In the RFA group, one was performed laparoscopically, one during open resection of primary hepatocellular carcinoma; and the rest percutaneous. In the cryoablation group, two were done laparoscopically and the remaining percutaneous. There were 10 (25.6%) recurrences occurring at a median of 7 months post-ablation (range = 1–56 months). Three had repeat ablative treatment, one underwent salvage laparoscopic nephrectomy, and the rest opted for conservative management. There was no cancer-specific mortality. There were 4 deaths from other causes occurring at 24–116 months post-ablation, which all occurred in those with tumour recurrences. The overall complication rate was 32.6% (Clavien I and II only) with perinephric haematoma being the commonest (20.9%).
Conclusion: In our group of well-selected patients, ablative treatment offered good local cancer control and low risk of cancer-specific death. Laparoscopic ablation was feasible for anteriorly-located tumours and previous failed percutaneous ablation.

MP28-9 Morcellation in robotic radical nephrectomy: A safe alternative with shorter hospital stay.

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Introduction: Kidney morcellation is oncologically safe, albeit not a widely popular procedure, during minimally invasive radical nephrectomy. We hypothesized that kidney morcellation is safe and associated with shorter hospital stay and less utilization of narcotics during hospitalization.
Materials and Methods: Between July 2006 and January 2015, 159 consecutive minimally invasive nephrectomies were performed at our institution. Kidney morcellation was offered to patients as an option for specimen extraction. Approaches used were pure laparoscopy, hand-assisted laparoscopy, retroperiteneoscopic, and robot-assisted Laparoscopic. Morcellation was performed by mechanically crushing and retrieving kidney tissues in a contained fashion. The extraction site was strictly isolated to prevent any spillage of the tumor content into the surgical field.
Results: A total of 69 (43.4%) kidneys were morcellated, while 90 (56.6%) kidneys were extracted intact. There was no difference in tumor size, nephrometry score, age, sex, BMI, or ASA between both groups. Patients that underwent specimen morcellation had less intra-operative bleeding (50 ml versus 183 ml, $p < 0.001$) and a smaller incision at the extraction site (3.6 cm versus 8.4 cm $P = 0.002$) than the nonmorcellated group. Hospital stay was shorter in the morcellated group (1.7 days versus 2.8 days, $P = 0.005$). There was no difference in total amount of narcotics used per day between both groups. Peri and postoperative complications were equivalent between both groups. The size and stage of the tumor were accurately assessed in 30% of the specimens in the morcellated group. None of the patients in the morcellation group had isolated local recurrence in the extraction site.
Conclusion: Kidney morcellation is safe and associated with shorter hospital stay. Despite a cosmetically smaller incision, patients who had specimen morcellation did not require less narcotics during their hospitalization.

MP28-10 Conservative management of upper tract urothelial carcinoma in a high volume single center experience

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Introduction and Objectives: Upper tract urothelial carcinomas (UTUCs) account for only 5–10% of urothelial carcinomas and the 60% of UTUCs are invasive at diagnosis and nephroureterectomy and lymphnode dissection is desirable. Patients with renal insufficiency, solitary functional kidney or low-risk cases can benefit a conservative management in order to avoid or delay a radical surgery and a probable further risk of chronic kidney disease. Since few data exist in literature describe the conservative management of UTUCs the aim of this study was to investigate the perioperative and oncological outcomes of this conservative surgery.
Methods: A single-center retrospective study was conduct. From December 2009 to March 2014 we collected all patients with new diagnosis of UTUC. The conservative treatment was offered to patients with small (< 1 cm), superficial, low-medium grade TCC or solitary/transplanted kidney. Eligible patients accepted a very strict radiological and endourological follow up. Suspected lesions were biopsied and photocoagulated. If a high grade or multiple low-grade tumors were proved at the final pathology and if were no more manageable endourological a nephroureterectomy and lymphnode dissection were offered to the patients. Short and long term complications, oncological follow up and renal function were analyzed. A disease free survival was estimated for the conservative management of UTUCs with the Kaplan-Meier methods.
Results: 15 patients (mean age 66 years ± 15.5) with new diagnosis of UTUC were conservatively treated, for a total of 84 procedures. The median follow up was 38 months (range 12–50). No intraoperative complications were observed. In the early postoperative, 12% of patients had fever (Clavien I) and one patient had gross hematuria (Clavien II). The mean hospital stay

was 2 days ± 1.60. Four patients after a median follow up of 45 months (range 18–50) underwent a nephroureterectomy and lymphnode dissection. 4 patients are currently negative, with median follow-up of 35 months (range 9–46). No one died for cancer disease and no patients after the surgery had recurrence of disease in the bladder. During the follow up the creatinine was stable.
Conclusions: The endourologic treatment of the UTUCs is a safety and reliable surgical procedure in highly selected cases. A relatively long disease free survival (mean 5.3 months) and the absence of major complications in experienced hands can avoid or delay conventional surgery. Avery strict follow up is needed. However patients have to be warned that in the 25% a radical surgery is necessary.

MP28-11 Salvage Percutaneous Cryoablation for Locally Recurrent Renal Cell Carcinoma after Primary Cryoablation

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Introduction: We report our experience with salvage percutaneous cryoablation (PCA) for local recurrence following renal cryoablation failure.
Materials and Methods: We retrospectively reviewed the prospectively established databases of two institutions for patients who underwent salvage PCA for local biopsy proven renal cell carcinoma (RCC) recurrence following primary cryoablation procedures. Recurrent benign or indeterminate tumors were excluded. Complications and oncologic outcomes were evaluated.
Results: A total 250 patients underwent primary cryoablation for RCC; 20 (8%) patients underwent repeat PCA for 21 tumors. Sixteen patients failed primary PCA and four failed laparoscopic cryoablation (LCA). The mean pre-ablation tumor size was 2.4 cm; 13 (65%) had a tumor < 3 cm and 7 (35%) had a tumor that was 3 to 3.7 cm. Biopsy at the time of repeat PCA procedure revealed clear cell renal RCC in 14 patients, 3 papillary and 4 chromophobe RCC. All repeat PCA were completed successfully without any complications. With a median follow-up of 2.5 years (range 0.6 – 5.3 years), 3 (15%) patients experienced another local recurrence ranging in size from 0.3 cm to 0.9 cm at 6, 13, and 35 months. One patient underwent a successful third PCA, while the other two underwent an uncomplicated laparoscopic partial nephrectomy. Local recurrence-free, metastasis-free and cancer-specific survival rates for the 20 patients in the study were 85%, 100%, and 100% respectively.
Conclusions: Repeat percutaneous cryoablation after primary cryoablation failure is feasible and effective in 85% of patients. In no case did a patient develop metastatic disease or require radical nephrectomy

MP28-12 Pain after Percutaneous Irreversible Electroporation of Renal Tumors is not dependent on tumor location

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Introduction and Objective: Percutaneous irreversible electroporation (IRE) is a novel minimally invasive technique to treat small renal masses. Electroporation causes cell death by generating an electric field across the cell, leading to creation of nano-scale pores within cellular membranes. IRE offers advantages to radiofrequency ablation (RFA) and cryoablation since it does not rely entirely on thermal energy. It was demonstrated previously that patients whose renal tumors lie close to their body-wall musculature have greater narcotic requirements in the peri-procedural period after percutaneous RFA. We hypothesize that patient's pain after percutaneous IRE is not dependent on renal tumor location due to IRE's athermal mechanistic action.
Methods: Retrospective review of our institution's percutaneous renal tumor IRE cases was performed from 2013 to 2014. Data was collected from chart review, including patient age, sex, body mass index (BMI), nephrometry score, shortest distance to the closest body-wall muscle, as measured on axial views from either CT or MRI, total perioperative narcotic use, patient reported pain score from standardized 11-point pain assessment scale, and previous narcotic usage. Pearson product-moment correlation test was used with significance set at $P = 0.05$.
Results: There were 23 cases available for review. Two patients were excluded from analysis due to incomplete anesthesia record and multiple ablations per session. 5/21 (23.8%) patients were admitted for observation overnight for pain. Mean tumor to body wall musculature distance was 2.62 cm. Mean total peri-operative morphine equivalents use was 9.47. Mean post-operative reported pain score was 2.43. There was no correlation between tumor proximity to body wall and total peri-operative narcotic equivalent use ($p = 0.56$). There also was no correlation between tumor proximity to body wall and patient reported pain score ($p = 0.41$). Increasing age was significantly correlated with decreased total peri-operative morphine equivalent use ($p = 0.01$).
Conclusions: Patients whose tumors lie close to their body-wall musculature did not have greater narcotic requirements or higher pain scores in the peri-operative period after percutaneous IRE. IRE may be preferred over RFA for small renal tumors that are close to the body-wall to minimize post-procedure pain.

MP28-13 Initial Clinical Experience with Percutaneous Irreversible Electroporation of Kidney Tumors

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Introduction and Objectives: Percutaneous irreversible electroporation (IRE) is a novel minimally invasive technique to treat small renal masses. Electroporation causes cell death by generating an electric field across the cell, leading to creation of nano-scale pores within cellular membranes, ultimately resulting in cell apoptosis. IRE offers potential advantages to radiofrequency ablation and cryoablation since it does not rely on thermal energy. We evaluated our inital IRE experience to assess feasibility, safety, effectiveness, and radiographic outcomes of IRE renal tumor ablation.
Materials and Methods: A retrospective review of all IRE cases between April 2013 and June 2015 was performed. IRE was performed using the NanoKnife 15 cm monopolar probes and commercial system (AngioDynamics, NY, USA). All procedures were performed under general anesthesia. To prevent cardiac arrhythmias, IRE was synchronized with the cardiac cycle. All patients underwent CT guided ablation. To be included in

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analysis, patients had a minimum of 6 week follow-up with a contrast-enhanced CT.
Results: A total of 26 tumors underwent IRE. Mean follow-up is 11 months (2–25). Mean tumor size was 2.13 cm (1.20–3.60 cm). Mean nephrometry score was 5.62 (4–9). Biopsy was performed in 53.8% of cases with diagnosis of renal cell carcinoma in 71.4%. There were no complications. Patients were discharged the same day 48.0% of the time, while the rest were discharged the next day. CT scan immediately post procedure typically showed decreased perfusion with an enhancing rim at the ablation site. At 6 weeks, three patients' (11.5%) CT scans demonstrated a persistent rim of enhancement, indicating ablation failure. These patients underwent successful salvage RFA. At 1 year, one patient had a recurrence that was treated with successful partial nephrectomy.
Conclusions: Percutaneous IRE of kidney tumors has shown to be feasible and safe. Longer term follow-up is needed to confirm the oncologic efficacy of IRE.

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MP28-14 Does Mannitol Use Impact Delayed Graft Function and Renal Functional Outcomes in Recipients of Living Donor Renal Transplants?

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Introduction: Mannitol is an osmotic diuretic that has been used in living donor renal transplants and partial nephrectomy for its purported impact on renal preservation in the setting of renal hypoxia due to its free radical scavenging and improved renal blood flow effects. However, limited data exists to support its use. Our objective was to assess its impact on renal function in recipients of living donor renal transplants.
Methods: We performed a retrospective analysis of all recipients of living donor renal transplants of a single surgeon between January 2011 and August 2014 to compare the renal function outcomes between those that received mannitol and those that did not. In 2013, mannitol was stopped in all donors, and adequate urine output was ensured before extraction of the kidney. Renal function was assessed using Modification of Diet in Renal Disease (MDRD). Patients less than 18 years of age were excluded. Students test for continuous variable and chi squared test for categorical variables were used to assess patient characteristics. Multiple linear regression model was used to identify factors impacting renal function at one month after transplantation. Variables included and controlled for in the regression model include: hypertension, length of hospital stay, age at the time of surgery, preoperative recipient eGFR and renal volume of the transplanted kidney.
Results: Overall, 118 patients received living donor renal transplants with 33 patients that did not receive mannitol and 85 that received mannitol. In the mannitol group one patient suffered delayed graft function and three suffered graft rejection. In the non-mannitol group there was no delayed graft function but there was one graft rejection which led to loss of the graft. Mannitol was not associated with improved renal functional outcomes ($p = 0.88$ and Figure 1). On multiple linear regression adjusting for the previously stated factors: age at the time of surgery (β: -0.36, 95% CI:-0.58–0.14, $p = 0.001$), Preoperative recipient eGFR (β: 0.55, 95%CI: 0.05 – 1.00, $p = 0.030$), and renal volume of the transplanted kidney (β: 0.15 95%CI: 0.06 – 0.24, $p = 0.001$) were independently associated with the recipients renal function at one month. Receiving mannitol was not found to be an independent predictor of recipient renal function.
Conclusion: Mannitol use was not associated with rates of lower delayed graft function or improved overall renal function when compared to those who did not receive mannitol

MP28-15 Factors affecting long-term renal function after partial nephrectony: parenchymal volume loss and warm ischemic time

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Introduction: We tried to determine the more dominant factor, between parenchymal volume loss and warm ischemic time, for renal function recovery after partial nephrectomy following long-term follow-up.
Materials and Methods: We retrospectively reviewed the medical records of 191 patients who underwent partial nephrectomy from 2006 to 2010. Reduction of renal parenchymal volume was calculated by summation of functioning parenchymal area in preoperative and postoperative computed tomography (CT) scan. Change of ipsilateral renal function was assessed by Diethylene-triamine-penta-acetic acid (DTPA) renal scan. We determined predictive factors affecting postoperative ipsilateral renal function.
Results: Open partial nephrectomy, robotic partial nephrectomy, and laparoscopic partial nephrectomy was performed in 54, 84 and 53 patients, respectively. Median age of patients was 52 years. 14.1% of patients had diabetes and 37.2% of patients had hypertension. Mean preoperative ipsilateral glomerular filtration rate (GFR) was 43.3 ml/min/1.73 m^2. Median tumor size was 2.2 cm. Median warm ischemic time was 23 minutes. Median percentage of remained GFR was 73.8% at 3 months after the surgery, but gradually recovered to 75.6% at 1 year after, and 80.0% at last follow-up (median, 49 months; $p < 0.001$). Both percentage of parenchymal volume loss and warm ischemic time ≥25 minutes independently affected the GFR recovery at postoperative 3 months, 1 year, and last follow-up. Young age and low ipsilateral preoperative GFR were also independent factors of better GFR preservation, whilst underlying comorbidities such as diabetes and hypertension had no influence on GFR preservation.
Conclusions: Both reduction of parenchymal volume and warm ischemic time ≥25 minutes independently affected the long term GFR recovery after partial nephrectomy for renal tumors.

MP28-16 The impact of preoperative retrograde pyelography before radical nephroureterectomy for upper urinary tract urothelial carcinoma on intravesical tumor recurrence

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Introduction: Despite its diagnostic role in identification of upper urinary tract urothelial carcinoma (UUT-UC), approach to ipsilateral ureteral potentially aggravates spread of tumor, as reported

Table 1. Univariate and multivariate analysis for intravesical recurrence after radical nephroureterectomy

	Univariate analysis	Multivariate Cox regression analysis		
	p-value	HR	95% CI	p-value
Mean Age (years)	0.022	1.0	0.9-1.1	0.191
Preoperative RGP	<0.001	4.9	1.4-17.1	0.012
≥ pT2 stage	0.006	5.9	1.1-14.0	0.036
Preoperative serum creatinine	0.001	3.9	0.6-8.2	0.222
Tumor involving lower ureter	0.003	2.2	0.7-50.8	0.105
Female	0.078			
Operation time (min)	0.231			
Mean duration from RGP to RNU (day)	0.376			
Preoperative ESR	0.105			
High grade tumor	0.065			
Lymphovascular invasion	0.737			

in preoperative ureteroscopy before nephroureterectomy. We thus assessed the impact of preoperative retrograde pyelography (RGP) on intravesical recurrence after radical nephroureterectomy for UUT-UC.

Materials and Methods: Of a total of 114 patients who underwent nephroureterectomy for UUT-UC from January 2000 to June 2012 in our institution, 72 patients who did not undergo preoperative ureteroscopy were selectively enrolled. Computed tomography and urine cytology as a basic diagnostic modality were performed in all subjects. The impact of preoperative RGP and the other variables (age, sex, operating time, clinicopathological factors, and hematological factors) on intravesical recurrence were analyzed by multivariate Cox regression model.

Results: During a mean follow up period of 61.2 months, 32 (44.4%) patients had intravesical recurrence after RNU, and 41 subjects (56.16%) underwent preoperative RGP. The mean duration from preoperative RGP to RNU was 14.2 ± 19.4 days and mean interval of intravesical recurrence was 22.0 ± 23.1 months. Multivariable analysis showed that RGP and pathologic stage over T2 were independent factors for intravesical tumor recurrence ($p = 0.012$ and $p = 0.036$, respectively, Table 1). Regarding the duration from preoperative RGP to RNU, no significant difference was observed between the recurrence group and the non-recurrence group ($p > 0.05$).

Conclusions: As with preoperative ureteroscopy, our data demonstrated that preoperative RGP is an independent factor associated with intravesical recurrence of UUT-UC after RNU.

MP28-17 Analysis of the Transperitoneal Approach to Robot-Assisted Laparoscopic Partial Nephrectomy for the Treatment of Anterior and Posterior Renal Masses

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Background: Few studies have directly assessed the impact of tumor anterior/posterior location during transperitoneal robotic-assisted laparoscopic partial nephrectomy (TPRPN). The present study sought to assess perioperative and pathological outcomes associated with TPRPN among patients with anterior vs. posterior tumors.

Methods: The IRB-approved Mount Sinai Kidney Cancer database was used to identify 103 patients with complete data for review who had an anterior ($n = 39$; 37.9%) or posterior ($n = 64$; 62.1%) renal mass and underwent TPRPN from May, 2011 to April, 2015. Perioperative outcomes including operative time, warm ischemia time (WIT), estimated blood loss (EBL), hospital length of stay (LOS), surgical margin status, complications, reduction in estimated glomerular filtration rates (eGFR) at discharge and at last follow-up (median = 8.8 months) were compared between those with anterior and posterior masses while controlling for tumor size and clinical and clinical variables (i.e., age, gender and body mass index).

Results: Clinical characteristics and tumor size (3.1 cm anterior vs. 2.8 cm posterior; $p = .307$) were comparable between groups. In multivariable analyses, perioperative outcomes including operative time, EBL, LOS, surgical margin status, reduction in eGFR and post-operative complication rates did not significantly differ between groups. WIT was significantly longer in patients with posterior tumors by 1 minute and 42 seconds ($\beta = 1.69$, $p = .034$).

Conclusions: The transperitoneal approach to PN for posterior tumors resulted in no difference in operative time, EBL, LOS, positive surgical margins, reduction in eGFR or post-operative complications. Longer WIT among patients with posterior tumor did not translate into a greater reduction in eGFR in intermediate follow-up and is likely clinically insignificant. The TPRPN approach to treat a posterior tumor is reasonable, and the preferred technique at our institution.

MP28-18 Comparison of preoperative adaptive enlargement of contralateral normal kidney in patients nephrectomized for benign non-functioning kidney and renal cell carcinoma

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Introduction: After unilateral nephrectomy, predicting the postoperative renal function is very crucial as the postoperative renal insufficiency increases the risk of cardiovascular disease, hospitalization and death. However, the effects of preoperative compensational adaptation of contralateral normal kidney (CNK) on the postoperative renal function are not fully investigated. The aim of this study was to evaluate the potential effects of preoperative compensational adaptation of CNK volume on the postoperative renal function.

Materials and Methods: A total of 895 patients who underwent simple nephrectomy (SN) for non-functioning kidney or radical nephrectomy (RN) for renal cell carcinoma (RCC) between October 1996 and December 2013 and fulfilling selection criteria were included. Propensity score analysis with 1:3 matching was used and 306 patients (80 patients with SN and 226 patients with RN) were identified finally. Preoperative three dimensional kidney volumes were estimated using the specialized volumetric program from computed tomography (CT) images of venous phase. Glomerular filtration rate (GFR) using the Chronic Kidney Disease Epidemiology Collaboration (CKD-EPI) equations were checked preoperatively, 1 week, 3 months and 1 year after nephrectomy. We compared preoperative CNK volume, disease-sided normal kidney volume and total normal kidney volume with postoperative changing pattern of GFR between patients with SN and patients with RN.

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Results: Preoperative mean CKD-EPI GFR was 76.5 ml/min/1.73 m^2 in SN groups and 89.2 ml/min/1.73 m^2 in RN groups, respectively. In patients with SN, mean CKD-EPI GFR showed a stable pattern up to 3 months (75.5 ml/min/1.73 m^2 at 7 days and 76.2 ml/min/1.73 m^2 at 3 months) and slightly decreased to 72.6 ml/min/1.73 m^2 at 1 year. However, in patients with RN, mean CKD-EPI GFR was immediately decreased to 63.4 ml/min/1.73 m^2 at 7 days after surgery and gradually increased to 64.6 ml/min/1.73 m^2 at 3 months and 65.9 ml/min/1.73 m^2 at 1 year. One year after surgery, relative percentages of CKD-EPI GFR were 94.9% in patients with SN and 73.9% in patients with RN, respectively. Preoperative mean CNK volume was 225.7 ml in SN group and 180.1 ml in RN group ($P < 0.001$). Mean total normal kidney volume was significantly different in two groups (SN: 306.1 ml, RN: 354.4 ml, $P < 0.001$). However, the proportion of CNK volume to total normal kidney volume in patients with SN (0.74) was much higher than that in patient with RN (0.51) (A/B = 1.45, $P < 0.001$).
Conclusions: Preoperative compensational adaptation of CNK volume is important to maintain the postoperative renal function.

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MP28-19 Comparative outcomes of endoscopic management of TCC versus laparoscopic nephroureterectomy; a large single centre study with up to ten year follow up

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Introduction: Patients who had nephroureterectomy or endoscopic ablation for TCC, at a single high volume centre, were included in a study to determine outcome, risk factors and the relative safety of endoscopic management.
Patients and Methods: A retrospective review of electronic records, patient notes and histopathology for all patients undergoing nephroureterectomy (NU) or endoscopic ablation (EA) for upper tract TCC between 2005 and 2014 was undertaken.
Results: 106 patients who had, up front, nephroureterectomy and 50 who had, up front, endoscopic ablation were followed up for a median of 30 months. Patients who had EA were older than those who had NU (73.5 v 69.1, p = 0.01). There was no difference in gender split, history of bladder cancer, biopsy grade, location of tumour and pre-treatment EGFR between the two groups. However, patients who went on to have nephroureterectomy in the EA group had a significantly lower pathological stage than the NU group. There was no difference in (5 year) survival (0.64 v 0.63, ns), cancer specific survival (0.77 v 0.95, ns), metastases free survival (0.74 v 0.88, ns) between NU and EA respectively. Those undergoing EA had a lower 5 year survival without bladder recurrence versus NU (0.23 v 0.55, p = 0.008), and a 5 year ureteric recurrence free survival of 0.4 and nephroureterectomy free survival of 0.6. Previous bladder cancer (p = 0.05, HR 1.9) and ureteric location of cancer (p = 0.01, HR 3.56) was associated with bladder cancer recurrence. No patients who had G1 disease in the EA group developed metastases or had a cancer specific death. On multivariate analysis of pooled data, tumour grade was an independent predictor of metastases (HR = 5.2, p = 0.03) and death (HR = 2.55, p = 0.05). Female gender was independently associated with bladder recurrence (p = 0.005, HR = 3). EA was not an independent risk factor for any adverse outcome.
Conclusions: Endoscopic Ablation is safe in low grade tumours. At 5 years, 40% are cured by a single ablation, but 40% of patients will require nephroureterectomy. Ureteric recurrence was not seen after 2 years of recurrence free surveillance though bladder recurrence may be delayed.

MP28-20 Systematic Review of Open Vs. Laparoscopic Vs. Robot-Assisted Nephroureterectomy

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Background: Upper tract urothelial carcinoma (UTUC) is a relatively uncommon malignancy. The gold standard treatment for this type of neoplasm is an open radical nephroureterectomy with excision of the bladder cuff. This systematic review compares the perioperative and oncological outcomes for the open surgical method alongside the alternative surgical management options of laparoscopic and robot-assisted nephroureterectomy.
Methods: MEDLINE, EMBASE, PubMed and Cochrane library databases were searched using sensitive search strategy. Article inclusion was then assessed by review of abstracts and full papers were read if more detail was required in order to make a decision.
Results: Fifty eligible studies were identified to be included in the review that looked at perioperative and oncological outcomes. The range for estimated blood loss (EBL) when examining observational studies was: 296–696 ml for open nephroureterectomy (ONU), 130–479 ml for laparoscopic nephroureterectomy (LNU) and 50–248 ml for robot-assisted nephroureterectomy (RANU). The one Randomised control trial (RCT) identified, reported results in which LNU was shown to be superior to ONU where $P < 0.001$ in the perioperative outcomes of EBL and length of stay (LoS). Once oncological outcome results were adjusted for factors such as tumour stage, there was no statistical difference found between results comparing ONU and LNU in studies. RANU studies report promising results with regard to oncological outcomes that are comparable with LNU and ONU.
Conclusions: There is a paucity of good quality evidence regarding ONU, LNU and RANU. Data is particularly scarce addressing RANU outcomes but, hopefully as the robotic field within urology advances this technique will be investigated further.

MP28-21 Establishment of prediction model of progression after radical nephrectomy or partial nephrectomy for Chinese patients with clear cell renal cell carcinoma

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Introduction: To develop an algorithm to predict progression to relapse or metastases after radical or partial nephrectomy for Chinese patients with localized clear cell RCC (ccRCC), so as to guide the postoperative treatment.
Patients and Methods: The clinical and pathological features and prognosis of 1034 localized ccRCC patients between January 2006 and December 2013 in the second hospital of Tianjin Medical University was analyzed retrospectively. Univariate comparisons of survival analysis used the Kaplan-Meier method. COX regression model method was used in the multivariate

analysis. Harrell's concordance index was used to assess the prognostic accuracy of the new model.
Result: The median follow-up was 39 months (range 4 months ~ 109 months). Relapse or metastases occurred in 129 patients. The relapse-free surival (RFS) rates after 1 year, 3 years, 5 years, 7 years were 94.8%, 88.6%, 83.4% and 80.4% respectively. In these 1034 ccRCC patients, 130 patients underwent partial nephrectomy and 904 patients underwent radical nephrectomy. There was no difference in RFS rates between group of partial nephrectomy and group of radical nephrectomy ($p = 0.061$). Multivariate analysis showed that the features of age, tumor size, symptoms at presentation, preoperative platelet count, tumor stage (2010), Fuhrman grade, histologic tumor necrosis were independent predictors associated with RFS for ccRCC patients. A scoring algorithm to predict progression to relapse or metastases after patients underwent partial or radical nephrectomy for ccRCC was developed using the regression coefficients from the multivariate analysis. In this model, the score was calculated as 2(for pT1b), 3(for pT2), 4(for pT3 and pT4, 1(for age ≥58), 1 (for tumor size ≥5.5 cm), 1(for symptoms at presentation), 2(for platelet count $\geq 400 \times 10^9$/L), 1(for grade 3), 3(for grade 4), 1(for histologic tumor necrosis) and 0 otherwise. The risk of progression to relapse or metastases was divided into three groups: low-risk group (score 0–3), intermediate-risk group (score 4–7) and high-risk group (score ≥8). The estimated 5-year RFS rates were 96.9%, 72.7% and 13.1% respectively in these three groups $P < 0.001$). Using this sample, the C-index of Leibovich model was 0.784. The C-index of the new model validation was 0.802.
Conclusion: In patients with ccRCC, age, tumor size, presenting symptoms, preoperative platelet count, tumor stage (2010), Fuhrman grade and histologic tumor necrosis are significant independent predictors of RFS after surgery. Based on these indicators, we established a scoring algorithm that can be used to predict disease progression after surgery for Chinese patients with ccRCC

MP28-22 The expanded use of percutaneous resection for upper tract urothelial carcinoma: a 30-year comprehensive experience

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Introduction: The gold standard treatment for upper tract urothelial carcinoma (UTUC) is radical nephroureterectomy (RNU). The role of endoscopic resection is limited to very low risk patients. Here we present our 30-year experience in the endoscopic management of UTUC.
Patients and Methods: In this retrospective study we identified 141 patients who underwent percutaneous UTUC resection. Demographic and clinical data were collected including tumor characteristics, BCG and mitomycin use, tumor recurrence, progression to RNU and overall survival.
Results: Recurrence occurred in 37% of low grade and 63% of high grade patients with a median time to recurrence of 36.4 versus 71.4 months, respectively. Grade was the only predictor of recurrence (HR 2.12, $p = 0.018$). The latest time to recurrence occurred after 116 months of surveillance. RNU was avoided by 87% of patients. Age, imperative indications for endoscopy, a history of bladder cancer, tumor stage and grade were predictors of overall survival; however, in multivariate analysis, grade and stage lost significance. BCG and mitomycin did not protect against recurrence, progression to RNU or death over resection alone.
Conclusion: Percutaneous management of UTUC allows for renal preservation in the majority of patients with resectable disease. Patients with high grade tumors are more likely to experience recurrence but are not at an increased risk of death. Intraluminal BCG and mitomycin continue to have a limited adjuvant role to resection. Recurrence may occur many years following initial resection and so prolonged surveillance is advised.

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MP29 - ROBOTIC SURGERY: NEW TECHNIQUES - ONCOLOGY

MP29-1 Adapting the robotic platform to small operating theaters: the side-docking technique for urologic pelvic surgery

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Introduction: Conventionally in pelvic surgery, the robot is entered between the legs of the patient. This approach presents drawbacks, including limited access to the perineum, inevitable abduction of the patient's legs and limited space available in small operating rooms. To overcome these problems in our center we use, from over 4 years, a side-docking technique for all pelvic urologic surgery. We herein describe our technique and a series of men who underwent robotic-assisted laparoscopic prostatectomy (RALP) using such side-docking procedure.

Patients & Methods: In our department we have applied the side-docking technique in over 400 pelvic procedures between 2010–2014. The series reported includes 268 men undergoing RALP ± extended lymph node dissection (ePLND) between 2010 and 2014. After trocart positioning, the robot is entered at a 45° angle compared to the patient's main axis, coming in from the right side. Patient's legs are minimally abducted to < 10°.
Results: Mean docking time, from skin incision to full docking was 13 mins. 41% (109/268) of patients underwent simultaneous ePLND, dissecting nodes up till the iliac bifurcation. 2 ureteral, 3 rectal and 1 external iliac vein lesions occurred, all of which were managed by robotic-assistance, with no conversion to open surgery. External collisions are infrequent with this configuration: no robot re-docking was necessary in this cohort.
Conclusions: Side-docking of the da Vinci robot is a valid and functional alternative for pelvic urologic surgery. In our department this technique has faced the proof of time and is routinely used.

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MP29-2 Withdrawn

MP29-3 Psychosexual care post radical prostatectomy: a systematic review

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Background: Prostate cancer is the most common cancer in men. Due to improved diagnostics and improvements in medical care, the number of prostate cancer survivors is increasing. Current literature demonstrates survivors harbour a significant number of unmet needs including psychosexual care. These needs may be addressed through structured pathways in survivorship programmes.
Methods: Two systematic reviews over 20 years using all medical databases looking for components of prostate cancer survivorship programmes and based on the findings, ii) prostate cancer survivorship and psychosexual care.
Results of Reviews: Systematic review 1 elicited over 1600 papers 43 of which conformed to our search criteria. Patient needs, largely unmet, were identified, psychosexual concerns came out as the strongest of these. Seventeen papers were identified relating to prostate cancer survivorship and psychosexual care.
Conclusions: These findings of the study may change psychosexual care of prostate cancer survivors due to close patient involvement in the programme. The outcomes will influence national and international survivorship programmes through guidelines with a focus on psychosexual care.

MP29-4 Cardio-pulmonary exercise testing and major urological surgery: risk stratification and preoperative assessment

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Introduction: Patient fitness is something which is central to patient care. Modern surgery has advanced much, with development of robotic surgery and minimally invasive procedures. However, procedures still include major surgery. Precise preoperative assessment is required, for this often older cohort, with stringent preoperative risks assessment and medical preoptimisation if required.
Method: We conduct a systematic review over 20 years of literature on all types of surgery with regards to CPEX testing. We present results and draw conclusions relating to this. Search terms used were as follows: (Cardiopulmonary exercise testing) AND (major surgery) OR AND (outcomes). The following databases were screened from 1984 to September 2014: CINAHL and MEDLINE (NHS Evidence), Cochrane, AMed, BNI, EMBASE, Health Business Elite, HMIC, PschINFO. We examine the role of CPEX in modern day surgery.
Results: Out of 67 papers, only 7 mapped to search terms. Inverse relationships have been demonstrated between CPEX testing and surgical outcomes. The overall conclusive evidence however involved small sample sizes.
Conclusions: As always the answer is within a trial in which CPEX testing is one of the variables examined in correlation with physiological outcomes. It may also have a role perhaps in selection of patients for other taxing treatments prior to surgery such as neoadjuvant chemotherapy

MP29-5 Robotic partial nephrectomy on multiple kidney tumors. A safe alternative to radical nephrectomy

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United States

We are describing a multiple robotic partial nephrectomy technique where 4 tumors were removed from the same kidney.
Materials and Methods: A 58 year old man who presented with multiple bilateral solid kidney tumors. He had 4 tumors in the left kidney ranging from 1.1 to 3.0 cm and 6 tumors on the right side ranging from 1.1 to 5.1 cm. Renal biopsy report showed papillary renal cell carcinoma type 1. We decided to perform multiple partial nephrectomy on the left side and right radical nephrectomy later on.
Results: All tumors were excised after clamping both renal artery and vein. Renorraphy was applied on all four tumors. Total surgery time: 150 mins, console time: 120 mins, clamping time: 37 mins, postoperative creatinine: 1.83, 3 months creatinine 1.3, recovery: uneventful.
Conclusion: Robotic approach is a feasible and safe option for multiple partial nephrectomy on the same kidney and offers an attractive alternative to radical nephrectomy. Up to date 7 uneventful robotic multiple partial nephrectomy were performed in our institution.

MP29-6 Single setting robotic multiple partial nephrectomies and salvage radical prostatectomy

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Introduction: We previously published the safety and feasibility of single setting robotic partial nephrectomy and radical prostatectomy. We are describing single setting robotic partial nephrectomy for two contiguous kidney tumors and salvage radical prostatectomy for radiation failure prostate cancer.
Materials and Methods: A 63 y/o patient presented with biopsy proven recurrent prostate cancer 5 years after initial radiation therapy. Two adjacent kidney tumors were detected upon metastatic work up. He was offered the option of single setting robotic right partial nephrectomy and salvage radical prostatectomy.
Results: We started with the partial nephrectomy part. The procedure was performed by hilar control, excising both tumors, and two layers renorraphy. The patient was repositioned into a lithotomy position and the salvage robotic radical prostatectomy and pelvic lymph node dissection were performed using the same ports utilized for the partial nephrectomy. The procedure was uneventful. Total surgery time was 350 minutes, console time for both procedures was 300 minutes, clamping time was: 24 minutes, blood loss was 125 cc. Patient had smooth recovery and was discharge on post operative day 2. Pathology showed a 5 cm and 3.2 cm renal cell carcinoma and prostate cancer Gleason score 7 with 26 negative lymph nodes. Patient remains cancer free with undetectable PSA 1 year after surgery.
Conclusion: Single setting partial nephrectomy and salvage radical prostatectomy is described for the first time and appears to be a feasible and safe approach for such a complex clinical scenario.

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MP29-7 Ves.Pa. – Designing a novel robotic intracorporeal orthotopic ileal neobladder

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Introduction: The open experience with orthotopic diversion after radical cistectomy has suggested that several principles are critical to ensure successful functional and physiologic outcomes.

The ideal neobladder should have large capacity to allow for reasonable voiding intervals, and low pressure and high compliance for continence, and should permit voluntary emptying without residual urine. The double-folded technique of Kock, or S- or W-shaped reservoirs, or VIP all effectively ablate the coordinated high-pressure contractions of the bowel wall, allowing the reservoir to maintain low internal pressure throughout the filling phase. Recent studies demonstrated the feasibility of robotic intracorporeal urinary diversion after radical cistectomy. But, to improve efficiency and decrease operative time, several modifications to standard open diversion configurations have been used. That is the lesson learned from several studies evaluating functional outcomes after open urinary diversion? We present a detailed step-by-step description of ''Ves.Pa.'', a proposal for a novel robotic intracorporeal ileal orthotopic neobladder that adheres to the defined characteristics of an ideal pouch. We describe technical tips to perform an efficacious and time-efficient robotic intracorporeal neobladder.

Materials & Methods: We tested *in silico*, *ex vivo* and in a robotic pelvic model the anatomical and technical feasibility of ''Ves.Pa.''. During the robotic tests, we recorded timing of the single steps of the procedure in order to identify possible tips to improve the efficacy and time-efficiency of the procedure.

Results: After an initial evaluation of the anatomical feasibility of the technique, during the *ex vivo* tests we confirmed the practicability of the procedure. We demonstrated also the possibility to perform two different versions of ''Ves.Pa.'', one for the cases with a short right ureter, and one (''Ves.Pa. Reverse'') for the short left ureter. Tests in our home-made robotic pelvic model confirmed the feasibility of the technique. Analizying the videos recorded, we identified some tips to improved the time efficiency of the procedure.

Conclusions: Despite the increasing use of robotic radical cistectomy, the majority of centers perform not an ''ideal'' intracorporeal urinary diversion due to perceived technical difficulties with reconfiguration of the ileum and considering the time efficiency in comparison with open surgery.

We designed a novel intracorporeal robotic orthotopic neobladder that adheres to all the defined features for a feasible and efficacious pouch. We demonstrated also the possibility to create two different versions of ''Ves.Pa.'' for short right or left ureter.

MP29-8 Intraoperative frozen section of the prostate to reduce the risk of positive margin whilst ensuring nerve sparing in patients with Intermediate and high risk prostate cancer during robotic radical prostatectomy – First UK Series with technique

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Introduction: Nerve sparing during robotic radical prostatectomy (RRP) considerably improves post-operative potency and urinary continence as long as it does not compromise oncological outcome. Excision of the neurovascular bundle (NVB) is often performed in patients with intermediate and high risk prostate cancer to reduce the risk of positive surgical margin (PSM) raising the risk of urinary incontinence and impotence. We present the first UK series and patients outcomes of such patients who underwent an intra-operative frozen section (IOFS) analysis of the prostate during RRP allowing nerve sparing.

Patients and Methods: We prospectively analysed the data of 40 patients who underwent an IOFS during RRP at our centre from November 2012 until November 2014. Our IOFS technique involved whole lateral circumferential analysis of the prostate during RRP with the corresponding neurovascular tissue. An intrafascial nerve spare was performed and thespecimen was removed intra-operatively via an extension of the 12 mm Auto-suture™ camera port without undocking robotic arms. It was then painted by the surgeon and sprayed with ''Ink Aid'' Prior to frozen section (FS) analysis. The corresponding NVB was excised if the histopathologist found a PSM on FS.

Results: Median time to extract the specimen, wound closure and re-establishment of pneumoperitoneum increased the operative time by 18.8 min. Median blood loss for IOFS was 130 ± 97 ml vs 90 ± 72 ml ($p = NS$). IOFS was not associated with major complications or with blood transfusion. PSM decreased significantly from non-IOFS RRP series of 28.7% to 8.1% ($p < 0.05$). Intraoperative PSM on the prostate specimen was seen in 8/40 margin analysis (20%) leading to an excision of the contra-lateral nerve bundle. On analysis of the nerve bundle on a paraffin embedded block, 6 NB matched tumour on the specimen whereas 2 NVB were retrospectively removed unnecessarily in our series. All 20 patients have undetectable PSA at a mean follow up of 4 months. Functional data at 18 months confirms a reduction in the urinary incontinence from 37% in the IOFS group vs 57% in the non-IOFS group ($p = NS$). IOFS technique has resulted in a significant increase in intravesical nerve sparing in both T2/T3 patients with intermediate and high risk prostate cancer when appropriately counselled and selected (T2 from 100% in the IOFS group versus 67% and T3 from 100% in the IOFS group to 42%) ($p < 0.05$)

Conclusion: Introduction of the IOFS analysis during intrafascial nerve spare RRP has reduced PSM and the rate of urinary incontinence.

MP29-9 Robotic Reconstruction of Bladder Neck: Patient Reported Outcomes

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Introduction: Urinary continence represents a competitive TRIFECTA goal of Robot Assisted Laparocopic Radical Prostatectomy (RALP). Continence outcomes relate to methodological instruments, source of data (patient v. physcian), definitions, preoperative risk factors and pivotal intraoperative factors driven by execution of surgical technique. In terms of technique, several factors have been evaluated, such as: Preserving the urethral complex (vascular control, urethral length, neurovascular bundles and puboprostatic ligaments) and keeping pudendal nerve branches intact. Improving the management of the bladder neck (preservation, tubularization, reconstruction). Reconstruction of Rhabdophincter of the bladder neck was introduced by Walsh & Marschke (J Urol-2002) as the use of buttressing sutures, aimed to prevent the bladder neck from pulling apart as the bladder fills. These investigators found

patient-reported early continence outcomes of: 3-month continence rates of 84%. 7% rate of bladder neck contracture.
Patients & Methods: We participated in a phase IIIb randomized clinical trial (RCT) employing personal digital device (PDA) that asked continence related questions to patients screened and randomized on a daily basis. Patients were screened the day of catheter removal and provided with the PDA. Those reporting 2 or more pad per day usage were eligible for randomization to study drug vs. control for 12 weeks. This video clip shows our vesicourethral anastomosis surgical technique with posterior and anterior intussusception of the bladder neck. A wide bladder neck is managed with posterior tennis racquet reconstruction. Otherwise a ''parachute'' approach is used.
Results: 96 patients were screened between October 2011 and August 2013. 46 patients did not met criteria for randomization. 40 of these failed because they met continence outcome (0-1 PPD). 4 of the whom 6 failed for other reasons (UTI, other) met continence outcome within 3 months of RALP. 50 patients were randomized. 38 patient met study continence outcome (0-1 PPD). All together 82/96 (85%) within 3 months of RALP. At 6 and 12 months 89/96 (93%) and 92/96 (96%) met continence outcome, respectively. No bladder neck contracture was observed.
Conclusions: Intussusception of the bladder neck is feasible, reproducible and time efficient. The 3 month continence outcomes from patients involved in a RCT was superior by 21% from those observed in of prior RCT that evaluated the reconstruction of the rhabdosphinter (Sutherland et al. J Urol 2011)

MP29-10 Side-docking of the da Vinci for robot-assisted radical prostatectomy: simplicity and advantage

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Introduction & Objectives: Although robot-assisted radical prostatectomy (RARP) is thought to be a minimally invasive surgery, lower extremity neuropathy and lower limb compartment syndrome have been reported as the complications of the lithotomy position that is not necessary for open or laparoscopic radical prostatectomy. We report a side-docking technique in which the robot is docked at an approximately 45° angle to the lower torso and aligned along the outside of the left leg freeing lithotomy position. We also evaluate the effect of this technique for setup time, perioperative outcomes and hemodynamic change.
Materials & methods: A total of 28 consecutive patients underwent RARP for localized prostate cancer at our hospital. Sixteen patients were in the standard lithotomy position (LP) and the remaining 12 patients were in the trendelenburg position (TP) with side-docking. Patients' characteristics and perioperative outcomes were retrospectively collected. Positioning time is defined as the time between the beginning of patient positioning and the starting operation and docking time is defined as the time between the docking the robot and the starting console operation. Hemodynamic change was evaluated with stroke volume variation (SVV). SVV is an indicator of cardiac preload and assessed using the FloTrac™ which is less invasive hemodynamic monitoring system analyzing atrial pulse pressure waveform. We measured SVV during anesthesia and compared before and after the head-down tilt.
Results: Patients' characteristics were not different in both groups. Positioning time were similar between LP (29.7 ± 4.4 min) and TP (31.3 ± 9.1 min) ($P = 0.70$). Docking time were also similar between LP (15.4 ± 8.0 min) and TP (13.9 ± 4.0 min) ($P = 0.95$). Overall operating time ($P = 0.37$), estimated blood loss ($P = 0.70$) and length of postoperative hospital stay ($P = 0.87$) were not different in both groups. Alteration of SVV before and after head-down tilt was larger in the LP group compared to the TP group ($5.8 \pm 3.1\%$ vs. $3.1 \pm 1.4\%$, $P < 0.05$). Unlike in the TP group, one patient has suffered from right lower limb compartment syndrome.
Conclusions: Prolonged lithotomy position during RARP is one of the risk factors for lower extremity neuropathy and lower limb compartment syndrome. Side-docking technique have the potential to reduce the risk of operative complications. Furthermore, this technique might reduce the fluctuation of hemodynamics. Although further evidences are required, we consider that this technique can be a standard for RARP.

MP29-11 Simultaneous use of suction device and laparoscopic grasper via Airseal® system valveless trocar during robotic upper urinary tract surgery

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Introduction: Robotic upper urinary tract surgery is always challenging due to the limited abdominal space for optimal port number and design. We describe a novel technique for using both instruments at the same time through the Valveless Airseal® System trocar.
Material and Methods: Between February 2015 and June 2015, 11 Robotic partial nephrectomies and 2 robotic nephroureterectomies were performed using that technique via 5 ports. In all cases, Airseal® system was used without any need for additional trocar for assistance. For optimum range of motion (ROM), the valveless trocar needs to be placed opposite to the target area. In our cases, we placed the assistance trocar in the midline; between the umbilicus and xiphoid. In all cases, we used long suction and irrigation with atraumatic grasping forceps. We prefered long suction and irrigation device in order to minimized the collision between instruments.
Results: All cases were completed without any additional trocar need. Since we used a long suction and irrigation device, we had acceptable instrument collision. During the use of both instruments, intraabdominal pressure was always stable (10 mm Hg). Interestingly, using two 5 mm instruments through that system did not compromise the intraabdominal pressure as seen while using single 10 mm instrument.
Conclusion: Airseal® System and its valveless trocar eliminated the need for an additional trocar. Refining the system and its valveless trocar may enable surgeons to perform upper urinary tract surgeries with limited number of trocars.

MP29-12 Dorsal Venous Complex ligation in robotic surgery. Is it still necessary?

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Introduction: Robotic radical prostatectomy (RRP) is already an established procedure with known perioperative outcomes.

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Several technical modifications have been described in the literature for RRP but most of them with dorsal venous complex ligation and opening of the endopelvic fascia. In this video we demonstrate the steps of a modified antegrade approach without opening the endopelvic fascia and dorsal venous complex ligation.
Materials and Methods: Between May 2013 and May 2015, 400 patients underwent robotic radical prostatectomy for localized prostate cancer at our institution. We started performing this modified technique on October 2014. Fifty five consecutive patients were operated without venous complex ligation and opening of the endopelvic fascia between October 2014 and February 2015. Most of them were operated with extraperitoneal aproach (81,8%). Prospective analyses of perioperative complications, clinical data and pathologic results are described.
Results: The mean age was 60,9 years, the mean body mass indice 27,4. Mean PSA was 6,1. The preoperative risk classification by D'Amico was low risk in 19 (34,5%), intermediate risk in 24 (43,6%) and high risk in 7 (12,7%). Perioperative outcomes: 1 transfusion (1,8%), mean operative time 79,4 minutes, no conversions and no fistulas. Four patients (7%) were sent to intensive care unit on immediate pos operatory. Mean indwelling catheter time was 8,6 days.
Conclusion: RRP without dorsal venous complex ligation and opening of the endopelvic fascia is a feasible and safe procedure for localized prostate cancer.

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MP29-13 Modification of Port Placement in Robot Assisted Laparoscopic Prostatectomy in Patients who have undergone a Large Ventral Hernia Repair

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Introduction: The proportion of robotic assisted radical prostatectomy has increased dramatically in the last decade, with some institutions using the robot for virtually 100% of their prostatectomies. There is a growing subset of patients who have undergone prior ventral hernia repair with mesh. One study estimates around 300,000 ventral hernia repairs occur annually in the US. When encountered, this does not allow for standard port placement and potentially can make the operation more difficult and increase morbidity. At our institution, three such patients were recently evaluated who had undergone laparoscopic placement of a large ventral mesh. We describe our experience performing robot assisted radical prostatectomies in these individuals, with particular emphasis on safe port placement.
Materials and Methods: Three patients, ages 51, 57, and 58 were diagnosed with prostate cancer and elected to undergo robot assisted laparoscopic prostatectomy. Each patient had a previous ventral hernia repair with mesh, the average size of which was 10.38×7.93 cm. In each case, the Veress needle was placed subcostal and laterally so as to avoid the mesh. The assistant port was then placed far laterally on the right with the bed tilted maximally to allow the bowel to fall away. The camera was inserted and the abdomen inspected. If any adhesions were present on the caudal aspect, they were pushed away from the mesh. The remaining ports were then safely placed, and the designated camera port was positioned under direct visualization approximately 4 cm caudal to the umbilicus to avoid disruption of the mesh.
Results: All three cases were safely completed, and it was felt that visualization was not compromised. Average blood loss was 317 cc. Each patient was discharged on post-operative day 1, and catheters were successfully removed after a cystogram at one week follow up. To date, two of the patients had been seen at three month follow ups and did not have any complications.
Conclusions: Previously, it was felt that any prior abdominal surgery could be a relative contraindication to robotic prostatectomy. More recent studies have demonstrated that, while perhaps more technically demanding, prostatectomies may be safely attempted with good functional and oncologic outcomes. Initial access into the abdomen and port placement are of utmost importance in these individuals. We show that select patients may safely undergo robot assisted radical prostatectomies by adjusting port placement without compromising the surgeon's visualization.

MP29-14 Use of Biomaterials during Robotic-Assisted Radical Prostatectomy

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Introduction: Clinical trials have shown that the use of biomaterials may hold potential benefits for patient important outcomes in different settings of robot assisted radical prostatectomy (RARP). The first scenario provides accelerated return time to potency with the wrapping of dehydrated human amnion/chorion (dHACM) allograft around the neurovascular bundle (NVB) during nerve sparing (NS) RARP. The second scenario involves the utilization of degradable urinary bladder extracellular matrix (UB ECM) xenograft in reinforcing the vesicourethral anastomosis (VUA) after salvage RARP (sRARP) in decreasing anastomotic leak rates. We describe our experience with the use of dHACM and UB ECM in different settings of RARP.
Materials and Methods: *dHACM-* A total of 308 patients who were preoperatively potent underwent NS RARP. AmnioFix® (MiMedx) dHACM allograft was wrapped circumferentially around each NVB after extirpative RARP and VUA. Through a propensity matched retrospective review we analyzed the return of potency at 8 weeks between treated and control groups. Our secondary endpoint was biochemical recurrence rates between groups.

UB ECM- A total of 7 patients underwent sRARP with buttressing of the VUA with the MatriStem® (ACell Inc.) degradable UB ECM scaffold. The scaffold was circumferentially sutured around the VUA. At post-operative day 10 cystography was performed. Through a propensity matched retrospective review we analyzed the VUA leak rate between treated and non-treated groups
Results: *dHACM-* The mean age of patients was 56.5 years $\pm$ 6.5. Average time of follow-up was 6 months. Potency at 8 weeks returned in 67.1% of the dHACM patients and 31.7% of the control group ($p < .001$). The potency rate in patients $\leq$ 55 years of age was significantly higher for treated vs. control groups (77.4% vs. 40%, $p < 0.005$). In patients $\geq$55 years the potency rate was significantly higher for the treated vs. control group (60% vs. 26.10%, $p < 0.001$). dHACM use was not associated with any to intra-, peri- or postoperative side effects. It was not associated with an increase in biochemical recurrence.

UB ECM- Leak rate was 14% (1/7) in the UB ECM treated group and 34% (18/53) in the non-treated group.
Conclusion: Initial results of AmnioFix® dHACM graft use has demonstrated earlier return of potency in patients undergoing NS RARP. Embedding the MatriStem® UB ECM into the VUA during sRARP has shown improvement in the anastomotic leak rate. The combined use of these materials can be considered in patients undergoing sRARP.

MP29-15 A Novel Transversus Abdominal Plane Block During Robotic Assisted Radical Prostatectomy

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Introduction: Robot assisted radical prostatectomy (RARP) has led to decreased patient morbidity and quicker convalescence. However narcotic analgesics are still required by many patients and efforts to reduce use have been described. Percutaneous transversus abdominis plane (TAP) block has been well described in the general surgery, colorectal, gynecological, and open radical prostatectomy literature to decrease postoperative pain. Classically TAP block is done at the level of the anterior axillary line between the iliac crest and the costal margin and the analgesic is injected percutaneously through the external oblique, and infused between the internal oblique and transversus abdominis muscles. However, proper injection requires ultrasound guidance to place the medication in the proper layer. Our theory is that transperitoneal laparoscopy can provide easy visualization of the transversus abdominis thus obviating the need for ultrasound. Our goal was to evaluate a novel method utilizing a robotic assisted TAP block on postoperative pain in RARP.
Patients and Methods: Ninety patients undergoing RARP received 10cc of 0.5% bupivacaine by infiltrating the laparoscopic port sites under our usual protocol (n = 50) or a robot assisted TAP block with 10cc of 0.5% bupivacaine (n = 40). One patient from each arm was excluded for opioid use preoperatively for chronic pain. Furthermore, all patients received around the clock ketorolac, and as needed oxycodone/acetaminophen, or regular acetaminophen in the postoperative period. All of the patients received standard general anesthetic. After the **conclusion** of the case, the TAP group received a robot-assisted TAP block of 5cc bilaterally by raising a wheal above the transversus abdominis muscle. Patients were assessed after the operation by a blinded registered nurse at 6 hour intervals until 24 hours after surgery.
Result: Robot assisted TAP block significantly reduced postoperative adjusted morphine equivalent consumption [mean (SD) 11.9 (13.3) *vs* 19.7 (19.1) mg, $P = 0.0254$]. Postoperative pain scale scores were also decreased in the TAP block group for all times with hours 6–12 postop being statistically significant ($P = 0.0075$]. There were no adverse reactions attributable to the TAP block.
Conclusion: We have demonstrated a novel robot-assisted TAP block which shows considerable promise in not only decreasing our patients' pain levels, but also reducing narcotic reliance and potentially avoiding undue deleterious effects. We have also simplified the technique by obviating the use of ultrasound via the direct visualization the laparoscopic approach provides.

MP29-16 Withdrawn

MP29-17 Evaluation of a hybrid surgical navigation system with 3D-cancer map and real-time transrectal ultrasound image during robot-assisted radical prostatectomy

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Introduction: The aim of this study was to evaluate a novel hybrid surgical navigation system by displaying three-dimensional (3D) cancer map and transrectal ultrasound (TRUS) image during robot-assisted radical prostatectomy (RARP) for reducing positive surgical margins.
Patients and Methods: A novel hybrid surgical navigation system consists of 2 different images shown in the ''Tile-pro display'' during RARP. 3D-Cancer map was constructed using Urostation® (Koelis, France), which was applied to diagnose prostate cancer by MR/US fusion technique. Histological data was added to the 3D-Cancer map to display index lesions of the prostate whether they are attaching or bulging to the prostatic capsule. The information of index tumor was applied to RARP by selection of dissection layer especially near the neurovascular and apical area. TRUS navigation was applied for all patients to confirm dissection plane. A total of 89 patients (39 with navigation and 50 without) were enrolled to this study to examine whether the addition of 3D-Cancer map to TRUS guidance could reduce positive surgical margins or not.
Results: The index lesion on the 3D-Cancer map of matched with final pathology in all patients. All patients were applied nerve-sparing procedure in the side without index lesion attaching to the capsule. Among 39 patients with 3D-Cancer map, 11 patients had pathologic T3a lesion which were successfully displayed during surgery with an attachment to the prostatic capsule. The positive surgical margin rate in the pT3a was reduced comparing with the patients who underwent RARP without 3D-Cancer map (2/11 versus 5/14, $p = 0.325$). The positive surgical margin rate in the pT2 was also reduced comparing with the patients who underwent RARP without 3D-Cancer map (1/27 versus 6/36, $p = 0.077$). There was a trend in early continence recovery in patients with 3D-Cancer map.
Conclusions: The 3D-Cancer map correctly provided location and risk of extra-prostatic extension during dissection of the prostate. An addition of 3D-Cancer map to TRUS navigation during RARP could improve learning curve in terms of reducing positive surgical margins in both pathological T2 and T3 disease. This hybrid system also provided an improvement in early continence recovery.

MP29-18 Retrovesical Robotic Radical Prostatectomy with Suprapubic Tube Placement is associated with Early Continence.

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Introduction and Objective: Robotic radical prostatectomy has been widely adopted in North America and is the most common method to treat localized prostate cancer. It can be performed in numerous ways, although nearly all methods involve developing the space of retzius (dropping the bladder). The retrovesical approach to robotic radical prostatectomy has been described

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previously to be feasible with favorable oncologic and functional outcomes. We describe our surgical technique for retrovesical approach (no bladder drop) to robotic radical prostatectomy with preservation of the dorsal venous complex along with urethral suspensory ligaments and report our immediate urinary continence outcomes.

Materials and Methods: Retrovesical robotic radical prostatectomy was performed with suprapubic tube placement by a single surgeon. Transperitoneal access is obtained in the standard fashion. The peritoneum is incised in the retrovesical cul-de-sac. The vas deferens and seminal vesicles are dissected free. The prostatic pedicles are clipped and divided at the prostatic capsule and antegrade nerve sparing is performed. The dorsal venous complex and puboprostatic ligaments are spared and the urethra is divided. A vesicourethral anastomosis is performed with a running barbed suture from a posterior approach using a 30 degree up lens. The bladder is filled with 300cc of saline and a 16Fr suprapubic tube is placed. The urethral catheter is removed on post-operative day 1. At post-operative day 7–10, the bladder is filled via suprapubic tube until capacity is reached. The patient is then asked to cough to assess for continence.

Results: 26 patients have undergone a complete retrovesical approach to robotic radical prostatectomy. 16 patients had suprapubic tube placed. 8 patients (50%) had complete continence with valsalva at bladder capacity. 3 additional patients had leakage only when bladder was filled to capacity. Median preoperative PSA was 7.2. 30% of cases had Gleason 8 or greater disease. Mean prostate size was 37.5 grams. Overall positive surgical margin rate is 31%, with T3 disease accounting for the majority of positive margins. Median blood loss was 350 mL and median console time was 179 minutes.

Conclusions: This novel technique for retrovesical approach to robotic radical prostatectomy with suprapubic tube placement is associated with high rates of early complete recovery of urinary continence.

MP29-19 Computational analysis of recovery from ischemic damage to kidney function undergoing robotic partial nephrectomy for renal tumor

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Introduction: We preliminarily assessed functional recovery of ischemic-damaged kidney after robot-assisted partial nephrectomy using computational anatomy to investigate that conceptions of ''Computer-aided diagnosis and therapy'' could help the optimal presurgical simulation and predict the postoperative kidney function.

Patients and Methods: Four patients underwent robotic partial nephrectomy for clinically localized small kidney tumor. A three-dimensional (3D) kidney model was printed with a 3D printer before the robotic partial nephrectomy for each kidney. A volume segmentation model in each kidney which was produced by contrast-enhanced abdominal CT and also prepared for making decisions of the optimal vessel clamping and for understanding the ratio of the kidney segment. Volumetry was made first by pointing all extra-pelvic renal arteries which were divided from the main renal artery or aorta and given the different color to each artery to divide the segment of the kidney, then second by fixing the boundary line by Voronoi diagram with the bisection between the visible intrarenal arteries, and third by calculating the volume of each color-labeled area in which blood was supplied from the same colored artery. Renal scintigram was examined before and 1-month after surgery to check the affected kidney. Estimated residual renal function (eRRF) in the clamped area was defined as the postoperative renal effective plasma flow (ERPF) in clamped area divided by preoperative ERPF in the same region.

Results: All 4 patients successfully treated robotically with a mean ischemic time of 26.8 minutes (ranged from 18 to 40 minutes). According to the preoperative simulation, 3 patients underwent selective artery clamping and the remaining 1 underwent total artery clamping because of the divergence being close to the renal sinus. The ratio of the ischemic volume ranged from 36.6% to 100%. Comparing to the preoperative status, postoperative serum creatinine (s-Cr) and estimated glomerular filtration rate (eGFR) averagely worsened 0.07 ng/ml and 10.0 ml/min./1.73 $m^{2,}$ respectively. Changes in ERPF on the whole operated kidney were ranged from 58.4% to 90.1%. According to the computational analysis, ERPF in clamped (damaged) area presented average segmental function of 59.8% (range: 49.5–73.0%) compared to the preoperative status. These results indicated that smaller clamped kidney volume and shorter ischemic time contributed to better recovery of segmental kidney function.

Conclusion: Computational analysis of renal volumetry helps direction of the optimal vessel clamping and might indicate residual kidney function.

MP29-20 Dual Virtual and Image-Guided, Targeted Robotic Salvage Lymph Node Dissection

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Objective: Salvage lymph node dissection (sLND) is considered as a curative option for biochemical recurrence of disease after robotic-assisted laparoscopic prostatectomy (RALP). However, a preoperative routine imaging does not allow to detect and localize metastatic lymph nodes to perform a targeted sLND.

Materials and Methods: We demonstrate a feasibility of potential application of dual virtual and image-guided sLND with two novel 3D-navigation systems in a single clinical case. 68 year old patient was presented with asymptomatic PSA rising of 64.7 ng/mL. Saturation transrectal prostate biopsy revealed adenocarcinoma with Gleason pattern 7 (4 + 3) with the signs of organ-confined disease. The patient underwent RARP in 3 months with final pathology stage of pT3bN1, Gleason score 9 (4 + 5), extraprostatic extension on right side. 8-week PSA cutoff was as of 8.6 ng/mL and patient underwent novel 11-Choline PET/CT imaging. The two enlarged lymph nodes in right iliac chain and one- in presacral area were found with ''hot spot'' of isotope uptake, on CT –other lymp node was detected in right pararectal fat.

3D reconstruction of lymph nodes' map was performed using virtual simulator by Visible Patient (Strasbourg, France) and Artemis/Eigen (Sacramento, CA, U.S.A.). These simulation models was constructed on the base of c11-choline PET/CT scan with exact topographic and anatomic localization and size of lymph nodes suspicious for malignancy that had to be removed. This allowed us to design operative plan with side docking of da Vinci Xi Robot while the transrectal approach remained free for

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insertion of the transrectal ultrasonography (TRUS) probe connected to the fusion Artemis device.
Results: Patient elected for targeted sLND. The procedure was performed to remove subsequently two iliac lymph nodes which one of them represented a dense round-shape in appearance with highly suspicious features for malignant spread. Then a presacral and enlarged and firm pararectal lymph node were dissected by a colorectal surgeon upon identification by real-time TRUS fused with uploaded PET/CT scan images of Artemis system. The procedure lasted about 2 hours with minimal blood loss as of 100 cc. Patient tolerated the procedure well and was discharged on the next day. At the final pathology assessment right iliac lymp node with location anteriorly to the ureter and pararectal lymp node contained metastatic prostate adenocarcinoma.
Conclusions: This is a first case of the combined use of the virtual simulator pre-operatively and fusion navigation system in real time to demonstrate a potential tool to improve targeting of sLND.

MP30 - LAPAROSCOPY: UPPER TRACT - BENIGN

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MP30-1 Laparoscopic pyeloplasty in patients with renal anatomic variations and ureteropelvic junction obstruction

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Objective: Evaluate outcome of laparoscopic pyeloplasty for the treatment of ureteropelvic obstruction (UPJO) in patients with renal anatomic variations
Materials and Methods: Retrospective data analysis from August 2008 to February 2015 was performed. Six patients with concurrent ureteropelvic obstruction (UPJO) and kidney with anomalous anatomy that underwent laparoscopic dismembered pyeloplasty were included. We evaluate symptoms, intra-op and post-op complications as well as treatment success.
Results: We identified 148 patients who underwent laparoscopic pyeloplasty in our service. From those, 6 patients had renal anatomic variation. Tree patients had ectopic kidney (pelvic), two had renal malrotation and one horseshoe kidney. All patients referred flank pain and previous urinary tract infection was seen in one. Intraoperative complication was seen in 1 patient (16,6%), which had vascular lesion requiring conversion to open surgery. One patient developed urinary retention post-operatively. Mean Hospital stay was 4 days (3–5). After a mean follow up of 15,98 months (4,2 – 32,5 m), complete symptoms resolution was seen in 5 patients (83,3%). One patient (16,6%)showed partial improvement of symptoms and maintained an obstructive scintigraphy.
Conclusions: Laparoscopic pyeloplasty in patients with renal anatomic variation has higher intraoperative complication rate but has satisfactory clinical outcome.

MP30-2 Outcomes of laparoscopic pyeloplasty in adults with poorly functioning kidneys as an alternative to nephrectomy

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Objective: Evaluate kidney function recovery and symptoms improvement after laparoscopic pyeloplasty in adults with poorly functioning kidneys.
Method: Retrospective data analysis from August 2008 to February 2015 was performed. Patients with poorly functioning kidney who underwent Anderson-Hynes dismembered laparoscopic pyeloplasty were included. Poor function was defined as a split renal function of </=15% in renal scintigraphy with Tc-99m DMSA. Pre and postoperative data were compared regarding differential renal function (DRF) and symptoms. Success was defined as split renal function stabilization (absolute variation of less than 5% in renal scintigraphy) and symptoms improvement.
Results: We identified 148 patients who underwent laparoscopic pyeloplasty in our service. From those, 12 patients had poor renal function, with a mean age of 37,05 years (23 – 60 years). At a mean follow up of 21,18 months (5 – 53,8 m) all patients reported symptoms improvement. Complete symptom resolution was seen in 9 patients (75%). One patient, despite showing complete symptom resolution, had decreased postoperative DRF in renal scintigraphy. Overall success rate was 91,6% (11/12). Split renal function remained stable in nine patients (75%), considerably decreased in one (8,3%) and considerably increased in two (16,7%) patients.
Conclusion: Laparoscopic pyeloplasty is an alternative to nephrectomy in adults with poorly functioning kidneys due ureteropelvic obstruction, enabling good symptom control with possible considerable improvement in renal function.

MP30-3 An Enhanced Recovery Pathway favouring Day-case, catheter and drain free Laparoscopic Pyeloplasty – Our Single Centre 8-year Experience

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Introduction: Laparoscopic/robotic Pyeloplasty is considered gold-standard treatment for pelvi-ureteric junction obstruction (PUJO). Traditional surgical practice has favoured the routine use of a urethral catheter and peri-nephric drain necessitating an inpatient hospital stay.

In our centre we have developed a progressive technique along with an enhanced post-operative recovery pathway for patients to undergo catheter and drain-free laparoscopic pyeloplasty as a day-case procedure. This study aims to present our 8-year experience of this technique.
Patients and Methods: A retrospective review of all laparoscopic pyeloplasties performed by the same surgeon in our centre from 1 September 2007 was done.

Exclusion criteria included patients who were catheterised or who had a peri-nephric drain inserted intra-operatively and were not considered for same-day discharge.

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Standard transperitoneal laparoscopic repair was performed over an antegradely inserted stent. All patients received local anaesthetic port-site infiltration and oral Brufen/cocodamol for analgesia.

All patients were operated first on the list.

Data was retrieved from case-notes and electronic records including ASA-grade, in-hospital length of stay, reasons for readmission, post-operative MAG3 results and subjective improvement in patients' symptoms post-procedure.

Result: 56 cases were identified within the time period of the study of which 48 were planned as day-cases. 7 patients were excluded due to insufficient records available for analysis. A total of (n = 41) patients were therefore included in the study. 26 (63%) patients of the study group were female. All patients were ASA-grade 1 or 2. 73% (n = 30) were successfully discharged on the same day of surgery and 3 of these were subsequently readmitted, all for analgesia and reassurance only.

11 patients required inpatient stay of which one was readmitted for analgesia.

83% (n = 34) resulted in objective improvement on the post-operative MAG-3 renogram curve and drainage. 90% (n = 37) of patients reported subjective improvement in loin pain symptoms at first post-operative clinic follow up.

Conclusion: To our knowledge, this is the largest study in literature which demonstrates that insertion of drain and urethral catheter are not essential in laparoscopic pyeloplasty and thus challenges conventional practice. Avoidance of unnecessary tubes facilitates day-case surgery with no adverse effect on patient outcome. At our institute, all patients are now offered day-case laparoscopic pyeloplasty for pelvi-ureteric junction obstruction with resulting benefits to both patients and the local health economy.

MP30-4 Long-term renal function in adults with ureteropelvic obstruction and solitary kidneys who underwent laparoscopic pyeloplasty

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Introduction: Treatment of ureteropelvic junction obstruction (UPJO) on adults in the setting of solitary kidneys can be a challenging procedure. Our goal was to evaluate the outcomes of pyeloplasty in this population.

Methods: We performed a retrospective analysis of all adult patients who have undergone operative intervention for UPJO from August 2008 to February 2015. From a total of 148 individuals, 5 patients (2 men and 3 women), aged 37 to 48 years (median 44), had a solitary kidney and were available for post-operative follow-up. Treatment consisted of laparoscopic dismembered pyeloplasty for all patients. Serum creatinine and estimated glomerular filtration rate (CKD-Epi formula) were measured preoperatively, postoperatively, and at all follow-up examinations. Statistical analysis was performed to analyze differences using the Student T test.

Results: The median follow-up was 28 months (range 17 to 62). The postoperative serum creatinine improved by a median of 1.0 mg/dL (range −0.04 to 3.0; p = 0.1), and postoperative estimated glomerular filtration rate improved by a median of 31.0 mL/min (range −7.0 to 63; p = 0.04). Postoperative mean T1/2 was 11 min (range 7.2 to 28). Only 1 patient required dialysis in early postoperative period but at latest follow-up visit no patient was on renal replacement therapy.

Conclusions: Laparoscopic pyeloplasty results in symptomatic relief and provides improvement and long-term preservation of renal function.

MP30-5 Long-term outcomes and complication rates of laparoscopic pyeloplasty for ureteropelvic junction obstruction in a residency program

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Introduction: Laparoscopic pyeloplasty (LP) has been considered the gold-standard treatment for patients with ureteropelvic junction obstruction (UPJO). Our aim is to present our experience with LP in adults and to assess the safety and long-term outcome of this technique performed by urology residents in a tertiary training institution.

Methods: Between August 2008 and January 2014, 141 consecutive patients who underwent LP for unilateral UPJO performed by a fourth-year urology resident were retrospectively analyzed. Indications for surgeries were pain, urinary tract infection (UTI) or renal function impairment. Dismembered pyeloplasty using a four-port transperitoneal approach was used in all cases, except for 2 cases with multiple previous abdominal surgeries where a retroperitoneal access was preferred. Clinical data, outcomes and complication rates for the patients were retrospectively reviewed using a prospectively maintained database. Intraoperative incidents were analyzed using the Satava-classification, postoperative complications according to the Clavien-classification. Differential renal function (DRF) and drainage curves were assessed by DTPA renal scan

Results: Patient age at surgery was 18–78 years old (mean 38 ± 15 years) and 58 (41.1%) were males. 106 patients (75.1%) complained of pain, 7 (4.9%) had urinary tract infection (UTI), and 19 (13.4%) had only renal function impairment. Median hospital stay was 2.0 days. We had only 1 conversion (0.6%) in a case with ectopic kidney due to uncontrolled bleeding. Postoperative complications occurred in 8.5%. There were a total of 5 intraoperative complications (Satava-classification: 1 Grade I, 3 Grade II and 1 Grade III) and 7 postoperative complications (Clavien-classification: 3 Grade I, 2 Grade II and 2 Grade III). Recurrent UPJ-stenosis requiring reintervention was seen in 7 patients (4.9%). The median pre- and postoperative split renal function on diuretic renography was 40 ± 22.4% and 43 ± 19% (p = 0.06), respectively. Median postoperative T1/2 was 11.25 min. 86.5% of patients presented improvements in symptomatology at a mean follow-up of 22.2 (6–78) months.

Conclusions: LP has been proven to be safe and effective in adults with acceptable long-term outcomes even in a training institution. It provides high rates of symptom relief and has a tendency towards split renal function improvement.

MP30-6 Our strategy to reduce invasiveness by changing from HALS (hand-assisted laparoscopic surgery) to RPS (reduced port surgery) in laparoscopic donor nephrectomies for living renal transplantation

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Background: In laparoscopic donor nephrectomies for living renal transplantation, reducing warm ischemia time is very

important, so we had used HALS in the past, but recently we have been using RPS to make this procedure less invasive. In the HALS procedure, we had previously made the main incision of 70–75 mm vertically in the middle of the upper abdominal wall to remove the donor kidney and had used two, 12 mm ports, but this large incision was considered a source of embarrassment, particularly among women.
Changing the direction and location of the main incision: Since January of 2014, we have been making the incision horizontally in the lower abdominal wall using the HALS procedure.
Changing the size of the main incision: Starting in January of 2015, we switched from HALS to RPS (the 50 mm main incision) using an access platform disc and a plastic laparoscopic kidney bag with two, 3 mm ports and one, 5 mm port in the upper abdomen. During this period, we have performed this procedure with ten patients. Just after putting the plastic bag in place through the access platform and opening the bag, we have cut the renal vessels and scooped out the donor kidney promptly using the plastic bag.
Results: In these ten cases, warm ischemia time did not increase and there were no complications.
Conclusion: The changes we have made to the direction, location and size of the main large incision have made this procedure less invasive, and have not increased warm ischemia time or adversely affected patient outcomes. Furthermore, we are planning to use less ports in the upper abdomen from now one.

MP30-7 Laparoscopic nephrectomy for ex vivo repair of renal artery aneurysms and autotransplantation: Results of a consecutive case series

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Introduction: Renal artery aneurysms (RAAs) occur in approximately 0.09% of the population. Certain cases, due to the size or location of the aneurysm are not amenable for endovascular treatment or in loco repair. For these cases the nephrectomy, ex vivo repair of the aneurysm and auto-transplantation is a valid option. The laparoscopic kidney retrieval is a technique with proven benefits and safety for living donor nephrectomy, however, little is known about the feasibility and safety of the procedure in this particular scenario.
Material/Methods: We reviewed 13 consecutive cases of laparoscopic nephrectomy for ex vivo repair of renal artery aneurysms and autotransplantation performed in our department.

The vascular anatomy was evaluated with angiography. All nephrectomies were performed by the same surgeon by laparoscopic transperitoneal technique. Nine patients (69%) presented significant aneurysmatic dilation proximal to the hilum, imposing a carefull dissection of the aneurysm to achieve the mobilization of the kidney and exposure of the renal vessels. The control of the renal pedicle was achieved either with use of an endo-gia stapler or hem-o-locks. After perfusion with the preservation fluid the RAAs were treated by resection with a primary or patch angioplastic closure. The successful treatment was angiographically comproved on table and the kidneys reimplanted in the ipsilateral iliac fossa.
Results: Median age of the patients was 47 years (IQR 39-61). All patients presented true aneurysms, 12 of saccular type and one fusiform. Eight cases (61,5%) were on the right kidney and 3 patients presented 2 renal arteries. The median diameter of the aneurysms was 22 mm (IQR 19,5-31). Seven aneurysms were located at renal artery bifurcation, one at the renal artery trifurcation and 5 were hilar.

Median duration of the laparoscopic nephrectomy was 130 minutes (IQR 130-185) and median warm ischemia time was 255 seconds (IQR 181-300). No intraoperative complications occurred.

We register the lost of two kidneys due to thrombosis of the renal artery in the first 48 h after transplant. The remaining patients present well functioning kidneys and in 63% of them a substantial decrease in arterial blood pressure was registered. Median serum creatinine was 0,71 mg/dl (IQR 0,64-0,86) before the procedure and 0,86 mg/dl (IQR 0,67-0,99) after autotransplantation.
Conclusion: Laparoscopic nephrectomy is feasible and safe in the presence of renal artery aneurysms. This technique reduces the impact of the treatment in cases unsuitable for endovascular or in loco correction.

MP30-8 Laparoscopic ureterolysis and omental wrap for retroperitoneal fibrosis: update on a single-centre experience

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Introduction: Idiopathic retroperitoneal fibrosis (RPF) is a rare chronic inflammatory condition that causes entrapment and obstruction of the ureters in 80% of the cases. We present our experience with laparoscopic ureterolysis and omental wrap for the surgical treatment of RPF.
Methods: From 2009 to 2015, 13 laparoscopic ureterolysis were performed at a single institution, on nine patients diagnosed with RPF and ureteric obstruction. Surgical intervention was offered upon failure of medical treatment or due to patient preference. A standard laparoscopic ureterolysis with omental wrap of the ureters was used for all renal units. From February 2012 all the procedures were done using a 3D laparoscopy system.
Results: 12 laparoscopic ureterolysis (eight patients) were completed successfully, and in one case there was failure due to the extent of the fibrosis. Every patient had intra-operative endoscopic ureteric stent insertion on the affected side(s) immediately before the ureterolysis. Stents were then removed after 4 weeks. One patient developed a chest infection on the post-operative period. No other adverse events were recorded post-operatively, and the analgesia requirements were minimal. The average length of stay was 7.2 days (median 6). Intra-operative blood loss was minimal and none of the patients required a blood transfusion. At median 25 months (5–66) of follow-up, symptomatic, radiographic and renographic success was documented in seven patients (10 out of 12 renal units). One patient developed early failure with more extensive pelvic RPF proven on PET-CT.
Conclusion: Laparoscopic ureterolysis with omental wrap is a safe procedure for the treatment of RPF, with good outcomes. We are confident enough to suggest that this should be the definitive operation for this condition.

MP30-9 Retroperitoneoscopic nephrectomy for large adult polycystic kidneys (>20 cm): optimising technique and outcomes

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Background: Laparoscopic excision of large polycystic kidneys remains a challenging procedure. Most of the literature describes transperitoneal approaches. Alterations in anatomy due to size of

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kidneys can make vascular and hilar control difficult. Retroperitoneal access with direct control of pedicle avoids risks without dissection for structures anterior to the kidneys. The technique of retroperitoneoscopic excision of massively enlarged kidneys is described with early outcomes.
Methods: Fifteen patients with large polycystic kidneys underwent 16 procedures using retroperitoneoscopic approach. After creation of retroperitoneal space, renal pedicle dissection was started with the incision of thinned out Gerota's fascia. Occasionally aspiration of large cysts using ultrasound assistance created space for precise dissection. Following control of vascular pedicle under laparoscopic vision, further aspiration of cysts was accomplished with the help of 3-dimensional reconstructed kidney. Post aspiration, remaining renal specimen was extracted through a small incision using an endo bag or as an intact specimen.
Results: The operative time was between 1300 and 240 minutes (median 200 minutes). Intraoperative blood loss was 100 to 300 mL (median 175 mL). Median time to control pedicle was 12 minutes (range 10–25 minutes). The postoperative periods were uneventful, except for blockage of arteriovenous fistula in 1 patient and one patient developed wound infection. Mean hospital stay was 7 days (range 6–14 days).
Conclusions: The retroperitoneasocopic approach to large polycystic kidneys is technically feasible, safe, with good perioperative outcomes. It facilitates early control of vascular pedicle with minimal risk of intraoperative bleeding.

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MP30-10 Laparoscopic Repair of Colon Perforation after PCNL

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Introduction: We report a case of a patient undergone a laparoscopic repair of iatrogenic colon perforation after percutaneous nephrolithotripsy.
Materials and Methods: A 48 years old male underwent a percutaneous right nephrolithotripsy for a large renal stone. Postoperatively, the patient complained abdominal pain. An abdominal CT was suspected of bowel perforation. The patient underwent a laparoscopic repair of colon perforation. A transperitoneal approach was performed; four laparoscopic ports were inserted. A nephrostomy tube was identified; It passed throughout right colon and went into kidney pelvis. Colon was isolated. A double lesion was seen on anterior and posterior colon wall (in and out hole). A colorraphy was realized with a double suture on posterior and anterior wall. A renorraphy was performed with Vicryl suture arrested with HemOlok. After performing an abdominal wash, two drains are placed.
Results: Operative time was two hours. No transfusion was required. No postoperative complications were encuntered. Patient was discharged on day 10.
Conclusion: Acute colon perforation can be safely managed with laparoscopic repair without requiring resection or diversion.

MP30-11 Retroperitoneal Laparoscopic Living Donor Nephrectomy: Report of 192 Cases

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Introduction and Objectives: To summary our experience of 192 retroperitoneal laparoscopic living donor nephrectomies and to report a single-center experience and technical modifications of retroperitoneoscopic live donor nephrectomy (RPLDN).
Methods: A total of 192 donors underwent retroperitoneal laparoscopic living donor nephrectomy from Dec 2003 to May 2015. The operation was performed through 3 lumbar ports; after the kidney was liberated fully and the ureter was severed 7–8 cm under the lower pole of kidney, the renal artery and vein were blocked with Endo-cut or hem-o-lok separately and then severed. Endo-cut was used in 3 patients and hem-o-lok in 189 donors. The tributaries of renal artery and vein were transected using a harmonic scalpel after both ends of the tributary were coagulated intermittently until the color turned light yellow. Transection was made using shifting coagulation. A longitudinal 6–8-cm skin incision was extended inferiorly from the primary trocar with muscles intact. Then the kidney was taken out quickly from the donor and infused with 4°C kidney preserving fluid immediately.
Results: The 192 operations were successful. Operation time was 75 min ($4\tilde{8}180$ min) and blood loss was 44 ml ($1\tilde{5}200$ ml), no patient needed blood transfusion. Warm ischemia time was 3.6 min (2–8 min). 3 patients had hematoma of renal fossa after operation and they required no further treatment. Hospital stay after operation was 4.8 days($3.\tilde{5}9$ days). 183 of 192 donors were followed up for 75 months ($\tilde{3}120$ months).
Conclusions: RPLDN is a safe and reliable method and it can replace the traditional open surgery. The modified RLDN can lower the learning curve of the surgery.

MP30-12 Laparoscopic intracorporeal ureter replacement by ileum

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Introduction: The intestinal ureteral substitution is an acceptable procedure in patients with long ureteral defects. The aim of this study is to evaluate the long-term results and effectiveness of this operation using laparoscopic method.
Material & Methods: From 2001 to 2015 74 patients underwent ileal ureteral substitution at our clinic. Seven patients (9,4%) underwent laparoscopic reconstruction of ureter. There were 54 (71,4%) women and 20 (28,6%) men with a median age of $50,5 \pm 9,5$ years (range from 18 to 69 years). The main causes of ureteral strictures were: retroperitoneal fibrosis following radiation therapy, colorectal and gynecological cancer surgery. We perform a comparative analysis of functional and perioperative outcomes between patients undergoing laparoscopic or open ileal ureter replacement. All patients underwent long-term follow-up including routine laboratory analysis and urinary tract imaging. Outpatient visits occurred at 3 and 6 months postoperatively and at least annually thereafter.
Results: The follow up period was from 3 months up to 14 years (mean $6,3 \pm 0,8$ years). The time to convalescence (median 4,2 vs 6 weeks, $p < 0.05$) was significantly less in the laparoscopic group. A trend toward shorter hospital stay (median 6 vs 12 days, $p < 0.05$) was also noted in patients in the laparoscopic group. Postoperative complications developed in 7 (9.5%) cases in open surgery group.

Conclusions: Ileal ureteral substitution remains a safe and efficacious procedure in patients with extended and multiple ureteral strictures. The laparoscopic technique is efficient and technically straightforward.

MP30-13 Evaluating the learning curve for retroperitoneoscopic adrenalectomy in a high-volume center for laparoscopic adrenal surgery

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Introduction: Laparoscopic adrenalectomy is an effective and safe method for small adrenal tumor removal. In literature both lateral transperitoneal (TLA) and posterior retroperitoneoscopic (RPA) approaches are described. In this cohort study potential advantages in operating and recovery times for RPA were evaluated, as well as the learning curve of RPA.
Materials and Methods: All data of patients undergoing laparoscopic adrenalectomy from 2007 until 2014 were prospectively collected. Since the introduction of RPA in 2011, patients were eligible for RPA with a tumor < 7 cm, BMI < 35 kg/m^2 and low suspicion of malignancy. Other patients received TLA. Blood loss, peroperative complications and hospital stay were compared for both techniques. The learning curve of RPA was measured by operating time. Descriptive statistics were performed using SPSS 20.0.
Results: In the study period 290 patients underwent surgery, 177 TLA and 113 RPA. When comparing baseline characteristics only BMI was statistically different (median 27 kg/m^2 versus 26 kg/m^2, p = 0.03). When analyzing all patients median blood loss was 10cc, median operating time 95 minutes and median hospital stay 4 days. Conversion to open surgery was necessary in 10 patients, in 6 patients a strategic conversion from RPA to TLA was performed because of lack of progression. Operating time for RPA decreased significantly (median 100 minutes in the first 20 patients to 60 minutes after 40 patients). Furthermore, blood loss, operating time and hospital stay were significantly lower in RPA (Table 1). In both groups few major complications occurred. Patients with a pheochromocytoma had more blood loss (median 50cc) and longer operating time (median 108 minutes).
Conclusion: A short learning curve is seen for RPA for a surgeon with experience in adrenal laparoscopic surgery. RPA has advantages compared to TLA in blood loss, operating time and hospital stay. Therefore, RPA should be the preferred approach for patients with BMI < 35 and benign adrenal tumors (< 7 cm).

Table 1: Unilateral and bilateral TLA versus RPA

	Unilateral TLA (n=165)	Unilateral RPA (n=102)	Bilateral TLA (n=12)	Bilateral RPA (n=11)
Blood loss:[a]	20 (90)	5 (5)[b]	40 (118)	5 (15)[c]
Operating time (min):[a]	108 (53)	62 (40)[b]	236 (109)	117 (35)[c]
Hospital stay (days):[a]	4 (2)	3 (1)[b]	5 (2)	5 (6)
Postop complications:				
- Clavien I-II	10	10	1	3
- Clavien III	3	2	1	0
- Clavien IV-V	2	1	0	0

[a] median (IQR); [b] p<0.05 compared to unilateral TLA; [c] p<0.05 compared to bilateral TLA

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MP31 - PCNL OUTCOMES

MP31-1 PCNL in the United Kingdom: Trends in 5000 cases from BAUS PCNL Registry

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Introduction: PCNL continues to be used for the management of large upper tract renal stones. BAUS developed an online data registry in January 2010 that now includes > 5000 procedures. We evaluate current practice, outcomes and trends in PCNL compared with an initial analysis of 1028 procedures.
Methods: The BAUS-PCNL registry was analyzed between 2010 and 2015. We evaluated patient position, access and track dilatation methods, grade of operator and fragmentation device used. Post-operative drainage, stone free rate at day 1 and complications were also analyzed. HES data for PCNL was evaluated for surgeons reporting of data.
Results: 5191 PCNL procedures were available for analysis, compared with a previous analysis of 1028 PCNL procedures in 2011. The majority of PCNL is still prone, but supine positioning has significantly increased (16.2%vs6%, p = 0.0001). Percutaneous access by interventional radiologist showed a small but significant upward trend (66.2%vs.62%, p < 0.006). Balloon dilatation has increased in popularity (63.4%vs48%, p = 0.0001) with a reciprocal decline in metal \ Teflon serial dilator usage. Significantly more Consultants perform PCNL themselves compared with 2011 (84.4%vs.79%, p = 0.0001). Ultrasound-fragmentation devices are more widely used (48.8%vs42.2%, p = 0.0002) with unchanged usage of lithoclast and laser. Lift-out-PCNL is significantly less common (-5.6%, p = 0.0001). There was no significant difference demonstrated in the usage of nephrostomy drainage post operatively. Intraoperatively 78.6% of patients were believed to be stone free, subsequently confirmed in 68.6% with postoperative imaging, similar to

Table 1	Analysis @ 1028 procedures		Analysis @ 5000 procedures		
	N	%	N	%	Fisher's exact test
Visceral Injury	4	0.3	17	0.3	Ns
Transfusion	24	2.5	117	2.4	Ns
Post-op fever	155	16	551	12.1	P=0.001
Sepsis	25	2.4	128	2.8	Ns
Clavien 3-5	17	1.4	84	1.6	Ns

Table 2	PCNL cases in England captured by HES	PCNL cases BAUS registry	%
2010	1689	489	29.0
2011	1806	719	39.8
2012	1739	786	45.2
2013	1687	911	54
2014	*Data in press - Estimated 4yr average @ 1730*	2042	*118*

2011. Complication rates are essentially unchanged (Table 1). HES data analysis suggests increasing reporting of PCNL-cases to the registry following compulsory participation in 2014 (Table 2.)

Conclusions: The BAUS PCNL registry is a unique resource for UK surgeons, providing vital information on current practice, and trends representing evolving PCNL practices. Compulsory participation from 2014 highlights increasing participation in the registry. Using the registry allows audit of individual practice against national outcome data and helps surgeons to counsel patients as to possible outcomes with this complex index endourological procedure.

MP31-2 The Clinical Efficacy and Safety of Bilateral Synchronous Percutaneous Nephrolithotomy (BSPCNL) for Bilateral Large Renal Stones

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Introduction and Objectives: Percutaneous nephrolithotomy (PCNL) has become the treatment of choice for large renal stones. Patients with bilateral renal stones present unique challenges to the endourologist. The decision to do bilateral synchronous percutaneous nephrolithotomy (BSPCNL) or a staged PCNL is influenced mainly by the surgeon experience, degree of stone burden on both renal units and the intraoperative events surrounding the first PCNL procedure. We describe our experience on BSPCNL and summarize its clinical efficacy, intraoperative and postoperative outcomes.

Materials and Methods: A retrospective chart review was done on all patients who underwent BSPCNL from January 2011 to April 2015 in a single institution. All patients underwent a preoperative imaging using unenhanced helical CT scan. The stone durillity was measured accordingly with Hounsfield units (HU) and the stone burden was classified according to the Guy Stone Score. Clinical parameters including operative time, estimated blood loss (EBL), transfusion rate and length of hospital stay (LOS) were analyzed. Complications were analyzed with the modified Clavien-Dindo classification.

Results: Fifteen patients (30 renal units) underwent BSPCNL during the study period. The mean age was 47.2 ± 12.5 years with a male to female ratio of 2:1. The mean stone burden was 3.5 ± 1.47 cm and 3.9 ± 2.13 cm for the right and left kidneys, respectively. According to the Guy Stone score, stones were I (5), II (19), III (2), and IV (4). The mean HU was 895.7 ± 293.3 and 669.9 ± 243.5 for the right and left, respectively. All BSPCNL proceeded as planned because no critical events occurred after the completion of the first PCNL. Mean total operative time was 260.3 ± 106.6 minutes, mean EBL was 380 ± 247.7 cc, and mean LOS was 5.5 ± 1.8 days. Mean drop in hemoglobin and hematocrit were 2.1 ± 1.74 g/dL and $5.2 \pm 4.74\%$, respectively. Mean increase in creatinine was 0.2 ± 0.4 mmol. The stone clearance rate was 96.7% for the right and 95.4% for the left. Only two patients had blood transfusion (Clavien-Dindo 2) with a transfusion rate of 13%. The rest had no complications. There was no mortality.

Conclusions: In selected patients, BSPCNL is safe and effective for bilateral renal stones. The decision to proceed with the PCNL on the contralateral renal unit should be decided upon when the initial PCNL procedure was uncomplicated.

MP31-3 Does pre-placement of Nephrostomy tube prior to PCNL improve outcomes or reduce complications

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Introduction and Objectives: Percutaneous nephrolithotomy (PCNL) can be performed with access obtained either at the time of surgery or prior. It has been thought that pre-placement of a nephrostomy tube might decrease intra-operative complications and postoperative complications such as sepsis, and may improve outcomes. This study aims to compare PCNL performed with a nephrostomy tube placed prior to surgery versus access at the time of surgery.

Methods: This was a retrospective IRB approved study examining 233 PCNL procedures from March 2005 to August 2014. Cases were divided into two groups based on whether the nephrostomy tubes were placed prior to surgery. There were 109 cases in which the nephrostomy tubes were placed at least 1 day prior to surgery, and there were 124 cases in which the access was obtained at the time of the PCNL procedure. Patient demographics, stone size, rates of sepsis, and rates of complications such as bleeding and inability to access stone were compared between the groups.

Results: There were no significant differences in patient age, weight, BMI and stone size between the two groups. There was a 92.7% success rate in the pre-placement group, and a 94.4% success rate in the access obtained at time of surgery group. There was no significant difference in success rates between the two groups ($p = 0.60$). There were 8 total cases of sepsis, and the rates of sepsis in the pre-placement group and the during-surgery group were 3.67% and 3.22%, respectively. There was no significant difference in rates of sepsis between the two groups ($p = 0.85$). There were 14 total cases of intra-operative complications, and the rates of complications in the pre-placement group and the during-surgery group were 6.42% and 5.65%, respectively. There was no significant difference in complication rates between the two groups ($p = 0.71$). There were 10 total cases of ICU admission, and the rates in the pre-placement group and the during-surgery group were 6.42% and 2.42%, respectively. There was no significant difference in ICU admission between the two groups ($p = 0.12$).

Conclusions: In this study, pre-placement of a percutaneous nephrostomy tube prior to PCNL did not result in a decreased incident of complications or sepsis, and did not show an increase in success rate. Further study is needed to determine the role for pre-placement nephrostomy tube for PCNL.

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MP31-4 A prevalence and risk factor analysis in retrorenal colon

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Purpose: To investigate the prevalence of retrorenal colon detected on the abdominal computed tomography scans (ACTS) and report its potential risks.
Materials and Methods: We reviewed the ACTS that were done in both supine and prone position on the same patient in five centers in China from January 2009 to September 2014. Instances where any part of the colon exte nded posterior to the posterior renal line and extended directly behind the kidney were recorded as retrorenal colon.
Results: We accrued a total 1001 patients, 448 male and 553 female. 63 patients (6.3%) had retrorenal colon. 37(3.7%) were on the left; 16(1.6%) were on the right; and 10 (1.0%) were bilateral. Retrorenal colon was found in 14 (1.4%) patients only in supine position, 28 (2.8%) patients only in prone position, and 21(2.1%) patients in both supine and prone position. Male patients had higher incidence of retrorenal colon than female (8.0% vs 4.9%). Patients with retrorenal colon were also tend to be older and had smaller body mass index(BMI) value. The multivariate regression demonstrated that smaller BMI value, older age, and male gender were risk factors for the increased probability of retrorenal colon (all $p < 0.01$).
Conclusion: Retrorenal colon is more frequently seen in the prone position, especially on the left side. Smaller BMI value, older age, and male gender were risk factors for retrorenal colon. For patients with BMI < 18.5 kg/m2 or Age ≥69 years, or male patients with left percutaneous access in prone position, preoperative CT should be done.

MP31-5 Development and Internal Validation of a Classification System for Predicting Stone-free Rates after Endoscopic Combined Intrarenal Surgery in the Modified Valdivia Position for Large Renal Stones

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Objective: To identify preoperative predictors and to develop a classification system for predicting stone-free (SF) statuses after endoscopic combined intrarenal surgery (ECIRS) in the modified Valdivia position for renal stone treatment.
Patients and Methods: We retrospectively analyzed 329 consecutive, single-session ECIRS procedures undertaken in the modified Valdivia position to treat renal stones. The SF status after surgery was determined at 1 month postoperatively using non-contrast computed tomography (NCCT), and was defined as the absence of stones or residual fragments measuring less than 4 mm. The preoperative factors analyzed included the stone status, which were determined by NCCT, and the patients' characteristics. A multivariate logistic regression model with backward selection was used to evaluate the relationships between the preoperative factors and an SF status following ECIRS, and a classification system was developed to predict an SF status based on the preoperative factors.
Results: The overall successful outcome rate was 65.3%. Multivariate analysis determined 2 independent predictors of ECIRS outcomes, namely, the stone surface areas ($P = .001$) and the number of involved calyces ($P = .001$). These parameters were used to develop the classification system for predicting the SF status after ECIRS.
Conclusion: Stone surface areas and the number of involved calyces independently predicted the SF status after ECIRS. This is the first study to identify the independent predictors and develop a classification table for predicting SF rates after ECIRS in the modified Valdivia position.

MP31-6 Results and Complications of Percutaneous Nephrolithotomy (PCNL): Report of over 12,000 cases in southern Iran

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Introduction: Currently, PCNL is the modality of choice for treatment of large, complex renal stones, however, such as open surgery has complication. We investigated the results and complications of PCNL in our high volume, training, referral center.
Materials and Methods: Between September 2002 and December 2014, a total of 12,379 PCNL procedures were done in our center; 7127 men and 5252 women, mean age 38.6 year (18–82) and mean stone size 25.5 mm (17–71) underwent PCNL by experienced, training urologist (Fellowships), and residents. PCNL was done in standard, No Nephrostomy and totally tubeless methods. Floroscopy and ultrasound were used for access. General, epidural, and spinal were the methods of anesthesia. We recorded the results and complications of our patients.
Results: Early stone-free rate was 88.14% and after 3 weeks with ancillary procedures (URS, SWL) 92.6%.

Complications according to Clavein classification:

-Grade I (746): Fever > 38.3 C 236, Bleeding 271, Hyponatremia (PCNL Sx.) 18, PCS perforation 154, Pneumo/hydro/hemothorax 46, Renal failure 21;

-Grade II (334): Transfusion 245, UTI 28, ileus 47, pneumonia 14;

-Grade III (571): Access failure 95, Clot retention 37, late hematuria 108, angioembolization 47, Conversion to open 28, Visceral injury 15, Perinephric collection 32, Chest tube 17, Scapular fracture 1, Re-PCNL 238;

-Grade IV (153): Renal failure requiring dialysis (17), Kidney exploration and repair (18), Heart failure (24), Arrhythmia requiring ICU (29), Sepsis (9), Myocardial infarction (52);

-Grade V (18): sepsis 5, MI 12, unknown 1.

Although some of the minor and major complications were managed by referring physicians which did not report to us.
Conclusions: PCNL seems the best treatment option for large renal stones and is a less invasive method, we should consider minor and major complications such as open surgery and manage them properly.

MP31-7 21st Century Trends in Percutaneous Nephrolithotomy in the United States: 1998–2011

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Introduction: Significant advances have been made in the surgical treatment of renal stones, yet the effect of those advances on

the incidence of PCNL is unknown. This study examines trends in PCNL using a serial, cross-sectional design.
Methods: Data was obtained using the National Inpatient Sample (NIS), the largest all-payer inpatient database in the U.S.. All patients who underwent PCNL between 1998 and 2011 were included and rates were estimated using the U.S. Census Bureau. The main outcome was annual PCNL rates.
Results: 105,180 patients underwent PCNL during the study period. The annual rate of PCNL increased from 17 per million U.S. adults in 1998 to 31 in 2011 ($p < 0.001$). The increase was significant among whites and Hispanics ($p < 0.001$ and 0.03, respectively) but not black patients ($p = 0.10$). Both genders showed significant increase in PCNL rates. Rates increased from 17 to 30 per million male adults and from 17 to 32 miilion female adults between 1998 and 2011($p < 0.001$ for both genders). PCNL among patients younger than 18 years had relative stability ($p = 0.59$) while patients 18–64 showed an increase from 39 to 70 million PCNL per million U.S. adults ($p < 0.001$). Patients older than 65 years showed a larger increase from 52 PCNLs per million U.S. adults in 1998 to 113 in 2011 ($p < 0.001$).
Conclusions: The incidence of PCNL in the U.S. increased significantly from 1998 to 2011. This trend was consistent among both genders and patients older than 18 years old.

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MP31-8 Percutaneous Nephrolithotomy (PCNL) Versus Retrograde Intrarenal Surgery (RIRS) in Treatment of Large Renal Stones (>2 cm) In Pediatric Patients: A Randomized Controlled Trial

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Purpose: To compare the outcomes of percutaneous nephrolithotomy (PCNL) and retrograde intrarenal surgery (RIRS) in treatment of children with > 2 cm renal calculi.
Patients and Methods: Between May 2011 and February 2014, 38 pediatric patients (< 16 year-old) with renal calculi > 2 cm were randomized between PCNL and RIRS. Demographic data, stone criteria, operative technique, radiation time, complications, blood transfusion, hemoglobin drop, stone free rates and hospital stay were compared between both groups. Stone free was document if there were no residual stones after one month.
Results: The study included 43 renal units; 21 units in RIRS group and 22 units in PCNL group. Operative time was comparable for both groups. The mean radiation time and hospital stay were longer after PCNL ($P < 0.001$). The stone free rate was higher in the PCNL group than in the RIRS group (95.5% versus 81%), but the difference was not significant ($P = 0.185$). Conversion to PCNL was needed in 2 patients in RIRS group. Patients in PCNL group had a statistically significant more complication rate compared with RIRS group ($P = 0.018$). Three patients in the PCNL group received blood transfusions, whereas none of the children in the RIRS group needed blood transfusion ($P = 0.015$).
Conclusion: This study demonstrates that RIRS is an effective alternative to PCNL in pediatric patients with large-sized renal stones. Radiation exposure, hospital stay, and morbidities of PCNL can be significantly reduced with the RIRS technique.

MP31-9 Post-operative bleeding risk in anticoagulated patients undergoing PCNL

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Introduction: Percutaneous nephrolithotomy (PCNL) carries a risk of perioperative bleeding requiring transfusion and possibly angioembolization. The risk of surgical bleeding is increased for patients taking chronic anticoagulation (AC); more so in PCNL where hemostasis is harder to guarantee. Here we review our PCNL experience in patients on non-antiplatelet AC, the largest series to date, to identify risk factors for significant bleeding.
Patients and Methods: Following IRB approval, our PCNL database was retrospectively reviewed for patients on AC prior to surgery. Patients solely on antiplatelet therapy (aspirin, clopidogrel) without concomitant AC were excluded. Perioperative complications were accounted for and any patient requiring ≥2 units of blood or angioembolization was considered to have significant bleeding.
Results: PCNL was performed on 24 patients (26 renal units) including 4 who had staged procedures. Twenty patients were on warfarin, 2 on dabigatran (Pradaxa) and 2 on rivaroxiban (Xarelto). Indications for AC included atrial fibrillation (14), venous thromboembolism (9), and artificial cardiac valves (4). AC was held prior to surgery in all patients and bridging with enoxaperin or heparin was given in 9 patients based on thromboembolic risk. Aspirin was continued through surgery for those already on it.

Eight patients had significant bleeding requiring ≥2 units of blood (4), angioembolization (1) or both (3). Two patients experienced significant bleeding following early re-initiation of heparin within 6 hours of surgery and both had supratherapeutic aPTT levels. A patient required blood transfusions for significant bleeding with a supratherapeutic INR (> 3) five days after PCNL and another required angioembolization after restarting warfarin 14 days post-PCNL, also with an INR > 3.

Patient age, number of tracts, bridging (within therapeutic range), staging, bilateral surgery, concomitant aspirin use, operative time and stone size did not confer an increased bleeding risk. There were no thromboembolic events or deaths within 30 days of PCNL.
Conclusion: Post-PCNL hemorrhage is a considerable concern in patients on AC. Significant bleeding is more likely with early initiation of anticoagulation within a few hours of surgery, aPTT values above target range, and supratherapeutic INR. We advise a SLOW titration of anticoagulation to the target range with close post-operative monitoring in conjunction with their primary physicians.

MP31-10 Patients are at Risk for Pyelovenous Backflow during Percutaneous Nephrostolithotomy

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Introduction: The pressure in the renal pelvis may have a significant effect upon patient outcomes during percutaneous nephrostolithotomy (PCNL). Pressures > 30 mm Hg can cause pyelovenous backflow with an increased risk for urosepsis.

Alternatively, low renal pelvic pressure (RPP) can lead to collapse of the collecting system, and impair visualization. The purpose of this study was to determine the influence of nephroscope type and the use of suction upon RPPs during PCNL.
Methods: During PCNL, ureteroscopic directed US guidance was utilized to establish a 30Fr access sheath. Once the access was established the working channel of the ureteroscope was connected to a pressure transducer and utilized to determine RPP at baseline, when irrigating using a 26Fr rigid nephroscope with and without suction, and during irrigation with a 16Fr flexible nephroscope. Pressure readings were randomly obtained during the case. Patient demographics and access location were also recorded. A Mann-Whitney U test was used to compare the RPP during rigid and flexible nephroscopy, with $p < 0.05$ considered significant.
Results: A total of 220 measurements were recorded in 20 patients undergoing PCNL. Mean patient age was 55.2 years (20–77) and BMI was 32.4 (18–53.3). All patients had single tract access including 19 patients with upper pole and 1 patient with lower pole access. Rigid nephroscopy resulted in significantly higher average RPP compared to flexible nephroscopy (30.3 vs.12.9 mmHg; $p = 0.007$). The mean RPP was > 30 mmHg in 7 patients (35%) using the rigid nephroscope and in no patient using the flexible nephroscope. One out of seven patients that had a mean rigid pressure > 30 mm Hg developed fever compared to none of the 13 patients that had mean rigid pressure < 30 mm Hg ($p = 0.35$). Patients with average RPP > 30 mm Hg had a significantly longer tract (skin to collecting system distance) than patients with an average RPP < 30 mm Hg (105.5 vs. 79.7 mm; $p = 0.03$) A significantly longer hospital stay of 4.3 days was noted in patients with an average RPP > 30 mm Hg compared to the 3.1 days in patients with an RPP < 30 mm Hg ($p = 0.04$).
Conclusions: Use of the rigid nephroscope resulted in RPPs greater than the threshold for pyelovenous backflow in 35% of patients. The RPP is significantly lowered by the use of the flexible nephroscope or suction. Knowledge of the factors that influence RPP and methods to control the pressure extremes may improve patient safety during PCNL.

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MP31-11 Prospective Evaluation of the Safety and Efficacy of Spinal Anesthesia vs. General Anesthesia for Percutaneous Nephrolithotomy (PCNL)

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United States

Introduction and Objectives: General anesthesia (GA) has been preferred for prone PCNL, but spinal anesthesia (SA) has potentially less morbidity and quicker recovery. A prospective randomized trial was conducted to compare their safety and efficacy
Methods: Sixty patients undergoing PCNL were randomized into receiving SA or GA. Bupivacaine 5 mg/ml alone or with the addition of 10 μg of fentanyl was administered in the sitting position into the L2-3 interspace for spinal anesthesia. Patients were placed supine, with Trendelenburg if needed for 10 minutes and sensory and motor blockade confirmed. Intra-operative analgesic supplementation, when deemed necessary, was achieved with intravenous fentanyl boluses (25 μg). GA was induced with standard protocol. Analgesic use, pain visual analogue scores (VAS), OR time, EBL, success rates, complications, and costs were analyzed.

	SA	GA
Age	45.6	44.8
Sex (M/F)	43/17	41/19
Side (R/L)	29/23	26/25
Bilateral	8	9
Stone area (mm3)	791.6	798.9
CKD	21	16
Co-morbidity	12	14
Recurrent stone former	21	14
OR time (min)	62.4	64.6
Blood transfusion	3.3%	5.0%
Fluoroscopy time	144.6 sec	128.4 sec
Stone free rate	93.4%	95%
Neurological complication	None	None
SIRS	1	2
Recovery room stay (min)	67.4	158.9
Time to ambulation	7.4 hrs	13.9 hrs
Hospital stay	2.1 days	4.1 days
Ambulatory PCNL	3	0
Complications/mortality	6.6%/0	8.3%/1
Post op pain* (VAS) (p<0.01)	**2.4**	**5.6**
Hemodynamic changes (heart rate, hypotension)	2	4
Nausea* (p<0.002)	**2**	**14**
Post op analgesic use* (morphine equivalents) (p<0.0025)	**12.0 mg**	**19.0 mg**

Results: The sensory and motor blocks after intrathecal bupivacaine and bupivacaine–fentanyl were similar. Sensory block reached the fifth dermatome and deep motor block occurred in all patients. Groups were matched in age, stone burden, and gender (Table 1). There was no significant difference in OR time, EBL, complications, SFR, or difficulty with multiple or upper pole access. SA patients required less intra-operative and post-operative analgesia (12 mg Vs 19 mg, $p < 0.005$) and had better pain scores(2.1 Vs. 5 at 2 hours, $p < 0.002$) and less nausea as shown in chart(below). Cost of drugs was lower in SA patients ($20 vs. $200). Two SA patients required supplementation with ketamine for prolonged procedures.
Conclusions: SA is as safe, reliable and effective as GA but with less nausea, less analgesic use, better pain scores, and lower cost.

MP31-12 Relationship between Stone Density on CT and Outcomes of Percutaneous Nephrolithotomy

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Introduction: We aim to analyze the relationship between stone density on CT and outcomes of percutaneous nephrolithotomy (PCNL)
Materials and Methods: We retrospectively examined the records of 183 patients who underwent PCNL in between July 2008 and September 2014. Patients undergoing PCNL were assigned to low stone density (LSD, ≤ 1000 HU) vs high stone density

(HSD, >1000 HU) based on Hounsfield units of primary renal stone. Preoperative characteristics and outcomes were analysed
Results: Mean stone size is 30 ± 12 mm. Mean duration follow up is 25 months. Mean operating time is slightly longer in the HSD group (176 min vs 154 min, p = 0.098). Univariate regression analysis reveal a linear relationship between the stone density and the probability of achieving stone free status; with increasing stone density, stone free rate decreases. Post op imaging within the first 48 hours revealed overall SFR is lower in the HSD group (53.3% vs 31.1%, p = 0.008). There were no significant difference in terms of complication rates and need for blood transfusion in both groups. There is no significant difference between the sizes of residual fragments (RFs) and also subsequent spontaneous expulsion of RFs in both groups and need for secondary treatment.
Conclusions High stone densities are associated with lower rates of treatment success and longer operating time in PCNL.

MP31-13 Is tubeless ambulatory percutaneous nephrolithotomy for staghorn calculi safe and effective?

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Introduction: Tubeless percutaneous nephrolithotomy (PCNL) for staghorn calculi has been shown to be safe and effective. Ambulatory PCNL (aPCNL) has recently been reported to be safe and effective in highly selected patients. The objective of this study is to report our early experience in treating staghorn calculi with tubeless PCNL on a completely outpatient basis, assessing its safety and efficacy.
Materials and Methods: A review of all tubeless aPCNL cases between March 2007 and May 2014 at two Canadian institutions was performed, including collection of preoperative, intraoperative and postoperative data. Strict preoperative, intraoperative and postoperative criteria were used in the selection of candidates for tubeless aPCNL: no intraoperative complications including significant bleeding or collecting system perforation; postoperative hemodynamic stability; adequate pain control; reliable patient with supportive family.
Results: Fifty patients underwent aPCNL during the study period. Staghorn calculi were treated in 9 of 50 patients—including 2 cases of bilateral staghorn calculi—resulting in a total of 11 staghorn renal units treated by aPCNL. All 9 patients were discharged home uneventfully within 6 hours postoperatively. There were no major postoperative complications, emergency room visits, hospital readmissions or deaths. At follow-up, 9 of the 11 renal units (82%) were stone-free.
Conclusions: This small series represents the largest series of aPCNL for staghorn calculi to date. In very carefully selected patients, PCNL for staghorn calculi on a completely outpatient basis appears safe and effective.

MP31-14 Complications in 504 consecutive patients undergoing percutaneous nephrolithotomy using a posterosuperior calyceal approach

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Introduction: 504 consecutive percutaneous nephrolithotomies for staghorn calculi were retrospectively reviewed for number and type of complications.
Methods: 504 adult patients underwent percutaneous nephrolithotomy (PCNL) using a posterosuperior calyceal approach primarily for staghorn calculi from January 2006-January 2014. Appropriate calyx for access was determined by consensus at monthly Stone Rounds attended by endourologists and interventional radiologists. The entire procedure was done in the operating room (OR). An OEC portable fluoroscopy unit was present in the OR. Each patient had a ureteral catheter in place through which a double contrast pelvocalycealagram was done. The targeted calyx was accessed in a coaxial manner using an 18 gauge Cook Needle and Accustick System set. Once access to the bladder was achieved, a second amplatz wire was inserted as a safety wire. Each patient underwent tract dilatation with 30 F working sheath insertion. All access and tract dilatations were done by interventional radiologists. Staghorn calculi were treated by the endourologists. Combination rigid and flexible nephroscopy in conjunction with ultrasonic and laser lithotripsy were used. At completion of the procedure either a 24 F or 16 F re-entry Malecot catheter was placed. Downsizing to a small nephrostomy tube or placement of a double J stent was done 24 hours after the procedure.
Results: The overall major complication rate was 4.5%. Complications included hydrothorax requiring chest tube in 11 patients (2.18%), pneumothorax in 6 patients requiring chest tube (1.19%), bleeding requiring transfusion in 5 patients (0.99%), and bleeding requiring arterial embolization of a renal artery pseudoaneurysm in one patient (0.19%).
Conclusions: A posterosuperior calyceal approach for PCNL in patients with staghorn calculi is a safe and effective method for stone eradication with acceptable complication rate below that reported in the literature.

MP31-15 Stone complexity does not affect fluoroscopy time during percutaneous nephrolithotomy

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Introduction: Fluoroscopy is commonly used to guide PCNL, allowing visualization of radiopaque stones, delineating collecting system anatomy, and providing real-time feedback. Nonetheless, ionizing radiation must be minimized, as dictated by ALARA principles. Prior to active interventions to reduce medical radiation, increased fluoroscopy exposure was noted with the percutaneous management of increasingly complex stones. Stone complexity is also known to correlate with total operative time. However, with increased awareness of radiation reduction – including use of pulsed fluoroscopy and low-dose settings – it is unknown whether stone complexity affects total fluoroscopic time. We sought to assess whether a correlation exists between fluoroscopy time and stone complexity.
Patients and Methods: We retrospectively reviewed records of 196 consecutive patients undergoing PCNL between June of 2009 and December of 2014 at a single institution. Of these, 177 had both preoperative CT and full intraoperative fluoroscopy and radiation dosimetry data available. Stone complexity was assessed according to Guy's stone score. Correlation between fluoroscopy time, fluoroscopy exposure, and Guy's stone score was assessed in a univariate and multivariate fashion, including parameters such as age, sex, BMI, operative time and number of accesses.

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Guy Score	N	Mean radiation exposure (mGray)	Mean fluoroscopy time (minutes)
1	47	93.7	4.39
2	45	103.6	5.11
3	43	111.1	5.10
4	42	94.5	5.46

Result: Of patients, 58% were female, mean BMI was 31.8 (SD. 8.6). Guys score was evenly distributed (see table). Multiple access was obtained in 21 (12%) of cases. The overall mean fluoroscopy time for all patients was 5.03 minutes (SD 3.76). Increased Guys stone score did not correlate with increased fluoroscopy time. (Pearson's $r = 0.08$, $p = 0.35$) or intraoperative radiation exposure (Pearson's $r = 0.0059$, $p = 0.95$). When specifically assessing for differences in fluoroscopy time based on single vs multiple accesses, there was a non-significant increase in fluoroscopy time for those requiring multiple percutaneous renal accesses versus those requiring only a single access (4.9 vs 6.6 minutes, $p = 0.10$)
Conclusion: In the setting of conscious efforts to reduce intraoperative radiation exposure, increasing stone complexity did not correlate with fluoroscopy time or radiation exposure. Complex stones and multiple accesses can thus be obtained without concern of significant additional radiation risks to patient and OR staff.

MP31-16 Modification of the Guy Stone Score to improve prediction stone free rate in percutaneous nephrolithotomy

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Objective: The original Guy Stone Score (GSS) has a limited prediction of Stone free rate (SFR) as seen in the first report 81%, 72.4%, 35% and 29% for category 1, 2, 3 and 4 respectively, divides the SFR in two big groups, grade 1 and 2 as good prognosis and 3 and 4 poor prognosis. We propose a modification, to have at least 20% discrimination power among groups and have a three prognosis groups.
Material and Methods: Historical cohort of patients undergoing PCNL from December 2010 to November 2014. To make the new classification we evaluated independently each specific model and their SFS, then we arrange it from the better to the worst, and subsequently grouped into 3 groups : good, intermediate and poor, having at least 20% of discrimitantion between each group. Then we associate estimated blood loss (EBL), surgical time (ST), length of hospital stay (LOS) and complications. A $p < 0.05$ was considered as significant.
Results: 126 PCNL procedures were evaluated, but only 124 included and classified based on SFR for each GSS grades: 76% for grade 1, 71% for grade 2, 55% for grade 3 and 20% for grade 4. The SFR with the modified GSS was: Good: 93%, intermediate: 70.8% and poor: 38.7%. This give us a difference between each group > 20%. ($p < 0.005$). We don't find statistical differences in EBL, LOS, ST, and complicactions. Table 1.
Conclusion: The original GSS has limitations to predict PCNL success based on SFR because of its poor discrimination power between grades. This rearrangement improves prediction of SFR and better discriminates risk groups after PCNL.

Results based on Reorganization and change in nomenclature scale Guy Stone in 3 groups

Groups	Good	Intermediate	Poor	P
Patients (%)	29 (23)	48 (38)	49 (39)	
EBLº	60 (5-400)	50 (5-800)	50 (5-600)	0.1*
OTº	90 (25-180)	77.5 (30-225)	90 (30-240)	0.7*
LOSº	4 (2-12)	4 (3-11)	4 (3-22)	0.2*
SFS (%)	27 (93)	34 (70.8)	19 (38.7)	<0.00^
Complications Clavien ≤2 (%) Clavien >2 (%)	 8 (27) 6 (20.6)	 16 (33.3) 2 (4.1)	 18 (36.7) 7 (14.2)	 0.9^

EBL = estimated blood loss
ST= Surgical time
LOS: length of stay
SFS= Stone free rate.
* Kruskal Wallis Test
^ Chi Square
º Median (range)

MP31-17 Supracostal punctures in the supine percutaneous nephrolithtomy are safe: outcomes from a comparative study

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Introduction: The feasibility and safety of supracostal punctures in the supine position PCNL is still controversial. Herein, we aim to compare success and complication rates between patients who underwent prone or supine PCNL with at least one supracostal puncture.
Methods: We reviewed our prospective database for all supracostal PCNL performed in our institution from Feb-08 to Aug-13. Patient demographics data, stone characteristics (classified by the Guy's Score), blood transfusion rate, success (residual fragments ≤ 4 mm at postoperative CT scan) and complication rates were compared based on patient's position, which was chosen according to surgeon's preference. Categorical variables were compared with chi-square and Fisher exact test, whereas continuous variables were compared using Student t test. Statistical analysis was performed with SPSS® software. Significance level was set at $p < 0.05$.
Results: Among a total of 905 PCNL, 132 supracostal PCNL were performed; 104 in the prone position and 28 in the supine position. Age, gender, body mass index, ASA score, and stone's Guys Score were similar between the groups. There were a high prevalence of complex cases / staghorn stones (Guys 3 and 4) in both groups (66.3% in the prone group and 71.4% in the supine group, $p = 0.657$). Complication rate was 39.4% and 28.6% in the prone and in the supine group, respectively. Major complication rate (Clavien ≥3) was higher, but not significantly different, in the prone PCNL compared to supine PCNL (16.3% vs. 3.6%, respectively, $p = 0.119$). Nine patients (8.7%) who underwent prone PCNL had thoracic complications that required surgical intervention compared to none patient who underwent supine PCNL ($p = 0.128$). There was no difference in the blood transfusion rate (10.6% vs. 10.7%, $p = 1.0$) or operative time (163.3 ± 66.7 vs. 160.1 ± 56.8 min, $p = 0.801$) between the groups. There was one liver lesion in each group, and both were treated conservatively. There was no colon lesion. Success rate was also similar between prone and supine groups (63.5% vs. 71.4%, $p = 0.507$).

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Conclusion: Supracostal punctures in the supine position are feasible and safe, providing similar complication and success rates than supracostal punctures in the prone PCNL.

MP31-18 Can Activities of Daily Living Predict for Complications Following Percutaneous Nephrolithotomy?

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Introduction: Predicting which patients are most likely to experience complications following percutaneous nephrolithotomy (PCNL) is elusive but important. The Charlson comorbidity index (CCI) and the American Society of Anesthesiologists (ASA) score have both been shown to predict for postoperative complications, but neither incorporates the functional status of a patient. Activities of daily living (ADL) provide information about functional status and are easy to evaluate. To this end, we sought to determine if any deficit in ADL could predict for post-PCNL complications.
Methods: We retrospectively review all PCNLs in our database between March 2013 and March 2014 and those with complete ADL assessment were included. Degree of independence with ADL (ambulation, transferring, toileting, bathing, dressing, eating, communication, swallowing), CCI, ASA score, perioperative outcomes and complications were examined according to degree of ADL deficit.

Results: 192 PCNLs were performed in 176 patients. Deficits in ADL were seen in 27 (16%) of patients (9% minor, 7% major). Complications occurred more frequently in those with deficits in ADL compared to those without (53% vs 31%, $p = 0.029$), and the length of stay was longer (2.0 vs 4.5 days, $p = 0.005$). On multivariate logistic regression, ADL were an independent predictor of complications (OR 1.11, $p = 0.01$), while ASA and CCI were not.
Conclusions: Assessing ADL is easy to perform preoperatively. Any deficit in ADL is associated with postoperative complications and a better predictor than ASA score or CCI. Preoperative assessment of activities of daily living can help risk stratify patients and may inform treatment decisions.

MP31-19 Preoperative Patient and Stone Characteristics Associated With a Prolonged Length of Hospital Stay Following Tubeless PCNL

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Introduction: Percutaneous nephrolithotomy (PCNL) remains the gold standard for the treatment of large and complex renal calculi. The adoption of tubeless PCNL has decreased patient discomfort and length of hospital stay following PCNL. Ambulatory PCNL (defined as a hospital stay of ≤ 24 hours) is now common, but identifying patients who are likely to require longer hospital stays remains a challenge. The objective of this study was to identify preoperative patient and stone characteristics associated with a required of hospital stay beyond post-operative day 1 (POD 1) following tubeless PCNL.
Methods: A database of patients undergoing PCNL at our institution between January of 2011 and July of 2014 was reviewed, and cases of tubeless PCNL were identified. Length of stay (LOS) was defined as the period from the time the patient entered the operating room until the time of their discharge. Preoperative variables evaluated included: age, gender, BMI, ASA, hemoglobin, creatinine, bacteriuria, and stone characteristics (side, stone burden, density, skin to stone distance). Patients were divided into 2 groups: those discharged on POD 1 (Group 1) and those discharged beyond POD 1 (Group 2). Categorical and continuous variables were compared using the Chi-squared test and student T-test, respectively.
Results: A total of 128 cases of tubeless PCNL were identified during the study period. Mean LOS was 37.7 hours (range = 14.0 to 316.4 hours). 100 patients were discharged on post-operative day 1 (Group 1 = 78.8%) with a mean LOS of 24.6 hours (SD ± 3.5 hours), and 28 patients were discharged later than post-operative day 1(Group 2 = 21.8%) with a mean LOS of 84.5 hours (SD ± 58.3 hours). Age did not differ significantly between the groups ($p = 0.24$). Pre-operative patient characteristics associated with a prolonged hospital stay included BMI (27.9 ± 4.7 vs 30.4 ± 7.7, $p = 0.04$), ASA 3 & 4 (47% vs 67.9%, $p = 0.05$), anemia (27% vs 53.6%, $p < 0.01$), creatinine (82.6 ± 30.2 vs 106.3 ± 72.9 μmol/L, $p = 0.01$), and bacteriuria (10.1% vs 37.0%, $p < 0.01$). Of the stone characteristics evaluated, only stone area was significantly associated with a prolonged hospital stay 491.4 ± 459.4 vs 1043.9 ± 983.6 mm^2, $p < 0.01$).
Conclusion: Both preoperative patient and stone characteristics can be used to identify patients likely to require a prolonged hospital stay following tubeless PCNL. This information may be useful in counseling patients and in pre-operative planning.

MP31-20 Comparison of Safety Outcomes in Totally Tubeless Percutaneous Nephrolithotomy According to Nephrostomy Tract Sealing Materials: A propensity Score Matching Study

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Introduction: The aim of this study is to investigate postoperative safety outcomes in totally tubeless percutaneous nephrolithotomy (PCNL) patients according to the type of sealant that is used on nephrostomy tract.
Material & Methods: Medical records of 158 patients who underwent totally tubeless PCNL from October 2008 to May 2015 were reviewed and analysed in this study. During tract closure, fibrin sealant(Tisseel®)(n = 107, FS group) or gelatin matrix hemostatic sealant(FloSeal®)(n = 51, GM group) were used. In all patients, noncontrast computed tomogram(CT) was done at first postoperative day. It was defined as unsatisfactory tract sealing(UTS) when patient underwent one of following conditions:postoperative ureteral stent placement due to clot obstruction, postoperative transfusion, hemoglobin drop ≥2 g/dL on the first postoperative day and/or angioembolism due to tract bleeding.
Result: The 1:2 propensity score matching was applied according to age, gender, body mass index(BMI), operative time, stone size, and treatment success(stone-free or residual stone < 4 mm). Postoperative safety profile was summarized as Table 1. UTS was found in 18 patients(11.4%). Between FS and GM groups, no significant differences were found in hemoglobin change, subclinical postoperative hamatoma or urinoma formation on CT, postoperative pain severity, number of event of

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	1:2 propensity matching		
	Sealant type		
	Tisseel® (n=98)	FloSeal® (n=49)	*P*
Hemoglobin change(g/dL)	-0.9±0.8	-1.0±1.0	0.513
Post-operative transfusion,n(%)	2(2.0)	1(2.0)	0.987
Image finding,n(%)			
Perirenal hematoma	19(19.3)	8(16.0)	0.614
Subcapsular hematoma	2(2.0)	0(2.0)	0.309
Intra-pelvocalyceal hematoma	30(30.6)	13(26.0)	0.559
Urinoma	6(6.1)	2(4.0)	0.589
VAS			
POD#0	3.3±2.5	3.1±2.1	0.701
POD#1	3.4±2.3	3.2±2.5	0.591
POD#2	2.2±2.3	2.3±2.6	0.834
POD#3	2.5±2.0	2.0±1.9	0.367
Return visit to emergency room,n(%)	5(5.1)	3(6.0)	0.819
Postoperative ureteral stent placement,n(%)			
Obstruction by clot	1(1.0)	3(6.0)	0.077
Obstruction by stone	0(0.0)	2(4.0)	0.046
Obstruction by ureteral swelling	0(0.0)	1(2.0)	0.160
Selective angioembolization,n(%)	2(2.0)	1(2.0)	0.987
Unsatisfactory tract sealing,n(%)	10(10.2)	8(16.0)	0.308

PCNL: pecutaneous nephrolithotomy; VAS: visual anlogue scale; POD:postoperative day

ureteral stent placement, visit of ER, and angioembolism. In GM group, ureteral stent placement due to clot was needed more frequently than FG group(6.0% in GM,1.0% in FS group) although it was not stastically significant. To find predictive factors of UTS, univariate and multivariate analysis was performed using preoperative and intraoiperative characteristics–age, gender, BMI, operation time, stone size, stone free and type of sealant. However, no factors were statistically significant.

Conclusion: In this study, there were no significant differences in postoperative pain and complications according to the type of sealant in totally tubeless PCNL patients. Although it was not statistically significant, there were tendency of higher incidence of postoperative ureteral stent placement due to clot obstruction in FS group. Further studies with larger number of patients seems to be necessary. Table 1. Postoperative safety profile of patients that underwent totally tubeless PCNL analyzed by 1:2 propensity matching.

MP31-21 Do post-operative white cell count, C-reactive protein or stone culture esults influence length of hospital stay after percutaneous nephro-lithotomy?

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Introduction: In order to optimise the patient journey through our unit, we attempted to predict length of inpatient stay following percutaneous nephrolithotomy (PCNL) using post-operative laboratory results.

Materials & Methods: We collected data retrospectively from all patients who had undergone PCNL in our centre between January and December 2014. We recorded patient and stone demographics. Other information collated included C-reactive protein (CRP) and white cell count (WCC) on the first post-operative day, stone culture and length of hospital stay (LOS).

Results: 106 PCNLs were performed over this period (42% male, 58% female) with an age range 14–84 years (mean 51.78 years, median 54 years, SD 17.079). The majority of patients had nephrostomy tubes sited at the end of the procedure (9 patients were left without).

Stone culture results included E. coli (14.5%), Proteus Mirabilis (11.5%) and Enterococcus Faecalis (5.8%). 5.7% of stones grew other bacteria including Pseudomonas Aeruginosa, Actinomyces Touricensis and Streptococcus Group C. 65.4% had no growth or mixed growth.

Day 1 post-operative CRP ranged from <0.6 to 313 with a median of 12.95. Day 1 post-operative WCC ranged from 1.37 to 52 with a median of 11.77. Median length of stay was 4 days (range 1–28) with the median stay for tubeless PCNL being 2 days. Most patients were discharged after 2–3 days but due to some patients having extended stay for medical reasons, the median length of stay was prolonged. 11 patients with an extended LOS for unconnected medical reasons were excluded.

We used the Pearson coefficient and Student's T test to analyse our data. Results showed that length of stay appeared unrelated to CRP (r: 0.031, $p=0.809$) but WCC was significantly linked to increased LOS (r: 0.791, $p=0.013$). Stone culture results were also significantly linked to increased LOS. The mean length of stay in the ''no growth'' group was 3.86 days, but with stone cultures positive for E. coli, E. fecalis or Proteus, the mean length of stay was 5.2, 3.97 and 5.80 days respectively ($p=0.026$).

Conclusion: From our data analysis, CRP does not appear to be linked to length of stay following PCNL. However, a significant correlation exists between length of stay and increased WCC on the first post-operative day.

MP31-22 Safety and efficacy of Percutaneous Nephrolithotomy (PCNL) in Patients with Solitary Kidney

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Introduction: To review our experience with PCNL in patients with solitary kidneys with a focus on efficacy, safety and renal function.

Material and methods: We reviewed our stone database for patients with solitary kidney, underwent PCNL between Jan-2005 and Feb-2015. Pre-operative data included patient demographics, renal function, cause of solitary kidney, laterality, renal cortex thickness, stone burden and Guys score. Intra and post-operative data included patients position, number of access tracts, drop in serum hematocrit level, transfusion rate, operative time, variation of creatinine clearance, complication rate, hospital stay and stone-free rate. Our outcomes were compared to those reported by the CROES study.

Results: 24 patients were included in this study Compared to CROES study, we had a higher stone burden(620 vs. 347 mm2), longer operativetime (110 vs.75 min), higher stone-free rate(83% vs.65.4%), higher transfusion(16.6% vs.10.1%) and low complication rates(4.16% vs.18.7%). 12% of our patients had multiple punctures compared to only 10.6% of patients from CROES study. On analysis number of tracts was associated with increased bleeding and operative time was associated with a higher complication rate. Linear regression confirmed number of access tracts

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as significantly related to, whereas logistic regression showed no correlation between variables in study and complications.
Conclusion: Our high volume tertiary center has higher stone-free rate compared to the CROES study. Although PCNL is accompanied by the risk of complications such as severe bleeding that may result in kidney loss in patients with a solitary kidney, the rate of success and complications seem to be similar to CROES study if careful operation and correct selection of candidates are done. Therefore we recommend cautious performance of PCNL in patients with solitary kidneys.

MP32 - ROBOTIC SURGERY: UPPER TRACT - ONCOLOGY 2

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MP32-1 Robotic Partial Adrenalectomy

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Introduction: We present two cases of Robotic Partial Adrenalectomy performed in a 54 yr-old female with a 4 cm left adrenal mass and negative biochemical tests and in a 40 yr-old female with a 2 cm left adrenal mass and negative biochemical tests, respectively.
Materials and Methods: In the first case, with the patient in a flank position, a four trocar access was performed; Gerota' s fascia was incised at the level of the upper pole and the adrenal gland identified; the medial aspect of the gland was bluntly dissected and some minor vessels feeding the mass were selectively clip legated and divided; the adenoma was progressively mobilised starting from the medial aspect and an enucleation was performed in order to maximize the adrenal parenchima spared; the specimen was macroscopically inspected to ensure the absence of any margin violation and it was placed into an endobag for extraction; pathological evaluation shows the presence of an intact 1,5 mm capsule all around the adenoma, with a small rim of adrenal cortex parenchima; the second case shows the same surgical access. Enucleation was performed as previously described, and a sliding clip suture was performed to approximate the margins of the adrenal gland; pathological report confirmed the non-functioning adenoma of the adrenal cortex.
Results: Intraoperative blood loss was negligible, postoperative course was uneventful in both cases and patients were discharged on second postoperative day.
Conclusions: Robotic Partial Adrenalectomy is a safe, feasible and minimally technique; favourable perioperative outcomes of robotic partial adrenalectomy are the preliminary steps to extend indications to functioning masses and malignancies.

MP32-2 Tumor Diameter Accurately Predicts Perioperative Outcomes in T1 Renal Cancer Treated with Robot-Assisted Partial Nephrectomy

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Introduction: Preoperative assessment of renal masses using the R.E.N.A.L. (R = radius, E = endophyticity, N = nearness to collecting system, L = location relative to polar lines) nephrometry score (RNS) has been shown to correlate with surgical approach, intraoperative parameters, and outcomes. Few studies have addressed the ability of individual components of RNS to predict outcomes in patients undergoing robot-assisted partial nephrectomy (RPN). We sought to compare continuous tumor diameter with the categorical variables of the RNS.
Patients and Methods: We retrospectively reviewed consecutive patients receiving RPN at a high volume center between July 2007 and June 2014 (n = 286). Three separate multivariate analysis models were performed to assess the relationship of total RNS, components of RNS, or diameter, with the following parameters: operating time, warm ischemia time (WIT), estimated blood loss (EBL), complications, and surgical margin status. Each model's quality of fit to the data was assessed with coefficients of determination (R^2) and discrimination.
Results: Both continuous diameter and total RNS were significantly correlated to operative time, EBL, and WIT ($p < 0.001$). R was independently related to operative time and WIT, but not to EBL. For each of these outcomes, the continuous diameter model outperformed R and total RNS models. Complications were not related to diameter, R, or total RNS. A positive surgical margin was not correlated with diameter, E, N or total RNS, but was related to L. Age, BMI, Charlson Comorbidity Index, and anterior versus posterior location did not correlate with surgical outcomes.
Conclusion: In our series of RPN, RNS and tumor diameter related to surgical outcomes. However, diameter more closely correlated to surgical outcomes than RNS. While RNS provides surgeons a standardized tool for preoperative planning of renal masses, tumor size may be more effective in conveying surgical parameters during preoperative patient counseling.

Table 1. Correlation of tumor characteristics with operative outcomes

	p-value				
	Operating time	Estimated blood loss	Warm ischemia time	Complications	Positive surgical margin
R=2 vs. R=1	**0.001**	0.105	**0.003**	0.105	0.997
R=3 vs. R=1	**0.001**	0.084	**0.016**	0.991	0.717
E=2 vs. E=1	**0.011**	0.138	0.856	0.374	0.451
E=3 vs. E=1	**0.002**	0.058	0.074	0.718	0.744
N=2 vs. N=1	0.531	0.946	0.235	0.468	0.913
N=3 vs. N=1	0.950	0.069	**0.038**	0.168	0.799
L=2 vs. L=1	0.535	0.532	0.054	0.474	**0.020**
L=3 vs. L=1	0.636	0.476	**0.029**	0.286	0.368
Total nephrometry	**<0.001**	**<0.001**	**<0.001**	0.978	0.265
Diameter (continuous)	**<0.001**	**<0.001**	**<0.001**	0.569	0.729

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MP32-3 Selective artery clamping under image guidance of three-dimensional reconstruction in robot-assisted partial nephrectomy

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Objective: To evaluate the usefulness of selective artery clamping under image guidance of three-dimensional (3D) reconstruction in robot-assisted partial nephrectomy (RAPN).
Patients and Methods: 56 robot-assisted partial nephrectomies under image guidance of three-dimensional reconstruction were performed using selective artery clamping (group 1, n = 31) or main artery clamping (group 2, n = 25). Patient demographics, tumor characteristics, perioperative data, functional outcomes, pathological findings were assessed for both group.
Results: There was no significant difference in renal tumor and patient characteristics between group 1 and group 2. All robotic procedures were successful and no kidneys were lost. Operative time (303.7 ± 78.0 vs. 311.9 ± 40.4 min, p = 0.680), warm ischemic time (20.2 ± 4.9 vs. 22.6 ± 7.1 min, p = 0.144) and estimated blood loss (56.8 ± 108.2 vs. 30.4 ± 42.4 ml, p = 0.248) did not show any significant difference between two groups. All surgical margins were negative. There was no significant difference in the decrease of eGFR at 6M postoperative day (13% vs. 15%, p = 0.58) or adverse events between two groups.
Conclusions: RAPN using selective artery clamping under image guidance of 3D reconstruction appears to be a safe and feasible treatment option with no additional morbidity compared with total clamping though it remains unclear how valid it is as for preserving renal function.

MP32-4 Nephro-ureterectomy benefits from robotic assistance

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Introduction: Requiring 2 incisions, open nephro-ureterectomy carries a significant morbidity, and includes a technical challenge with respect to the entire removal of the ureter all the way down to the bladder. Over the last 10 years, urologists have sought to decrease the burden of this procedure by using minimally invasive techniques. The aim of this study is to investigate whether this effort has significantly improved patient immediate post-operative evolution.
Patients and Methods: Retrospective analysis of all patients undergoing nephro-ureterectomy at our institution since February 2007.
Results: 40 procedures were perfomed; 8 were excluded because leaving a ureteral stump ≥2 cm in place, leaving 32 for analysis. There were 20 men and 12 women. Mean age at surgery was 66 years old. 84% of indications were oncological. There were 5 open surgery cases (16%; 4 lombotomies + Pfannenstiel, 1 midline incision). All other procedures (n = 27; 84%) were performed mini-invasively: 13 laparoscopies associated with an iliac incision, 8 hand-assisted (Pfannenstiel) retro-peritoneoscopies and 6 robotically assisted (da Vinci) laparoscopies. Two of the 13 laparoscopies (15%) were converted to open surgery due to bowel adhesions or bleeding, while none of the hand or robotically assisted procedures required conversion. All resections were margin negative, except for 2 (6%; 1 open surgery and 1 hand-assisted retro-peritoneoscopic surgery). Mean hospital stay were 9.4 days for open surgery, 6.8 for laparoscopic and 6.5 for hand-assisted surgery, while it was shortest (4.8 days) for the robotically assisted group. Statistically, hospital stay was significantly shorter in the latter group as compared with both other mini-invasive groups (p = 0.039). Comparing open surgery and mini-invasive techniques, mean hospital stay was significantly shorter in the latter group: 9.4 versus 6.3 days (p = 0.015). Five patients sustained complications: three were minor (Clavien II; 1 laparoscopy, 1 open surgery, 1 robot assisted surgery). Two significant complications (IIIa & IIIb) occurred in the conjoined laparoscopy and hand-assisted group (n = 21; 10%), whereas there were none in the robotic group.
Conclusion: Minimally invasive surgery significantly facilitates immediate post-operative evolution by decreasing hospital stay length. This advantage appears to be optimal for the robotically assisted approach, which also was oncologically efficient, and safer than the 2 other minimally invasive techniques in terms of conversion and Clavien III complication rate. Robotic nephro-ureterectomy is therefore now our preferred technique.

MP32-5 Comparative study of Optimal Outcomes on Robot-assisted Partial Nephrectomy for T1a and T1b Renal Masses: Propenstity score matched study

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Introduction: The new concept of 'optimal outcomes' the pentafecta of oncology, complications and functional outcome has been proposed as a measure of effectiveness of robotic partial nephrectomy (RPN) in the treatment of renal masses. The utility of 'optimal outcome' for the assessment of larger renal tumors has not been studied. This study was to assess the comparative optimal outcomes in cases of RPN between T1a and T1b renal tumors, in a large tertiary center.
Methods: We retrospectively reviewed the medical records of 277 cases of RPN performed from 2007 to 2015. Sixty patients with clinically T1b renal masses (>4 cm and ≤7 cm) were identified, and from 180 patients with clinically T1a renal mass, 60 patients were matched with T1b renal mass by propensity score (preoperative variable: age, sex, body mass index, ASA score). Tumor complexity was investigated according to R.E.N.A.L nephrometry score. The 'optimal outcome' was defined as achievement of Trifecta (negative surgical margin, no perioperative complications and warm ischemia time of ≤25 minutes) with addition of over 90% estimated GFR preservation and no chronic kidney disease stage upgrading (postoperative 6 months).
Results: Preoperative variables (age, sex, body mass index, ASA score) were similar between T1a and T1b after propensity score matching. The mean R.E.N.A.L. Nephrometry score was 7.45 vs 8.88 for T1a and T1b respectively (p < 0.001). The mean warm ischemia time was 20.1 min vs 26.2 min (p < 0.001). Positive surgical margin rate was 6.7% vs 8.3% (p = 0.729) and overall complication rate of 13.3%. vs 15% (p = 0.793). The rate of achievement of trifecta rate was 65.3% vs 43.3% (p = 0.017) and 'optimal outcome' was 38.3% vs 26.7% (p = 0.172).

Conclusion: The rate of 'Optimal outcomes' after RPN was comparable between T1a and T1b renal masses. RPN is feasible modality for even larger mass of T1b patients with comparable intermediate term renal function.

MP32-6 Tumour characteristics are more important than patient's conditions in predicting complications after RAPN: Results of a single-center study on 104 patients treated by a single-surgeon robotic-skilled

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Introduction: Nephron-sparing surgery is considered the gold standard of surgical treatment for localized renal masses. The aim of the present study was to identify preoperative clinical factors (related to patients and tumours) and intraoperative parameters, which can predict the development and severity of postoperative complications in patients undergoing RAPN.
Materials & Methods: This is a retrospective study of a consecutive series of 104 patients undergoing RAPN by a single robotic-skilled surgeon. We collected the main clinical pre-, intra-, post-operative and pathological variables, including complications. Univariable and multivariable analyses were performed.
Results: The PADUA score was correlated with operative time ($p = 0.009$) and warm ischemia time (WIT) ($p = 0.043$), which was associated with renal function alteration in the immediate postoperative period ($p = 0.004$). 57 patients (54.8%) developed one or more postoperative complications, including 9 cases (8.7%) of major ones (grades 3–4 acc. DC). The PADUA score, considered both as a continuous value ($p = 0.005$) and as low, intermediate and high classes ($p = 0.018$), was correlated with the risk of postoperative complications in both univariable and multivariable analyses (OR = 1.59, $p = 0.004$). The risk of postoperative complications was correlated with cT ($p = 0.02$), clinical tumor diameter ($p = 0.002$). Patients' characteristics (such as age, gender, ASA class, Charlson score, previous abdominal surgery, BMI, anticoagulation/antiplatelet therapy) did not seem to predict postoperative complications. Comparing preoperative and postoperative eGFR-MDRD we found a significant difference ($p = 0.0018$), becoming no significant during the follow-up. The impact of learning curve of a robotic-skilled surgeon is limited to operative time and WIT, but not involves overall complication rate. The study is limited by the retrospective character of the study and the number of cases examined.
Conclusions: Tumor size and anatomic tumor features according to the PADUA score are independent predictors of postoperative complications. Patients' characteristics are not predictors of postoperative complications.

MP32-7 Robotic Assisted Laparoscopic Partial Nephrectomy (RPN) in Patients on Anticoagulation/Antiplatelet Agents

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Introduction: Robotic assisted partial nephrectomy (RPN) has become the standard in surgical treatment of SRMs. We compared patients on anticoagulation who underwent RPN to those without anticoagulation.

Table 1: Preoperative and Demographic Comparison of Patients Based on Anticoagulation Status

Parameter	Any Anticoagulation	No Anticoagulation	p-value
	n = 32 patients	n = 110 patients	
Avg Tumor Size (cm)	2.8	2.8	-
Nephrometry Score	5.9	5.8	-
Charlson Comorbidity Index	5.0	3.8	0.011
Age (years)	65.6	57.6	0.005
Length of Stay (days)	4.2	3.4	0.015
Median Post Op Day Drain Removed	7.3	3.5	0.007
Complications % (Clavian > 3)	12.5%	6.3%	0.246
Positive Margin %	6.7%	1.0%	0.069

Table 2. Comparison of Patients in Whom Aspirin was Continued and Patients in Whom it was Stopped

Parameter	Continued ASA	Held ASA	p-value
	n = 8 patients	n = 19 patients	
Avg Tumor Size (cm)	5.3	2.7	0.115
Nephrometry Score	8.0	5.7	0.001
Charlson Comorbidity Index	5.1	5.0	0.970
Age (years)	60.5	68.1	0.113
Length of Stay (days)	7.5	4.2	0.053
Median Post Op Day Drain Removed	10.0	11.1	0.234
Complications % (Clavian > 3)	50.0%	5.3%	0.006
Positive Margin %	12.5%	5.3%	0.515

Methods: 150 patients underwent robotic partial nephrectomy by a single surgeon from 11/2011 to 4/2015 were retrospectively reviewed including patients on Aspirin, Coumadin, Clopidogrel. 9 patients remained on aspirin throughout the perioperative period. Perioperative parameters were reviewed.
Results: Parameters were compared between patients on anticoagulation/antiplatelet agents to those not (Table 1). Age (65.5 yrs. vs. 57.6 yrs., $p = 0.005$) and Charlson Comorbidity Index (5.0 vs.3.8, $p = 0.011$) were significantly different across the two cohorts. Length of hospital stay (4.2 d vs. 3.4 d, $p = 0.015$) and median postoperative day of drain removal (7.3 d vs. 3.5 d $p = 0.007$) were also significantly different. 27 patients were on aspirin and 8 of these patients remained on aspirin through the time of their surgery. Comparing those patients who remained on aspirin (8 patients) perioperatively against those for whom aspirin was held (19 patients), nephrometry score (8 vs. 5.7) and complications (3 patients vs. 1 patient) were significantly different (Table 2).
Conclusions: RPN for select patients on anticoagulation is feasible and efficacious. Patients had a significantly longer length of hospital stay and length of postoperative drain. There were more Clavien 3 complications amongst patients who remained on aspirin preoperatively although the tumors were also significantly more complex based on RENAL score.

MP32-8 Aspirin and Clopidogrel during Robotic Partial Nephrectomy, Is It Safe?

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Introduction: Continuation of antiplatelet medications through major urologic surgery may increase the risk of intraoperative and postoperative bleeding complications. However, withdrawal of antiplatelet therapy may place some patients at high risk of serious cardiovascular or cerebrovascular complications. We assess the feasibility of performing robotic partial nephrectomy (RPN) in patients maintained on aspirin or dual antiplatelet therapy with aspirin and clopidogrel.
Patients and Methods: Perioperative data was collected prospectively on 230 subjects undergoing RPN enrolled in an IRB approved quality of life study. We analyzed subjects who were maintained on either aspirin alone or both aspirin and clopidogrel throughout the operative and peri-operative period.
Results: Of the 230 patients, six were identified who continued antiplatelet medication throughout the perioperative period. Four patients were maintained on 81 mg of aspirin and two patients continued aspirin and clopidogrel. Average RENAL score was 7 with mean tumor size of 4.1 cm. There were no intraoperative complications and no conversions to open surgery. Average estimated blood loss was 242 ml. Ninety day complication rate was 33%. There were no major complications in the two patients maintained on dual antiplatelet therapy through the perioperative period. One patient on aspirin had postoperative bleeding on day 14 after restarting coumadin.
Conclusions: We present a case series demonstrating that in carefully selected patients, RPN on aspirin and clopidogrel is feasible and safe. This is the first report of patients who underwent RPN while on both aspirin and clopidogrel.

MP32-9 Robotic versus laparoscopic nephrectomy from a single centre: comparing apples with oranges?

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Introduction: Laparoscopic nephrectomy (LN) is the standard approach for localised renal tumours or simple nephrectomy. The role of robotic-assisted nephrectomy (RAN) is yet to be determined. We compared surgical outcomes of robotic nephrectomy with the conventional laparoscopic approach.
Patients & Methods: Data was collected retrospectively in patients undergoing LN and RAN between 2011 and 2014 at a single centre, including 116 patients who underwent nephrectomy; 56(48%) RAN vs. 60 LN. Comparative analyses were performed using the Mann-Whitney-U test and Chi-squared test.
Results: 70% of LN & 84% of RAN were performed for malignancy. The RAN group had a significantly higher ASA grade ($p < 0.05$) with a higher TNM stage and tumour size observed. 44% of RAN tumours were stage ≥T2b (including 1 requiring caval thrombus resection, 2 IVC repairs, 2 splenectomies, 1 BMI > 70 and 4 retroperitoneal lymphadenectomies) compared with 32% in the LN cohort. There was an increased length of stay, 4 vs. 3 days ($p < 0.05$) in the RAN cohort, likely due to the higher ASA grades. 1 LN required open conversion (caval injury), with none in RAN cohort. No significant differences in pre & post-op Hb, eGFR, operating time, estimated blood loss or Clavien-Dindo complications (2 vs 3 grade III/IV) were identified between groups.
Conclusions: Surgical outcomes of RAN and LN are comparable despite more challenging tumours and co-morbid patients in the robotic group. RAN may provide the surgeon with greater ability to attempt more difficult cases and manage intra-operative complications that may otherwise lead to open conversion.

MP32-10 Off-Clamp Robotic-Assisted Partial Nephrectomy

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Introduction: Robot-assisted partial nephrectomy (RAPN) is an effective option in the management of small renal masses. Off-clamp minimally invasive partial nephrectomy has emerged in an attempt to minimize the loss of renal function by eliminating ischemic renal injury. In the accompanying video we demonstrate our technique for off-clamp RAPN in a patient with a complex 3.6 cm hilar tumor.
Materials and Methods: We performed a retrospective review of our off-clamp RAPN experience between August 2007 and March 2015. Patient demographics, operative information, perioperative outcomes, and renal functional outcomes were evaluated. Estimated glomerular filtration rate (eGFR) was calculated with the Chronic Kidney Disease Epidemiology Collaboration formula.
Results: 187 patients underwent off-clamp RAPN during the study period. Mean (standard deviation) age was 58.8 (11.8) years, BMI was 32.2 (8.3) kg/m^2, clinical tumor size was 2.9 (1.6) cm, with a nephrometry score of 6.9 (2.1). The mean operative time was 169 (61) min, and the mean estimated blood loss was 242 (299) mL. Surgical margins were positive in 2/187 (1.1%) cases. The mean hospital length of stay was 2 (1.3) days. There were 14/187 (7.5%) postoperative complications. Mean decline in eGFR was 6.5 (16.9) mL/minute/1.73 m^2, representing a 6.8 (21.4)% change. The average follow-up was 454 days (range 15 – 2195 days). There was a single recurrence (0.53%) at postoperative day 596. The patient is undergoing observation due to significant medical comorbidities.
Conclusions: The off-clamp RAPN technique, which eliminates warm ischemic time, is both safe and effective in the treatment of renal tumors in our experience. The procedure should be performed by an experienced surgeon, and we have found that this technique is applicable to most tumors amenable to minimally invasive partial nephrectomy.

MP32-11 Partial Nephrectomy: Comparison of open and robotic techniques in a single centre

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Introduction: Partial nephrectomy (PN) is the standard of care for the management of small renal masses: renal functional outcomes are superior without compromising oncological result. Robot-assisted partial nephrectomy (RAPN) is a minimally invasive option for nephron-sparing surgery. We compared the early patient outcomes of open and robotic partial nephrectomy.
Method: We retrospectively reviewed 123 consecutive planned PNs (81 Open and 42 robotic) for suspected RCC. Comparison of open PN and RAPN was performed with respect to patient demographics, and perioperative outcomes.
Results: The table highlights some of the main findings: The 112 cases were performed between 2009 and 2014. Follow-up is ongoing. There have been no local recurrences so far.
Conclusions: RAPN appears safe and effective for management of small renal lesions in selected patients. Our patients had less

	Open PN (Range)	Robotic PN (Range)
Mean Age (years)	60 (27-86)	60 (30-78)
Number of Male Patients (%)	47 (58%)	23 (55%)
Size of renal lesion (mm)	39 (15-100)	33 (15-58)
Mean Console time in min	NA	106 (75-160)
Mean ischaemia time in min	13 (5-24)	18(9-28)
Mean estimated blood loss ml	338 (30-1500)	226 (50-1300)
Median post op drop in Haemoglobin	120 (89-159)	125(85-153)
Median post op drop in eGFR (mL/min/1.73m2)	17	6
Malignant lesions, n (%)	72 (89%)	37 (87%)
T1 lesions: number (%)	64 (79%)	34(81%)
Margin positive	2 (2.5%)	2 (4.8%)
Median(Range) Hospital stay, days	5(2-22)	3 (2-6)
Clavien-Dindo Complications: I/II	9	3
III+	3	3

blood loss and a shorter hospital stay when having robot-assisted surgery. Longer term follow-up continues.

MP32-12 Use of the Satinsky clamp in a multi-center cohort of patients undergoing robotic partial nephrectomy

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Introduction & Objectives: The Satinsky clamp is an alternative to bulldog clamps for renal hilar control during robotic partial nephrectomy (RPN). We compared the outcomes of RPN when the Satinsky clamp was used with the outcomes when bulldog clamps were used.
Methods: A multicenter database of RPN at 5 academic institutions included 1073 patients with recorded method of hilar clamping. Patient and tumor characteristics, and peri-operative outcomes were compared between Satinsky and bulldog clamp groups.
Results: The Satinsky clamp was used in 94/1073 (8.8%) cases in this cohort. Frequency of its use has decreased over time with < 10% of the 94 cases using the Satinsky clamp in the last 3 years.

Satinsky clamp cases had a longer operative time, longer warm ischemia time, higher estimated blood loss and higher transfusion rate. There were six intraoperative complications in the Satinsky group, one of which was a renal vessel injury, which could potentially be associated with the Satinsky. Although intraoperative complication rate was higher in the Satinsky group on univariate analysis, this was not found to be significant on multivariate analysis. The Satinsky clamp was not associated with higher major post operative complication rate, positive surgical margin rate or percentage eGFR decrease.
Conclusions: In a multicenter study of RPN, the Satinsky clamp was used for hilar clamping in a small percentage of cases early in surgeon experience. These cases had a higher blood loss, which could make bulldog clamps more challenging. Despite this, major complications, positive surgical margins and reduction in eGFR were not associated with use of the Satinsky clamp.

Table 1: Comparison of patient characteristics and perioperative outcomes of 1073 RPN patients based on type of hilar clamping.

	Satinsky (n=94)	Bulldog (n=979)	p value
Age(y)	58(53-70)	60(52-67)	0.463
Male Sex	61(64.9%)	588(60.1%)	0.360
BMI	28.3(26-33)	29.3(26-33.6)	0.446
Age adjusted Charlson comorbidity index	5(4.75-8)	5(3-7)	0.002
Tumor size(cm)	2.6(2.03-3.58)	2.7(2-3.8)	0.869
RENAL score	7(6-9)	7(6-9)	0.525
Hilar tumor location	2(9.5%)	94(16%)	0.426
Pre-operative eGFR	80.3(68.1-94.6)	84.1(67.6-99.2)	0.225
Multiple ipsilateral tumors	7(6.7%)	64(6.6%)	0.713
Multiple renal arteries	14(14.9%)	162(23.4%)	0.062
Retroperitoneal approach	0(0%)	42(4.3%)	0.039
Operating room time(mins)	198(180-230)	175(138-214)	<0.001
Estimated blood loss(ml)	200(100-312.5)	100(75-200)	<0.001
Warm ischemia time(mins)	20(15-26)	19(14-24)	0.036
Length of stay(days)	3(3-4)	2(2-3)	< 0.001
% change in eGFR	-7.2(-22.3-6.2)	-11.7(-23.9-1.3)	0.051
Positive surgical margins	1(1.1%)	28(2.9%)	0.301
Blood transfusion	12(12.8%)	47(4.8%)	0.001
Intraoperative Complications	6(6.5%)	21(2.1%)	0.011
Postoperative complications(Clavien 3 or above)	6(6.5%)	41(4.3%)	0.338

MP32-13 Does occasional retroperitoneal robot-assisted partial nephrectomy negatively affect outcomes? A comparison of transperitoneal versus retroperitoneal robot-assisted partial nephrectomy.

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Introduction: To compare perioperative outcome of transperitoneal (TP) and retroperitoneal (RP) approaches during robot-assisted partial nephrectomy (RPN) at a single institution.
Methods: Retrospective analysis of a prospectively kept database of RPN for renal tumours was conducted. Time period: June 2010 to May 2015. TP was the default approach. RP was chosen in selected cases based on tumour (posterior or lateral tumours) and patient (previous extensive intra-peritoneal surgery) characteristics. PADUA score, operative time, estimated blood loss (EBL), warm ischaemic time (WIT), length of stay (LOS), change in eGFR and complications were compared between the TP and RP cohorts. Comparative analyses were performed using the Chi-squared test and Mann-Whitney-U test.
Results: A total of 189 patients underwent RPN. 170 patients underwent TP RPN and 19 underwent RP RPN. TP RPN had a higher EBL (mean 190 vs 155 ml, $p < 0.05$). There were no significant differences between TP and RP RPN in LOS (mean 3.2 vs 3.7 days). PADUA score (7.4 vs 6.8), WIT (17 vs 19 min), operative time (174 vs 175 min), or eGFR change. A total of 16 (8.4%) post-operative complications were identified. 2 patients required ureteric stent insertion for urine leak and 2 patients required selective angio-embolisation. There was no significant difference in incidence between the 2 cohorts.
Conclusions: In our series, RP RPN showed in general equivalent peri-operative characteristics to TP RPN. RP RPN is a safe, viable option in treatment of patients with posterior or lateral tumours, or in patients with previous extensive intra-peritoneal surgery.

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MP32-14 Racial disparities in Renal Cell Carcinoma: Histology and renal function of a contemporary cohort undergoing Robotic Partial Nephrectomy

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Introduction: A paucity of data exists describing racial differences in incidence of renal cell carcinoma. African Americans diagnosed with localized disease have been observed to experience a poorer survival time when compared to Caucasians.
Purpose: To identify variation in histology & renal function in patients of different ethnic groups that underwent partial nephrectomy.
Methods: A retrospective chart review on patients that underwent robotic NSS from 2008–2015 was performed. Multivariate analysis performed to identify factors affecting post-operative eGFR in Caucasians and AA.
Results: We identified 321 patients that underwent NSS at our institution: CA (n = 209), AA (n = 98), Hispanic (n = 10), and other ethnicity (n = 4). Age at surgery between AA and Caucasians was of 60.1 and 62.3 years of age, respectively ($p < 0.001$). There was a higher proportion of female patients in the AA cohort (46% females, 54% males) compared to the CA cohort (37% females, 63% males), ($p = 0.021$). Average BMI of AA and CA patients was 30.1 and 31.7, respectively. A significantly greater proportion of AA patients presented with diabetes than CA ($p < 0.001$).

Preoperative renal function did not differ significantly across races. Preoperative creatinine AA was 1.15 vs. Caucasians 1.12, respectively. Average eGFR pre-operatively was 70.35 for AA and 69.06 for CA. AA had a statistically significantly higher postoperative serum creatinine than CA, 1.59 mg/dl vs. 1.45 mg/dl, respectively ($p < 0.001$). Average post-operative eGFR was 50.59 for AA patients and 57.85 for CA. There was a greater absolute value of increase in serum creatinine postoperatively between AA and CA, 0.44 mg/dl vs 0.33 mg/dl, respectively ($p < 0.001$). Although diabetes was more prevalent in AA patients than CA, diabetes status did not significantly affect post-operative serum creatinine levels or eGFR values.

Clear cell renal cell carcinoma (RCC) was more prevalent in Caucasians compared to AA. revalence of papillary RCC ~three times greater for AA versus Caucasians. A survival advantage was paradoxically observed in Caucasians relative to AA for all histological subtypes.
Conclusions: There was a significantly greater increase in serum creatinine postoperatively between AA and CA groups, 0.44 mg/dl vs 0.33 mg/dl respectively. While clear cell RCC was the most common pathology among both AA and CA, papillary RCC had a ~three-fold higher incidence in the AA group.

MP32-15 Five-year Oncologic and Functional Outcomes after Robotic Partial Nephrectomy

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Korea, Republic of

Introduction: There is still lack of relevant studies of robotic partial nephrectomy on its long-term outcomes as it is a relatively new technique. Herein we report the long-term outcomes of robotic partial nephrectomy at our institution.
Materials and Methods: We performed a chart review of patients who had undergone robotic partial nephrectomy since August 2007; patients with a minimum of 5 years of follow-up were included in this study. The demographic, preoperative, and postoperative data were statistically analyzed. Patient's estimated glomerular filtration rate (eGFR) was determined using the Modification of Diet in Renal Disease formula. The Kaplan-Meier method was used to calculate overall survival (OS) and cancer-free survival (CFS).
Results: Out of the patients who underwent robotic partial nephrectomy during the study period, 87 patients had a minimum follow-up of 5 years and up to 7.8 years. Median follow-up was 64 (IQR 60–71) months. Patients had a median age of 51 (IQR 44–60) years; median BMI of 24.4 (IQR 22.6–26.6) kg/m^2 and there were 60 male patients (69%). The median tumor size was 2.8 (IQR 2.1–4.45) cm and the median RENAL nephrometry score was 7 (IQR 6–8). The median operative time was 176 (IQR 136–220) minutes, with mean warm ischemia time of 26 (IQR 19–34) minutes. A total of 7 intraoperative complications (8%) and 3 high-grade Clavien complication (3.4%) occurred. Renal cell carcinoma was confirmed in 78 patients (90%) with tumor stage pT1a in 57 patients (65.5%). All surgical margins were pathologically negative except for 1 patient (1.1%), and at 60-month follow-up, this case continues to show no evidence of recurrence. The OS was found to be 95.4% at 5 year and CFS was 94.3% at 5 year. The median preoperative GFR was 88.1 (IQR 78.1–98.7) ml/min/1.73 m^2; the latest postoperative GFR was 87.5 (IQR 74.8–98.7) ml/min/1.73 m^2, with a −0.7 (IQR −9.5–10.6) change. There was a 19.5% upstaging of CKD postoperatively, but no patients started dialysis.
Conclusion: This study reaffirms that robotic partial nephrectomy has comparable results with other nephron sparing surgical options.

MP32-16 Robotic Partial Nephrectomy Demonstrates Similar Perioperative and Renal Functional Outcomes as Open Partial Nephrectomy in Patients with Pre-operative Chronic Kidney Disease: Trifecta Analysis

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Introduction and Objective: Partial nephrectomy (PN) in setting of pre-existing chronic kidney disease (CKD) is has significant risk for short and long term hemodialysis (HD). We compared renal functional and perioperative outcomes of open and robotic PN (OPN and RPN) in patients with pre-operative CKD.
Patients and Methods: Multicenter retrospective analysis of patients with pre-operative CKD that underwent RPN or OPN from 07/2005-07/2014. CKD was defined as estimated Glomerular Filtration Rate (eGFR) < 60 mL/min/1.73 m2 (MDRD). Demographics, disease characteristics, perioperative and renal functional outcomes were analyzed between OPN and RPN groups. Primary outcome was change in eGFR between preoperative to 6 month postoperative value (DeGFR), with secondary outcomes including short term and long term HD rates, estimated blood loss, (EBL) complications (Clavien), and transfusion rates. Trifecta, a composite measure of surgical quality outcomes, was defined as simultaneous achievement of: negative margins, no Clavien 3–5 or GU complications, and ecovery from ischemia (eGFR saved/volume saved) ≥80%. Multi-variable analysis (MVA) was performed to identify risk factors associated with long term HD.

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Result: 129 patients with pre-operative CKD who underwent PN were identified (median follow up 31 months); 48 (37.2%) underwent RPN and 81 (62.8%) underwent OPN. There were no differences in demographic variables. RPN had significantly lower clinical tumor size (2.1 vs. 3.6 cm, $p < 0.001$), though proportions of distribution of RENAL scores were similar ($p = 0.156$). RPN had lower EBL (150 vs. 250 mL, $p = 0.002$), and length of stay (4 vs. 6 days, $p = 0.048$). There were no differences between RPN vs. OPN in median ischemia time (23 vs. 26 min, $p = 0.181$), complication rate ($p = 0.691$), margin status ($p = 0.55$), DeGFR (-2.4 vs. –4.1, $p = 0.79$), DeGFR within RENAL score complexity groups, and hemodialysis at last follow-up (2% vs. 9%, $p = 0.21$). Trifeca was achieved in 46 (56.8%) OPN and 27 (56.3%) RPN ($p = 0.952$). On MVA, there were no factors that independently associated with long term hemodialysis.
Conclusion: In patients with pre-operative CKD, those who underwent RPN demonstrated similar perioperative and renal functional and Trifecta outcomes as OPN patients, while conferring benefit with respect to length of hospital stay and EBL. The overall distribution of RENAL scores was similar between the groups and the delta GFR within RENAL score complexity groups was similar. Our results suggest that RPN can be safely performed with comparable renal function to OPN for appropriate patients.

MP32-17 Robot-assisted laparoscopic retroperitoneal laparoscopic partial nephrectomy with 4-arm method

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Introduction: Robot-assisted laparoscopic partial nephrectomy is considered an alternatives to laparoscopic partial nephrectomy because it reduces surgical time, warm ischemia time, and intraoperative blood loss. The surgery can be performed by transperitoneum or retroperitoneum. Using retroperitoneal method, the approach to renal hilum is easier and the postoperative recovery is faster. However, considering the limited retroperitoneal space, it can lead to prolonged surgical time or even incomplete resection if the tumor is located at upper pole, anterior aspect, or large volume. To overcome this limitation, we started 4-arm method during robotic partial nephrectomy.

Material and methods: In our hospital, we started robotic partial nephrectomy since August 2012. 40 patients received the surgery during this time, and most of the procedure were performed retroperitoneally. We started 4-arm method since May 2014, and 22 of 40 patients underwent this method.
Result: 22 patienta received robotic partial nephrectomy with 4-arm method. The average warm ischemia time is 17 mins 23 sec. Estimated blood loss was 470 ml. We would like to share the video, showing the excellence traction and surgical site exposure in different tumor situations.

Conclusion: using 4-arm method in robot-assisted retroperitoneal laparoscopic partial nephrectomy, we are able to approach renal tumor in different position with high R.E.N.A.L. score, and stay in retroperitoneal space at the same time.

MP32-18 Single centre experience employing a default extra-peritoneal approach for robotic assisted laparoscopic partial nephrectomy

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Introduction: Partial nephrectomy (PN) is a preferable management option for localised renal cancer, irrespective of the surgical approach. In this study we analyse our perioperative, oncological and functional results of the robotic assisted laparoscopic PN (RAPN).
Material and methods: Between June 2010 and June 2015, 162 RAPN were performed by a single surgeon at our institution and the data has been collected prospectively. Whatever the route, the procedure is optimised for four ports (three robotic and one assistant port). Descriptive statistics were used for this analysis.
Results: The median patients age was 60.5 yr (interquartile range [IQR]: 52–68) and male: female ratio was 2:1. Median tumor diameter was 2.8 cm (IQR: 2.2–3.5) and median R.E.N.A.L nephrometry score was 6 (IQR: 5–7). In 142 cases (87.7%) a retroperitoneal approach was used. Median operative time and warm ischemia time were 135 min (IQR: 110–160) and 20 min (IQR: 16–25), respectively. Median estimated blood loss was 20 ml (IQR: 0–68.5) and median length of stay was 1 day (IQR: 1–2). 4 cases (2.5%) were converted to radical nephrectomy, 10 patients (6.7%) experienced complications (Clavien: grade 1– 2, grade 2 – 4, 3a – 3, and 3b – 1). Overall, 119 cases had malignant pathology (stage pT1a – 104, pT1b – 10, pT3a – 4, pT3b – 1), in 10 cases (8.4%) positive surgical margins were reported. After median follow-up of 29.5 months (IQR: 15.5–41) 1 patient experienced disease recurrence.
Conclusions: This study reaffirms the oncological and functional effectiveness of RAPN in the management of small renal tumours. A retroperitoneal route can be successfully used for the majority tumour localisations, this study confirming the generally shorter operating time, intraoperative blood loss, post operative complications and more rapid discharge from hospital associated with this approach.

MP32-19 Robotic Partial Nephrectomy Becomes cost neutral copmared to open partial nephrectomy during a period of increasing utlilization

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Objectives: To study trends in cost and utilization of robotic-assistance during partial nephrectomy.
Patients and Methods: Adult patients ($\geq$18 years) undergoing partial nephrectomy for localized primary renal malignancy were identified using the 2009 to 2012 Nationwide Inpatient Sample database. Robotic-assistance coding (17.4x) became available the final quarter of 2008. Discharge weights were used to calculate national level estimates of procedures performed. Total hospital cost was used as the primary outcome. A multivariable linear regression model was used to adjust for patient and hospital characteristics.
Results: There were 32,664 (58%) open, 3,498 (6%) laparoscopic, and 20,350 (36%) robot-assisted partial nephrectomies between 2009 and 2011. The total number of partial nephrectomies performed in the United States increased by 89% between 2009 ($n = 10{,}530$) and 2012 ($n = 19{,}860$) with robotic partial nephrectomies (RPN) representing the majority (73%) of the increase. Robotic partial nephrectomy increased from 1,029 cases in the first half of 2009 to 9,300 in the last half of 2012, and the proportion of all partials performed with robotic-assistance increased from 20% to 49% during the same period. After

Multiple linear regression examining average hospital costs associated with partial nephrectomy (Also included in model: Age, gender, Charlson comorbidity index, and hospital region)

	2009		2012	
	Coefficient (95% CI)	p-value	Coefficient (95% CI)	p-value
open	reference	--	Reference	--
Lap.	-$677 (-$1862-$508)	0.262	-$1192 (-$2388-$3)	0.051
Robotic	+$1464 (-$368-$2561)	0.009	-$456 (-$1285-$372)	0.28

adjusting for Charlson Comorbidity index, demographics, and hospital region the cost of robotic-assistance went from $1,464 (p = 0.009) more than open in 2009 to $456 (p = 0.28) less than open partial nephrectomy in 2012.
Conclusion: Robotic partial nephrectomy utilization surpassed open in 2012 in the United States. The cost difference between the robotic and open approaches decreased during the study period and by 2011 was not statistically different.

MP32-20 Robotic partial nephrectomy for multiple ipsilateral renal tumors: a multi-institutional analysis of perioperative and functional outcomes

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Introduction and Objectives: Multiple ipsilateral renal tumors may pose significant surgical challenges. We report our experience with robot-assisted partial nephrectomy (RAPN) in a contemporary cohort of patients presenting with multiple tumors.
Material and methods: Data from 1,820 patients undergoing RAPN at five high-volume centers between 2006 and 2014 were retrospectively reviewed to identify patients with multiple ipsilateral tumors. Multivariate logistic and linear regression models were fitted to compare their perioperative and functional outcomes with patients with solitary renal tumors, controlling for baseline patient (age, sex, body mass index, comorbidities) and index tumor characteristics (preoperative tumor size, nephrometry score, tumor complexity and complex hilar anatomy) in a propensity score adjusted multi-variate analysis (MVA).
Results: 116 (6.4%) patients presented with multiple ipsilateral renal tumors (median = 2, range 2–6), including 29 (25%) who also had a contralateral tumor (not operated upon in the same setting). While median preoperative tumor size (2.6 vs. 2.7 cm) and RENAL nephrometry scores (8 vs. 7) were comparable in multiple vs. solitary tumor cohorts, significantly more patients with multiple tumors had Stage 3 or greater chronic kidney disease (32.7% vs. 20.7%, p = 0.003). Significantly higher estimated blood loss (EBL) (150 vs. 100 ml), longer operating room (OR) (199 vs.167 min) and warm ischemia time (WIT) (22 vs. 19 min) were seen in patients with multiple tumors (Table 1). Out of 10 (8.8%) patients with positive surgical margins (PSM) in the multiple tumor cohort, 50% were papillary renal cell carcinoma (RCC) and no recurrence was noted over a mean follow-up of 10.15 months. 4 (4.7%) patients with multiple tumors developed local recurrence, 3 (75%) of which were bilateral multifocal papillary RCC and treated with cryoablation. On propensity score adjusted MVA, presence of multiple tumors was not independently associated with OR time, EBL, WIT, length of stay, % change in estimated glomerular filtration rate (at median follow-up of 18 months), PSM or local recurrence rates, with RENAL nephrometry score of the index tumor showing the strongest correlation with these endpoints.
Conclusions: 6.4% of patients undergoing RAPN in a large multi-center study presented with multiple ipsilateral renal tumors. Our analysis shows that RAPN is safe and feasible in appropriately selected patients with ipsilateral renal tumors and is not independently associated with inferior perioperative, functional or surgical margin rates. Outcomes seem to be primarily governed by the complexity of the index tumor.

MP32-21 Microwave Ablation for Facilitating Zero-Ischemia Robot-Assisted Laparoscopic Partial Nephrectomy

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Introduction: Ablative therapies such as cryoablation and radiofrequency ablation have become accepted alternative therapies for small renal masses, especially in patients that are poor surgical candidates. More recently, microwave (MW) ablation therapy has been approved for soft tissue lesions. We present a case of a small renal mass treated with laparoscopic MW ablation followed by off-clamp robot-assisted laparoscopic partial nephrectomy (RALPN).
Materials and Methods: The patient is a 67 year old female who was incidentally found to have a 2.7 cm left enhancing renal mass on cross sectional imaging during an evaluation for right-sided nephrolithiasis. The patient elected to undergo MW ablation followed by left RALPN for this renal lesion. MW ablation of the renal mass was offered to assess the effectiveness of this therapy for treating malignant tissue and to facilitate zero-ischemia partial nephrectomy by obviating the need for renal hilar clamping. The coagulative effect of MW ablation has been shown to minimize bleeding from treated soft tissue resection sites. The patient was positioned in a modified right lateral decubitus position. A 4 trocar template was used for the procedure. The lower pole of the left kidney was mobilized, and the left renal artery and vein were dissected and isolated. A biopsy of the renal lesion was performed prior to MW ablation. A 5 minute MW cycle was performed using one 17 gauge antenna (Certus 140; Neuwave Medical, Madison, WI) at 65 watts. Off-clamp robot-assisted partial nephrectomy was then performed followed by renorrhaphy. A Jackson-Pratt drain was placed for postoperative drainage.
Results: Total operative time was 197 minutes and estimated blood loss was 30 cc. The patient had an uncomplicated postoperative course, and was discharged home on the second postoperative day. The pathology report from the biopsy and from the partial nephrectomy specimen revealed clear cell renal cell carcinoma, Fuhrman grade 3, with negative margins. Coagulative necrosis was noted within the central portion of the tumor with viable tumor cells noted at the periphery.
Conclusion: To our knowledge, this is the first report of robot-assisted laparoscopic partial nephrectomy following MW ablation for renal cell carcinoma. MW ablation has been confirmed to destroy renal cell carcinoma at the microscopic level. Furthermore, MW ablation has the ability to facilitate off-clamp zero-ischemia renal surgery by coagulating the renal parenchyma immediately surrounding the renal mass. Further investigation into the adjunctive role of microwave ablation for renal tumors is warranted.

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MP32-22 High Volume robotic partial nephrectomy centers: is there a difference between teaching VS. nonteaching hospitals?

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Introduction: Robot assisted partial nephrectomy (RAPN) has been adopted as the preferred modality for nephron sparing surgery at high volume centers. However, it is not well established whether there is a difference in outcomes between high volume community surgical centers compared to high volume academic centers. This issue may be particularly crucial for RAPN, which may require an experienced surgical assistant. We evaluated high volume teaching and non-teaching hospitals on several perioperative metrics.
Material and Methods: We retrospectively reviewed all RAPN patients at Kaiser Permanente Southern California from January 2011 - December 2013. We determined the difficulty of the tumor excision by calculating the well validated R.E.N.A.L Nephrometry score using the pre-operative CT. We obtained the warm ischemia time (WIT), estimated blood loss (EBL), operative times, length of hospital stay, pre and 90-day post-operative creatinine values as well as 30 and 90-day readmission rates. A total of 163 RAPN had a calculated R.E.N.A.L. score and recorded WIT. The cases were divided into two groups: teaching hospital (n = 86) and nonteaching hospital (n = 77). All RAPNs were performed at hospitals considered to be high volume centers. Cases were matched by R.E.N.A.L score and the median WIT, EBL, operative times, length of hospital stay, change in creatinine and readmission rates were compared using Wilcoxon rank sum test.
Results: The cohorts did not differ significantly in regards to age, sex, body mass index, Charlson score or tumor complexity. When adjusting for Nephrometry score, we found no statistically significant difference in WIT, EBL, change in creatinine, or readmission rates at both 30 and 90 days post-operatively between the cohorts. There was, however, a statistically significant difference in length of hospital stay and operative times. Patients in the teaching hospitals had a longer hospital stay compared to nonteaching hospitals (4 days vs 3 days respectively, $p < 0.05$). Moreover, the median operative time was less in the nonteaching hospitals (215 min vs. 237 min respectively, $p < 0.05$).
Conclusions: Within an integrated healthcare system, we found that, other than the length of hospital stay and operative time, teaching hospitals have no negative effect on WIT, EBL or change in creatinine during RAPN. While operative time may be longer in teaching hospitals by 22 minutes, this may not be clinically significant. The increased hospital stay may be a result of clinical pathways established within our healthcare system. This study demonstrates that resident teaching may not have significant adverse perioperative outcomes for RAPN.

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MP33 - NEW TECHNOLOGY 2

MP33-1 Suprapubic-assisted laparoendoscopic single-site surgery for nephrectomy: analysis of a single-surgeon learning curve of 30 cases

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Introduction: To discuss the learning curve of Suprapubic-assisted laparoendoscopic single-site surgery (SA-LESS) nephrectomy.
Materials and Methods: We retrospectively analyzed the clinical data of 30 patients, who underwent SA-LESS nephrectomy performed by a surgeon from July 2010 to Jan 2012 in our hospital. The patients were divided into three groups (groups A, B and C, 10 cases in each) by time sequence.

The operative time, estimated blood loss, postoperative complications, conversion rate, as well as postoperative hospital stay were compared among the three groups.
Results: There was no statistically significant difference in age, gender, body mass index(BMI) and American Society of Anesthesiologist(ASA)scores, among these three groups($P > 0.05$). Group A showed a significantly longer operative time, more estimated blood loss than those in the groups B and C. However, there was no statistically significant difference in operation time and blood loss between B and C. No statistically significant difference was found in postoperative complications, conversion rate and postoperative hospital stay among the three groups.
Conclusions: SA-LESS nephrectomy appears to be feasible and effective with a gentle learning curve for an experienced laparoscopist.

MP33-2 A nationwide survey of laparo-endoscopic single-site and reduced port surgery in Japan

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Background: Despite an increase of laparo-endoscopic single-site surgery (LESS) and reduced port surgery (RPS) in recent years, a national survey on these procedures has not been performed in Japan. We performed a nationwide survey to clarify the current situation of LESS and RPS in Japanese urologists.
Material and Methods: A nationwide survey was conducted in the form of a questionnaire asking for information about LESS and RPS that had been performed in each department by the 31th March, 2014. Forty-two major urological departments in which LESS and RPS had been performed actually in Japan participated in the study. Numbers of operation including adrenarectomy,

renal cancer surgery, simple nephrectomy, nephroureterectomy, pyeloplasty, prostatectomy, etc. were accumulated. We also asked about the conventional laparoscopic surgery which had been performed at the same period.
Results: We received 32 responses (76.19%). Total number of cases had been performed were 1091 between January 2008 to March 2014, including 371 adrenarectomy, 210 radical nephrectomy, 30 simple nephrectomy for benign tumor, 79 donor nephrectomy, 55 total nephroureterectomy, 84 pyeloplasty, 171 radical prostatectomy, 26 surgery for urachal remnant, 14 varicocelectomy, 12 removal of retroperitoneal tumor and 39 others. In this research, the number of adrenarectomy, simple nephrectomy for benign tumor, donor nephrectomy and pyeloplasty in LESS and RPS group were more than that in conventional laparoscopic surgery group.
Conclusions: Even though LESS and RPS are considered technically difficult, the number of these procedures have increased in recent years. Data of this survey elucidated a certain role of LESS and RPS in Japanese urologists.

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MP33-3 Transvaginal Natural Orifice Transluminal Endoscopic Surgery (NOTES)-Assisted Laparoscopic Heminephrectomy in Duplex Kidney: Report of 4 Cases

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Introduction: Duplication of the ureter and renal pelvis is the most common anomaly of the upper urinary tract. This study aimed to investigate the safety, feasibility and efficacy of transvaginal NOTES-assisted laparoscopic heminephrectomy (TV-NOTES-HN) for duplex kidney.
Materials and Methods: From October 2013 to August 2014, a total of 4 patients with duplex kidney (1 on the right and 3 on the left) with the age of 28, 32, 37 and 21 years and BMI of 26.48, 20.82, 19.23 and 24.33 Kg/m^2, respectively, underwent TV-NOTES-HN. All cases were confirmed by IVU, CT scan and MRI. Preoperative GFR was 39.47, 41.42, 35.83 and 44.29 ml/min respectively. The procedure was performed according to the standard laparoscopy with a trocar in the vagina and two trocars in the umbilicus. The specimen was retrieved through the enlarged incision at posterior vaginal fornix.
Results: The procedures were successfully performed in all patients without intraoperative or postoperative complications. Upper pole hemi-nephrectomy was performed on 3 cases and lower pole on one case. The operative time was 110, 102, 94 and 87 minutes, respectively. The estimated blood loss was 300, 160, 230 and 210 ml, respectively. The patient's recovery of bowel functions on postoperative day 1, 2, 1 and 1, respectively. The patients were discharged on postoperative day 8, 6, 9 and 7, respectively. Postoperative GFR was 31.48, 27.55, 24.45 and 26.79 ml/min, respectively. No urinoma or perinephric fluid occured. At a median (range) follow-up of 12.5 (7–17) months the posterior vaginal fornix and the umbilicus incision healed well. There was a hidden umbilicus scar. All cases began normal sexual life in postoperative 3 months, and Female Sexual Function Index (FSFI) was 29.1, 26.7, 28.4 and 27.4, respectively. All patients were satisfied with surgical results, especially cosmetic results. Patients with Scar Assessment Questionnaire (PSAQ) were 39, 37, 32 and 43, respectively.
Conclusions: TV-NOTES-HN for duplex kidney is safe, feasible and effective. More experience is required to determine reproducibility.

MP33-4 Chinese Patient Perceptions of Transvaginal Natural Orifice Transluminal Endoscopic Surgery

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Introduction: Natural orifice translumenal endoscopic surgery (NOTES) offers the possibility of surgery without visible scars. Patient perceptions of NOTES have been reported for the Western population. However, whether Chinese patients share the same perspectives as compared to the Western population is unknown. This study was designed to evaluate the perception of patient regarding NOTES in Chinese population.
Materials and Methods: This was a crosssectional survey carried out in the urological outpatient's clinic at the First Affiliated Hospital of Gannan Medical University between March and June 2014. Patients were provided with an information leaflet and asked to complete a questionnaire regarding their perceptions of and preferences for NOTES. Female patients attending the clinic were given an additional questionnaire regarding attitudes towards transvaginal surgery.
Results: Three hundred patients were recruited to complete the questionnaire and the male to female ratio was 1:2. Two hundred and sixteen patients (72%) preferred to undergo NOTES for cosmetic reasons. Transrectal routes were both acceptable for NOTES accesses in males and females. Seventy percent of the female patients would consider transvaginal NOTES. Of these patients, significantly more patients indicated that the reasons for choosing transvaginal NOTES were to reduce pain and to minimize the risk of hernia associated with the procedure. Younger nulliparous women were most concerned about the potential negative effect of NOTES on sexual function and fertility.
Conclusions: In China, patients preferred NOTES mainly for good cosmetic and less pain reasons. The transvaginal route was acceptable to females because the potential advantages of the emerging technology. However, the effect of transvaginal NOTES on sexual function and fertility was expressed as a particular concern by younger women.

MP33-5 Complications of transvaginal natural orifice transluminal endoscopic surgery (NOTES) in urology

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Introduction: To analyze the complications of urologic transvaginal natural orifice transluminal endoscopic surgery (TV-NOTES), and to explore effective measures for its prevention and management.
Materials and Methods: From May 2010 to February 2015, a total of 245 cases underwent TV-NOTES in our institute. Intraoperative and postoperative complications were graded according to Satava and ClavienDindo grade classifications

system. The major complications and their treatments were most importantly analyzed.
Results: Among the 245 TV-NOTES procedures, 5 case conversion to open surgery and one case conversion to suprapubic-assisted laparoendoscopic single-site surgery (SA-LESS). 31(12.65%) patients had intraoperative complications, the minor and major was 13(5.3%) and 18(7.35%), respectively. The intraoperative complications include 5 cases of pneumoderm, 4 cases of skin ecchymosis, 2 cases of pleural damage, 3 cases of liver injury, 1 case of adrenal central vein injury, 4 cases of spleen injury, 3 cases of inferior vena cava injury, 3 cases of renal veins injury, 1 case of right iliac vein injury, 1 case of bladder injury, 1 case of renal collecting system injury, 2 cases of colon injury, 1 case of rectum injury. The proportion of patients incurring minor and major postoperative complications undergoing TV-NOTES was 8.16% (n=20) and 1.2% (n=3), respectively. The postoperative complications include 1 case of adrenal crisis, 5 cases of incision infection, 10 cases of postoperative fever, 5 cases of postoperative bleeding, 1 case of the right external iliac artery thrombosis and 1 case of urinary leakage. No intraoperative and postoperative deaths occurred.
Conclusions: TV-NOTES operation is safe and feasible surgical technique in urology, and does not increase the incidence of complications. But there is a potential risk of major complications occurring, which should be paid more attention to.

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MP33-6 Application of three-dimensional (3D) laparoscopic technique in hybrid transvaginal NOTES nephrectomy

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Introduction: To explore the application of three-dimensional (3D) laparoscopic technique in hybrid transvaginal NOTES nephrectomy.
Materials and Methods: A total of 8 female patients underwent hybrid transvaginal NOTES nephrectomy using 3D laparoscopy system. Those included 4 cases of hydronephrosis, 3 cases of renal empyema, and 1 cases of renal atrophy. The median age was 39 (range 33 to 55) years, and body mass index was 23.7 (19.8 ~ 28.5) kg/m2. All patients were with unilateral disease and normal contralateral kidney. The perioperative data including operative time, estimated blood loss, and surgical outcome were analyzed
Results: The procedures were successfully completed. The median operative time was 100 (85 to 150) mins. The median estimated blood loss was 120 (80 to 450) ml. The patients were recover ambulation on postoperative day 1 to 2, and tolerated diet on postoperative day 2 to 3. The patients were discharged on postoperative day 7 to 8. There were no intraoperative or postoperative complications. During the 6- to 10-month follow-up period, all the patients were in good condition. The posterior colpotomy incision healed up well. There were two hidden umbilicus scars.
Conclusions: 3D laparoscopic technology can provide more clearly anatomical layering and vision, stronger sense of space, and more accurate positioning leading to reduced difficulty of operation, shortened operative time, reduced surgical complications, and steep learning curve of transvaginal NOTES nephrectomy.

MP33-7 Suprapubic assisted umbilical laparoendoscopic single-site surgery for duplex kidney in children : report of 9 cases

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Introduction: To evaluate the applied value of suprapubic assisted umbilical laparoendoscopic single-site surgery (SA-LESS) for duplex kidney in children.
Materials and Methods: Nine consecutive patients including 3 males and 6 females, with a mean age of 9 years (range 2 to 15), were subjected to SA-LESS heminephrectomy in our center. There were 1 duplex kidney with megaureter empyem, 4 duplex kidney with duplication of ureter, 2 duplex kidney with ectopic ureteral orifice and 2 duplex kidney with ureterocele in our study. Operative time, estimated blood loss, intra- and postoperative complications, length of postoperative hospitalization and follow-up outcomes were recorded.
Results: All the 9 procedures were successfully performed without conversion to open surgery. There were no intraoperative or postoperative complications. The median operative time was 81 (range 60 to 130) min. The median estimated blood loss was 35 (range 10 to 50) ml. No blood transfusions were required. Mean postoperative hospital stay was 7.5 days (range 7 to 10). During the 2- to 47-months follow-up, the suprapubical and umbilical incisions were healed well. The umbilical incision was hidden and difficult to find. No incisional hernia occurred. No perirenal urinary cyst and severe loss of renal function were founded by ultrasound and nephrogram.
Conclusions: SA-LESS for duplex kidney is safe, feasible, minimally invasive and cosmetic, while operation difficulty and risk is relatively low with shorter operation time. It is worth of clinical application.

MP33-8 Transabdominal scar-assisted transumbilical laparoendoscopic single-site surgery (U-LESS) in urology: A report of 52 cases

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Introduction: To explore the feasibility and clinical value of transabdominal scar-assisted transumbilical laparoendoscopic single-site surgery (U-LESS) in urology.
Materials and Methods: 52 patients, including 18 males and 34 females, underwent transabdominal scar-assisted U-LESS. The mean age was 40 (range 21 to 58) years. There were 22 patients with non-functioning hydronephrotic and atrophic kidney, 15 with ureteral calculi, 3 with adrenal gland tumor, 4 with renal cell carcinoma, 3 with renal cyst, 3 with ureteropelvic junction obstruction and 2 with lower ureter stricture. All the cases presented only one abdominal scar before surgery, including 16 cases with the history of caesarean section, 13 cases with birth control surgery, 8 cases with appendectomy, 3 cases with inguinal hernia repair, 5 cases with ureterolithotomy, one case with bladder lithotomy, and 6 cases with laparotomy surgery. The mean length

of scar is 7.4 (1.5 to 18.5) cm. Under general anesthesia, the patients were positioned in lithotomy with affected side elevated at 70°. Two trocars (5 mm or 10 mm) were introduced into abdominal cavity from the incisions at the right and left medial margin of umbilicus. A 10- or 5-mm trocar was inserted into the abdominal cavity through the abdominal scar under the direct vision. Our technique for the transabdominal scar-assisted U-LESS is similar to that of standard laparoscopy, using conventional operating apparatus placed in the umbilical trocars, under direct vision achieved by a flexible-tip 0 ° laparoscope placed through the trocar at the abdominal scar. The specimen was placed inside a homemade bag and removed under direct vision through an extended incision at the abdominal scar.
Results: All the procedures were successfully completed, and no additional transabdominal trocars were required. The mean operative time was 106, 67, 68, 85, 33, 112 and 103 mins for simple nephrectomy, radical nephrectomy, ureterolithotomy, adrenalectomy, renal cyst decortication, pyeloplasty, and ureteral reimplantation, respectively. Each postoperative course was uneventful, and no complication was recorded. The mean visual analog scale pain scores was 2.5 (1 to 10) on the first day after surgery. The mean time for full ambulation was 1.5 (1–2) days. The patients resumed oral diet on postoperative day 2 to 3. During the 3-month follow-up period, there was a hidden umbilicus scar. The incision at the abdominal scar healed up well.
Conclusions: Transabdominal scar-assisted U-LESS appears to be feasible, safe and effective. There were no abdominal postoperative complications, with good cosmetic results.

MP33-9 Application of Multi-channel Port (ZOU-port) in Pure Transvaginal NOTES

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Introduction: To investigate the value of multi-channel port (ZOU-port) with self-dependent national patent product in pure transvaginal NOTES.
Materials and Methods: A retrospective analysis of clinical data with pure transvaginal NOTES between December 2010 and May 2015 was performed. Five patients underwent pure transvaginal NOTES renal cyst decortication, in 3 cases, the cyst was on the left, in 1 on right and 1 was bilateral. Seventeen patients with severe hydronephrosis leading to a nonfunctioning kidney underwent pure transvaginal NOTES simple nephrectomy, in 4 cases on the left and in 13 on right. One patient with right renal carcinoma underwent pure transvaginal NOTES radical nephrectomy. A TriPort or Zou-Port was deployed across the vaginal incision.
Results: 23 patients were included in this study. In our initial 3 cases, TriPort was uded. In the subsequent 20 procedures, Zou-Port was used. The procedures were successfully performed in all patients without additional trocars except for one patint who immediately converted to suprapubic-assisted laparoendoscopic single-site surgery (SA-LESS) nephrectomy because of rectal injury while the channel established. There were no other intraoperative abdominal and pelvic organs side injury complication occurred. Postoperative complication included a right external iliac artery thrombosis from pure transvaginal NOTES simple nephrectomy. The mean operative time was 80 min (range 60 to 90) and the mean estimated blood loss was 25 ml (range 20 to 50) for pure transvaginal NOTES renal cyst decortication. The mean operative time was 186 min (range 160 to 280) and the mean estimated blood loss was 110 ml (range 160 to 280) for pure transvaginal NOTES nephrectomy. Postoperatively, the mean visual analog scale (VAS) pain score was 3.1 (range 2–5), The mean time to ambulation was 1.6 (range 1–2) d. The mean time to oral feeding was 2.2 (range 2～3) d. The mean time to surgical drain removal was 3.1 (range 1～5) and postoperative hospitalization stay was 5.2 (range 3～8) d. During the 3- to 51-month follow-up period, all the patients were in good condition. The posterior colpotomy incision healed up well. There were no scars on the abdominal wall. There was no complication in retrograde infection of pelvic and abdominal cavity, umbilical hernia, or uterine prolapse. One patient who underwent nephrectomy for malignant suspicion was alive without evidence of tumour recurrence or metastasis.
Conclusions: Zou-Port in pure NOTES transvaginal reduces the difficulty of operation and facilitates the surgical procedure, which can effectively avoid the abdominal and pelvic organs side injury, worthy of clinical application.

MP33-10 Suprapubic-assisted Laparoendoscopic Single-site Surgery (SAE-LESS) for Nephroureterectomy

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Introduction: During the past years, suprapubic-assisted laparoendoscopic single-site surgery (SA-LESS) established by ourselves has been used in urology in our center. We report 32 case of SA-LESS for nephroureterectomy in a patient with right upper urinary tract cell carcinoma.
Materials and Methods: Thirty-two consecutive patients including 22 males and 10 females, with a mean age of 58.0(range 45 to 77) years, were subjected to SA-LESS nephroureterectomy in our center. There were 19 renal pelvic carcinomas, 7 ureteral carcinomas,3 renal pelvic carcinoma combined with ureteral carcinoma, two renal tuberculosis, and one megaureter with empyema included in this study. The patients were administrated general endotracheal anesthesia and secured on the operating table in lateral decubitus with right affected side elevated 70°. One 5- and 10-mm trocars were inserted at the medial margin of umbilicus. A 5-mm trocar was inserted into abdominal cavity below the pubic hairline under the direct vision from a 5-mm flexible-tip 0° laparoscope through the umbilical trocar. The operation was performed using conventional operating apparatus placed in the abdominal trocars, under direct vision achieved by a 5-mm flexible-tip 0° laparoscope placed through the trocar below the pubic hairline. Firstly, the distal ureter was dissected and blocked by a Hem-O-lok. Then, the ureter was isolated completely and radical nephrectomy was performed according to the method of the standard laparoscopy. Finally, the bladder cuff excision was performed and the incision was sutured. The specimen was removed after the incisions below the pubic hairline was enlarged transversely and the rectus abdominis muscle sheath was incised vertically.
Results: All the procedures were successfully performed. The median operative time was 160 (range 110 to 220) minutes, and the median estimated blood loss was 150 (range 50 to 300) ml.

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There was no major perioperative complication occurred. All the patients resumed ambulation on postoperative day 1–2. Pelvic drainage tube was removed on postoperative day 2–3. Urethral catheter was removed on postoperative day 6–7 (the tumor patients underwent irrigation of bladder with Pirarubicin). The patients were discharged on postoperative day 8.
Conclusions: SA-LESS nephroureterectomy appears to be feasible, safe and effective. The placement of trocar at umbilicus and below the pubic hairline not only decreases the difficulty of operation, but can also leads to good cosmetic results.

MP33-11 Our experience with 3D Laparoscopy in Urology

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Introduction: Three-dimensional (3D) laparoscopic visual systems have been developed to augment laparoscopic skills. Although the challenges of lost depth perception can be overcome with a long experience of cases, most urologists cannot depend on such a high volume over a short period. A 3D system seems to be an excellent tool for performing complex laparoscopic tasks and undoubtedly should be considered by every minimally invasive surgeon. The benefits might translate into improved operative times, shortened learning curves, and greater surgeon comfort. The non-robotic 3D system is approximately 1/10th as expensive as a robotic 3D surgical system and in addition, is more mobile and might be used for any laparoscopic procedure. It offers significant advantages in the teaching of laparoscopic skills to inexperienced individuals. It produced no more eye strain, headaches, or other side effects than 2D visualization.

A MEDLINE search was used to identify articles and publications of specific importance, which highlighted the recent developments and future direction of 3D laparoscopy in the field of urology. Although 3D visual system descended to the platform of minimally invasive surgery in early 1990's, the literature regarding the experience with 3D laparoscopic procedures in the field of urology is very scarce
Methods: The goal of this study was to evaluate our early experience with 3D (Viking system) laparoscopic system with conventional 2 D laparoscopy for urological procedures. This is a based on a single surgeon's experience in all urological laparoscopic procedures for more than 20 yrs. We have had executed more than 100 3D laparoscopic procedures till now, including laparoscopic simple and radical nephrectomy, laparoscopic pyeloplasty, laparoscopic vesico-vaginal fistula (VVF) repair and laparoscopic ureteric stricture repair. Our experience with laparoscopic pelvic procedures is though limited. We are discussing various parameters including total operative time, time taken for specific surgical steps like suturing, dissection of vascular pedicle blood loss and surgeons stress level for the procedure.
Results: With the modern 3D laparoscopic view, intra-corporeal suturing and stenting were technically much easier, operative time for various procedures were significantly less, the stress to the surgeon was less and the surgeon was at better comfort level on a subjective basis. There was no significant difference observed in the hospital stay and complication rate between two procedures.
Conclusion: 3D laparoscopy gives more clear vision, depth, surgeon comfort and faster patient recovery. A larger data is required. 3 D technology is truly the future of minimal invasive surgeries.

MP33-12 Transvaginal Natural Orifice Transluminal Endoscopic Surgery (NOTES)-Assisted Laparoscopic Partial Nephrectomy: Report of the First Ten Human Cases

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Introduction: To present our initial experience in 10 female patients undergoing transvaginal NOTES-assisted laparoscopic partial nephrectomy (PN).
Materials and Methods: Between August 2013 and January 2015, a prospective analysis of the initial ten patients who underwent transvaginal NOTES-assisted PN was entered into an institutional review board (IRB)–approved database. The procedure was performed using two umbilical trocars and one trocar through the vagina. The main renal artery clamping, segmental renal artery clamping and unclamped PN were performed depending on the circumstance of the tumour. Some perioperative parameters including operative time, warm ischemia time, blood loss, and perioperative complications were recorded. Sexual function was assessed with the Female Sexual Function Index (FSFI) questionnaire before and after surgery. The postoperative mean visual analog pain scale (VAPS) scores were recorded. The cosmetic results were investigated by administering Patient Scar Assessment Questionnaire and Scoring System (PSAQ).
Results: Nine transvaginal NOTES-assisted PNs were completed successfully. One patient with a right anterior upper-pole tumor was converted to radical nephrectomy because of persistent bleeding from the parenchymal defect. The median operating time was 120 (range 110–190) mins and the median estimated blood loss was 140 (range 50–400) ml. The median warm ischaemia time (WIT) was 25 (range 20–40) mins. The median postoperative VAPS scores was 2 (range 1–3). The median postoperative hospital stay was 5 (range 4–10) days. All surgical margins were negative. Eight patients completed the FSFI questionnaire, and analysis did not show differences in FSFI scores before and after surgery. The better cosmesis results were confirmed by the PSAQ score.
Conclusions: Transvaginal NOTES-assisted PN is a safe and feasible surgical procedure in the treatment of small renal mass with excellent cosmesis results. More prospective studies with long follow-up are needed to investigate the oncologic safety.

MP33-13 Laparoendoscopic single-site radical nephrectomy by Single-Cup or Single-Ring glove technique

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Introduction and Objectives: Compared with the traditional laparoscopic technique, LESS may have better results in cosmetic, less postoperative pain, better recovery and so on. However, commercially available single-port devices (Only Tri-port and X-cone available in China) have some defects such as expensive, disposable (for Tri-port), instruments crowding, etc. These features above limit its widespread use in our country. We present two new homemade single-site devices which had been successfully used in radical nephrectomy and other urological surgery. Aim of this study is to evaluate the efficacy and safety of laparoendoscopic single-site radical nephrectomy by homemade devices.

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Methods: The clinical data of laparoscopic radical nephrectomy performed from June 2010 to April 2013 in Peking University Third Hospital were analyzed retrospectively. 17 cases underwent LESS radical nephrectomy and 34 cases received retroperitoneal laparoscopic radical nephrectomy. Data on general presentation, tumor size, tumor location, operative time, blood loss, complications, Visual Analog Pain Scale (VAPS), postoperative hospital stay, pathological results were collected to compare between two groups. Our homemade equipments are composed of Single-Cup device (inter-diameter of 2.5–5.5 cm, peripheral diameter of 4.0–6.0 cm, and 4.0 cm high) **or** Single-Ring device (inter-diameter of 4 cm, peripheral diameter of 5 cm) and a 6F sterile surgical glove. The thumb, middle, and ring fingers of the glove were implanted and fixed with 11 mm, 5 mm and 5 mm diameters' trocar respectively. The kidney was dissociated after cut off the renal vessel and extracted through the umbilical incision. The retroperitoneal approach followed the standard surgical procedures, the specimens were removed from the extended incision.
Results: All procedures were completed without conversion to open radical nephrectomy. Compare with traditional laparoscopic surgery, operative time ($P < 0.05$) and VAPS ($P < 0.05$) show significant difference in LESS group, and no difference was noted in other factors ($P > 0.05$). There was no secondary bleeding, wound infection, intestinal obstruction, incision hernia and other severe postoperative complication. Follow-up of 2 to 36 months shows no local recurrence.
Conclusions: Laparoendoscopic single-site radical nephrectomy by Single-Cup or Single-Ring glove technique is feasible, effective and safe. It gives a more mini-invasive and cosmetic option for young or female patients. The characteristics of lower-cost, more aesthetic, repeat use of the homemade devices appeared o be popularized. Further experience and longtime evaluation are required.

MP33-14 The long-term oncologic results of radiofrequency ablation for small renal tumors

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Objective: The aim of this study was to retrospectively evaluate the long-term oncologic results of radiofrequency ablation (RFA) of small renal masses (SRMs).
Materials and Methods: The patients who had been followed over 5 years after percutaneous or laparoscopic RFA for small renal mass were included in this study. A total of 47 patients and 48 renal tumors were included. The follow-up study included physical examination, chest radiography, creatinine, and contrast-enhanced CT or MRI. Recurrence was defined as contrast enhancement after 3 months or lesion growth at subsequent imaging or viable cancer cells on follow-up biopsy.
Results: The mean tumor size was 2.3 cm and the mean follow-up period was 93.3 months. Technical success was achieved in 43/48 renal tumors (89.6%). Repeated RFA was necessary in 5 tumors due to incomplete ablation. The overall complication (OC) occurred in 35.8% of which the low-grade complications accounted for 96.2% of OC. A relevant deterioration of renal function after RFA was very rare. The 5-year local recurrence-free survival rates, cancer-specific survival rates, and overall survival rates are 91%, 95.7%, and 89.3% respectively.
Conclusion: RFA is considered useful treatment for selected patients with SRMs and also for nephron-sparing. Our long term follow-up results suggest excellent therapeutic outcome with RFA, while achieving effective local tumor control.

MP33-15 Office based MRVUS fusion cryoablation of Prostate Cancer under local anethesia: quality of life indicators

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Introduction: Multiparametric Prostate MRI (MP – MRI) has improved diagnostic precision of Prostate Cancer (PC). We conducted a clinical protocol characterizing biopsy – proven fuse – image guided PC treatment with cryotherapy. Short term outcomes are presented.
Patients and Methods: NCT02381990-ClinicalTrials.gov contemplates evaluation of long term outcomes for Office-based FUSION-IMAGE MP-MRI/Ultrasound (US) guided PC Cryoablation. 101 men underwent this procedure between September 2013 and June 2015. PC lesions, prostate gland, urethra, were contoured and co-registered with fusion software to live office bi-planar ultrasound. The procedures transitioned from light sedation to local anesthesia. Validated questionnaires were used to assess Pain, QOL (SHIM, IPSS scores) and PSA outcomes. Statistics: t-test for continues variables and Chisquare for categorical evaluations
Results: An example of treatment typical planing is shown on the poster. Median age - interquartile range (IQR) for the cohort of 101 men was 72 (66, 78) years. The last 64 patients were performed under local anesthesia. All of these tolerated procedure well - overall median pain score of 2 (Interquartiles, 1–4). Pain scores are reported on Table.

No patient required hospital transfer. The last 27 patients were discharged without indwelling catheters. All MP-MRI targeted lesions were coregistered and cryoablated successfully (two 8'freeze /10' thaw cycles). Significant improvements (median, $p < 0.05$) were observed before- > after Fusion Cryoablation in 68 patients with at least 3 month follow up: IPSS and flow rates improved from 7 and 6 cc/s to 4 and 9 cc/s, respectivelly ($p < 0.05$ for both). A total of 59 of 63 patients with SHIM scores over 15, keep their same score and ejaculatory response. One patient had a PSA jump at 3 months and showed biopsy proven cancer progression 6 months after treatment. For the remainder 67, PSA declined a median of 3.6 ng/ml (IQR 1.6–5.2).
Conclusions: Office MP-MRI/US Fusion-Cryoablation for PC seems promising in the short run. However, oncological outcomes are still under rigorous evaluation.

Pain Assessment During Office MRI/US Fusion Cryotherapy

Pain Scale (0-10) Measured at the time of:	Median Pain	(25th-75th) Percentile	Mean (Range) duration in seconds (') or minutes
Insertion of Foley Catheter	6	3-8	45' (8-186)
Perineal Skin & Periprostatic Block	4	2-6	74' (45-97)
Coregistration	2	0-3	7 minutes (5 - 10)
Freeze 1st Cycle	0	(0-1)	8 minutes
Thaw 1st Cycle	0	(0-0)	10 minutes
2nd F/T Cycle	0	(0-0)	18 minutes
Overall Assesment	2	(1-4)	OR time 109 minutes (52-125)

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MP33-16 Pilot Evaluation of Histotripsy Based Treatment of Peyronie's Disease: Histologic Effects in Ex Vivo Plaques

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Introduction: Current surgical management of Peyronie's disease is invasive and involves penile shortening or excision and grafting of the fibrous plaque. Recent clinical trials have demonstrated therapeutic benefit of remodeling the plaque with collagenase. However, improvements in penile curvature are modest and can require up to 8 injections. As such, a more efficacious non-invasive technique to mechanically disrupt the plaque could be beneficial. We evaluated the feasibility of using histotripsy, a non-invasive non-thermal pulsed focused ultrasound technology that uses acoustic cavitation to mechanically fractionate targeted tissues, as a novel treatment for Peyronie's plaques.
Methods: Using an IRB approved protocol, fresh excised Peyronie's plaques (n = 5) were obtained and processed into ~5 mm wide strips. Tissue was then submerged in degassed phosphate buffered saline and either exposed to histotripsy treatment (n = 17 strips total) or saved as control tissue. Histotripsy treatments were conducted using a 1.0 MHz custom-built therapy transducer delivering pulses with repetition frequency of 1000 Hz, duty cycle of 0.5%, and peak +/- focal pressures of (+98/-17 MPa) under ultrasound image guidance. Treatments delivered 60,000–120,000 pulses/focus to a line or grid of foci spaced 1 mm apart within the plaque. Tissue was then formalin fixed and stained with Masson's Trichrome, Verhoeff-van Gieson, or Hematoxylin and Eosin for histologic assessment.
Results: During histotripsy treatment, cavitation was observed on ultrasound in each case within the plaque, but also occurred prominently on either surface of the plaque. On gross inspection, there was evidence of plaque disorganization and decreased tissue integrity following treatment. On histologic assessment, evidence of histotripsy-induced disruption of collagen and elastin fibrils was evident in all fibrous portions of plaques resulting in fragments with a globular appearance. The sensitivity of the plaque to histotripsy varied with the extent of collagen deposition, but all demonstrated an effect with ≤ 120,000 pulses/focus. Despite fragmentation of fibrous portions, the calcified portions of two ossified plaques demonstrated only minor histologic evidence of any treatment effect.
Conclusion: Histotripsy ablation of Peyronie's plaques is feasible and suggests further development of histotripsy could be beneficial as a novel Peyronie's therapy. Future studies will evaluate the mechanical and functional tissue effects of treatment and aim to optimize transducer design and pulse parameters in anticipation of *in vivo* studies. Work supported by NIH DK043881, EB007643, K01EB015745, and NSBRI through NASA-NCC-9-58

MP33-17 3D printing: a new tool in preoperative surgical planning of complex minimally invasive nephron sparing surgery

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Introduction: Minimally invasive nephron sparing surgery (MINSS) is a recognized option in the treatment of T1 renal tumors. The majority of laparoscopic techniques require hilar clamp placement to create a clear operative field, but imposes ischemic injury to the kidney. Zero-ischemia MINSS is based on the concept of anatomic renovascular microdissection and clamping of tertiary or higher-order renal arterial branches that supply the tumor. In this scenario, preoperative knowledge of the vascular anatomy, collecting system and the relationship of these structures with the tumor is mandatory to obtain the best functional and oncological outcomes.
Objective: To present the development and initial clinical experience of new virtual representation and 3D printed models named TAC3D (tumor, arterial and collecting system-3D), combines physical and computerized prototypes to optimize preoperative planning of ultra-selective clamped partial nephrectomy. Methods: From December 2014 to June 2015, three patients with complex cT1N0M0 renal tumors were selected for laparoscopic ultra-selective MINSS. All tumors had a R.E.N.A.L. nephrometry score ≥10. Preoperative computed tomography was acquired from a 64 multi-detector-row CT-scan with 5 mm step interval. Images obtained were exported to Vitrea fX Workstation (Vital Images Corporation – Toshiba Medical Images)®. Segmented images were exported in a CAD compatible format (.STL) to a 3D mesh processing software (Meshlab v. 1.3.3- ISTI – CNR research center, Pisa University, Italy®.) It was assigned different colors to different anatomical structures to facilitate the identification upon visual analysis. The final colored 3D digital model was sent to a 3D printer, Zprinter 650 (Zcorporaion/3D Systems - Rock Hill, South Carolina, United States®.) and a real sized model of the tumor, collecting system and intra-arterial branches were produced.
Results: All cases were submitted to MINSS with ultraselective clamping without complications. During surgical procedures TAC3D printed and digital model demonstrated high correlation with real anatomy, allowing correct identification and clamping of the tumor's feeding branches and a proper tumor resection. All surgical team and patients agreed that models were imperative for anatomy comprehension and preoperative planning.
Conclusion: TAC3D is a novel tool based on 3D printing and CAD technology to be used in the preoperative surgical planning of minimally invasive nephron sparing surgery of complex renal tumors. The technical advance proposed by this tool is the representation of the intrarenal arterial system, collecting system, renal parenchyma and the tumor combined in one model. Further studies are necessary to evaluate the benefits of our model on surgical outcomes.

MP33-18 A novel laparoscopic nephrectomy via transumbilical approach for infective nonfunctioning kidney with perinephric adhesion

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Introduction: To evaluate a novel laparoscopic nephrectomy via transumbilical approach for infective nonfunctioning kidney with perinephric adhesion.

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Materials and Methods: Between May 2010 and June 2014, a retrospective analysis of 93 patients who underwent a novel laparoscopic nephrectomy via transumbilical approach was performed. A total of 48 patients (Group A), including 21 males and 27 females, underwent perirenal intrafascia nephrectomy. The mean age of these patients was 37.5 years. There were 44 patients with pyonephrosis for nonspecific infection, and 4 with nephrotuberculosis. There were 11 patients with the history of previous ipsilateral renal surgery in Group A, in which, 23 patients underwent transvaginal NOTES-assisted laparoendoscopic single-site surgery(TV-NOTES) nephrectomy, (Group A1), and the other 25 patients underwent suprapubic-assisted laparoendoscopic single-site surgery(SA-LESS) nephrectomy(Group A2). Another 45 patients (Group B), including 17 males and 28 females, underwent perirenal extrafascia nephrectomy. The mean age of these patients was 39.2 years. There were 40 patients with pyonephrosis for nonspecific infection, and 5 with nephrotuberculosis. There were 9 patients with history of previous ipsilateral renal surgery in Group B, in which, 21 patients underwent TV-NOTES nephrectomy (Group B1), and the other 24 underwent SA-LESS nephrectomy (Group B2). The parameters including operative time, estimated blood loss, indwelling drain time, postoperative visual analogue scale, postoperative hospital stay and intraoperative or postoperative complications were recorded.
Results: 88 procedures were successfully completed. Five patients in group A experienced conversion to open surgery. The operative time, estimated blood loss, indwelling drain time, intraoperative and postoperative complications showed statistically significant difference between group A1 and B1, and between group A2 and B2, respectively ($P < 0.05$). The postoperative visual analogue scale, postoperative hospital stay showed no statistically significant difference ($P > 0.05$).
Conclusions: The novel laparoscopic perirenal extrafascia nephrectomy via transumbilical approach is feasible and safe with less blood loss, less operative time, fewer complications, and good cosmetic result. It is worth applying in clinic.

MP33-19 Robotic HIFU: Focus on early complications after 6 years experience

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Aim: To evaluate early complications of robotic HIFU treatment in patients with prostate cancer after 6 years experience with long term results.
Method: From October 2008 to January 2015, 280 patients were included in a therapy protocol with robotic HIFU. Patients were fully informed and consented the procedure. Data was prospectively collected and retrospectively analyzed. Registration of any somatic side effect, complication and discomfort was updated at every patients contact. Functional outcomes in terms of urinary status and continence were assessed. Sexual function was not included in the analysis. Patients underwent HIFU with the second-generation of Ablatherm device (Technomed SA, Vaux en Velin France). Treatment was performed by two skilled urologist all over the prostate gland under spinal anesthesia. Transurethral resection of the prostate (TURP) was indicated in all the patients (performed at least one month earlier) in order to reduce the risk of post-procedure acute urinary retention (AUR). Follow-up: clinical evaluation including DRE, TRUS and Uroflowmetry after 14, 30, 90 days and every 3 months on. Urinary status (IPSS score) and continence were evaluated. The sextant biopsy was conducted at 3 months and the serum prostate specific antigen (PSA) was measured every 3 months after HIFU treatment. Treatment failure was defined as any positive biopsy.
Results: All the 280 enrolled patients were considered evaluable for the actual analysis. Just 25 patients underwent II look retreatment between 6 – 12 months after robotic HIFU (positive follow-up biopsy and increasing PSA value). Median catheter time was 7 days and the most common adverse event reported was AUR. Postoperative sloughing of necrotic tissue in 15 cases (5,3%) resolved with catheter wash out (6 pts) or TUR (9 pts); pelvic perineal pain reported in 10 patient (3,5%), rectal bleeding in 6 patient (2,1%) and scrotal edema in 2 case (0,7%). Late complications (1–3 mo.) included bladder-neck stenosis in 45 patients (16%) and pre-sphincterial stenosis in 11 patients (3,9%). Moreover grade 1 stress incontinence reported in 33 patients (11,7%), grade 2 in 8 patients (2,8%) and grade 3 in 3 patients (1,07%). OAB (due to TURP performed 1–2 mo. before) in 57 patients (20,3%). Major complications like rectovescical fistula just in 2 salvage robotic HIFU patients.
Conclusion: Robotic HIFU is associated with low morbidity. The second generation prototypes dramatically decreased serious adverse events, however few complications and side-effects are reported and they tend to increase with the number of local pretreatments.

MP33-20 HIFU hemiablation for prostate cancer in 50 men: Results from a prospective cohort with a median follow-up of 3.3 years

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Introduction: Focal therapy is an emerging mini-invasive treatment modality for localized prostate cancer aimed to reduce the morbidity associated with radical therapy while maintaining good cancer control. We report the mid-term oncologic and functional results of primary hemiablation High Intensity Focused Ultrasound (HIFU) in a prospective cohort of patients.
Material and Methods: Beginning in 2008, hemiablation HIFU was primarily performed in 50 selected patients with biopsy-proven clinically localized unilateral, low –intermediate risk prostate cancer in complete concordance with the prostate cancer lesions identified by MRI with precise loci matching on multimodal approach. Post-treatment follow-up included regular serial PSA measurements. Biochemical recurrence was reported using Stuttgart and Phoenix criteria. The latter was used as a threshold to offer whole gland biopsies.
Results: Complete follow-up was available for all patients. No patient developed metastasis or died at a median follow up of 39.5 months (range: 6–94). Mean nadir PSA value was 1.6 ng/ml which represents 72% reduction compared to initial PSA pre-treatment value ($p < 0.001$). Median time to achieve PSA

nadir was 3 months and PSA nadir was < 0.5 ng/ml in 11 patients. Biochemical recurrence, according to Phoenix and Stuttgart definition, occurred in 28% and 36% of patients, respectively. Of the 8 patients undergoing biopsy, 6 patients had a positive biopsy for cancer occurring in the untreated contralateral (n = 3) or treated ipsilateral lobe (n = 1) or bilaterally (n = 2). 2 patients experienced urethral stenosis as a late complication (> 90 days), requiring endoscopic urethrotomy (Clavien-Dindo IIIb). Complete continence (no pads) and erection sufficient for intercourse were documented in 94% and 80% of patients, respectively.
Conclusion: Hemiablation HIFU therapy, delivered with intention to treat, for carefully selected patients affords mid-term promising functional and oncologic outcomes. The effectiveness of this technique should be now compared to whole gland radical therapy.

MP33-21 Changing trends in the detection (Prostate biopsy) and treatment (Focal therapy) of prostate cancer in England: Evidence from hospital episodes statistics (HES) database

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Introduction: We wanted to look at the trends in prostate cancer diagnosis and treatment to help us plan our services, train juniors and in ongoing and new research.
Methods: The HES database contains all NHS activity (diagnosis and intervention) in England. To capture trends in Prostate cancer intervention/treatment, we analyzed data for 6 years from 2007–2013. We looked at the overall trend and compared annual data from 2007–2008(period-1) and 2012–2013 (period-2).
Results: During this 6-years, 171,807 prostate biopsies were done of which 10.5%(18,142) were perineal biopsies and 89.5% were TRUS biopsies. While TRUS biopsies increased by 17.5%(from 22,621 period-1 to 26,566 during period-2), the corresponding perineal biopsy rate rose by 198%(1,635 period-1 to 4,871 during period-2) possibly suggesting a rise in screening for prostate cancer and second biopsy for persistently high PSA. Total 28,269 prostatectomies were carried in 6 years, of which < 1% were perineal prostatectomy (PP). While there was rise of radical prostatectomy (RP) by 49%, there was a fall in RFA and endoscopic cryotherapy; both of which fell by 80% and 72% respectively. HIFU fell by 17% while the rates of radioactive seed or implant insertion of prostate rose by 20%.
Conclusions: Based on the HES data, recent trend shows a rise in the number of prostate biopsies, especially template perineal biopsy. It also shows a rising trend of radical prostatectomy and prostate radioactive seed/implant insertion. There was a decreasing trend for focal therapy especially for cryotherapy, RFA and HIFU. This data could influence future manpower planning and delivery of prostate cancer services.

Annual	Prostate (perineal)biopsy	Prostate (rectal) biopsy	RP	PP	RFA	Cryo	Radioactive seed /implant	HIFU
2012-2013	4871	26566	5275	17	8	27	1072	180
2007-2008	1635	22621	3508	48	39	96	896	216
% rise	198%	17.5%	49%	-65%	-80%	-72%	20%	-17%
Total 6 years (2007-2013)	18142	153665	28017	252	83	338	6806	1129

MP33-22 Development of Convective Water Vapor Energy Therapy for Treating Localized Prostate Cancer: First-In-Man Early Clinical Experiences

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Introduction: Earlier work has confirmed the unique thermodynamic properties of phase-change convective ablation using water vapor energy to conform and remain confined to the anatomical zones of the prostate including the prostatic capsule. The acute safety and effectiveness of thermal water vapor in treating the human prostate for BPH has also been established. The objectives of this study were to assess the in vivo treatment of prostate cancer and the early clinical effects using water vapor.
Patients and Methods: Ethics Committee approval was obtained. To date, 6 patients have been treated in this ongoing study using the Revīv™ System. All patients had localized prostate cancer as determined by biopsy, DRE, PSA and prostate MRI. Treatment was performed using a urethral cooling catheter and a transperineal, ultrasound guided approach for needle placement and water vapor delivery. Follow-up monitoring included serial, gadolinium enhanced MRI's performed at pre-treatment, 1 week, 1, 3, and 6 months post-treatment and a surveillance biopsy at 6 months post-procedure. Standard AE reporting and the IIEF questionnaire was used to evaluate clinical outcomes.
Results: Outpatient, regional anesthesia was used for all patients and to-date, all patients have completed the three month follow-up visits. One patient underwent unilateral peripheral zone ablation, 2 patients underwent bilateral peripheral zone ablation, 2 patients underwent hemi-ablation and 1 patient underwent total gland ablation. One week MRI confirmed obvious tissue ablation in all patients. (Fig. 1) Follow-up MRI's to-date have shown tissue resolution without cystic formation. At 3 months, PSA decreased by 60%. Six-month surveillance biopsies are pending. Three patients had their catheter successfully removed the next morning, two patients had their catheters removed at day 2, and one patient at day 6. No serious adverse events were reported.
Conclusions: The thermodynamics of convective ablation using water vapor energy is ideally suited to the zonal anatomy of the prostate and was clearly demonstrated by MRI. Partial or whole gland ablation can be performed. These very early and limited data suggest that effective tissue ablation using convective water vapor energy can be performed with minimal, transient morbidity and warrants continued investigation.

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MP34 - BPH / LUTS 3

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MP34-1 Personal experience with Transurethral Bipolar Enucleation with Button electrode (B-TUEP) for the treatment of bladder outlet obstruction (BOO) due to benign prostatic hyperplasia (BPH)

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Objective: To evaluated the safety and efficacy of Transurethral Bipolar Enucleation with Button electrode (B-TUEP) for the treatment of bladder outlet obstruction (BOO) due to benign prostatic hyperplasia (BPH).
Methods: Between July 2011- March 2012 a single surgeon performed 50 B-TUEP.

Pre and postoperative investigation protocols included PSA dosage, IPSS, IEFF-5, QOL, Uroflowmetry with post-voiding residual urinary volume (PVR) and transrectal ultrasonography assessing prostate volume. Intraoperatively, we evaluated B-TUEP time (enucleation and resection time). Perioperatively we evaluated Hb dosage**,** bladder irrigation's time, catheterization's time**,** acute urinary retention events, hospital's stay, patient readmission and eventual endoscopic retreatments.
Results: Three months after surgery 82% of the patients presented a significant improvement of Qmax ($p < 0{,}001$). After 6 and 12 months the 80% and 83,3% of patients, respectively, maintain the significant improvement ($p < 0{,}001$). About secondary endpoints: IPSS, QOL, IEFF-5 and PVR, presentented a statistical significant improvement in comparison with baseline values. We didn't observe a significant modification of haemoglobin values before and after surgery. Bladder irrigation time was > 24 h < 36 h for about the 80% of patients, in one case was necessary a second look haemostatic endoscopy. Hospital stay after surgery was less than 48 hours in 88% of cases. 6% of patients required to be admitted again to the hospital for haematuria and 2 others patients after six months suffered from bladder neck contracture that have been treated with TUIP.
Conclusions: Transurethral Enucleation of Prostate with Button electrode (B-TUEP) with Gyrus PK system is a rapid and safety technique, showing optimal outcomes.

MP34-2 Benefits of the TURis system for transurethral resection of the prostate in benign prostatic hyperplasia: systematic review, meta-analysis and economic evaluation for England and Wales

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Introduction: Monopolar transurethral resection of the prostate (M-TURP) is current UK surgical standard of care for benign prostatic hyperplasia. Whilst efficacy in prostate resection is established, potential peri-operative complications and associated costs remain a concern. The current study aims to present up-to-date and robust evidence in support of bipolar Transurethral Resection in saline (TURis) as an alternative surgical option to M-TURP, as recently evaluated in National Institute for Health and Care Excellence medical technology guidance.
Materials and Methods: A systematic review of electronic databases (up to 2014) for randomised, controlled trials (RCTs) comparing TURis with M-TURP was conducted, followed by pair-wise meta-analysis of hospital stay, transurethral resection (TUR) syndrome, blood transfusion and clot retention. Equivalent efficacy in prostate resection weight or radicality was assumed. A cost-consequence analysis was subsequently undertaken from the UK NHS hospital perspective with costs and resource use data from published sources.
Result: TURis was associated with improved safety versus M-TURP, eliminating the risk of TUR syndrome and reducing the risk of blood transfusion and clot retention (relative risks 0.34 and 0.43, respectively; $p < 0.05$). TURis also reduced hospital stay (mean difference 0.56 days; $p < 0.0001$) (Table 1). The cost-consequence analysis indicated potential cost savings with TURis versus M-TURP (existing monopolar customers) of up to £204 per patient, with incremental equipment costs offset by savings from reduced hospital stay and fewer complications.
Conclusion: The TURis system is associated with significant improvements in peri-operative safety compared with M-TURP while ensuring equivalent clinical efficacy. These benefits may translate into cost savings for UK health services.

Table 1: Results of the meta-analysi s of RCTs of TURis versus M-TURP

Outcome (No. of studies)	Patients (n)		Events (n)		Relative risk for TURis versus M-TURP (95% confidence interval [CI]; p value)
	TURis	M-TURP	TURis	M-TURP	
TUR syndrome (6)	767	734	0	13	0.18 (0.05, 0.61; p=0.006)
Blood transfusion (7)	595	580	14	40	0.34 (0.18, 0.61; p=0.0003)
Clot retention (6)	594	594	11	26	0.43 (0.22, 0.86; p=0.0161)
Outcome (No. of studies)	Patients (n)		Weighted mean hospital stay (days)		Mean difference for TURis (95% CI; p value)
	TURis	M-TURP	TURis	M-TURP	
Hospital stay (4)	490	478	2.87	3.43	-0.56 (-0.77, -0.35; p<0.0001)

MP34-3 TURiS prostatectomy as daycase: introducing the service

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Introduction: We present our experience introducing TURiS™(transurethral resection of prostate in saline)as a platform for day case prostatectomy. Our trust comprises of 2 district general hospitals and a standalone outpatient/daycase facility on 3 sites serving a population of greater than 450,000. We currently undertake around 285 prostatectomies for benign disease per year. TURiS™ utilises bipolar diathermy energy to allow plasma resection of the prostate with less bleeding and as normal saline is used for irrigation there is no risk of TUR syndrome. A day case prostatic resection pathway utilising this system frees up valuable inpatient beds, offers improved patient safety and is well tolerated with good patient satisfaction. Furthermore a £238 uplift in the national tariff for prostatectomy delivered as daycase allows significant cost savings. We present our results and highlight the successes and challenges of introducing the service.

Methods: We present a prospective review of our first 50 patients. Daycases were undertaken at 2 sites, one a standalone facility with no inpatient beds. Median age was 70, ASA grade 2. Consultant triage selected patients suitable for day case surgery and preoperative assessment followed standard daycase criteria. All patients underwent short general anaesthesia or spinal. Patients were discharged with a catheter and underwent trial without catheter (TWOC) between 4–6 days in a urology nurse-led clinic. Complications were recorded and a patient satisfaction survey undertaken.
Results: 75% of patients were assigned to daycase, the remainder deemed unsuitable due to prostate size or comorbidity. 36% had preoperative retention requiring catheterisation. Median operation time was 35 minutes (range 25–55). Median resection volume was 16 grams and in all cases blood loss was minimal. All patients were sent home with a catheter in-situ and 96% passed their first TWOC. Only one patient was admitted from day surgery following a vasovagal attack. There were two late readmissions with urinary tract infections. The patient satisfaction survey was favourable.
Conclusions: TURiS offers safe and effective treatment for day case prostatic resection with significant cost savings. There were no cases of TUR syndrome or post-operative bleeding requiring intervention and only a single patient was admitted from our daycase facilities. From our current audit, we estimate that we can perform 75% of our TURP cases as day case saving our Trust 514 bed days and up to £103,943 per annum.

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MP34-4 Bipolar TURP – The Trainee's Gold Standard

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Introduction: Transurethral Resection of Prostate (TURP) is a core urological procedure. Improved pharmacological management, shorter surgical training and increased theatre pressures have squeezed the trainee's opportunities to become skilled in this procedure. Bipolar TURP in saline (bTURP) confers reduced bleeding, avoidance of transurethral resection (TUR) syndrome, with efficacy equivalent to monopolar TURP. Freedom to resect safely beyond the traditional one-hour limit is advantageous to the trainee surgeon.

We report outcomes of the largest published series of bTURP performed by trainee urologists.
Patients and Methods: Retrospective analysis of consecutive bTURP procedures using the Olympus TURis system by six urologists in early specialist training at one UK centre over a five-year period. Experienced consultant urologists supervised trainees. Electronic patient records (EPR) were interrogated to obtain patient demographics, operative details, post-operative outcomes and complications at follow up. Procedure-based assessments (PBA) were used to assess trainee competence.
Results: 226 patients (median age 71, range 51–87) underwent bTURP. 168 procedures (74%) were performed entirely by the trainee. 114 procedures (50%) were for urinary retention with catheter in-situ. 28 (12%) had known prostate cancer. 22 (10%) were re-do procedures.

Mean specimen weight was 24.7 g. 2-way urethral catheters were inserted at the end of procedure in 212 patients (94%), with 3-way catheters in the remainder. Catheter was removed the following day in 85% of patients (n = 182, mean 1.1 days, range 1–5 days). 78% patients voided successfully at first trial (n = 176). Subsequently a further 30 patients (17%) voided successfully. 168 patients (75%) were discharged by day 1 post-op (n = 224, mean 1.6 days, range 0–22 days). Mean drop in Hb post-operatively was 1.2 g/L (n = 181). Two patients received blood transfusion intra-operatively– one due to low pre-operative Hb. No patients required post-operative transfusion. Follow up outcomes were available for 143 patients. Complications included urethral stricture (6), post-operative infection (5), bladder neck stenosis (1), meatal stenosis (1), erectile dysfunction (1), urgency incontinence (1), stress incontinence (in one patient undergoing re-do channel TURP). Four patients subsequently had re-do TURP. Median trainee competence level progressed from 2 (able to perform under supervision) in the first 6 months of placement (n = 25, range 2–4) to level 3 (able to perform with minimal supervision) in the final 6 months (n = 24, range 2–4).
Conclusion: Bipolar resection in saline is a safe and effective method of training urologists in TURP technique. This large series demonstrates good outcomes from bTURP performed by trainees, with excellent haemostasis and most patients being discharged catheter-free the day after surgery.

MP34-5 B-Tuep with Plasma Kinetic System: A new enucleation technique for the treatment of large volume BPH

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Introduction: The morbidity of transurethral resection of the prostate continually requires the evolution of new equipment and technique. Here are the results with Plasma Kinetic Transurethral Adenoma Enucleation using Button electrode (b-TUEP) for the treatment of large volume BPH.
Materials and Methods: Between July 2011 to June 2014, two urologists of our team, performed 150 b-TUEP in large volume BPH (> 80 gr). The average age of the patients was 75 years (range 53–84 yrs). The preoperative investigation protocol included DRE, PSA, IPSS, IEFF-5, QoL, Uroflowmetry with PVR and TRUS. The aim of this study was to evaluate Qmax's improvement, and, in second time, the change in IPSS, IEFF-5, QOL, PSA, PVR, Prostate weight and post-operative blood loss. Surgical technique was HOLEP like. Intraoperatively, we evaluated total b-TUEP time, including enucleation and resection time and adenoma's weight. Following surgery, we evaluated bladder irrigation's time, catheterization's time, RUA post b-TUEP, hospital's stay and any emergency after the surgery within 30 days.

The follow up was performed after 1, 3, 6 and 12 months, with PSA and HB dosage, IPSS, IEFF-5, QOL, Uroflowmetry with PVR. TRUS was performed 6 months after surgery.
Results: Minimum follow-up 12 months. After three months 89% of the patients improve $Q_{max} > 15$ ml/sec < 25 ml/sec ($p < 0{,}001$); 85% stable after six months and 80% after one year. The resection time was less than 40 minutes in 79 pts (52,7%), less than 75 minutes in 43 pts (28,6%) and more than 75 min in 28 pts (18,7%), all with prostate larger than 80 gr. The bladder irrigation time was between 24 h and 36 h in about 81% (121 pts). No patient needed hemo transfusion. In 9 pts we had haematuria and clot retention after catheter removal and only one pts needed a second look endoscopy. The hospitalization time was less than 48 hour in 22%, less than 72 hours in 70% and more in 18%. In the first 30 days we had 2 readmission to hospital for hematuria. We had no urinary incontinence.

After six months we had 3 pts with urinary obstruction (needed TUIP).
Conclusions: Plasma Kinetic Transurethral Adenoma Enucleation using Button electrode (b-TUEP) for large volume BPH (>80 gr) is a feasable and safety technique, showing optimal outcomes.

MP34-6 Is Green light photo selective vaporization of the prostate (GPVP) gold standard in management of benign prostatic hyperplasia in high-risk patients?

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Introduction and Objective: GPVP is progressively becoming an established treatment in patients with LUTS because it is a minimally invasive technique that achieves efficient hemostasis, making it the ideal technique for patients at high surgical risk. We evaluated the efficacy and safety of GPVP using Green Light System (120 watts) for BPH with TURP in high-risk patients.
Methods: 92(42PVP, 50TURP) patients who underwent PVP and TURP for BPH with medical comorbidities from January to october 2014 were compared in terms of Q max, IPSS, PVR, Operative time, blood loss, indwelling catheterization, quality of life score and short-term complication rates. The follow up data was recorded postoperatively at 1 month and 6 months.
Results: In this study 92 patients received treatment (42 PVP, 50 TURP) with all completing 6-month follow-up visits. The two treatment arms are similar with respect to demographic and baseline characteristics. The median procedure times for TURP and PVP were 50.0 minutes and 39.0 minutes respectively. For both modalities, the median time spent in post-surgical recovery was 1.3 and 1.2 hours. Median catheterization time for PVP and TURP group were 21.7 hours and 30.0 hours respectively. The median time spent in the hospital was 29.3 hours (PVP) compared to 38.9 Hours (TURP). Blood transfusion was required in some cases of TURP but not in PVP group.
Conclusions: The Green light XPS is a versatile energy source with effective outcomes for BPH patients even with high-risk patient with minimal complication rates and side effect profile as compared with TURP.

MP34-7 120W Green Light Laser Photo selective Vaporization (PVP) of the Prostate versus Bipolar TURP for Treatment of Symptomatic Benign Prostate Hyperplasia: A Prospective Randomized Study

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Introduction: Over the recent years, green light laser PVP and bipolar TURP are gaining popularity worldwide for the treatment of symptomatic BPH. To our knowledge, there is no study comparing laser PVP and bipolar TURP in the literature. Hence, we conducted a prospective, randomized study to compare the efficacy and outcome of both techniques.
Materials and Methods: From Jan 2014 to Oct 2014, a total of 133 patients with symptomatic BPH underwent surgical intervention. Prostate volume more than 80 cc(n=11), patients undergoing monopolar TURP(n=52) were excluded from study. Patients undergoing laser PVP were allocated Group A(n=32) and patients opted for bipolar TURP were allocated in group B(n=38). Patients were followed up at every 3 months for 1 year. Primary outcome measures were improvement in IPSS score, QOL score and maximum flow rate. Secondary outcome measures were operating time, duration of catheterization, duration of hospital stay and complications, if any.
Results: Primary outcome measures were similar in both the groups and no significant differences were noted. Patients with smaller prostates (<40 cc) had significantly reduced duration of catheterization and hospital stay in PVP group. Patients with larger prostates (>40cc) and/or enlarge median lobe, PVP resulted in significantly longer operating time.
Conclusion: Our study showed that both laser PVP and bipolar TURP are equally efficacious and have similar outcome for treatment of BPH. Patients with smaller prostates, laser PVP has distinct advantage over bipolar TURP in terms of reduced blood loss, duration of catheterization and hospital stay.

MP34-8 Photoselective vaporization of the prostate in patients with refractory urinary retention: Results and predictive factors of a prospective study

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Introduction: Refractory urinary retention is one of the principal indications for surgery in patients with benign prostate hyperplasia (BPH). However, very few studies have focused on this specific population and about the outcomes of minimally invasive therapies in these patients. The objective was to assess the efficacy of photoselective vaporization of the prostate (PVP) and the factors predictive of the failure in patients catheterized for refractory urinary retention (RUR) secondary to BPH.
Materials and Methods: From January 2005 to December 2013, we prospectively included all patients treated by PVP preoperatively catheterized for urinary retention. The primary end point was the number of patients free of indwelling catheters three months after the procedure. Efficacy was analyzed on day 7, and at 3, 6, and 12 months on IPSS, QoL, Qmax, post void residual volume and prostate volume complications were reported by a modified Clavien-Dindo score. Univariate and multivariate analyses were performed to identify the factors predictive of treatment failure (recatheterization) at 7 days and 3 months.
Result: We included 152 patients in the analysis. The percentage of patients free of indwelling catheters was 91.5%, 3 months after the intervention. At one month, mean IPSS was 9.2±6.1, decreasing to 5.6±4.4 at 6 months and 4.2±3.1 at one year. Mean IPSS-QoL at 12 months was 1.2±1.1 (versus 3.5±1.7 before surgery). Mean Qmax was 14.8 ml/s at 6 months and 13.4 ml/s at 12 months. Mean PVR was 26 ml at 6 months and 38 ml at 12 months. At least one complication occurred in the first 30 days after surgery in 44.7% (n=48) of patients. Most of these complications were Clavien grade 1 (27.5%, n=42). Overall, 13.8%, 0.6% and 2.7% of the complications observed were of Clavien grades 2, 3 and 4, respectively. Two factors were identified as predictive of treatment failure at three months in multivariate analysis: preoperative ultrasound prostate volume (UPV) (OR=0.91; 95% CI [0.74–0.98]; p=0.008) and volume of primary urinary retention (OR=1.03; 95% CI [1.003–1.26]; p=0.003). Forty-two patients (27.6%) required recatheterization in the seven days following intervention. Prostate size was the only predictive factor (OR: 0.97; p=0.01) in multivariate analysis for early recatheterization.

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Conclusion: PVP is effective and safe in patients with RUR due to BPH. We show that high urinary retention volume and small preoperative ultrasound prostate volume are factors predictive of PVP failure in patients with preoperative indwelling catheters.

MP34-9 Age and prostate size matched comparison of urinary incontinence between HoLEP and PVP

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Introduction: Laser surgery for large prostates typically include the holmium laser enucleation (HOLEP) or the Greenlight laser photovaporization (PVP). A systematic comparison of urinary incontinence (UI) using validated measures has not been performed.
Methods: Using a retrospective cohort, we compiled an age- and prostate size- matched comparison group of 50 men who underwent HOLEP or PVP procedure between 2010–2013 (25 each group). The minimal prostate size for inclusion as a large prostate was 60 gm on transrectal ultrasonography. Our primary endpoint was the Michigan Incontinence Symptom Index (M-ISI) after surgery (up to nine months followup). Mixed models were constructed to compare differences in patient-reported UI after surgery between these two procedures.
Results: Both groups were comparable on mean follow-up ($\sim$ 8 months), race, BMI, baseline PSA, baseline post-void residual, AUASS, and M-ISI (all $p > 0.20$). The mean prostate volume was 105 gm and 102 gm for HOLEP and PVP, respectively. In the initial months after surgery (Figure), HOLEP was associated with greater transient UI (estimate = 5.9, *P*-value = 0.002) after adjustment for finasteride use, BMI, and baseline lower urinary tract symptoms (LUTs). In spite of this, patients ended up with a comparable degree of UI at final followup and with a similar degree of LUTS improvement based on AUASS regardless of procedure. The greater transient burden of UI may be offset by a greater degree of prostate tissue removal with HOLEP as evidenced by a greater decrease in PSA (72% vs. 17%, *P*-value = 0.003).
Conclusion: HOLEP is associated with greater UI during the first 9 months after surgery relative to PVP; however, more prostate tissue is removed and may translate into longer-term benefits such as decreased rate of retreatment and decrease rate of delayed hematuria.

MP34-10 Evaluation of safety, efficiency and surgical outcomes between GreenLight 180W-XPS techniques: comparison of Pure Photo-Vaporization and Vapor-Incision Techniques

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Introduction and Objectives: Recent improvements in GreenLight 180W-XPS offer enhanced tissue vaporization and fiber durability. Aside from pure photo-vaporization of the prostate (PVP), various vapor- resection techniques have been described to help improve tissue resection, including vapor-incision techniques (VIT). We sought to evaluate the efficiency, safety and outcome parameters between GreenLight PVP and VIT.
Methods: Data of 956 XPS cases were retrospectively collected from 5 experienced surgeons at high- volume GreenLight XPS centers. Preoperative, operative and post-operative parameters were collected and compared between groups. PVP was defined as pure vaporization only while VIT included techniques to incise into adenoma and allow tissue resection and removal.
Results: As summarized in Table1, men undergoing VIT (n = 284) had larger prostate size, higher IPSS/QOL and retention preoperatively than those undergoing PVP(n = 672). While VIT allowed greater delivery of energy (4.9 vs 3.6 kJ/g), operative time was longer and had greater need for > 1 fibers. There were no differences in intra- and post-operative adverse events. While no differences were observed in IPSS/QOL at 6 months post-operatively, more favorable Qmax and PVR were observed at 6 months, along with greater PSA reduction, in the VIT group.
Conclusions: Both Greenlight PVP and VIT techniques can be safely used to treat men with BPH. Both offer significant and durable symptom relief with comparable complication rates. Vapor-resection techniques suggest larger adenoma resection, however long-term data is required to assess if it correlates to greater treatment durability.

Preoperative Patient Characteristics	PVP* (n=672)	VIT* (n=284)	p-value
Age(years)	68.8	68.0	0.230
Previous BPH Surgery(%)	22.3%	18.2%	0.155
Anticoagulation(%)	7.7%	6.4%	0.477
IPSS	18.8	22.2	<0.001
QoL	3.8	4.3	<0.001
Qmax(mL/s)	9.3	7.3	<0.001
PVR(mL)	184	251	0.001
PSA(ng/mL)	4.3	5.9	<0.001
Prostate Volume(g)	72.7	83.5	<0.001
Urinary Retention(%)	18.0%	31.6%	<0.001
Operative Outcomes			
ASA >2	27.1%	33.7%	0.048
Operative Time(min)	49.7	74.2	<0.001
Laser Time(min)	30.1	40.5	<0.001
Energy(kJ)	241.5	356.6	<0.001
kJ/Prostate Volume(kJ/g)	3.6	4.9	<0.001
# Fibers Used			
1	95.5%	82.4%	
2+	4.5%	17.6%	
Length of Stay(days)	0.4	0.7	<0.001
Foley Duration(days)	1.3	1.1	0.002
Adverse Event Outcomes			
Intraoperative Bleeding(%)	0.4%	0%	0.559
Clot Retention(%)	0.9%	1.8%	0.320
Urinary Retention(%)	5.4%	4.6%	0.749
Incontinence, de novo(%)			
Stress	1.6%	0.7%	0.365
Urge	1.9%	1.4%	0.790
Bladder Neck Stricture(%)	1.6%	1.1%	0.769
6-Months Outcomes			
IPSS	6.6	5.8	0.479
QoL	1.4	1.2	0.465
Qmax(mL/s)	17.3	19.8	<0.001
PVR(mL)	49.1	37.8	0.005
PSA Drop(ng/mL)	1.8	2.6	<0.001
PSA Percent Reduction	32.3%	44.3%	0.054
* Mean or percentage of subjects reported.			

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MP34-11 Efficacy and safety of photovaporization of prostate with the Greenlight® laser in patients under oral anticoagulation with mechanical heart valve: Results of a multicentric study.

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Introduction: Photovaporization of prostate (PVP) is an alternative to transurethral resection of the prostate (TURP) particulary in patients with high risk of bleeding with benign prostatic obstruction (BPO). Patients with mechanical heart valve have higher INR (international normalised ratio) goals than in others indications of anticoagulants therapy. We evaluted the safety and efficacy of PVP with the Greenlight® laser in patients with mechanical heart valve under anticoagulation compared to patients with anticoagulation for other indication.
Materials and Methods: From June 2007 to December 2014, all patients under anticoagulation who received PVP were prospectively included in two centers. Patients under anticoagulation for mechanical heart valve (group A) were compared to patients with anticoagluation for other indication (group B). We analyzed fonctional outcomes (IPSS, Qmax, QoL) and postoperative complications. The statistical analysis was performed with Chi-2 for qualitative data and with Wilcoxon for numerical data.
Results: We included 109 patients in the study, 16 in group A and 93 in group B. Patients characteristics were similar except for age ($p = 0.005$) and preoperative INR ($p = 0.022$). Concerning bleeding complications: decrease of hemoglobin ($p = 0.13$), hematuria rates ($p = 0.55$), transfusion ($p = 0.36$) was comparable at 1 month. Hospital lenght of stay was similar in both group ($p = 0.1$). IPSS variations at 6 months ($p = 0.11$) as QoL ($p = 0.92$) were not different. Complications evaluated with Clavien-Dindo scale were similar for minor ($p = 0.72$) and major Clavien-Dindo complications ($p = 0.91$).
Conclusion: Photovaporization with Greenlight® laser is feasible and safe in patients under anticoagulation. PVP seems to be safe and effective in patients under oral anticoagulation with mechanical heart valve.

	p	Group A: Anticoagulants with mechanical valve. n=16	Group B: Anticoagulants only. n=93
Hospital lenght of stay (day)	0.1	2.8±2.1	2.8±4.4
Hematuria	0.95	4/16 (25%)	24/93(25,8%)
Blood transfusion	0.36	1/16 (6.3%)	2/93 (2,2%)
Decrease of hemoglobin	0.13	0.9±1	0.5±1.1
Minor complications Clavien-Dindo (	0.72	4/16 (25%)	25/85 (29.4%)
Major Clavien- Dindo (≥III)	0.91	1/16 (6.3%)	6/85 (7.1%)
IPSS at 6 month	0.11	4.3±2	7±5.6
QoL (quality of life) score at 6 month	0.92	1.3±0.5	1.9±2.1

MP34-12 Functional Results of a Prospective Randomized Controlled Study Comparing GreenLight XPS to TURP Demonstrate Durable Efficacy and Safety at 24-Months (GOLIATH): UK Analysis

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Introduction and Objectives: Six and twelve month results of a large prospective RCT comparing XPS to TURP in men with BPO demonstrated non-inferiority of XPS We now report 24-month UK results.
Materials and Methods: The trial was powered to assess non-inferiority of XPS versus TURP in terms of IPSS, Qmax and complication free rate at 6 months. Additional secondary endpoints included prostate size, PVR, PSA and QoLs at 6, 12, and 24 months. Of the 269 subjects who were randomized (1:1) and received treatment, 88 (48 GL-XPS and 40 TURP) patients were recruited at 10 sites in the United Kingdom. At baseline, there were no differences in IPSS, Qmax, prostate volume, PSA and IIEF between the UK and overall patients.
Results: The 24-month UK data showed that IPSS was comparable in both the GL-XPS and TURP arms (7.0 vs 7.0). Qmax was 20.9 in XPS and 23.7 in TURP. The complication free rate was 89.1% in XPS and 81.6% in TURP. IPSS-Qol, PVR, prostate volume, PSA and IIEF-5 were not statistically different. Six adverse events required intervention in the TURP arm compared to five in the GL-XPS arm. Measures of safety, efficacy and quality of life (IIEF-5, IPSS-Qol, PVR, prostate volume and PSA) were not statistically different between treatment arms.
Conclusions: GOLIATH data demonstrates durability of treatment between GL-XPS and TURP with comparable safety, efficacy and quality of life results after 24-months. Findings from the UK sub-analysis indicated that the treatment effects were consistent with the overall GOLIATH study results.

MP34-13 Photovaporization of prostate with the Greenlight® laser in octogerians: Results of a comparative, multicentric study

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Introduction: To treat elderly patients is challenging, and particularly in benign prostate hyperplasia (BPH) surgery where transurethral resection is a major procedure for this population. We evaluate efficacy and safety of photovaporization of prostate (PVP) in elderly patients (≥80 years) comparatively with patients < 80 years with BPH.
Materials and Methods: From December 2005 to February 2014, all patients who were treated by PVP for BPH and had a follow-up at 3 months were prospectively included in two centres. We analyzed functional results (IPSS, quality of life (QoL), Qmax, post-void residual volume (PVR)) and complications. Qualitative data were compared with $\chi 2$ test and numeric data with the ANOVA test.
Result: We included 396 patients, 249 were less than 80 years old and 147 were ≥80 years. Results on efficacy (table 1) have shown that IPSS was statistically lower in the < 80 years group during the first 6 months ($p = 0.02$) but not anymore at one year ($p = 0.3$). Quality of life, Qmax and PVR were not statistically different between both groups along the follow-up. At least one complication occurred in 40.5% of ≥80 years and in 39.4% of < 80 years ($p = 0.83$). Complications were Clavien ≤ 2 in 92.5% without differences between groups, one complication Clavien 5 occurred in the ≥80 years group. Types of complications were similar excepted for erectile dysfunction and retrograde ejaculation who were higher in the ≥80 years group.
Conclusion: Photovaporization of prostate is effective across all generations, without more complications in patients over 80

Table 1: Comparison of functional results in patients ≥ 80 years and < 80 years at 12 months

	< 80 years	≥ 80 years	p
Hospital length of stay (days)	1.7 ± 1.4	1.8 ± 1.2	0.37
IPSS variation	-13.7 ± 5	-11.5 ± 5.63	0.3
QoL variation	-3.5 ± 1.7	-3.8 ± 1.53	0.46
Qmax variation	10.5 ± 9.9	7.5 ± 7.6	0.24
PVR variation	-142 ± 252	-162 ± 216	0.72
PSA variation	-3.0 ± 8.7	-2.5 ± 34	0.09

years old. With advantages in terms of coagulation and hospital stay, and with similar functional results PVP should be a good surgical strategy for patients ≥80 years patients with BPH.

MP34-14 Photoselective Vaporization of the Prostate in Men with Large Glands and in High Risk Men using the 180-W GreenLight XPS Laser System: Results from a Large Multicenter Retrospective Study

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Introduction and Objectives: Treatment of Benign Prostatic Obstruction (BPO) by the GreenLight laser has been well established over the last decade. The objectives of this study were to evaluate the safety and efficacy of the 180-W GreenLight XPS Laser System in men with large prostates and in men who are higher surgical risks.
Methods: Data were collected through a multicenter retrospective chart review of 956 cases from 2010–2014. High risk (HR) men, defined as American Society of Anesthesia (ASA) Score III or higher, were compared to healthier men with respect to perioperative and post-operative outcomes. In addition, outcomes were compared between the men with baseline prostate volume (PV) greater than 80 g and those with 80 g or less.
Results: The 273 HR men were older, had larger prostates, more likely on anticoagulation, and as likely to be treated as outpatients as the 668 men in the healthier cohort (94.5% v 93.5%, p = 0.58) even though more were treated in a hospital. Intraoperative adverse events were similar. Postoperatively, men experienced an improvement in flow rate, international prostate symptom score (IPSS) and post void residual (PVR) in both groups. HR men were as likely as the healthier cohort to have an unplanned surgical intervention at any postoperative time point. Hospital readmission in the first year for HR men was more likely (4.8% v 1.5%), although similar at 30 days (1.9% v 1.4%). HR men experienced clot retention more often (2.2% V 0.7%), possibly due to greater anticoagulant usage. Mean PV for the 533 men with glands <= 80 g was 50.7 g v 125.7 g for the 271 men with glands > 80 g. Pre-operatively, men with PV > 80 g at baseline had a higher IPSS score (21.6 v 19.4), lower Qmax (7.8 v 8.9 mL/s) and higher PSA (6.8 v 4.1 ng/mL). Intra-operatively they required more energy (427 v 195 kj) and greater lasing time (49 v 25 min). Post-operatively, patients with larger PV had a greater rate of urinary tract infections (5.4 v 2.7%) but similar rates of urinary retention (4.1 v 3.6%) and irritative voiding symptoms (1.8 v 1.3%). These differences were not statistically significant.
Conclusions: Procedure-related morbidity, outcomes and symptom improvement were largely similar regardless of co-morbidities and prostate gland size. GreenLight XPS is a safe and effective treatment for high risk men and men with large prostates with symptomatic BPH.

MP34-15 Do antiplatelet and anticoagulant increase risk of haemorrhagic complications in photovaporization of prostate by Greenlight® laser

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Introduction: Photoselective vaporization of prostate (PVP) is an alternative to transurethral resection of the prostate (TURP) particularly in patients with high risk of bleeding. The objective was to assess whether anticoagulants or antiplatelet intake in patients treated by PVP was associated with an increased risk of complications and to find risk factors for bleeding complications.
Materials and Methods: All patients treated for benign prostate hyperplasia by PVP between November 2005 and January 2014 were included in a prospective study. According to the risk associated with the cessation of anticoagulant or antiplatelet for each patient, these treatments were stopped 5 days before surgery or continued. The frequency of haemorrhagic complications per and postoperative (bleeding requiring conversion to TURP, transfusion, clot removal, prolonged hematuria) in each group was compared by the Chi-2 test. Risk factors for bleeding complications per and postoperative were investigated by multivariate binary logistic regression.
Result: Of 446 patients, 370 treated with PVP were analyzed, 17 (4.6%) had warfarin, 108 (29.2%) had aspirin and 16 (4.3%) clopidogrel. There were 39 hemorrhagic complications (10.5%). In univariate analysis, no significant differences were found on the incidence of bleeding complications between the groups anticoagulants continued, anticoagulants stopped and no anticoagulants (17.6% vs 10.5% vs 9.8%, p = 0.49); the results were similar with antiplatelet agents, respectively (14.8% vs 6.5% vs 9.1%, p = 0.21) for aspirin and (6.3% vs 14.8% vs 10%, p = 0.48) for clopidogrel. The use of anticoagulants or antiplatelet agents was not a factor in bleeding risk in multivariate analysis, the only risk factor was the low energy applied in joules/grams of prostate (OR = 0.95, IC95 = [0.91 – 0.98], p = 0.004). Four vascular complications occurred: three acute coronary syndromes including two patients for whom aspirin was stopped, and one phlebitis in a patient for whom a relay warfarin to low molecule weight heparin was performed.
Conclusion: The pursuit of anticoagulants or antiplatelet agents do not appear to increase the risk of bleeding complications in PVP. Their stopping for the intervention increases the risk of serious vascular accidents. We must therefore continue to perform these treatments during PVP procedure.

MP34-16 Impact of photoselective vaporization of prostate in management of prostate cancer

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Introduction: Prostate cancers T1a or T1b are found in nearly 11% of patients who underwent transurethral resection of the

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prostate (TURP). Due to the lack of histology related to the vaporization of prostate tissue no study has been performed on patients with prostate cancer and having a photovaporization of prostate by laser Greenlight® (PVP). The objective of the study was to analyze the realization of a PVP in management of prostate cancer from diagnostic to treatment.

Materials and Methods: Between October 2005 and October 2014 all patients undergoing PVP and suffering from prostate cancer were prospectively enrolled in our center. The management included a digital rectal examination (DRE) and preoperative PSA, and biopsies during with the PVP in case of suspicion of cancer. Patients were followed annually (PSA + DRE ± biopsies). The analysis focused on: the detection rate of prostate cancer, functional outcomes and impact on the therapeutic management.

Result: Of the 486 patients operated, 27 had a prostate cancer: 15 patients had cancer diagnosed preoperatively (group A); 74 biopsies during PVP were performed, of which only 12 were positive (group B) whether 16.2% of screened patients but only 2.5% of the total population operated patients. During the postoperative follow-up 9 patients (2%) had a diagnosis of prostate cancer (group C). In group A, 83% of patients had cancer localized T1 or T2 versus 100% in group B and C. In Group B 58% had a Gleason 6 vs. 27% in group A, and 50% had an active surveillance vs 33% respectively. In group C, 66% had a Gleason 6, 88% had a prostatectomy or active surveillance (Table 1). In groups A and B, the IPSS was not statistically different initially ($p = 0.22$) and not anymore at 12 months of follow-up ($p = 0.42$).

Conclusion: The number of diagnosed prostate cancer patients treated by PVP is lower than that observed during TURP despite strict monitoring. But PVP does not prejudice the subsequent treatments and has improved functional outcomes.

Table 1: Patients characteristics

		Prostate cancer on biopsies realized during PVP (Group B) n=12	Prostate cancer diagnosed during follow up (Group C) n=9
Age mean (years)		76	71
PSA mean (ng/ml)		11	11
TNM	T1	92% n=11	100% n=9
	T2	8% n=1	
Gleason	6	58% n=7	66% n=6
	7	33% n=4	33% n=3
	8	8% n=1	
Treatment	Surveillance	50% n=6	44% n=4
	Prostatectomy	0%	44% n=4
	Radiotherapy	17% n=2	11% n=1
	Hormonotherapy	33% n=4	0%

MP34-17 Comparative study of photovaporization by Greenlight® laser in benign prostate hyperplasia and prostate cancer

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Introduction: The prostatic photovaporization (PVP) has shown its efficacy in benign prostate hyperplasia (BPH) with good results in terms of functional results and complications. We aim to evaluate if results of PVP on prostate adenocarcinoma tissues were similar to results on benign adenoma.

Materials and Methods: All patients who had a PVP in our centre have been prospectively included. Patients with prostate cancer (group A) were matched with patients with BPH (group B) in 1 to 4 fashion, according to prostate volume, indwelling catheter preoperatively, types of fibres and ASA score. Functional results and complications were compared between both groups.

Result: Between 2005 and 2013, 486 patients were operated and 27 had a prostate cancer. Patients from group A ($n = 27$) were matched with 108 patients from group B. Preoperatively, patients characteristics were similar except for initial PSA which was higher in group A (20 vs. 6.5; $p = 0.0002$). Energy applied (kj/g) was similar in the two groups (3516 vs. 3808; $p = 0.48$). Removal of catheter was similar in both groups (92.3% vs. 85.7%; $p = 0.5$). Analyze of functional results did not find difference between groups on prostate volume and Qmax, but a difference on IPSS variation (-23% vs. −67%; $p = 0.02$) and QoL variation (-42% vs. −80%; $p = 0.02$) at 12 months. No difference was observed for complications with 40% vs. 42.7% for group A and B respectively ($p = 0.82$) and similarly for Clavien ≥3 (0% vs.4.6%; $p = 0.26$). Incontinence at one year tended to be higher in group A (15.4 vs. 4.6; $p = 0.07$).

Conclusion: Photovaporization by laser Greenlight on prostate adenocarcinoma is technically feasible without increasing morbidity; nevertheless, functional results are worse than on BPH. PVP could be an optional therapy on refractive urinary symptoms in patients with prostate cancer.

MP34-18 Investigation for Postoperative Extubation in 24 Hours after Transurethral Anatomical Enucleation and Resection of the Prostate

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Objective: Transurethral Anatomical enucleation and Resection of the Prostate (TUAERP) has been carried out in our department more than 10 years since 2002. Surgical technique and perioperative management are gradually mature and perfect. In the current study, we explored the feasibility of postoperative extubation in 24 hours after TUAERP.

Methods: From June 2013 to May 2014, a total of 35 cases with TUAERP in our hospital received postoperative extubation in 24 hours.

Results: 35 cases of TUAERP were successfully completed. The basic clinical characteristics of all patients were observed (average age: 68.37 ± 3.37 years old; volume of prostate: 103.17 ± 31.32 ml). There was no intraoperative complication such as blood transfusion, TURS, bladder injury, rectal injury, obturater nerve reflex. Duration of operation: 40.67 ± 6.15 min, bladder washing time: 9.92 ± 3.17 h, time of installing catheter: 17.53 ± 6.32 h, postoperation hospitalization duration: 2.30 ± 0.53 day. 2 patients (5.7%) placed catheter again after extubation. IPSS, QOL, Qmax, PVR of preoperative and 3 months after operation were 22.3 ± 5.7 VS 5.21 ± 1.15 min, 4.27 ± 0.50 VS 1.32 ± 0.21 min, 8.14 ± 1.21 VS 21.52 ± 1.33 ml/s, 31.30 ± 21.43 VS 4.75 ± 5.31 ml, respectively. It was statistics significance at difference of preoperative and postoperative ($P < 0.05$). None of the postoperative complications including long-term urinary

incontinence, urethrostenosis, secondary hemorrhage occurred during the 3 months follow-up.
Conclusions: It's feasible to extubate in 24 hours after TUAERP. Both of the 2 patients with 24 h extubation failure have small prostate. Our experience of 24 h early extubation include preoperative taking adrenergic alpha-antagonists; intraoperative wound hemostasis thoroughly; postoperative close observation, bladder irrigation and stop irrigation early. It's suitable for early extubation especially for bigger prostate volume patients.

MP34-19 Early catheter removal: A Prospective study of 800 consecutive patients undergoing transurethral resection of the prostate (TURP)

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Introduction: Post-operative care of TURP includes prolonged bladder irrigation that places a heavy burden on the nursing staff and a substantial strain on the budget. We explored the feasibility and limitations of early catheter removal after TURP in our unit.
Material and Methods: The study included 800 consecutive patients who underwent TURP between 2009 and 2013. The equipment used was a standard resectoscope with a regular loop. The cutting and coagulation electrical variables were standard at 160 and 60 W for the generator used. The decision to remove the catheters was based on normal vital signs, adequate urine output, and absence of clots and acceptable color of the catheter effluent.
Results: Catheters were removed in 768(96%) patients on postoperative day 1. Of the 768 patients 614(80%) were discharged on the same day. The criteria for catheter removal on postoperative day 1 were not met in 32(4%) patients and the mean indwelling catheter time was1.8 +/- .8 days and the mean length of hospital stay after surgery was 2.2 +/- 1.1 days. For the entire group, the mean indwelling catheter time was 1.1 +/- 0.4 days and the mean length of hospital stay after surgery was 1.4 +/- .5 days. Risk factors, which predicted delayed removal were age, postoperative bleeding and several comorbidities, that is coronary heart disease, renal insufficiency.
Conclusions: Removal of the catheter on the first postoperative day after TURP seems to be feasible, safe and cost-effective without increasing significant morbidity in selected patients.

MP34-20 Decrease in serum prostate specific antigen level following transurethral resection of prostate for benign prostatic hyperplasia and its correlation with the resected prostate weight and the clinical outcome.

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Introduction: Serum prostate specific antigen levels are known to decrease after transurethral resection of prostate in patients with benign prostatic hyperplasia. The study was conducted to assess the decrease in serum PSA level after TURP for BPH and correlate it with the resected prostate weight & the clinical improvement.
Materials & Methods: Ninety patients with clinically and investigation proved bladder outlet obstruction, secondary to prostatic enlargement, without any clinical or biochemical evidence of prostate malignancy, undergoing TURP for the first time, were included in the study. Patient's evaluation included a complete history, International Prostate Symptom Score (IPSS), serum total PSA (t-PSA) level, and transrectal ultrasound determined prostate weight. All the patients underwent transurethral resection under spinal anesthesia. On follow-up, their serum t-PSA levels and IPSS scores were determined periodically & final assessment done at 8 weeks. The patients were compared in two groups, depending on the fraction of gland resected, group A with < 70% resection and group B with > 70% prostatic resection.
Results: The mean preoperative prostate size, serum t-PSA and IPSS were 68.32 grams, 3.64 ng/ml and 23 respectively. The amount of tissue resected on an average was 47.11 grams; this corresponded to about 68% of the mean prostatic resection. The mean post-operative t-PSA and IPSS was 1.94 ng/ml and 5 respectively. The mean fall in t-PSA was 42.43% and the mean fall in IPSS was 78.30%, reflecting a substantial fall in the serum t-PSA level as well as in the symptom score. The mean preoperative t-PSA and IPSS in group A were 3.76 and 23.09, with the corresponding post-operative values of 2.05 and 4.61 respectively. In group B, the mean preoperative t-PSA and IPSS were 3.52 and 22.64, while the corresponding mean post-operative values were 1.82 and 4.59 respectively. Serum t-PSA was found to decline substantially in both groups, although patients with > 70% resection had the maximum fall in serum t-PSA when compared to their preoperative values, the difference being statistically significant.
Conclusions: Percentage fall in serum t-PSA by about 42% was found to be predictor of nearly 68% resection, which corresponded to an absolute decrease of about 78% in the patient's urinary symptom score. The study suggests that it is the fraction of the prostate gland resected in BPH that correlates directly with the percent fall in IPSS whereas it is the total weight resected that correlates with the percent fall in serum t-PSA.

MP34-21 Can we preserve ejaculation after transurethral resection of the prostate? Comparative study between the conventional and a new technique.

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Introduction: Transurethral resection of the prostate (TURP) remains the gold standard in the surgical treatment of benign prostatic hyperplasia, though it is complicated with retrograde ejaculation in 65–80% of cases. The purpose of this study was to evaluate a new resection technique to reduce the incidence of retrograde ejaculation without loss of efficiency on voiding results.
Methods: This is a single-center, prospective, randomized, single-blind, comparative study between a new technique (group A) preserving more than 1 cm para-montanal tissue and the conventional technique of TURP (group B).
Results: They were 70 patients (35 patients in each group). Mean patient's age was 66 years and mean prostate weight was 60 gr in group A and 58 gr in group B. Operative time and hospital stay were similar for both groups (40 min and one day hospitalization). No significant differences were noted in terms of early complications (fever or bleeding) or late complications concerning urinary retention or urinary tract infections (p = 0.383). The result in the voiding issue was assessed by improved post void residual urine (from 211 cc to 26 cc for patients in group A and from 204 cc to 49 cc for those in group B) and postoperative

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IPSS (from 21 to 7 for both groups). Ejaculation was statistically more preserved for patients in group A, 65.7% vs 28.6% ($p < 0.05$). The new technique also offered less erectile and ejaculatory dysfunction according to IIEF5 and MSHQ scores.

Conclusion: The technique of TURP preserving more than 1 cm in the para-montanal tissue offers good voiding results as those in conventional technique with less risk of retrograde ejaculation and erectile dysfunction.

MP35 - BPH / LUTS 4

MP35-1 Home after HoLEP: Patient outcomes and cost-benefits of a day-case HoLEP service

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Introduction: Day-case prostate surgery has wide-reaching benefits for patients and offers savings for healthcare services, but to be successful requires a carefully planned patient pathway. We describe our experience implementing a district general hospital day-case holmium laser enucleation of the prostate (HoLEP) service.

Patients and Methods: We conducted a retrospective cohort study comparing all inpatient and day-case HoLEP procedures performed in our UK centre, between April 2014 – March 2015. Day-case patients were discharged by 8pm and their catheter removed in outpatients the following morning. Outcomes assessed included immediate complication rate and time to trial without catheter (TWOC). Patient feedback on the day-case procedure was obtained by telephone. Financial savings were calculated using National Health Service reference costs.

Results: Forty-five HoLEP procedures were performed, 17 inpatient and 28 day-cases. Consultant and patient preference determined which patients underwent day-case surgery. Age, ASA grade, pre-operative prostate volume measured with transrectal ultrasound, and resected prostate weight were similar in both groups (Table).

Two (12%) inpatient complications occurred, both clot retention after TWOC. There were four (14%) day-case complications, one urinary tract infection and three patients with significant haematuria: one required return to theatre and two readmission. Six (21%) day-cases required an unplanned overnight stay, including the 3 patients with significant haematuria, 2 patients with more minor haematuria requiring observation only, and, in one case, patient anxiety. There was no significant difference in time to TWOC, median (IQR) [range] 24 (24–48) [24–72] hours after inpatient and 24 (24–24) [24–96] after day-case ($p = 0.38$). Patient satisfaction with our day-case HoLEP service was high.

Characteristic	Inpatient [n=17]	Day-case [n=28]	p
Age Mean (standard deviation, sd)	76 (7.7)	74 (7.7)	0.40
ASA Median (interquartile range, IQR)	2 (2-3)	2 (2-2)	0.25
Pre-operative prostate volume, cc Mean (s.d.)	111 (49) [measured in n=12]	103 (33) [n=18]	0.66
Resected prostate weight, g Mean (sd)	50 (42)	54 (32)	0.70

Each HoLEP successfully undertaken as a day-case saves £165 in costs, and generates £490 additional tariff income for the hospital when compared to an inpatient procedure. Over the year studied, 22 of 45 cases were successfully conducted as a day-case, saving £3630 in expenses, and generating £10780 in additional tariff revenue: an overall benefit to the hospital of £14410.

Conclusion: We demonstrate a successful model for running a safe and cost-effective day-case HoLEP service. Complications are minor even when operating on large prostates and patients are highly satisfied with the experience.

MP35-2 An evaluation of the learning curve for Holmium Laser Enuclation of the Prostate (HoLEP) – A single surgeon's experience

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Introduction: Holmium Laser Enuclation of the Prostate (HoLEP) is now established useful treatment for benign prostate hyperplasia. However, concerns have been raised about HoLEPs prolonged learning curve. This study therefore aimed to analyse the learning curve for HoLEP utilising a single expert surgeon.

Materials and Methods: A retrospective analysis of 253 consecutive HoLEP cases performed by the same surgeon from 2006–2013, was conducted. Outcome measures included enucleation efficacy, morcellation efficiency and three-month post-operative PSA values. Cases were plotted sequentially with a line of best fit placed to produce and overall graph. Additionally, subdivision into cohorts of 20 cases occurred, to assess if learning had occurred through ANOVA analysis. The final outcome measure was complication rates. Percentages per 20 cases were calculated to demonstrate procedural safety outcomes and also compared using ANOVA analysis.

Results: The mean age of patients across the cases was 69.21 years with an average Transrectal Ultrasound (TRUS) prostate volume of 95.84 cc. Enucleation efficiency demonstrated learning across cases ($p = 0.21$) with a mean value of 0.97 g/min. A plateauing of performance was observed the first 50–60 cases. Morcellation efficiency demonstrated significant learning ($p = 0.01$) with mean values of 4.44 g/min. A plateau in performance was seen after 30–40 cases. Finally, three month PSA values did not demonstrate learning ($p = 0.83$), however a plateau of performance appears after roughly 50–60 cases with average

values of 2.27 ng/mL. In total 21 complications occurred (8.3%) ranging from urinary Incontinence to erectile dysfunction. Rates decrease steadily when observed over 20 case loads from 15–20% to 5–10% over the later cases, however do not demonstrate a stable performance within this caseload and were therefore not used for learning curve analysis.
Conclusions: Our case series demonstrated a learning curve of 30–60 cases for HoLEP, depending on the outcome measure. Additionally, large variance in performance and complication rates was still seen even after 200 cases conducted, demonstrating the procedures difficulty. Therefore, it is crucial adjuncts to training such as simulation-based training are utilised and integrated into training pathways to ensure patient safety during the initial phase of learning. Finally, as increasing numbers of experienced surgeons are becoming available, the impact of mentorship within this learning curve must now be analysed.

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MP35-3 Long Term Efficacy of HoLEP: A Prospective Study

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Introduction: HoLEP is an established Endourological equivalent to other methods of prostatectomy (TURP / Open Prostatectomy). We prospectively evaluated the outcome of HoLEP in the Long term (>3 Years).
Materials and Methods: Between January 2010 & June 2012, patients presenting with LUTS or Retention urine were evaluated clinically & Investigated (Bio Chemistry, Uroflowmetry). Patients who had failed Medical Management and Trial voiding following Retention were included in the study. Patients who had previous TURP, Stricture Urethra or Ca Prostate were excluded. HoLEP was performed using the Lumenis Versapulse (100 watt Holmium Laser). Enucleation was done using a 550 micron fiber (2 or 3 Lobe Technique). The Enucleated lobes were removed by morcellation using the Versacut Morcellator. A 22 fr or 24 fr three way catheter was placed and removed after the urine cleared and the patient ambulant. Patients were followed up initially at 2 weeks, 4 weeks & 3 monthly in the first year. Subsequently they were reviewed at 6 monthly intervals with PSA, Sonography & Uroflowmetry. Immediate & Long term complications, Secondary Procedures and Events were recorded.
Results: Holep was performed on 124 Patients during the study period. 25 were in Retention with catheter. The mean prostate size was 70.28 gms (Range 28–163). Mean Pre-op PSA was 7.77 ng/ml (Range 0.4–34.2) and Qmax averaged 8.97 ml/sec (Range 3.8–13.7). The mean operative time was 1 Hr 40 minutes (Range 45 minutes – 3 Hrs 20 minutes). The catheter was removed after 48 hrs (Range 48 Hrs - 96 Hrs). 2 patients required Recatheterization. Urine infection occurred in 21 patients in first post-op month.

During follow up 7 died; 53 patients were not compliant with follow up. Overall 64 Patients were completely evaluable with required (3 monthly & 6 monthly) reviews. The Mean PSA was 0.97(1 year), 0.7(2 years), 0.56(3 years)ng/ml. The Qmax averaged 24.6(1 year), 28.3(2 years), 18.9(3 years) ml/sec, signifying an improvement of 174% (1 year), 215% (2 years), 110% (3 years).

8% required secondary procedures (Internal Urethrotomy, Orchiectomy). Urine Incontinence was noted in 16 during the first 3 months and reduced to one at 1 year.
Conclusion: Holep offers significant relief of obstruction with satisfactory long term efficacy.

MP35-4 Durable symptom improvement after Holmium laser Enucleation of the prostate: Analyzing outcomes at ten years in over 100 men

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Introduction: A majority of surgical treatment options for benign prostatic hypertrophy (BPH) demonstrate improvement in symptoms at short-term follow-up. However, long-term outcomes are under-reported, especially at ten years post-operatively. In the case of holmium enucleation of the prostate (HoLEP), there is only one published report of ten-year treatment responses and none from the United States. Such information is critical for determining comparative efficacies and establishing a gold standard in surgical care of BPH.
Materials and Methods: Patients enrolled in a prospectively maintained, IRB approved database were sent surveys ten years after undergoing HoLEP. All surgeries were performed at a single institution between the years 2002 and 2004.
Results: Surveys were completed by 115 patients. At ten years post-operative (Table 1), mean AUA symptom score decreased from 21.9 to 5.1. Ninety-five percent of patients reported being satisfied or very satisfied and fewer than 5% reported being on alpha-blocker therapy. Only four patients required ancillary procedures, two for perioperative bleeding and two for urethral strictures. Patients were equally likely to report improvements in pre-operative incontinence as they were worsening or de novo post-operative incontinence. Mean PSA at 10 years was 1.66 ng/mL relative to a pre-operative mean of 7.33 ng/mL.
Conclusions: Symptom improvements seen after HoLEP are profound and sustainable for at least a decade.

Table 1: Demographic, operative, and follow-up data among patients undergoing HoLEP with at least 10 years follow-up

Variable (number of pts. with pre-operative data/number of pts. with post-operative data)	Baseline (range)	10 years post-op (range)
Age (years) (115/115)	66.3 (40-80)	77.7 (50-91)
AUA symptom score (101/98)	21.9 (3-35)	5.1 (1-22)
BPH symptom index (87/98)	7.4 (0-13)	1.15 (0-12)
TRUS volume (cm^3) (102)	95.6 (23.3 -242.8)	
Specimen weight (g) (107)	79.8 (2-261)	
Enucleation time (min) (106)	70.7 (10-245)	
Morcellation time (min) (106)	17.2 (3-55)	
Total energy used (kV) (74)	159.0 (32.4 – 518.1)	
Ancillary urologic procedures (115)		4
Satisfaction with HoLEP (112)		
1 – Very satisfied		72 (64.3%)
2 – Satisfied		34 (30.3%)
3 – Mixed		4 (3.6%)
4 - Dissatisfied		2 (1.8%)
5 – Very dissatisfied		0
Taking alpha-blocker (115/115)	54 (47.0%)	4 (4.3%)
Any degree of incontinence (77/115)	24 (31.2%)	21 (18.2%)
New/worse incontinence		17 (14.7%)
Newly wearing pads		7 (6.1%)
Improved/resolved incontinence		17 (14.8%)
Able to stop wearing pads		4 (7.5%)
PSA (ng/mL) (100/81)	7.33 (0.29-36.4)	1.66 (0.4-26)

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MP35-5 Holmium laser enucleation of the prostate (HoLEP) verus simple prostatectomy for large prostates: systematic review and meta-analysis

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Introduction: Discussion and debate continues in regards to the optimal surgical intervention for large prostate burdens. The objective of this review was to compare and evaluate the safety and efficacy of HoLEP and simple prostatectomy for this common pathology.
Materials and Methods: Systematic search was carried out for studies comparing HoLEP with simple prostatectomy (open, robot assisted, laparoscopic) using a sensitive strategy and in accordance with Cochrane collaboration guidelines. Primary parameters of interest were objective measurements including maximum urinary flow rate (Qmax), post void residual (PVR) and subjective outcomes including International prostate symptom score (IPSS) and quality of life (QoL). Secondary outcomes of interest included volume of tissue retrieved, catheterization time, hospital stay, blood loss and serum sodium decrease. Data on baseline characteristics and complications was also collected. Where possible, comparable data was combined and meta-analysis was conducted.
Results: A total of 310 articles were identified and after screening abstracts (114) and full manuscripts (14), 3 randomised studies (263 patients) were included, which met our predefined inclusion criteria. These all compared HoLEP with open simple prostatectomy (OSP). The mean trans-rectal ultrasound volume was 113.9 ml in the HoLEP group and 119.4 ml in the OSP group. There was no statistically significant difference in Qmax, PVR, IPSS and QoL at 12 and 24 months between the two interventions. OSP was associated with a significantly shorter operative time ($p = 0.01$) and greater tissue retrieved ($p = 0.0003$). However, HoLEP achieved significantly less blood loss ($p < 0.00001$) and patient's shorter hospital stay ($p = 0.03$) and patients had shorter catheterisation times ($p = 0.01$). There were no significant differences in the total number of complications recorded between HoLEP and OSP ($p = 0.80$)
Conclusion: The results of the meta-analysis suggests that HoLEP and OSP possess similar efficacy profiles in regards to both objective and subjective disease status outcome measures overall. This review suggests these improvements persist to atleast the 24-month follow up point. Further randomised studies are warranted in order to fully determine the optimal surgical intervention for large prostate burdens.

MP35-6 Analysis of Perioperative performance and functional improvements for patients undergoing Holmium laser enucleation of the prostate stratified by gland size

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Introduction: Holmium laser enucleation of the prostate (HoLEP) is an optimal surgical treatment for BPH with evidence demonstrating favorable outcomes across small, medium, and large sized glands. However, few studies have directly compared treatment outcomes substratified by gland size, particularly among smaller prostates less than 40 gm.
Materials and Methods: A prospectively maintained, IRB approved surgical database of men undergoing HoLEP at a single institution was reviewed to identify 897 patients who had 100 gm of tissue or less enucleated during surgery. Patients were then categorized in 10 gm increments. Demographic, peri-operative and post-operative functional improvements were compared between groups.
Results: The number of patients in each cohort ranged from 66 to 107. There was no significant difference between groups for age, pre-operative AUA symptom score (AUASS), or BPH impact index (BPH-II). Enucleation time increased with increasing gland size; however, enucleation efficiency (gm/min) improved in a linear fashion from 0.23 gm/min in the 0–10 gm cohort to 1.67 gm/min in the 90–100 gm cohort ($p < 0.01$). Similarly, morcellation time increased with gland size though morcellation rate reached a plateau around 6 gm/min at 40 gm and greater ($p < 0.01$). All patients demonstrated significant improvements in AUASS and BPH-II scores at 1, 6 and 12 months, although the magnitude of improvement was greater with increasing gland size (Table1).

Table 1

Variable	0-10gm	10-20gm	20-30gm	30-40gm	40-50gm	50-60gm	60-70gm	70-80gm	80-90gm	90-100gm	P-Value
12-month AUA-SS	8.84 ± 6.81	7.91 ± 6.31	5.95 ± 5.06	5.81 ± 5.12	5.76 ± 5.62	3.4 ± 3.0	4.13 ± 2.99	3.00 ± 2.97	5.05 ± 4.26	3.59 ± 3.24	<0.01
% reduction in AUA-SS from baseline	54.9	64.4	69.4	73.1	72.6	83.8	79.6	84.9	75.2	81.4	<0.01
12-month BPH-II	2.4 ± 3.03	1.38 ± 2.5	1.03 ± 2.09	1.13 ± 1.54	1.19 ± 2.05	0.51 ± 1.3	0.71 ± 1..89	0.35 ± 0.9	1.00 ± 1.99	0.62 ± 1.25	<0.01

Conclusion: HoLEP remains an efficacious surgical treatment regardless of gland size, although men with larger glands may experience higher degrees of symptom improvement.

MP35-7 Single Lobe Versus Multiple Lobe Holmium Laser Enucleation Of Prostate

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Introduction: Transurethral resection of the prostate (TURP) has been challenged over the last decade by Holmium enucleation of the prostate (HoLEP). During HoLEP, prostate can be enucleated in 3 lobes (left lobe, right lobe and median lobe), 2 lobes (left lobe and right lobe +/- median lobe) or as a single lobe (i.e. whole prostate enucleated as a single piece). Here, we report our experience and outcomes of single lobe versus multiple lobe HoLEP techniques.
Patients and Methods: This prospective study included 62 symptomatic BPH patients who underwent HoLEP between September 2012 and March 2015. Initial 41 patients (between Sept. 2012 and June 2014) underwent multiple lobe enucleation technique (Group A) and later 21 patients (between July 2014 and March 2015) underwent single lobe enucleation technique (Group B). Patient demographics, preoperative and perioperative data and post-operative outcomes were recorded and analyzed. Patients were followed clinically and with International Prostate Symptom Score (IPSS), peak flow rate (Qmax) and post void residual urine volume at 1, 3, 9 and 12 months.
Result: The mean age of patients was 65.2 ± 13.4 years in group A and 63.6 ± 12.8 years in group B ($p = 0.653$), mean follow-up

time was 16.2 months in group A and 5.8 months in group B and mean preoperative prostate size was 53.4 ± 16.8 cm3 in group A and 56.7 ± 15.6 cm3 in group B (p = 0.456). The mean enucleation time was 86.1 ± 16.8 minutes in group A vs. 73.4 ± 14.4 minutes in group B (p = 0.004). Mean resection weight was 45.6 ± 12.6 g in group A vs. 47.2 ± 13.3 g in group B (p = 0.643), mean catheterization time in group A was 33 ± 11 hrs. vs. 34 ± 10.6 hrs. in Group B and mean hospital stay in group A was 56.4 ± 11.4 hrs. vs. 58 ± 10.6 hrs. in group B. Blood transfusion was needed in 2 patients in group A and 1 patient in group B. Transient stress incontinence was seen in 8 patients in group A and 3 patients in group B. The IPSS and Qmax improved significantly and equally in both groups at 3 months follow up.
Conclusion: Operative time was lesser with single lobe enucleation technique of HoLEP. However, both techniques of HoLEP provide similar clinical outcomes and complications, thus surgical training and preference may well decide the choice of a particular HoLEP technique.

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MP35-8 The impacts of training on the perioperative and intermediate functional outcomes after Holmium Laser Enucleation of the prostate.

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Objective: The purpose of this study is to systemically measure the impact of trainees' participation on the perioperative and functional outcomes after Holmium laser enucleation of the prostate (HoLEP) in a residency training setting.
Material and Methods: BPH patients who underwent HoLEP at our institution between January 2007 and January 2013 were stratified based on trainee's postgraduate level. All cases were performed or supervised by a single endourology fellowship-trained urologist. IRB approval was obtained and perioperative outcomes and complications were retrospectively analyzed. Functional outcomes were assessed using a comprehensive questionnaire that was sent by an independent third party survey center. The questionnaire included Sexual Health Inventory for Men (SHIM), International Prostate Symptom Score (IPSS) and International Continence Society (ICSmaleSF) questionnaires. Patients were divided into three groups. Group 1 if no trainee participated in the operation, Group 2 if a senior trainee (Post graduate year (PGY) 4 or 5) performed the operation and Group 3 if a junior trainee (PGY 1, 2 or3) participated in the operation. The patient's baseline characteristics, complications, perioperative and postoperative outcomes were compared among the groups.
Results: There were no differences in the baseline clinical and functional characteristics among the groups. Preoperative prostate size, PSA, and uroflowmetry were comparable among the groups. Intraoperatively there were significant differences in overall operative and enucleation time (p = 0.0186, p = 0.0.0047 respectively) with shorter operative time noticed with more experienced operators. However, the morcellation time was not different. There were no differences in the weight of the resected tissue, hemoglobin change, and incidence of blood transfusion. Postoperatively, all patients had similar length of stay and urinary catheter duration. Complications (graded by the Clavien grading system) were not significantly different among the groups. Uroflowmetry was performed at six weeks postoperatively and every three months afterward. There were no differences in the maximum flow rate, average flow rate or post void residual at any time point. However, the voided volume was different at six weeks (p = 0.03). There were no differences regarding SHIM, IPSS and ICS male VS among the groups. When the incontinence scale (ISC male IS) was analyzed there was a significant difference among the three groups where the highest score seen in group 2.
Conclusion: Trainee participation in HoLEP does not compromise the safety or the functional outcomes of the procedure. The overall sexual and functional outcomes are comparable, however cases performed by senior trainees may have higher incidence of storage symptoms.

MP35-9 Morcellation Efficiency: Comparative Study of Two Generations of Morcellators

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Objectives: Efficient tissue morcellation plays an important role in shortening the operative time of Holmium laser enucleation of the prostate (HoLEP). This study compares the efficiency of the new VersaCut+™tissue morcellation system and the older VersaCut™ tissue morcellator system.
Materials and Methods: The first 20 patients who underwent Holmium laser enucleation of the prostate (HoLEP) and tissue morcellation using the new VersaCut+™ tissue morcellation system at our institute were included in this study (Group1). These patients were matched based on the resected tissue weight to patients from our prospectively maintained HoLEP database with a 2:1 matching ratio (Group2). Peri-operative characteristics, operative times, morcellation times and complications were reported and compared between the two groups. Morcellation efficiency (defined as the weight of morcellated tissue per morcellation time) was calculated and compared between the two groups.
Results: The preoperative transrectal ultrasound prostate volume was comparable for the two groups [96.9 gm (SD 42) for group 1 vs 97.2 gm (SD 39) for group 2, (p = 0.97)]. There were no differences in the resected weight between the two groups [51.1 gm (SD 26.3) for group 1 vs 50.7 gm (SD25.9) for group 2, (p = 0.94)]. Total operative times were not different between the two groups [123 minutes (SD 24) for group 1 and 152 minutes (SD 55) for group 2, p = 0.80). When the new morcellator was used, mean morcellation time was 19.95 minuts (SD13.7) whereas mean morcellation time was 14.59 minutes (SD11.6) with the older morcellator (p = 0.12). Morcellation efficiency was comparable between the two groups [3.3 gm/minute (SD1.8) for group 1 vs 4.4 gm/minute (SD 2.45) for group 2]. There were no complications in both groups. When the morcellated tissue was examined postoperatively, there were no differences in the incidence of prostatitis or prostate cancer in the two groups.
Conclusions: When matched by the resected prostatic tissue weight, there were no differences identified in the efficiency of the two morcellators examined in this study.

MP35-10 Perioperative or operative factors affecting the hemoglobin decrease in HoLEP with Pure Laser hemostasis

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Purpose: Although Holmium laser has good capability in hemostasis, HoLEP may need to be used to stop bleeding with

transurethral fulguration in some cases. We analyzed how each perioperative or operative factor affected postoperative hemoglobin decrease among HoLEP with pure laser hemostasis.
Subjects: 228 pure laser hemostatic HoLEPs, which were conducted by the single surgeon (FE) between July 2008 and May 2015 at St. Luke's International Hospital, were included in this study.
Methods: Postoperative values of hemoglobin were evaluated by the following parameters: age, body mass index, preoperative PSA, dutasteride use, time of 4 operation components (enucleation, 1st hemostasis, morcellation, 2nd hemostasis), three lobe or enbloc enucleation technique, and enucleated prostate weight.
Results: The average postoperative hemoglobin decrease was -0.95 g/dl. The longer time of 3 operation components (enucleation, morcellation, 2nd hemostasis) contributed significantly to greater decrease of hemoglobin in the univariate analysis. Enucleated prostate volume and age were also significantly associated with hemoglobin reduction. Dutasteride use reduced Hemoglobin from -1.00 ± 0.95 g / dl to -0.54 ± 0.60 g / dl($p < 0.001$). However, only two factors, dutasteride ($p = 0.038$) and prostate volume ($p = 0.003$), were remaining significant to predict hemoglobin decrease in the multiple regression analysis.

However, shorter enucleation time tended to reduce hemoglobin decrease ($p = 0.065$).
Conclusion: This study showed that the greater resected volume resulted in the greater hemoglobin decrease using both enucleation technique and transurethral resection.

The effect of attentive laser hemostasis time on hemoglobin reduction was non-significant, but shorter time of enucleation may suppress the hemoglobin decrease. Furthermore, dutasteride had the potential to suppress the hemoglobin decrease.

MP35-11 Sphincteric mucosal saving technique for the prevention of transient incontinence after holmium laser enucleation of the prostate

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Introduction: Recently, holmium laser enucleation of the prostate (HoLEP) is widely performed for the surgical management of benign prostatic hyperplasia (BPH). Although HoLEP is more effective for the resection of enlarged prostatic adenoma compared to transurethral resection of prostate (TURP), it has been reported that the incidence of postoperative transient incontinence is slightly higher after HoLEP. To reduce the postoperative incontinence rate, we performed sphincteric mucosal saving technique during HoLEP and analyzed the efficacy of this technique.
Patients and Methods: From April 2013 to May 2014, 63 patients underwent HoLEP by a single surgeon and followed-up for more than 3 months. Of these patients, 33 patients underwent sphincteric mucosal saving technique (Group A) and the other 30 patients did not (Group B). We retrospectively compared the presence of postoperative incontinence, postoperative peak flow rate and post-void residual urine volume and other perioperative outcomes between the two groups. All operations were performed using three lobal excision technique and there was no technical difference except sphincteric mucosal saving between both groups. Incontinence was defined any involuntary urine leakage after HoLEP.
Results: The patients' mean age and prostate volume were 72.4 ± 7.1 vs 68.8 ± 6.3 years and 71.7 ± 34.2 vs 60.4 ± 17.9 g between group A and B, respectively ($p = 0.180$, 0.003). Mean enucleation and morcellation time were 73.7 ± 28.8 vs 66.3 ± 27.2 and 17.2 ± 12.7 vs 10.7 ± 8.6 minutes, respectively ($p = 0.578$, 0.091). Mean resected volume was 39.1 ± 18.6 vs 25.6 ± 12.5 g, respectively ($p = 0.041$). The incidence and duration of postoperative incontinence was significantly lower in group A (12.1% and 4.1 weeks) than group B (40% and 10.5 weeks) ($p = 0.006$, 0.042). Postoperative peak flow rate and post-void residual urine volume checked at postoperative 1 month were not significantly different between the two groups ($p = 0.446$, 0.670).
Conclusion: Sphincteric mucosal saving technique during HoLEP can be safely and effectively performed and may be helpful for reducing postoperative transient incontinence with comparable improvement of voiding symptoms.

MP35-12 The effect of preoperative administration of 5 alpha-reductase inhibitor, Dutasteride, on holmium laser enucleation of the prostate (HoLEP)

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Objective: To evaluate the effect of preoperative administration of 5 alpha-reductase inhibitor, Dutasteride, on holmium laser enucleation of the prostate (HoLEP).
Method: A retrospective study was conducted on 75 patients who underwent HoLEP, during the period of February 2009 to March 2011. Patients were divided in two groups, one who had preoperative administration of Dutasteride and the other who did not have preoperative administration of Dutasteride, and compared on preoperative prostate volume, operative time, enucleated weight, and the change in hemogolbin between preoperateive and post operative day 1. The group with preoperative administration of Dutasteride was also divided into 2 groups, according to the duration of the administration of Dutasteride, at the median day of 33 days.
Result: The mean age was 71.5 years old (60–86), and the mean preoperative prostate volume was 72.2 ml(28–150). When compared between the two groups with and without the preoperative administration of Dutasteride, the operative time was significantly shorter ($p = 0.0003$) and the change in hemoglobin was significantly less ($p = 0.036$) in the group with preoperative Dutasteride administration. When compared between the duration of the administration, there was no significant difference in any of the aspects, but there was a tendency for smaller preoperative prostate volume, smaller enucleated weight, shorter operative time, and smaller change in post and preoperative hemoglobin in the longer administrated group.

The operative findings show that in the group with preoperative Dutasteride administration, the redness of the membrane of the prostatic urethra decreases, and the bleeding during the ablation decreases for better surgical view. There was no impression that the enulceation maneuver was made harder by preoperative administration of Dutasteride.
Result: Preoperative Dutasteride administration shortens the operative time, and decreases operative bleeding in HoLEP and is thought to ease the HoLEP procedure.

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MP35-13 Is Power Everything in HoLEP Surgery? The First Reported 50W HoLEP Series.

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Introduction: We present the first reported series of 50 Watt (W) HoLEPs undertaken in a single institution. The aim of the study was to report outcomes across all prostate sizes during the learning curve of two surgeons to see if 50W HoLEP is clinically and financially viable option.
Materials & Methods: Two HoLEP naive surgeons completed 105 HoLEPs over a 14 month period using a 50W Holmium laser (Auriga XL, StarMedTec GmbH, Munich, Germany, a Boston Scientific Company). Pre and post operative data including flow rates (Qmax), residual volume (RV), international prostate symptom scores (IPSS), quality of life scores (QoL), total surgical times, hospital stay, histology, haemoglobin (Hb), creatinine (Cr) and catheter times were accurately recorded. Mentorship was provided by a senior 100W HoLEP surgeon (TFA) from an adjoining hospital by regular staged visits to our unit.
Results: Wilcoxon non-parametric rank testing using SAS statistical software version 9.3 was used. Median patient age was 70 years, median prostate volume 50 cc with a mean enucleation weight of 31.67 g (range 1–105 g) across the series that included 23 laser bladder neck incisions. Removing these gave a median enucleated weight of 40 g. Mean hospital stay was 1.03 days with 11 cases completed as day-case surgery. Mean operating time (enucleation and morcellation) was 104.4 mins. 47 of the 105 cases were for urinary retention (45%), the remainder for symptoms and/or proven urodynamic bladder outlet obstruction. All patients were rendered catheter free with the immediate day 1 post-operative catheter-free rate of 84%. There was marked improvement in flow rates (Qmax) with median increase of 7.9 mls/s ($p = 000.1$), IPSS median reduction of 12 points ($p = 0.0001$) and QoL scores by 2 ($p = 0.0001$). Median decrease in Hb of 1.55 g/dl ($p = 0.0001$) was noted, but no transfusions took place and a small clinically insignificant rise in Cr of 5 mmol/l ($p = 0.0002$) was noted. Pre and post-operative RV remained statistically insignificant. 3 cancers were reported in our cohort. Return of the capital investment for the project was achieved by the 16th month, mainly by bed days saved (176.5) compared to our historical cohort of TURP patients, well ahead of the projected plan of 3.25 years.
Conclusion: Excellent patient outcomes from 50W HoLEP surgery are achievable. This can enable the delivery of a high quality HoLEP service at much reduced financial cost to hospitals wishing to offer this service compared to the current cost of 100W and 120W Holmium laser systems on the market.

MP35-14 How Efficient is Reduced Power in HoLEP Surgery? A Comparison of 50W and 100W HoLEP Surgical Times

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Introduction: Holmium laser enucleation of the prostate (HoLEP) has been established as a safe, effective and durable procedure for bladder outlet obstruction, with advantages over TURP and open prostatectomy. Most HoLEP units use a 100 Watt (W) holmium laser. Few use a 50W holmium laser which requires a lower initial capital investment making this attractive. There is little published data regarding the operative efficiency of 50W lasers for HoLEP. We present the first comparative series of HoLEP using the 100 and 50 Watt lasers. The primary endpoint was total operating time.
Materials & Methods: Two surgeons (FAK, MAS), from the same centre, completed 105 HoLEPs over a 14 month period using a 50W Holmium laser (Auriga XL, StarMedTec GmbH, Munich, Germany, a Boston Scientific company). The laser settings used were energy = 2.2 Joules (J), rate = 18 Hertz (Hz). Total operating times and weight of enucleated tissue were recorded prospectively. These were compared to the same outcomes, also collected prospectively, from another surgeon (TFA) from an adjoining hospital who uses a 100W holmium laser (Lumenis Inc) for HoLEP, laser settings: energy = 2J, rate = 50 Hz. The same HoLEP technique was used by all surgeons. To minimise bias on operating times HoLEPs between the two surgeon groups correlated to a point similar on the learning curve between them were compared. Laser bladder neck incisions and median lobe enucleations were excluded for the comparison.
Results: Wilcoxon non-parametric signed rank sum testing using SAS statistical software version 9.3 was used. In the 50W series, the median patient age was 70 years with a median enucleated weight of 40 g (range 3–105 g). In the 100W series, the median age was 72.5 and median enucleated weight was 50 g (range 4–180 g). The weight of tissue enucleated was not significantly different between the two groups ($p = 0.0532$). However, the median total operating times (enucleation and morcellation) of 114.5 minutes for the 50W laser when compared to 85 mins for the 100W laser, were significantly different ($p = 0.0002$).
Conclusion: These results suggest that the 100 Watt holmium laser allows a shorter operating time for HoLEP compared to the 50 Watt holmium laser.

MP35-15 HoLEP 111W EPS – A transurethral operation without antibiotic prophylaxis Prospective evaluation of 194 patients with a new laser system

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Introduction: With global increase of antibiotic resistances every use of antibiotics must be critically questioned. We prospectively evaluated the need for an antibiotic prophylaxis (ABP) for the HoLEP 111W EPS.
Patients and Methods: From March 2013 to December 2014 all patients scheduled for a HoLEP due to BPH had a urine culture (P-Urine). In case of a positive culture a test equitable antibiosis was administered at least 24 h before the operation. In case of a sterile culture no antibiotic was given.

The HoLEPs were always performed in the same standardized manner by two different surgeons with different grade of experience: Enucleation was done in the classical 3-lobe-encircling-technique using a 27 Fr. laser resectoscope (Olympus GmbH, Hamburg, Germany) and a new high power laser system (MultiPulse HoPLUS, Jena Surgical GmbH, Jena, Germany). For tissue retrieval a rotation morcellator (Piranha, Richard Wolf GmbH, Knittlingen, Germany) was used.

Our special laser pulse settings are optimized for using the mechanical „Blow-effect" of the Holmium laser: The special

Enhanced Pulse Setting (EPS) was developed by our team according to the ,,scalpel and scissors effect'' resulting in a 3J / 37 Hz (=111W) setting that offers better visualization and smoother dissection of the capsular plain.

All instruments are completely sterile including the camera and the change of the optical systems.

When the indwelling catheter was removed (first day after operation) a second urine culture was collected. We evaluated the number of pre- and postoperative positive cultures as well as infectious complications.

Result: 194 consecutive enucleations were performed. The average patient age was 72,8J (48–95J). The average enucleated tissue weight was 54.8 g (3–240 g), average operation time 72.5 min (23–233 min). Short term functional results were equal to the known prospective randomized literature data, operation speed with 0.76 g/min 50% faster. 54 patients (27.8%) had a proven UTI preoperatively and received a test proof antibiotic treatment at least 24 h prior to the operation. None of these had an infection complication or positive urine culture intra- or postoperatively. 140 patients (72.2%) had a sterile culture preoperatively. Of those only one (0.52%) had a new asymptomatic bacteriuria. No infectious complications occurred.

Conclusion: Considering a postoperative infection rate of 0% and of asymptomatic bacteriuria of 0,52%, a ABP for HoLEP is not necessary. The preoperatively sterile urine culture or the test proof antibiotic treatment respectively, the standardized, strictly sterile and fast operation as well as early catheter removal are crucial.

MP35-16 Improving Holmium Laser Enucleation of the Prostate Efficiency: The Lumenis Pulse 120H Laser Platform

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Objectives: This study compares the efficiency of HoLEP performed with the new Lumenis Pulse ™ 120H laser platform compared to the older Lumenis 80 Watt VersaPulse. The new 120 Watt laser allows for preset modes and a dual pedal footswitch that allows the surgeon to switch between two laser settings efficiently and easily.

Materials and Methods: Patients at a single institution who underwent HoLEP using the new LumenisPulse ™ 120H laser platform were identified from a prospectively maintained HoLEP database and matched 2:1 with patients from the database with similar preoperative TRUS measurements who underwent HoLEP with the 80 Watt laser platform. Similar laser settings were used on all patients. Efficiency was determined by dividing the resected tissue weight by enucleation time. Median baseline patient characteristics as well as operative, pathology and post-operative details are reported using univariate comparison with paired t-tests.

Results: A total number of 14 patients were identified who underwent HoLEP with the new laser platform. Median TRUS volume was 70.8 cm^3 in the 120 Watt group and 70.9 cm^3 in the 80 Watt group ($p=0.999$). Enucleation times were greater with the 120 Watt laser platform with a median enucleation time of 67.5 minutes compared to 47.5 minutes with the 80 Watt machine, but the difference was not stasticially significant ($p=0.342$). The resected tissue weight was greater with the 120 Watt laser compared to the 80 Watt laser platform (52.5 grams vs. 29.5 grams), but again this result was not statistically significant ($p=0.811$). Laser efficiency was similar between the two lasers with values of 0.78 grams/minute (gm/m) in the 120 Watt laser group versus 0.69 gm/m in the 80 Watt laser group ($p=.332$). Pathology was similar between the two groups with all but one patient in each group having benign disease. Postoperative change in serum sodium was similar between the two groups ($p=0.505$) but the change in hemoglobin was statistically significant with a slightly larger decrease seen in the 120 Watt laser group (2.2 g/dl vs. 0.8 g/dl, $p=0.029$).

Conclusions: The new Lumenis Pulse ™ 120H laser has a similar efficiency to the older 80 Watt Holmium laser platform. When matching for preoperative TRUS volume patients undergoing HoLEP with the 120 Watt laser platform had more tissue enucleated and enucleation was done in a shorter time, but the differences were not statistically significant.

MP35-17 A prospective study to compare changes in male sexual function following Holmium laser Enucleation of prostate versus Transurethral resection of Prostate

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Aims and Objectives: To Compare Changes in Male Sexual Function Following HoLEP Versus TURP Using IIEF-15 Questionnaire

Methods: All patients with bothersome LUTS due to BPH, who got admitted to the hospital from May 2013 to April 2015 for surgical management in the form of either TURP or HoLEP were evaluated. Baseline IIEF score was noted. Patients were divided into two groups: Group 1 (HoLEP) and Group 2 (TURP). Follow up of changes in sexual function (IIEF 15 score) was carried out at 1, 3 & 6 months and data of both the groups was compared. Statistical testing was conducted with SPSS 17.0. Comparison of normally distributed continuous variables between the groups was performed using Student's t test. Nominal categorical data between the groups were compared using Chi-squared test or Fisher's exact test as appropriate.

Results: Mean erectile function score remained significantly low in both the groups at 6 months without significant difference between the two groups. Mean orgasmic function score, intercourse satisfaction score and sexual desire score was significantly better in HoLEP group than TURP group after 6 months of surgery.

Conclusion: At the end of our study (6 months) we found no difference between the groups with regard to erectile function, overall sexual function as assessed by total IIEF-15 score and overall satisfaction score but mean orgasmic function score, sexual desire score and intercourse satisfaction score was significantly better in HoLEP group.

MP35-18 Holmium Laser Enucleation versus Transurethral Resection of the Prostate for urinary retention – peri-operative and long-term outcomes from a single centre experience.

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Introduction: Both holmium laser enucleation (HoLEP) and transurethral resection of the prostate (TURP) are established, safe and effective treatments for bladder outlet obstruction

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(BOO) due to benign prostatic hyperplasia (BPH). There is no published long-term evidence comparing the efficacy of both procedures for urinary retention. We compare peri-operative and long-term outcomes from a single centre.
Materials & Methods: We compared data from a prospectively collected database of patient undergoing HoLEP, to a retrospective chart review of monopolar TURP treatments, for men in pre-operative urinary retention. This included patients with acute, chronic, and high pressure chronic urinary retention. We extracted peri-operative data to compare weight of tissue retrieved, changes in serum hemoglobin and sodium, and length of stay. Long-term follow up data was collected during telephone conversation with the patients assessing IPSS scores, need for catheter, subsequent urethral or re-do prostatic surgery and any episodes of haematuria after the initial post-operative period.
Results: 50 patients from each group were contacted and completed the telephone questionnaire. In the HoLEP group median (range) follow up was 66 months (49–81) compared to 67 months (56–76) in the TURP group. There was no difference in median sodium change (-1 vs − 1 mEq/L), but there was less of a decrease in hemoglobin after TURP (median − 0.55 vs − 0.95 gm/dL, $p < 0.001$). The HoLEP group had a shorter hospital stay (median 1.45 vs 3.1 days, $p < 0.001$), and had significantly more tissue removed (median 52 g vs 17 g, $p < 0.001$). At long term follow-up, catheter or intermittent self catheterization was required in 10(20%) patients after TURP for persistent retention versus 1(2%) after HoLEP. Median (range) postoperative IPSS and QOL was 4(0–23) and 0(0–5) following TURP compering to 4(0–14) and 1(0–3) in HoLEP groups. One patient in each group had repeat bladder outlet surgery (2%). Interval visible haematuria and urethral stricture disease requiring intervention occurred in 4(8%) and 3(6%) versus 2(4%) and 3(6%) of TURP and HoLEP patients respectively.
Conclusions: Contrary to published HoLEP versus TURP randomized trial data for non-retention patients, we noted a slightly higher hemoglobin drop following HoLEP. This is probably due to the fact that significantly more tissue was retrieved in the HoLEP group. Despite this, hospital stay was significantly shorter for HoLEP and long-term outcomes including relief of urinary retention and interval haematuria were better for HoLEP.

MP35-19 Holmium laser enucleation of the prostate versus laparoscopic retropubic simple prostatectomy in large benign prostatic hyperplasia

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Introduction: To evaluate the feasibility of laparoscopic retropubic simple prostatectomy (LRsP) by comparison with holmium laser enucleation (HoLEP) in cases of large prostate with regard to surgical efficacy and peri-operative outcomes.
Materials and Methods: A total of 37 benign prostatic hyperplasia (BPH) patients with prostate volume > 100 g, maximum flow rate (Qmax) < 10 mL/s and international Prostate Symptom Score (IPSS) > 15 were randomized in the two study arms. 21 patients were performed by HoLEP and 16 by LRsP. All cases were assessed preoperatively and at 1, 3, 6 months after surgery by IPSS, Qmax, quality of life score (QoL) and post-voiding residual urinary volume (PVR). The prostate volume and prostatic specific antigen (PSA) level were measured at 6 month.
Results: There was no significant difference between the HoLEP and LRsP groups in patient age (72.1 years HoLEP vs 74.7 years LRsP), prostate volume (106.8 cc vs 121.6 cc), and weight of resected tissue (94.6 g vs 107.4 g). There were significant differences in the mean operative time (164.8 vs 112.6 minutes; $P < 0.001$). Both surgical techniques resulted in postoperative improvement in symptom socres, peak urinary flow rate, and postvoiding residual volume ($P < 0.001$). Blood transfusion were required in 0 HoLEP patients vs 6 LRsP patiens.
Conclusion: Both of HoLEP and LRsP were safe in large benign prostatic hyperplasia. LRsP entails significantly less operative time. The perioperative outcomes were not significant differences except blood transfusion rate.

MP35-20 Correlation between postoperative dysuria and intraoperative features of the en-bloc no-touch HoLEP

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Introduction: Holmium laser enucleation of the prostate (HoLEP), introduced into clinical practice by Gilling in 1998, has been proven to be a safe and efficient therapeutic option for the treatment of benign prostatic hyperplasia obstruction. Since 2011 we slightly modified the traditional technique into the so-called ''en-bloc no-touch'' approach, characterized by the enucleation of the adenoma in one single piece (en-bloc), obtained with a prevailing blunt enucleation from the capsule and a limited use of the laser fiber activated at a short distance from the tissue (no touch). Transient irritative storage symptoms are described in the literature among the early complications in 9% to 59% of patients who underwent HoLEP, more frequently than after TURP and open prostatectomy. Such postoperative dysuria, resolving spontaneously or with medical therapies within 1–3 months after surgery in most cases, has been correlated to the amount of energy supplied to the capsule. The aim of the present work was to investigate the impact of postoperative dysuria after the ''no-touch'' approach, theoretically supplying less energy to the surgical capsule.
Materials and Methods: A total of 201 consecutive patients underwent HoLEP from January 2011 to December 2014 in our Department. The 100W Versapulse holmium laser (Lumenis) was employed (2J/50 Hz setting), apart from few cases done with the 120W device (2J/30 Hz/medium-long pulse). Patients demographics and clinical data were prospectively registered. I-PSS questionnaires were self-administered before surgery and at 3-month follow up. The data were correlated using the Pearson correlation test.
Results: The mean age was 69.8 years +/- 7.4 S.D. The mean enucleated adenoma weight was 52.4 g +/- 37.9 S.D. The mean enucleation time was 35 minutes +/- 17 S.D. The mean amount of energy employed during surgery was 93 kJ +/- 40 S.D. Mean enucleation efficiency was 1.8 g/min (range 0.29–5.5). The number (%) of patients in our series reporting postoperative dysuria with urgency/transient urge incontinence was 21 (10.4%). Postoperative dysuria mainly correlated with an energy supply > 100 kJ, very small or very large adenomas, longer enucleation times but especially with a low efficiency (< 0.5 g/min).
Conclusion: The en-bloc no-touch HoLEP technique, efficient and safe on the whole, causes limited postoperative dysuria, probably thanks to the reduced supply of energy to the capsular plane. A reduced likehood of postoperative storage symptoms may also be due to increasing experience, allowing to improve enucleation efficiency and to employ limited amounts of energy without directly lasing the capsular plane.

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MP35-21 Does Cystolithopaxy at the time of Holmium Laser Enucleation of the Prostate (HoLEP) affect Outcomes?

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Introduction: Bladder stones are an absolute indication for treatment of bladder outlet obstruction (BOO) most commonly due to BPH. The outcomes of men undergoing concurrent cystolithopaxy and HoLEP has not been well described. We aim to compare outcomes of HoLEP with and without concurrent cystolithopaxy.
Patients and Methods: A retrospective review of a prospectively maintained database was performed on 231 consecutive patients who underwent HoLEP by a single surgeon between June 2008 and July 2014. Patient characteristics and outcomes were captured. A statistical analysis was performed.
Results: 25 patients underwent concurrent cystolithopaxy and HoLEP. All procedures were performed in one stage. Patients undergoing HoLEP and cystolithopaxy had a significantly slower maximum urinary flow rate prior to surgery (average 6 mL/sec versus 10 mL/sec, $P = 0.0011$). All other preoperative characteristics were similar. Operative time was slighltly longer for patients undergoing cystolithopaxy in addition to HoLEP (179 versus 157 minutes, $P = 0.042$). Men undergoing HoLEP with cystolithopaxy had lower postvoid residuals postoperatively (29 mL versus 55 mL, $P = 0.0094$). There was no difference between intraoperative blood loss, amount of resected tissue, length of stay, complications, urinary flow rate or postoperative symptom score.
Conclusion: Cystolithopaxy done at the time of HoLEP not surprisingly results in slightly increased operative times. Otherwise, there were similar perioperative and postoperative outcomes between the two groups. HoLEP with or without cystolithopaxy results in excellent outcomes for men with BOO due to BPH.

MP35-22 Transurethral anatomical enucleation of the prostate by 1470 nm Diode Laser

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Background: 1470 nm Diode Laser can absorb both water and hemoglobin so it is perfect at coagulation and hemostasis. Additionally, 1470 nm Diode Laser also has good effect in tissue vaporization and cutting.
Objective: To explore the application and effect of 1470 nm Diode Laser in transurethral anatomical enucleation of the prostate.
Methods: 20 BPH patients underwent transurethral anatomical enucleation of the prostate by 1470 nm Diode Laser in our department from February 2013 to May 2014. We collected and analyzed the data of the general conditions of preoperation, preoperative and follow-up of these patients.
Results: All the 20 cases of operation were successfully completed. General conditions of preoperation: age (68.7 ± 3.3) years old, Preoperative prostate volume (80.1 ± 31.4 ml). Preoperative and postoperative hemoglobulin and serum sodium were (128.1 ± 12.4 VS 113.3 ± 13.3)g/L, (142.1 ± 3.2 VS 138.5 ± 1.4)mmol/L. No transfusion was required and all enrolled patients were free of other complications like TURS, bladder ore rectum injuries, obturator nerve damage and death. Perioperative indications: Operation time (38.7 ± 3.2) min, Enucleation time (16.4 ± 3.1) min, morcellation time (21.8 ± 4.2)min, bladder douche time (10.6 ± 3.2)h, catheterization time (22.5 ± 6.6)h, postoperative hospitalization time (3.8 ± 0.2)days. Comparison of IPSS, QOL, Qmax and PVR preoperation with a month after surgery as well as three months after surgery were (21.4 ± 5.7 VS 5.5 ± 1.3 VS 5.1 ± 1.2), (4.3 ± 0.3 VS 1.6 ± 0.14 VS 1.2 ± 0.31), (8.7 ± 1.6 VS 17.7 ± 2.2 VS 20.5 ± 1.3) ml/s, (30.3 ± 21.4 VS 10.7 ± 11.1 VS 4.5 ± 5.2) ml. The differences were significant between preoperation and postoperation ($P < 0.05$). No case of urinary retention, incontinence, urethral stricture, or secondary bleeding was observed in three months of follow-up.
Conclusion: The performance of 1470 nm Diode Laser in hemostasis and vaporization-resection is definite, and it is an alternative energy platform in treating BPH by endovascular surgery. However, the operability of laser fiber of 1470 nm Diode Laser is worse than conventional electrosurgical excision loop. The surgeons not only should be skilled in transurethral anatomical enucleation of the prostate but also take a long learning curve to master the hemostatic techniques. Meanwhile, if the clinical center intends to develop minimally invasive laser treatment of prostate, they should consider the high cost of laser equipments and laser fibers.

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MP36 - SURGICAL OUTCOMES 6

MP36-1 Predicting hospital stay for flexible ureteroscopy

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Introduction: Following proposals from BAUS that 65% of urological surgery should be performed as day case surgery there has been a rise in day case flexible ureteroscopy (FURS). Due to anaesthetic and urological factors 23 hour stay is occasionally necessitated. We aim through retrospective review to outline our unit's current length of stay and highlight risk factors associated with conversion to 23 hour stay or transfer to inpatient site, in order to safely and cost effectively manage day case flexible ureteroscopy.
Patients and Methods: We performed a retrospective analysis of a single surgeon's day case flexible ureteroscopy practise between 2010–2014. Demographic factors of age, sex, indication for surgery and stone position were recorded. Intraoperative factors of ASA, stone free status, failed access rates and conversion to 23 hour stay or transfer to inpatient site were analysed. Statistical analysis with ANOVA testing and $p < 0.05$ taken as significant.
Results: 355 FURS were performed with 64% male patients compared to 36% female, and mean age 52.3 years (SD14.6). 350 were for elective indication (99%), with the indication for

urolithiasis in 314 cases (89%.) The remaining cases were diagnostic (4%) and for TCC surveillance (7%.). Stones were renal in 153 cases, 71% (Upper pole 39%, Lower pole 16%, Interpolar 6%, Pelvic 9%) and ureteric in 63 cases (29%.) Mean ASA was 1.5 (SD0.6) [59% ASA 1, 36% ASA 2 and 5% ASA 3]. Patients were stone free following their first treatment in 91.8% with a failed access rate of 7.1%. All patients had prophylactic antibiotic cover and were discharged home on ciprofloxacin and tamsulosin as standard.

Fifty patients required conversion to 23 hour stay (14%). Transfer to inpatient site occurred in 16 cases (4.5%) due to sepsis, pain or anaesthetic complication. There was a significant difference between ASA 1 and 2 patients with regard to conversion to 23 hour stay rate at 7% versus 24%, (ANOVA, $p < 0.01$). In addition there was a significant difference in total length of stay between ASA 1 and 2 patients (0.2 vs. 0.6 days, ANOVA $p < 0.01$.) There was no difference in transfer to inpatient rate across ASA (2% versus 6%, ANOVA $p = 0.07$) or stone position ($p = 0.053$.)

Conclusions: There is a significant difference between 23 hour conversion rates between ASA 1 and 2 patients and this is reflected again in patient length of stay. Day case ureteroscopy is safe but higher ASA status predicts necessity for overnight stay.

MP36-2 Loss of flexible ureteroscope flexion is associated with increased repair rates: a prospective multi-center study

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Introduction: Flexible ureteroscopy is increasingly performed to treat various conditions in the upper urinary tract. It is an effective treatment but one factor that may affect scope durability that has never been examined before is loss of tip flexion after each usage. The goal of this study was to examine loss of scope flexion for flexible ureteroscopes and whether this was associated with increased scope repair rates.

Methods: The Western Endourology STone (WEST) research consortium is comprised of six high volume stone treatment centers. Flexible ureteroscope cases performed between August 2014 and April 2015 at these institutions comprised the study cohort. Patient demographic data, details regarding upper urinary tract pathology treated in each case, ureteroscope performance and intraoperative data were recorded prospectively. Photographs of each ureteroscope at maximal upward and downward flexion at the start and end of every case were acquired to measure loss of flexion. Multivariate regression analyses were subsequently used to identify factors affecting this parameter.

Results: 383 flexible ureteroscopic procedures were performed during the study period. Male to female ratio was 1.3:1 with an average patient BMI of 30.7 kg/m^2. Stone removal was the indication for treatment in 295 (79.7%) cases with lower pole (36.8%) as the most common location followed by upper pole (21.9%) and middle kidney (21.7%). Loss of scope upward flexion was found in 203 cases (53.0%) with an average loss of 15.6 ± 18.7 degrees. Loss of downward flexion was found in 218 cases (56.9%) with an average loss of 16.0 ± 13.0 degrees. Loss of flexion in either direction was associated with the scope being sent for repair at the end of each case (figure 1). With multivariate analysis, the amount of time the scope was used in the patients' body and patient BMI were statistically significantly correlated with loss of downward deflection ($R = 0.160$, $p < 0.05$ and $R = 0.177$, $p < 0.05$, respectively).

Conclusion: Loss of scope flexion is frequently observed after flexible ureteroscope use and is associated with subsequent instrument repair. Increased duration of scope use in the patient's body and patient BMI are predictive of increased loss of downward scope flexion. These factors should be considered to improve the lifespan of flexible ureteroscopes.

MP36-3 Outcomes of ureteric stents with extracting strings

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Objective: Ureteric stents are commonly placed after ureteroscopic stone surgery. Most manufacturers supply ureteric stents with strings attached for easy removal post-operatively without cystoscopy. However, use of a string can potentially cause increased urinary symptoms and is a risk factor for accidental stent dislodgement. We reviewed our patients who had ureteric stents with a string placed after ureteroscopic stone removal and compared the symptoms in this group with a group of patients in whom ureteric stents were placed without an extraction string.

Patients and Methods: This study was conducted between March 2014 and April 2015 and data was collected prospectively. Thirty-eight patients (25 male, 13 female) undergoing ureteroscopy for stone disease received a ureteric stent with an extraction string. Twenty-eight (18 male, 10 female) patients completed the Ureteric Stent Symptom Questionnaire (USSQ) post-operatively and after stent removal. This group was compared with twenty-five patients (23 male, 2 female) who had stents placed without a string. Post-procedure related events such as stent dislodgement, urinary tract infection, emergency department visits and pain scores during stent removal were recorded.

Results: Of the 38 patients with an extraction string, 2 patients (1 male and 1 female) had accidental premature removal of the stent. Both of these patients did not require stent replacement. 6 patients with an extraction string needed the stent removed by a medical practitioner, 5 saw a doctor and 3 required antibiotics for a urinary tract infection with one needing admission. The median pain score at removal for that cohort was 4/10 and the mean time before stent removal was 6.7 days. Of the 25 who did not have an extraction string, 4 saw a doctor and 3 required antibiotics for a urinary tract infection. The median score at removal was 6.5/10 and the mean time before stent removal was 26.4 days. There was no difference in the symptom scores in both groups.

Conclusions: Ureteric stents with extraction strings offer several advantages without increasing stent-related side-effects or urinary symptoms. Patients with a string had a significantly shorter period with the ureteric stent in situ. While they may not be appropriate for all patients, the use of extraction strings obviates the need for flexible cystoscopy resulting in timely removal. Moreover, the stents with a string are unlikely to be forgotten.

MP36-4 Diagnostic ureteroscopy does not routinely need a post-operative stent insertion: Prospective outcomes from a University teaching hospital

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Introduction: Diagnostic ureteroscopy is now a standard test for investigation of ureteric abnormality. We wanted to see the

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outcomes of diagnostic ureteroscopy and incidence of post-operative stenting.
Methods: Over a 3-year period between March 2012-February 2015, eighty-seven diagnostic ureteroscopy procedures were performed. Outcome analysis was done from a prospectively collected database.
Results: Eighty-seven patients had diagnostic ureteroscopy, mean age of 58 years (range: 16–88 years) and a male: female ratio of 50:37. The ureteroscopy was unilateral in 74(85%) and bilateral in 13(15%) of cases. The indications for ureteroscopy were on-going haematuria (n = 7), abnormality/filling defect on CT scan (n = 38), possible kidney or ureteric stones (n = 31) and on going upper urinary tract surveillance (n = 11).

The mean operative time was 34 minutes (8–95 minutes) with a post-operative stent inserted in 32(36%) patients. Following unilateral ureteroscopy, 25/74(33.7%) were stented while 7/13(54%) undergoing bilateral ureteroscopy were stented on one side only and none of the patients had bilateral stenting. The most common reason for stenting was ureteric narrowing/stricture or concurrent biopsy/treatment.

Seventy-three procedures (84%) were done as true day cases. Of the remaining 14 procedures, most stayed for social reasons and were discharged next day. There were 4(5%) Clavien I complications including two urinary retention, one overnight bladder irrigation and one stent pain readmission.
Conclusions: Diagnostic ureteroscopy is a relatively safe procedure with majority of patients going home the same day. Based on our data two-thirds of patients with unilateral ureteroscopy were not stented, and of the patients with bilateral ureteroscopy half only had a unilateral stenting with the other half needing no stents.

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MP36-5 Effect of tamsolusin on quality and Complication of ureteroscopy

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Introduction: Ureteroscopy is a very common procedure for diagnostic and therapeutic purposes in urology. The most common indication of ureteroscopy is for stone management. Like other procedures, ureteroscopy has special difficulties and complications. The role of autonomic neural system and adrenergic components on ureteral spasm and contractility is well known. In various studies, effect of Tamsolucin, as an alpha1 blocker, on relaxation of lower ureter and stone passage are approved. Facilitation of ureteroscopy can improve its efficacy and decline side effects. The purpose of this study was to evaluate the impact of Tamsolucin on facility and quality of ureteroscopy.
Material &Methods: In this double blind clinical trial, 120 patients underwent ureteroscopy because of various indications. They were divided to two groups. Each groups were consist of 60 persons. In group 1, they received 2 capsules of Tamsolucin 0.4 mg and another group received 2 capsule of Multivitamin (placebo), 12 and 6 hours before ureteroscopy. Success rate, facility, and ureteral injury were evaluated and finally the results were analyzed by STATA11 software.
Results: Success rate in group 1(Tamsolucin) were higher than placebo ($P < 0.02$). Entrance of ureteroscope via ureteral orifice were easy in group 1 ($P < 0.01$). Fewer cases of ureteral injury was observed in the group1 compared to placebo ($P < 0.045$).
Conclusion: administration of Tamsolucin can raise success rate of ureteroscopy, easy doing of this procedure and lower of its complications.

MP36-6 The predictive value of ureteroscopic biopsy to final pathological stage in upper tract urothelial carcinoma

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Purpose: We compared histopathological grade of ureteroscopic biopsy with subsequently resected surgical specimens to evaluate the diagnostic accuracy and to assess whether the clinical grade predicts the final pathologic stage.
Materials and Methods: A retrospective evaluation of the data of patients with upper urothelial carcinoma who were ureteroscopically biopsied with 3Fr cup forceps before nephroureterectomy from 2008 to 2015 was carried out. Their clinical, surgical, and pathologic data were reviewed to determine the positive and negative predictive values of the clinical biopsy grade with respect to the final pathologic disease stage.
Results: The data of 36 cases were analyzed. The location was 16(44%) in pelvis, 14(38%) in upper ureter, and 6(17%) in lower ureter. A definitive diagnosis of urothelial carcinoma was made by biopsy in 27 lesions (75%). Of the 27 urothelial tumors, the distribution was grade1 in 1 (4%), grade 2 in 15 (56%), and grade 3 in 11 (41%). The clinical grade of ureteroscopic biopsy matched the grade of surgical specimen in 20 of the 27 cases (74%). Every grade3 cases of ureteroscopic biopsy was matched surgical pathological grade, but 3 grade2 (18%) cases was upgrade grade3 and one grade1 case was upgrade grade2. Of the 11 patients with grade 3 disease, 6 had Stage pT2 disease or higher (54% positive predictive value). Of the 15 patients with less than grade 2 disease, 13 had less than pT2 disease (81% negative predictive value).
Conclusions: The histologic grade obtained from the diagnostic biopsy for upper urinary tract urothelial carcinoma could be used to predict the pathologic disease stage. This information can be used to identify patients for neoadjuvant chemotherapy.

MP36-7 Operator dissatisfaction with flexible ureteroscopes rarely results in scope repair: a prospective multicenter study

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Introduction and Objectives: Reusable flexible ureteroscopes pose a significant cost and administrative burden to hospital systems, but few studies have examined how operator stressors and satisfaction may impact their long term durability. Operator satisfaction was assessed in a multi-institutional prospective trial (six high volume institutions comprising the Western Endourology Stone (WESt) research consortium).
Materials and Methods: Surveys were performed using Research Electronic Data Capture (REDCap) software at the start and end of consecutive flexible ureteroscopic procedures to document case characteristics including ureteroscope properties, accessories used, patient characteristics, and stone location. Operator satisfaction with visualization and performance was reported on a

Likert scale. Multivariable regression was used to examine how operator satisfaction and stressors affected scope repair rates.
Results: Initial data from 112 flexible ureteroscopic cases (left, right, bilateral: 51, 43, 6% respectively) were collected. Cases were performed by an attending, fellow or resident, with residents involved in 76% of cases. 73% were stone cases where stone locations were lower pole (35%), ureteral (25%), upper pole (20%), and mid kidney (20%). Previously repaired scopes were used in 25 (23%) cases; new scopes were used in 84 (76%). Operators were ''concerned'' or ''very concerned'' about ureteroscope performance for 15% of cases, and visibility was reported to be ''somewhat compromised,'' ''severely compromised,'' or ''unusable'' for 27% of cases. Only 1/3 of these ''concerning'' scopes were sent for repair after use.
Conclusion: Compromised flexible ureteroscope flexion is a significant and progressive problem. Surgeons are often dissatisfied with the quality and function of the ureteroscope in use. Despite this, scopes are rarely sent for repair. This may underscore the physician or hospital desires to reduce ureteroscope usage costs or maximize scope availability. This practice pattern may have implications for quality patient care and warrants additional investigation.

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MP36-8 Outcomes at 3 and 6 months in patients with renal lithiasis treated with flexible ureteroscopy

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Introduction: Flexible ureteroscopy is nowadays, in many centers a routine procedure. The aim of this study was to evaluate the evolution of renal lithiasis patients treated with flexible ureteroscopy.
Material and Methods: Between January 2014 and November 2014, 264 cases having renal calculi were treated with the flexible ureteroscope. We retrospectively reviewed the procedural efficacy and complications rates at 3 and 6 months from the intervention. The evaluation of the stone free rate was performed using renal ultrasonography and plain KUB immediately after the intervention, at 3 and 6 months. We evaluated stone-free rate, defined as complete absence of stone fragments.
Results: A Flex-Xc Storz flexible ureteroscope was used in all cases. Stone free rate was 89% immediately postoperative, 6% of cases presented small residual fragments (< 6 mm), while 5% of cases presented larger stones. At three months after the first procedure, the stone free rate was 94%, 6% of patients having small residual fragments. At six months from the procedure the stone free rate was 90%, the residual small fragments were met in 6% of cases and the fragments over 6 mm were met in 4% of the patients.
Conclusions: Retrograde flexible ureteroscopic approach is an efficient treatment modality. The evaluated stone-free rates may change in time, the factors influencing it being probably very complex.

MP36-9 Do lower pole renal stones effect RIRS stone free results in the modern ureteroscopy era?

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Preface: Lower pole renal stones present a challenge due to their location. In the majority of cases, lower pole stones are found together with renal anatomical variations such as a sharp infundibulo- pelvic angle and a dilated collecting system, promoting stone formation.

Different treatment modalities have been described in treating lower pole caliculi, such as ESWL, PCNL and ureteroscopy. The different methods vary in success and complication rates. The preferable method for treatment is controversial.

When choosing ureteroscopy and retrograde intra-renal surgery (RIRS) as treatment of choice, the stone is initially displaced into the upper pole in the majority of cases. Following the translocation, the stone in broken down using laser, and the fragments are removed with either basket or forceps.

When applying the translocation method, some stone fragments are occasionally left behind in the upper pole. The question arises – does migration of the residual fragments combined with the anatomical variant, lead to recurrent stone formation in the lower pole?
Methods: The cohort includs all patients who underwent RIRS in our institution between the years 2004 – 2013. A retrospective analysis using a computerized database was done with an average follow up time of 7.9 months (5.7- 10 months).
Results: Out of 629 cases, 62% (391) were male and 38% (238) female. The stones were located in the lower pole in 58.8% (370), renal pelvis in 14.3% (90), midpole in 14.9% (94) and upper pole in 11.9% (75).

Average stone size in the lower pole was 8 mm, compared to 10 mm in the other renal locations ($p < 0.02$). In the lower pole, the procedure was completed successfully in 91.4% (338) of the cases. Whereas in the other renal locations the success rate was reported to be 89.2% (231) ($p < 0.01$). Postoperative complications where rare and included fever in 2.4% (9), urosepsis in 1.1% (4), urinary tract infection in 1.6 (6) and ureteral strictures in 0.3% (1).

Average follow up was 7.9 months (range 5.7 – 10 months). Stone free rate in lower pole cases was reported to be 91.9% (340), compared to 89.1% (230) ($p < 0.01$).
Conclusions: Despite the anatomical variant which leads to stone formation the lower pole, the stone free rate and low recurrence rate is almost equivalent to other stone locations within the kidney. Only in the minority of cases lower pole caliculi were unreachable. It appears that the dislocation of lower pole stones prior to their fragmentation leads to similar stone free rates when compared to other renal locations.

MP36-10 Natural History, Complications, and Re-Intervention Rates of Asymptomatic Residual Stone Fragments Post-Ureteroscopy: a Report from the EDGE Research Consortium

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Fragments 4 mm or less that are non-obstructing and asymptomatic are termed ''clinically insignificant residual fragments'' (CIRFs); this designation is controversial due to high rates of re-intervention. Our objective was to examine the natural history, complication rates, and re-intervention rates of fragments following ureteroscopy. Data from 6 centers was collected retrospectively from members of the Endourology Disease Group for Excellence (EDGE) in 232 patients who had

	Fragment < 4mm	Fragment > 4 mm	P value
Passage of fragments	27.3%	26.0%	0.948
Growth of fragments	27.8%	59.2%	<0.001
Occurrence of Complication	22.3%	35.7%	0.039
Re-Intervention required	17.5%	38%	0.001

residual fragments following ureteroscopy (URS) between 2006 and 2013. Patients with fragment(s) of any size post-procedure with at least one KUB X-ray, US, or CT within 12 months were studied. Outcomes measured were fragment location, size, growth, passage, complication rates, and re-intervention rates. Of the 232 subjects with fragments, 131 (56%) required no further intervention and remained asymptomatic, 34 (15%) developed complications requiring no intervention, and 67 (29%) required intervention. Fragments > 4 mm were more likely to grow over time ($p < 0.001$) and were associated with complications ($p = 0.039$). Logistic regression shows the original stone size ($p = 0.0475$) to be the only significant predictor of complication. Re-intervention was predictable based on the size ($p = 0.017$) and location of fragments ($p = 0.02$). There was a trend towards complication depending on the location of residual fragments ($p = 0.068$) and re-intervention with older age ($p = 0.075$). Kaplan-Meier analysis found that dusting the stone and larger residual fragments (> 4 mm) were more likely to require re-intervention ($p = 0.004$). Re-interventions included URS (58), PCNL (4), and SWL (3). This study suggests that fragment sizes > 4 mm following ureteroscopy is associated with significantly higher rates of stone growth, complications, and need for re-intervention with at least one year of follow-up. Even for fragments less than 4 mm, 28% underwent stone growth and 22% suffered a complication, challenging the traditional description of CIRF. Ensuring complete stone free status is the best way to reduce the rate of complications and interventions following ureteroscopy.

MP36-11 Construct validity of operation time and volume of stone fragmented per unit laser energy as a marker of expertise in ureteroscopy and stone fragmentation

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Introduction: Ureteroscopy is a core urological skill. Despite the need for markers of competence and to assess progress in training, there are few studies comparing trainee performance with that of consultant. We hypothesised that with increasing expertise, the operation would become quicker and laser use would become more efficient (i.e. more stone fragmented per joule).
Methods: Data were collected between November 2010 and April 2015 in a single NHS health board. With a training year running from August-August and specialty training designated as years 3–7, surgical experience was broken down as Specialty Trainee (ST)3-5 August-January, ST3-5 February-July, ST6-7 and Consultant. Mean overall operative time (mins) and mean volume fragmented per Joule laser energy (mm^3/J) for consultants was calculated from the cohort. Multivariate analysis using logistic regression was undertaken to assess factors associated with procedures exceeding the consultant mean time, and falling below the consultant mean volume fragmented per unit energy. Factors included in the models along with operative experience were stone volume (for operative time analysis), stone density, stone location, presence of multiple stones, presence of ureteric/renal abnormality, presence of a pre-op stent and emergency versus elective operation. Patient age, ASA, BMI and gender were also included.
Results: 333 procedures were undertaken by consultant, with 148 by trainee (124 ST3-5, 24 ST6-7). The consultant mean operative time was 45.1 mins and mean volume fragmented per unit energy 1.32 mm^3/J. There was a significant difference in mean operating time between operative experience groups by Kruskal-Wallis test ($p < 0.001$, ST3 Aug-Jan mean 50.1 mins; ST3 Feb-Jul 52.0 mins; ST6-7 55.4 mins; Cons 45.1 mins). By logistic regression trainee experience was significantly associated with procedure time exceeding the consultant mean ($p < 0.001$; Cons Odds Ratio (OR) 1.00, ST3 Aug-Jan 3.78, ST3 Feb-Jul 4.54, ST6-7 4.22). In the same model increasing stone volume ($p < 0.001$) and presence of multiple stones ($p = 0.001$) were also significantly associated. In the second model, increasing stone density was significantly associated with less efficient stone fragmentation ($p = 0.01$), but there was no significant difference in OR by level of experience of surgeon ($p = 0.75$).
Conclusion: Overall operative time had good construct validity to differentiate between consultant and trainee, but was not sensitive enough to differentiate between levels of training. Efficiency of laser use did not show good construct validity. Confounding factors in trainee performance could be level of supervision or number of previous ureteroscopies undertaken.

MP36-12 Entractable Fragment Versus Dusting during Uretheroscopic Laser Lithotripsy in Childeren: Prospective Randomizied study

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Introduction: Complete eradication of stone fragments is an important goal during stone management in children. Mode of fragmentation employed to clear stone during uretroscopic laser lithotripsy raises concerns related with operative time, associated morbidity and costs, especially by potential endoscope damage. The purpose of this study is to evaluate outcomes of fragmentation into extractable pieces and stone dusting during ureteroscopic laser lithotripsy in children
Materials and Methods: One hunderd children with ureteral stones underwent ureteroscopic holmium laser lithotripsy were prospectively randomizied into two groups: group I with stone fragmented to dust ($n = 50$), and group II with lithotripsy into extractable fragments ($n = 50$). Double-J stent was routinely indwelled in both groups. Operating time, stone free rate and perioperative complications were compared. All patients were followed up for 3 months.
Results: Mean stone volume in groups I and II were similar. Stone free rate was 98% and 96% in group I and II respectively. Mean operating time was statistically significantly lower in group II (36 versus 28 min, $P = 0.0069$). Minor complications occurred in 8 cases (5 in group I and 3 in group II) in the form of

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hematuria and urinary tract infection. No major complication encountered in both groups.
Conclusion: Fragmenting stones into extractable pieces has a shorter operative time compared with stone dusting with a comparable stone free rate and complication rate. The optimal mode of ureteroscopic laser lithotripsy in children seems to be into extractable fragments.

MP36-13 The management of urinary stones in the octogenarians

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Introduction: With extended life expectancy and easier access to cross-sectional imaging, urolithiasis is increasingly diagnosed in the elderly population. This group of stone patients often represents a diagnostic and therapeutic challenge. The aim of this study was to evaluate the presentation and management of upper urinary tract stones in the octogenarians.
Method: Our prospectively-maintained urolithiasis database was interrogated to identify all the patients above 80 years of age who were managed between 2009 and 2014. Demographics, clinical presentation, co-morbidities, stone features, type of intervention, stone-free rates, post-operative complications and length of stay were analyzed.
Results: 42 patients aged 80 and above were treated in the studied period. The mean age was 84 (80–93). The male to female ratio was 2:1. The mean stone size was 11.5 mm (5–35 mm). The clinical presentation was often atypical, with only 15 patients developing ureteric colic or loin pain (35.5%). 50% of cases presented as emergency with obstructive uropathy, often associated with urinary sepsis. 66% of this emergency group were initially managed with either percutaneous nephrostomy and subsequent antegrade stent insertion (n = 4) or with retrograde stent placement (n = 10), while the rest received definitive endourological treatment during the same admission. The stented patients were afterwards treated semi-electively after an adequate course of antibiotics.

The remaining 50% of the study population could be managed electively. Five patients underwent percutaneous nephrolithotomy, 17 and 13 patients underwent semirigid and flexible ureteroscopy plus Ho:YAG laser lithotripsy respectively. Seven patients underwent stent insertion but due to severe comorbidities were not suitable candidates for definitive treatment and were subsequently scheduled for stent changes only. Extracorporeal Shockwave Lithortipsy was unsuccessfully attempted in 2 cases only.

The overall stone-free rate was 83% (29/42). The median hospital stay was 2 days (1–25). There was one post-operative death due to hospital-acquired pneumonia. The most common complications included urosepsis (n = 9) and urinary retention (n = 4).
Conclusion: The treatment of urolithiasis in the elderly population can be challenging from diagnosis to intervention to post-operative management. Clinical presentation is often atypical, and therefore a high degree of suspicion is mandatory to avoid diagnostic delays. In our experience endourological surgery seems to achieve satisfactory outcomes with acceptable safety. The most common and serious complication remains urinary sepsis and therefore urologists must ensure appropriate peri-operative antimicrobial therapy is administered. In view of the unique characteristics of these patients, an individualized approach within a multidisciplinary setting is strongly advised.

MP36-14 Ureteroscopy in emergency setting

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Introduction: Ureteroscopy in emergency has some particularities in regard of the indications and results. The purpose of this study was to evaluate our clinic experience with this procedure.
Materials and Methods: Between January 2014 - February 2015 in our department, 745 patients underwent semirigid ureteroscopy for lithiasis pathology. 258 patients of these underwent emergency ureteroscopy (within 6 hours of admission). Indications for these procedure was: severe renal colic unresponsive to treatment, patients in special situations (real objective impossibility stay longer in hospital), patients with urolithiasis already in our departments evidence.
Results: All surgeries went without major complications. Stone-free rate was 90.9% compared to 93% in cases where semirigid ureteroscopy was performed in programmed setting. Minor complications were observed in 2.8% of cases compared to 2.6% in the general group.
Conclusions: Emergency semirigid ureteroscopy is an effective method of treatment. Low complication rate is probably dependent on careful selection of cases.

MP36-15 Does pre-operative Urinary Tract Infection increase the risk of post-operative sepsis in patients undergoing Ureteroscopy?

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Introduction: Ureteroscopy and stone fragmentation is an established treatment for urinary stone disease. Infection is a recognised complication of ureteroscopy. We evaluated the risk of post-operative infection and sepsis in patients undergoing ureteroscopy for stone disease with a recent history of treated UTI.
Methods: Data on all ureteroscopy and stone fragmentation procedures was collected prospectively from November 2010 to April 2015 in a single institution. Out of our database of 503 patients, 492 patients were identified with complete datasets for analysis. We identified two cohorts of patients – those with a presenting emergency admission to hospital with urosepsis (in the preceding 90 days) and those who had no history of urosepsis but were found to have a positive MSSU identified at pre-operative assessment. All patients with a positive MSSU on routine testing at pre-operative assessment received a full course of an appropriate antibiotic pre-operatively. Matched pair analysis was undertaken for each cohort with other patients in the database with no history of sepsis or UTI. The pairs were matched for: gender, age, stone location, stone size and volume, diabetes, other co-morbidities, BMI and ASA.

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Results: 87 patients with recent urosepsis requiring antibiotics +/- emergency stent insertion were matched to their respective controls. Using univariate logistical regression analysis, the Odds Ratio of post-operative sepsis was 1.75, [p = 0.35, 95% CI 0.55 – 5.56], compared to the control group.

55 patients with a positive pre-operative MSSU but no history of sepsis and treated with a course of appropriate antibiotics were matched to their respective controls. Using univariate logistical regression analysis, the Odds Ratio of post-operative sepsis was 19.25, [p = 0.005, 95% CI 2.4 – 152.4], compared to the control group.

Conclusion: Pre-operative positive MSSU in otherwise asymptomatic patients with no history of sepsis is the most significant predictor of post-operative sepsis in patients undergoing ureteroscopy and stone fragmentation, even when these patients have received a full course of an appropriate antibiotic pre-operatively. Recent admission to hospital with urosepsis also shows an increased risk but the result is not significant. These higher-risk patients may benefit from more intensive peri-operative antibiotic prophylaxis.

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MP36-16 Which factors are most likely to increase the risk of post-operative urosepsis in patients undergoing ureteroscopy for treatment of stone disease?

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Introduction: Ureteroscopy and stone fragmentation is a well established treatment for stone disease. Infection and sepsis are recognised complications of ureteroscopy that can result in significant morbidity and mortality. We investigate which factors are most likely to increase the risk of post-operative sepsis following ureteroscopy for stone disease.

Methods: Data on all ureteroscopy and stone fragmentation procedures was collected prospectively from November 2010 to April 2015 in a single institution. Elective patients underwent pre-operative assessment and had a routine MSSU for culture. Patients with a positive MSSU were treated with a full treatment course of an appropriate antibiotic (as per sensitivities). All patients received a dose of prophylactic antibiotic at induction of anaesthesia. Where the pre-operative MSSU had been positive, antibiotic choice was as per sensitivities. Where the MSSU was sterile, patients received Gentamicin at 5 mg/kg except in renal impairment where Co-Amoxiclav was usually chosen. Multivariate logistic regression analysis was undertaken to assess the association of factors with post-operative urine infection. Factors included in the model were: patient age, BMI, diabetes, IHD, ASA, symptomatic UTI within 90 days, positive MSSU at pre-operative assessment, stone location and volume, prophylactic antibiotic used, experience of surgeon, elective or emergency procedure, and presence of pre-operative stent.

Results: 375 patients with complete data on all variables were included in the study. A positive pre-operative MSSU was the most significant factor associated with post-operative infection or sepsis (OR 26.86, p < 0.001 95% CI 6.77 – 106.61). The presence of diabetes was the only other variable significantly associated with post-operative infection (OR 4.36 P = 0.03 95% CI 1.18 – 16.10). There were no other patient or stone related factors with a significant association with post-operative sepsis in this multivariate analysis.

Conclusion: A positive pre-operative MSSU is the most significant predictor of post-operative sepsis in patients undergoing ureteroscopy and stone fragmentation, despite appropriate treatment with a pre-operative course of antibiotics. Presence of diabetes also predisposes patients to post-operative sepsis. These patients should be carefully monitored post-operatively and need appropriate counselling about their increased risk of post-operative sepsis.

These higher-risk patients may benefit from more intensive peri-operative antibiotic prophylaxis, possibly by 24 – 48 hrs of antibiotic therapy before and after surgery.

MP36-17 Prophylactic antibiotics may reduce stone recurrence in non-struvite renal calculi

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Introduction: Struvite stones have traditionally been referred to as infection stones. AUA and EAU guidelines both recommend the use of prophylactic antibiotics as a method of reducing the risk of stone recurrence. However, there is limited evidence about the impact in other stone types. This study evaluates prophylactic antibiotics on stone recurrence after percutaneous nephrolithotomy (PCNL).

Methods: We performed a retrospective review of all patients' notes undergoing a PCNL over a 3 year period ending December 2014. PCNLs were performed by 3 surgeons. Prophylactic antibiotics were given to a select group of patients depending on the surgeon's clinical opinion.

Results: Complete data was available for 156 procedures with 26 having received prophylactic antibiotics for at least 4 weeks. The stone free rate was similar in both groups (73% vs. 73%), although the antibiotic group (Group A) had a higher proportion with positive stone cultures (74% vs 62%). Group A had a higher proportion of staghorn calculi and struvite stones (62% vs. 27%; 8% vs. 2% respectively). The commonest stone type was calcium phosphate in both groups. Group A had a lower proportion needing further intervention and a longer mean time to first intervention (18% vs. 28%; 741 vs. 155 days respectively).

Conclusion: Prophylactic antibiotic may have a role in non-struvite stones by reducing time to first intervention and likelihood of needing a secondary intervention for recurrent stone formation. The definition of infection stone may need to be expanded to include other stone types especially those associated with positive stone cultures.

MP36-18 Factors influencing operative time for ureteroscopy and stone fragmentation

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Introduction: Ureteroscopy and stone fragmentation is a commonly undertaken endourological procedure. Despite this there are few studies examining which patient, stone and surgical factors most influence operative time.

Methods: Data were collected between November 2010 and April 2015 in a single NHS health board. Patient data collected were age, gender, BMI, ASA and presence of ureteric/renal abnormality. Stone factors were location, side, size, density and presence of multiple stones. Surgical factors were presence of a stent pre-operatively, use of access sheath for renal stones, emergency or elective procedure, and operation by trainee or consultant. Univariate Mann-Whitney or Kruskal-Wallis tests were undertaken to assess differences in operative time by each of the above factors. Multivariate analysis by logistic regression was then used to determine which of these factors was most associated with longer operating time.
Results: Data were collected on 481 consecutive procedures. Mean operating time was 47.2 mins (SD 22.3). By univariate analysis increasing patient age ($p = 0.02$), location of stone (mean operating time by stone location: lower ureter 44.3 mins, mid-ureter 40.8 mins, upper ureter 42.0 mins, pelvi-ureteric junction 55.2 mins, renal pelvis 53.6 mins, upper pole 46.9 mins, midpole 43.1 mins, lower pole 50.6 mins; $p = 0.004$), increasing stone volume ($p < 0.001$), presence of multiple stones (single stone mean 43.4 mins, multiple stone mean 58.3 mins; $p < 0.001$), increasing stone density ($p < 0.001$) and operation by trainee (consultant mean 45.1 mins, trainee mean 52.0 mins; $p < 0.001$) were all significantly associated with longer operative time. On multivariate analysis, stone volume ($p < 0.001$; $< 125\,mm^3$ OR 1.00, 125–422 mm^3 OR 2.91, 422–1000 mm^3 OR 4.08, 1000–1125 mm^3 OR 7.06, $> 1125\,mm^3$ OR 18.90), presence of multiple stones ($p = 0.001$, OR 3.01) and trainee undertaking the procedure ($p < 0.001$; trainee OR 4.09) were associated with operation time exceeding the mean.
Conclusion: Stone volume, presence of multiple stones and trainee undertaking the procedure were significantly associated with prolonged operation time. This is the first study to look at factors affecting procedure time in ureteroscopy and has important implications for the efficient planning of operating theatre lists.

MP36-19 Variation in kidney stone treatment patterns between different English University Hospitals

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Introduction: Flexible ureterorenoscopy and laser stone fragmentation (fURS + laser) and percutaneous nephrolithotomy (PCNL) are the commonest surgical treatments for kidney stones. With technological improvements, there has been improved success in treating larger kidney stones with fURS + laser and the overall increased use of fURS + laser nationally has been reported elsewhere. The purpose of the study was to examine variations in surgical treatment patterns in individual University Hospital units in England.
Materials and Methods: English Hospital Episode Statistics (HES) data was searched using Dr. Foster Intelligence for relevant OPCS4 codes for various procedures for renal stones between April 2012 and March 2014. Using the University Hospital Peer Function tool, we identified units who performed more than 10 PCNL's and 20 PCNL in this time period. We calculated the ratio of fURS + laser to PCNL.
Results: 31 University Hospitals performed 5707 renal stone operations during this 2 year period including 1403 PCNLs (10–248 per unit) and 4304 fURS + lasers (22–649 per unit). This accounted for 36–38% of the total kidney stone operations performed in England during this time period.

fURS + laser : PCNL	Number of hospitals
<1	3
1-2	9
2-4	4
4-8	9
8-10	2
10-15	2
15-25	2

The ratio of FURS + laser: PCNL varied from 0.5 to 23.3 per unit. The dramatic extent of this variation was unexpected and indicates widely varying practice among different urology units, some of whom strongly favour fURS + laser with others favouring PCNL. There did not appear to be a link between overall kidney stone surgical volume and treatment choice. Such variation is masked when looking only at overall national data.
Conclusions: Dramatic variation exists in University Hospitals in England in the operations performed for kidney stones.

MP36-20 Developing a disease specific Ureteric Stone Patient reported outcome measure: Stage 3 and 4

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Introduction: Outcomes from surgery have traditionally been based on surgeon-reported outcomes. A paradigm shift in assessing healthcare productivity from output to qualitative outcome, has led to increased interest in patient-reported outcome measures (PROMS). The aim of this project is to develop a disease-specific ureteric calculus PROM instrument. In previously presented stages 1 and 2 of the study we invited patients with ureteric calculi to participate in focus groups or semi-structured interviews. All comments were transcribed, collated and recurring themes were identified. We then selected items for the ureteric specific PROM. Here we present the test-retest validation of the PROM as well as EQ-5D-5L questionnaire.
Method: We prospectively collected the data from our ureteric specific PROM and EQ-5D-5L questionnaires completed at least an hour apart by the patients admitted with ureteric calculi. Our study has NHS REC approval.
Results: Patients with ureteric stones admitted acutely to Urology Department in our Trust participated in our test-re-test validation of the ureteric specific PROM. Demographic, and clinical data were also collected at the same time.
Conclusions: We performed test-retest validation, assessed reproducibility of our PROM questionnaire and identified redundant questions. We will now prospectively evaluate ureteric calculi therapy using our ureteric stone specific PROM together with the EQ-5D-5L both locally and nationally as part of the TISU (Therapeutic Interventions for Stones of the Ureter) study.

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MP36-21 Acute urinary tract stone disease in the very elderly – need for a national audit?

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Introduction: An increasing number of very elderly patients are presenting with acute stone complications. Their patients present difficult management issues.
Methods: A retrospective review of elderly patients (>77 yrs) presenting acutely with stone problems to 3 adjacent hospitals, during the past 12 months was conducted.
Results: 21 patients were identified, mean age 82.8 years (77–88). Two had a past history of renal tract calculi. The average number of co-morbidities was 5 (1–8). Eight (38%) were taking anticoagulants. Most patients were first admitted under physicians (12/21, 57%).

On admission, typical renal colic pain was present in only 1 patient, 11/20 (52%) were 'septic' and 18/21(86%) had an increased creatinine compared to their baseline (mean increase 82 mg/dl). All patients underwent a CT. Mean problematic stone size was 11 mm. Three (14%) were at the PUJ, 13/21 (62%) in the proximal or mid ureter, 4/21 (19%) in the proximal ureter or VUJ and there was one renal pelvic calculus. Thirteen (62%) required urgent nephrostomy insertion, 3/21 (14%) had emergency stent insertion and the remaining 5 were managed conservatively (mean stone size in this group was 5 mm). Post emergency procedure, 3 (14%) required ventilation on ITU and 4 (19%) needed HDU care (mean stay 7 days). 10/21 (48%) required increased social care on discharge with an average delay to discharge of 10 days (2–35). One patient died after being discharged to a rehabilitation ward.

To date, 8/20 (40%) have long term nephrostomies, 1/20 (5%) has a long term stent, 7/20 (35%) have undergone surgery (3 PCNL and 4 ureteroscopy + laser, though 2 had complications), 1/20 (5%) passed their stone and 3/20 (15%) are awaiting an anaesthetic review.
Conclusion: Management of elderly patients with acute stone complications is challenging. Diagnosis is often delayed and many will be unfit for definitive surgery.

A multidisciplinary team approach is needed with urologists and health care of the elderly physicians and ready access to a nephrostomy service and intensive care facilities.

There is an urgent need for a larger audit of this patient population to guide best practice.

MP36-22 Use of Ureteral Catheters and Stents after Uretero-renoscopy: How soon can they be safely removed?

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Introduction: Our aim was to evaluate the use of ureteral catheters and stents after uretero-renoscopy and how soon they could be safely removed.
Methods and Materials: We retrospectively analysed all patients who underwent ureteroscopy under a single consultant's care (AP) at Royal London Hospital over an 8 month period between August 2014 and March 2015. A total of 142 cases were identified and reviewed.
Results: 142 patients underwent 150 uretero-renoscopies (elective – emergency). Based on individualized risk analysis, 140/150 procedures required ureteral intubation either by JJ stent (63) or ureteral catheter (76). 10 ureteroscopic procedures were tubeless.

JJ stents were removed after a minimum of 2 weeks depending on the availability of space on an interventional list. Of 76 ureteral catheters, 35 were removed 3–4 hours post procedure followed by discharge home the same day. The remaining 34/76 ureteral catheters were removed within 24 hours and 8 cases extended beyond 24 hours (including 1 nephrostomy inserted pre procedure).

5/142 (3.5%) patients re-presented via Emergency Department. 1 reported stent symptoms and was discharged, 3 reported post-operative pain of whom 1 required overnight admission for analgesia. Only 1 patient (with impacted ureteral stones > 1 cm) was unwell with ureteral clot related obstructive uropathy - urosepsis post ureteral catheter removal resulting in stent insertion the following day.
Conclusion: The decision on the type of ureteral intubation based on an experienced surgeon's judgement of risk of ureteric obstruction due to post-operative oedema, clot or passage of stone fragments seem to be valid according to this analysis. While minimal risk cases can remain tubeless, low risk cases do well with temporary ureteral catheter (3–4 hours). Higher risk cases invariably required JJ stent insertion, which often remained for a much longer period than desired in our healthcare system. The impact of unreported stent symptoms limited this analysis.

MP36-23 Is Routine JJ stent placement necessary after use of Ureteral Access Sheath (UAS) for Retrograde Intrarenal Surgery (RIRS)?

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Introduction: Our aim was to evaluate the need for routine JJ stent insertion after RIRS following retrograde placement of a ureteral access sheath.
Methods and Materials: Of 142 patients who underwent ureteroscopy (URS) or RIRS under a single consultant's care (AP) in our unit over an 8 month period between August 2014 and March 2015, 61 had semi rigid URS, while 81 had RIRS following semi rigid URS (7.5Fr tip - 9.5Fr base) for optical dilation.
Results: 12–14Fr UAS were deployed in 70/81 (86%) patients undergoing RIRS with digital flexible uretero-renoscopes (Olympus, KeyMed). 29/81 RIRS procedures required ureteral intubation with a JJ stent, while 46 had a temporary indwelling ureteric catheter, which was removed within 3–4 hours in 67% cases and prior to discharge in the remainder (max 72 hours). 5 cases were tubeless. In contrast, a JJ stent was inserted in 34 of 61 semi-rigid URS stone treatments where an access sheath was not used.

5/142 (3.5%) patients re-presented via the Emergency Department after discharge. Of these, only 2 required re-admission: 1 URS needing re-stenting for clot obstruction of the ureter after treatment of a large upper ureteric impacted stone, and only 1 who had undergone UAS placement + RIRS, who required overnight admission for analgesia only,

Interim analysis of 38 patients undergoing RIRS after UAS placement showed, that only 1 was pre-stented.
Conclusion: This analysis demonstrates that routine post-operative JJ stent insertion is not mandatory in the majority of patients after UAS placement during RIRS. Ureteral intubation can be based on the experienced surgeons' intra-operative decision

independently of the degree of ureteral instrumentation. A possible bias due to pre-stenting is possible, but seems minimal on interim analysis. These provocative data should tested and matched by different surgeons to avoid outcome bias due to this surgeons' experience and justify future larger multicenter randomized controlled trials.

MP37 - NEW TECHNOLOGY 3

MP37-1 From diagnostic to focal prostate cancer treatment at a high volume prostate cancer center: concept of a workflow

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Introduction and Objective: Focal therapies for localized prostate cancer are described in recent guidelines to be the therapeutic approach with the most important future potential in treatment. The latest HIFU device (FocalOne®) for the first time utilizes the fusion of multiparametric MRI (mpMRI) and transrectal ultrasound (TRUS) imaging for treatment planning. We describe our concept as a high volume prostate cancer center to deliver focal prostate cancer treatment.
Methods: Men with prior negative 12-core biopsy or men without a prior biopsy and clinical suspicion of localized prostate cancer or men with proven localized prostate cancer are enrolled for mpMRI/TRUS fusion biopsy. Artemis® is a semi-robotic biopsy platform which develops a 3D-model of the prostate from the 2D-transrectal ultrasound in real-time and an elastic fusion with the mpMRI. This enables target biopsy and recording of samples for accurate re-biopsy. In case of low to intermediate risk localized prostate cancer focal therapy using mpMRI/TRUS-guided HIFU is offered as a treatment alternative.
Results: Primary outcome of focal therapy is disease control. Disease control is defined as complete focal ablation proven by a negative mpMRI/TRUS fusion biopsy at 12 months after treatment. Secondary outcomes address the patient reported health status using ICHOM criteria (vitality, sexual dysfunction, bowel irritation, urinary frequency obstruction irritation, urinary incontinence) and acute complications.
Conclusion: The concept of a standardized workflow for focal prostate cancer treatment combining the modern mpMRI/TRUS fusion biopsy platform Artemis® with the latest HIFU device Focal One® holds promise to optimize patient selection and improve focal prostate cancer treatment. All patients are enrolled into prospective trials as suggested by international guidelines using the latest health outcome measures ICHOM for localized prostate cancer.

MP37-2 Head to head comparison of ASTRO, Phoenix and Stuttgart criteria in patients treated with High Intensity Focused Ultrasound for primary prostate cancer.

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Introduction: There is not a consensus regarding the prognostic efficacy of different criteria to define treatment failure after High Intensity Focused Ultrasound (HIFU) for prostate cancer (PCa). In this study we evaluated the prognostic efficacy of commonly used prognosticator according to ASTRO, Phoenix and Stuttgart criteria.
Materials and Methods: Baseline, perioperative and oncologic outcomes of 251 consecutive patients treated with HIFU for primary PCa between 2004 and 2014 were prospectively collected into an institutional database. Treatment failure was coded according to available criteria described above. Univariable and multivariable Cox analyses were performed to test the efficacy of known prognostic factors in predicting outcomes according to the 3 criteria.
Results: One-yr recurrence free survival rates were 80.7%, 64.1% and 37.3% according to Phoenix, ASTRO and Stuttgart criteria, respectively, while 5-recurrence free survival rates were 70.3%, 46.1% and 28.5%, respectively (Figure 1). At univariable Cox analysis baseline PSA, cT stage and biopsy Gleason score were significant predictors of recurrence according to Phoenix criteria (all $p \leq 0.003$), while none of these variables was predictive of recurrence neither according to ASTRO nor to Stuttgart criteria (Table 1). At multivariable Cox analysis, biopsy Gleason score and cT stage were independent predictors of recurrence according to Phoenix criteria ($p = 0.049$ [HR 1.67, 95% CI 1.01–2.789] and $p = 0.005$ [HR 1.38, 95% CI 1.1–1.73]).
Conclusions: Established prognosticators of PCa recurrence-free survival do not accurately predict oncologic outcomes according to ASTRO or Stuttgart criteria after HIFU for PCa. In the preoperative patients counseling the only criteria that provide an accurate prediction of recurrence free survival based on commonly used clinical parameters are Phoenix criteria.

Table 1. Univariable and multivariable Cox analyses

		Univariable Cox Analysis			Multivariable Cox Analysis		
		p value	HR	95% CI	p value	HR	95% CI
Phoenix Criteria	Baseline PSA (continuous)	0.002	1.043	1.02-1.07	0.101	1.03	0.99-1.05
	cT stage	<0.001	1.511	1.21-1.88	0.005	1.38	1.1-1.73
	Biopsy Gleason Score >6	0.003	2.115	1.29-3.47	0.049	1.67	1.01-2.79
ASTRO Criteria	Baseline PSA (continuous)	0.464	0.988	0.96-1.02	-	-	-
	cT stage	0.896	0.989	0.84-1.16	-	-	-
	Biopsy Gleason Score >6	0.880	1.03	0.7-1.52	-	-	-
Stuttgart Criteria	Baseline PSA (continuous)	0,179	1.013	0.99-1.03	-	-	-
	cT stage	0,193	1.096	0.96-1.26	-	-	-
	Biopsy Gleason Score >6	0,084	1.330	0.96-1.84	-	-	-

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MP37-3 2D-US versus 3D-US guided saturation biopsy to detect prostate cancer

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Introduction and Objectives: Grey scale (GS) two dimension (2D) transrectal ultrasound- (TRUS-) guided systematic prostate biopsy is the clinical standard for prostate cancer diagnosis. In the last years, the GS three dimension (3D) TRUS-guided sampling has been introduced as a new technique that improves prostate mapping as well as clinical quality management. We compared detection rate of 2D-US versus 3D-US guided saturation biopsy in two groups of patients at their initial biopsy.
Methods: From December 2012 to October 2014 we prospectively analyzed data of 84 consecutive patients with no previous history of prostate cancer who underwent an initial prostate biopsy due to an abnormal PSA and/or DRE, using respectively 2D-US and 3D-US guided system. All biopsies were done by a single experienced operator using the same standardized protocol of transrectal random systematic saturation biopsy. All 3D procedures were performed using an end firing, 3D TRUS probe and a Sonoace X8 ultrasound machine (Koelis Urostation) capable of 3D image acquisition allowing real-time 3D TRUS registration system to spatially map each biopsy needle trajectory (Organ Based Tracking).
Results: The two groups were comparable for age, total PSA, DRE and prostate volume. Cancer detection rate was high in both groups but significantly higher in the group of 3D-US guided biopsy, 50% vs 45% respectively ($p = 0.001$) [Table 1]. A between group comparison highlighted a statistically significant difference in detecting higher rate of cores involved and clinically relevant prostate cancer using the 3D-US system ($p = 0.004$ and $p = 0.02$, respectively) [Table 2].

Table 1	2D-US	3D-US	P value
Number of Patients	64	20	
Age Median (IQR)	65 (60-72)	62.5 (55.75-70.5)	0.46
PSA (ng/mL) Median (IQR)	8.2 (5.9-11.6)	7.8 (5.45-10)	0.84
DRE (%)	22 (34)	7 (35)	0.65
Prostate volume (cc) Median (IQR)	52 (36-70)	58 (46.5-73)	0.33
Cancer Detection Rate (%)	45	50	0.001

	2D-US	3D-US	P value
Gleason 6	16 (55%)	3 (30%)	0.38
Gleason 7	11 (38%)	6 (60%)	
Gleason >7	2 (7%)	1 (10%)	
Median rate of cores involved (IQR)	11.63 (5-37.5)	50(31-76.5)	0.004
Clinically significant Pca Detection rate (%)	13/64 (20)	5/20 (25)	0.02

Conclusions: This experience showed the superiority of 3D-US guided biopsy in detecting prostate cancers that would have been missed using the 2D-US guided saturation protocol.

MP37-4 3D US versus US/MRI fusion-guided target biopsy to detect prostate cancer: a preliminary experience

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Introduction and Objectives: Recent developments in US systems and imaging modalities such as multiparametric MRI have led to a promising advance in mapping and correctly tracking target regions. We compared detection rate of 3D US versus US/MRI fusion-guided prostate biopsy in two groups of patients at their initial biopsy.
Methods: From December 2013 to October 2014 we prospectively analyzed data of 51 consecutive patients with no previous history of prostate cancer who underwent an initial prostate biopsy due to an abnormal PSA and/or DRE, using respectively 3D-US and 3D-US/MRI fusion guided system. All the biopsies were done by a single experienced operator using the same standardized protocol of transrectal random systematic saturation biopsy and three target cores of each suspicious area in the US/MRI fusion-guided biopsy group. All procedures were performed using Urostation (Koelis, Grenoble, France).
Results: The two groups were comparable for age, total PSA, DRE and prostate volume. Cancer detection rate was high in both groups but significantly higher in the group for US/MRI fusion guided biopsy 74.2% vs 50% ($p = 0.006$) [Table 1]. A between group comparison high-lighted a statistically significant and a trend towards significance in detecting clinically nonsignificant and clinically significant prostate cancer ($p = 0.005$ and $p = 0.08$, respectively) [Table2]. In a post-hoc analysis performed on patients with a positive fusion biopsy, prostate cancer detection rate of systematic cores and target cores were 78.2% (18/23)and 91.3% (21/23), respectively ($p = 0.001$).

Table 1

	3D-US	3D US/MRI fusion	P value
Number of Patients	20	31	
Age Median (IQR)	60.5 (62-66.3)	62.5 (55.75-70.5)	0.46
PSA (ng/mL) Median (IQR)	7.5 (6.6-10.3)	7.8 (5.45-10)	0.84
DRE (%)	7 (38.8)	10 (33.3)	0.26
Prostate volume (cc) Median (IQR)	55.5 (44-72.5)	58 (46.5-73)	0.72
Cancer Detection Rate (%)	50.0	74.2	0.006

Table 2

	3D-US	3D US/MRI fusion	P value
Gleason 6	3 (30%)	10 (43.5%)	0.08
Gleason 7	6 (60%)	8 (34.8%)	
Gleason >7	1 (10%)	5 (21.7%)	
Median rate of cores involved (IQR)	50.5 (31.2-76.2)	33 (16-43)	0.06
Clinically significant Pca Detection rate (%)	7/20 (35)	13/31 (42)	0.08
Clinically nonsignificant Pca Detection rate (%)	3/20 (15)	10/31 (32.2)	0.005

Conclusions: This preliminary experience showed a reasonable evidence demonstrating the superiority of the 3D US/MRI fusion guided biopsies in detecting prostate cancers that would have been missed using the 3D saturation protol.

MP37-5 MRI Fusion Biopsy for patients who are on Active Surveillance

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Introduction: Active surveillance (AS) monitors patients that have low risk (Gleason 6 or less, and PSA < 10 ng/ml) organ confined (T1/T2a) prostate cancer (pCa). AS involves regular MRI scans and TRUS biopsies to assess the disease progression. The current standard for prostate biopsy is sextant transrectal ultrasound (TRUS) guided biopsy, a blind systematic procedure. Fusion biopsy (FB) is a technique using Multiparametric MRI (mpMRI) images that can be fused with real time ultrasound to guide biopsies towards areas of interest. Using this technique of FB in our practice alongside standard TRUS biopsies we intend to find out whether the FB technique is capable of detecting more significant cancers and if this upgrades pCa in AS patients significantly.
Patients and Methods: Prospective data from patients attending for a fusion biopsy from January 2014 to January 2015 were analysed. Age, PSA, fusion biopsy information were noted. Inclusion criteria were patients who were on Active Surveillance. All patients had at least one identified suspicious lesion on a 3 Tesla mpMRI which was targeted via MRI- Ultrasound Fusion biopsy using the Hitachi™ RVS platform.
Results: 29 patients were identified in total. 8 did not have a concomitant TRUS biopsy. PSA levels ranged from 1.4 – 12.9, with a mean of 8.01. Ages ranged from 59 – 78, with a mean of 68.97. 13 of 29 (44.83%) patients undergoing FB had upgraded Gleason scores. This compares to 6 of 21 (28.57%) patients having TRUS biopsy. Of 147 cores taken via FB, 60 were positive for pCa, giving a core pick up rate of 40.82%. Again, this compares favourably to TRUS biopsies, in which 47 of 220 (21.36%) cores were positive for pCa. Importantly, in the 21 patients that had both FB and TRUS biopsy concurrently 4 of 21 patients (19%) would have had Gleason 7 pCa missed if they had TRUS alone. Alternatively 4 of 9 patients (44.45%) would not have been upgraded by TRUS alone.
Conclusion: Hu et al looked at reclassification of patients following FB. 41 (36%) of 113 patients were upgraded due to higher Gleason score disease. Our results show that 44.83% patients were upgraded by FB. Given such promising results, FB should be considered for patients on AS. In the future, a larger power study looking into AS patients should be carried out to confirm our results.

MP37-6 MRI-US Fusion Targeted Biopsy: Comparison of different biopsy schemes

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Introduction: Suspicious lesions identified on MRI may be biopsied with a range of MRI targeted-biopsy techniques the optimal strategy for targeting an MRI identified lesion has not yet been defined. This study evaluates the diagnostic yield of different biopsy strategies for targeting an MRI identified lesion.
Patients and Methods: A prospective cohort of 229 patients who underwent MRI-US fusion targeted biopsy using Varian brachytherapy software. Four biopsy schemes were compared which included;

Protocol A: Single core through the middle of the lesion
Protocol B: Four cores of the lesion
Protocol C: Additional cores surrounding the lesion
Protocol D: Additional systematic biopsy of the whole prostate.

Cancer detection rates between protocols were compared using McNemar's Test.
Results: The cancer detection rates for each biopsy scheme are shown in the below table:

	Detection rate	Cumulative
Lesion (single core)	34.5%	52.5%
Lesion (4 cores)	42.4%	55.6%
Quadrant of lesion	29.2%	60.1%
Remaining prostate	35.4%	69.7%

The addition of biopsies outside the lesion increased cancer detection rates by 13% and 14% were upgraded in Gleason score. Additional cores surrounding the lesion improved detection rates but did not identify all clinically significant disease ($p = 0.007$). The middle of the lesion core had the highest per core detection rate.
Conclusions: The highest cancer detection rate is achieved by combining targeted biopsy with the systematic transperineal sector mapping biopsy. The addition of a core targeting the middle of the lesion has increased cancer detection rates and Gleason Grade without significant morbidity. Targeted biopsy alone misses a proportion of clinically significant disease and systematic biopsy cannot be safely omitted.

MP37-7 An analysis of PSA Density and MRI in Newly Diagnosed Prostate Cancers

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Introduction: In the United Kingdom prostate cancer (PC) is the most common cancer in men with over 40,000 newly diagnosed cases every year. Our aim was to analyse the co-relation of MRI findings and PSA density in men with PC.
Methods and Materials: We reviewed 37 cases randomly selected newly diagnosed prostate cancer cases from an established dataset from 2013 to 2014. All diagnoses were confirmed by template transperineal prostate biopsy (TTPB). 33 cases had 1–3 previous negative transrectal prostate biopsies.
Results: Mean patient age at TTPB was 64 years (47–82). A mean 42 cores were taken from prostate volume measuring 57.3 cc (22–190) based on either transrectal ultrasound or MRI.

Mean PSA was 14.5 (3.23–92) with mean PSA density (PSAD) calculated at 0.29 (0.05–1.14).

While previous study shows that PSAD > 0.15 is more likely to lead to a diagnosis of prostate cancer[1], in our analysis 59% (22/37 cases) had PSAD > 0.15. Of these 22 cases, the ratio of

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G6:G7:G8 was 7:13:2 respectively. 16 cases involved the anterior zone but only 1 was limited to this zone (G6).

The remaining 41% cases (15/37) had PSAD < = 0.15, demonstrating G6 (7 cases) and G7 (11 cases) on histology. 6 cases involved the anterior zone but only 1 was limited to this zone only (G6).

24% MRI scans reported no suspicious lesions but histology confirmed G6:G7:G8 in 3:5:1 patients respectively. 4 of these had PSAD > 0.15 while 5 had < = 0.15 with mean prostate volumes about 67.5 cc and 42 cc respectively. In general all positive histology was more widespread than disease detected on MRI except the 2 cases limited to the anterior zone, which were accurately characterised on the MRI.

Conclusion: We conclude that PSAD was a better predictor of PC than PSA alone. Values as little as 0.09 can co-relate to clinically significant PC (> = G7). Where MRI scans seem to predict anterior zone lesions, the extent of disease is often more widespread than that detected on the scan.

[1] Benson MC et al. Prostate-specific antigen density: a means of distinguishing benign prostatic hypertrophy and prostate cancer. J Urol 1992; 147:815–16.

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MP37-8 Detecting Positive Surgical Margins: Utilization of Light Reflectance Spectroscopy on ex vivo Prostate Specimens

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Introduction and Objectives: Intraoperative frozen section analysis is not routinely performed to determine positive surgical margins (PSM) at radical prostatectomy (RP) due to time requirement and unproven clinical utility. Light reflectance spectroscopy (LRS) measures light intensity reflected or backscattered from tissues and can be used to differentiate malignant from benign tissue. This technology may be useful to detect surgical margin status in oncologic operations. The objective of this study is to assess the efficacy of LRS to detect positive surgical margins (PSM) on *ex vivo* radical prostatectomy specimens.

Materials and Methods: A prospective evaluation of *ex vivo* prostate specimens using light reflectance spectroscopy was performed at a single institution from June 2013 to September 2014. LRS measurements were performed on selected sites on prostate capsule, marked with ink, and correlated with pathologic analysis. Significant features on LRS curves differentiating malignant tissue from benign tissue were determined using a forward sequential selection algorithm. A logistic regression model was built and randomized cross-validation was performed. The sensitivity, specificity, accuracy, NPV, PPV, and area under the receiver operating characteristic curve (AUC) for LRS predicting PSM were calculated.

Results: Fifty prostate specimens were evaluated using LRS. In total, there were 197 sites selected for LRS readings. Pathologically, 32 sites had PSM with gleason ≥7, 12 sites had PSM with gleason 6, and 153 sites had normal tissue. LRS sensitivity for Gleason ≥7 PSM was 91.3%, specificity 92.8%, accuracy 92.5%, PPV 73.2%, NPV 99.4%, and AUC = 0.960. LRS sensitivity for Gleason ≥6 PSM was 65.5%, specificity 88.1%, accuracy 83.3%, PPV 66.2%, NPV 90.7%, and AUC = 0.858.

Conclusions: LRS can reliably detect negative surgical margins for Gleason 7 or above prostate cancer in *ex vivo* radical prostate specimens.

MP37-9 Comparision of early oncologic outcomes of focal cryotherapy in prostate cancer (PCA) with gleason score 6(3+3) VS 7(3+4)

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Objective: To compare the early oncologic outcomes of FC-HA in unilateral, organ confined PCa with GS 6(3 + 3) Vs GS 7(3 + 4)

Materials and Methods: We analyzed 108 patients who underwent primary FC-HA at our institution (March 2009 - February 2014). Cancer localization was done with transrectal ultrasound (TRUS) guided prostate biopsy and multiparametric-Magnetic Resonance Imaging (mp-MRI). Under general anesthesia, FC was delivered through transperineal needles placed in the affected lobe with TRUS guidance. Follow-up constitutes of Prostate Specific Antigen (PSA) every 3 months and MRI and control biopsy at 12 months. Positive biopsy in the treated lobe was considered failure. We compared the early oncologic outcomes following FC-HA in patients with GS6 Vs GS 7(3 + 4). The complications were reported using the Clavien-Dindo classification.

Results: FC- HA was offered to 82 patients with GS 6 (3 + 3) and 21 with GS 7 (3 + 4) PCa. Clinical and operative characteristics were similar between the two groups. The mean (SD) follow up was 26.7 (16.9) months. There was no significant difference noted between GS6 vs GS7 in negative biopsy rates in treated lobe (73% vs 67%, *p* - 0.2). The salvage treatment rates after positive control biopsy were similar between the groups with 57.8% active surveillance, 24.4% repeat focal therapy and 17.8% radical treatment. The complications were noted in 14 (13.5%) patients mostly low grade, except one patient who had III b complications.

Conclusion: FC-HA appears to provide similar early oncologic outcomes in patients with unilateral, organ confined PCa harboring GS6(3 + 3) and GS7 (3 + 4) disease.

MP37-10 Prospective comparison of oncological outcomes between Focal cryotherapy versus Focal High-Intensity Focused Ultrasound in localized prostate cancer.

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Introduction and Objectives: To compare the oncological outcomes of focal cryotherapy with those of focal High-Intensity Focused Ultrasound (HIFU) in patients with localized prostate cancer.

Patients and Methods: Between 2009 and 2014, 277 patients harboring localized prostate cancer were treated with FT. Of these 277; 149 prospective patients with at least one-year follow-up were included for analysis. The median serum PSA before primary therapy was 6.4 ng/ml (Inter-quartilrange [IQR]: 3.3–8.6) and 6.2 ng/ml (IQR: 3.5- 8.9) in patients treated with focal

cryotherapy and focal HIFU respectively. Clinical stage before focal cryotherapy and focal HIFU was T1C in 78 and 48 patients and T2A in 13 and 10, respectively. Biopsy Gleason score in patients treated with focal cryotherapy and focal HIFU before primary therapy was 6 (3 + 3) in 75 and 53 patients, 7 (3 + 4) in 16 and five patients; respectively; and one patient with a Gleason Score of 7(4 + 3) was treated with focal cryotherapy. The median serum PSA nadir after focal cryotherapy was 2.9 ng/ml (IQR: 0.5–5.30) and 3.6 ng/ml (IQR: 0.9–6.3) for patients treated with focal HIFU ($p = 0.18$). Treatment failure was defined as any positive control biopsy. Salvage treatment was introduced in case of treatment failure: FT is therefore reconsidered if only one biopsy is positive in the same lobe; otherwise, the patient is offered AS, androgen deprivation therapy (ADT) or salvage robotic-assisted radical prostatectomy (sRARP).
Results: After 22 (IQR: 12–28) and 19 (12–24) months median follow-up, 43 (47%) and 18 (31%) patients had positive biopsies for cancer ($p = 0.12$): 14 (15.4%) and eight (13.8%) ipsilateral, 14 (15.4%) and seven (12.1%) contralateral lobe; and, 15 (16.5%) and three (5.2%) bilateral in patients treated with focal cryotherapy and focal HIFU, respectively. In patients treated with focal cryotherapy and focal HIFU, 15 and four had Gleason 7 positive control biopsy, respectively; they had therefore salvage radical prostatectomy. 13 and three patients had one ipsilateral Gleason 6 positive biopsy in patients treated with focal cryotherapy and focal HIFU respectively, out of whom, nine underwent repeat FT and seven chose AS.
Conclusion: Focal cryotherapy and focal HIFU failure rates were not statistically significant featuring comparable oncological outcomes.

MP37-11 Therapeutic effect of variant wavelengths of Nd:YAG laser on benign prostatic hyperplasia

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Introduction: To analyze the effects of a new laser equipment using simultaneously a 1444 nm wavelength of Nd:YAG laser similar to the tissue absorption of the holmium laser and a 1064 nm wavelength of Nd:YAG laser that is high in hemoglobin absorption. In the rat benign prostatic hyperplasia model, tissue resection and coagulation effect of these lasers was investigated.
Materials and Methods: Fourteen Wistar male rats over 13 weeks old were injected with 0.4 mg/100 g of testosterone enantate through weekly subcutaneous injection for 4 weeks to cause benign prostatic hyperplasia and 7 rats were allocated randomly into 2 groups. Anesthesia was maintained through inhalation anesthesia to expose the prostate gland. For the first group, a 1444 nm wavelength of Nd:YAG laser was provided in the speed of 3 mm/s on the entire prostate gland and for the second group, a 1064 nm wavelength of Nd:YAG laser was provided using the same method. After the rats underwent exsanguinations, the prostate gland was enucleated. Hematoxylin-eosin dye was performed to examine the histological change of the prostate gland substrate and the resection depth from the prostate gland surface was measured.
Results: According to the histopathogical examination, the first group showed tissue evaporation where the resection depth of the prostate gland resection surface is deep and the inflammation and denaturation of the surrounding tissue was small (Fig. 1). On the other hand, for the second group, tissue evaporation of the prostate gland did not occur greatly. However, tissue cauterization, such as inflammation, bleeding, and necrosis, occurred in the surrounding tissue (Fig. 2). The average resection depth measured from the prostate gland surface was 2.03 ± 0.18 mm for the first group and 0.94 ± 0.21 mm for the second group in which the first group was more attentively and deeply excised ($p < 0.01$).
Conclusion: For the 1444 nm wavelength of Nd:YAG laser, the resection effect of the prostate gland tissue was excellent. Also, the 1064-nm wavelength of Nd:YAG laser has excellent haemostatic effects in the tissue. It is concluded, therefore, that by using this multi-wavelength laser in the resection surgery of benign prostatic hyperplasia, therapeutic effect and safety can be achieved at the same time.

MP37-12 En bloc thulium laser resection of bladder tumors: 3-yr single centre experience

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Introduction: En bloc resection of bladder tumor is an oncologically appropriate technique, providing pathologist the entire tumor with its margins and resection bed. We report a 3-yr single-center experience of en bloc bladder tumor resection with thulium laser.
Materials and Methods: Data about 136 patients who underwent this technique were prospectively collected. Exclusion criteria were: tumors larger than 3 cm and patients with clinical evidence of muscle invasive disease who underwent a staging TURB. Perioperative and 3-yr oncologic outcomes were reported.
Result: Baseline and clinical data were summarized in Table 1. Mean operative time was 26.6 minutes; in 95 tumors (69.8%) laterally located obturator reflex was never observed and ureteral orifice was successfully spared in all cases (19; 14%) where it was involved. The overall complication rate was 5.1%, with no grade ≥ 3 Clavien complications occurring. Mean hospital stay was 1.6 days. Three-yr recurrence free survival rates for Ta low grade tumors and papillary urothelial neoplasms of low malignant potential and for T1 high grade tumors with negative ReTURB were 78.5% and 80% respectively.
Conclusions: Preliminary results suggest that en bloc thulium laser resection of bladder tumors is a safe and oncologically effective technique. Thulium laser allows surgeon to perform resection without obturator reflex and to spare ureteral orifices, making tumors laterally located and those involving the ureteral orifice the best targets for this technique.

MP37-13 New imaging technology significantly reduces radiation dose during prostate artery embolization (PAE): Assessment of a UK University Hospital Practice.

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Introduction: PAE is an emerging technique for men with symptomatic BPH. The procedure involves radiation exposure and in a quest to achieve as low as reasonably achievable

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(ALARA), we sought to compare the radiation dose for patients undergoing PAE using differing imaging platforms in our hospital.
Materials and Methods: In our institution, PAE may be performed using a Siemens Axiom Artis DTA in the older interventional radiology suite (OS) or the latest Siemens Artis Zee in the new suite (NS). Cone beam 'Dyna CT' (DCT) has been used intra-procedurally to improve the efficiency and safety of embolisation. We reviewed the radiation dose of 71 patients, undergoing PAE performed by the same operators, using a consistent technique to assess the impact of equipment and DCT.
Results: Overall, the median dose area product (DAP) was 19090 cGycm^2(1278- 77424), median skin dose(SD) was 1426 mGy(95-3876) and median screening time (SCT) was 29:27. Cases were randomly divided between the interventional suites, with 26 were performed in the NS and 45 in the OS. Median DAP and SD in the NS were 0.65 and 0.35 of those in the OS respectively despite longer SCT in the NS. Procedures with DCT across both rooms multiplied the DAP and SD by 1.2 and 1.03. In the NS, DCT multiplied the DAP and SD by 1.3 and 2.38 respectively. In the OS, the skin dose reached the reporting threshold of 3000 mGy in 4 patients. Significant disparity was noted between the extremes of DAP received, with the lowest DAP representing 1.6% of the highest.
Conclusion: PAE has the potential to produce significant radiation dosage, however it can be reduced using newer technology with low dose protocols and pulsed low frame rate DSA. The use of intra-procedural Dyna CT can notably impact skin dose and its judicious use should be balanced against the benefits offered during embolisation.

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MP37-14 Dependence of stone composition and dimensions on fragmentation efficacy with burst wave lithotripsy

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Introduction: Burst wave lithotripsy (BWL) is a new experimental treatment modality that applies low-frequency focused ultrasound pulses without shock waves to noninvasively fragment urinary calculi. The purpose of this study was to evaluate how the efficacy of stone fragmentation changes as a function of stone composition and size relative to focus width.
Materials and Methods: Artificial stones were produced from Begostone and Ultracal-30 powder to mimic hard and soft stones, respectively. The stones were formed into cylinders (4–14 mm diameter × 10-mm length, $n = 6$ each diameter/type). Stones were treated in a degassed water bath, with the stone held fixed by a tissue mimicking material. A 170 kHz ultrasound transducer with an 8-mm wide focal beam was positioned to center the focus on the stone, with the axis of the cylinder aligned along the transducer propagation path. Each stone was exposed for 10 minutes to 10 cycle pulses with 6.5 MPa peak pressure amplitude at a rate of 200 pulses per second. Stone fragments were collected after each treatment and weighed to evaluate the stone fraction disintegrated. The size distribution of fragments produced was determined by sequential sieving.
Results: Stone fracture and fragmentation were observed in hard stones up to 12-mm diameter and soft stones up to 14-mm diameter. Among stones that could be broken, disintegration varied with hardness. For instance, 6-mm soft stones were disintegrated by 80% while hard stones were disintegrated an average of 31% with the same exposure. The volumetric rate of comminution did not vary significantly with stone diameter, thus a smaller fraction of the stone was fragmented for successively larger diameters. The estimated time to achieve complete comminution varied from 5.6 +/- 4.0 minutes for soft 4 mm stones up to an estimated 168.0 +/- 75.0 minutes for 12 mm hard stones, based on the fraction remaining after 10 minutes. Most of the fragment mass was < 2 mm regardless of stone characteristics, but fragments up to 4 mm were identified in certain cases.
Conclusions: BWL can effectively fragment stones into passable fragments when the stone is smaller than or comparable to the beamwidth of the ultrasound transducer. For softer stones, BWL may be able to fragment stones considerably larger than the focal beamwidth. These data will be valuable to future design of BWL devices with proper beamwidth to treat a target range of stone sizes and compositions.

MP37-15 High-frequency versus long-pulse laser lithotripsy performance

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Introduction: High-frequency and long-pulse lithotripsy are fairly recent lithotripsy methods. Small fragment size is one of several advantages of both methods, but their comparative ablation efficiencies and relationships are still unclear. The authors decided to analyze and compare both settings, evaluating their individual lithotripsy performances.
Materials and Methods: An automated laser fragmentation testing system was used to perform laser-lithotripsy experiments with artificial stones made of soft and hard stone material (plaster of Paris and BegoStone), as well as standard 273-μm core laser fibers (SureFlex from AMS™ and MF272STs from Rocamed™). Lithotripter settings for high-frequency experiments were 40Hz/0.2J/8W, 40Hz/0.4J/16W, 40Hz/0.6J/24W, and 40Hz/0.8J/32W, while those of long-pulse experiments were 15Hz/0.5J/7.5W, 15Hz/1.0J/15W and 15Hz/1.5J/22.5W. The lithotripters used were the VersaPulse® Powersuite 100W from Lumenis™, and the MH01-ROCA FTS30W from Rocamed™ for high-frequency and long-pulse experiments, respectively. Both power ranges, 8W to 32W for high-frequency, and 7.5W to 22.5W for long-pulse lithotripsy, provide an adequate overlap of parameters (8 to 22.5W) to allow a thorough comparison. Considering the recent trend of using ball-tipped laser fibers in high-frequency lithotripsy, additional high-frequency experiments were conducted with such a fiber (AccuTrac from Boston Scientific™) using BegoStone material. Ablation volumes were measured and compared. Laser-fiber tips were photographed before and after lithotripsy to complement the results.
Result: Long-pulse lithotripsy outperformed high-frequency lithotripsy regardless of stone material ($p < 0.00001$), and achieved on average 59.1% higher ablation volumes in the lithotripsy parameters tested (68.5–151.5% for lower power levels, and 27.2% for higher power levels). Even in comparison to the high-frequency experiments with the ball-tipped fiber, long-pulse lithotripsy had, on average, 30.7% (22.2%-43.2%) higher ablation volumes ($p < 0.0001$). All experiments showed a positive linear relation between power settings and ablation volume, regardless of lithotripter parameters, stone material, or laser fiber ($p < 0.00001$). Ablation volume increased on average 10.3% for

softer stone material (14.0% for long-pulse, and 7.6% for high-frequency settings; $p < 0.001$). The ball-tipped fiber was, on average, 5.7% more ablative than the standard fiber in high-frequency experiments, but lacked statistical significance ($p = 0.18$). However, at higher energy levels (40Hz/0.8J/32W) its ablation performance declined, and microscopic analysis revealed significant fiber tip damage.
Conclusion: Long-pulse lithotripsy showed a better lithotripsy performance than high-frequency lithotripsy. Low-power long-pulse laser lithotripters are still able to compete with high-power high-frequency lithotripters in terms of ablation volume, within the range of parameters tested. The ball-tipped fiber didn't provide any significant performance advantage over the standard fiber for high-frequency lithotripsy.

MP37-16 Comparison of an electric pulse lithotripter to the Holmium laser; Stone fragmentation efficiency and impact on flexiable ureteroscope deflection and flow

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Introduction: A new intracorporeal lithotriptor uses a nanosecond duration electrical discharge through a flexible coaxial probe to endoscopically fragment urinary stones. This device was compared to a holmium laser with regards to stone fragmentation efficiency and their impact on flexible ureteroscope deflection and flow of irrigation.
Methods: Using a custom bench model, stone fragmentation efficiency of the Nano-electric Pulse Lithotriptor (NPL, Lithotech Group, Israel) was evaluated with a begostone (mixture 5:2) confined under 0.9% normal saline atop sequential mesh sieves. Two NPL probe sizes (2.4 and 3.6F) and two holmium laser fibers (200 μm and 365 μm) were evaluated using 6 mm begostones. Time to first break, time to complete break (all fragments < 3 mm), and overall fragment sizes were measured. Ureteroscope deflection was tested in 5 new 4th generation flexible ureteroscopes, with an empty channel followed by placement of a 2.0F NPL probe, a 2.4F NPL probe, a 200 μm laser fiber, and a 1.9F wire basket. Ureteroscope irrigation flow was measured using normal saline at 100 cm, with an empty channel and then with a 2.0F NEP probe, a 200 μm laser fiber, and a 1.9F wire basket.
Results: The 2.4F NPL showed improved stone fragmentation efficiency compared to the 200 μm laser (86 mg/min vs. 52 mg/min, $p = 0.014$) as did the 3.6F NPL vs. the 365 μm laser (173 mg/min vs. 80 mg/min, $p = 0.05$). The NPL created more 1–2 mm fragments, while the laser created more dust (< 1 mm fragments); the difference was more pronounced between the larger NPL and laser probes. In the 5 ureteroscopes tested, ureteroscope deflection was reduced by an average of 3.75° with the 2.0 NPL probe and 22.25° with the 2.4F NLP probe (compared to 5.25° with the laser and 2.75° with the basket). Irrigation flow through the ureteroscope was 36.5 ml/min on average, and was reduced to 18.3 ml/min with the 200 μm laser fiber, and to 6.3 ml/min with the 2.0F NEP probe.
Conclusion: The Nano-electric pulse lithotripter produces improved stone fragmentation efficiency as compared to the holmium laser. However the 2.0F and 2.4F NPL probes limit flow and the 2.4F probe limits ureteroscope deflection.

MP37-17 An exploratory study on novel herbal formulation for the treatment of recurrent urinary stone

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Introduction and Objective: Recurrence of Urolithiasis is second most common concern for Urologist's all over the world. The incidence of recurrence over a period of five years without any treatment is estimated to be 35 to 50%. The treatment of choice to avoid above incidence is usually Thiazides, Chlorthalidone indapamide, oral Potassium citrate, Allopurinil. Lithorisk Profile- a 24 hours urine analysis parameter is considered as guideline for recurrence of renal calculi. The risk factors in recurrent stone formation are usually hyperoxaluria, hypercalciuria, low level of citrate and magnesium. This condition can be treated by employing number of herbal remedies followed by a typical lifestyle to slow down the rate of recurrence. We have developed a novel herbal combination for the management of recurrent stone. The preclinical safety profile of this formulation was evaluated by OECD guidelines and efficacy by Ethylene glycol model in rodents. The results of exploratory studies of above formulation in recurrent stone patients are presented.
Study Methods: The formulation 'Herbmed plus' was prepared using *Crataeva nurvala* bark and kshars of *Musa paradisiaca* stem, *Achyranthus aspera* plant and *Hordeum vulgare* seeds in certain proportions at GMP certified facility. A prospective, exploratory, controlled study in 30 patients without any major complications having recurrent stone was conducted after the approval of Institutional Ethics Committee. The patients were divided into Group A ($n = 15$) and Group B ($n = 15$) and were evaluated by Lithorisk profile at baseline and end of the study with treatment period for three months. The parameters like pH, Uric acid, Calcium, Oxalates, Citrate, Sodium, Potassium, Magnesium, Phosphates and Saturation Index for CaOx were considered in 24 hrs urine samples. The results were analyzed by employing T-Test using 2013 Graph Pad Software, Inc.
Results: The baseline results of 24 hrs urine analysis revealed no significant difference in pH, Uric acid, Calcium, Oxalates, Citrate, Sodium, Potassium, Magnesium, Phosphates and Saturation Index for CaOx between control and treatment group. However, significant difference is observed in treatment group after three months medication in values of oxalate ($p < 0.03$), calcium ($p < 0.04$), citrate ($p < 0.02$), magnesium ($p < 0.02$) and saturation index for CaOx ($p < 0.005$) as compared to the control group.
Conclusions: The herbal formulation 'Herbmed plus' is showing promising results in correction of the parameters responsible for formation of recurrent stones. However, a proper study in large sample size is proposed to confirm the above results.

MP37-18 Management of Refractory Dystrophic Calcifications of the Lower Urinary Tract with Hyperbaric Oxygen Therapy

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Introduction: Dystrophic calcifications manifest in damaged tissue and have been described in the prostatic fossa after de-

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obstructing surgery or prior radiation for prostate cancer. Hyperbaric oxygen therapy (HBOT) has multiple applications in urology but has not been described in the treatment of dystrophic calcifications of the urinary system. This study describes the successful utilization of HBOT in patients with recalcitrant dystrophic calcifications.

Patients/Methods: Two patients at our institution were identified who underwent successful HBOT treatment for recalcitrant dystrophic calcifications of the prostatic fossa.

Results: A 71-year-old male with a history of prostatitis and urinary retention was treated with a Holmium laser enucleation of the prostate. Eighteen months later he passed some stone material and workup revealed extensive dystrophic calcifications of the prostatic fossa. He subsequently underwent two treatments of laser lithotripsy followed by HBOT. Repeat cystoscopy after the HBOT regimen revealed almost complete resolution of the calcifications with well-healed urothelium.

An 81-year-old male with a history of prostate cancer status post radiation therapy, salvage cryotherapy and TURP was evaluated for recalcitrant calcifications in his prostatic fossa after 10 prior cystolitholopaxies at an outside facility. He subsequently underwent 3 additional such procedures at our institution then completed HBOT. Two-year follow-up revealed no recurrence of calcifications and well-healed urothelium.

Conclusion: Hyperbaric oxygen therapy has not been previously reported as a treatment modality for recalcitrant dystrophic calcifications of the prostatic fossa. The objective improvement in our patients may indicate a role for hyperbaric oxygen therapy in the surgical armamentarium for these challenging cases.

MP37-19 Microwave Ablation of T1a Renal Cancer: Preliminary Safety and Clinical Efficacy

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Introduction: Microwave (MW) ablation offers theoretical advantages over other modalities because of the ability to achieve high tissue temperatures with reproducible ablation zones. The MW antenna utilized in this study has a gas cooled mechanism that facilitates high temperature ablation without shaft overheating seen in prior MW instruments. The purpose of this study is to review the feasibility, safety, and early efficacy of a FDA-approved MW ablation system to treat small biopsy-proven RCC.

Methods: After obtaining Institutional Review Board approval, an institutional database identified 95 consecutive biopsy-proven small (≤ 4 cm) RCC treated with percutaneous MW ablation in 91 patients. Post-procedure follow-up imaging was reviewed and complications occurring within 30 days after the procedure were recorded and classified using the Clavien- Dindo system.

Results: Median patient age was 66 years (IQR 60–73) and 75% of patients were male. Median Charlson Comorbidity Index was 6 (IQR 4–7). RCC subtypes included clear cell, papillary, chromophobe, or unspecified in 65, 22, 4 and 4 patients respectively. Fuhrman grades 1, 2, 3, 4 were assigned to 13, 50, 2 and 1 tumors, while 29 tumors were ungraded. Median tumor diameter was 2.6 cm (IQR 1.8–3.1) while R.E.N.A.L. nephrometry score median was 7 (IQR 5–8).

Median follow-up was 12 months (IQR 6–19). Radiologic local recurrence was identified in 1 patient at 25 months follow up. Major complications (Clavien $\geq$3a) were identified in 3 (3.2%) patients (MI POD 22, CVA POD 8, hemorrhage requiring angioembolization). Minor complications occurred in 12 (12.6%) patients, including urinary retention (3), UTI (5), hemorrhage requiring transfusion (2) and cardiac arrhythmia (2). Post procedure eGFR decreased slightly immediately postoperatively by a mean of 6 mL/min per 1.73 m^2 ($p = 0.023$), though this is unlikely to be of clinical significance.

Conclusion: Use of a modern microwave ablation system for the treatment of T1a renal cell carcinoma is feasible, safe, and efficacious at short-term follow-up. Further studies and continued follow up are warranted to demonstrate long-term oncologic outcomes.

MP37-20 Spending money to make money: new LASER technology results in shorter operating time and more patients on a theatre list

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Introduction: Holmium LASER is the gold standard way of stone fragmentation used in ureteroscopy and flexible ureterorenoscopy. Technology improvement has led to development of new systems which are considered to be more effective. In our unit the Cook Medical Rhapsody (30 Watt) LASER system was acquired in 2014 to replace the Auriga system (30 Watt) when its commission expired. We explored whether its introduction resulted in any clinical or financial benefits, as there were no other changes during this period (in equipment or staff).

Patients & Methods: We reviewed the electronic records and imaging studies of the last 50 consecutive cases of ureteroscopy (semi-rigid or flexible combined with renoscopy) with LASER stone fragmentation performed using the old system (group A) and the first 50 consecutive cases performed with the new system (group B), respectively. Cases and operating times were identified through our operating lists database and theatre Galaxy online recording system, respectively. Data was collated for demographics, stone characteristics, operating times and post-operative stone-free rates.

Results: Basic demographics (age, sex, side) were similar in both groups. The 100 cases, were done over 12 months (6 months each group). The majority of treated stones were intra-renal (A:30, B:37). Mean stone diameter was 9.7 mm (4–20) in A and 10.7 mm (5–26) in B. In A, the LASER malfunctioned twice leading to the procedures being abandoned. There was no difference in complications or stent insertion rates. Mean theatre time was significantly shorter for B (41.7 ± 14.7 min) compared to A (54.6 ± 14.9 min) ($p = 0.001$). Stone free rates were different between A (74%) and B (82%) but this did not reach significance ($p = 0.47$). The actual operating time saved in B was 645 min. If this was adjusted according to stone diameter, it would have been higher (712 min); this could have saved approximately £9200 in those 6 months, based on the estimation that Urology theatre cost is £775/hour (Information Service Division for NHS Scotland 2014). The time saved per patient (12.9 min) in an average 6-stone case operating list, would equate to enough extra time (77.4 min) for an additional patient on the list.

Conclusions: Our study demonstrates that the new LASER system use resulted in significantly reduced operating times and the potential to add an additional patient to a theatre list. This

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finding can support the financial investment for new LASER systems in other departments due to their potential long-term cost savings.

MP37-21 PercSac: A Novel Device to Prevent Stone Fragment Migration during Percutaneous Lithotripsy in a Kidney Model

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Introduction: Up to 50% of patients with residual fragments after percutaneous nephrolithotomy (PCNL) experience a stone-related event. We developed a polyethylene sack (the PercSac) that fits over the shaft of a rigid nephroscope and is deployed in the collecting system to capture a stone and contain fragments generated during PCNL, allowing for efficient and complete removal. We previously reported our results with the PercSac in a percutaneous cystolithopaxy model. Herein we compare the efficiency of stone fragmentation with and without the PercSac in a PCNL model.
Materials and Methods: The in-vitro PCNL model consisted of a human kidney model created on a 3-D printer with an open upper pole calyx, renal pelvis, and ureter. A 30F Amplatz working sheath was placed in the upper pole calyx. Ten Bego® stones made in spherical molds of 2.0 cm diameter, matched for weight, were fragmented using a 24F rigid nephroscope and an ultrasonic lithotripter; five with and five without the PercSac. The time for stone fragmentation with ultrasonic lithotripter, total time for stone clearance from the kidney, a gross assessment of the stone-free status, and need for flexible nephroscope to achieve stone-free status were recorded.
Results: The mean stone weight for both groups was 4.76 g (PercSac SD = 0.12, no PercSac SD = 0.16). The median time for stone fragmentation with the ultrasonic lithotripter was significantly shorter in the PercSac group compared with the control group [217 sec (IQR = 169–255) vs 340 sec (IQR = 310–356), ($p = 0.028$)]. Likewise, the total time from insertion of the nephroscope into the kidney to completion of stone clearance from the kidney was significantly shorter for the PercSac group [293 sec (IQR = 244–347) vs 376 sec (IQR = 375–480), $p = 0.047$)]. One trial with the PercSac had residual dust remaining in the kidney while all 5 trials without the PercSac had small residual fragments remaining. All trials without the PercSac required a flexible scope with basket extraction to achieve stone-free status and none of the trials with the PercSac required flexible nephroscopy for stone clearance.
Conclusions: Ultrasonic lithotripsy using the PercSac device is more efficient and efficacious than traditional ultrasonic lithotripsy in a PCNL model. This advantage may be even more pronounced during clinical PCNL where residual fragments migrate into difficult-to-access calyces. Further *in vivo* testing is underway.

MP37-22 Evaluation of combined electro cutter with cold knife effect on the intractable anterior urethral strictures

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Introduction: Sachse cold knife is conventionally used for optical internal urethrotomy for management of urethral strictures and in this procedure the complications and recurrent rates are relatively high, now we suggest combined electro cutter and cold knife as a success alternative to it in intractable anterior urethral strictures.
Materials and Methods: In this prospective study, we included 87 male patients age ≥18 years with diagnosis of intractable anterior urethral stricture (≥2 time recurrent) who admitted for internal optical urethrotomy during May 2010 to Jun 2013. The patients were randomized into two groups by using computer generated random number. In group A (electro cutter - cold knife group = 44), internal urethrotomy was done with combined electro cutter with cold knife and in group B (Cold knife group = 43) Sachse cold knife was used. Patients were followed up for 6 months after surgery in outpatient department on 15, 30 and 180 post-operative days. At each follow up visit physical examination, and uroflowmetry was performed along with noting complaints, if any.
Results: The success rates in group A and B were 46.6% (21 out of 44 patients), and 23.80% (10 out of 43 patients) ($P < 0.05$). The Complications were seen 11% in group A and 45% in group B. The peak flow rates (PFR) were compared between the two groups on each follow up. At 180 days (6 month interval) the difference between mean of PFR for electro cutter -cold knife group and Cold knife group was statistically significant ($P < 0.01$).
Conclusion: combined electro cutter with cold knife urethrotomy modality are effective than conventional cold knife urethrotom in providing immediate relief in recurrent urethral strictures and had lesser complications in patients with intractable and recurrent urethral strictures.

MP38 - NEW TECHNOLOGY 4

MP38-1 Evaluation of a novel single use flexiable ureteroscope

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Introduction: A novel, single-use, flexible ureteroscope promises the optical characteristics and maneuverability of a non-disposable 4th generation flexible ureteroscope. In this study, the single use flexible ureteroscope was directly compared to contemporary flexible ureteroscopes, with regards to optics, ureteroscope deflection and irrigation flow.
Methods: Three flexible ureteroscopes including the LithoVue (Single-use, Boston Scientific, USA), Flex-Xc (Karl Storz,

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Table 1. Characteristics of the LithoVue, Flex-Xc and Cobra Flexible Ureteroscopes

CHARACTERISTIC	LithoVue	Flex-Xc	Cobra
Platform	Digital	Digital	Fiberoptic
Working Channel	3.6F	3.6F	Dual 3.3F
Optical Characteristics			
Resolution at 10mm (lines/mm)	7.13	8.00	4.00
Image Distortion	3.6%	22.6%	16.7%
Depth of Field (mm)	4.5	6.0	4.0
Field of View (mm)	15.75	10.5	14.25
Maximum Deflection	276°	263°	253°
Maximum Flow Rate (ml/min)	40.3	38.4	28.8

Germany) and Cobra (Richard Wolf, Germany) were assessed in vitro for image resolution, distortion, color representation, grayscale imaging, field of view and depth of field. Ureteroscope deflection was tested with an empty channel followed by placement of a 200μm laser fiber and a 1.9F wire basket, a 2.0F Nanoelectric pulse lithotripsy (NPL) probe and a 2.4F NPL probe. Ureteroscope irrigation flow was measured using normal saline at 100 cm, with an empty channel followed by a 200μm laser fiber, a 1.9F wire basket and a 2.0F NPL probe.

Results: The optical characteristics of the three ureteroscopes are shown in Table 1. The LithoVue showed the largest field of view, with excellent resolution, image distortion and depth of field. No substantial difference was demonstrated in color reproducibility or in the discernment of grayscales between ureteroscopes. Maximal deflection of each ureteroscope is also shown in table 1. The LithoVue maintained full deflection ability with all instruments, though the Flex-Xc and Cobra showed loss of deflection ranging from 2° to 27° depending on the instrument placed. With an empty channel, the LithoVue showed a flow rate greater than the Flex-XC ($p = 0.003$) and the Cobra ($p < 0.001$). It maintained better flow with instruments in the channel than the Flex-Xc. The Cobra has a separate 3.3F instrument channel, keeping flow rates the same with instrument insertion.

Conclusion: The LithoVue single-use ureteroscope has superb optical capabilities, deflection and flow, making it a viable alternative to standard non-disposable 4th generation flexible digital and fiberoptic ureteroscopes.

MP38-2 The Disposable Digital Flexible Ureteroscope: A New Paradigm?

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Introduction: Flexible ureteroscopy is the most rapidly growing intervention for the treatment of upper urinary tract calculi. One of the greatest limitations to a more widespread adoption of this modality is the fragility and finite lifespan of reusable flexible ureteroscopes. To date, disposable flexible ureteroscopes have not offered performance characteristics and image quality comparable to reusable flexible ureteroscopes, which has limited their utility. We evaluated a novel, disposable, digital flexible ureteroscope, and compared it to a conventional fiber-optic flexible ureteroscope.

Methods: The Boston Scientific LithoVue disposable, digital flexible ureteroscope and the Olympus URF-P5 were both assessed in a porcine model by three experienced endourologists. Once the pigs were adequately anesthetized, flexible ureteroscopy was performed with an access sheath, without an access sheath, and finally a laser papillotomy was executed. The two ureteroscopes were assessed for their ability to navigate the upper urinary tract as well as their optical characteristics.

Results: Three renal units were inspected with each ureteroscope. No significant differences were noted in the ability to advance and manipulate the two ureteroscopes within the upper urinary tract. The image quality of the LithoVue was rated as superior to that of the Olympus URF-P5. Representative images and video from each endoscope were captured.

Conclusions: The disposable LithoVue ureteroscope exhibited comparable performance characteristics and superior image quality to that of a reusable fiber-optic ureteroscope.

MP38-3 First evaluation of a new single use flexible digital ureteroscope in human fresh cadavers

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Introduction: With the advance of technology, flexible Ureteroscopy (fURS) has become an attractive option for the surgical management of kidney stones. Although digital scopes have better image quality, both fiber-optic and digital can be used effectively with comparable results. Due to the high cost and short durability, the cost-benefit of these permanent non-disposable scopes continues to be the most important factor for initiating and maintaining fURS programs worldwide. LithoVue is the first disposable digital flexible ureteroscope developed to access the upper urinary tract. It claims to be cost-effective but, to date, there is a lack of data regarding its performance, especially image quality and accessibility to the entire collecting system. The aim of this study was to evaluate LithoVue in a human cadaveric model and compare it to a non-disposable fiber-optic and a digital flexible ureteroscope.

Materials and Methods: LithoVue, a conventional fiber optic and a digital flexible scope were each tested in 4 renal units (2 right and 2 left) of fresh female cadavers by 3 surgeons. The following parameters were analysed: accessibility to the kidney and navigation of the entire collecting system with and without ureteral access sheath (UAS), lower pole access with the working channel empty and with 2 different baskets and laser fibers. A subjective evaluation of maneuverability and visibility was assessed by each surgeon at the end of every procedure.

Results: Kidney access, navigation of the entire collecting system and navigation time are reported in the Table. Lower pole access with baskets and laser fibers was possible for each scope, after UAS placement. The digital scope was the favourite for visibility in all procedures; for maneuverability LithoVue was the favourite in 6 evaluations, fiber optic in 5 and the digital scope in 1.

Conclusion: The new single-use flexible digital scope seems to be comparable to conventional scopes in terms of visibility and manipulation in the collecting systems of fresh human cadavers.

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		Scopes	
	LithoVue	Fiber optic	Digital
Kidney access (without/with UAS)			
-Kidney 1(L)	**No/yes**	**No/yes**	**No/yes**
-Kidney 2(R)	Yes/yes	Yes/yes	Yes/yes
-Kidney 3(L)	Yes/yes	Yes/yes	Yes/yes
-Kidney 4(R)	Yes/yes	Yes/yes	Yes/yes
Navigation (without/with UAS)			
-Kidney 1(L)	Yes/yes	Yes/yes	Yes/yes
-Kidney 2(R)	Yes/yes	Yes/yes	**No(lower pole)/yes**
-Kidney 3(L)	Yes/yes	Yes/yes	**No(upper pole)/yes**
-Kidney 4(R)	Yes/yes	Yes/yes	Yes/yes
Navigation Time (Surgeon 1/2/3)			
-Kidney 1(L)	2,30/2,35/2,10	1,38/3,1/1,45	2,10/4,43/3,42
-Kidney 2(R)	1,25/2,10/1,18	1,13/2,08/1,55	1,17/2,48/2,02
-Kidney 3(L)	0,38/1,16/1	0,45/0,55/0,54	0,51/1,33/1,53
-Kidney 4(R)	0,52/1,33/1,08	0,49/1,42/1,09	0,58/1,03/0,56

Further studies in humans are needed to determine the clinical value of this new instrument.

MP38-4 Fourth Generation flexiable ureteroscopes: A comparison of optics, deflection and flow

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Introduction: Flexible ureteroscopes remain in continual evolution, with improved optical characteristics and maneuverability with each generation. They now have smaller diameters than their predecessors and improved imaging capabilities, among other benefits. In this study, three ureteroscopes were directly compared with regards to optics, ureteroscope deflection and irrigation flow.
Methods: Two digital flexible ureteroscopes including the Flex-Xc (Karl Storz, Germany) and URF-V2 (Olympus, Japan) and one fiberoptic flexible ureteroscope (URF-P6, Olympus, Japan) were assessed in vitro for image resolution, distortion, field of view, depth of field, grayscale imaging and color representation. Ureteroscope deflection was tested with an empty channel followed by placement of a 200 μm laser fiber and a 1.9F wire basket, a 2.0F Nanoelectric pulse lithotripsy (NPL) probe and a 2.4F NPL probe. Ureteroscope irrigation flow was measured using normal saline at 100 cm, with an empty channel followed by a 200 μm laser fiber, a 1.9F wire basket and a 2.0F NPL probe.
Results: The optical characteristics of the three ureteroscopes are shown in Table 1. The digital platforms showed superior resolution and depth of field, and the Fiberoptic platform had a larger field of view. No substantial difference was demonstrated in color reproducibility or in the discernment of grayscales. Maximal deflection of each ureteroscope is shown in table 1. There was no significant difference in impact on deflection between the ureteroscopes by instruments in the working channel. With an empty channel, the flow rates of the URF-V2 and URF-P6 were identical and significantly lower than the Flex-Xc ($p = 0.001$). The Flex-Xc maintained significantly faster flow with instruments in the channel than both the URF-V2 and URF-P6 ($p = 0.03$).
Conclusion: The flexible ureteroscopes tested showed excellent optical, deflection and flow capabilities. The resolution of the digital ureteroscopes is superior to the fiberoptic scope, yet the field of view is limited. The Flex-Xc showed deflection comparable to the URF-P6, and improved flow rates over the URF-V2 and URF-P6.

Table 1. Characteristics of the Flex-Xc, URF-V2 and URF-P6 Flexible Ureteroscopes

CHARACTERISTIC	Flex-Xc	URF-V2	URF-P6
Platform	Digital	Digital	Fiberoptic
Optical Characteristics			
Resolution at 10mm (lines/mm)	8.00	7.13	3.56
Image Distortion	22.6%	4.0%	11.5%
Depth of Field (mm)	6.0	4.5	3.0
Field of View (mm)	10.5	10.5	13.5
Maximum Deflection	263°	239°	261°
Maximum Flow Rate (ml/min)	38.4	35.5	35.5

MP38-5 I-Guide™ localization system (Siemens) and Ultramini Access Ureteroscopic Anterior PNCL

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Patient and Management: A 34 years old 109 kg female, with multiple small symptomatic (18/12 pain score 8/10) anterior parenchymal left infra-hilar stones, was referred, having undergone two failed uretero-renoscopic stone access. Contrast based imaging showed no connection from collecting system to stones. Prone left diagnostic ureterorenoscopy (digital) showed a tiny anterior basal peripheral LC papilla opening, which was laser incised to no avail. Standard fluoroscopic + US guidance was then used with the patient supine. A laterally placed mature UMPCN track was obtained. Short 7Fr semi-rigid ureteroscopic nephroscopy allowed 2nd Holmium laser incision anterior to the previous incision, but again to no avail! A final joint Interventional Radiology-Urology Procedure was made using the I-Guide™ localization system. After planning, the puncture needle was advanced transparenchymally, anterior to the renal capsule, contrast was injected to confirm bowel integrity, followed by 50 ml saline to create a safe working space to coil safety and working wires (Dual Lumen catheter). Track dilatation was done with 12–14Fr, 36 cm ureteral access sheath (later shortened to allow passage of a short semi-rigid ureteroscope). Using combined endovision + fluoroscopic guidance, the optimal Laser incision site was selected anterior to the LC neck, finally leading to the stones in a self-contained anterior parenchymal pocket, followed by uncomplicated fragmentation and removal.

I-Guide™ is a stereotactic-like localization and planning system based on 3-D imaging data acquisition-manipulation to create surface entry and target tip points, allowing real time needle tracking to the target location. This is ideal for targeting small solid organ based lesions (as in this case), which have

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failed access by traditional means /or difficult to visualize on ultrasound -traditional parallax guided fluoroscopy.
Conclusions: Potential system advantages include shorter screening time + reduced OR staff exposure, but for higher patient dose. However, it allows interventional radiology and endourology technique hybridization to access lesions otherwise resistant to standard treatment and which have failed multiple treatment attempts previously, or for small stones in difficult-to-reach areas in obese patients. This is the first reported urological use of I-Guide™ for salvage therapy of symptomatic renal parenchymal calculi with reduced size percutaneous access deploying standard short small ureteroscopic instruments.

MP38-6 Comparison of a Novel Combined Holmium Laser and Suction Device, LithAssist, to an Ultrasonic Lithotripter for Percutaneous Nephrolithotomy- A Randomized Controlled Multicenter Clinical Trial

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Purpose: The objective of this study is to compare the efficiency of stone fragmentation and removal of the LithAssist (Cook Medical, Bloomington, IN, USA), a disposable combination holmium laser and suction handheld device, to an ultrasonic lithotripter in patients undergoing percutaneous nephrolithotomy (PNL) for renal stones.
Materials and Methods: With IRB approval, we performed a randomized controlled multicenter clinical trial to compare the LithAssist to an ultrasonic lithotripter. Patients undergoing a PNL with non-staghorn renal stones were eligible for the study. The primary outcomes were the time to stone clearance and stone clearance rate. In addition, stone burden, S.T.O.N.E nephrolithometry score, post-operative complications, stone-free rates, need for additional modalities, device malfunction, and surgeon comfort with the device were measured.
Results: A total of 21 PNLs were performed with 10 patients randomized to the LithAssist device (7 female: 3 male, age 58.2 ± 16.7) and 11 patients randomized to an ultrasonic lithotripter (6 female: 5 male, age 61.6 ± 8.4). There was no significant difference between the two devices for stone size (LithAssist 828.9 mm^2 vs Ultrasonic 1339.9 mm^2), S.T.O.N.E nephrolithometry score (LithAssist 8.4 vs Ultrasonic 8.9), time to stone clearance (LithAssist 74.0 min vs Ultrasonic 45.2 min) or overall operative time (LithAssist 158.3 min vs Ultrasonic 141.3 min). There was a trend for higher stone clearance rate with the ultrasonic lithotripter compared to the LithAssist device, 124.2 mm^2/min vs 23.2 mm^2/min respectively, $p = 0.1$. Post-operative complications, stone-free rates, need for additional modalities, and device malfunction were similar in both treatment groups. There were two cases that required switching from the LithAssist to the ultrasonic lithotripter, and were excluded from the outcomes measurements. Surgeon comfort with the device was higher for the ultrasonic lithotripter ($p < 0.001$).
Conclusions: Preliminary results suggest no significant difference between the LithAssist and ultrasonic lithotripter, however there was a trend for higher stone clearance rate with the ultrasonic lithotripter. Specifically the LithAssist device had poor suctioning secondary to the small caliber of the probe and required more retrieval of stone fragments. Surgeon comfort was significantly higher with the ultrasonic lithotripter.

MP38-7 Results from a prospective multicentric observational and comparative study on XenxTM, a new stone management device for the treatment of ureteric stones

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Introduction: This is a prospective observational multi-centric and comparative study in evaluating the performance of Xenx – a dual purpose device designed as a safety guide-wire (0.038 inches) with a built-in stone retention capability that prevents retrograde stone fragments (< 1 mm) migration during ureteroscopic lithotripsy.
Method: Between March and September 2014, 45 patients were recruited across 7 European Tertiary Referral Centres for urinary stone disease and underwent ureteroscopy and laser fragmentation by using the Xenx. Inclusion criteria were: unilateral ureteric stone, single or multiple stones of 0.5 – 1.5 cm in maximum diameter. Main exclusion criteria were: concomitant ipsilateral renal stones, presence of known ureteric stricture, ureteric dilation > 12 mm. Demographics, complication rates and surgical outcomes were prospectively collected and compared with a historical cohort of 41 ureteroscopies and laser fragmentation of ureteric stones, randomly selected across the centres involved. Stone-free condition was defined as residual fragments ≤ 2 mm. A Likert-like 5-grade scoring system (1 = very bad; 5 = very good) was used by surgeons for subjective evaluation of XenX properties, such as pushability, ease of deployment, full expansion and cooptation to ureter walls, kink resistance, stone retention capabilities, device retrieval, ease of stenting, device radiopacity, and ease of basketing.
Results: In 41 patients Xenx was successfully used; in other 4 patients (10%) problems regarding positioning and deployment of the braid prevented its use.

Demographics, complication rates and surgical outcomes are summarised in the table, including comparative features with the control group. Median operators' evaluations for XenX were ''Good'' (4 out of 5) for most of the domains surveyed, expect for ''Ease of Basketing'' (2/5) and ''Advancement of double J stent'' (3/5).
Conclusions: Xenx is equally effective for proximal and distal stones, even though in the European practice its indication for proximal stones is predominant.

Xenx is a safe tool for the treatment of ureteric stones; combination with lasering fragmentation makes highly effective its use; however, improvements are needed for the deployment

	Xenx Group	Control Group	p
Patients number Male Female	41 25 16	41 23 18	n.s.
Patients age (yrs)	52	46	n.s.
Total Stone burden size (mm)	9.72	10.63	n.s.
Stone site Prox ureter Dist ureter	 30 11	 30 11	n.s.
Operative time (mins)	39.34	44.63	n.s.
Lasering time (mins)	13.98	5.29	0.0001
Intraoperative complication rate (%)	0	2	n.s.
Use of basket (%)	19.5	97.6	0.0001
Need of JJ stent (%)	22	35	0.001
Hospital stay	2.08	1.95	n.s.
SFR Intra-op 4-week	 100 100	 62 75.6	 0.0001 0.001

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system to make it more cost-effective. Xenx should not be used for basketing of residual fragments; use of basket is minimal as the device eases a thorough fragmentation of stones. Stent functionality can apply only for stents accommodating a 0.038 inches guidewire.

MP38-8 Developing an Augmented Reality PCNL Access System

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Background: The most technically challenging part of the PCNL procedure is obtaining percutaneous access to the kidney. The challenge is to convert two-dimensional images from fluoroscopy or ultrasound into a mental 3D image in order to triangulate and puncture the calyx of choice.
Methods: To reduce the need for judgment and estimation an augmented reality (AR) prototype has been developed. The surgeon wears a head mounted display through which the exterior of the patient can be seen as normal and onto which the preoperative 3D imagery can be overlaid. Preoperative CT images can be fused with real time ultrasound. The kidney architecture appears like a ''hologram'' in the field of view of the surgeon.
Results: The current prototype is able to determine, in real-time, the relative position and orientation of the imaging device and the head mounted display and to reconstitute the image from the point of view of the wearer of the head mounted display. Thus, as the wearer of the head mounted display moves relative to the target and/or the real-time imaging device, the image visible in the display screen of the head mounted display is corrected.
Conclusions: This technology offers a promising method to facilitate percutaneous access in procedures such as PCNL. The technology might also be used for other percutaneous procedures requiring accurate real-time guidance.

MP38-9 PCNL puncture using an image guidance system

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Objectives: PCNL has proved its efficacy as the endourological procedure of choice for renal calculi larger than 2 cm. Precise percutaneous needle puncture of the desired calyx of the renal collecting system is the critical initial step in PCNL and is associated with a steep learning curve. Contemporary imaging modalities for puncture (2D fluoroscopy and ultrasound) have their limitations. Developments in image-guided surgery using commercially available systems offer promise to develop a technique for PCNL puncture. We set out to devise a protocol / workflow for using such systems to perform the puncture.
Methods: A silicone phantom kidney model (courtesy of Boston Scientific) with six radio-opaque fiducials markers attached to it was used. The phantom was scanned using a 16 slice computed tomography (CT) machine. Contrast material (Omnipaque®) was injected into the phantom collecting system. The resultant images were uploaded into a Medtronic StealthStation® surgical navigation system. In vitro image guided navigation was made possible by the following steps: *calibration* of the camera(s) and needle with position tracking fiducials attached, *registration* of CT imaging data to the phantom ''anatomy'', and *tracking* of the needle.
Results: Using the image guidance system, the surgeon is able in real time to intuitively visualise the anatomy, see the needle / anatomy relationship in 3 D, plan which entry point on the ''skin'' is favourable and navigate the needle to target the phantom collecting system. Successful manual attempts were made to puncture the phantom collecting system using both optical and electromagnetic tracking systems. Limitations of this image guidance system for PCNL relate primarily to 3 sources of (difficult to predict in our in vitro model) targeting errors: 1) respiratory movement, 2) deformation of anatomical structure during needle puncture and 3) differences in anatomy related to patient positioning from CT scanner to operating table.
Conclusion: It is hoped that image guidance systems can offer a more efficacious method for PCNL puncture and this study has outlined a proposed workflow. Human trials are required to assess its efficacy given the anticipated in vivo targeting error limitations.

MP38-10 Urine diagnostic testing for bladder cancer by imaging flow cytometry

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Introduction: Urine-based tests are ideal as a non-invasive test for urothelial carcinoma although does not replace flexible cystoscopy. Imaging flow cytometry combines the benefits of confocal fluorescent microscopy with the high throughput capability of flow cytometry to enable an objective, morphometric analysis of individual cells within a fluid suspension. Using a combination of preclinical and clinical samples, we developed an imaging flow cytometry-based test to identify urothelial carcinoma cells from human urine.
Methods: Ethical approval was granted for the study. A sample processing workflow was developed using bladder cancer cell lines, optimised for cellular morphology and staining preservation. This was then applied to 43 patient urine samples from patients with and without urothelial carcinoma. Fluorescent staining protocols were designed to enable identification of nucleated cells, exclusion of lymphocytic lineage cells (cells negative for CD45). ImagestreamX II (Amnis) was used for data acquisition and analysed using IDEAS software.
Results: The optimised workflow preserved both cell morphology and fluorescent signal. The workflow development consisted of discrimination between nucleated and non-nucleated cell events, single and multi-nucleated cells. A variety of cell types including squamous and urothelial cells, and CD45 + lymphoid cells were identified. From a range of cell morphometric parameters, we identified cellular morphometric parameters to distinguish between benign and malignant samples.
Conclusion: Ultimately we aim to improve bladder cancer diagnostics by reducing the need for flexible cystoscopy which is both an invasive and expensive test. This is the first time imaging flow cytometry has been used to detect malignant bladder cells in human urine samples. Our test offers an objective analysis of cell morphology compared to conventional urine cytology. Our findings are currently being validated in a larger sample pool to fine-tune the protocol and refine the parameters for discrimination.

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MP38-11 Initial evaluation of clinical implementation of the semi-robotic mpMRI/TRUS-guided transrectal fusion biopsy of the prostate using the ArtemisTM-device in a high volume university prostate cancer

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Introduction: Recent studies show that MpMRI/TRUS-guided fusion biopsy improves prostate cancer detection. The biopsy platform Artemis™- enables semi-robotic image-guided biopsy by real-time 3D tracking of the prostate. To determine clinical applicability we analyzed data regarding duration time of the procedure and complications during and post intervention of the first 70 patients biopsied from November 2014 to April 2015 in a high volume prostate cancer center with the Artemis™-device.
Material and Methods: After a prior multiparametric MRI of the prostate patients with a previous negative biopsy or no previous biopsy but clinical suspicion of prostate cancer or patients undergoing active surveillance received a targeted and systematic prostate biopsy with Artemis™ in general anaesthesia. Antibiotic prophylaxis was provided when urine culture was sterile, otherwise treatment of a urinary tract infection was initiated at least 24 hours before the biopsy. Duration of the biopsy was documented from beginning of TRUS to the last obtained biopsy core. According to the Clavien-Dindo Classification complications were defined as rectal bleeding during and post intervention, haematuria, prostatitis, fever and urinary retention.
Results: 70 patients with a median age of 66,5 years (range 43,3 – 79,7 years) were biopsied with Artemis™ during the above mentioned 6 months. Duration of biopsy was documented in 65 patients and mean duration was 33 minutes (range 11 – 67 minutes). Rectal bleeding during biopsy occurred in 8 patients (11,43%), 2 (2,86%) patients developed postinterventional haematuria (Clavien-Dindo Classification Grade I). There was no case of prostatitis, fever or urinary retention. Clinical evaluation revealed no impairment through general anaesthesia and all patients were able to leave hospital on the following day.
Conclusion: Artemis™ promises to be applicable in clinical usage. Operation time is acceptable although technical complexity is higher. As biopsy is performed in general anaesthesia no consecutive impairment of the patient caused by the procedure has to be expected. Complication rate is similar to that of systematic biopsy as described in previous studies. Whereas no complication arised due to general anaesthesia the procedure might be more comfortable for the patient.

MP38-12 MRI Fusion Biopsy in Biopsy Naïve patients

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Introduction: The current standard for prostate biopsy is sextant Transrectal Ultrasound (TRUS) Guided biopsy, a blind systematic procedure. Fusion biopsy (FB) is a technique using Mutiparametric MRI images that can be fused with real time ultrasound to guide biopsies from areas of interest. Using this technique of FB in our practice alongside standard TRUS biopsies we intend to find out whether the FB technique is more capable of detecting cancer, more importantly, significant prostate cancer (pCa) avoiding the need for repeat biopsies.
Patients and Methods: Patients attending for a fusion biopsy from January 2014 to January 2015 were identified. Age, PSA, FB information were all noted. Exclusion criteria were patient's who had previous fusion or TRUS biopsy. 64 patients were identified. PSA ranged from 1.2 – 45.5 with a mean of 8.34. Age ranged from 47 – 82 with a mean of 66. All patients had at least one identified suspicious lesion on a 3 Tesla Mutiparametric MRI which was then utilised for MRI- Ultrasound FB using the Hitachi™ RVS platform.
Results: Overall the pCa detection rate in patients was 30 out of 64 patients (46.88%) on FB. 68 targets were identified in total, 32 of these were positive for pCa giving a positive target rate of 47.06%. Of 332 cores obtained by fusion biopsy, 78 (23.49%) had cancer. Conventional TRUS biopsies demonstrated, of a total of 754 cores, only 134 (17.77%) were positive for malignancy. On FB, a Gleason score of 6 was detected in 16 (23.53%) patients, Gleason score 7 in 12 (17.65%) patients and a Gleason score of 8 or higher in 4 (5.88%) patients.
Conclusion: Djavan et al carried out a prospective study looking at TRUS biopsy. 1,051 patients had TRUS biopsy, with pCa detected in 231 of these patients giving a detection rate of 21.98%. Our study, bearing in mind its reduced power, shows that fusion has a pCa detection rate over double that at 46.88%. Our study picked up significant pCa (Gleason Grade 7 or higher) in 16 (23.53%) patients. Maxeiner et al have shown the rate of TRUS Biopsy pick up rate of significant pCa in the region of 15%. The figures show that mpMRI/US Biopsies have an increased pick up rate of pCa in the setting of biopsy naïve patients. There is potential for mpMRI/US Biopsy to be the gold standard for prostate sampling in the future.

MP38-13 MRI Fusion Biopsy of Prostate in patients that have had previous negative Transrectal Ultrasound guided biopsy

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Introduction: The current standard for prostate biopsy is sextant Transrectal Ultrasound (TRUS) Guided biopsy, a blind systematic procedure. Fusion biopsy (FB) is a technique using Mutiparametric MRI (mpMRI) images that can be fused with real time ultrasound to guide biopsies from areas of interest. Using FB in our practice we intend to find out whether the FB technique is capable of detecting cancer in patients with previous negative TRUS biopsies. Importantly we will consider the volume of significant prostate cancer (pCa) that is detected on these FB, and if it is a superior technique to TRUS.
Patients and Methods: Prospective data from patients attending for a fusion biopsy from January 2014 to January 2015 were analysed. Age, PSA, FB information were noted. Inclusion criteria were patient's who had a previous negative TRUS biopsy. All patients had at least one identified suspicious lesion on a 3 Tesla mpMRI which was then utilised for MRI- Ultrasound FB using the Hitachi™ RVS platform.
Results: 55 patients were identified. PSA ranged from 5.1 – 77.5, with a mean of 15.62. Age ranged from 59 – 87, with a mean of 68.96. FB detected pCa in 22 (40%) of 55 patients. Significant pCa was detected in 18 (32.73%) of 55 patients undergoing FB. Of 279 cores obtained by FB, 73 (26.16%) had pCa.
Conclusion: The literature shows us that repeat TRUS biopsy is positive for pCa in 10–20% of patients after initial negative

TRUS biopsy. FB in patients with initial negative TRUS biopsy is positive in 40% of patients. Taira et al quote that Transrectal ultrasound (TRUS) biopsy can miss 20–30% of clinically significant cancers. Of the pCa detected by FB, 81.82% were significant pCa. These figures show us that TRUS biopsies can miss significant pCa and that FB may be emerging as the new standard for sampling the prostate. FB should certainly be considered in patients who have a negative initial TRUS biopsy, in whom the suspicion of pCa remains high.

MP38-14 Image Guided Percutaneous Cryoablation for Solid Renal Tumours: Early Experience of a Novel Cone Beam CT Needle Guidance System

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Introduction: To establish the safety and efficacy profile of image guided cryoablation (CRA) in the treatment of solid renal tumours using both conventional multi detector computed tomography (MDCT) and cone beam computed tomography (CBCT) with a novel needle guidance system.
Methods and Materials: Data on all renal tumours treated by CRA at our institution between February 2013 and April 2015 was retrospectively collected. Patient demographics, tumour characteristics and procedural details were documented. All patients underwent initial follow up imaging at 3 months, followed by further imaging up to 20 months post procedure (average 10 months to date). Total or subtotal treatment and complication profiles were recorded.
Results: 12 tumours were treated in 12 patients. Mean patient age 75 years (range 59–83 years). Mean tumour size 31 mm (range 25–45 mm). 33% of tumours were central and 67% exophytic, whilst 33% were anterior and 67% posterior. Tumour histology demonstrated 67% (8/12) were clear cell renal carcinoma, 17% (2/12) papillary, 8% (1/12) angiomyolipoma, and 8% showed no evidence of tumour.

All treatments were performed under general anaesthetic under either MDCT (27%) or CBCT (73%) guidance. Between 1 and 6 probes were used per tumour depending on size. Hydrodissection was used in 46% of cases. 11 tumours have undergone follow up imaging to date; 1 tumour is awaiting follow up. 91% (10/11) tumours were completely treated at either one (10/11) or two (1/11) CRA sessions. A single tumour showed equivocal residual enhancement after two treatment sessions, but further treatment has been withheld due to patient frailty. 1 patient sustained a small pneumothorax during the procedure requiring chest drain insertion, and one patient had a self-limiting acute kidney injury. No other complications were observed.
Conclusion: Our experience further reinforces the role of CRA as a safe and effective treatment for solid renal tumours in surgically unfit patients. CRA performed using CBCT with a needle guidance system offers advantages over conventional MDCT guidance, allowing treatment of awkwardly placed tumours and allowing procedures to be performed in a hybrid interventional theatre.

MP38-15 Second Harmonic Generation Optical Microscopy Identifies Aggressive RCC Variants

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Introduction: Tumor matrix data using a non-invasive optical technology called Second Harmonic Generation (SHG) microscopy has been linked to prognosis in ovarian and breast cancer, but few studies have evaluated the collagen-rich extracellular matrix (ECM)-based markers for renal cell carcinoma (RCC). We sought to characterize RCC using SHG and identify quantitative optical biomarkers in the ECM.
Methods: A tissue microarray (TMA) was constructed from renal tissue specimens, including RCCs grade1, grade 4, and benign tissue. A 5μm section was cut from the TMA and SHG images of the collagen were captured with a custom-built forwards detection SHG microscope with an excitation wavelength of 780 nm and an emission filter centered at 390 nm with a 20 nm bandwidth. SHG images were analyzed using Curvelet transform-based custom software tools, which automatically extract collagen fibers in each TMA spot and quantify several features associated with the alignment and density of fibers with respect to each other. The quantified collagen features were then compared between different renal tissues with ANOVA.
Results: Both collagen fiber density and alignment have an apparent consistent change among benign tissue, high, and low-grade RCC for the features we measured. Specifically, collagen fiber density was greatest in benign tissue, followed by grade 4, with grade 1 RCC being the least collagen-dense. Collagen fibers appeared more linearly aligned in high grade RCC compared to low grade RCC or benign. The table shows the comparison of two typical density and alignment features. To be noted, the listed p-values may be subject to the ANOVA design, sample size, and accuracy of the collagen feature extraction.
Conclusions: SHG-based biomarkers of collagen fiber density and alignment distinguished between benign renal parenchyma, high, and low-grade RCC. SHG imaging provides a quantitative platform technology with which to analyze renal tumors and may provide additional information to characterize both whole specimens and biopsy cores. In other malignancies, aligned collagen fibers have been shown to act as a ''scaffold'' along which cancer cells migrate and there may be additional metrics of the ECM that influence RCC onset and progression.

	Mean Benign (n=62)	Mean Grade 1 RCC (n=55)	Mean Grade 4 RCC (n=44)	Benign vs Grade 1 RCC	Benign vs Grade 4 RCC	Grade 1 vs Grade 4 RCC
Collagen Fiber Density (mean # pixels between 16 fibers)	75.3	148.3	104.8	p<0.0001	p<0.0001	p<0.0001
Collagen Fiber Alignment (alignment coefficient of nearest 16 fibers)	0.33	0.40	0.44	p<0.0001	p<0.0001	P=0.0364

MP38-16 Virtual 3D bladder reconstruction from white light Cystoscopy

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Introduction: Bladder cancer has a high recurrence rate that requires lifelong surveillance to detect mucosal lesions.

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Examination with white light cystoscopy (WLC), the standard of care, is inherently subjective and data storage limited to clinical notes, diagrams, and still images. A visual history of the bladder wall can enhance clinical and surgical management. To address this clinical need, we developed a tool to transform *in vivo* WLC videos into virtual 3-dimensional (3D) bladder models.
Patients and Methods: Patients scheduled to undergo transurethral resection of suspected bladder tumor were recruited under an IRB-approved protocol. A standard rigid cystoscope was used to systematically image the bladder. WLC videos were recorded at a resolution of 1280×720 pixels and 30 Hz frame rate, followed by immediate camera calibration to control for cystoscope-based image distortions. Video data were fed into an automated structure-from-motion algorithm that generated a 3D point cloud followed by 3D mesh to approximate the bladder surface. The highest quality cystoscopic images were projected onto the approximated bladder surface to generate a virtual 3D bladder reconstruction.
Results: WLC videos were obtained from 36 patients. Regions imaged included normal mucosa, inflammation, and low- and high-grade bladder cancer. Approximately 25% of the frames from a video were required for an adequate reconstruction. Optimal reconstruction was achieved from WLC images depicting well-focused vasculature, when the bladder was maintained at constant volume with minimal debris, and when regions of the bladder wall were imaged multiple times.
Conclusion: We demonstrated 3D bladder reconstructions from intraoperative WLC videos in patients with suspected bladder cancer. A significant innovation of this work is the ability to perform the reconstruction using video from a clinical procedure collected with standard equipment, thereby facilitating potential clinical translation. Envisioned uses of the reconstructions include the creation of longitudinal visual medical records to enhance perioperative management and long-term surveillance of patients with bladder cancer, and the development of an objective cystoscopy evaluation tool for resident physician education.

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MP38-17 Transurethral resection in one piece by using a flexible cystoscopy (fTURBO): A new technique for the treatment of non-muscle-invasive bladder cancer

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Introduction: The usefulness of transurethral resection to treat non–muscle-invasive bladder cancer (NMIBC) has been widely accepted. However, conventional transurethral resection specimens are inappropriate for tumor pathological evaluation because of disorientation and fragmentation. Transurethral resection of a bladder tumor in one piese (TURBO) is characterized by the removed of a bladder tumor as a single piece. A more accurate pathological diagnosis is possible by TURBO. On the other hand, more minimally invasive surgical options should be evolved especially for solitary or recurrent tiny tumors. We herein report the report a new technic of TURBO by using a flexible cystoscopy (fTURBO).
Patients and Methods: Between June 2014 and May 2015, a total of twelve patients (mean age 71.0 ± 18.4 years, range 52–82 years) with solitary bladder tumor underwent fTURBO. We selected tumor size less than 1 cm as an indication for fTURBO. OLYMPUS CYF-5A was used as a flexible cystoscopy. A 2Fr electrofulguration probe was used for cutting and coagulation the resection was carried out in the order of 1. marking, 2. mucous membrane incision, 3. horizontal exision and 4. tumor remval. 21 Fr rigid cystoscope was used for extracting resected tumors.
Results: The resection of tumor was possible inside any part of the bladder. The mean surgical time was 34 min and No patient had major complications, such as bladder wall perforation or massive bleeding. Nine of twelve cases (75%) contained muscle layer in the resected sample. Pathological evaluation showed the tumor classification was pTa in eight cases and pT1 in four cases. The resected margin was free from tumor cells in all cases.
Conclusions: fTURBO was found to be as safe and effective as standard TURBO for tiny bladder tumors. It has a potential of development as a new technique for the treatment of NMIBC because of its advantages such as less analgesic requirement or out-patient operation.

MP38-18 En-bloc plasma-button bladder tumor removal – is it feasible?

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Introduction: This first experience, pilot study, was aimed to evaluate the outcome of en-bloc bladder tumor resection using the plasma-button electrode in cases of papillary non-muscle invasive bladder tumors (NMIBT) from the perspectives of surgical safety and efficacy, perioperative morbidity, histological assessment and short term oncologic outcome.
Methods: A total of 55 patients previously diagnosed by abdominal ultrasound, contrast CT and flexible cystoscopy with papillary bladder tumors over 1 cm in diameter were included in the trial. The exclusion criteria consisted in solid sessile tumors, lesions located in bladder neck area and tumors involving the ureteral orifice. En-bloc tumor resection using the plasma-button approach was applied in all enrolled cases. The tumor base was subsequently biopsied by standard single-wire loop resection and followed by plasma-button coagulation. The first follow-up cystoscopy was completed at 3 months.
Results: All procedures were successfully performed leading to visually complete tumor ablation. The mean tumor diameter was 1.8 cm (range between 1 and 4 cm). No obturator nerve reflex adverse events or cases of bladder wall perforation were encountered. No significant postoperative hematuria and re-intervention requirements were encountered in this series. The mean catheterization period was 1.6 days (range 1 to 2.5 days) and the mean hospital stay was 2.1 days (range 1 to 3 days). The pathological analysis confirmed the presence of detrusor muscle in the resected biopsy specimens for all enrolled patients, thus enabling for a reliable tumor staging to be established (all NMIBT histology diagnosed patients). A single case of other site residual lesion was found during the first evaluation cystoscopy, while no orthotopic recurrences were described.
Conclusion: En-bloc tumor resection using the plasma-button bipolar technology was confirmed by this initial trial as a promising endoscopic approach in cases of papillary bladder tumors. This new endoscopic approach, otherwise characterized by superior surgical efficiency and safety profiles, was described as accurate from the perspective of pathological staging. The short term oncologic outcome further supported the reliability of the technique.

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MP38-19 íSPIES; Evaluation of bladder images in four different SPIES modalities by a tablet application

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Introduction & Objectives: The novel Storz Professional Image Enhancement System for endoscopy contains besides conventional White light (WL) a Spectra A (SA) and Spectra B (SB) setting and Clara and Chroma setting. The Spectra A&B use specific color renderings to pronounce contrast. The Clara setting enhances local brightness and Chroma enhances sharpness of the image. We hypothesize that in cystoscopy, each SPIES modality has a different (A) perception of tumor margin, (B) recognition time and (C) perception of image quality. The objective of this research is to evaluate the differences in interpretation of images of bladder mucosa in different SPIES modalities between urologists in a pre-clinical setting.
Materials & methods: An in-house developed App for the iPAD retina and stylus was used. A total of 80 images from 20 areas acquired with four modalities were included in the study. During an international endourology meeting in 2014, 69 urologists and 4 residents participated. All data grouped together or grouped in *complicated- vs uncomplicated* images were analyzed on differences in (A) delineated tumor margin variation represented as the root mean square (RMS) in pixels from the median delineation, (B) quality of the image by a 0–10 score and (C) time in seconds of delineation per modality.
Results: (A) When grouped together, there was no difference in RMS between the four modalities (WL 12.4 pixels, CC 14.6 pix, SA 14.7 pix, SB 13.7 pix). There was a clear separation between uncomplicated images (n = 14) and complicated images (n = 6). In the uncomplicated images, no differences in RMS were found. In complicated images, WL (26.5 pix) and SA (33.4 pix) had a significant wider range than CC (18 pix) and SB (21.4 pix). (Figure 1) (B) Overall, the SPIES modalities images were rated higher quality on a VAS 0-10 score; CC 6.7, SA 6.9 and SB 6.9 compared to WL 6.2. (C) The mean duration of delineation of images in WL (11.2 sec, 6.5–19.5), CC (11.5 sec,7.4–20.5), SA (11.3 sec, 6.6–18.6) and SB (11.5 sec, 6.8–21.8) was the same.
Conclusion: The quality of images in SPIES modalities is graded higher than WL. No differences were found in RMS between the different modalities in all images. But in complicated images the RMS in CC and SB was smaller than WL and SA. This indicates these modalities have less variation in interpretation.

MP38-20 Development and use of tablet application íSPIES for evaluation & comparison of image perception of Storz Professional Image Enhancement System (SPIES)

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Introduction & Objectives: New technologies in surgical techniques should be studied to evaluate its merit and added value before adaption in general clinical use. Karl Storz has developed an imaging platform for endoscopy called SPIES, Storz Professional Image Enhancement System. Besides conventional White light (WL), it contains four different modalities. Spectra A (SA) and ~B (SB) which use specific color renderings to pronounce the spectral separation of the recorded broad visible spectrum. A third modality enhances local brightness (Clara) and the fourth enhances sharpness of the image (Chroma). We hypothesize that the different SPIES modalities will result in a different perception of cystoscopy images and location of tumor margin. The objective of this research is to develop delineation software in tablet based app environment to analyze differences in interpretation of images of bladder mucosa given by the four different SPIES modalities between urologists in a pre-clinical setting.
Materials & Methods: Apple Xcode environment was used to program an App that allows precise delineation of a suspected lesion within 100 SPIES images, all stored on an iPAD. Ten Apple iPad retina together with a soft tip stylus (size 5 mm) were used for delineation. Additionally, a participant background questionnaire was performed prior to delineation and an image quality rating was asked after each image. All data was stored online in raw coma separated format on an external server for further analysis. The study was executed in a room which allowed 10 participants simultaneously.
Results: Figure1: *iSPIES* Screenshots of a)an exemplary questionnaire, b)Image delineation c) study room, d)visualization example of all delineations within an image, e)median delineation and f) calculated distance from median delineation at several positions.
Conclusion: The app was successfully developed and put into use in the *iSPIES* study by 73 urologists which took place at a conference in 2014. Delineated data was successfully analyzed on margin differences. The App environment warrants similar studies on image data with the inclusion of multiple participants.

MP38-21 SPIES versus NBI technology in bladder tumors' diagnostic

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Introduction: The trial was aimed to assess the reliability of SPIES (Storz professional image enhancement system) technology by comparison to NBI (narrow band imaging) from the perspective of non-muscle invasive bladder cancer (NMIBC) diagnostic.
Methods: A total of 20 NMIBC suspected consecutive cases were enrolled in this initial series. The inclusion criteria were represented by hematuria, positive urinary cytology and/or ultrasound suspicion of bladder tumors. Following the standard white light cystoscopy (WLC), all patients underwent SPIES (using all 4 available modes) and NBI evaluation of the bladder mucosa. Conventional transurethral resection (TURBT) was performed for all white light visible lesions, while SPIES and NBI guided resection were distinctively performed for tumors exclusively visible in the respective vision modes.
Results: The overall NMIBC lesions detection rate was significantly improved for SPIES (95.3%) and NBI (93%) cystoscopy by comparison to WLC (83.7%). A total of 5 and respectively 4 patients were described subsequent SPIES and NBI as presenting supplementary tumors when drawing a parallel to classical endoscopy. Two patients were only diagnosed with bladder cancer by applying SPIES and/or NBI. No significant differences were determined between SPIES and NBI regarding NMIBC diagnostic accuracy regardless of tumor stage. A total of 7 (3 CIS, 3 pTa and 1 pT1) and respectively 6 (2 CIS and 4 pTa) lesions were solely discovered using SPIES and NBI modes.

Conclusion: SPIES and NBI cystoscopic alternatives were emphasized as presenting a substantially improved NMIBC diagnostic accuracy when compared to standard WLC. On a lesions related basis, the present study confirmed the detection advantages of both SPIES and NBI over conventional endoscopy.

MP38-22 Confocal laser endomicroscopy in the management of endoscopically treated upper urinary tract transitional cell carcinoma (UTUC) - preliminary data compared with histopathiological analysis

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Introduction: Confocal laser endomiscroscopy (CLE) has been recently described as an innovative and promising endoscopic imaging technology which could help clinicians in the characterisation of urothelial bladder cancer. In the current study we aimed at evaluating the feasibility of using such a device during the endoscopic evaluation and treatment of upper tract urothelial carcinoma (UTUC).
Materials and Methods: Preliminary data were analyzed from 10 patients with suspicion of UTUC scheduled for flexible ureteroscopy (URS) and consensual holmium-YAG laser tumour ablation. An endoscopic biopsy of the suspicious lesion was performed at the beginning of the procedure. Subsequently, 5 mL of 10% fluorescein was directly injected into the intrarenal collecting system through the working channel of the digital ureteroscope (URF-V1, Olympus, Japan). CLE was performed using the UroFlex™ B (Cellvizio® system, Mauna Kea Technologies, Paris France), a 3 Fr-diameter flexible probe which allows to obtain microscopic resolution imaging (3.5 μm), with a field of view of 325 μm and a depth of tissue imaging of 40–70 um. Once UroFlex™ B was placed in contact with the suspicious lesion, the Cellvizio® system started to acquire real-time video sequencies, which were simultaneously compared with the endoscopic view and analyzed afterwards.
Results: A diagnosis of non-invasive papillary urothelial tumour was made at histopathological examination in five (50%) patients. Tissue specimens resulted positive for high-grade and low-grade tumour in one (10%) and four (40%) patients, respectively. CLE provided good-quality images depicting characteristic features compatible with low-grade tumour including densely packed homogeneous and monomorphic urothelial cells with papillary structure and fibrovascular stalks in patients with low-grade tumours. In the patient with a pathologically-confirmed diagnosis of high-grade UTUC, video sequences analysis revealed the presence of more densely packed urothelial irregularly-shaped cells with distorted microarchitecture, indistinct cell borders and tortuous fibrovascular stalks. Moreover, CLE allowed to obtain images compatible with malignant tumours even in the three patients for whom biopsy results were not valid and in the patient with dysplastic alterations. The patient with no tumour findings at biopsy had normal urothelium at CLE as well.
Conclusion: These preliminary data showed the feasibility of CLE technique when applied to the diagnosis of UTUC. When compared with the endoscopic view, The Cellvizio® system provided good quality imaging of urothelial cancer. Further clinical studies are required to evaluate whether this method can accurately discriminate healthy urothelial tissue from neoplastic lesion, thus helping clinicians in targeting ureteroscopic biopsy and laser photoablation.

MP38-23 Treatment of Stress Urinary Incontinence in Women of Reproductive Age Using Laser Technologies

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Stress urinary incontinence is a relevant social and medical problem. A prospective study was carried out to evaluate the efficacy and safety of treatment of stress urinary incontinence using an erbium laser (Er:Yag 2940 nm) in women of reproductive age, and to evaluate its influence on the sexual function. 37 women with mild to moderate stress urinary incontinence were included in the study; the average age of participants was 36.2 years. The control group included 20 women of similar age. The treatment was offered in an outpatient facility without administration of any anaesthetics or sedatives using the Dermablate MCL 31 laser system (Asclepion Laser Technologies, Germany) complete with the V-Asclepion set of vaginal heads.

The study included interviews based on ICIQ-SF and FSFI, Q-tip testing at rest, and the Valsalva manoeuvre. All 37 patients reported significantly reduced manifestation of their stress urinary incontinence symptoms in the month immediately following the procedure. Positive changes were also reported in the sexual function of the study subjects and in the positioning of their urethrovesical angle, which is indicative of the efficacy of the employed method. No complications were registered in the short-term or long-term follow-up periods following the procedure. The **Conclusion** about the efficacy and possible safety profile of this new stress urinary incontinence treatment method was drawn based on the prospective evaluation.

MP39 - LAPAROSCOPY: LOWER TRACT - BENIGN

MP39-1 Extraperiotneal laparoscopic prostatectomy for very large prostates (>150 grams) not suitable for endoscopic laser or non-laser management: Early outcomes.

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Background: Management of very large benign enlarged prostate not suitable for endoscopic management is a challenge. Open surgical removal of adenoma has been offered in the past, the current series is an extraperitoneal laparoscopic removal of large adenomas with good results
Patients and Methods: 28 consecutive patients diagnosed with bladder outflow obstruction (with pr without resistant urinary

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retention) between January 2012 and December 2014 underwent extraperitoneal laparoscopic removal of adenomatous portion of gland. All men were assessed by team of urologists with access to Holmium: YAG laser and deemed to be unsuitable (glad size more than 150 grams). Patients were followed up using uroflowmetry, bladder scans for residual urine and IPSS. Re-admission and postoperative complications were noted.
Results: Mean age of population was 74 (±10.3) with more than 90% (25/28) were in urinary retention with trial without catheters for atleast on two occasions. There were no intraoperative complications. Twenty of these men (70%) did not require any postoperative irrigations. Hospital stay ranged between 1–6 days (mean 36 hours). Two patients required postoperative conservative treatment for urinary tract infection. One patient developed meatal stenosis requiring dilataion and one man had stress urinary leakage for 6 months. Men with symptoms showed a significant improvement in flow rate and IPSS including quality of life and those with urinary retention had successful voiding without catheters (flow more than 15 ml/sec; residual urine less than 50 ml)
Conclusions: Extraperitoneal laparoscopic prostatectomy is a safe and alternate option for men with very large (more than 150 grams) and urinary retention not suitable for endoscopic management with or without laser.

MP39-2 Flexible 3D laparoscopic repair of iatrogenic vesicovaginal fistulas.

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Introduction: Vesicovaginal fistulas (VVF) are a common complication mainly after gynecologic procedures. In this video we demonstrate our experience in the treatment of VVFs using a flexible 3D endoscope.
Methods: The flexible 3D endoscope (Olympus Endoeye™) combines a minimal weight with a premium 3D-HD quality. Its flexible tip provides the user with 6 degrees of freedom and offers optimal view even during the most difficult steps of the procedure. Four patients underwent laparoscopic VVF repair surgery after a gynecological procedure. One of them was recurrent. They were all diagnosed after a vaginal urine secretion and a cystoscopic control. The patients are placed in lithotomy position. Preoperatively, two DJ catheters are placed in the ureters. A 16Fr transurethral catheter is placed. We use 4 trocars, the optic placed left, laterally to the umbilicus and the 2 instrument trocars in the left and the right lower abdominal wall, in a standard triangular fashion. An additional 4th trocar for the assistant can be placed also in the right lower abdominal wall. All adhesions are dissected. After exploring the local anatomy, the fistula is demonstrated. The bladder is mobilized by incising the bladder peritoneum bilaterally. The cervical stump is exposed with the help of a metal bougie. A sharp and blunt dissection separates completely the cervical stump from the bladder wall. The communication is completely removed using sharp dissection. The bladder and cervical defect are sutured with a barbed 3-0 V-loc suture, in two layers and the catheter is filled with povidone iodine for leakage testing. A peritoneal flap with the omentum and a synthetic mesh are adapted between the anterior cervical wall and the posterior bladder wall. An inspection for bleeding and a meticulous coagulation is performed. An easy-flow drainage is placed trough the right trocar. The transurethral catheter and the DJ stents are removed 4 weeks postoperatively.
Results: The operative time was 80–110 (mean: 98) min, the intraoperative blood loss was 50–80 (mean: 63) mL and the hospital stay time was 4–9 (mean: 5.5) days. The duration of follow-up was from 8 to 14 months. During the follow up one recurrence was observed which was treated with an open procedure.
Conclusion: Laparoscopic repair of vesicovaginal fistula is feasible, safe and effective with less blood loss and shorter recovery time, which can minimize surgery damage and improve successful rate. An additional benefit is gained by adding a 3D-HD vision to our armamentarium.

MP39-3 Combined endoscopic and Laparoscopic partial Cystectomy in the treatment of Bladder endometriosis

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Introduction: Urinary tract endometriosis is rare. It appears in 1% of the patients with endometriosis. The most frequent location of urinary tract endometriosis is the bladder (84%) followed by ureter (10%) and less frequently kidney and urethra. In cases of symptomatic bladder endometriosis surgical excision is the treatment of choice.

In this video we present the surgical treatment of bladder endometriosis by a combination of endoscopic and laparoscopic partial cystectomy.
Patients and Methods: We treated 6 patients with urinary tract endometriosis. 5 had bladder endometriosis and 1 ureteral endometriosis. Ureteral endometriosis presented as renal colic pain and ureteral stenosis. Laparoscopic ureteral excision and reimplantation were performed. All patients with bladder endometriosis presented pain and moderate-severe voiding symptoms, mainly increased frecuency (less than 1 hour in 60%); one presented severe voiding difficulty. Only one patient presented hematuria (20%). A soft mass was palpable in the anterior vaginal wall in 4/5 (80%). Mean size of bladder endometriomas was 4,9 cm (Range 2–10 cm). 3 patients with bladder endometriosis underwent partial cystectomy, one of them combined with rectal resection. The other 2 underwent transurethral resection and medical treatment. Clinical case (Video): 31 y.o female presenting voiding symptoms with pelvic pain, pain on bladder filling and high urinary frequency. Imaging techniques: 28×45 mm mass in the posterior bladder wall (MRI/US) Cystoscopy: Multiple round, cystic masses of various sizes in the posterior bladder wall. Bimanual palpation: soft mass in the anterior vaginal wall.

Operative technique:
1. Cystoscopy. Insertion of bilateral DJ catheter. Endoscopic incisión marking the limits of the mass
2. Transperitoneal laparoscopic partial cystectomy: 4 trocars. Wide peritoneal incisión. Disection of the vesicouterine and vesicovaginal planes freeing the posterior bladder wall. Ureteral dissection to avoid injury. Bladder is open in the midline and the mass is excised following the marks performed endoscopically. Bladder closure in a vicryl 2-0 single continuous suture.

Results: All partial cystectomies were completed laparoscopically. One case was converted to open surgery to finish the rectal resection and anastomosis. In this case bladder closure was performed open. Laparoscopic operative time 252 and 195 minutes. Blood loss < 300 cc. There were no postoperative complications.

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Conclusions: Partial cystectomy with excision of all endometriosic lesions is the treatment of choice of bladder endometriosis. Laparoscopia approach offers good results with the advantages of minimally invasive surgery.

MP39-4 A review of laparoscopic assisted orchidopexy for crytorchidism in a single institution

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Cryptorchidism is uncommon in adults as it has usually been treated prepubescently. Orchidectomy has historically been the preferred choice in adults due to the lifetime increased risk of malignancy; consequently few centers have offered the alternative treatment of orchidopexy. Here we present a retrospective review of nine patients ndergoing laparoscopic orchidopexy and argue that it can be considered a safe and effective alternative treatment for patients who wish to preserve their testes.

11 procedures (9 patients, aged 14–30) were carried out between June 2010 and July 2014. 3 patients had bilateral orchidopexies over two sessions; 5 had unilateral procedures (2 left, 3 right). All patients had been diagnosed with undescended testicles; 2 via the infertility service.

There were no mortalities. One patient developed a post-operative scrotal abscess requiring surgical drainage. Another patient subsequently required excision of a port site granuloma. All patients, except one, had good outcomes in terms of post op testicle position. This patient required bilateral prosthesis due to difficult laparoscopic mobilisation of the vessels and cord secondary to previous surgery. All patients were contacted by telephone by the operating consultant and were satisfied with their final cosmetic outcome. To date none of the patients have represented with testicular malignancy. Laparoscopic orchidopexy is safe and effective for managing cryptorchidism in young men. The demographic means that once a cosmetic outcome has been achieved, patients are less likely to attend review and as such should be counselled thoroughly preoperatively about performing testicular self-examination for early detection of malignancy.

MP39-5 Laparoscopic ureteroneocystostomy in iatrogenic ureteral injuries after gynecologic operations

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Introduction: To evaluate outcomes of laparoscopic ureteroneocystostomy in patients with iatrogenic strictures of distal part of ureter, caused by gynecologic interventions
Materials & methods: From 2010 to 2014, 16 female patients with iatrogenic injuries of distal part of ureter underwent laparoscopic ureteroneocystostomy. Nine had previous open or laparoscopic hysterectomy, five– removal of endometrioid nodes and one – ovarial resection. Surgery was performed using transperitoneal approach with inserting of 4 trocars. Ureter was mobilized and transected above the stricture with subsequent extravesical implantation to the bladder. All procedures were performed at a single institution. A retrospective review of perioperative and clinical data was performed assessing the operative time, estimated blood loss, length of hospital admission. Success of operations as indicated by the absence of obstruction on follow-up imaging.
Results: We had no conversion cases and in all patients ureteroneocystostomy didn't fail. In 7 cases intervention included ureteroneocystostomy with psoas-hitch, in 4 – Boari flap and in 5 – direct anastomosis of ureter with bladder. Average surgery time was 160 min (ranged between 110 and 215 min), average blood loss was estimated as 120 ml (80 – 240 ml). Average of hospital admission was 3,7 days. Cystoureteral reflux was noted in 2 patients.
Conclusion: Laparoscopic ureteroneocystostomy is less invasive and reliable surgical treatment modality efficient in cases of iatrogenic ureteral injuries due to gynecological interventions

MP39-6 Laparoscopic sacrocolpopexy using barbed sutures for mesh fixation and peritoneal closure: A safe option to reduce operational times

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Introduction: Laparoscopic sacrocolpopexy (LSC) has established itself as a safe method for the management of Pelvic organ prolapse (POP). Suturing and knot tying are challenging and time consuming skills during laparoscopy. Self-retaining barbed sutures (SBS) are known to reduce the operative timein laparoscopic cases. The currentprospective study aims to test the efficacy and safety of the use of SBS during LSC.
Materials and Methods: 20 female patients with symptomatic POP were treated with LSC by the same surgeon. The pre-poperative evaluation included the International Continence Society (ICS) Pelvic Organ Prolapse Quantification (POP-Q) for the evaluation of the degree of prolapseand the prolapse-specific quality-of- life questionnaire (P-QOL). Mesh fixation was performed with SBSanteriorly on the anterior vaginal wall and the posteriorly on the levatorani muscle. A 5-millimeter titanium tacking devicewas usedfor promontofixation of the mesh. The peritoneum was also closed with SBS.
Results: Mean patient age was 63 years (50 – 79 years). According to POP-Q, system 3 patients (15%) had grade I, 12 patients (60%) had grade II, 3 patients (15%) had grade III and 2 patients (10%) had grade IV prolapse. Concomitanthysterectomy was performed in a total and supracervical fashion in 4 and 10 patients, respectively. Mean operative time was 99.75(range 65–140)mins, mean blood loss for all procedures was 57.75 (range 30–120) ml. Two patients had a bladder perforation intraoperatively and three patients developed transient fever postoperatively. One patient had a recurrent cystocele and three patients recurrent rectocele.
Conclusion: The current experience renders the use of SBS during LSC to be safe and efficient in experienced hands. Nevertheless, appropriate comparative studies would elucidate the impact of the use of SBS in LSC.

MP39-7 Transutricular seminal vesiculoscopy in the treatment of ejaculatory duct obstruction: clinical analysis and discussion

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Objective: To investigate the efficacy, feasibility and safety of transutricular seminal vesiculoscopy in the treatment of ejaculatory duct obstruction.
Methods: This retrospective observational research enrolled 57 patients who were diagnosed of ejaculatory duct obstruction previously. All the clinical information were collected before and after surgery including general characteristics, semen volume, semen plasma pH, semen fructose level, semen density, sexual hormone and testicular biopsy results etc. The ejaculatory ducts and seminal vesicles were visualized by performing transutricular seminal vesiculoscopy. All the operational parameters were collected such as operation time, blood loss and so on. All the patients were followed up for over 2 years postoperatively to gain the information of postoperative complications occurrence, semen analysis and pregnancy results. All the patients were divided into two groups to investigate the differences between complete obstructive group and partial obstructive group.
Results: The average age of all the patients were 30 year-old (range from 20 to 43 yearold), all the patients were followed for 26 to 38 months. 54 out of 57 patients successfully received transutricular seminal vesiculoscopy. In 3 cases, we failed to create a shortcut from utricle to ejaculatory duct or seminal vesicles on neither sides. Of all the 54 successful cases, the average operation time were 68 minutes (range from 21 to 206 minutes), Average blood loss were 3.9 ml (range from 1 to 10 ml). In 13 cases, seminal stones were found and lithotripsy were performed. Based on one-week postoperative semen analyses, the average semen volume elevated from 0.67 ± 0.64 ml to 2.09 ± 1.41 ml ($p < 0.001$), average semen density changed from $7.37*10^6$/ml to $29.38*10^6$/ml ($p < 0.001$), average pH changed from 6.43 ± 0.34 to 7.03 ± 0.54 ($p < 0.001$). The semen characteristics of 38 patients improved short term postoperatively. 9 recurrences were found within half year after surgeries. 16 patients had conceived, 12 patients chose to In vitro fertilisation (IVF). 4 patients suffered from long term hemospermia, one had intermittent urethral itching. Retrograde ejaculation, epididymitis, urinary incontinence or rectal injuries had not been observed.
Conclusion: Transutricular seminal vesiculoscopy provides the advantages of fewer complications and optimal semen recovery as well as higher fertility rates in treating EDO.

MP39-8 Robotic Urological Reconstructive Surgery Outside of the Tertiary Referral Center

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Purpose: Laparoscopic and robotic technique is well suited to urologic reconstructive surgery, and overall has dramatically decreased perioperative morbidity. This study was conducted to assess operative characteristics, complication rates and outcomes of robotic reconstructive procedures in a community hospital setting.
Materials and Methods: We retrospectively reviewed patient data for robotic reconstructive surgeries conducted from January 2013 to June 2015. Complications were graded according to the Clavien-Dindo classification scheme. Postoperative function was assessed with renal ultrasound, MAG-3 nuclear scans and BMP analysis at 6 weeks after surgery in all patients.
Results: In total 29 patients were included: 13 dismembered pyeloplasties, 4 primary ureteroureterostomies, 6 ureteroneocystostomies (2 bilateral Boari flaps, 3 unilateral Boari flaps, and 1 primary ureteroureterostomy) and 6 bladder diverticulectomies. Median age was 62 (range: 21–83), and females patients composed 48% of the cohort. Median operative time was 2.25 hours with Boari flaps tending to be the most time-consuming cases (median 4 hours). Median hospital stay for all patients was 2 days (range: 1–7), with the group undergoing bladder diverticulectomy staying for a median of 3 days. The perioperative complication rate was 14% with two grade 1–2 and two grade 3 complications. Median follow-up was 39 months (range: 2.4–68 mo). The total ureteral patency rate was 93%. Two patients with recurrent stricture were successfully managed endoscopically. One patient who underwent dismembered pyeloplasty required completion nephrectomy 7 months after surgery due to persistent urinary tract infections.
Conclusions: In this case series the use of robotic technique was both safe and efficacious. Complications tended to be low grade with rates commensurate with contemporary cohorts from academic tertiary referral centers.

MP39-9 Pediatric laparoscopic assisted percutaneous indirect inguinal hernia ligation

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Introduction: Indirect inguinal hernias are commonly evaluated and treated by pediatric urologists. Traditionally, surgical repair has been performed through an open inguinal incision with ligation of the hernia sac. Using a representative case in a post pubertal male with an incarcerated hernia, we demonstrate one technique for a laparoscopic assisted percutaneous indirect inguinal hernia ligation.
Materials and Methods: A single 5-mm umbilical trocar is placed. With Introduction of the laparoscope, both inguinal rings are inspected. Incarcerated abdominal contents are manually reduced. A 22-gauge needle is used to hydro-dissect the peritoneum from the underlying spermatic cord structures with local anesthetic. A small stab incision is made over the internal inguinal ring. An 18-gauge Touhy needle is passed around the lateral edge of the hernia. A loop of Prolene suture is passed through the needle into the abdomen. The needle is removed. The Touhy needle is then passed on the medial aspect of the open inguinal ring and then passed through the loop of Prolene. Ethibond suture is passed through the Touhy needle, and the needle is removed. The Prolene is pulled out, bringing the Ethibond suture completely around the internal ring. The Ethibond suture is tied, closing the hernia defect.
Results: Surgical time was 15 minutes. There was no blood loss or complications.
Conclusions: Laparoscopic assisted percutaneous indirect inguinal hernia ligation is a brief and effective surgical technique. Advantages include the ability to directly address the hernia without dissection of the inguinal canal and the ability to evaluate and treat a contralateral inguinal hernia.

MP39-10 Laparoscopic varicocelectomy: two trocars, one wound and one man

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Introduction: Laparoscopic varicocelectomy with a single incision wound has been performed in various institutions. Many hospitals use an air-tight trocar port to insert three trocars. In less developed countries the cost of the trocar port, trocars and even the first assistant may decrease the popularity of single incision laparoscopic surgery. We developed a novel method to overcome such difficulties.
Patients and Methods: Fourteen cases of laparoscopic varicocelectomy via a single incision wound were performed by a single surgeon for grade 3 varicocele patients from 2009 to 2013. Instead of a single port, we simply inserted the trocars through a 1.5–2 cm peri-umbilical wound, and stuffed the gaps with vaseline-impregnated gauze when leakage of carbon dioxide occurred. Two 5-mm trocars were applied in eight cases, so no assistant was required during laparoscopy. The remaining six cases were performed with three 5-mm trocars.
Results: The mean skin-to-skin time of the cases in which two trocars and three trocars were used were 31.5 minutes and 42.3 minutes respectively ($p = 0.04$). The mean age of the cases in the two-trocar and three trocar groups were 21.8 years and 35 years respectively ($p = 0.12$). In the two-trocar group, all of the varicoceles were left-sided, while three out of six cases in the three-trocar group had bilateral disease.
Conclusion: Although significant biases exist, laparoscopic varicocelectomy via a single incision wound using two trocars appears non-inferior to the three trocar method, if not superior. The peri-umbilical scar is so faint that one may call it ''scarless surgery''. The innovative two-trocar method seems to offer a safe, feasible, ''single-operator'' alternative for laparoscopic varicocelectomy. However, further prospective studies with less biases and larger patient numbers are necessary to delineate the true value of this novel technique.

MP39-11 Laparoscopic sacrocolpopexy (LSC) is needed to see the thin fascia for secured LSC

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Introduction: Pelvic organ prolapse (POP) is a prevalent condition, with up to 12% of women requiring surgery in their lifetime. Minimally invasive LSC appears as effective the gold standard and should be utilized by surgeons based on their skill and expertise in it. De novo defecation disorders have been reported and may be due to intraoperative compromise of the superior hypo gastric nerve so on. Because surgeons is required to less bleeding with using energy divices.
Materials and Methods: this is retrospective study

During 4-years (2011–2015), 30 patients underwent LSC with standard methods (group A: 2011–2013), 31 patients (group B: 2013–2015) with new dissection that allow less bleeding without energy divices. Using High vision systems, after dissection of thin fascia the vessels go away from it easily. Our key procedures are the technique of following the bubble by champagne effect. Example, The steps of opening the peritoneum at the level of the promontory, identification of thin fascia that is named anterior-hypogastric nerve fascia. The fascia is dissected finely and identify the bubble structure. And we can easily to find the thin fascia as fascia rectovaginalis, fascia propria recti, so on. The video demonstrates our technique for vissels and nerves-sparing LSC.
Results: Univariate analysis shows as follows: Age: (N.S), BMI (N.S), POP-Q($p < 0.05$), Operation time: 229 vs 232 min (N.S), Blood loss 41.9 vs 13.9 ml ($p < 0.05$), Patient's satisfaction (N.S) De novo defecation disorders: Group A occur 4 of 30 patients after LSC, Group B 2 of 31 (N.S).

The goals of POP therapy are to decrease symptoms, improve quality of life (QoL), reduce POP grade, avoid urinary retention, defecation disorders and prevent disease progression.
Conclusions: Minimally invasive approaches to our LSC allow for the benefits with significant reductions in operative related constipation. High vision systems available for magnifying the fascia structures.

MP39-12 Laparoscopic Varicocelectomy with two-port Scarless Periumblical Mini-Incision: Initial Experience in Approach and Outcomes

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Korea, Republic of

Introduction and Objective: To present our initial experience with laparoscopic varicocelectomy using two-port scarless periumblical mini-Incision (TSPM) and to assess its feasibility and safety.
Materials and Methods: In 18 consecutive patients, we performed laparoscopic varicocelctomy with TSPM, who were over 18 years of age with scrotal pain in diagnosis with varicocele. All surgeries were performed by single surgeon in transperitoneal approach and two 5-mm length of incision were made in peri-umblical skin according to skin crease and smallest headed 5-mm trocar (non-threaded 5-mm trocar, Aesculap) was used. The testicular artery was preserved. Clinical data were collected with respect to feasibility, intraoperative or postoperative complications, postoperative pain and recovery. Kolomogorov-Smirnov test and logarithmic transformation was conducted for analyses for learning curve of operation.
Results: All cases were completed successfully, without conversion to a standard laparoscopic or open approach. Mean operative time was 62.5 ± 15.6 minutes and mean estimated blood loss was 20.3 ± 10.2 ml. Postoperative pain score on the visual analog scale in immediate postoperative, 6-hour and 24-hour after operation was 4.4 ± 1.5, 3.1 ± 1.4, 1.7 ± 1.1, respectively. The mean hospital stay was 2.8 ± 1.9 days. One patient had hydrocele and two patients were reported recurrence during follow-up period. Surgical durations were significantly decreased as the surgeon's experience increased.
Conclusion: In selected patients, laparoscopic varicocelectomy using TSPM is safe and feasible with decreased instrumental cost. Additional experience and further investigations are warranted.

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MP40 - LAPAROSCOPY: NEW TECHNIQUES - ONCOLOGY

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MP40-1 En Bloc Stapling of the Renal Hilum during Laparoscopic Nephrectomy: A Multi-institutional Analysis of Safety and Efficacy

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Introduction: During laparoscopic nephrectomy, the renal artery and vein are traditionally dissected and ligated separately. En bloc renal hilar ligation is not routinely performed, mainly because of the perceived risk of arteriovenous fistula (AVF) formation. We sought to evaluate the safety and efficacy of en bloc stapling of the renal hilum during laparoscopic nephrectomy.
Materials and Methods: We retrospectively reviewed a prospective databases of patients undergoing laparoscopic nephrectomy with en bloc hilar stapling between 2008 and 2014 by seven surgeons at two academic medical centers. Each surgeon adhered to similar technique, ensuring stapler positioning around the renal hilum so that the peak of the stapler was visible and the vessels were parallel to each other within the stapler jaw. Data analysis included tumor size, tumor pathology, operative time, estimated blood loss (EBL), stapler related complications, and any perioperative or postoperative complications. Evaluation of AV fistula formation was assessed by physical exam (absence of abdominal bruit or palpable thrill), review of imaging studies, and evaluation of any new onset diastolic hypertension..
Results: 428 patients (mean age 63) underwent laparoscopic nephrectomy with en bloc stapling of the renal hilum (204 left renal units, 222 right renal units). Mean operative time was 182 min (range 51–489 min). Mean EBL was 157 ml (range 5 ml–2000 ml). Mean tumor size was 5.6 cm (range 0.9–91.0 cm). The conversion-to-open rate was 1.1% (n = 5). One patient (0.23%) had a stapler related complication (bleeding aneurysmal defect of renal artery along stapler line necessitating vascular repair). Pathologically, renal cell carcinoma was present in 75.7% of the patients, urothelial cell carcinoma was present in 9% of patients, and 15.3% had benign pathology (oncocytoma, hydronephrotic non-functional renal units, xanthogranulomatous pyelonephritis). Post procedural imaging (CT scan, MRI, or US with dopplers) of the renal bed was available for 266 (62%) patients. Mean postoperative diastolic blood pressure was 71 and remained stable at an average of 41 months follow up. No patients (0%) developed clinical or radiographic evidence of AVF at a mean follow-up of 41 months.
Conclusions: Ligation of the entire renal hilum with en bloc stapling during laparoscopic nephrectomy is safe and effective. No patients in our cohort developed any significant immediate surgical complications as a result of en bloc ligation. This study offers the largest cohort of en bloc stapling to date, with no resulting clinical diagnoses of AV Fistula.

MP40-2 Transumbilical Laparoendoscopic Single-Site Surgeries: A Single-Center Experience of 236 Consecutive Cases

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Introduction: Laparoscopic single-site surgery(LESS) is a technique in which the laparoscopic surgery is performed through a singe incision. We report our experience with 236 patients who underwent transumbilical laparoendoscopic single-site surgery (TU-LESS) for urologic diseases in a single institution.
Methods: Between December 2011 and June 2015, we performed 236 TU-LESS surgeries. These surgeries included simple nephrectomy(n = 22), partial nephrectomy (n = 2), adrenalectomy (n = 27), ureterolithotomy (n = 23), extravesical ureteral reimplantation (n = 3), nephroureterectomy (n = 9), pyeloplasty(n = 2), radical prostatectomy (n = 34), radical cystectomy and cutaneous ureterostomy (n = 12) or orthotopic ileal neobladder (n = 2), renal cyst decortications (n = 56), partial cystectomy (n = 3), pelvic mass excision (n = 3), high ligation of internal *spermatic* vein (n = 29), and tension-free hernioplasty (n = 4). A single-port with four channels was placed into a 2.5 cm periumbilical incision. The conventional laparoscope and laparoscopic instruments were inserted through the single-port. For radical prostatectomy and cystectomy, we added another trocar through urethra. Laparoscopic instruments were inserted through the urethra to expose the anatomic structures clearly, to avoid the injury of rectum, and to make urethrovesical anastomosis quickly. The perioperative and postoperative data were collected and analyzed prospectively.
Results: All the procedures were completed successfully. No conversion into convertional laparoscopic or open surgery was necessary. Five cases were added 1–2 5 mm additional trocars. The operative time ranged from 15 to 332 min. Estimated blood loss ranged from 20 to 600 ml. Two patients who underwent radical prostatectomy required blood transfusion. No severe intraoperative complications were occurred, and postoperative complications in 3 cases (1.5%).
Conclusions: Using some special tips and tricks, TU-LESS is technically feasible and safe for various urologic diseases, including complicated lower urinary tract diseases. The indications for TU-LESS surgery are the same as those for standard laparoscopy. This new surgical technology will result in decreased postoperative pain and improved cosmesis and patient satisfaction.

MP40-3 ''Y'' shaped tubeless ileal neobladder for laparoscopic radical cystectomy: A pilot study

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Introduction: To analyze the technique and clinical efficacy of ''Y'' shaped tubeless ileal neobladder in laparoscopic radical cystectomy (LRC) for muscle invasive bladder cancer.
Materials and Methods: 18 cases of LRC patients were enrolled between March 2012 and July 2014 (Gender: male 15 *vs.* female 3). During neobladder reconstruction, 5 cm of intact tube were sparing on both side of target ileal, the middle section was split and sutured into reservoir, and the neobladder was made in ''Y'' shape. The distal ureter was reshaped by using split-cuff nipple technique with a ureteral stent inserted in it, each side of ureter

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was inserted into and anastomosed with iplateral limb of ileal wall, ureteral stent was removed after the anastomosis was proven water-tightness by leaking test. A neobladder and peritoneal cavity drainage tube were placed after the procedure. Perioperative as well as follow up data was collected.
Results: All 18 procedure were succeed, the neobladder catheter was removed after cystography confirmed no anastomosis leakage on 9–14 post-operative day(POD), one case of anastomosis leakage occurred after the removal of catheter, thereafter neobladder and peritoneal cavity drainage was placed for another two weeks. The peritoneal cavity drainage was removed on 4-6POD with 3 cases of lymphatic leakage, which healed with conservative treatment. Post-operative hospital stay was 9–12 days. All patients recovered urine continence during 1–2 months of follow-up. The initial two cases developed hydronephrosis and serum creatine elevation, and alleviated during follow-up of 6 months.
Conclusion: ''Y'' shaped tubeless ileal neobladder was technically feasible for LRC, the anastomosis was secure after the leaking test was confirmed, the improvement of procedure was time efficiency, and reduced the workload postoperatively. Our pilot study still revealed surgical related complications, further improvement and attemption are needed.

MP40-4 Dorsal venous complex ligation. Is it still necessary? An advance of standard laparoscopic technic

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Introduction: As our group have shown in robotic surgery, laparoscopic radical prostatectomy without dorsal venous complex is a feasible, safe and reproductible procedure. In this video we demonstrate the steps of a modified antegrade approach originally described in robotic surgery.
Materials and Methods: Between January and May 2015, 80 patients underwent laparoscopic radical prostatectomy for localized prostate cancer at our institution. Of these, 12 were operated with these technique. The selection criteria was body mass indice, prostate volume. Prospective analyses of perioperative complications, clinical data and pathologic results.
Results: Perioperative outcomes (EBL: 150 ml), no transfusions, mean operative time 150 minutes, no conversions and no fistulas.
Conclusion: As our group have shown in robotic surgery, laparoscopic radical prostatectomy without dorsal venous complex is a feasible and safe procedure for localized prostate cancer.

MP40-5 Clinical Application of targeted stereotactic prostate biopsy: experience in our center

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Introduction: Diagnosis of prostate cancer (PCa) is often fortuitous and the indication for biopsy is usually driven by an elevated PSA level or suspicious DRE. Recent developments in magnetic resonance imaging (MRI) technologies have led to a promising advance in prostate cancer imaging. Moreover, fusion of ultrasound and MRI by a new technology appears capable of bringing those images to the patient for biopsy guidance. We present our preliminary experience on clinical application of targeted stereotactic prostate biopsy in patients with suspicious MRI lesions.
Methods: Between December 2013 and March 2015, 41 patients at high risk of prostate cancer (PCa) underwent prostate stereotactic trans-perineal biopsy. All patients had at least one previous negative prostate mapping for PCa. Mean patients age was 65 (range 59–71), the average prostate volume was 63 ml (range 50 to 106 ml) and the average value of total PSA was 8.3 ng/ml (range 4–14 ng/ml). These patients had MRI suspected lesions. First, BiopSee® System (Tema Sinergie, Germany) did fusion of MRI image with ultrasound image. Once the fusion was made, MRI and lesions margins were overlapped with real-time ultrasound images and then used for biopsy targeting. The system detected and saved the spatial coordinates of suspicious prostate lesions. Finally, we performed a transperineal saturation biopsy with total 32 cores.
Results: 25/41 patients were diagnosed with PCa (detection rate = 60.9%). Positive correlation between MRI findings and histopathological examination of targeted biopsy was observed in 20 of 25 patients (80% of patients with positive biopsy). No patients had urinary infection and/or acute urinary retention.
Conclusion: In our experience, the stereotactic biopsy system with image fusion TRUS / MRI has proven to be a safe technique, easily reproducible and with high detection rate. Larger series are needed to confirm these broad results. The advantage of the BiopSee system is to unify the reproducibility of ultrasound images with the high specificity (96–97%) and high sensitivity (90%) of MRI images and so ensured a high detection rate. In addition, the ability to detect and save the spatial coordinates of each cores biopsy may confer potential applications in active surveillance protocol or in focal therapy (HIFU, cryotherapy, brachytherapy, etc.) to improve the management of early organ-confined disease.

MP40-6 Renal and adrenal mini-laparoscopy: a prospective multicentric study

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Purpose: To determine the role of minilaparoscopy (3 mm instruments and laparoscope) in renal and adrenal surgery in a contemporary prospective multicenter series. Furthermore we attempted to identify predictive factors for complications.
Methods: From July 2013 through December 2014, 110 patients from 6 laparoscopic Spanish centers were enrolled. A common database was used and data were collected in a prospective manner. Standard approach was defined as three to four 3-mm trocars with a 3 mm laparoscope and 3 mm instruments (Karl Storz® Tuttlingen, Germany). Descriptive variables were analyzed and statistical analysis was performed for predictive factors for complications.
Results: Patient mean age was 57.8 ± 14.6 years, with an average body mass index (BMI) of 25.3 ± 3.6 kg/m^2. Median ASA score was II and 32% (n = 35) of the patients had a previous surgery. A total of 59 nephrectomies, 20 partial nephrectomies, 9

nephroureterectomies, 13 pyeloplasties, 3 pyelolithotomies, and 6 adrenalectomies were performed. Overall operative time was 180 ± 64 min. There were 12 clampless partials and 8 with a mean WIT of 14 ± 7 min. There were 5% of intra-operative and 8% of post-operative complications (Clavien II-IV). Mean hospital stay was 5 ± 2.3 days with optimal pain and cosmetic control.
Conclusion: To our knowledge this is the largest prospective series of ML for renal and adrenal surgery. Despite a mean operative time possibly longer than in standard laparoscopy, clinical and safety outcomes are not compromised. Furthermore ML results in excellent pain control and cosmetic outcomes.

MP40-7 Endoscopic Subcutaneous Modified Inguinal Lymph Node Dissection (ESMIL) for Squamous Cell Carcinoma of the Penis, Adopting a Revised Technique

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Introduction: Despite its prognostic and therapeutic value, radical open lymphadenectomy for penile cancer is associated with significant morbidity. We describe our experience of endoscopic subcutaneous modified inguinal lymph node dissection (ESMIL) in the setting of pT2 squamous cell carcinoma (SCC) of the penis.
Methods and Procedures: The surgical team prepared for the case by performing a cadaveric dissection using our modified technique. In our current patient, preoperative MRI was utilized for clinical staging and to identify the location of suspicious lymph nodes. The patient was placed in a supine position with both legs abducted. Bony and muscle landmarks were identified and marked on the skin as in an open approach. A 12-mm incision was made at the most inferior aspect of the area just deep to Scarpa's fascia to elevate a flap. A hemostat and preperitoneal balloon dilator expanded the working space beneath fascia lata. 5-mm and 10-mm trocars were placed at medial and lateral locations. Lymph nodes deep within the femoral triangles were dissected first, followed by superficial lymph nodes located along the saphenous veins, superficial to Scarpa's fascia. Deep dissection was performed initially in order to limit devascularization of the dermis. Once all the lymph nodes were extracted, Jackson-Pratt drains were placed bilaterally.
Results: The operative time was six hours for a bilateral dissection; the total estimated blood loss was 50 mL. With no perioperative complications, the patient was discharged on postoperative day 1.
Conclusion: Revised ESMIL is feasible for patients with SCC of the penis.

MP40-8 Safe and simplified laparoscopic radical nephrectomy by novel "transperitoneal anterior and posterior approach"

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Introduction: Laparoscopic radical nephrectomy (LRN) is performed by either retroperitoneal or transperitoenal approach. Retroperitoneal approach (RP) provides direct and rapid access to the renal hilum and doesn't need mobilization of intra-abdominal organs. On the other hand, transperitoneal approach provides larger working space and more landmarks. We, therefore, prefer retroperitoneal approach for T1a/b tumors, and transperitoneal approach for lager tumor or obese patients. By transperitoneal approach, it is occasionally difficult to manipulate the renal artery when it is located cephalad and posterior to the renal vein.

We present our initial experience of novel ''transperitoneal anterior and posterior approach (TAP)'', which enables us to control the renal vessels in the same way as retroperitoneal approach.
Patients and methods: We reviewed our institutional kidney cancer database and identified patients undergoing laparoscopic radical nephrectomy performed by a single surgeon from January/2014 to January/2015.

LRN by TAP was performed as follows: (a) Patient was placed in the standard nephrectomy position. (b) Three laparoscopic ports were placed similarly to standard transperitoneal approach. Intra-abdominal organs were mobilized until anterior surface of the renal vein was exposed. Space posterior to Gerota's fascia was developed. (c) Two additional ports were placed at flank to enable to operate similarly to standard retroperitoneal approach. Renal arteries and veins were dissected and secured separately with vascular clips. Rest of the operation was continued by posterior approach.
Result: Five cases by TAP and 5 cases by RP were identified. There were no significant differences in age, sex, BMI or laterality. Mean tumor diameter were significantly larger in TAP group (74 mm vs. 26 mm). Mean number of the renal arteries/veins were 2/1.8 in TAP group vs. 1.2/1.2 in RP group. Mean operating time spent for dissection of the renal arteries and veins were 47 min. (range 31 – 66) in TAP group vs. 43 min. (range 26 – 63) in RP group. Mean operating time from the start to separation of the entire kidney were 148 min. (range 31 – 66) vs. 142 min. (range 108 – 169). Mean estimated blood loss were 64 ml vs. 70 ml. No complications which were equal or greater than grade 2 in Clavien-Dindo classification were identified.
Conclusion: LRN by TAP showed similar perioperative outcome to RP, although TAP group included more complex cases. TAP, which requires little extra procedure, provides advantage of both transperitoneal and retroperitoneal approach. Therefore, we believe that this approach can be a standard for transperitoneal LRN.

MP40-9 Percutaneum surgical system (PSS): a novel instrument for laparoscopic urologic surgery

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Introduction: A new international working group was constituted to test the PSS® in different surgical specialities including urology. The PSS® is a percutaneous non-trocar instrument to assist in laparoscopic procedures. Urologists have shifted away towards a less invasive surgery of the abdominal wall to reduce the morbidity of the patients.
Methods: In this video we present the use of the PSS® in reconstructive kidney surgery. We describe the device's technical features, intraoperative use, as well as tips and tricks to overcome technical challenges during the surgery.
Results: The patient included in this study is a 52 year-old man with a history of smoking and gastro-esophageal reflux. The

patient reported intermittent chronic flank pain. The diuretic-renogram showed a uretero-pelvic junction obstruction with a good relative renal function (40%). In the CT scan a ureterohydronephrosis and parenchyma thinning was described. All this findings were compatible with a right uretero-pelvic junction stenosis.

An 11 mm port was placed in a umbilical position, and then a 5 mm trocar was placed through a two fingerbreadth right subcostal incision. The PSS® was driven percutaneously into the skin in the right inguinal fossa. The system has a handle finished in a 3 mm-diameter percutaneous shaft and three different interchangeable 5 mm-diameter tips: a dissector, a grasper or scissors. The tips are introduced in the abdominal cavity via a cartridge that is carried in a laparoscopic holder. Once both parts are inside the patient the tip is docked in the percutaneous axis.

An Anderson-Hynes pyeloplasty was performed without the need of accessory trocars. The operation lasted 100 minutes and the hospital stay was 48 hours. After the surgery the patient was satisfied with the cosmetics outcome.

Among other limitations of the forceps, although the clamp permits the rotation of the tip, it is not fixed and can be moved by the pull of the tissues. Also, some curtness when grasping and using the buttons of the handle is noticeable.

Conclusion: Our pioneering experience using a PSS® was successful. Since this device is under development, any further recommendations are encouraged. Despite the need of more technical improvements, in our opinion this instrument could have an important role in scar reduction during urologic laparoscopic surgical procedures.

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MP40-10 Zero ischemia laparoscopic partial nephrectomy with hydrodissection – a safe option

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Introduction: Laparoscopic partial nephrectomy (LPN) is a technically challenging procedure. Ischemic injury is a critical factor that impacts on renal function and patient's outcome following partial nephrectomy. The video shows a case of ''zero ischemia'' laparoscopic partial nephrectomy done using hydro dissection technique.

Methods: A 76 years old female was incidentally noted to have heterogeneously enhancing right mid pole hilar renal lesion measuring 2.0×1.4 cm. A transperitoneal approach was used and hilar vessels were dissected and isolated with vascular loops. Renal tumour was marked out with intracorporeal ultrasound and excised using hydrodissection technique with Erbejet®. Smaller bleeding vessels were clamped using BiClamp®. The Parenchyma was repaired by sliding clip renorrhaphy. Floseal™ and Surgicel™ were applied over the tumor bed.

Results: Our case was successfully completed without hilar clamping. Ischemia time was zero. Operative time was 4 hours, blood loss was minimal and hospital stay was 5 days. There were no post-operative complications. There was no change in the pre- and post-operative serum creatinine/hemoglobin. Histology confirmed a Fuhrman grade 2 clear cell renal cell carcinoma, and the margins were negative.

Conclusion: Zero-ischemia laparoscopic partial nephrectomy using hydrodissection without hilar clamping is feasible and safe. Hydrodissection is gentle on blood vessels and allows clear demarcation and better hemostasis. Its precise tissue dissection gives a good visibility at the operative site due to the integrated irrigation and suction.

MP40-11 Hybrid-NOSE (natural orifice specimen extraction) Robotic or Laparoscopic Surgery with Vaginal Extraction for Urologic Neoplasm: A Preliminary Report of the Initial Experience

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Introduction: The aim of this prospective study was to assess the safety and feasibility of hybrid-NOSE (natural orifice specimen extraction) robotic or laparoscopic surgery for urologic neoplasm

Materials and Methods: Four patients with urologic neoplasm underwent serial minimally invasive procedures: nephrectomy (two by conventional laparoscopy and the other two by robot-assisted laparoscopy) followed by vaginal extraction of the surgical specimen. Vaginal extraction was performed by one gynecologist via an incision in the posterior fornix of vagina. During the early postoperative follow-up, pain and scar cosmesis were evaluated using visual analogue scale(VAS) and scar assessment scale(SAS) (observer[OSAS]and patient[PSAS]), respectively. Postoperative recovery including complication was also monitored.

Results: Four hybrid-NOSE laparoscopic surgeries (1 nephroureterectomy with bladder cuffing, 2 partial nephrectomies, and 1 retroperitoneal mass excision) for urologic neoplasm were successfully completed without conversion or perioperative complications (Table1). The mean age of patients was 58.5 years (range, 41–72 years). The mean size of surgical specimen was 5.6 cm (range,4.3–9.0 cm). Mean total length of scars was 6.0 cm (range,5.0–7.5 cm). Mean total operative time for urologic procedure including specimen extraction was 219 minutes (range, 121–320 minutes). Postoperative pain has decreased to no greater than VAS 3(range,0–3) by 48 hours after surgery under patient-controlled anesthesia(PCA) for all the patients. PSAS evaluating satisfaction for scar cosmesis ranged wide from 1.2 to 4.8 at postoperative 8 weeks.

Conclusions: Hybrid-NOSE robotic or laparoscopic surgery with vaginal extraction for urologic neoplasm might be a safe and

Table 1. Perioperative Summary of four cases of hybrid-NOSE robotic or laparoscopic surgery for urologic neoplasm

	Case1	Case2	Case3	Case4
Age at NOSE(yr)	67	72	41	52
BMI(kg/m^2)	24.9	21.6	23.6	20.2
Pathologic diagnosis	Adrenocortical neoplasm	TCC	RCC	Epithelioid angiomyolipoma
Operation				
Name	Rt.aparoscopic adrenalectomy	Lt.robot-assisted laparoscopic nephroureterectomy	Lt.robot-assisted laparoscopic partial nephrectomy	Lt.laparoscopic partial nephrectomy
Size of tumor(cm)	4.5x3.0x2.0	2.0x1.2x0.2	0.8x0.7x0.2	4.3x3.3x2.0
Size of specimen(cm)	4.5x3.0x2.0	9.0x5.0x2.0(LK)/6.5x2.5x0.8 (ureter)	3.5x4.5x2.0	4.3x3.3x2.0
Time,total(min)	125	320(210)	310(150)	121
Time,NOSE(min)	50	40	30	20
EBL(ml)	300	100	50	50
Postoperative pain (VAS/PCA cumulative use in ml)				
POP2hr	5/2.8	8/6.5	4/8.9	2/5.0
POP6hr	3/6.5	5/12.7	3/15.8	4.9/8.9
POP24hr	3.8/24.3	5.6/28.7	2.9/55.2	4.1/28.3
POP48hr	2.6/48.3	0/53.2	3/101.3	1.7/37.7
Scar assessment				
Total length(cm)/ total number	5.0/3	6.3/5	7.5/5	5.0/3
OSAS,overall,1wk	12	17	10	10
PSAS,overall,1wk	2.8	5.1	1.4	1.5
OSAS,overall,8wk	15	14	12	
PSAS,overall,8wk	4.8	2.9	1.2	
Postoperative recovery				
Foley out(day)	1	7	3	2
Gas out(day)	2	1	2	3
Diet start(day)	1	1	1	3
Hospital stay(day)	6	9	8	8

feasible alternative to conventional laparoscopic surgery in female patients with urologic neoplasm.

MP40-12 En-bloc resection of bladder tumor with hybridknife

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Introduction: Bladder cancer is the most common cancer of urinary tract, representing the 9th most common cancer type. The majority of the patients (75–85%) present with superficial bladder tumors, associated with high recurrence rates (15–61%) and cost burden.

The en-bloc resection of gastrointestinal tumors is already well established.

Materials and Methods: We present in this video a case of transuretral en-bloc resection of a primary bladder tumor, with the use of Erbe® multifunctional hybridknife device. This 7 Fr. flexible probe combines electro surgical and water jet surgical technologies in a single instrument, and was used in a conventional cystoscope. This video aims to perform a step-by-step illustration of the procedure: marking, elevation, dissection and coagulation.

Result: 69 years-old female presenting with gross asymptomatic hematuria. The evaluation with ultrasound and cystoscopy showed a 2,0 cm lesion in the left lateral wall, with negative urine citology for malignant cells. The patient was submitted to transuretral en-bloc resection of the primary bladder tumor, with complete lesion resection and remotion of the specimen with grasping forceps. There was no intra or postoperative complications. The patient performed immediate post-operative intravesical Mitomycin, with good tolerance and was discharged the day after the surgery.

Pathological examination revealed a transitional cell carcinoma pTa high-grade bladder tumor, with correct representation of muscularis propria layer.

Conclusion: The en-bloc resection with hybridknife of bladder tumours stands as a promising approach, representing a safe technique with low complication rates and accurate pathological staging due to waterjet hydrodissection and minor pathology specimen fulguration.

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MP41 - STONES: SWL

MP41-1 The proximal ureteric stone conundrum: Comparison of ESWL vs Ureteroscopy

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Introduction: Renal colic is a common urological emergency often requiring urgent intervention, and constitutes a significant proportion of the urologist's emergency workload. Patients presenting acutely with proximal ureteric stones and persistent pain will require treatment with either primary ureteroscopy (URS) and laser lithotripsy with or without prior ureteric stent insertion, or External Shockwave lithotripsy (ESWL).

Patients and methods: Over a one-year period, all patients admitted with renal colic secondary to a proximal ureteric stone less than 15 mm with no evidence of sepsis were included. Patients who had planned delayed treatment were excluded. A total of 54 patients were included in the study; 31 patients had primary or delayed URS and 23 had ESWL. Patients' demographics, stone size, side, type of treatment and time to stone clearance were recorded.

Results: In the primary URS and laser lithotripsy/stone extraction group (n = 31), 29% (n = 9) patients had a successful primary URS and stone extraction. The remaining 71% (n = 22) required prior stenting due to deranged renal function (n = 6) or uncontrolled pain (n = 16), all of which went on to successful delayed URS. Stone size ranged from 4–14 mm, and 58% (n = 17) had left sided stones. Overall time to stone clearance ranged from 2–120 days with mean of 45.5 days. All patients were successfully treated with URS in one sitting. In the ESWL group (n = 23), 78% (n = 18) patients were stone free following 1–3 sessions of treatment. Time to stone clearance ranged from 3–40 days with a mean 17.6 days, with 22% (n = 5) patients failing ESWL and requiring URS; this subgroup of patients' time to stone clearance ranged from 50–210 days with mean 82 days. Overall, the mean time to stone clearance in the ESWL group was 31.6 days.

Conclusion: Patients with renal colic secondary to proximal ureteric stones will mostly require treatment, with a high percentage requiring prior stenting. Choice and modality of treatment will depend on the local resources available and patient preference. This study shows that ESWL has a shorter time to stone clearance and remains efficacious.

MP41-2 Validation of a scoring system for the prediction of the treatment outcome of ureteral stone treated by shockwave lithotripsy

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Introduction: Non-contrast Computerized tomography (NCCT) is currently the gold standard in diagnosis of ureteral stone. Based on the parameters measured from NCCT, various scoring system had been derived for the prediction of treatment outcome of urinary stone treated by shockwave lithotripsy (SWL). In this study, we would like to validated the usefulness of a 3-point scoring system, based on the measurement of mean stone density (MSD), stone volume (SV) and skin-to-stone distance (SSD) in NCCT of stone treated by Sonolith 4000 + , (Ng et al J Urol 2009; 181:1151–7) in the prediction of treatment outcome in another lithotripter, Sonolith vision, within the same treatment centre.

Patients and Methods: Seventy-five patients with a solitary radiopaque ureteral stone of size < 15 mm, planned for treatment by SWL by Sonolith Vision were recruited in this study. Patients had SWL performed under analgesics with a maximum of 1400 energy unit. Treatment success was defined as stone free at

3 month after one section of SWL. A single research staff, blinded from the clinical information and treatment outcome, reviewed the pre-treatment NCCT and measured the NCCT parameters. The result were then assessed using the 3-points scoring system and hence the validity of the 3-point scoring system was then assessed.
Results: Thirty-three patient (44%) had successful treatment after one section of SWL. While the patient characteristics of the two groups of patients were similar, SV and MSD were both significantly lower in treatment successful patients. Based on the 3-point scoring system, the ROC curve of the scoring system in our population had an AUC of 0.652 (95% CI 0.525 – 0.778), indicating a moderate discriminative capacity. However, the $\chi 2$ goodness of fit test indicated the calibration is poor for the scoring system in our sample ($\chi 2 = 8.11$, d.f. = 2, $p = 0.02$).
Conclusion: From our result, scoring system based on one lithotripter might not be applicable to another lithotripter. Therefore, validation study for different treatment prediction system is needed for the assessment of the usefulness of these tools in clinical management.

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MP41-3 A retrospective comparative analysis between emergency and elective shockwave lithotripsy for acutely obstructing ureteral stones

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Introduction and Objective: To investigate whether there is an advantage of emergency versus elective SWL for acutely obstructing ureteral stones.
Materials and Methods: Between July 2008 and September 2013, 3842 patients received shockwave lithotripsy at our department. Records of 258 patients who underwent SWL in emergency (122 patients, 47.3%) or elective setting (136 patients, 52.7%) for ureteric stones were collected and reviewed in retrospect. Mean age was 46.65 years (range: 18–95) Male/female ratio was 3:1. Mean stone size overall was 7.477 mm (range: 3–21 mm). Mean attenuation overall was 771.07 (range: 130–1548 HU). In 114 of the 280 patients the stone was located in the proximal ureter (40.7%), 38 in the mid ureter (13.6%) and 128 in the distal ureter (45.7%). Stone free rate, attenuation, size, and stent requirements were analyzed between the two groups with t-test and x^2 test. Level of significance was considered $p < 0.001$.
Results: There was no statistical difference in the maximum intensity of the shockwaves used in emergency and elective setting (5.8 vs. 5.49 Joules, $p = 0.106$) and neither for the number of shockwaves delivered between the emergency group and the elective group (4009.07 vs 3969.3, $p = 0.619$). A strong relationship between the type of initial ESWL and the need of at least a second SWL ($p < 0.001$) was shown. 71.4% of the patients who had elective SWL needed a retreatment, whereas it was needed only for 21.6% of those having emergency SWL. Differences in attenuation (650.58 HU vs 910.97 HU, $p < 0.001$) and stone size (6.8 mm vs. 8.05 mm, $p < 0.001$) were statistically significant between the emergency and elective groups respectively. Ureteric stenting was required in 23.1% of the elective and 14% of the emergency group. There was no correlation between stone location and need for a second SWL ($p = 0.225$).
Conclusion: Emergency SWL is an effective, non-invasive method for treating acutely obstructing ureteral stones. Stone size and Hounsfield units seem to be the main predictive factor for re-treatment. Stone location does not seem to alter the need for re-treatment. The need for stenting seems to be equal in the emergency and elective setting. More than one shockwave session is likely required when ureteric stones are treated electively.

MP41-4 Is Extracorporeal Shockwave Lithotripsy more cost effective than ureteroscopy for the management of ureteric calculi in the NHS?

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Introduction: Extracorporeal Shockwave lithotripsy (SWL) and ureteroscopy (URS) are recognised treatment options for patients who present acutely with ureteric calculi. Emergency ESWL (within 48 hours of presentation) has been shown to be clinically effective. We performed a cost-effectiveness analysis using our own institutional data and costs comparing the two treatments. We performed an alternative analysis using published data on success rates and NHS reference costs.
Methods: Data on treatment outcomes of patients undergoing SWL for ureteric calculi was collected for a one-year period (1st August 2013 to 31st July 2014). A cost-effectiveness analysis was performed from an NHS perspective using a Monte Carlo simulation and data and costs from our institution.
An alternative analysis was performed using published data and NHS reference costs.
Results: Data was available for 65 patients. The mean age was 45(SD 12.75), mean stone size 8.23(SD 3.55), mean Hounsfield units on CT 953.23(SD390.21). The average pain score was 4.21(SD 2.23). Our overall success rate of SWL was 65%. SWL was less costly than URS by £529 and more effective 0.007 QALY. Our alternative analysis using published data and NHS reference costs showed that SWL also dominated; it was less costly than URS by £768.8, and more effective by 0.0096 QALY. At a NICE threshold of £30, 000/QALY, ESWL was more cost-effective with a 75.76% certainty.
Conclusion: Our model demonstrates that SWL is more cost-effective than URS. Patients will often prefer a non-invasive treatment option despite lower success rates. Based on our treatment outcomes, early attempts at SWL followed by ureteroscopy if required is cost effective within the NHS. In our unit, we continue to offer patients emergency ESWL within 48 hours of presentation as an option for the treatment of patients with ureteric calculi. Recent evidence of no benefit for medical expulsive therapy for renal colic means that patients with low chance of spontaneous passage of a ureteric stone should be referred for early emergency ESWL.

MP41-5 Patient's preferences in treatment of ureteral calculi: SWL vs. URS

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Objective: The aim of the study was to evaluate patient's preferences for different management approaches to their ureteral stones treatment with respect to perceived safety, efficacy and patient's insurance coverage.

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Patients and Methods: A total of 100 patients with 1 cm or less isolated mid ureteral stones were selected for SWL or URS. After detailed discussion about course, efficacy and potential complications of these two procedures patients were asked to make their decisions and fill out questionnaire designed to explain their decisions and describe their attitudes towards these procedures. Visual Analogue Scale (VAS) was used to assess preoperative anxiety and confidence for success scores. Clopper-Pearson confidence interval, exact binomial test and Mann–Whitney U test were used for statistical analysis.
Results: The mean age in general cohort was 53.2 (19 – 76) years with the 58/42 female to male ratio. The mean stone size was 9 mm. 64 (95% CI for rate 0.54 – 0.74) (42 female and 22 male) out of 100 patients gave their preference to SWL while 36 (11 female and 25 male) favoured URS. The mean age in SWL group was 59 years. Among these patients 38 were retired and 26 were currently employed. As the main reasons of favouring SWL patients mentioned: Safety and tolerability of the SWL (53), no need for urethral catheter (49), no need for spinal anesthesia (26), no risk of prostatitis (7). The median anxiety score among patients undergoing SWL was 3 out of 10 points. Success expectancy score was 5 points. Nevertheless, if patients had to cover medical expenses on their own 29 of them might have reconsidered treatment options, and 35 would have definitely started with SWL. The mean age in URS group was 38.6 years. Two of them were retired and 34 currently employed. As the main reasons motivating in favour URS patients mentioned: Time shortage (21), intention to receive more radical treatment (5), confidence for success (2). The anxiety score in this group was 4 points higher (median = 7; $p < 0.05$) while success expectancy score was higher by 3 points (median = 8; $p < 0.05$). Nevertheless, if patients had favorable timing for treatment 19 of them might have reconsidered treatment options and 17 would not change their mind. After 3 months of follow up, stone free rates was 78% (n = 50) in SWL group and 93% (n = 33) in URS group. 75% (n = 48) SWL patients were fully satisfied with the treatment and would recommend it to their friends. In the URS group treatment satisfaction rate was 47% (n = 17) while 19 other patients said it was worse than they expected.
Conclusions: The results of our study shows, that SWL is perceived by patients as safer but less effective procedure. The majority of patients prefer SWL as first line treatment. The patient's decisions are highly influenced by such socio-economical factors as health insurance coverage and employment status, which should be taken into consideration by health practitioners. Patients undergoing SWL seemed to be more satisfied by treatment.

1. W. Romanik et al. Preoperative anxiety assessed by questionnaires and patient declarations Anaesthesiology Intensive Therapy, 2009, XLI,2; 80–84

MP41-6 SWL vs. URS: Between indications and doctor's whim

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Objective: The aim of the study was to evaluate the factors influencing the treatment options of urinary stones.
Patients and Methods: We requested data of 300 patients treated for urolithiasis in Moscow region (September 2013 – august 2014). The inclusion criteria were solitary, radioopaque non recurrent renal stones < 20 mm, and solitary, radioopaque non recurrent ureteral stones < 12 mm. The exclusion criteria were repeated treatment sessions and emergency cases. We received data on 248 patients. 135 patients were available for follow up and consented to take part in the study. Confidence intervals for sample ratio were used for statistical analysis.
Results: Out of 135 patients, 82 (61%) were treated for renal calculi and, 53 (39%) for ureteral calculi. Median size of ureteral calculi was 9 mm (4–12 m), and 14 mm (6 – 20 mm) for renal calculi. 51 patients (62%) out of 82 with renal calculi, with median stone size 12 mm, underwent PCNL, and 31 (38%), with the median stone size 10 mm, underwent (SWL). 35 (66%) out of 53 with renal calculi, with the median stone size 8 mm, underwent URS, and 18 (24%), with the median stone size 8 mm, underwent (SWL). So 86 (64%) CI (55.9 – 72.1) of all patients underwent endourological interventions and 49 (36%) CI (27.9 – 44.1) (SWL). 18 (21%) CI (9.88 – 26.12) out of 86 revealed they have chosen ureteroscopy due to non-availability of SWL, 21 (25%) CI (12.39 – 29.61) stated that doctor influenced their decision. The remaining 47 (54%) CI (36.45 – 57.55) patients believed ureteroscopy was their own deliberate choice. Only 8 (16%) CI (5.14– 26.6) patients in SWL group thought that their doctor (has) influenced their decision and 41 (84%) CI (73.74 – 94.26) believed SWL was their own deliberate choice. 47 (35%) patients declared, they were not comprehensively informed on alternative methods of treatment.
Conclusions: Our study showed that 35% patients treated for renal and ureteral calculi did not receive comprehensive information on alternative methods of treatment. Majority of patients with similar stones size and localization underwent ureteroscopy 86 (64%) vs 49 (36%). One of the most crucial factors determining treatment options is non-availability of (SWLT) SWL. Urologists inclined to persuade patients for more invasive treatment 21 (25%) vs 8 (16%). The weak point of our study was inability to (asses) assess influence of stone density and stone composition on treatment modalities.

MP41-7 Primary ESWL is successful for treating lower pole renal calculi between 10 to 20 mm. A large single institution study

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Introduction: Lower pole (LP) renal calculi remain challenging to treat despite advances in ESWL, flexible ureteroscopy (FURS) and percutaneous nephrolithotomy (PCNL). We employ a 'trimodal' protocol for the treatment of solitary LP stones between 10–20 mm. ESWL is used as first line treatment in all cases, with FURS and PCNL reserved as second and third line treatments respectively, except when ESWL is contraindicated, or through patient choice. The objective was to determine the outcome of our trimodal approach.
Patients and Methods: All patients treated for solitary LP calculi sized 10–20 mm, between 2008–12, were selected from our prospectively maintained database. Treatment modality was determined at a multidisciplinary meeting based on our trimodal protocol. ESWL was performed on an outpatient basis (Sonolith Vision or i-Sys lithotripters). Outcome was assessed by KUB X-ray, or USS for lucent stones. Treatment success was defined as

stone free or presence of clinically insignificant fragments (≤3 mm) at one-month follow-up.
Results: A total of 249 patients were included (median age 54.7 years, median stone size 12 mm). The overall treatment success rate was 93.5%. There were 203 (81.5%), 33 (13.2%), and 13 (5.2%) patients who underwent ESWL, FURS and PCNL as first-line treatment respectively. The success rates were 89.2%, 69.7% and 92.3% respectively. Only 22 patients failed ESWL: 17 underwent FURS (success 77%), 5 underwent PCNL (success 80%).
Conclusion: Using this protocol, the vast majority of patients are treated successfully with ESWL alone on an outpatient basis. The more invasive FURS and PCNL can be reserved for more complex cases where ESWL fails or is contraindicated. We advocate the use of primary lithotripsy as a potentially efficacious means of treating solitary lower pole renal stones (10–20 mm) in tertiary centres which treat high volumes of patients with urolithiasis.

MP41-8 Relative Cost Comparison of the Surgical Treatment of Medium-sized Renal Stones

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Introduction: Medium-sized renal stones are primarily treated with one of three methods: ureteroscopy (URS), shockwave lithotripsy (SWL), or percutaneous nephrolithotomy (PCNL). Many studies have addressed the efficacy of these procedures, but evaluating the relative costs is rarely done because actual cost (not charge) data is not readily available. In this study, we used an innovative tool to evaluate the cost and efficacy of treating medium-sized renal stones.
Materials & Methods: We retrospectively identified all adult patients treated from January 2012 to December 2013 for unilateral, 10–20 mm, renal stones with URS, SWL, or PCNL by a single surgeon. Patient demographics, stone characteristics, procedural data and complication rates were obtained from medical records. Efficacy was measured by the stone free rate (SFR). Complications were defined as seeking medical attention for urinary symptoms/complaints within 30 days of treatment, e.g. UTI, hematuria, flank pain. Costs were calculated using a proprietary cost-allocation tool developed at our institution (Value Driven Outcomes, VDO). We used VDO to itemize and assign all costs associated with each patient episode including all post-operative visits, both routine and unexpected within 30 days of treatment. Importantly, the allocated costs are independent of hospital charges.
Result: Fifty-six patients met inclusion criteria. Patient demographics and stone characteristics are similar between all three groups. The cost of URS was lowest and set at 1.0; the other costs are reported relative to URS. PCNL and SWL cost 29% and 33% more per episode than URS. All three treatments have similar SFRs, retreatment, and complication rates, although URS appears to fare slightly better in outcomes than the other two treatments (see table).
Conclusion: For medium-sized renal stones, URS is the least expensive treatment for single episodes of care, and appears to offer the best balance between efficacy and cost, compared to SWL and PCNL. In an era of healthcare cost concerns, this study supports VDO as being a valuable tool in evaluating the relative costs of similar treatments.

Treatment	N	Cost	SFR (%)	Retreatments (%)	Complications (%)
URS	23	1.0	20/23 (87)	1 (4)	2 (9)
SWL	20	1.29*	14/20 (70)	1 (5)	5 (20)
PCNL	13	1.33*	10/13 (77)	2 (15)	2 (15)

* p < .05

MP41-9 What is the best treatment for renal calculus after first failure shockwave lithotripsy? Shockwave lithotripsy vs. Retrograde Intrarenal surgery

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Introduction: The Retrograde Intrarenal Surgery (RIRS) has developed very rapidly in recent years and some surgeons around the world say that we are in fact in the Endourology Era.

Nonetheless the indications to RIRS are widely shared with indications to perform Shockwave lithotripsy (SWL). There is some controversy in this field and even more about how to treat patients with first SWL treatment failure. The aim of this study is to analyse efficacy of RIRS and SWL as second treatment in patients with one first SWL treatment failure.
Patients and Methods: The authors reviewed retrospectively all cases of RIRS and SWL performed in Centro Hospitalar Tâmega e Sousa, since January 2014 to December 2014, as second treatment of Kidney stones after one SWL treatment failure. Success was defined as no residual fragments or asymptomatic residual stone fragments £ 4 mm in size at follow-up imaging. The data analyses were made using IBM SPSS Statistics 20.0 software.
Result: After one initial SWL treatment failure, 43 and 18 patients were submitted to another SWL treatment or RIRS respectively. Both groups SWL vs. RIRS are similar in mean age (54,1 vs. 52,5 years p=0,654), in female to male proportion (24:19 vs. 13:5 p=0,09), in mean BMI (27,4 vs. 28,2 Kg/m2 p=0,403), in terms of mean of length of calculus (12,1 vs. 12,8 mm, p=0,665) and in the proportion of inferior calyces calculus (23,3% vs. 27,7% p=0,06). The success rate was 53,5% in the SWL group and 77,8% in the RIRS group with statistically significance (p=0,03).

The complications reported in the SWL group were 3 cases of renal colic but only 1 needed urinary diversion with ureteral stent. In the group of RIRS there were 3 cases of postoperative fever treated with antibiotics and 1 case of stent related complaints treated with analgesics and stent removal.

We must refer that all SWL were ambulatory treatments and the mean of hospital stay in the RIRS group was 3 days.
Conclusion: Despite the limitations of this study (retrospective, small number of cases and single centre experience), our data gives us some indicative parameters of the advantage of RIRS compared to SWL in the treatment of the patients who had one first SWL procedure failure.

MP41-10 Shockwave lithotripsy (SWL) of lower pole stones - Any difference in newer generation lithotripters?

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Introduction: Lower pole stones are inherently more difficult to treat due to the anatomy of renal collecting system. First generation lithotripters like Dornier HM3 were very effective, achieving 60% stone free rate (SFR) but it required a water bath

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for shock wave coupling and treatment performed under general anaesthesia. Newer generation lithotripters remedied these shortcomings. However these lithotripters are equipped with narrower focal zone, making targeting of stones difficult. Despite the higher peak pressure, the newer lithotripters have poorer SFR than the original HM3. The aim of the study is to evaluate the SFR after SWL of lower pole stones. In addition, the study would evaluate whether there is difference in outcome between third generation lithotripters.

Material and Methods: We retrospectively evaluated patients with lower pole stones who underwent SWL using our latest lithotripter, Dornier Gemini, from May 2012 to June 2014. Those who underwent prior ureteroscopy, percutaneous surgery or had stents inserted were excluded. Outcome was assessed by plain abdominal radiograph done at 3 months. SFR was defined as absence of residual fragments. Further need for additional interventions was recorded. The results were compared with our institution's previous lithotripter, Storz Modulith SL20.

Results: A total of 196 patients were treated during that period. Mean size of stone treated was 10.4 mm (range 4 – 23 mm). 90 patients were stone free on their followup radiograph (SFR 46.4%). 46 patients needed retreatment SWL sessions however only 55% of those achieved treatment success of either stone free status or residual fragment < 4 mm. Overall treatment success was 68.5%. When stratified by stone size, SFR was 48.6% for stone < 1 cm; SFR was 28.6% for those stone between 1 – 2 cm while none of stone > 2 cm were stone free. Of the 14 patients who required ancillary procedures, either ureteroscopy or percutaneous surgery, 12 had stone > 1 cm. Few (6) complications were encountered but all were in patients with stone > 1 cm. The previous lithotripter achieved SFR of 43% and treatment success of 65% for lower pole stones.

Conclusion: As a non invasive procedure with a low complication rate, SWL is utilised widely despite stones located in the unfavourable lower pole. SFR is low at 46.4%. SWL of stone < 1 cm results in slightly higher SFR than stone > 1 cm. Between the 2 different lithotripters, there was no considerable difference in SFR of lower pole stones because anatomical factors far more pertinent than lithotripter factors.

MP41-11 Is ureteral stenting an essential procedure before extracorporeal shockwave lithotripsy for proximal ureteral stones? A prospective randomized controlled trial

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Introduction: Role of ureteral stenting before extracorporeal shock wave lithotripsy (ESWL) of proximal ureteral stones is still controversial. We aimed to compare the effect of pre-ESWL insertion of ureteral stents during management of proximal ureteral calculi.

Patients and methods: 153 patients undergoing ESWL for radio-opaque proximal ureteral stones (< 1.5 cm) were randomized to be managed by either ESWL alone (group A) or ESWL after insertion of ureteral stents (group B). Exclusion criteria were those with poor renal function or marked hydronephrosis. Evaluation parameter included 1 and 3 months stone free rates (SFR) and ESWL efficacy quotient (EQ). ESWL and/or ureteral stents complications were also monitored.

Results: 78 and 75 patients were included in groups A and B respectively. At 1 month; SFR and EQ were 70.5% and 0.5 for group A, 73.3% and 0.55 for group B ($p > 0.5$). Similarly at 3rd month they were 94.9% and 0.64 in group A, 93.3% and 0.66 in group B ($p > 0.05$). By 3rd month 6 patients (7.7%) in group A required auxiliary ureteroscopy and ureteral stenting (due to impacted steinstrasse, failure of lithtripsy or progressive hydronephrosis). Stent-related symptoms included lower urinary symptoms in 68 patients (90.6%), pain reducing patients' activity by 50% in 39 patients (52%) and sexual dysfunction in 14 patients (18.6%).

Conclusion: for properly functioning kidney with proximal ureteral stones < 1.5 cm, ureteral stenting prior to ESWL didn't significantly improve either SFR or EQ. Adding its invasiveness and impact on quality of life; ureteral stenting prior to ESWL for proximal ureteral stone seems un-necessary procedure.

MP41-12 The Success of Shockwave lithotripsy (SWL) in treating larger renal stones

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Background and Objectives: Many centres favour endourological management over SWL in the management of larger (10–20 mm) renal stones. EAU guidelines support all modalities for the treatment of these stones. The aim of this study was to evaluate the efficacy of SWL in the treatment of larger renal stones (10–20 mm).

Methods: Since 2013 all patients undergoing SWL in our unit have been recruited into a prospective database. Data on demographics, treatment details and outcome were collected. 130 consecutive patients with renal stones 10–20 mm were retrospectively evaluated (January 2013 to October 2014). Demographics, location of stone within the kidney, number of SWL sessions and treatment outcomes were analyzed. Treatment success was classified into complete stone clearance and the presence of clinically insignificant residual fragments < 4 mm (CIRFs).

Results: 119 patients (92%) completed treatment and radiological follow-up. Eleven patients were excluded due to incomplete follow up data. The mean age was 56.8 (23–88). Male to female ratio was 1.9:1 (78:41) and the mean BMI was 28.4 (17.9- 58). The mean stone size was 12.8 mm (10–14 mm: n = 87; 15–20 mm: n = 32). The mean number of treatments was 2.14 and 2.82 for stones 10–14 mm and 15–20 mm respectively. Overall treatment success was 66.4% (combined complete stone clearance and CIRFs). Subdivided by stone size < 15 mm and ≥ 15 mm the success rate was 70.4% and 53.1% respectively. The treatment success by stone location was 65%, 64% and 70% for upper, middle and lower pole stones respectively and 67% for PUJ stones. For those who failed SWL treatment, the majority 50% (n = 20) were managed expectantly, 42.5% (n = 17) required URS, 7.5% (n = 3) required PNL.

Conclusions: This study supports other large international series that suggest equivalent stone clearance rates are possible irrespective of stone site in the kidney. This study suggests that SWL has an efficacy for treating larger renal stones that is equivalent to success rates for smaller stones in other series. As a low-risk and non-invasive procedure SWL should be considered a first line treatment for larger renal stones particularly in patients with other comorbidities.

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MP41-13 Extracorporeal shock wave lithotripsy of pelvic and distal ureteral stone in supine position: does stone size matter?

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Introduction: ESWL have been traditionally considered the treatment of choice of distal ureteral stones up to 10 mm. Stones exceeding this size are managed with an endo-urological approach. In fact, from previous literature reports, ESWL seems to provide lower stone free rate for bigger stones located in the pelvic as well as in distal ureter. However, those series considered only treatments performed with the patient positioned in prone position, with fluoroscopy as the only focusing tool to point such stones. We report our series on ESWL treatment of pelvic and distal ureteral stones with a supine position, with particular regard to stone size and outcomes.
Methods: 70 consecutive patients with a pelvic or distal ureteral stones submitted to ESWL have been considered. All stones were diagnosed by means of a KUB film and ultrasound exam or by an uncontrast CT scan. Absence or low degree of hydronephrosis, absence of sepsis and of renal failure were considered as inclusion criteria. All SWL were carried out by a single operator with the Dornier Lithotripter S XXP (Dornier MedTech GmbH, Germany): treatments were performed in the supine transgluteal position that allows an ultrasonographic stone focusing. Post-SWL follow up included KUB film and ultrasound examination at 2–3 weeks after treatment; a second session of lithotripsy was used if no fragmentation was evident after initial treatment. Stone free condition was defined as the complete absence of any residual fragment or stone.

Patients were stratified into two groups, depending on stone size (Group A: stone up to 9 mm, 50 patients; Group B: stone ≥ 10 mm, 20 patients). Data were inserted and analysed using SPSS software (SPSS, Chicago, IL).
Results: Mean stone size in Group A was 5,6 +/- 1,5 mm and mean stone size in Group B was 10,9 +/- 2,3 mm (p = 0.00). The characteristics of ESWL treatment were similar among groups: mean shock wave number (1774 vs 1984), power (4,2 vs 4,5) and accumulated energy (46,8 vs 49,1) did not differ among Group A and B (p = 0.07; p = 0,5; p = 0,5, respectively). Stone free rate was 86% (43/50) for Group A and 85% (17/20) for Group B: no statistically significant difference was recorded (p = 0,59). However, the number of session required was significantly higher for bigger stones (Group A: 1,18 +/- 0,3 vs Group B: 1,6 +/- 0,6; p = 0,01).
Conclusions: The use of the supine transgluteal position for distal ureteral stones provides satisfactory outcomes in terms of stone free rate and re-treatment requirement. This position allows a continuing ultrasonographic monitoring of the stone, with the opportunity to increase the energy of ESWL up to reach stone fragmentation. The abdominal content (bowel, bladder) does not represent any more a factor impairing the path of the shock waves. These findings turn out in high stone free rates, that are independent from stone size. Further and bigger series are required to confirm those outcomes, in order to update the traditional limit of 10 mm as the indication of ESWL treatment for distal ureteral stones.

MP41-14 Combined Retrograde Intrarenal Surgery and Shockwave Lithotripsy for Renal Stones over 20 mm in Diameter

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Purpose: To investigate the outcomes of a combination of retrograde intrarenal surgery (RIRS) and extracorporeal shockwave lithotripsy (SWL) for the treatment of renal stones > 20 mm in diameter.
Patients and Methods: Thirty-three patients with a mean age of 54.3 years (range 31–81 years) having the renal stones with a mean long diameter of 24.8 mm (range 20–32 mm) with the exception of staghorn calculi were treated with combined RIRS and SWL in our hospital from July 2012 to March 2015. First, ureterorenoscopy with holmium laser lithotripsy was performed as RIRS by a single surgeon, and SWL was subsequently performed using the EDAP LT-02× two days after RIRS.
Results: The mean operative time of RIRS was 80.6 min. (range 51–127 min). Stone removal by means of a basket was performed on 12 patients (36%). All of the patients were treated by SWL following RIRS. The median sessions of SWL were 4 times (range 1–10 times). Although operative morbidity was nonexistent, the postoperative complications were pyelonephritis in two patients and stone street formation in two patients (12%). The complete stone-free rate was 78% (26/33), and the success rate including residual fragments < 4 mm was 93% (31/33) at one month postoperatively.
Conclusions: Combined RIRS and SWL can safely offer favorable outcomes even in the treatment of large renal stones unless they are staghorn calculi.

MP41-15 Laser Lithotripsy versus ESWL for Lower Calyceal Renal Stones

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Introduction and Objectives: Urolithiasis, especially lower calyceal (LC) stones, is a common medical problem. Its prevalence is around 2% to 3% in general population. With advances of endourologic and laser technology, flexible ureterorenoscopy (FURS) and laser lithotripsy (LL) are considered the second line therapy in ESWL-resistent LC stones. This study aimed to assess safety, efficacy and outcome of FURS and holmium:YAG LL comparing its results to ESWL in LC stones.
Methods: A prospective randomized study was done from May 2010 to May 2012. It included patients with radiopaque unilateral, single or multiple, LC stones < 20 mm. Patients were divided into 2 groups. In Group I, patients underwent FURS and LL using 365 μm laser fiber. In Group II, patients underwent ESWL. Patients were followed for 3 months by KUB to assess stone-free status defined as no fragments or fragment < 3 mm. In each group, multiple parameters (age, sex, stone size and number, and LC anatomy) were examined to assess impact on stone-free status. Additionally stone-free status and complications were compared in both groups.

Results: 60 patients were included in the study. In Group I (N = 30), mean age was 44.2 years and mean stone size was 11.5 mm. 26 patients (86.7%) had single stone and 4 patients (13.3%) had multiple stones. Stone free status was achieved in 29 patients (96.7%). Complication rate was 16.7%. Age, sex, stone size and number, and LC anatomy did not correlate with stone- free status in Group I. In Group II (N = 30), mean age was 35.5 years and mean stone size was 11.3 mm. 28 patients (93.3%) had single stone and 2 patients (6.7%) had multiple stones. Stone-free status was achieved in 17 patients (56.7%). Complication rate was 23.3%. Stone size (< 10 mm) only correlated with stone-free status in Group II. FURS and LL achieved significantly better stone-free rates compared to ESWL (96.7% vs 56.7%, p = 0.001), with no difference in complication rate between both groups (16.7% vs 23.3%, p = 0.5).
Conclusions: Both FURS with LL and ESWL are considered safe in treating LC stones less than 20 mm with minimal complication rates. However, FURS with LL achieved significantly better stone-free rates. Stone size could predict stone-free status in ESWL.

MP41-16 Endourological treatment in patients with renal colic and fever

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Introduction: Renal colic with hydronephrosis and fever is frequent cause for emergency endourological treatment, due to its septic shock potential. The aim of our study was to evaluate the particularities of these patients and efficacy of different therapeutic approaches.
Material and methods: Study included the patients presented in our emergency room with febrile renal colic between May 2014 and May 2015. As first procedure, a double J or a percutaneous nephrostomy were placed. Then, the patients were discharged and after 2 weeks they were re-admitted for solving the obstructive cause.
Results: A total number of 346 patients were admitted for febrile renal colic. In 288 of them (83%) unilateral double J stent was placed, in 25 patients (7%) a bilateral double J stent was placed and in 33 cases (10%) it a unilateral nephrostomy was placed. 38 patients (35 with unilateral double J and 3 with nephrostomy) underwent SWL. 15 cases were treated using PCNL. In 235 cases semirigid ureteroscopy was performed: 61 cases (26%) having proximal-ureteral calculi with a success rate of 83%, 107 cases (45%) having mid-ureteral calculi with a success rate of 89% and 67 cases (29%) having distal ureteral calculi with a success rate of 98%. Complication rate was similar for double J stents and for nephrostomy, the average value being of 22.5%. Clavien I and II complication occurred in 21.2% of the cases, Clavien III occurred in 1% of the cases. No Clavien IV and V complications were encountered. 5% of the complications were septic.
Conclusions: Endourological treatment in two steps seems to represent a safety and viable alternative for patients with febrile renal colic.

MP41-17 Increased Urinary Neutrophil Gelatinase-Associated Lipocalin Excretion After Shock Wave Lithotripsy in a Pig Model

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Introduction: Shock wave lithotripsy (SWL) treatment of kidney stones causes acute renal injury with elevated levels of markers of oxidative stress and inflammation. A promising early marker of acute kidney injury is neutrophil gelatinase-associated lipocalin (NGAL), which increases dramatically in the urine after insults affecting the kidney, such as ischemia. The purpose of this study was to determine if urinary NGAL levels change after SWL and if the change can be correlated with the degree of hemorrhagic lesion in the pig kidney.
Materials and Methods: The lower pole of the left kidney of adult female farm pigs (~ 32 kg body weight) was treated with 2500 shock waves (SW) using a Dornier Compact S lithotripter. SWs were delivered at various power levels and SW rates to cause a wide range of lesion sizes in the kidney. Urine samples were collected at timed intervals before and after SWL. An ELISA kit (BioPorto) was used to assay NGAL. The renal hemorrhagic lesion was assessed by morphological analysis of serial tissue sections.
Results: Urinary excretion of NGAL normalized to GFR increased from baseline at 1.5 hr after SWL on average 81% ± 64% (SD) pg/min (n = 14, p < 0.05). Lesion sizes ranged from 0–6% of total renal parenchymal volume. No statistical correlation between urinary NGAL excretion and lesion size was found ($r2 = 0.0598$, p = 0.3995).
Conclusions: Urinary NGAL excretion increases after SWL in the pig model. The increase in NGAL excretion does not correlate with renal hemorrhagic lesion size. NGAL does not appear to be a good marker for assessing acute renal injury after SWL.
This study was funded by NIH P01-DK43881.

MP41-18 Quantification of Renal Hemorrhagic Injury: Development of a Novel Magnetic Resonance Imaging Acquisition and Analysis Workflow

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Shock wave lithotripsy (SWL) has been used as an effective noninvasive treatment for nephrolithiasis; however, SWL can produce undesirable side effects in the target tissue resulting in renal injury. The primary acute lesion is vascular trauma with breakage of blood vessels and pooling of blood within the renal tissue. Although SWL-induced injury has been linked to adverse outcomes, the consensus among the urologic community is that SWL is generally safe and that benefits outweigh the risks when used appropriately. The current gold standard for determining SWL-induced tissue damage is based on morphometric detection of renal hemorrhage in serial tissue sections from fixed latex perfused kidneys. This methodology is time/labor intensive; requires expert knowledge of renal anatomy and image processing to generate accurate results and is tissue destructive. Provided this, we sought to develop a non-destructive method which would permit rapid assessment of hemorrhagic lesions in post-mortem kidneys using native tissue contrast that would reduce cycle time while maintaining information content of lesion volumes. T1 weighted (T1W) 3D-FLASH and T2 weighted (T2W) 3D-SPACE images were acquired on a Siemens 3T Tim Trio using a high sensitivity 72 mm inner diameter 8 channel volume coil. Images were co-registered, normalized, difference images generated, and volumes classified and segmented using a Multispectral Neural Network classifier. Kidneys were then

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subjected to standard morphometric analysis for measurement of lesion volumes. Classification of T1W, T2W and difference image volumes resulted in an average total lesion of $0.08 \pm 0.01\%$ ($n = 4$) and $1.2 \pm 0.14\%$ ($n = 2$) for naïve and SWL treated kidneys, respectively. These results compared favorably with the morphometric measurement of the lesion, which were $< 0.1 \pm 0.0\%$ and $2.45 \pm 0.03\%$ for naïve and SWL treated kidneys, respectively. These preliminary data suggest that the MRI technique may provide a rapid, low cost and reliable means to evaluate renal injury lesion volumes due to SWL, and when adapted for in vivo use may provide clinically useful information on the lesion severity, extent, and distribution.

MP41-19 Assessing the magnitude of effect of bone structures on SWL fragmentation: Results from an in vitro study

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Introduction: Several anatomical and clinical factors have been implicated in the failure rates of Shock wave lithotripsy (SWL), including the attenuating effects of bony structures. We designed an *in vitro* model which incorporates the presence of transverse processes and lumbar spine along the pathway of shockwaves, to mimic the clinical scenario during SWL of upper ureteral stones. We hypothesized that the presence of bone structures in the SWL pathway significantly affects the fragmentation rate.
Materials and Methods: An ordnance gelatin (OG) model was conceptualized and created to allow a pig's lumbar spine to be embedded within it. Artificial urinary calculi weighing 2 ± 0.1 grams (1.2 cm diameter) were prepared using Begostone plaster. Stones were located approximaely 3 cm over the transversus processes in the model. The trial was divided in two arms: group 1 models had OG only and served as the control, and group 2 models had the bone embedded in the gelatin. A sample size was calculated to find a a difference of 30% in fragmentation rate between both groups wit a SD (standard deviation) of 30, with a power of 0.9 and a type I error probability of 0.05. Twenty four stones per group were subjected to SWL using the Storz Modulith SLX-F2 lithotripter, using the same treatment parameters (2,000 shocks per stone). Fragments were sieved through a 2 mm and 4 mm filter, and the fragmentation coefficients (FC) were calculated. Mann-Whitney test was used to compare FC between the two groups.
Results: The mean fragmentation rate of group 1 was statistically significantly higher compared to the group 2 using a 4 mm sieve (43.5 SD 24.6 vs 0.62 SD 1.1, $p < 0.001$) and the 2 mm filter (18 SD 9.7 vs 0.5 SD 0.73, $p < 0.001$).
Conclusions: The presence of bone structures dramatically reduces the fragmentation rate of phantom stones in this ordnance gelatin *in vitro* model. The OG model is an inexpensive and simple to use model which can be used to simulate clinical situations during SWL.

MP41-20 In-vitro comparative assessment of clinical shockwave lithotripsy technologies

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Introduction: Extra-corporeal Shock Wave Lithotripsy (ESWL) is a common procedure for the treatment of renal stones. At present there are few comparative assessments of the range of clinical devices currently in use. This in-vitro configuration provides a platform to test the hypothesis that machines vary in their ability to fragment urinary calculi.
Materials and Methods: An *in vitro* test configuration was used to fragment standardised synthetic Urocal-30 Gypsum (U.S. Gypsum, Chicago, Illinois) stones using the Sonolith i-sys (EDAP TMS, France), Modulith SLX F2 (Storz Medical AG, Switzerland) and Piezolith 3000 (Richard Wolf GmbH, Germany) SWL devices. Using typical clinical settings stones were treated with 250, 500 or 1000 shocks. The residual mass following passage through a 2 mm wire mesh was measured and compared using ANOVA and the Tukey-Kramer HSD test.
Results: For 250 and 1000 shock treatments there was no statistically significant difference between the Modulith SLX F2 and Piezolith 3000 devices ($p = 0.34$ and 0.31 respectively). The Sonolith i-sys was significantly less effective than the other devices. Performance of the Sonolith i-sys decreased beyond a threshold generator probe age of 6000 shocks. 1000 shock treatments above and below this threshold showed a mean difference in mass reduction of 93.9 mg (95% CI 54.9 to 133.0 mg).
Conclusions: There is considerable variability in the ability of ESWL devices to fragment synthetic urinary calculi. This in-vitro study provides an objective, repeatable means of assessing this variability. The Modulith SLX F2 and Piezolith 3000 yielded greater stone mass reduction than the Sonolith i-sys. The performance of the Sonolith i-sys deteriorates with increasing generator probe age beyond a threshold of 6000 shocks.

MP41-21 Comparison of shockwave lithotripsy and retrograde intrarenal surgery for the treatment of renal stones <20 mm

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Introduction: To compare the outcomes of shockwave lithotripsy (SWL) and retrograde intrarenal surgery (RIRS) for treatment of renal stones < 20 mm.
Material and Methods: 376 patients with renal stones < 20 mm, who were treated SWL (group 1) and 314 patients with renal Stones < 20 mm, who were treated with RIRS (group 2) were enrolled in the study. RIRS was performed with Storz Flex X-2 flexible ureterorenoscope, and SWL was performed with Siemens Modularis Variostar Uro 2. The procedure was considered as successful in patients with complete stone disappearance or fragments < 4 mm on plain radiography and/or urinary ultrasonography. The pre-operative, operative and post-operative outcomes of both groups were analyzed retrospectively.
Results: The mean age, gender, body mass index and hounsfield unit were similar between the groups. The mean stone size was 11,52 mm for the SWL group and 16,9 mm for the RIRS group ($p > 0.05$). The stone- free rates (SFRs) after a single session were 65,9% in the SWL group and 79,7% in the RIRS group ($p < 0,05$). After auxiliary procedures, the overall SFRs reached 82.4% for the SWL group and 90.76% for the RIRS group ($p > 0.05$). No major complications were observed for both groups. Minor complication (Clavien 1–3) rates were 13,5% and 15,4% for the SWL and RIRS group, respectively ($p > 0,05$).

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Conclusion: In the treatment of < 20 mm kidney stones SWL or RIRS can be successfully used with high success and low complication rates. However, RIRS may provide higher stone-free rate in the treatment of < 20 mm kidney stones with a single session.

MP41-22 Comparison of the new ShockPulse Intracoroporeal Lithotriptor to 3 Commercially Available Ultrasonic Lithotriptors

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Introduction: Ultrasonic intracorporeal lithotripters are used during percutaneous nephrolithotomy for stone comminution and removal. We performed standardized bench testing of the new ShockPulse™ Stone Eliminator against 3 commercially available systems to determine differences and nuances in performance in both hard and soft stones.
Methods: The new ShockPulse (Olympus) intracorporeal lithotrite was tested against the LUS-2™ (Olympus), Cyberwand™ (ACMI/Olympus), and EMS LithoClast™ in standardized settings using hard (Utracal 30: U30) or soft (plaster of Paris: POP) stones. Using a rigid nephroscope, camera, irrigation and video screen, the time to fragment standardized U30 or POP stones ($\sim$5 g) in a rubber kidney model was assessed by 3 surgeons. The time to fragment the stone into pluckable fragments was recorded followed by complete elimination of all fragments by the lithotripter. All stones were eliminated using the lithotripter. To determine the differences in force required to fragment stones, a hands-free apparatus was used to deliver 1, 1.5 or 2 lbs of constant force from the handpiece to the stone. Both solid cylindrical stones and cylindrical stones cut into 6 smaller discs to provide a gap between stones (to mimic more real-life situations) were utilized. The time to drill through these stones was measured at each of the forces.
Results: The time to create pluckable fragments in the kidney model was similar among all 4 lithotriptors for both POP (17–23 sec, ns) and U30 (25–33 sec, ns). The time to total fragmentation of free stones was similar for 3 of the lithotriptors (45–66s) which were significantly faster than the Cyberwand (112s, $p = 0.046$) for U30 stones and (32–37s vs 72s) POP stones ($p = 0.001$). With the constant force testing of a 6 small cylindrical stones, the ShockPulse was faster than any other lithotripter ($p < 0.001$) at 1 lb and 1.5 lb ($P = 0.002$) forces. At 2 lb force, Cyberwand was the slowest lithotripter ($p < 0.0001$) and there was no difference between the other 3 lithotriptors ($p = 0.09$). With constant force testing of a solid cylindrical stone, the ShockPulse and Cyberwand were significantly faster at all 3 forces tested ($p < 0.0001$). The LUS-2 was unable to fragment through solid stones at 1 or 2 lb pressure and was only able to penetrate at 1.5 lb pressure.
Conclusions: The ShockPulse works equally well compared to commercially available lithotripters. ShockPulse was significantly faster at lighter applied forces which are more in keeping with those pressures applied clinically. ShockPulse performed equally well at low and high applied pressures.

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MP42 - STONES: MISCELLANEOUS

MP42-1 Significance of the presence of Systemic Inflammatory Response Syndrome (SIRS) in patients with obstructive urolithiasis presenting to the emergency department

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Introduction: SIRS is considered as an early marker for critical illness. However, little is known about SIRS as a diagnostic marker of sepsis in obstructive urinary stone patients. We hypothesized that SIRS is a poor prognostic indicator of serious illness in the presence of obstructive urolithiasis. We evaluated clinical outcomes of SIRS in the above group of patients.
Methods: Retrospective chart review of all patients presenting over the last 3 years to our tertiary center ED and diagnosed with obstructive urolithiasis on a CT scan of the abdomen and pelvis. Inclusion criteria included primary diagnosis of ureteral or UPJ calculus and hydronephrosis on a CT scan. Data reviewed included patient demographics, SIRS criteria, stone size, location, disposition (home, hospital admission or operating room), hospital revisit and intervention for renal obstruction. Multivariate analysis of the results was performed.
Results: Of a total of 5002 patients with urolithiasis seen at the ED, 1983 patients had a primary diagnosis of urolithiasis. Of these, 686 patients were identified who had obstructive urolithiasis on a CT scan. Of these, 14.7% (101 patients) met SIRS criteria and 54% (54/101 patients) went to the OR for emergency drainage of the kidney and 46% (47 patients) were discharged home. Only 2.3% (1/81) of patients that were discharged home with an obstructing stone and SIRS was readmitted to our institution compared to 6% without SIRS (29/481) ($p = 0.5$). The most predictive SIRS criteria requiring surgical intervention was fever (OR 2.039) and WBC count (OR 1.178).
Conclusions: In the above patient cohort, SIRS was a risk factor for the need of surgical intervention in the setting of obstructive urolithiasis. However, patients with SIRS and obstructive urolithiasis that were discharged home did not have an adverse outcome of progression to sepsis.

MP42-2 The Relationship between Vascular Calcification, Bone Mineral Density, and Perinephric Fat in Kidney Stone Patients

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Introduction: Vascular calcification (VC), bone mineral density (BMD), and perinephric fat (PNF) may share common pathways. Recent studies suggest kidney stone patients may have high degrees of VC. VC has been negatively correlated with BMD in other patient populations. Similarly, there is increased interest in fat compartments. One compartment, perinephric fat (PNF), is a predictor of kidney disease. To our knowledge, no analysis has evaluated the relationship between VC, BMD, and PNF. Our objective was to analyze this relationship in kidney stone formers.

Patients and Methods: Retrospective analysis of 350 stone patients seen between 2004 and 2013 with pre-operative CT imaging. Abdominal aortic calcification (AAC), BMD, and PNF were measured by a single radiologist. AAC measurements were taken when evaluating 4 cross-sectional slices between L1 and L4 vertebras. Measurements were translated to a score by multiplying a severity factor with the percentage of aortic circumference calcified in each cross section. BMD was measured at the L4 vertebra. Osteoporosis was defined as a BMD of < 80 HU, osteopenia as 80 through 120 HU, and normal values as > 120 HU. PNF was measured at the level of the hilum in the anterior, lateral, and posterior portions of the kidneys and summed. Statistical analysis was performed using SPSS v 20.
Results: Analysis revealed a negative correlation between AAC and BMD ($p = 7.8x10^{-13}$, rho $= -0.321$). Of the patients with AAC (51%), 25 (15%) had osteopenia and 8 (4%) had osteoporosis. Of the patients without AAC (49%), 4 (2%) had osteopenia and 0 patients had osteoporosis. Patients were then distributed into tertiles of AAC scores. 16% of osteopenia and no osteoporosis patients were in the lowest tertile. 44% of osteopenic and 88% of osteoporosis patients were in the upper tertile of AAC scores. AAC positively correlated with PNF ($p = 4.33x10^{-05}$, rho $= 0.223$), and BMD was negatively correlated to PNF ($p = 2.64x10^{-09}$, rho $= -0.321$).
Conclusion: AAC, BMD, and PNF may all be related in kidney stone patients. Our results demonstrate an inverse correlation between AAC and L4 BMD. 88% of osteoporosis patients were in the upper tertile of AAC. Additionally, AAC positively correlated with increased PNF. Perinephric fat is often thought of as a ''surgical encounter'' rather than a fat compartment with metabolic activity, but it appears that it may share common networks with BMD and AAC. Additional work is needed to deepen our understanding of these relationships.

MP42-3 Office Perurethral Cystolithotripsy (PUCL) for bladder stone up to 2 cms - a safe and cost effective modality

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Introduction and Objective: Perurethral cystolithotripsy (PUCL) has been usually performed under general anaesthesia or spinal anaesthesia. Perurethral cystolithotripsy (PUCL) under local anaesthesia is still in its infancy. Being in a tertiary care center situated in a stone belt, bladder calculi are one of the most common entities encountered. This huge work load, limited theatre availability and low socio-economic status of the patients prompted us to initiate PUCL under local anaesthesia in a war footing. The objective of this study is to demonstrate the safety, success rate and cost effectiveness of this procedure under local anaesthesia in an office setting.
Methods: From June 2013- December- 2014, 75 patients ($M = 52$; $F = 23$) underwent office PUCL under local anaesthesia with solitary stone UP TO 2 cms using nephroscope and pneumatic energy. Only a single shot of intramuscular diclofenac (50 mg) was administered 20 minutes prior to the procedure. Data for stone size, duration of surgery, post operative pain, complications, stone free rate etc were recorded.
Results: Overall, 67 patients (89%) had complete clearance. Out of these 60 (80%) patient underwent complete clearance in the first sitting. Among the remaining, 8 (11%) opted to undergo PUCL under spinal anaesthesia. Overall success rate was 89%. Overall, VAS pain score was 64% mild, 38% moderate & 8% severe.
Conclusions: Based on the findings of our study, we can conclude that office PUCL is a safe and cost-effective modality in carefully selected group of patients. The reduction in treatment cost and early return to work act as a catalyst.

MP42-4 Assessing radiation exposure during Endoscopic Combined IntraRenal Surgery (ECIRS)

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Introduction: Nowadays the prevalence of kidney stones is increasing. Standard percutaneous nephrolithotomy (PCNL) is the treatment modality of choice for large and/or complex urolithiasis, being very efficient but often associated with significant radiation exposure for patients and operating room staff. Recent literature has clearly highlighted the potential oncologic risk of excessive diagnostic radiation exposure, thus this should be minimized whenever possible. ECIRS (Endoscopic Combined IntraRenal Surgery), enriching the antegrade percutaneous approach with the retrograde ureteroscopic contribution, offers the possibility to assist endoscopically all the steps of renal access, tract dilation and Amplatz sheath insertion, as well as lithotripsy and final exploration of the collecting system, thus to potentially decrease the levels of radiation exposure.
Materials and Methods: A retrospective review of all consecutive ECIRS performed at our institution was conducted between January 2011 and May 2015. Surgery was always carried out with the patients in the Galdakao-modified supine Valdivia position. Patient demographics, stone features and perioperative details were recorded, including mean fluoroscopy time.
Results: In total, 173 ECIRS were performed. The mean age was 51.2 years +/- 15.1 S.D. (range 19 months-82 years), mean BMI 29.7 kg/m^2 +/- 5.3 S.D., ASA score 1–3, mean stone size 48 mm +/- 22 S.D. (range 15–80 mm), 16% staghorn stones, 94% single postero-inferior calyceal access, mean operating time 82.4 minutes +/- 29.5 S.D. The completely endoscopically-guided procedures were 54, i.e. 31% (39 males and 15 females). The treatment success rate was 89.8%, 94.3% after an early second percutaneous look during the same hospital stay. The overall complication rate was 6.8%, being only 1.6% of cases Clavien 3 (but never more). The mean fluoroscopy time of the 54 ''really-endoscopic'' cases was 3.3 minutes +/- 1.2 S.D.
Conclusion: The contribution of the retrograde approach during PCNL (=ECIRS), associated with valuable safety and efficacy of the procedure, allows a rather low radiation exposure in comparison with the values reported in the literature for the traditional PCNL procedures (ranging from 6 to 10 minutes/procedure). This advantage is particularly beneficial for patients and healthcare providers, and might be further enhanced by fully exploiting the possibility of endoscopically assisting all the steps of the percutaneous procedure. A further attempt to spare X-ray use during percutaneous surgery when not strictly necessary might be sustained by careful technique and experience, gained from a large caseload.

MP42-5 Percutaneous nephrolithotomy for management of pediatric renal calculi: A tertiary care centre experience

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Introduction: Management of pediatric renal calculus disease is always been a dilemma. Different treatments modalities have been used to reduce recurrence rate and improve long term outcome have various effects on growing pediatric kidney. We share our experience with percutaneous nephrolithotomy (PCNL) mono-therapy in staghorn or complex pediatric renal calculi.
Material and methods: We retrospectively analyzed the results of PCNL in 89 children treated at our institute between 2010 and 2015. A total of 89 children (97 renal units) underwent 107 percutaneous nephrolithotomies (PCNLs). 8 patients underwent bilateral percutaneous nephrolithotomy. The average calculus size was 45.9 mm (range 15–65 mm). Of the patients, 68 renal units had complete or partial staghorn. Of the patients, 12 had previous open renal surgery, 8 had a solitary kidney and 2 had anuria secondary to bilateral calculi. Operations were performed under the guidance of fluoroscopy. Pneumatic lithotripsy and forceps extraction were used with a rigid nephroscope.
Results: Stone free status was achieved in 81 renal units after a single stage PCNL. 90 of the renal units (92.78%) were stone free at the time of discharge, and the success rate was 95.87% (93/97). In 19 procedures (17.75%), intra-operative hemorrhage was present, and blood transfusions were required. The mean operating time was 82 minutes (range, 38 to 136 minutes) and no intra-operative or postoperative major complications were observed.
Conclusion: PCNL is an effective and safe form of therapy in pediatric calculus disease.

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MP42-6 Percutaneous Nephrolithotomy: Experience with over 150 Pediatric Cases

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Introduction: Nowdays, Renal calculi is a common problem in children. ESWL is the first choice in this age group, but sometimes other interventions may be indicated. In such cases PCNL seems the most less invasive and a safe option than open surgery. We evaluated the results and complications of the pediatric PCNL in our referral training center.
Materials and Methods: Between September 2002 and May 2015,173 children, underwent PCNL. The procedure was done under general anesthesia, in prone position, with ureteral cathter 3 or4 F, diluted contrast injection and fluoroscopic or ultrasound guided nephrostomy by Chiba needle 18G. Tract dilation performed with Alken telescopic dilators. Nephroscopy were done with adult size 24 Fr nephroscope in 85, pediatric in 54 and semirigid ureteroscpe in 34 cases. Lithotripsy was done with pneumatic lithoclast and saline solution used as irrigation. Nephrostomy tube was inserted in 35 with ureteral stent, tubeless (No nephrostomy) in 117 and totally tubeless in 31. Ureteral stent and Foley catheter removed 12–24 hours after operation.
Results: Of total 173 patients,98 were boys,75 girls, with mean age 8.5 years(9 months-15 years) with renal stone > 20 mm. Mean operation time was 75 min(40–105) and radiation 0.6 min(0.3–1.9). Five patients had residual fragment less than 5 mm, passed spontaneously in 2 weeks after operation,7 underwent second look nephroscopy, and 3 ureteroscopy for migrated stone fragments to distal ureter. Postoperatively,21 patients developed fever,2 sepsis,7 needed transfusion, and 5 raising of normal creatinine which improved with conservative management.
Conclusion: PCNL seems a good option for treatment of the nephrolithiasis in children.

MP42-7 Narcotic Use and Postoperative ''Doctor Shopping'' among Patients with Nephrolithiasis Requiring Operative Intervention

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Introduction: This study sought to determine perioperative patterns of narcotic use and the prevalence of postoperative ''doctor shopping'' among patients with nephrolithiasis requiring operative management.
Methods: Retrospective review of consecutive patients requiring ureteroscopy with holmium laser lithotripsy (URS/HLL) for nephrolithiasis at our institution in 2013 was performed. Perioperative narcotic use was abstracted from the Tennessee Controlled Substances Medication Database. Patients were categorized by number of postoperative narcotic providers, and ''doctor shopping'' behavior was identified as any patient seeking multiple narcotic providers within 3 months of surgery. Demographic and clinical characteristics associated with ''doctor shopping'' behavior were identified using appropriate bivariate parametric and non-parametric statistical testing.
Results: 200 patients underwent URS/HLL in 2013. Forty-eight (24%) were prescribed narcotics by more than one provider after surgery. Compared to those receiving narcotics from a single provider, patients with multiple narcotic providers were younger (48.1 vs. 54.2 years, $p < 0.001$), less educated (83.3% vs. 58.7% high school education or less, $p = 0.014$), more likely to have a psychiatric history (37.5% vs. 16%, $p < 0.01$) and more likely to have had prior stone procedures (66% vs. 42%, $p < 0.01$). Additionally, these patients were more likely to use narcotics preoperatively (87.5% vs. 63.2%, $p < 0.001$), require longer duration of postoperative narcotic use (39.1 vs. 6.0 days, $p < 0.001$) and require higher average daily morphine equivalent dose (MED) per prescription (44.7 vs. 35.2 MED/day, $p < 0.001$).
Conclusion: Postoperative ''doctor shopping'' is common among patients with nephrolithiasis requiring surgery. Urologists should use available controlled substances registry data to reduce the likelihood of redundant narcotic prescribing.

MP42-8 Does Previous Open Renal Stone Surgery Affect Percutaneous Nephrolithotomy (PCNL) Outcome?

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Purpose: PCNL is the mainstay treatment for large burden renal calculi. Being in a stone belt region with high recurrence rates, many patients now having PCNL have had prior open surgery for renal stones. We sought to determine whether prior surgery impacted on PCNL outcomes.
Materials and Methods: We reviewed medical records of 2100 patients who underwent PCNL in our institute between 2002 and 2014. Patients were divided into 2 groups. The first group

included patients with no history of previous ipsilateral open stone surgery (n = 1508). Patients in second group had been undergone open stone surgery before PCNL (n = 612). We compared stone free rates (SFR), operating room (OR) time, number of attempts to access the collecting system, tract number and location, and intraoperative and postoperative complications between two groups.
Results: There were no differences in sex, body mass index, stone burden and laterality between both groups. OR time was significantly shorter in the first group (p = .0042). The number of attempts to enter the collecting system and number of tracts were significantly lower in the first group in comparison to other two groups (p < .0046). We did not find significant differences in hospital stay, SFR, and intraoperative and postoperative major complications. Intrarenal manipulation and tract dilation were more difficult in previous operated cases.
Conclusion: Our findings suggest that PCNL can be performed in patients with prior open stone surgery successfully without an increase in complications but with a longer OR time and more difficulty with access and tract dilation.

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MP42-9 Patient Reported Outcomes: Emergency Ureteroscopic stone treatment gets patients back to work earlier

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Introduction: Our Unit manages ureteric colic secondary to urolithiasis according to the patient and stone. The stone's location and size allows us different surgical strategies: such as cystoscopy and ureteric stent insertion followed by elective treatment or emergency ureteroscopy (URS) with stone treatment and a possible ureteric stent insertion. Emergency URS is performed on selected patients to treat their stone primarily.
Patients & Materials: We retrospectively analysed adult patients requiring surgical management by the acute Urology Team for distal ureteric to vesico-ureteric junction calculi over a one year period. Exclusion criteria were upper ureteric stones, patients unfit for general anaesthesia, suitable for medical expulsive therapy or septic. Patients fitting the inclusion criteria, were analysed separately into two groups: Group 1 were those managed with emergency retrograde ureteric stent insertion and elective URS for stone treatment; Group 2 had emergency URS and stone treatment with or without a ureteric stent. Primary outcomes were the comparative post operative symptom and satisfaction scores as assessed by a telephoned questionnaire.
Results: Between January 2014 – January 2015 we analysed 51 records. 29 patients to Group 1 (emergency stent then elective URS) and 22 patients to Group 2 (emergency URS +/- stent). Male to female ratio was 1.8:1 (Group 1 was 2.6:1 and Group 2 was 1.2:1). Mean CT axial stone size for Group 1 was 6 mm (range 3 – 11 mm) and Group 2 was 7 mm (range 3 – 14 mm). Mean time to elective URS was 9.6 weeks (range 2 – 28 weeks), emergency URS was 0.7 days (0–3 days) with 62% of Group 2 patients requiring ureteric stents. Our response rate for the post operative questionnaire was 45%, (51% from Group 1, 36% from Group 2). Group 1 had 66%, Group 2 had 100% bothersome lower urinary tract symptoms. For the employed patients, 22% of Group 1 and 66% of Group 2 returned to work in less than 3 days. Overall satisfaction was 60% and 75% for Group 1 and 2 respectively.
Conclusion: We present a comparison of patients undergoing two lines of emergency surgical management for distal ureteric stones. 38% of patients undergoing acute URS in our Unit required no ureteric stent. Managing these patients with primary intervention facilitate their livelihood and decrease strain on an elective Stone Unit. Patients undergoing acute URS can get back to work earlier than patients with stents awaiting elective URS.

MP42-10 Extrarenal Manipulation to Facilitate Retrograde Intrarenal Surgery (RIRS) with Semirigid Ureteroscope and Pneumatic Lithotripter: Novel Techniques

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Introduction: RIRS is the mainstay treatment for 1–2 cm sized renal stones when ESWL is not possible or fails. This is best accomplished with a flexible ureteroscope, but this may not be available in the developing world. Here we present our experience of RIRS using a semirigid ureteroscope with extrarenal maneuvers to achieve stone clearance. Many of the maneuvers have not previously been described to our knowledge.
Methods: We performed 72 cases of RIRS with semirigid ureteroscope with the aid of extrarenal manipulation. Extrarenal manipulations included manually pushing kidney up by pressure in the posterior flank, pushing the kidney down by anterior abdominal pressure, rotating the kidney medially or laterally by manual pressure in the lateral flank or midline abdomen, tilting the table, placing the patient in Trendelenburg or reverse Trendelenburg, and altering respiratory rate and tidal volumes. We recorded stone size, location, degree of hydronephrosis, stone clearance rates, hospital stay, and complications.
Results: Of 72 patients, 42 had a renal pelvic stone, 28 an upper calyceal stone, 36 a middle calyceal stone, and 17 a lower calyceal stone with favorable anatomy. With the maneuvers described 65 patients (90.1%) were rendered stone-free. There were no major intraoperative complications except minor extravasation in one case. Mean operative time was 49 ± 8 minutes. Four patients had postoperative fever successfully resolved with antibiotics.
Conclusions: Extrarenal manipulation for intrarenal surgery using a semirigid ureteroscope and pneumatic lithotripsy is safe and effective with good outcomes and a low rate of complications.

MP42-11 Multicenter Prospective Comparison of Laparoscopic Ureterolithotomy Versus Ureteroscopic Lithotripsy Combined with Retrograde Intrarenal Surgery for Large Proximal Ureteral Stones

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Introduction: The debate continues about the standard treatment for large upper ureteral stones. We aimed to compare the outcomes of Transperitoneal laparoscopic ureterolithotomy (TLU) and ureteroscopic lithotripsy (UL) combined with retrograde intrarenal surgery (RIRS) for large proximal ureteral calculi more than 15 mm by evaluating stone-free rates and associated complications.

Materials and Methods: Between March 2012 and May 2014, 100 patients with a large ureteral stone (≥15 mm) treated by TLU (n = 48) or UL-RIRS (n = 52) in three hospitals were prospectively evaluated. Double-J stent was routinely indwelled in both groups. The patient characteristics, success rate, stone-free rate, operation time, and complications were analyzed in the two groups. All patients were followed up for more than three months.
Results: The TLU group and the UL-RIRS group were similar in age, gender distribution, body mass index, stone size (21.1 ± 4.2 vs. 22.0 ± 3.6 mm; p = 0.163), stone radio-opacity, and laterality. Patients of the TLU group required a longer operative time (128.56 vs. 49.75 minutes, p < 0.001) and hospital stay (6.75 ± 0.42 vs. 4.96 ± 0.62 days; p < 0.001) and had a longer D-J stent duration (4.60 ± 0.15 vs. 2.69 ± 0.16 weeks, p < 0.001). However, stone clearance rate (no remnant stone in postoperative stone CT of the kidney, ureter, and bladder) in a single session was higher in the TLU group (100% versus 73.1%; p = 0.005). Total complication rate was not significant different between both groups (12.5% versus 19.2%, p = 0.261). Three patients with urine leakage in both groups were managed by the percutaneous nephrostomy. Residual stones in 14 cases in the URS-RIRS group were removed by extracorporeal shock-wave lithotripsy. Even in patients with a previous ESWL or URS history, TLU showed higher stone clearance rates (100% versus 72.2%, p = 0.043) and lower complication rates (0 versus 33.3%, p = 0.020) compared to patients with UL –RIRS.
Conclusions: Although TLU required a prolonged operative time, a longer hospital stay, and longer D-J stent duration, our data demonstrated that TLU had a higher stone clearance and lower complication rates compared with UL-RIRS. TLU is a safe and effective treatment technique for large, impacted, upper ureteral stones more than 15 mm in size when first-line treatments have failed or are unlikely to be effective.

MP42-12 The Use of Medical Expulsive Therapy during Pregnancy: a Worldwide Perspective

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Introduction: Medical expulsive therapy (MET) is a pharmacological approach thought to augment the spontaneous passage of ureteral calculi. A 2014 meta-analysis of 32 studies suggested benefit to MET although recent studies have failed to verify this.

The number one cause of non-obstetric hospital admission during pregnancy is nephrolithiasis and over 70% of stones in pregnancy resolve with expectant management.

The usage of MET pharmacologics in the setting of presumed ureteral calculi during pregnancy has not been widely studied and their safety and utility are unknown. We sought to characterize the worldwide usage of MET in the setting of pregnancy with presumed ureteral calculus (P-MET), as well as factors associated with physician decision to use or not use.
Materials/Methods: A 9-question survey was delivered through society-administered email. Questions gathered physician's worldwide region, degree of specialization in stone disease, practice type, interval since training and willingness to employ both MET and P-MET. We assessed drugs of choice in those employing P-MET and reasons for avoidance in non-P-MET-users. Finally we assessed the impact of physician-perceived medico-legal risk on usage of P-MET.

Results: 565 responses were recorded. Respondents were globally diverse; 63% were US-based practitioners and the remaining represented a worldwide distribution.

Tamsulosin was preferred by over 90% of urologists and did not differ significantly by region or country. Worldwide usage of MET was extremely high in our sample at 97.6% and was not influenced by region, training, time in practice, specialization or practice type.

P-MET was endorsed by only 44.3%. Internationally, only 23.6% of European practitioners used this strategy, a low, while the rest of the responding international regions did not differ from the US average. In worldwide aggregate, the time from training, degree of specialization in stone care, and practice type did not appear to significantly interact with adoption of P-MET.

Physician reasons for rejecting use of MET during pregnancy were adverse-outcome related: 76.7% reported either the perception of legal risk (52.8%) or concerns about safety (23.9%). 15.6% were influenced by local obstetrician input; only 7.6% felt P-MET ineffective.
Conclusion: MET has seen impressive worldwide adoption. P-MET is far less well accepted, and fears of legal risk and safety far outweigh questions about effectiveness. The utility of these drugs during pregnancy-induced ureteral dilation is unknown. Still, 44% of worldwide practitioners recommend usage of this drug strategy despite a paucity of evidence supporting either safety or effectiveness during pregnancy. Further study is critical.

MP42-13 Outcomes of Ureteroscopy and stone treatment for patients with urosepsis/obstruction is independent of the mode of pre-operative drainage

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Introduction: Patients who present with urosepsis/obstructed hydronephrosis secondary to stone disease often need urgent drainage by means of either nephrostomy or ureteric stent insertion. Once the kidney is drained and the infection settles, definitive stone management is then carried out. We wanted to look at the outcomes of ureteroscopy and laser stone fragmentation (URSL) for these patients and compare if there was a difference in outcome between nephrostomy or retrograde ureteral stent insertion.
Methods and Materials: We included all patients with stone disease and urosepsis or infected hydronephrosis managed with percutaneous nephrostomy (PCN) or retrograde ureteric stent

	Nephrostomy	Ureteral stent	P-value
Presentation: Urosepsis/ obstructed hydronephrosis, n	10	13	
Mean operative time (mins)	64.9	50.0	0.30
Mean stone diameter (mm)	10.6	10.4	0.90
Post URS infection Resolution	100%	100%	1.00
SFR	90.00%	100.00%	0.74
Median Hosp stay (range)	0 (0-21)	0 (0-8)	0.62
Stone location, n			
Mid/distal ureter	6	4	
PUJ/Kidney	4	9	
Prior ITU admission, n	3	1	0.16

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insertion (USI) from our prospective ureteroscopy database between a 3-year period from May 2012- April 2015. Data on URSL was collected for clinical presentation, operative time, stone size, stone location and post-operative hospital stay. Treatment resolution was defined as no complications and cure of infection.
Results: Twenty-three patients underwent urgent (10 PCN and 13 USI) of which four also needed to go to the intensive care unit (see table). While the mean stone size was similar (10.5 mm) in both groups, the mean operative time was slightly more in the PCN group. There was complete resolution of infection in all cases, with the stone free rate (SFR) being 90% in the PCN group and 100% in the USI group. There was no difference between the groups in any of the outcome measures.
Conclusion: The type of drainage for patients with urosepsis or infected hydronephrosis seems to be of little consequence in the post-operative outcome of URSL for patients with kidney stones.

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MP42-14 Urolithiasis in Pregnancy: Cost-effectiveness Analysis of Ureteroscopic Management versus Serial Ureteral stenting

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Introduction: Genitourinary complications are the leading cause of non-obstetric hospital admissions during pregnancy, with kidney stones affecting an estimated 1 in 244 to 1 in 2000 pregnancies. Many anatomic and physiologic changes that accompany pregnancy are also associated with an increased risk of stone formation, including mechanical obstruction of the ureters, progesterone-induced reduction in ureteral peristalsis, and increased filtration of stone promoters such as sodium, calcium, and uric acid. While the most prudent and most successful initial management strategy is an attempt at medical expulsive therapy, it is unknown what the most cost-effective treatment strategy is when severe colic persists and requires urological intervention. In this study, we aimed to determine the cost-effectiveness of serial stenting versus immediate ureteroscopy (URS) in the treatment of urolithiasis during pregnancy as a function of gestational age (GA) at diagnosis.
Materials and Methods: We built decision analytic models (TreeAge Pro, Williamstown, MA, USA) for a hypothetical cohort of pregnant women diagnosed with symptomatic ureteral calculi and compared serial ureteral stenting to URS. We assumed ureteral stent exchange every four weeks during pregnancy under intravenous sedation, and spinal anesthetic for URS. All outcomes were derived from the literature and included stent infection, migration, spontaneous stone passage, ureteral injury, failed URS, postoperative urinary tract infection, sepsis, and anesthetic complications. Four separate analyses were run based on the GA at diagnosis of urolithiasis. Using direct costs and quality-adjusted life years (QALYs), we reported the incremental costs and effectiveness of each strategy based on GA at stone diagnosis and calculated the net monetary benefit (NMB). We performed one-way and Monte-Carlo sensitivity analyses to assess the strength of the model.
Results: URS was less costly and more effective for urolithiasis irrespective of GA at diagnosis. The cost advantage of URS over serial ureteral stenting decreased from $68,525 to $6,864 and the incremental effectiveness decreased from 0.49 to 0.05 QALYs for a stone diagnosed at 12 versus 36 weeks GA, respectively. The NMB of URS progressively decreased for stones diagnosed later in pregnancy. The model was robust to all variables on sensitivity analyses.
Conclusion: Ureteroscopy is less costly and more effective compared to serial stenting for urolithiasis during pregnancy, regardless of the GA at diagnosis. Ureteroscopy is the more cost effective strategy for women diagnosed with symptomatic ureteral calculi, and its cost effectiveness is greater earlier during pregnancy.

MP42-15 Preoperative Belladonna and Opium Suppository for Postoperative stent pain: a randomized controlled, double-blinded placebo-based trial

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Objectives: Ureteral stents are routinely placed after ureteroscopic procedures. However, they are associated with significant discomfort and bothersome symptoms that result in increased narcotic use, frequent phone calls and unnecessary clinic or emergeny room visits. Our hypothesisis is that a Belladonna and Opium suppository given prior to ureteroscopic manipulation may reduce postoperative stent pain.
Materials and Methods: Seventy subjects were enrolled.. All patients undergoing ureteroscopy by a single surgeon were eligible. Exclusion criteria included non-english speaking patients and those with a neurologic condition (i.e. spinal cord injury or multiple sclerosis). Patients were randomized in a double-blinded manner to receive either a single 30/16.2 mg Belladonna and Opium suppository or a placebo suppository by the nursing staff following induction of anesthesia. Intraoperative analgesic administration and analgesic requirements in the PACU were recorded. Subjects completed the international Ureteral Stent Symptom Questionnaire (USSQ) and AUA symptom score on postoperative days 1 and 3; and then 7 days after stent removal. A medication diary was kept while the stent was in place..
Results: Fifty-two patients (74%) completed and returned questionnaires for review. There was no difference in subject characteristics or operative data. When controlling for BMI, age, gender, and analgesic use, the treated group reported decreased pain on the USSQ on postoperative day 1 ($p = 0.023$). There were no differences in PACU or postoperative day 1 pain level and analgesic use, however the placebo group reported significantly higher levels of dissatisfaction ($p = 0.047$). There was a trend toward increased analgesic requirements intraoperatively for the placebo group. Improvement of QOL scores from preoperative to postoperative day 14 was higher in the treated group after controlling for age, BMI and gender ($p = 0.03$).
Conclusion: A single Belladonna and Opium suppository given prior to ureteroscopy and stent placement appears to reduce overall pain on postoperative day 1. Patients that received the placebo also reported higher levels of dissatisfaction while those that received the treatment drug reported improve QOL scores after stent removal.

MP42-16 Maintaining a ureteric stent register: An imperative aspect of endourological surgery

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Aim: Ureteric Stent insertion is a common procedure performed by endourological surgeons. 'Lost' or 'Forgotten' ureteric stents pose a challenge both for the surgeon and patient, and can have a significant morbidity and mortality, not to mention the implications of health economics.
Methods: We analysed the data from a prospectively maintained database of all endourological procedures performed by a single surgeon in a tertiary stone referral centre. All ureteric stent insertions could be set up as a Query on a Database created on Microsoft Office Access. This Stent Database is updated on a monthly basis to ensure that every stent inserted is accounted for.
Results: A total of 839 ureteric stents were inserted over a 14 year period (2001–2015). 646 (76.9%) were stented for the management of renal tract calculi and the remaining 193 (23.1%) were stented for malignancy or obstruction. Every stent was accounted for, with the median length of time a stent was left in-situ for renal tract calculi being 28 days (range 1- 392 days), median length of time a stent was left in-situ for non-calculi indications being 42 days (range 5–303 days).
Conclusion: A prospective well maintained Stent register database is an effective method of tracking all ureteric stent insertions to ensure no stent is lost to follow up. Our experience highlights that a properly maintained Stent Register Database should be mandatory for ethical, clinical governance and medico-legal reasons. It also serves as a valuable tool, in our practice to limit waiting times in stented patients given the constraints of the NHS.

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MP42-17 The value of acute renal injury markers and associated factors after endoscopic urinary stone surgery

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Introduction: Microalbumin, N-Acetylglucosamine (NAG), and2-microglobulin have been suggested as urine markers to detect acute kidney injury. To describe the value of theses markers and associated factors after endoscopic stone surgery for renal and ureter stone.
Material and methods: A retrospective review of endoscopic stone surgery at Seoul National University Hospital from March 2013 to March 2015 was conducted. A total of 52 cases with relevant tests were selected (ureteroscopic ureterolithotripsy [URS] 9, retrograde intrarenal surgery [RIRS] 21, URS with RIRS 11, and percutaneous nephrolithotomy [PNL] 12). The postoperative marker tests were obtained at two time-frames; within 1 month (early) and 3–6 months after surgery (later postoperative period).
Results: Average preoperative microalbumin/Cr, NAG/Cr, and 2-microglobulin were 4.8, 5.98, and 0.55 mg/dL within 1 month after surgery, averages were 21.26, 7.81 and 0.45 mg/dL and at 3–6 months after surgery, average was 0.50, 7.97, and 0.50 mg/dL. In serial change, microalbumin/Cr and NAG/Cr were significantly increased during early postoperative period, and microalbumin/Cr was also significantly decreased during later postoperative period. It seems to better microalbumin/Cr reflect the postoperative acute kidney injury after urinary stone surgery.

Operative time, number of stones, and preoperative BUN were associated with increase of NAG/Cr in the early postoperative period. Preoperative BUN, creatinine, and eGFR, and postoperative DJ stent indwelling time were associated with increase of 2-microglobulin in the later postoperative period. Preoperative BUN was also associated with later microalbumin/Cr change on multivariable analysis. According to the operation method (PNL > RIRS > URS), postoperative microalbumin/Cr has tended to increase. Preoperative and postoperative remained hydronephrosis were associated with increase of all markers in the later postoperative period.
Conclusion: Microalbumin/Cr, NAG/Cr, and2-microglobulin may reflect well the degree of acute renal injury during and after endoscopic urinary stone surgery. Characteristics of these markers should be further evaluated.

MP42-18 Effect of body mass index on outcomes of ureterorenoscopy (URS) for renal stones

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Introduction and Objectives: To compare the outcomes of URS with regard to stone-free rates (SFR) and complication rates (CR) in patients with different body mass index (BMI) scores in the treatment of kidney stones.
Materials&Methods: A retrospective chart review of our stone database was done. All patients with known BMI, who underwent URS for kidney stones between 2006 and 2012 at our institution, were included (n = 556 patients). The SFR and CR of obese patients (BMI > 30 kg/m^2, n = 146) were compared to overweight (BMI 25–30 kg/m^2, n = 220) and normal weight patients (BMI < 25 kg/m^2, n = 190), respectively. The groups were assessed in terms of demographic parameters including age, gender, stone size, ASA score, intraoperative and postoperative variables. Differences between the groups were assessed using the Kruskal-Wallis test. Categorical variables were compared using the chi-square test. A p-value < 0.05 was considered statistically significant. Patient data were expressed as mean ± SD.
Results: Mean age was 52.51 ± 15.06 yrs. and the average BMI 27.74 ± 5.88 kg/m^2. Of the patients, 34.2% had normal weight (22.59 ± 1.91 kg/m^2), 39.6% were overweight (27.30 ± 1.42 kg/m^2), and 26.3% were obese (35.09 ± 5.93 kg/m^2), respectively. The mean ASA score differed significantly between normal weight (1.99 ± 0.57), overweight (2.03 ± 0.62), and obese (2.22 ± 0.63) patients (≤ 0.036). The mean stone size was 8.51 ± 6.84 and the mean number of stones 1.9 ± 2.41 without differences between the groups. There were no differences in the use of preop (94.8%) and postop ureteral stents (60.3%), the Ho:YAG laserlithotripsy rate (33.6%), the flexible ureteroscopy rate (16.2%), and the operative time (52.04 ± 34.55 min) between the groups, respectively. There were no differences in the SFR for the upper pole (90%), middle pole (94.7%), lower pole (90.2%), multiple location (68.6%), renal pelvis (87.9%) or the total SFR (86.3%). Total SFR of 95.7%, 88.4%, 73.7% for urinary calculi < 5 mm (3.42 ± 0.77 mm), 5–9 mm (6.56 ± 1.31 mm), and ≥ 10 mm (15.19 ± 9.5 mm) were found without differences between the different weight groups. The SFR decreased from 92% (1 stone) to 73.5% (60–100%) in those with ≥ 3 stones without differences between the groups. Perioperative complications occurred in 10.4%: Clavien I in 3.6%, Clavien II in 3.8%, Clavien IIIa in 1.8%, and Clavien IIIb 1.3% of the patients without differences between the weight groups.
Conclusion: Semirigid/flexible URS is an appropriate treatment for renal stones with high SFR and low CR regardless of patient's BMI.

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MP42-19 Horizontal bolster positioning during percutaneous nephrolithotomy displaces the kidney caudally when compared to vertical bolster positioning

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Introduction: The risk of intrathoracic complications exponentially increases when obtaining supracostal access for percutaneous nephrolithotomy (PCNL). Although the primary function of bolsters is to improve cardiopulmonary parameters for patients under anesthesia in the prone position, the ideal positioning of the bolsters to selectively manipulate kidney positioning remains unknown, and to our knowledge, has not been previously evaluated. We hypothesize that adjusting from the current standard of vertical bolster positioning to horizontal will alter the position of the kidney caudally, thus obviating the need for supracostal access.
Materials and Methods: In a prospective, single-blinded study, 10 patients with 20 renal units underwent 3T MRI in the prone position, with bolsters situated vertically and horizontally. The horizontal bolsters were positioned below the nipple and at the pubis. The position of the upper pole of each kidney in relation to the diaphragm, L1 vertebra, and inferior-most rib was determined for each bolster position by a blinded radiologist. The anterior-posterior position of the colon was determined by measuring the distance of the ipsilateral colonic flexure to the posterior vertebral body plane, at the level of the renal hilum. Negative values implied the kidney was above the structure of reference. The Wilcoxon signed rank test was used to compare differences between the two groups.
Results: The right kidney to diaphragm distance significantly increased from a median of 2.68 cm with vertical bolsters to 6.12 cm with horizontal bolsters ($p = 0.02$); the left kidney to diaphragm distance significantly increased from 3.54 cm to 5.40 cm ($p = 0.01$). The right kidney to rib distance significantly increased from 0.1 cm to 2.5 cm ($p = 0.025$); the left kidney to rib distance showed an increase from 1.4 cm to 1.9 cm ($p = 0.123$). The right kidney to L1 distance significantly increased from a median of -1.51 cm to 0.65 cm ($p = 0.007$); the left kidney to L1 distance increased from -0.7 cm to 0.2 cm ($p = 0.059$). Lastly, there was no significant change in the AP position of the colon (right kidney 4.5 cm to 4.3 cm, $p = 0.753$; left kidney 2.7 cm to 3.1 cm, $p = 0.139$)
Conclusion: Horizontal bolster placement for PCNL in the prone position displaces the kidney caudally, which may improve the safety of percutaneous renal access.

MP42-20 Learning Curve for Ultrasound-guided Renal Access Percutaneous Nephrolithotomy

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Objectives: Ultrasound guidance is a unique alternative to fluoroscopy for percutaneous renal access underutilized in the United States. It is devoid of radiation exposure to the patient and intraoperative personnel. As this is a novel technique to the American urologist, the goal of this study was to define the learning curve associated with adopting ultrasound guidance to perform percutaneous renal access for PCNL.
Methods: This was a prospective cohort study of 61 consecutive patients undergoing percutaneous nephrolithotomy by a single surgeon between May 2014 to April 2015. At the start of the study period, the operative surgeon adopted the use of ultrasound guidance for renal access during PCNL. At the close of the study, clinical data were reviewed, including success in gaining renal access with ultrasound guidance, total fluoroscopic screening time, radiation exposure dose, and operative time encountered during surgery. Twenty historical control PCNL cases matched for stone size and performed with fluoroscopic guidance for renal access were also compared.
Results: The 61 ultrasound-guided procedures were divided into 3 groups - early ($n = 20$), middle ($n = 20$) and late ($n = 21$) experience cohorts. Significant improvement in success rate of renal access with ultrasound was seen after 20 cases (20.0%, 80.0% and 71.4% success respectively, $p < 0.01$). Total fluoroscopic screening time ($108.5 + 67.0$ sec, $77.2 + 47.8$ sec, and $54.3 + 70.0$ sec respectively, $p = 0.07$), total radiation exposure dose (26.6 ± 28.9 mGy, 19.8 ± 16.9 mGy, and 9.7 ± 11.2 mGy respectively, $p = 0.09$) and total operative time (188.4 ± 74.6 min, 164.1 ± 48.5 min, and 150.6 ± 38.0 min respectively, $p = 0.11$) also improved over the surgeon's experience between each stage of learning though these differences did not reach statistical significance. When compared to matched cases of fluoroscopy-guided PCNL, significant decreases in total fluoroscopic screening time (151.2 ± 89.1 sec vs 75.6 ± 65.1 sec, $p < 0.01$) and total radiation exposure (47.3 ± 46.1 mGy vs 17.3 ± 19.7 mGy, $p < 0.01$) were seen immediately after changing to ultrasound-guided renal access. No differences in Clavien grade complication rates were seen for ultrasound guided access cases when compared to fluoroscopy guided cases ($p = 0.192$).
Conclusion: Within 20 cases, ultrasound-guided renal access for percutaneous nephrolithotomy can be performed successfully. Transitioning to the use of ultrasound will quickly reduce radiation exposure for patients and intraoperative personnel. Ultrasound guidance is a safe and effective alternative to fluoroscopic guidance of renal access in PCNL.

MP42-21 Guy's Stone Score (GSS) Based on Intravenous Urography Findings Predicting Percutaneous Nephrolithotomy (PCNL) Outcomes

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Objective: To predict the success rate and complications following percutaneous nephrolithotomy based on preoperative intravenous urography (IVU).
Patients and Methods: Two hundred eighty-nine renal units in 283 patients who underwent PCNL were classified according to GSS by using preoperative intravenous urography finding. The complication was classified according to Clavien classification. The success rate and complication was compares between each GSS.
Results: The number of GSS1, GSS2, GSS3 and GSS4 was 21.8%, 14.2%, 30.5% and 33.5%, respectively. The immediate success rate is 80.95% of GSS1, 68.29% of GSS2, 60.23% of GSS3, and 40.21% of GSS4. There was significant different between the groups in stone size, overall immediate success rate, operative time, number of tract access, number of tubeless PCNL. Minor (Clavein score 1–2) and major complication (Clavein score 3–5) was significant more in higher GSS.

Conclusion: GSS based on IVU is a simple and reliable tool in predicting the success rate and complication following PCNL. GSS information is very important in clinical judgment and patient counseling.

MP42-22 Flank Percussion in the Semi-prone Position Can Relocate Stones Prior to Percutaneous Nephrolithotomy or Laparoscopic Pyeloplasty

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Canada

Introduction: Stones in remote calyces may be difficult to access. During percutaneous nephrolithotomy (PCNL) or robot assisted laparoscopic pyeloplasty, renal stones within the calyces require flexible nephroscopy and the use of a nitinol stone basket for removal. During laparoscopic pyeloplasty this tends to be complex and time consuming on occasions. In dilated systems, stone may be mobile, as suggested by a rounded shape, making their relocation a possibility. Relocation of calyceal stones to the renal pelvis facilitates and simplifies their extraction. The objective of this study is to describe a technique for manually relocating stones to the renal pelvis prior to PCNL and robotic pyeloplasty.

Methods: Patients undergoing either PCNL or robot-assisted pyeloplasty who were known to have remote calyceal calculi were identified pre-operatively. With the patient under general anesthetic, prior to placing them in the prone position for PCNL, or lateral for robot-assisted laparoscopic pyeloplasty, the patient was placed on their side with the affected kidney superiorly and rotated 45° anteriorly to position the renal pelvis in a dependent position. This rotation also reduces the effect of the more posterior and medial lie of the upper pole calyces. Manual percussion is then performed over the kidney to dislodge the calyceal stones into the renal pelvis. C-arm fluoroscopy and nephroscopy was then used to confirm movement of all stones out of the calyces into the renal pelvis during PCNL, and flexible nephroscopy alone during robot-assisted pyeloplasty.
Results: We have now used this technique in 2 patients at the time of robot-assisted laparoscopic pyeloplasty and 3 patients at the time of PCNL. All patients had dilated collecting systems with smooth, round or pebble-shaped stones. All of the stones moved into the renal pelvis with this technique (images will be provided with the presentation).
Conclusions: Flank percussion in the semi-prone position seems effective in relocating the stones to the renal pelvis, which can simplify the procedure, avoid the need for flexible nephroscopy and save time. However further studies with a larger number of patients are required to confirm this conclusion.

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MP43 - SURGICAL OUTCOMES 7: LOWER TRACT

MP43-1 Diagnostic accuracy of immediate second resection of tumor bed after complete transurethral resection of bladder tumor

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Introduction: This study aimed to evaluate that immediate second resection of tumor bed after complete transurethral resection (TUR) could safely omit the restaging TUR in high risk bladder tumor.
Material and Methods: We prospectively collected the data from 398 patients who had underwent immediate second resection of tumor bed after complete TUR of bladder tumor as previously reported. (Kim et al. J Endourol 2008) The distribution of final pathologic stage was 223 Ta, 125 T1, and 50 T2. Among them, a restaging TUR was performed in 86 in high risk patients. The diagnostic accuracy and quality of primary TUR were assessed by pathologic finding of restaging TUR.
Results: The sensitivity and specificity of immediate second resection for T2 disease were 76.0% and 99.4%, respectively, and the positive and negative predictive values of immediate second resection for T2 disease were 95.0% and 96.6%, respectively. Of the patients who received restaging TUR, 58 (67.4%) patients did not have residual tumor, 12 (14.0%) with CIS, 5 (5.8%) with Ta, and 11 (12.8%) with T1.
Conclusion: Immediate second resection of tumor bed after complete TUR of bladder tumor diagnosed the muscle invasiveness with high accuracy but was still insufficient to omit the restaging TUR in high risk bladder tumor.

MP43-2 NBI Cistoscopy and bladder carcinoma in situ in our experience

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Introduction: The aim of this study was to evaluate the capacity of NBI to increase the detection rate and visibility of Carcinoma in situ (CIS)
Materials and Methods: From June 2010 to April 2012, 797 patients, underwent to WL plus NBI cystoscopy and subsequently to Bipolar TURBt. In 797 patients, we identified a total of 1571 suspected lesions, of which 496 (50.6%) were single lesions and 1075 (49.3%), instead, multiple lesions. The use of cystoscopy with WL has allowed the identification of 1337 lesions. With the subsequent use of NBI light, we discovered 234 lesions not otherwise visible with WL.

During cistoscopy, were recorded the topography and characterization of lesions by WL and NBI. All the removed tissue was sent separately for histological evaluation.
Results: In our experience, the use of NBI significantly increases the ability of WL cystoscopy in identifying lesions ($p < 0.05$) Using NBI during cystoscopy we found out 234 suspicious lesions not visisble to WL, 127 (12,1%) of those after TURBt resulted in bladder neoplasms. About this lesions NBI + WL- 15 was CIS, 12 was a primate lesions and 3 was recurrence.

The use of NBI cystoscopy is useful in the identification of CIS lesions. Comparing sensitivity, specificity, positive predictive value, negative predictive value, of NBI vs WLI Cystoscopy

regarding the CIS lesions, we noted that sensitivity and NPV were the only statistically significant values (100%, 95% CI, p < 005, and 80,62%, 95% CI, 100%,95% CI, p < 005, and 78,35%, respectively).
Conclusions: Despite the high rate of false positives (35,75%), the overall capacity of NBI cystoscopy to increase the predictive power to identify suspicious bladder lesions, significantly increases compared to the use of WL cystoscopy alone. In our experience, the use of NBI cystoscopy compared to WL Cystoscopy, was particularly useful in the identification of CIS lesions, showing a sensitivity and a NPV of 100% vs. 80.62% and 100% vs. 78.35%, ($p < 0.05$).

We can conclude that the combination of WL and NBI cystoscopy before TURBt is an economic and better diagnostic in the bladder tumours and in particolary in the Carcinoma in situ.

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MP43-3 Patient Frailty is a Predictor for Complications after Bladder Cancer surgery– Analysis from the NSQIP Database.

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Background: Bladder cancer is the fifth most common non-cutaneous malignancy in the United States, and typically afflicts the older patient with a heavy tobacco use history and consequent cardiopulmonary disease. Postoperative complications are not uncommon in these patients who require cystoscopic resection of superficial tumors or radical cystectomy and urinary diversion for muscle invasive disease, which is one of the most complex urological operations. Patient frailty has been demonstrated to be a predictor for postoperative complications in other surgical disciplines, thus we aimed to determine if patient frailty could independently predict for complications after bladder cancer surgery using the American College of Surgeons' National Surgical Quality Improvement Project (NSQIP) database.
Materials and Methods: We identified all patients in the NSQIP database who underwent cystoscopic, open or minimally invasive bladder cancer surgery from 2005–2013. The Modified Frailty Index (calculated using eleven preoperative variables and additively scored as 0, 1, 2, 3 or ≥4) was calculated for each patient, and the incidence of 30-day postoperative complications was determined for patients at each Frailty Index. Univariate analysis and multivariate logistic regression were used to determine the independent predictors of these complications.
Results: Between 2005 and 2013, 18,919 cystoscopic, open or minimally invasive renal cancer operations were included in the NSQIP database. 76% were men, and their mean age was 70.5 years. Using the referent Frailty Index = 0, univariate analysis demonstrated that patients with Frailty Index 3, ≥4 had statistically significant odds ratios of complications of 1.5, and 1.7, respectively. On multivariable logistic regression, increasing operative time, body mass index, decreased serum albumin and frailty score were statistically significant predictors for complications.
Conclusions: The Modified Frailty Index is simple to calculate and it is an independent predictor of both the severity and number of postoperative complications in patients undergoing bladder cancer surgery.

MP43-4 Evaluation of the effects of the recent NICE guidelines on detecting recurrence among patients with low-risk urothelial cancers

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Introduction: The National Institute for Health and Care Excellence (NICE) has recently published new guidelines for the diagnosis and management of bladder cancer in February 2015. Interestingly, the recommended follow-up period for the low-grade urothelial cancers, prior to discharge to primary-care, is now shorter than the surveillance period outlined by the European Association of Urology (EAU).
Materials and Methods: In order to assess the veracity of the new NICE guidelines, we audited the follow-up outcomes of a total of 194 patients (144 after exclusions) with low-risk urothelial cancers - defined as solitary pTaG1 and pTaG2 tumours as well as other papillary urothelial neoplasms of low malignant potential. We cross-referenced data from electronic patient records with biopsy results from a separate pathological database to document the date of the primary diagnosis, the date of first recurrence and the follow-up periods for each of the patients.
Results: According to our analysis, three groups of patients were identified. The first group accounted for 67% of all patients analysed and did not experience a recurrence in an average follow-up period of 2.2 years; according to the new NICE guidelines these patients would be eligible for earlier discharge. The second group comprising of 17% of all patients, had at least one recurrence within the first year, and thus would merit a more intensive follow-up regime based on NICE guidance. The third group consisting of 6% of all patients, developed a recurrence after the first-year cut-off period suggested by NICE; this group of patients would likely be missed or would not adequately be followed up if the current NICE guidance was followed. The remaining 10% of patients who underwent laser therapy, had no biopsy data available and hence could not be included in the above-mentioned groups.
Conclusions: Based on the results of this audit, 6% of patients may have recurrences missed by using the NICE guidelines. The clinical importance of this needs to be assessed. As more groups audit their clinical data, we will be better able to predict the potential benefits or detriment of this shorter follow-up period of one year.

MP43-5 NBI guided TURBT in NMIBC management

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Introduction: The standard bladder cancer management was often marked by unsatisfactory outcomes. This prospective, single-center study compared the diagnostic accuracy specific for narrow band imaging (NBI) and respectively white light cystoscopy (WLC) among non-muscle invasive bladder cancer (NMIBC) patients.
Methods: 81 consecutive NMIBC suspected cases were included based on the presence of hematuria and/or ultrasound suspicious aspect. All patients were evaluated by both WLC and NBI cystoscopy. WL-visible lesions were removed by classical

transurethral resection of bladder tumors (TURBT), while NBI resection was exclusively applied in tumors solely detected in this particular vision mode.
Results: Subsequent to NBI cystoscopy, substantially improved CIS (100% versus 66.7%) and overall NMIBC (97.1% versus 89.7%) patients' detection rates were determined. A significant proportion of additional lesions was identified in NBI regardless of the bladder cancer stage (26.5% versus 7.4% for overall NMIBC lesions; 50% versus 0% for CIS; 22.2% versus 8.9% for pTa; 29.4% versus 5.9% for pT1). Improved tumors' detection rates were established for NBI when compared to white light concerning all NMIBC categories of patients (CIS – 94.1% versus 58.8%; pTa – 94% versus 83.2%; pT1 – 96.8% versus 90.3%; overall NMIBC – 93.9% versus 81.9%). The more numerous false-positive **Results** affected the NBI-TURBT related specificity within a parallel to the standard investigation protocol (15.8% versus 10.7%).
Conclusion: NBI cystoscopy and TURBT were outlined as providing an efficient modality of significantly improving NMIBC detection, thus optimizing tumor ablation. The solely NBI diagnosed NMIBC cases and tumors largely supported this conclusion.

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MP43-6 Incidence of Bladder cancer after radiation for prostate cancer as a function of time and radiation modality

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Introduction: The influence of the radiation modality and the time point at which prostate cancer (PCa) patients are at increased risk of developing bladder cancer (BlCa) have not been well elucidated. We sought to evaluate the risk of BlCa developing after various radiation modalities for PCa, stratified by ethnicity and follow-up duration.
Methods: The 1973–2011 Surveillance, Epidemiology and End Results database was used to determine the observed and expected number of BlCa after radiation for PCa. The adjusted relative risks (RR) of developing BlCa were calculated for the various radiation modalities relative to no radiation, stratified by ethnicity and follow-up duration. BlCa characteristics were compared between patients with a history of prostate radiation and those without histories of PCa.
Results: There were 346,429 men who underwent radiation for PCa, 6401 of who developed BlCa versus 2464 expected cases [SIR (95% CI) of 2.60 (2.53–2.66)]. All radiation modalities were found to have an increased RR of developing BlCa after 10 years, with brachytherapy having a significantly higher RR than external beam radiation (EBRT) or combined EBRT and brachytherapy in Caucasian men and a significantly higher RR than EBRT in men of other/unknown ethnicity. (Table 1) Post-radiation BlCa was of higher grade ($P = 0.0001$) and lower stage ($P = 0.0001$) then those of the general population.
Conclusions: The increased risk of BlCa after prostate radiation is predominantly after 10 years, regardless of ethnicity. The RR of developing BlCa after 10 years is significantly higher with brachytherapy than EBRT or EBRT and brachytherapy. Bladder cancers after prostate radiation are generally lower stage but higher grade than those in patients without PCa.

Table 1: Adjusted RR for development of Blca broken down by radiotherapy modality ethnicity and time period

Ethnicity	Follow-up duration	Adjusted Relative Risk (95% CI)		
		External Beam Radiation	Brachy-Therapy	Combined External Beam and Brachy
Caucasian	<1 year	0.77 (0.59-0.99)	0.98 (0.66-1.43)	1.04 (0.65-1.62)
	1-5 years	0.61 (0.46-0.81)	2.35 (1.78-3.09)	1.32 (0.87-1.94)
	5-10 years	0.42 (0.30-0.58)	0.99 (0.66-1.44)	1.04 (0.67-1.58)
	>10 years	1.69 (1.59-1.79)	**3.51(3.19-3.87)**	2.30 (2.07-2.56)
African-American	<1 year	0.61 (0.21-1.57)	0.65 (0.05-3.29)	0.66 (0.05-3.33)
	1-5 years	0.39 (0.11-1.13)	0.82 (0.12-3.39)	1.85 (0.54-5.37)
	5-10 years	0.61(0.21-1.63)	2.03 (0.53-6.39)	1.98 (0.57-5.88)
	>10 years	1.53 (1.24-1.88)	**2.89 (1.86-4.38)**	2.31 (1.60-3.28)
Other/ unknown	<1 year	1.73 (0.44-6.41)	1.32 (0.01- 13.81)	1.86 (0.01-19.49)
	1-5 years	0.74 (0.15 2.98)	0.84 (0.01- 8.07)	2.39(0.17-14.8)
	5-10 years	0.56 (0.09-2.51)	1.86 (0.13- 11.87)	1.13 (0.01-10.99)
	>10 years	1.46 (1.06-2.00)	**5.52 (3.05-9.57)**	2.20 (1.09-4.12)

MP43-7 The impact of surgical duration of Transurethral Resection of Bladder Tumors on postoperative complications: an analysis of ACS-NSQIP data

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Introduction: Transurethral resection of bladder tumor (TURBT) is a common procedure used in the diagnosis and treatment of bladder cancer. Despite how often it is performed, not much is known about the risk factors for complications. Traditional surgery has an increase in morbidity and mortality with increasing operative duration. We assess the effect of operative duration on TURBT complications.
Methods: The years 2006 to 2012 of the American College of Surgeons National Surgical Quality Improvement Program (ACS-NSQIP) were queried for patients undergoing TURBT. We separated patients into four groups based on operative time: < 30 minutes, 30.1 to 60 minutes, 60.1 to 90 minutes, and greater than 90 minutes. Standard statistical analysis including multivariate regression was performed to determine predictors of complications.
Results: 10,599 TURBTs were included in our analysis. The overall complication rate for TURBT was 5.8% and there was an increase in the rate of complications seen as operative duration increased which remained after controlling for age, comorbidities, tumor size, and ASA classification. Increased operative duration was associated with a greater risk of postoperative urinary tract infection (UTI), sepsis or septic shock, pulmonary embolism/deep venous thrombosis, re-intubation or failure to wean, myocardial infarction, and death. Larger tumors were related to an increased odds of requiring blood transfusions.
Conclusions: Using a contemporary multicenter cohort of TURBTs from the ACS-NSQIP database, we demonstrate that increased operative duration is associated with serious post-operative complications. This association was found to persist even after adjusting for patient age, comorbidities, and functional status.

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MP43-8 Is Extended Venous Thromboembolism Prophylaxis with Enoxaparin Cost-Effective in Radical Cystectomy?

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Introduction: Radical cystectomy is the standard curative operation for muscle-invasive bladder cancer, but perioperative complications occur frequently. Venous thromboembolism (VTE), including both pulmonary embolism (PE) and deep vein thrombosis (DVT), is among the most important and lethal postoperative complication, with some series reporting rates exceeding 12% with inpatient-only prophylaxis. While extended VTE prophylaxis using 3–4 weeks of enoxaparin following discharge has been proven effective in preventing VTE in the surgical oncology and orthopedic literature, there is an increased risk of postoperative bleeding. Although extended VTE prophylaxis has been shown to be effective in cystectomy case series, its cost-effectiveness is unknown. In this investigation, we aimed to determine the cost-effectiveness of extended VTE prophylaxis.
Materials and Methods: We built a decision analytic model in TreeAge Pro Healthcare SuiteÒ (Williamstown, MA) to model all complications and costs related to VTE and enoxaparin use. Two protocols were modeled: inpatient-only prophylaxis, and extended prophylaxis with 21 days of enoxaparin following discharge. Three hypothetical population groups were modeled: those with normal weight and renal function (GFR), decreased GFR, and obese (body mass index, BMI > 30 kg/m^2). Costs, clinical probabilities, and quality-of-life values were derived from peer-reviewed literature. Primary outcomes were cost and quality-adjusted life years (QALYs).
Results: In the base-case patient with normal GFR, extended VTE prophylaxis generated slightly more QALYs (3.61 vs. 3.59) at a significantly increased cost ($2902 vs. $1448) compared to inpatient only prophylaxis, for an incremental cost-effectiveness ratio of $56,820/QALY. Thus, at a societal willingness to pay of $50,000/QALY, extended prophylaxis was not cost-effective. However, overall lifetime VTE mortality was lower in the enoxaparin arm (0.42% vs 0.95%), despite greater mortality from acute bleeding (0.16% vs 0.05%) with its use.

Extended prophylaxis was even less cost-effective in the decreased GFR cohort (ICER of $73,463/QALY), attributable to the increased bleeding risk.

In the obese (BMI > 30 kg/m^2), extended VTE prophylaxis is cost effective, as it generated greater QALYs (3.6 vs. 3.55) at an incremental cost of $985, for an ICER of $21,578/QALY. In the obese, lifetime VTE mortality after extended prophylaxis was 0.7%, compared to 1.6% in the inpatient-only prophylaxis group.
Conclusions: While extended VTE prophylaxis with enoxaparin does reduce VTE incidence and its associated mortality following radical cystectomy, it is not cost-effective in all patients. Selective extended VTE prophylaxis is most cost effective in patients with BMI > 30 kg/m^2, who have the highest risk of VTE following cystectomy.

MP43-9 Predictive power of NBI versus standard cystoscopy before TURB

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Introduction: The aim of this study was to evaluate, in the same patient before TURBT, the probability to increase our ability to detect bladder cancer comparing the predictive power NBI visible lesions cystoscopy versus white light visible lesions cystoscopy.
Materials and Methods: From June 2010 to April 2012, 797 consecutive patients, 423 male and 374 female, affected by suspected bladder cancer lesions, underwent to WL plus NBI cystoscopy and subsequently to WL Bipolar Gyrus PK TURBT. The average of the follow-up was at 24 (16–38) months.

All patients underwent preoperative white light cystoscopy: topography and characterization of neoplasms and/or suspicious lesions followed by a similar evaluation using NBI. Subsequently all the patients underwent WL resection (WLTURBT) of the previously identified lesions. All the removed tissue was sent separately for histological evaluation.
Results: A total of 797 patients were enrolled in this study. In our experience, we observed an overall suspicious bladder lesions detection rate equal to 1571 bladder lesions. Overall, we identified 234 patients (14,8%) with visible lesions only at NBI light. After the WLTURBT, we observed 1051 (66,85%) neoplastic lesions of the bladder; among them 521 (33,14%) were negative. We observed 127 (12,1%) bladder neoplasms in 99 patients (19,8%, $p < 0,05$), with negative WLI and positive NBI cystoscopy. The use of WL and NBI cystoscopy allowed us to have a sensibility of 80,66% and of 97,85% with a PPV of 68,49% and of 63,74%, respectively. Regarding the accuracy, we observed a 63,74% and a 62,86% respectively. Staging (CIS, $p < 0,05$), grading (LG, $p < 0,05$), focality (unifocal, $p < 0,05$) and dimensions (< 3 cm, $< 0,05$) were statistically significant too.
Conclusion: After NBI cystoscopy, we observed an overall increased suspicious bladder lesions detection rate by 24,34% (194 pts.) and a bladder tumours NBI positive detection rate by 12,1% (99 pts.). Overall false positive detection rate was 35,75% (285 pts.). The combination of white light and NBI cystoscopy and subsequently bipolar TURBt seems to allow a better diagnostic and therapeutic approach to bladder tumours, especially in CIS lesions, LG lesions, primitive, unifocals and < 3 cm lesions. The high rate of false positives could depend on artefacts produced during white light endoscopy.

MP43-10 Ultrasound Guided Obturator Nerve Block for TURBT. Technique and Preliminary Results

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Introduction: Bladder perforation is one of the most serious complications of transurethral resection of bladder tumour (TURBT). One of the risk factors for this is an ''obturator jerk'', caused by surgical stimulation of the obturator nerve, causing a powerful adduction of the leg. As almost half of all bladder tumours are located on the lateral wall and 55–100% of resections on the lateral wall can result in obturator jerk, this is not an insignificant risk.
Patients: We have introduced regional anaesthetic nerve block of the obturator nerve in patients with known lateral wall tumours undergoing TURBT. Patients have spinal or general anaesthetic without muscle relaxant.
Methods: Levobupivicaine is used to infiltrate the anterior branch of the obturator nerve in the upper medial thigh to achieve motor block. In the supine position the leg is positioned slightly abducted and laterally rotated. Ultrasound (US) is used to identify the adductor longus, adductor brevis and adductor magnus

muscles in the medial thigh, 2–3 cm inferior to the inguinal crease. The plane between adductor longus and adductor brevis, medial to pectineus is identified, which is where the anterior branch of the obturator nerve is situated. An insulated block needle is passed under US guidance and a nerve stimulator using 0.5 mA current is used to elicit a twitch. On average, 10 ml of Levobupivicaine (0.25–0.5%) is infiltrated and separation of the plane is demonstrated on US. TURBT is then performed in the standard fashion using monopolar diathermy.

Results: The series includes 18 TURBT procedures. These were under spinal anaesthetic (n = 16) or general anaesthetic without muscle relaxant (n = 2). All the tumours were on the lateral or posterior-lateral wall of the bladder. Tumours were large flat areas of re-resection (n = 5), flat bladder lesions (n = 1) or exophytic lesions (n = 12). There were no incidences of obturator jerk observed during TURBT (0/18). 13/18 specimens included muscle, there was no muscle in one as the tumour was in a diverticulum and the remaining were reported as benign disease and muscle was not commented upon in the pathology report. There were no complications.

Conclusion: We report a simple technique which can be performed by the surgeon or anaesthetist and only takes a few minutes in skilled hands. Larger studies are required but our series supports the use of this technique to reduce obturator jerk, which is one of the most important risk factors for bladder perforation.

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MP43-11 Our experience with NBI. Can it improves our ability to identify bladder tumors progression in the follow-up?

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Introduction: Aim of this study was to evaluate if use of light NBI (repeat NBI-assisted TURBT), during the follow-up, can lead advantage to identify undetected residual tumors following WL-TURBT.

Materials and Methods: From June 2010 to April 2012, 797 patients affected by primitive, recurrent or suspicious bladder lesions, underwent WL plus NBI-cystoscopy and following WL-TURBT with bipolar Gyrus-PK. 512 patients presented a oncological bladder lesions, were submitted to a 12 month's follow up. Using the EORTC scoring system, the total score for recurrence for each patient was calculated separately. According to the total score, patients were divided into 4 recurrence risk groups. Every three months, we performed a WL-TURBT and a repeat NBI-assisted TURBT on any suspected lesion (or scar), on our relative margins and bottom and collected all data. We calculated the time to first progression to decide if performed WL-cistoscopy or repeat NBI-assisted TURBT after the diagnosis of bladder cancer.

Results: Following WL-TURBT, we observed that 3 (0,67%) patients had progression to muscle invasion bladder lesions, than after repeat NBI-assisted TURBT, 11 patients (2,48%) developed progression to pT2 bladder tumor in 12 months of follow-up. Of those, all lesions were localized in the bottom. Regarding to stratification in EORTC risk progression group we observed that 41,6% and 58,3% were II, and IV groups respectively. Stratifying these data for staging (pT) and grading, we observed a progression to pT2 in 16,6% pTaLG, and pTaHG, in 58,3% pT1HG and in 8,3 pCISHG, respectively. If we evaluate the progression, as an increasing recurrence in staging and grading of the primary lesion but always non-muscle invasive, in the analyzed group within one year occurred in 265 patients (59,6%). The risk of bladder tumor progression was statistically more frequent in intermediate-risk group. The recurrence rate was 0%, 18,8%,45.6%, and 35,4% in I, II, III and IV progression risk group, respectively. In a multivariate analysis focality ($p < 0,05$) was a significant predictor to progression than status ($p = 0,35$) and dimensions ($p = 0,43$). The overall time to progression following repeat NBI-assisted TURBT in patients with to progression to pT2 than only upgrading staging and grading was 3,7 months; thus on bottom and margins were 3,29 and 6,41, respectively.

Conclusions: Repeat NBI-assisted TURBT allows a statistically significant advantage in identifying progression undetected residual tumors following WL-TURBT. Focalities was a significant predictor to progression.

MP43-12 The Endoscopic Management of Upper Tract TCC – Initial Results from the BAUS Upper Tract TCC Audit

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Introduction: Advances in technology and the challenge of managing increasingly comorbid and elderly patients with upper tract TCC have seen the widespread adoption of endoscopic management. This study reports initial findings from a UK national audit of practice and outcomes in the endoscopic management of upper urinary tract TCC (UTTCC).

Patients and Methods: The British Association of Urological Surgeons invited members to submit data online from March 2011 onward. Patients undergoing endoscopic surveillance or treatment of UTTCC at all UK centres were therefore eligible. Data on procedures and outcomes were extracted from the anonymised registry dataset in February 2015.

Results: By February 2015, 374 upper tract endoscopic procedures were recorded within the registry, for 106 patients (66 male, 50 female). The mean age at first procedure was 71.4(35–90).

Retrospectively entered data from June 2002 onward were also included, follow-up duration therefore ranging from 0–113 months (mean = 10 months). ASA performance status was 0 for 35 patients, 1 for31, 2 for30, 3 for 9 and 4 for one patient. 13 patients were deemed medically unfit for radical surgery. 30 procedures were undertaken for patients with eGFR < 30. 23 patients had solitary functioning kidneys. 17 others had moderate to severe CKD. The remainder had a combination of relative and elective indications for endoscopic management.

Ablation was carried out in 217 procedures (163 by holmium laser, 35 by holmium plus neodymium and 19 by diathermy alone). Synchronous bladder TCC was identified in 71 procedures and 5 had synchronous TURBT. Adjuvant therapy was administered following 24 initial procedures (17 single shot MMC, 7 courses MMC) and 32 follow-up procedures (22 single dose MMC, eight courses MMC and two courses BCG). Recurrence was detected at 127 procedures, for 64 patients. 19 had multiple serial recurrences and 25 had multifocal upper tract recurrences. 7 patients progressed to nephroureterectomy (3x G1pTa, 2x G2pTa, 1 G3pTa, 1 G3pT3; 1 segmental ureterectomy for tight structuring at level of TCC recurrence (G1pTa).

Conclusions: Endoscopic techniques for managing upper tract TCC have been widely adopted in the UK setting. There is significant variation in practice, reflecting a lack of evidence.

Outcomes from this series broadly reflect those previously reported in the literature. Longer-term follow-up data from this large-scale cohort may help inform optimal management

MP43-13 Patient-Reported Quality of Life and Convalescence after Minimally Invasive Kidney Cancer Surgery

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Introduction: Minimally invasive approaches to radical nephrectomy (RN) and partial nephrectomy (PN) can decrease immediate post-operative pain and hospital stay. However, patients' health status in the period between hospital discharge and the subsequent post-operative visit(s) is less well-understood. In this study, we used patient-reported outcomes to better describe quality of life (QOL) and convalescence after minimally invasive kidney cancer surgery.
Patients and Methods: We analyzed subjects who underwent laparoscopic/robot-assisted PN or laparoscopic RN and enrolled in an IRB-approved prospective longitudinal QOL study, excluding those without baseline information and/or who underwent cytoreductive nephrectomy. Subjects completed Convalescence and Recovery Evaluation (CARE) – an abdominal/pelvic surgery questionnaire with an Overall CARE score, and Pain, Gastrointestinal, Cognition, and Activity subdomains – at pre-treatment baseline and at 2, 4, 8, and 12, 26, and 52 weeks post-treatment. We performed longitudinal analysis using a mixed repeated measures model to assess whether QOL scores significantly differed from baseline at each post-treatment timepoint.
Results: We analyzed 98 PN and 46 RN subjects. PN subjects had better baseline QOL, with significantly higher pre-treatment Overall CARE scores than RN subjects (90.1 versus 79.7). At 2 weeks, both groups had significant decreases in Overall CARE, Pain, Gastrointestinal, and Activity scores, with PN subjects experiencing worse relative decline in Overall CARE compared to RN (-20.8 and – 15.6). Overall CARE, Pain, Gastrointestinal, and Activity scores remained significantly below baseline until 4 weeks for RN subjects and 8 weeks for PN subjects. Beyond 4 weeks, RN subjects showed continued increases in Overall CARE, Gastrointestinal, and Cognition scores beyond baseline levels, reaching levels similar to PN subjects.
Conclusions: Convalescence after minimally invasive renal surgery may be more prolonged than conventionally assumed, with most PN subjects reporting persistent QOL deficits up to 8 weeks post-treatment. Differences in baseline QOL between RN and PN subjects likely explain RN subjects' quicker return to baseline and long-term QOL improvements beyond baseline levels.

MP43-14 Venous thromboembolism following open and minimally invasive nephrectomy: thirty day incidence and risk factors from national multi-institutional data

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Introduction: For patients undergoing nephrectomy, we seek to define factors associated with an increased risk for VTE in the thirty days following surgery.
Methods: We identified patients undergoing nephrectomy, partial nephrectomy, or nephroureterectomy captured by the NSQIP database from 2006 to 2012. Several variables were compared between DVT/PE and non-DVT/PE and multivariate analysis were used to analyzed all cases together as a group and then sub-stratified between open and laparoscopic/minimally invasive cases.
Results: There were a total of 13,208 cases analyzed. The overall 30-day rate of DVT and PE following all surgeries were 0.8% and 0.5%, respectively. DVT and PE were significantly more common in open surgery (1.2%, 0.7%) compared to LAP/MIS (0.5%, 0.3%). Significant factors associated with postoperative DVT were diabetes, dyspnea, prior CVA, poor functional status, higher ASA class, and longer operative time. No factors were significant for DVT on multivariate regression.

For PE, significant risk factors were dyspnea, COPD, metastatic cancer, age, and increased operative time. On multivariate analysis, increasing age (OR 1.1), presence of dyspnea (OR 2.7), and disseminated cancer (OR 2.5) had increased odds for PE. Each additional 15 minutes of operative time carried a higher risk of PE. Preoperative dyspnea had a higher OR for PE postoperatively in patients undergoing L/MIS cases than open, 3.4 vs. 2.4.
Conclusions: VTE post nephrectomy is uncommon but more frequent in open surgery. No risk factors on MV analysis were significant for DVT. Dyspnea, a potentially modifiable factor, contributes greatest to the risk of PE.

MP43-15 Pre-operative Group & Save in Transurethral and Upper Tract Surgery - An Expensive, Unnecessary Practice?

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Introduction: The issuing of type-specific blood products for transfusion requires two group and save (G&S) samples; one historical and one within seven days. The cost of processing a sample is high - £75, and the issue of a unit of blood £125. Within our trust, there is no protocol for the routine pre-operative group and save/cross matching prior to elective uological operations, however this is the current practice. Blood is both an expensive and a scarce resource. Appropriate utilisation of this resource is critical to patient safety, and therefore knowledge of appropriate indications for transfusion and cross matching prior to elective surgery is paramount to safe and cost-effective care. By investigating our current transfusion rate, we sought to establish if there was a clinical need, and if changing this practice would impact patient safety.
Methods: Patient information was collated using electronic theatre list records for a sixteen-month period. The procedure performed was confirmed by cross-referencing electronic discharge summaries and histology reports. Numbers and timing of group and save samples, cross matching and blood transfusions were obtained from blood bank electronic reporting. All emergency procedures were excluded.
Results: 335 elective procedures were identified; 144 transurethral resection of bladder tumours (TURBT), 99 transurethral resection of prostate (TURP), 29 photovaporisation of prostate (PVP) and 63 laparascopic upper tract procedures. 288 (86%) of these patients had two group and save samples taken (the second within 7 days of their procedure). No patients required intraoperative or post-operative blood transfusion. Six patients (1.8%) were cross-matched, with all units returned to blood bank.
Conclusion: In the current climate of NHS financial uncertainty, it is pertinent we all seek ways in which we can help our

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departments and trusts save money, whilst maintaining high standards in patient safety during the perioperative period. Surgical outcomes within our study have shown a negligible risk of clinically significant blood loss. Omitting the second group and save sample would represent a saving of nearly £21,000. A change of policy within our trust would result in a significant cost saving without impacting patient safety, and we propose this change could easily be adopted across all centres performing elective urological surgery with similar results. A re-audit of postoperative bleeding and transfusion rates, with any resulting delays in transfusion causing significant harm to the patient is required.

MP43-16 Second transurethral resection for T1, high-grade and T1 -high grade bladder cancer. Is it really necessary?

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Objectives: To evaluate the results of a second transurethral resection for (TURB) in T1, high-grade and T1 /high grade, non muscle-invasive bladder cancer (NMIBC).
Patients and Methods: A retrospective data revision was made of patient with new diagnosed bladder cancer who received TURB. Between December 2012 and May 2015 patients at Hospital Alemán, Buenos Aires-Argentina. The patients who received a second TURB were selected. Age, gender, interval time between surgeries, pathology and, European Association of Urology disease recurrence and progression scores were analized
Results: From 206 patients who underwent TURB, 26 patients received a second TURB and were selected for analysis. Five patients without detrusor muscle in the initial anatomy and two who had tumor infiltration of the detrusor muscle were excluded. The remaining 19 patients were divided into 3 groups. Group 1: Tumour invades subepithelial connective tissue (pt1) urothelial carcinoma 3 (31.5%); Group 2: high-grade tumor 6 (15.7%); Group 3: pT1 and high grade tumor at the initial anatomy 10 (52.8%). Median age was 69.63 (50–90 years). Gender: male 15 (78.9%) and female 4 (21.1%). Second TURB pathology showed: Group 1: 16% positive pathology (1 low grade non-invasive papillary carcinoma (pTa) with detrusor without tumor, 5 cases with chronic inflammation). Group 2 No patient had residual tumor (1 active chronic cystitis, 1 acute and severe chronic cystitis, 1 chronic inflammation fibrosis). Group 3 had 20% positive pathology. (8 patients with active chronic inflammation, 1 pTa high degree detrusor negative, 1 carcinoma in situ with detrusor negative and chronic inflammation. Median time to the sencond TURB was 7.9 months. No significant difference were observed related with age gender and neither with the EAU progression and recurrence scores.
Conclusions: In our serie, a second bladder TUR in NMIBC showed a low rate of residual tumor, and those with positive pathology were not associated with EAU progression o recurrence score.

MP43-17 Development of a nomogram predicting 30-day probability of severe complications in patients undergoing radical cystectomy

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Introduction: Despite the improvements in surgical technique and perioperative care, radical cystectomy (RC) is associated with significant incidence of perioperative complications also in contemporary series. We developed a model predicting 30-day severe complication (grade ≥3) risk according to Clavien Classification System (CCS) to be used in the preoperative patients counseling.
Materials and Methods: Data of 396 consecutive patients treated with RC and pelvic lymph node dissection at 17 institutions between April 2011 and March 2012 were prospectively collected. Logistic regression analysis was used to predict 30-day severe complication risk, including the followingvariables: age, body mass index (BMI), American Society of Anaesthesiologists (ASA) score, hemoglobin levels (Hb), yearly cystectomy caseload and urinary diversion performed.
Results: The overall incidence of 30-day severe complications was 15%. Regression coefficients used to develop the nomogram were: age (OR 1.59, 95% CI 0.94–2.7), body mass index (OR 1.04, 95% CI 0.74–1.47), ASA score (OR 1.31, 95% CI 0.85–2.01), preoperative hemoglobin levels (OR 0.69, 95% CI 0.45–1.05), yearly cystectomy caseload (OR 0.73, 95% CI 0.54–0.99), and urinary diversion performed (ureterocutaneostomy: reference category; ileal conduit: OR 2.52, 95% CI 1.15–5.53; ileal neobladder: OR 6.04, 95% CI 2.21–16.5). The nomogram had a discrimination accuracy (c-index) of 0.68 and was well calibrated. The internal validation of the model with 200 bootstrap resamples demonstrated a discrimination accuracy of 0.64. (figure 1).
Conclusions: At the best of our knowledge we first developed a nomogram predicting 30-day severe complication risk according to CCS that may be a clinical tool to counsel patients in the preoperative setting about the potential impact of UD choice on perioperative outcomes. Larger cohorts and external validation are needed to confirm the clinical utility of the nomogram.

MP44 - SURGICAL OUTCOMES 8

MP44-1 Does ureteral pre-stenting reduce incidence of severe ureteral wall injuries related to ureteral access sheath?

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Purpose: Using a classification, proposed by Traxer & Thomas in 2013, we reviewed our database to determine the incidence and severity of ureteral wall injury.
Materials and Methods: The data of 72 consecutive patients who underwent retrograde intrarenal surgery for kidney stone were retrospectively collected at our institution, in São Paulo - Brazil, from Charts and electronic media. The primary outcome

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	Grade 0 and I (N = 63)	Grade II and III (N = 9)	Total (N = 72)	p
Gender, n (%)				>0,999
Male	36 (57,1)	5 (55,6)	41 (56,9)	
Female	27 (42,9)	4 (44,4)	31 (43,1)	
Body mass index (Kg/m2)				0,321*
mean ± SD	28,4 ± 5,4	26,5 ± 4,7	28,1 ± 5,3	
DM, n (%)	6 (9,5)	3 (33,3)	9 (12,5)	0.078
Smoking, n (%)	7 (11,1)	0 (0)	7 (9,7)	0.585
Cardiovascular disease, n (%)	25 (39,7)	3 (33,3)	28 (38,9)	>0,999
Sheath Fr, n (%)				0,788#
11Fr	1 (1,6)	0 (0)	1 (1,4)	
12Fr	1 (1,6)	0 (0)	1 (1,4)	
13Fr	33 (52,4)	6 (66,7)	39 (54,2)	
14Fr	28 (44,4)	3 (33,3)	31 (43,1)	
Length, n (%)				0.468
35-36cm	38 (60,3)	7 (77,8)	45 (62,5)	
45-46cm	25 (39,7)	2 (22,2)	27 (37,5)	
UAS Brand, n (%)				>0,999#
Boston Scientific ®	35 (55,6)	5 (55,6)	40 (55,6)	
Cook ®	21 (33,3)	3 (33,3)	24 (33,3)	
Other Co.	7 (11,1)	1 (11,1)	8 (11,1)	
Time with sheath placed in ureter				0,506**
mean ± SD	42,2 ± 21,6	54 ± 38	43,7 ± 24,2	
DJ pre-stenting, n (%)	31 (49,2)	6 (66,7)	37 (51,4)	0.480

Fisher exact test, # likelihood ratio; * t-Student; ** Mann-Whitney

measure was the incidence and severity of ureteral wall injuries and its relation with pre-stenting.

Results: A total of 41 men and 31 women were included in this analysis. Ureteral wall injury was found in 36 patients (50%). Severe injury involving the smooth muscle layers was observed in 9 patients (14.51%). No grade IV (avulsion) lesion was observed. No factor related to the patient, to the sheath or to the duration of surgery was associated to severe ureteral injury. Not even pre-stenting was associated with decrease in severe ureeral wall injuries ($p = 0.48$).

Conclusions: The incidence and severity of ureteral wall injuries is similar to the original report by Traxer & Thomas, but the incidence of severe ureteral injury did not decrease by preoperative Double-J stenting.

MP44-2 Effect of Metabolic Syndrome on Pathologic Features and Outcomes of Renal Cell Cancer after Partial Nephrectomy

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Introduction: The prevalence of metabolic syndrome has been increasing worldwide. Scarce data exist evaluating the impact of metabolic syndrome on aggressiveness of renal cell cancer (RCC) and outcomes after partial nephrectomy (PN). In this study, we reviewed patients undergoing robotic (RPN) and laparoscopic partial nephrectomy (LPN) to evaluate if those with metabolic syndrome had more aggressive disease and worse post-operative renal function change as estimated by glomerular filtration rate (GFR).

Patients and Methods: We utilized patients who underwent RPN and LPN between July 2002 and July 2013 in whom follow up data was available ($n = 256$). Patients who had clear cell type renal cell cancer were selected for this analysis ($n = 181$). The database was queried for components of metabolic syndrome as defined by the International Diabetes Federation i.e. BMI ≥ 30 and ≥ 2 of the following: hypertension, diabetes or elevated blood glucose, and dyslipidemia ($n = 62$). Patients with no components of metabolic syndrome were used as controls ($n = 119$). Demographic, clinicopathologic and outcome variables such as age, body mass index (BMI), operative room (OR) time, warm ischemia time (WIT), Fuhrman grade, tumor size and median post-operative GFR as measured by modification of diet in renal disease (MDRD) formula at 3 months, GFR change at 3 months were compared between the 2 groups. Fuhrman grade 1 and 2 were combined as low-grade cancer and grade 3 and 4 as high-grade cancer. We also used multivariate logistic regression analysis to identify independent predictors of high-grade cancer.

Results: Out of 43 patients who had high-grade cancer, 33 (76.7%) had metabolic syndrome and 10 (23.3%) did not have metabolic syndrome ($p < 0.001$). Median tumor Size was 3.1 vs. 2.5 cms ($p = 0.027$); median GFR change % at 3 months was −9.6% vs. 11.5% ($p = 0.911$), for patients with metabolic syndrome vs. patients without metabolic syndrome, respectively. On multivariate logistic regression analysis, metabolic syndrome (OR 14.4, CI- 5.7–36.2, $p < 0.001$) and African American race (OR = 3.7, CI-1.4–9.5 $p = 0.007$), were identified as significant independent predictors of high Fuhrman grade.

Conclusion: Patients with metabolic syndrome were found to have higher Fuhrman grade and tumor size on final pathology. After controlling for other co-variables, metabolic syndrome was significant independent predictor of higher Fuhrman grade. There was no association between worsening renal function post-operatively and metabolic syndrome.

MP44-3 Lower urinary tract symptoms in patients after treatment for localized prostate cancer. A comparative study: Robot assisted laparoscopic radical prostatectomy vs brachytherapy.

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Purpose: To examine the change in lower urinary tract symptoms (LUTS) after robot assisted laparoscopic radical prostatectomy (RARP) or brachytherapy (BT), international prostatic symptom score (IPSS) and uroflowmetry were prospectively compared.

Patients and Methods: In all 31 patients who underwent RARP and 44 who received BT without androgen deprivation therapy or external beam radiation therapy were included in this study. IPSS was completed at baseline, and at 1, 3, 6 and 12 months after treatment. There were no statistical differences in age, prostate volume or IPSS at baseline between the 2 groups. In contrast, PSA level and Gleason scores were statistically higher in the RARP group. Forty-one patients (93.2%) in the BT group received α1-adrenoceptor administration immediately after the treatment.

Results: IPSS worsened at 1month in both groups ($p < 0.001$), but this score was lower in the RARP group. The IPSS in the RARP group recovered to baseline at 3 months and improved to better than baseline after 6 months. IPSS obstructive or irritative score for the RARP group had resolved by 3 and 6 months, respectively. In contrast, IPSS in the BT group did not recover to baseline up to 12 months. All patients in the RARP group recovered their IPSS total score at 12 month, while 29 patients (67.4%) in the BT group did not recover. The risk factors for deteriorate in the obstructive score in the BT group were prostate volume, IPSS total score and IPSS QOL index at the baseline. The maximum and average flow rate gradually improved in the

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RARP group until 12 months. On the other hand, the maximum and average flow rate worsened at 1 month and it took 12 months to recover in the BT group. Residual volume showed the same tendency as flow rate. The continence rate (pad free) in the RARP group at 6 and 12 months were 60.7 and 90.9%, respectively.
Conclusion: This prospective study revealed differences in LUTS after RARP and BT. RARP improved preexisting urinary obstructive-irritative symptoms. BT caused urinary obstructive-irritative adverse effects. These results will be helpful in making treatment decisions.

MP44-4 Predictors of surgical complications after nephrectomy for urolithiasis

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Introduction: Nephrectomy may be necessary to manage urolithiasis in cases of severe urinary infection and symptomatic renal unit with relative poor function. Our aim was to identify predictors for surgical complications after nephrectomy for urolithiasis.
Patients and Methods: The records of 150 consecutive patients submitted to nephrectomy for urolithiasis from January 2006 to July 2012 in a tertiary center were reviewed.

Clinical, laboratory and preoperative computed tomography features (kidney size, presence of abscess, adherence and fistula) were analyzed. Renal function was assessed by the equation of the Modification Diet for Renal Disease for estimated glomerular filtration rate, staging according to the *National Kidney Foundation* and DMSA renal scintigraphy scan. Comorbidity was evaluated by Charlson comorbidity index and *American Society of Anesthesiologists* (ASA) score. Logistic multivariate regression models assessed the predictors for surgical complications after nephrectomy for urolithiasis. Primary endpoint was Clavien-Dindo score > 1. Secondary endpoints were postoperative dialysis and conversion into open surgery.
Results: Eight-four patients were submitted to laparoscopic nephrectomy and 66 patients to open procedure. Median hospitalization period was 3.5 ± 8.4 days. Clavien-Dindo score > 1 was reported in 19.3% patients. Definitive dialysis was indicated in 3.4% (5/145) of patients after surgery. Conversion into open surgery was necessary in 19.0% (16/84) of laparoscopic procedures.

Higher preoperative chronic kidney stage ($p = 0.029$), Charlson comorbidity index ≥ 2 ($p = 0.049$), higher ASA score ($p = 0.001$), kidney size ≥ 12 cm ($p = 0.007$), preoperative abscess ($p = 0.002$) and visceral adhesion ($p = 0.043$) were associated with Clavien-Dindo score > 1 on univariate analysis. On multivariate analysis, higher ASA score ($p = 0.010$), kidney size ≥ 12 cm ($p = 0.040$) and preoperative abscess ($p = 0.044$) remained significantly associated with Clavien-Dindo score > 1.

Higher preoperative chronic kidney stage ($p = 0.002$), higher Charlson comorbidity index ($p = 0.005$), higher ASA score ($p = 0.005$) and higher body mass index (BMI) ($p = 0.037$) were associated with postoperative dialysis on both univariate and multivariate analysis.

Renal abscess ($p = 0.033$), perirenal abscess ($p = 0.023$), pararenal abscess ($p = 0.006$), renocutaneous fistula ($p = 0.006$), liver or spleen adhesion ($p = 0.015$) and bowel adhesion ($p < 0.001$) were associated with conversion to open surgery on univariate analysis. On multivariate analysis, only pararenal abscess ($p = 0.0052$) and bowel adhesion ($p < 0.0001$) remained significantly associated with it.

Conclusions: Higher ASA score, kidney size ≥ 12 cm and preoperative abscess were associated with Clavien-Dindo score > 1. Predictors for postoperative dialysis were higher chronic kidney stage, higher Charlson comorbidity index, higher ASA score and higher BMI. Pararenal abscess and bowel adhesion favored conversion to open surgery.

MP44-5 Negative Ureteroscopy: Appropriate care or wasted care?

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Introduction: There have been two papers that have previously examined the incidence of negative ureteroscopy (URS)–that is, when URS is performed and nothing is found or done, which would seem to be an unnecessary or wasted procedure. Since the majority of URS cases are done for stone disease, this finding implies not finding or not treating urinary stones. In both studies, the reported incidence of negative URS was identical at 9.8%, but there has not been a clear explanation for why this number is relatively high. We sought to evaluate our own experience with negative URS in order to shed light on this seemingly adverse finding.
Materials and Methods: We retrospectively examined the records of every URS procedure that was performed by 2 endourologists in our hospital from January 2004—December 2014. We identified negative URS by CPT code 52351 (ureteroscopy with no other treatment). We then classified the outcomes of the procedures based on intention and findings. We consider ''no stones found'' and ''no stones treated'' to be unnecessary interventions that might be avoided.
Result: During the time period, we performed 1027 unique procedures that included URS. Most (78%) were done for stone disease, 8% for malignancy, 6% for benign obstruction, and the rest for other reasons. Of the total, 102 (9.9%) were identified as having a negative URS. However, examination of the records reveals the following reasons for the procedure:

Stones—not found	9.8%
Stones—actually treated	5.9%
Stones—treated on the opposite side	7.8%
Stones—found, but not treated	7.8%
Diagnosis—hematuria, pain, radiology findings	25.5%
Malignant diseases (diagnosis/surveillance)	11.8%
Benign obstruction—evaluation only	13.7%
Other	17.6%

Conclusion: Negative URS, while seeming to be an unwanted event, most often serves a valid purpose. In this study, we found that only 17.6% of the negative URS cases would be considered unnecessary. In the rest of the cases (82.4%), URS produced a meaningful outcome for diagnosis and/or treatment. Thus, of our total patients, only 1.7% of patients received what might be perceived as unnecessary care, which is much lower than previous studies have suggested.

MP44-6 Complications following flexible ureteroscopy for heterogeneous population

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Introduction: Flexible urteroscopy is increasingly performed as a day case procedure. Current literature figures suggest a readmission rate for ureteroscopy of 13.8%; considerably greater than the recommended 3% by the Royal College of Surgeons of England. We aimed to analyse complication and subsequent readmission rate in our day case flexible ureteroscopy series.
Patients and Methods: We performed a retrospective analysis of a single surgeon's day case flexible ureteroscopy practise between 2010–2014. Demographic factors of age, sex, indication for surgery and stone position were recorded. Immediate complications and necessity of stent drainage were recorded as well as any subsequent readmission within 2 week of surgery.
Results: 355 FURS were performed with 64% male patients compared to 36% female, and mean age 52.3 years (SD14.6). 350 were for elective indication (99%), with the indication for urolithiasis in 314 cases (89%.) The remaining cases were diagnostic (4%) and for TCC surveillance (7%.). Stones were renal in 153 cases, 71% (Upper pole 39%, Lower pole 16%, Interpolar 6%, Pelvic 9%) and ureteric in 63 cases (29%.) The stone clearance rate was 91.8% with a failed access rate of 7.1%. Prophylactic antibiotic cover was used in all cases and ciprofloxacin and tamsulosin were used as standard on discharge. Stents were used in 215 (60.5%) of cases with a further 7 cases drained by ureteric catheter (1.9%.) The overall complication rate was 7.3% (26 cases.) The majority of these were bleeding (N = 11) and pain (N = 6.) There were predictable Clavien-Dindo Grade 1 and 2 complications of sepsis (N = 4) and mucosal tear (N = 1) and anaesthetic complications of (chest pain, PE, seizure, hypoxia). A further 7.3% (26) patients had an unplanned return within 2 weeks due to stent symptoms, ongoing pain or infective symptoms.
Conclusion: Our experience of flexible ureteroscopy provides evidence of safe day case practise with a high stone clearance rate and low complication rate. The unplanned readmission rate of 7.3% in our unit is significantly lower than the current literature standards, however remains above that of other day case urology procedures.

MP44-7 Outcomes on ureteroscopy in a tertiary referral center

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Purpose*:* to compare our outcomes of ureteroscopy (URS), in patients with urolithiasis with the data of the Clinical Research Office of the Endourological Society (CROES) ureteroscopy global study.
Patients and Methods: our hospital functions as a tertiary referral hospital for stone treatment. We have prospectively collected data of patients treated with URS since January 2010. URS was performed according to study protocol and local clinical practice guidelines. Patient characteristics, intra and postoperative outcomes, use of antibiotics and complications were compared with the data reported in the CROES ureteroscopy global study.
Results: Between January 2010 and May 2015, 685 patients underwent URS in our hospital. 356 had renal stones, 273 ureter stones and 48 had both. The average size of the ureter and kidney stones was 9 mm and 7 mm respectively. In comparison to the CROES global study our patients are older (52 vs. 49 years), have more comorbidity (CVD 34.9% vs. 25.2%; prednisone use 4.2% vs. 0.9%). and more often use anticoagulants (16.1% vs. 5.9%). Almost all our patients were operated with only a single prophylactic dose of antibiotics (98.4% vs. 82.2%). 6.7% of our patients were discharged with a course of antibiotics (vs. 73.8%). In 54.6% of the cases both a semirigid and a flexible ureteroscope were used during the surgery. For entrance of the ureteral orifice we used a guide wire in majority of procedures (74.6%). If stone fragmentation was performed, we used the laser in all cases. The rate of perioperative complications is comparable with the CROES data. Main complications are failure of the procedure or ureter perforation (4.8% and 1.6%). Our data show a lower stone free rate (69.1% vs. 85.6%) but comparable re-treatment numbers (10% vs. 10.6%). 72.5% of patients received a ureteral stent postoperative (vs. 81.4%). Mean operating time was similar. We have a higher incidence of complications postoperatively (6.1% vs. 3.5%). The main reason for readmission was fever. Ultimately, fewer patients were readmitted within 3 months after the operation (4.7% vs. 8.7%).
Conclusion: main differences in data can be found in our patient characteristics. These can be explained by the fact that we function as a tertiary referral center. Though our patient group has more comorbidity than the CROES global study group, the perioperative complication rate is comparable and we have fewer readmissions within 3 months. Furthermore, our strict antibiotic policy results in less antibiotic use.

MP44-8 Withdrawn

MP44-9 Comparison of the stent-related symptoms of regular polymeric and Resonance metallic stents.

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Introduction: Standard polymeric stents are placed postoperatively to prevent acute ureteral obstruction and for chronic ureteral obstruction, but must be changed frequently. Metallic stents are placed in chronic ureteral obstruction in patients who are not candidates for surgery and have the advantage of needing less frequent stent change. Many patients are afraid they will have increased symptoms with metallic stents. We evaluated the stent-related symptoms of patients with Resonance metallic and polymeric ureteral stents.
Methods: Patients who had placement of polymeric and metallic Resonance ureteral stents from August 2014 to January 2015 completed a standardized, validated stent symptom questionnaire (USSQ) at the first postoperative visit two weeks following placement. Domains of health covering urinary symptoms, pain, general health, work performance, sexual matters and additional

Comparison of individual domain scores (median) between Resonance and Polymeric Stents.
(* denotes p<0.05)

Domain	Polymeric Stent	Resonance Metallic Stent
Urinary Symptoms	31*	21*
Body pain	14	8
Visual Analog Score	6	4
General Health	14	13
Work Performance	9*	4*
Sexual matters	2.5	0
Additional problems	11	10

problems were self-recorded by patients and compared using Mann-Whitney U test.
Results: Forty one patients completed the questionnaire, 30 with regular polymeric stents (average age 50.7 years, 13 males and 17 females) and 11 with Resonance metallic stents (average age 65.1 years, 5 males and 6 females). There was no significance difference in any of the domains except for urinary symptoms (mean rank 24.24 versus 13.77, $p = 0.015$) and work performance (mean rank 25.52 versus 10.18, $p < 0.01$), with metallic stents having favorable symptom score.
Conclusion: Resonance stents are as tolerable as regular polymeric stent with fewer and less severe stent-related urinary symptoms, and better work performance.

MP44-10 Ureteric Strictures - Is Endoluminal procedures still has dominant role?

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Introduction: Ureteric strictures are prevalent from ancient literature. Advances and miniaturisation in endoscopic instruments decreased the incidence of ureteric strictures. At the same time increase in laparoscopic procedures resulted in more thermal injuries to ureter. Incidence of ureteric strictures and it's spectrum of presentation with outcomes of various endoluminal and reconstruction procedures were never studied in detail. In this study we analysed ureteric strictures presentation, therapeutic options offered and it's outcomes with long term follow up. We also performed systematic analysis of the literature with formation of algorithm for ureteric stricture management.
Materials and Methods: All in patient and day case surgical patient details from June 2005 to May 2015, were searched for patients with diagnosis of ureteric strictures as primary or secondary diagnosis. 47 patient details matched the diagnosis. The case details were retrospectively analysed.
Results: Forty seven patients were treated for ureteric stricture disease in the past ten years. Of which women constituted 63%. Transplant anastomotic strictures and iatrogenic injuries constituted the predominant etiologic factors. 85% of patients were treated with endoluminal options of dilatation (Nottingham or balloon), laser endoureterotomy, metallic stent (Resonance and Memokath) placement. 15% of patients required open or laparoscopic approaches in the form of ureteric reconstruction or ureteric reimplantation. Only one patient had bilateral ureteral intervention due to retroperitoneal neuro endocrine tumour. Laterality has equal distribution to left and right sides. Average follow up is 26 months. Only seven percent of patients required secondary procedures (excluding twelve monthly replacement of Resonance stents).
Discussion: This study examines one of the rare clinical presentation, ureteric strictures. Prior to two decades, iatrogenic injury due to ureteroscopy was relatively high. As the endoscopic instruments got miniaturised, laparoscopic procedures increased taking up priority in etiology. In our practice due to predominant tertiary referrals, incidence of neuro endocrine tumours and transplant uretero vesicle anastomotic strictures are high when compared to literature evidence. In this presentation we have formulated an algorithm for approach to ureteral strictures based on the location, degree of narrowing and etiology. In our series endoluminal approach gave equivalent good long term out come when compared to reconstructive surgery.
Conclusion: We hope this study and it's associated systematic analysis will help urologist to select optimal therapeutic intervention for ureteral strictures based on its location and degree of obstruction. With our data and the outcome analysis we have provided algorithmic approach to ureteric strictures based on the location and etiology.

MP44-11 Cook Resonance Metallic Ureteric Stent: 5-year contemporary clinical series analysing efficacy and safety in treatment of chronic ureteric obstruction.

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Introduction: The Cook Resonance metallic ureteric stent is increasingly being used to relieve upper urinary tract obstruction of both malignant and benign causes. We present our 5-year data of the feasibility, safety and efficacy of this stent in the treatment of chronic ureteric obstruction.
Materials and Methods: A retrospective analysis of our prospective database of all Cook Resonance metallic ureteric stent insertions from April 2009 to May 2014 was performed. Stent duration, early and late complications, clinical indication and success rate (as measured by radiological evidence of relief of obstruction) are presented.
Results: In total 20 patients accounted for 48 stent insertion episodes over 5 years. All were included in the analysis. Median age was 58 years (range 39 to 90). Median follow-up was 15 months for all cases and 26 months for non-deceased patients. Longest follow-up was 4 years (with three routine stent changes at 12 months duration). 32 (67%) episodes had a benign cause (22 retroperitoneal fibrosis, 4 neuropathic bladder, 3 PUJ stricture/previous stone surgery, 2 duplex kidneys and 1 obstructed transplant kidney) and 16 (33%) a malignant aetiology. Bilateral obstruction was seen in 12 patients. Median stent duration was 12 months. Sub-categorisation by aetiology revealed a median stent duration of 11.5 months for malignant and 18 for benign cases. Post-operative urinary tract infection occurred in 2 non-catheterised (10%) and 1 catheterised patient. Both the former had poorly controlled diabetes mellitus. Stent-removal due to pain was required in 1 patient (bilateral stents in situ). Haematuria requiring hospital admission was seen in 5 cases (25%), with none needing intervention or transfusion. 2 stents (4%) had to be removed due to obstruction. In the remaining 46 cases (96%), ureteric obstruction was demonstrated to have been relieved on subsequent imaging (ultrasound or CT). 9 patients died within 12 months of stent insertion. Malignancy accounted for 5 (56%) of these mortalities and underlying medical co-morbidities for the remainder.
Conclusion: The Cook Resonance stent provides an effective and safe means of relieving chronic upper tract obstruction of both benign and malignant causes. It is tolerated well and only requires annual exchange. The stent failure rate in our series was 4%.

MP44-12 Predictive Value of Individual Nephrometry Score Variables on Peri-Operative Outcomes and Renal Functional Outcomes in Minimally Invasive Partial Nephrectomy

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Multivarate Analysis of Effect of Nephrometry Score Variables on Change in Post-Operative Renal Function of the Surgical Kidney

Nephrometry Score Variable	Effect on short term renal function (% change, s.e.)	Effect on long term renal function (% change, s.e.)
R	-4.08 (1.27) P =0.002	-9.08 (3.56) P=0.014
E	-1.46 (0.92) P=0.11	-4.66 (2.06) P=0.04
N	-0.72 (0.78) P=0.36	-1.01 (1.86) P=0.59

Objectives: To determine the predictive value of individual nephrometry score (NS) constituents (R.E.N.A.L.) on peri-operative outcomes and renal function of the surgical kidney in patients undergoing laparoscopic (LPN) or robotic partial nephrectomy (RPN).
Methods: 245 patients who underwent LPN or RPN between 2005–2014 were retrospectively reviewed. Each renal mass' NS was calculated from pre-operative CT imaging. Multivariate regression analysis was used to evaluate the effect of NS variables on peri-operative outcomes and change in overall renal function (as calculated by MDRD as an estimate of GFR) from pre- to 1 year post-operative. Multivariate regression analysis was used in a cohort analysis to determine the effect of NS variables on change in percent renal function of the surgical kidney from pre- to post-operative based on nuclear medicine renal scintigraphy.
Results: Increasing R and E values significantly predicted a longer OR time, with each point increase in R and E increasing OR time by 16.56 minutes ($p=0.006$) and 11.96 minutes ($p=0.005$), respectively. Increasing R and N significantly predicted a longer WIT, with an additional 2.90 minutes ($p=0.007$) and 2.49 minutes ($p=0.000$) for each point increase, respectively. Overall renal function, as estimtated by MDRD, was not affected by any NS variable. However, percent function of the surgical kidney by renal scintigraphy significantly decreased post-operatively in a stepwise fashion as R and E values increased.
Conclusions: Among NS variables, tumor radius (R), endophytic nature (E), and nearness to collecting system (N) significantly predicted changes in WIT and OR time. While these variables did not predict a change in overall renal function at 1 year post-operative, they did predict a significant decrease in percent renal function of the surgical kidney at 1 year post-operative, suggesting a more accurate method of assessing effects of partial nephrectomy. R, E, and N are the most significant variables when utilizing the NS for partial nephrectomy planning.

MP44-13 Survival outcomes following urological stenting for malignant ureteric obstruction.

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Introduction*:* Extrinsic malignant ureteric obstruction (MUO) is an increasingly common and difficult problem to manage. Ureteric stent insertion can help preserve renal function, offer symptomatic relief and allow for further oncological systemic therapy. Factors to consider at time of stent insertion should include life expectancy and prognosis, renal function and the effect of a stent on quality of life, including consideration of stent symptoms and the need for frequent operations. The aim of this study was to investigate the indications and outcomes in patients undergoing endourological procedures for malignant ureteric obstruction.
Methods*:* We retrospectively reviewed all patients who underwent a retrograde JJ stent procedure for MUO between January and December 2014 at a single tertiary centre. Patients with ureteric obstruction secondary to upper tract urological malignancy or those with post radiotherapy strictures were excluded. Data analysed included type of malignancy, renal function, provision of prognostic information from oncology prior to first procedure, prevalence of stent encrustation, and overall survival. The frequency of operations and prevalence of stent-related symptoms was also recorded in order to consider the potential impact on quality of life.
Results: 73 stenting procedures were performed in 47 patients within the study year, 18 of which were bilateral procedures. The median overall survival from first urological procedure was 11 months (range 0 to 41 months). The most common malignancies requiring intervention were endometrial (8) and ovarian (8). Median time from the radiological detection of hydronephrosis to stent insertion was 26 days (range 4 to 170 days). There was evidence of renal impairment prior to first urological intervention in only 8/47 patients (17%). Following stent insertion 10 patients (21%) developed one or more urinary tract infection and 16 patients (34%) suffered stent symptoms. At the time of stent change or stent removal, stent encrustation was noted in 7/52 procedures (13%). Prior to primary urological intervention, 42/47 (89%) of patients had no documentation of prognosis on review of oncological letters.
Conclusions: This study demonstrates the poor overall survival of patients undergoing stent insertion for malignant ureteric obstruction. Stent insertion is often performed on the radiological diagnosis of hydronephrosis without evidence of renal impairment. The poor documentation of prognosis in oncological referrals is of concern given the careful consideration required prior to performing invasive urological procedures and the high incidence of stent related symptoms.

MP44-14 Native nephrectomy with renal transplantation improves long-term quality of life in autosomal dominant polycystic kidney disease

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Purpose: Autosomal dominant polycystic kidney disease (ADPKD) is a chronic medical condition with potential severe, disabling complications impacting quality of life. Unilateral and bilateral native nephrectomies are thought to reduce mechanical symptoms of kidneys with significant cyst burden.
Patients and Methods: Patients with ADPKD who underwent renal transplantation between 2003 and 2013 were selected for study. Patients were contacted and offered a quality of life survey (SF36v2) by phone, mail, or Internet. Norm based data was tabulated and the Mann-Whitney U test used for analysis. A separate questionnaire assessed pain symptoms and treatment satisfaction.
Result: In our study, 58 participants with renal transplant were divided into no ($n=22$), unilateral ($n=19$), or bilateral native nephrectomy ($n=17$) with a median followup time of 5.6 years. Participants in the bilateral nephrectomy group demonstrated significantly increased quality of life compared to no nephrectomy related to physical functioning (55.0 vs 48.8, $p=0.01$), vitality (55.6 vs 48.2, $p=0.04$), general health (52.3 vs 41.8, $p=0.01$), and physical health summary score (54.6 vs 46.2,

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p = 0.02). A sub-analysis of patients with bilateral nephrectomy vs one or no nephrectomy found pronounced increases in physical health (54.6 vs 43.9, p = 0.01). Bilateral nephrectomy was the only significant predictor of improved quality of life on multivariable analysis (p = 0.02). Unilateral nephrectomy did not improve quality of life compared to no nephrectomy. There was no difference in mental health between any groups.
Conclusion: Bilateral native nephrectomy with renal transplant is associated with improved long-term quality of life related to physical health in ADPKD patients.

MP44-15 Selective Arterial Clamping Offers no Renal Function Benefit under Low Ischemia Time

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Introduction: Warm ischemia time above twenty five minutes is a predictor of worse long term renal function. In an attempt to minimize ischemic injury and ultimately preserve renal function, several institutions have implemented the use of selective segmental artery clamping during robotic partial nephrectomy (RPN) as an alternative to main artery clamping. In the few studies demonstrating a short term (0–4 months post-operatively) renal function benefit and in the one study demonstrating no difference in estimated glomerular filtration rate (eGFR) reduction at 6 months and 1 year following RPN, the ischemia time in the these studies is variable, ranging from 0–41, 16–32, 8–39, 2–25 and 12.8–25 minutes. The present study therefore sought to determine whether the use of selective segmental artery compared to main artery clamping provides an intermediate renal function benefit when warm ischemia time is low (< 25 minutes) and the expected impact of ischemic injury on renal function subsequently minimized.
Patients and Methods: The present retrospective study identified 49 (21.6%) patients who underwent selective segmental clamping robotic partial nephrectomy (RPN) with indocyanine green (ICG) and 178 (78.4%) patients who underwent main artery clamping RPN with complete data for review during February, 2008 to May, 2015. Percentage reduction in eGFR at most recent follow up (mean = 10.3 months) was compared between these groups adjusting for clinical and pathological variables including BMI, tumor size, R.E.N.A.L. Nephrometry Score and warm ischemia time.
Results: R.E.N.A.L. Score (7.02 vs. 7.21; p = .496) and WIT (14.05 vs. 14.77; p = .261) were comparable between those undergoing selective segmental vs. main artery clamping. Tumor size was significantly larger among those undergoing main artery clamping (3.33 cm vs. 2.67 cm; p = .002). results from Multivariable Linear Regression Analysis revealed that percentage change in eGFR was similar between those undergoing main vs. selective segmental artery clamping RPN with ICG at most recent follow-up (p = .593).
Conclusions: At a mean follow up of 10.3 months, the percentage change in eGFR did not significantly differ between patients undergoing selective segmental vs. main artery clamping. When warm ischemia time is low and ischemic injury to the functional renal parenchyma subsequently minimized, the use of selective artery clamping evidently offers no renal function benefit.

MP44-16 Systematic review of surgical and oncological outcomes following surgical management of clinical T1 renal masses

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Introduction: Renal cancers account for approximately 3.5% of all malignancies, with renal cell carcinoma accounting for 90% of the cancer burden. Developments in modern imaging techniques have led to an increase in the detection of small diameter, low stage tumours. We aimed to identify and review evidence comparing surgical and oncological outcomes following the surgical management of clinical T1 renal masses.
Materials and Methods: This review was performed in accordance with guidelines defines in the Preferred Reporting Items for Systematic Review and Meta-Analyses (PRISMA) statement. A systematic literature review was carried out using electronic databases MedLine (1980-present), PubMed (1980-present), EMBASE (1980-present) and the Cochrane database in order to identify studies published between 2000 and 2014 that compared surgical interventions in the treatment of the T1 renal mass.
Results: No randomised trials were identified which met the inclusion criteria comparing surgical or oncological outcomes between techniques of surgical management of T1 renal masses. A total of 6047 potentially relevant articles from 2000–2014 were identified. Abstract review of 1708 articles was undertaken. Ultimately, 42 non-randomised prospective/ retrospective comparative studies and database reviews were identified which compared the oncological and/or surgical outcomes of two of the specified interventions: ablative therapy (radiofrequency ablation, cryoablation), partial nephrectomy (open, laparoscopic, robotic), radical nephrectomy (open, laparoscopic). These were included in the review. Meta-analysis was not appropriate due to the heterogonous nature of the data and parameters used. However many noteworthy trends were observed. For example, with regards to surgical outcomes, when comparing techniques of RN, LRN was associated with a greater OT, however ORN was associated with increased EBL. In comparing techniques of PN, OPN was associated with increased transfusion rates, and also consistently resulted in higher PSM rates than RAPN. In addition, the inferiority of cryoablation to nephrectomy was demonstrated through the analysis of oncological outcomes.
Conclusion: In our knowledge, this is the first attempt to review the surgical management of T1 tumours alone. Evidence surrounding the current surgical techniques in the management of T1 renal masses is composed of non-randomised studies and database reviews. It is therefore with care that the results and trends shown throughout these studies should be viewed.

MP44-17 Can radiofrequency ablation of renal tumours be performed as a day case procedure?

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Introduction: Patients undergoing Radiofrequency ablation (RFA) for small renal masses at our institution are admitted overnight following the procedure. This is associated with

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significantly increased costs compared to a day case procedure. The aim of this study is to assess the feasibility of day case RFA.
Methods: An analysis of consecutive patients who underwent RFA of renal masses was performed. Data were recorded prospectively on each patient using the electronic patient records (EPR). Data collected included RENAL Nephrometry score, complications, post procedure systemic inflammatory response syndrome (SIRS), need for analgesia, need for anti-emetic drugs and use of antibiotics.
Results: Data was collected on 36 consecutive patients and was included in the study. The mean age was 69.6 years. The median American Society of Anaesthesiologists (ASA) score was 3. The median RENAL Nephrometry score was 6. 1(2.7%) patient developed SIRS. 10(27%) patients received injectable analgesia. 7(19.4%) patients received injectable anti-emetic medication. 12(33%) patient's required injectable medication of any kind. No patients required antibiotics. No patients required surgical, endoscopic or radiological intervention.
Conclusion: Based on post procedure data, the majority of patients could take oral medication to relieve their symptoms and therefore may not need to stay in hospital. However other factors such as social circumstances and medical comorbidities need to be taken into account when selecting patients for day case RFA.

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MP44-18 Is there a difference between renal sinus and capsular invasion in T3a Renal Cell Cancer (RCC)? A study comparing the outcomes after extirpative surgery

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Introduction: The 2009 UICC TNM classification of renal cell carcinoma categorizes renal sinus (RSI) and perirenal fat invasion (PFI) equally as T3a. The study compares recurrence and survival outcomes between these two parameters after extirpative surgery.
Patients (or Materials) and Methods: Patients with localized RCC who had RSI and PFI were identified from a prospective database (n = 974). Age, tumour size, grade, local recurrence, metastases, cancer specific survival (CSS), overall survival (OS), were compared using Mann-Whitney, Kruskal-Wallis and Wilcoxon statistical tests.
Result: RSI alone occurred in 48 patients; median age 61.5 (group 1). PFI alone occurred in 31 patients; median age 65.1 (group 2). RSI and PFI together occurred in 28 patients; median age 68.5 (group 3). Group 1 patients were younger but not statistically different to groups 2 & 3 ($p = 0.175$).

Median tumour diameter for groups 1, 2 and 3 were 7.5, 5.9 and 7.45 cm ($p = 0.031$). The only local recurrence occurred in a nephrectomy patient with RSI. Mean Tumour grade was 2–3 in all groups and did not affect survival.

Metastases occurred in 14.9%; 12.9% and 24% across the groups ($p = 0.012$). OS was 88.5%, 83.7% and 64.3% at median follow up 3.1 years ($p = 0.036$). CSS was 92.3%, 95.9% and 82.1% ($p = 0.23$). No partial nephrectomy patients had local recurrence or metastases.
Conclusion: RSI has a slightly worse CSS than PFI but the combination of both was associated with greater risk for metastases and poorer CSS and OS. RSI and PFI in partial nephrectomy patients does not confer worse prognosis.

MP44-19 Preoperative Predictors of T3 upstaging in Partial Nephrectomy

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Introduction: Despite advances in diagnostic imaging, pT3 upstaging in patients undergoing partial nephrectomy is a known phenomenon. Since pre-operative knowledge of pT3 disease can significantly alter management, the ability to identify those patients at risk bears important implications. We have previously reported our findings on pre-operative predictors of pT3 renal lesions. Herein we report findings from a high volume multi-institutional cohort with the aim of identifying trends in pT3 upstaging.
Methods: 1836 patients who underwent partial nephrectomy from 5 medical centers were retrospectively review from a prospectively maintained database. Demographic and clinicopathological parameters were evaluated. A multivariate regression model with OR and 95% CI was fashioned to identify significant pre-operative predictors of pT3 disease as confirmed by final pathology.
Results: Of the 1836 men who underwent partial nephrectomy 89 were upstaged to T3 disease. Of the patients who were upstaged 2 had local recurrence and 3 had subsequent metastatic disease. On multivariate analysis, increasing age ($P = 0.006$), Body Mass Index (BMI) ($P = 0.037$), and pre-operative tumor size ($P = 0.002$) were associated with upstaging to pT3 disease.
Conclusions: Age, BMI, and tumor size are significant predictors of pT3 upstaging in patients undergoing partial nephrectomy. Interestingly, nephrometry score was not a significant predictor. These results suggest a possible relationship between the physiology of age and adiposity status, to tumor pathology in men being evaluated for partial nephrectomy.

MP44-20 Recovery and Health Related Quality of Life in Patients Undergoing Cytoreductive Radical Nephrectomy

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Introduction: Cytoreductive nephrectomy (CN) has been shown to extend overall survival in patients with renal cell carcinoma. Functional status and overall state of health play an important role in selecting candidates for surgery and their postoperative adjuvant therapy. Utilizing validated questionnaires we assessed the changes in patients' Health Related Quality of Life (HRQOL) during the recovery after surgery.
Patients and Methods: From 2009 to present, a total of 36 patients with metastatic renal cell carcinoma and good baseline functional status underwent a CN and were enlisted in our prospective, single institution observational study. HRQOL was measured using Convalescence And Recovery Evaluation (CARE) and Short Form – 12 (SF-12) questionnaires administered at baseline preoperatively, then after surgery at 2, 4, 8 and 12 weeks. Linear mixed model was used for statistical analysis.
Results: Laparoscopic CN was performed in 28 patients and open approach was utilized in 8 patients (full demographic

details in Table). Largest mean decline in quality of life (QOL) from baseline was observed at 2 weeks postoperative in both open and laparoscopic groups (CARE - 25.85, −15.85 respectively). Majority of patients were able to return back to baseline QOL markers within 4 weeks, however, patients who underwent open nephrectomy had a statistically significant worse pain and activity reports at 4 weeks (decrease in average CARE reported pain and activity domains of −11.79 and −31.69). There was no significant change in cognitive ability detected in CARE or SF-12 questionnaires throughout recovery.

Conclusions: Recovery from laparoscopic CN may significantly reduce patients' QOL in the first 4 weeks, however, patients undergoing open CN may take as long as 6 weeks to recover to baseline. Appropriate counseling about postoperative convalescence can help with managing patients' expectations and future planning for adjuvant therapy.

Table 1: Patient demographics and characteristics for cytoreductive nephrectomy.

	Open Mean (Std)/N(%)	Laparoscopic Mean (Std)/N(%)
N patients	8	28
Age at entry	59.5 (9.3)	55.1 (7.9)
Male	6 (75.0%)	23 (82.1%)
BMI	25.0 (3.9)	27.6 (5.3)
Charlson score [median(IQR)]	8 (7-8)	8 (7-8)
Tumor size [median(IQR)]	14.0 (10.0-14.1)	9.3 (7.0-10.6)
Operation time	279.3 (70.3)	178.1 (73.1)
Estimated blood loss	1000 (500-2250)	100 (50-225)
Length of hospital stay [median(IQR)]	4.0 (3.5-4.0)	2.0 (2.0-2.0)
Transfusion	3 (37.5%)	2 (7.1%)
Clavien Score		
None:	2 (25.0%)	22 (78.6)
1-2	6 (75.0%)	6 (21.4%)

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MP44-21 Cerebrovascular disease and chronic pulmonary disease increase risk of complications during robotic partial nephrectomy

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Introduction: Metrics such as the RENAL nephrometry score and the Charlson comorbidity index (CCI) have incorporated tumor- and patient-specific factors to better predict the complexity and perioperative outcomes of partial nephrectomy (PN). The relative contribution of individual morbidities within the CCI is still unknown. The purpose of this study was to identify specific comorbidities within the CCI that are associated with increased complication rates after robotic-assisted PN (RAPN).

Patients and Methods: After IRB approval, a consecutive series of 641 patients undergoing RAPN was retrospectively identified. Perioperative complications were defined and classified using the Clavien grading system. Fisher's exact test or chi square test was performed to evaluate the association of individual morbidities with perioperative complications. Logistic regression was used for multivariable analysis to adjust for other non-CCI morbidities and tumor-specific and patient-specific characteristics.

Results: Of the 641 patients undergoing RAPN, complications occurred in 67 patients (10.5%) within 30 days of surgery. Cerebrovascular disease [odds ratio 3.01 (95% CI 1.05–8.04) $p=0.03$] and chronic pulmonary disease [3.12 (1.19–7.72) $p=0.02$] predicted complications in multivariable analysis of clinico-pathological characteristics including all CCI and non-CCI comorbidities. In additional modeling including only CCI comorbidities, only cerebrovascular disease [2.93 (1.01–7.96) $p=0.04$] and chronic pulmonary disease [2.69 (1.03–6.76) $p=0.04$] predicted complications. No other variables reached statistical significance in either model, including nephrometry score or estimated blood loss ($p>0.50$ for both).

Conclusions: Cerebrovascular disease and chronic pulmonary disease predict perioperative RAPN complications within 30 days of surgery. Identification of patients with these comorbidities preoperatively may afford improved counseling and risk stratification.

Table 1. Multivariable analysis of tumor- and patient-specific characteristics with perioperative RAPN complications

	All comorbidities		Charlson comorbidities only	
Characteristic	OR [95% CI]	p-value	OR [95% CI]	p-value
BMI	1.03 [0.99-1.08]	0.16	1.03 [0.98-1.07]	0.24
Age	1.01 [0.99-1.05]	0.34	1.01 [0.99-1.04	0.35
Gender	0.95 [0.51-1.82]	0.89	0.91 [0.49-1.71]	0.77
Operative time	1.01 [1.00-1.01]	0.054	1.01 [1.00-1.01]	0.07
Estimated blood loss	1.00 [1.00-1.00]	0.99	1.00 [1.00-1.00]	0.93
Nephrometry score	1.05 [0.87-1.27]	0.61	1.06 [0.88-1.27]	0.55
CVA or TIA	3.01 [1.05-8.04]	**0.03**	2.93 [1.01-7.96]	**0.04**
CPD	3.12 [1.19-7.72]	**0.02**	2.69 [1.03-6.76]	**0.04**

Not all variables included in multivariable analysis are shown in Table 1

Abbreviations: robotic-assisted partial nephrectomy (RAPN), odds ratio (OR), cerebrovascular accident (CVA), transient ischemic attack (TIA), chronic pulmonary disease (CPD)

MP44-22 Impact of accidentally cutting open a tumour during laparoscopic partial nephrectomy on the oncologic and clinical outcomes

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Introduction: To investigate the impact of accidentally cutting open a tumour (ACT) followed by inappropriate surgical incision on the treatment outcome of laparoscopic partial nephrectomy (LPN) and to determine the predictive factors for ACT.

Patients and Methods: Consecutive 156 patients with renal tumours suspicious of renal cell carcinoma cT1N0M0 undergoing laparoscopic partial nephrectomy at Yokohama City University between May 2003 and November 2014 were retrospectively evaluated. The clinical factors analysed in the present study included maximum tumour diameter, tumour location, tumoural protrusion rate, the R.E.N.A.L. Nephrometry Score, occurrence of ACT during surgery, and the postoperative pathological findings, including the histologic subtypes, pseudocapsule formation, and positive surgical margin (PSM). Port site metastasis, tumour seeding, and local recurrence were investigated by routine follow-up CT during the postoperative period.

Result: PSM and local tumour recurrence were observed in five and one cases in the non-ACT group, respectively, as compared to in no cases in the ACT group. Port site metastasis or tumour seeding was not observed in either group. Multivariate analysis indicated that pseudocapsule formation significantly correlated

with ACT (P = 0.022) and that maximum tumour diameter was a possible predictor of ACT (P = 0.054). Of the total 156 renal tumours, pathological pseudocapsule formation was missing in 26.9% of cases.
Conclusion: The present study indicated that ACT might not have a big impact on the surgical and oncologic outcomes of LPN, although, in theory, ACT during LPN may increase the risk of disseminated cancer cells, which in turn might induce port site metastasis, tumour seeding, and local tumour recurrence. In addition, missing pseudocapsule formation was found to be an independent significant predictor of ACT occurrence during LPN, and maximum tumour diameter was a possible predictor of ACT.

MP44-23 Management of small renal massess in the octogenarian patient

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Introduction: Surgical extirpation is the gold standard for the management of localized renal masses; however, evidence suggests many small renal masses (SRM) are indolent in nature. Given the inherent cardiovascular risks of surgical treatment in the octogenarian, we sought to understand the impact of active surveillance (AS) on recurrence and survival, compared with partial nephrectomy (PN) in this patient population.
Patients: We identified 760 elderly patients evaluated for clinically localized SRM at our institution. Eligible patients were ≥80 years of age with an enhancing solid mass or Bosniak IV cyst on cross-sectional imaging. Exclusion criteria included metastatic disease, history of upper tract urothelial carcinoma, presence of solitary kidney, or previous extirpative or ablative renal procedure. AS consisted of serial imaging for at least 6 months. Ninety-one AS patients and 26 PN patients were followed longitudinally until last follow-up visit or death.
Results: Median age at diagnosis was 83.5 years and 80.0 years for AS and PN cohorts, respectively. AS patients were followed for a median 30.1 months. Median tumor growth was 0.20 cm/year. Eight patients (8.8%) in the AS cohort underwent delayed intervention. Progression to metastatic disease occurred in three AS patients (3.3%) including one who had undergone delayed intervention. No patients in PN cohort experienced systemic relapse. For patients on AS, change in tumor diameter was significantly greater among those to progressed to metastasis, compared to those who did not progress (1.35 cm/year vs. 0.15 cm/year; P = 0.038). Similarly, those who underwent delayed intervention demonstrated greater tumor growth (0.45 cm/year vs. 0.14 cm/year; P = 0.016). Tumor size at diagnosis for AS patients was not associated with progression. Nine AS patients (9.9%) and six PN patients (28.6%) died after a median follow-up of 21.2 months and 52.9 months, respectively. Two (2.2%) deaths in the AS cohort were attributed to renal cell carcinoma (RCC), whereas seven (10%) were due to non-cancer related causes. No deaths in PN cohort occurred secondary to RCC.
Conclusions: Surveillance is an increasingly utilized management option for elderly patients with SRMs. The majority of SRMs among octogenarians appear to be of low prognostic significance and are unlikely to impact survival in the context of competing causes of mortality. Tumors with relatively higher growth rates may demonstrate more aggressive behavior and warrant intervention. Relative life expectancy and tumor growth rate may be beneficial in guiding management of SRMs in octogenarians who are candidates for ablative or surgical therapy.

MP44-24 Laparoscopic radical nephrectomy for large renal tumours: expanding the frontiers of endo-urology

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Introduction: We have arguably reached a technological superiority with minimally invasive nephrectomy services. Tumours greater than 7 cm are being resected successfully with negative margins. In addition to oncological outcomes, patient-related outcomes (PRO), their experience and quality of life (QOL) must be considered in order to attain higher standards.
Method: Data was collected on laparoscopic radical nephrectomy (LRN) patients above the radiological tumour size of 7 cm from our prospective nephrectomy database over 2.5 years. Data included patient demographics, procedure-related outcomes, histology and clinical results. A Clavien-Dindo grade was assigned to complications. Functional outcome data was collected independently on PRO and their experience. A questionnaire based on King's Health QOL questionnaire was devised enquiring about the effect of the surgical experience on aspects of their life, and sent anonymously.
Results: A total of 95 LRN were performed between 2012 to date. 29 were 7 cm or above, of which 10 were 10 cm or above. The 29 were performed with a mean operative time of 171 minutes (range 110–300 minutes). No cases were converted to open. Mean estimated blood loss was 95 ml (range 10–400 ml) with no transfusions. Mean hospital stay was 6 days (4–11 days). Only 2 patients had complications classified as Clavien-Dindo grade II and IIIa which were pneumonia and pneumonia requiring a pleural drain respectively. All 29 patients are alive with no recurrences. 27(93%) were margin negative. 2 were margin positive (stage T3a): a chromophobe renal cell carcinoma invading the perinephric and renal sinus and a rhabdoid clear cell carcinoma invading the renal capsule and vein. The majority of responses in each domain of the quality of life questionnaire were satisfactory. Most patients were back to daily activities with little or no effect on sleep, sex or mood. Overall they were delighted with the outcome of the major laparoscopic surgery.
Conclusions: Our results showed that although technically challenging, in experienced hands, LRN is a feasible and safe option for the management of larger renal tumours. There was no need for open conversion and complication rates were better than published evidence. Tumour size was not a poor prognostic factor. Patients were satisfied with the surgical outcome and quality of life. LRN can have favourable and comparable oncological and functional outcomes with minimal morbidity.

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MP45 - URS: OUTCOMES

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MP45-1 Contemporary practice patterns of flexible ureteroscopy for treating renal stones: Results of a worldwide survey

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Introduction: Flexible ureteroscopy (fURS) is increasingly used in the treatment of renal stones. However wide variations exist in technique, use and indications. To better inform our knowledge about the contemporary state of fURS for treating renal stones, we conducted a survey of endourologists worldwide.
Methods: An anonymous online questionnaire assessing fURS treatment of renal stones consisting of 36 items was sent to members of the Endourology Society in October 2014. Responses were collected through the SurveyMonkey system over a three-month period.
Results: Questionnaires were answered by 414 surgeons from 44 countries (response rate 20.7%). U.S. surgeons accounted for 34.4% of all respondents. fURS was routinely performed in 80.0% of institutions, with 40.0% of surgeons performing > 100 cases/year. Respondents considered fURS to be first-line therapy for patients with renal stones < 2 cm and lower pole calculi. A substantial minority (11.3%) preferred staged fURS for renal stones > 2 cm. Basket displacement for lower pole stones was routinely performed by 55.8%. Ureteral access sheaths were preferred for every case by 58.3%. Respondents frequently utilized high-power lasers, and dusting techniques. Criteria for determining SFR was defined as zero-fragments or residual fragment (RF) < 1, < 2, < 3, and < 4 mm by 30.9%, 8.9%, 31.5%, 15.8% and 11.2% of respondents, respectively.
Conclusions: The overwhelming majority of endourologists surveyed consider fURS as a first-line treatment modality for renal stones, especially those < 2 cm. Use of ureteral access sheaths, high power holmium lasers and dusting technique have become popular among practitioners. When defining stone-free after fURS, the majority of endourologists used a zero-fragment or RF < 2 mm definition.

MP45-2 Impact of Case Volume on Outcomes of Ureteroscopy (URS) for Ureteral Stones: the Clinical Research Office of the Endourological Society (CROES) URS Global Study

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Introduction: To investigate the influence of case volume on the outcomes of ureteroscopy (URS) for ureteral stones.
Patients and Methods: The Clinical Research Office of the Endourological Society (CROES) URS Global Study collected prospective data on consecutive patients with urinary stones treated with URS at 114 centres around the world for 1 year. Centres were identified as low- and high- volume based on the median overall annual case volume. Pre-operative, intraoperative characteristics and post-operative outcomes in patients at low- and high-volume centres were compared. The relationship between case volume and stone-free rate (SFR), stone burden, complications, and hospital stay was explored using multivariate regression analysis.
Results: Across all centres, the median case volume was 67; 58 centres were designated low-volume and 56 centres were designated high-volume. URS procedures carried out at high-volume centres took a significantly shorter time to conduct. Mean SFR was 91.9% at high-volume centres and 86.3% at low-volume centres ($p < 0.001$), and the adjusted probability of a stone-free outcome increased with increasing case volume ($p < 0.001$). Patients treated at a high-volume centre were less likely to need retreatment, had a shorter post-operative hospital stay, were less likely to be readmitted within 3 months, and had fewer and less severe complications. At case volumes above approximately 200, the probability of complications decreased with increasing case volume ($p = 0.02$). The study is limited by the heterogeneity of centres and surgeons that participated and the inclusion of patients treated by more than one approach.
Conclusions: In the treatment of ureteral stones with URS, high-volume centres achieve better outcomes than low-volume centres. Several outcome measures for URS improve with an increase in case volume.

MP45-3 Differences in renal stone treatment and outcomes for patients treated either with or without the support of a ureteral access sheath: The Clinical Research Office of The Endourological Society Ureteroscopy Global Study

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Introduction: To describe the differences in the treatment and the outcomes of renal stones treated with flexible ureteroscopy (URS) either with or without the support of a ureteral access sheath (UAS).
Materials and Methods: The Clinical Research Office of the Endourological Society URS Global Study involved the collection of prospective data from consecutive patients treated with URS at centers around the world over a 1-yr period. Baseline characteristics, stone location, treatment details, post-operative outcomes and complications were recorded. Inverse-probability-weighted regression adjustment (IPWRA) analyses were conducted on outcome from patients treated with or without the use of a UAS to determine the impact on stone free rates (SFRs).
Results: Of 2239 patients treated with flexible URS, 1494 (67%) patients were treated with the use of a UAS and 745 (33%) without a UAS. The IPWRA analyses conducted on 1827 patients with complete data and based on treatment and outcome models showed that if URS procedures were performed without the use of an UAS, the average stone free rate would be 0.504 compared with 0.753 with a UAS. This average treatment effect of 0.248 was not significant ($P = 0.604$). Using IPWRA analysis on only the treated population in the estimations revealed no

significant difference between the use or not of a UAS (31%; ATET: 0.311; $P = 0.523$).
Conclusions: The study showed no difference in SFR when a UAS was used or not. Whereas UAS did not increase the risk for ureteral damage or bleeding, postoperative infectious complications were reduced.

MP45-4 Prospective evaluation of treating renal stones greater than 2 cm as a Day-Surgery Activity (Outcome, complications and tolerance)

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Purpose: Our aim is to evaluate the outcome, complications and patient's tolerance of retrograde endoscopic management with holmium laser lithotripsy as a minimal invasive procedure for the renal stone greater than 2 cm as a day-surgery activity.
Patients and Methods: We prospectively evaluated 14 patients (14 renal units) with renal stone greater than 2 cm underwent flexible ureterorenoscopy (F-URS) with holmium laser lithotripsy in Day-Surgery unit. The mean stone size was 26.4 mm (ranged from 20 to 58 mm). Patient characteristics, stone size, stone composition, associated lower calyx stone, Double-J stent preoperatively, congenital anomalies, urological history, duration of the intervention and complications were evaluated. The outcome was determined at 4 weeks on renal ultrasound or Non-contrast CT scan (NCCT) or by endoscopic second look if needed. Success rate was defined as stone free (SF) or remaining fragments (RF) less than 3 mm. Patient was informed and consented concerning Stage-Therapy.
Results: According to the set of this study, success rate was obtained in 4 RU (28.5%) after first session of treatment. Success rate was improved up to 78.5% and 92.8% after second and third session respectively. Retreatment was strongly related to stone size. No complications were recorded. Postoperative pain was tolerated in 100%. Spinal anesthesia was performed in 4 out of 24 procedures.
Conclusion: Retrograde endoscopic management with holmium laser lithotripsy is a very effective and safe technique in treating renal stone greater than 2 cm as a day-surgery activity. It offers excellent results, low rate of complications. However, patients should be informed about multiple sessions of treatment (staged-therapy).

MP45-5 Post-Operative Infection Rates in Patients with a Negative Baseline Urine Culture Undergoing Ureteroscopic Stone Removal: A Matched Case Control Analysis on Antibiotic Prophylaxis from The CROES URS Global Study

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Introduction: To examine the effects of antibiotic prophylaxis on post-operative infection rate in patients with negative urine cultures undergoing ureteroscopy (URS).
Patients and Methods: Using the Clinical Research Office of the Endourological Society (CROES) URS Global Study database, patients with a negative baseline urine culture undergoing URS for ureteral stones (n = 1141) or kidney stones (n = 184) not receiving antibiotic prophylaxis were matched with those who were by predefined risk factors, including gender, American Society of Anesthesiologists (ASA) score, and ureteral stent placement. Patient characteristics, operative data and post-operative outcomes, including the development of urinary tract infection (UTI) and fever, in the two groups were compared.
Results: Antibiotic prophylaxis use varied widely across participating countries (13–100%). Differences were found between patients who did or did not receive antibiotic prophylaxis regarding the frequency of anticoagulation medication, previous treatment with URS, stone burden, previous presence of kidney stones, duration of current URS, and complications post-URS. The prevalence of fever and UTI was low ($\leq 2.2\%$) and similar in both groups. Factors predictive of post-operative UTI or fever were female gender, Crohn's and cardiovascular disease, a high stone burden, and an ASA score of II or higher.
Conclusions: In patients with a negative baseline urine culture undergoing URS for ureteral or renal stones, rates of post-operative UTI and fever were not reduced by pre-operative antibiotic prophylaxis. Female gender, and high ASA score were specific risk factors for post-operative infection in this patient group.

MP45-6 The New Stone Age: Outcomes of Ureteroscopic Stone Dusting using a 120-Watt Holmium Laser

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Introduction: A popular approach to treating renal stones with ureteroscopy (URS) is laser fragmentation and basket retrieval. One of the downsides of this method is that it typically requires placement of a ureteral access sheath (UAS). Recently, there has been great interest in ''Dusting'' technique in comparison to retrieval. However, critics contend this may be associated with high residual fragment (RF) rates. To better inform this debate we evaluated our experience with dusting approach.
Patients and Methods: We performed a retrospective review of all URS cases performed by a single surgeon at an academic center utilizing a 120-Watt Holmium:YAG laser (Pulse 120H, Lumenis Inc, San Jose, CA). The 120-Watt has dual lithotripsy modes of 'Dusting' and 'Fragmentation'. Dusting i.e., high frequency and low pulse energy (HiFr-LoPE), settings of 0.2–0.5 J × 30–80 Hz were utilized. All cases were recorded on a database by a research assistant and assessed for stone size, Hounsfield unit (HU), and use of: staged procedures, UAS and post-operative stenting. Stone clearance was determined on post-operative radiography (KUB), ultrasound or computed tomography. Complications were classified using the Clavien-Dindo Grade.
Results: Over a five-month period, URS was performed on 51 renal units (43 patients). Renal stones constituted the majority of cases (80.4%), including three partial staghorn stones. Five and three patients underwent bilateral and staged procedures, respectively. The mean stone size and HU were 11.6 mm (SD 5.6; range 4–30) and 935.6 (range 200–1530), respectively. The maximum cumulative diameter for stones ranged from 5 to 50 mm. UAS was used in 11 patients (25.6%) primarily to keep low intra-renal pelvic pressures. Mean laser energy used for all cases was 4.98 kJ (range 0.06 – 33.03). Post-operative stents were used in 88.2% of cases, of which 37.8% were with self-

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extraction strings. Four patients (9.3%) had complications (Grade 1 = 3, Grade 2 = 1); three of these patients made a visit to the emergency department. At a mean follow-up of 94 days, the zero-fragment and ≤ 2 mm residual fragment (RF) rates were 62.3% and 75.7%, respectively.
Conclusions: In our series we observed acceptable rates of residual fragments and post-operative complications with the dusting technique. These data would suggest that dusting may be an attractive alternative to basket extraction thereby sparing patients possible morbidity associated with routine use of UAS. Further studies are needed to understand which patients benefit most from these different approaches.

MP45-7 Outcome of the transurethral lithotripsy by using holmium-laser lithotriptor (Odyssey 30)

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Aim: We started to use of Horminium:YAG laser as a lithotriptor for TUL and PNL procedure. Herein we reports our results and usefulness of transurethral procedure for the ureterorenosrones by using Odyssey 30.
Methods: Since 2011 to 2013, there were 60 for the first line transurethral lithotripsy, we used small caliber ureteroscope (6.9F flexible: Olympus), Miniscope ■ (ridged: STORZ) and laser lithotriptor (Oddesey 30: TAKAI) with OptiLITE Ho laser fiber. Litholapaxy after lithotripsy was performed using 3 Fr stone-cone bascket catheter.
Results: With a breakdown of 60 cases of lithotripsy prosedure, f-TUL 16cases, r-TUL 42cases and PNL were two cases. As for the quarrying effect, the result that was approximately equal to VersaPulseTM 80/100 (COHERENT) which we used before was provided. The rubble of the inferior calyx of kidney calculus needed difficulty. The complications did not accept after pre-and post among for 25–50 minutes of operation.
Conclusion: Although I needed the careful handling in the flexible ureterorenoscope, as for Odyssey 30 and the 200/400 micron OptiLITE fiber, it was thought that it was safe and effective minimal invasive therapy as a cure for the urinary calculi. There was no significant complications.

MP45-8 Flexible ureterorenoscopy in the treatment of renal stones: analysis of factors influencing stone-free rate

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Introduction: Retrograde Intra Renal Surgery (RIRS) via flexible ureterorenoscopy (FURS) has become well established as a method for treatment of renal calculi. With newer scopes, modern technology, and improved experience, the indications for this modality are being further refined. This study assess the influences of stone size; location; type of flexible ureterorenoscope (analogue vs digital); and stone density on treatment outcome from a large series in a single UK center.
Patients and methods: A prospective database of patients undergoing flexible URS and Holmium laser lithotripsy between March 2002 and June 2015 was retrospectively analyzed. Single-treatment success was defined as satisfactory visual clearance of stone bulk, radiopacities less than 2 mm on non-contrast CT, and no further treatment.
Results: 597 patients had 735 treatments (median age = 57 years; range 15–92 years). Overall single-treatment success rate was 86.1%; when stratified by stone size it was 98% (< 5 mm), 93% (5–10 mm), 90.4% (11–15 mm), 82% (16–20 mm), 63.5% (21–30 mm) and 31.5% (> 30 mm). For stones < 20 mm, an overall stone-free rate of 91.4% was achieved after a single procedure. In 74 patients with stone size 21–30 mm, 66 (89.2%) were stone free after their second FURS. Stone locations were lower pole, renal pelvis, mid and upper pole, and in caliceal diverticula in 52%, 20%, 13%, 11% and 4% of the cases, with single-treatment success rate of 87%, 77%, 91%, 84% and 83%, respectively. After URS for renal stones of < 10 mm, 52% did not require ureteric stenting. The introduction of digital flexible ureterorenoscopy did not significantly change the stone free rate (91.8% for analogue versus 86.4% for digital), but was used for a greater proportion of larger stones. In those patients who had a preoperative CT scan enabling the Hounsfield Unit (HU) density of the stone to be measured, 28.8% had stone density > 1000 HU. Stone-free rates were not statistically different when stratified for stone HU.
Conclusion: Stone clearance of > 90% can be achieved for stones < 20 mm, and with two procedures similar stone free rates can be achieved for stones up to 30 mm. Stone density, digital technology and stone location do not significantly influence outcome. The majority of renal stones up to 10 mm can be managed without ureteric stent postoperatively.

MP45-9 RIRS – the impact of evolving experience

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Introduction: During the past decade, Retrograde Intra-Renal Surgery (RIRS) has become one of the preferred treatment options for renal stones. RIRS can be a challenging technique and is associated with a rather steep learning curve. However, there is little data as to the impact of RIRS learning curve and its influence on the indications, success and complication rate. We evaluated our experience with RIRS during the recent years.
Materials and Methods: 629 patients underwent RIRS during 2004–2013 and were divided into three groups: ''early'' (2004–2007), ''intermediate'' (2007–2010) and ''late'' (2010–2013). The indication and pre-operative data, post-operative morbidity and follow-up data were collected and analyzed
Results: The 3 groups were similar in the age and gender distribution. However the mean charlson's comorbidity index was somewhat higher in the later groups (1.61, 1.79 and 2.07 in the early, intermediate and late groups, respectively). Renal stone location and size were similar between the groups with 60% of patients presenting with lower pole calculi and 15% with stones > 10 mm.

Overall stone burden in late group was higher. 117/180 (65%) in this group had overall stone size above 10 mm, compared with 79/190 (58.4%) and 92/180 (51%) in the early and intermediate groups, respectively ($p = 0.028$). Patients in the late group were observed to have 3 times more (7.2%) bilateral stones compared to the other groups ($p < 0.05$). Conversely, the number of pre-stented patients was lower in the late group ($p < 0.05$). The mean operative time decreased between the early and late group from 61 to 56 min ($p < 0.05$)

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The number of intra and postoperative complications was 30/210 (14.3%), 17/210 (8.1%) and 14/209 (6.7%), in the early, intermediate and late groups, respectively ($p=0.145$). The number of secondary procedures was similar between the groups. The overall success rate was similar between the groups with a mean of 90.8%.
Conclusions: With growing experience RIRS can be performed in patients with more comorbidities and larger stone burden and yet with decreased operative time and similar complication and success rate.

MP45-10 Safety and efficacy of Ureterorenoscopy and Holmium:YAG laser lithotripsy in patients on anticoagulant or antiplatelet therapy

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Introduction & Objectives: The development of thinner and atraumatic ureteroscopes allows for easier insertion and smooth passage with lower risk of urothelial injury and bleeding. A proportion of patients with cardiovascular disease undergoing ureteroscopic stone management are on anticoagulants or antiplatelet drugs. Discontinuation of such medication may increase the risk of thrombotic events. We performed a systematic review to assess the safety and efficacy of ureterorenoscopy and Holmium:YAG laser lithotripsy in this population.
Materials & Methods: A systematic review was performed using published studies between March 1998 to May 2014 with PubMed, Medline, EMBASE and CINAHL databases. We included all studies investigating complication rate and efficacy of flexible and semi-rigid ureteroscopic laser lithotripsy for ureteric or renal stones on patients on anticoagulants or antiplatelet agents. Studies on patients with other bleeding diatheses were excluded.
Results: We screened 210 abstracts and found 4 studies which met the inclusion criteria reporting on 236 patients. All were retrospective cohort studies while no randomised controlled trials were found. Of all patients, 155 (65.7%) were on aspirin, 59 (25%) on warfarin and 22 (9.3%) on clopidogrel. The mean stone size was 13.2 mm (range: 5–35 mm). Complete stone clearance was achieved in 94.1% of cases. No major complications or deaths were reported while the incidence of minor complications (Clavien-Dindo classification grade I/II) was 17.9% ($n=42$). No procedures were abandoned due to obscured operative view as a result of bleeding. Changes between pre-operative and post-operative haemoglobin concentration were insignificant and no patients required blood transfusion.
Conclusion: Flexible or semi-rigid ureteroscopic Holmium:YAG laser lithotripsy of ureteric and renal stones may be performed safely on patients on antiplatelet or anticoagulant treatment with a very low associated complication risk and excellent stone clearance rate and with no need for discontinuation of medications. Randomised controlled trials are needed to strengthen the evidence for further recommendations.

MP45-11 Patient-initiated encounters extracted from an electronic medical record after ureteroscopy

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Introduction: Although ureteroscopy (URS) is a minimally invasive outpatient procedure, we observed that URS patients generated an unusually high number of phone calls and unplanned visits. We used our electronic medical record (EMR) to review all documented patient encounters among patients undergoing URS for stones in order to identify common problems.
Methods: After obtaining IRB approval, we reviewed records of 298 consecutive patients who underwent 314 URS procedures between July 2013 and November 2014. Patients underwent preoperative counseling and received a printed brochure with a detailed description of the expected peri-operative course. Patients were discharged with a standard postoperative medication regimen. We used our EMR (EPIC, Madison, WI) to extract patient characteristics, operative details and telephone encounters and unscheduled office/ED visits. We also identified 56 TURBT patients treated between January and June 2014 to compare the quantity of and reasons for medically-related encounters between patients undergoing the 2 procedures. Encounters were categorized according to the reason prompting the phone call and/or ED visit. We performed univariate (UVA) and multivariate (MVA) analyses to identify factors predictive of postoperative encounters.
Results: Mean BMI of the URS patients was $30\pm8\,kg/m^2$ and 182 patients (58%) were male. Overall, 201 procedures (64%) were associated with 443 unplanned post-operative encounters, of which 352 encounters (79%) were medically-related (mean 1.1 medically-related encounters/procedure), while the rest were for administrative issues. Among the medically-related encounters, 267 (76%) were prompted by symptoms. On UVA, younger age, bilateral URS, smaller ureteral access sheath (UAS) size, multiple stone locations and larger number of stones were predictive of a symptom-related encounter. On MVA, only younger age and smaller UAS size remained independent predictors. The TURBT group was comparable to the URS group with regard to race and BMI, although age, gender and ASA were significantly different. The TURBT cohort generated 65 encounters, 46 of which (71%) were medically-related (mean 0.8 encounters/procedure). After adjusting for confounding factors, patients undergoing URS were 2.7 times more likely to have a medically-related encounter than patients undergoing TURBT (2.71, 95% CI 1.40–5.49, $p=0.003$).
Conclusion: Unplanned postoperative encounters are disproportionately more frequent in URS patients than in TURBT patients. Younger URS patients and those in whom a larger access sheath could not be placed had or perceived more post-operative problems. Identification of modifiable factors, such as adjusting patient expectations and perceptions by improving communication between physicians and patients may reduce the occurrence of these encounters.

MP45-12 Does insurance status or ethnicity affect follow-up after ureteroscopy with laser lithotripsy?

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Introduction: Follow-up after ureteroscopy (URS) with laser lithotripsy is important to remove stents, assess for obstruction, confirm stone removal, and prevent recurrence. Our goal was to determine whether follow up rates varied on the basis of insurance status or ethnicity.

Materials and Methods: We performed an IRB approved retrospective chart review of 601 patients who underwent URS with laser lithotripsy from 2007–2013, performed by three urologists at an urban safety net hospital. Data collected included insurance status and ethnic background, both extrapolated from self-reported patient registration data. Follow-up rate was calculated for each routinely scheduled postop appointment – at 1–2 weeks (if stent-removal was required), 1–2 months, 4–8 months, 9–12 months, 15–18 months, and 24 months post-op.
Results: Of the 601 patients, 308 (51.2%) patients were male. The average age was 53.6 years. 190 (31.6%) patients had government-assisted insurance (e.g. Medicaid), 189 (31.4%) were Medicare-insured, 158 (26.3%) had private insurance, and 64 (10.6%) had Free Care or were uninsured. 218 (36.3%) were Caucasian, 184 (30.6%) were Hispanic/Latino, 166 (27.6%) were Black or African American, 13 (2.2%) were Asian, and 20 (3.3%) reported being of another ethnic background. The average period of continued follow-up compliance was 5 months. Follow-up rates over the course of 24 months post-op did not vary significantly based on insurance status (Figure 1), or on ethnicity (Figure 2). Compliance with follow up declines with time, demonstrated by a 92% average follow-up rate for stent removal (1–2 weeks post-op), and a 43% average follow-up rate at 24 months post-op.
Conclusion: In our cohort, patient compliance with follow up after ureteroscopy with laser lithotripsy declines with time. However, follow up rates did not vary with insurance status or by ethnicity.

Figure 1: Follow-up Rate by Insurance Status (In Percentage)

Insurance	TOTAL	1-2wk	1-2mo	4-8mo	9mo-1yr	1.5yr	2yr
Uninsured	64	94	69	56	41	34	33
Private	158	96	78	60	53	51	46
Govt-Funded	190	92	72	53	46	43	43
Medicare	189	89	72	59	52	45	44
Average		**92**	**74**	**57**	**49**	**45**	**43**

Figure 2: Follow-up Rate by Ethnicity (In Percentage)

Ethnicity	TOTAL	1-2wk	1-2mo	4-8mo	9mo-1yr	1.5yr	2yr
Black	166	93	70	53	46	43	42
White	218	91	71	58	52	49	46
Hispanic	184	93	78	60	49	42	41
Asian	13	92	85	46	38	31	23
Other	18	89	83	61	61	56	56
Average		**92**	**73**	**57**	**49**	**45**	**43**

MP45-13 A prospective multicenter study on infectious complications of RIRS for renal stones using the Clavien classification system

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Introduction: Although the overall complications of retrograde intrarenal surgery (RIRS) have been well described, data on the rate and severity of infectious complication following RIRS using the modified Clavien classification system are under-reported. The aim of this prospective multicenter study is to report and grade the postoperative infectious complications of RIRS using the modified Clavien classification system.
Materials & Methods: From March 2010 to July 2013, we conducted a prospective study including cases of RIRS performed for upper urinary tract lithiasis in 4 European centers. All patients received antibiotic prophylaxis prior to instrumentation and antibiotics were also administered postoperatively.

The data collected included patient demographics, operative data and reported complications according to the modified Clavien classification system (Tab.1).

Table 1: Classification of infectious complications according to the Clavien-Dindo system

Grade	Complication	Management
Minor		
Grade I	fever	antipyretics
Major		
Grade II	urinary tract infection	antibiotic therapy
	non-obstructive pyelonephritis	antibiotic therapy
	sepsis	multi-drug therapy (antibiotics, inotropic and/ or nutritional support)
Grade III	obstructive sepsis	endoscopic intervention + multi-drug therapy
Grade IV		
Grade IVa	severe sepsis	intermediate care/ intensive care unit management
Grade IVb	septic shock	intermediate care/ intensive care unit management
Grade V	death	-

Results: Three hundred and fifty-six (356) patients underwent 377 RIRS procedures of holmium laser lithotripsy for renal stones. A stone free rate was achieved in 262 cases (73,6%). A ureteral access sheath (UAS) was used in 283 patients (79,5%) and a double J stent was left in situ postoperatively in 85% of patients. Twenty seven patients (7.5%) experienced a post-operative infectious complication (Tab 2). Two patients (0.2%) were re-admitted for non obstructive pyelonephritis following discharge from the hospital: they were treated with intravenous antibiotics. Two patients (0.2%) with obstructive pyelonephritis required DJ insertion. Infectious complications were encountered on postoperative day I, II and III in 18 (67%), 3 (13%) and 6 (20%) patients, respectively.

Table 2. Complications

Complication	# patients (%)	management
Clavien Grade I		
- Fever (>38,5 C^0)	23 (6.4)	Antipyretics
Clavien Grade II		
- Non obstructive pyelonephritis	2 (0.5)	Antibiotics
Clavien Grade IIIa		
- Obstructive pyelonephritis	2 (0.5)	DJ placement
Overall infectious complication rate	27(7.5%)	

Conclusions: Although several series on the septic complications after RIRS have been published, there is little consensus regarding the definition and classification of the infectious complications of RIRS. In this prospective study, the use of modified Clavien classification system has allowed the standardization and reproducibility of infectious complications after RIRS.

MP45-14 Semirigid and flexible URS "all prestented"- SFR 100% and high patient satisfaction – a prospective study of 250 patients

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Introduction: The discussion about prestenting often relies on retrospective data. We wanted to prospectively evaluate the stone free rate (SFR), operation time (OT), safety and patient satisfaction with routinely prestenting prior to semirigid (s) and flexible (f) URS.
Patients and Methods: From 6/2011 to 6/2013 all patients received a DJ stent without problems at least 9 days prior to URS. 82% (n = 205) as an emergency treatment (colics, infection).

During the URS the stent was removed. No routinely poststenting was done. The URS was performed by 4 Urologists differently experienced as well as a resident training procedure always in the same standardized manner. The sURS was done with a safety wire, the fURS using an access-sheath.

The patient satisfaction with all measures as well as complaints and complications were recorded with standardized questionnaires from the first contact up to 3 weeks after the URS.

The definition of ''stone free'' was: Endoscopicaly no residual stone ≥ 1 mm in the kidney or ureter and SFR: 0U + 0X (according to Somani et. al., Urolithiasis 20131207) already on the first day after URS.
Results: 250 ureterorenal units were treated. Average patient age was 54 y (15–92). Primary SFR for sURS was 100% (n = 101), for fURS 95,3% (n = 142) and after a 2.-look procedure also 100% (n = 149). In 42% (n = 105) there were coincident stones in the kidney and the ureter.

Median OT was 17 min (5–150) for the sURS and 55 min (12–178) for the fURS respectively.

Complication rate was 2.8% according to the Clavien grading score (Grade 1–3) and 6% according to the PULS score (Grade 1–3). The overall poststenting rate was only 9.6%.

91.8% of the Patients would recommend the therapy.
Conclusion: Consequent prestenting leads to a 100% SFR, short OT, high safety and high patient satisfaction.

MP45-15 Antegrade Irrigation Technique to Facilitate Ureteroscopy for Large Ureteral Stone Burden

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Introduction: A large volume of ureteral stones can be associated with severe hydronephrosis, compromised renal function, and infection or pyonephrosis. Extracting these stones is challenging, whether performed antegrade or retrograde, because the large volume in the narrow confines of the ureter does not lend itself to bulk extraction, as can be done for renal stones. We present the results of our technique of retrograde ureteroscopy combined with antegrade irrigation.
Materials and method: We identified 42 patients from 2009 to 2014 who presented with hydronephrosis due to high volume ureteral stones without renal stones and underwent percutaneous nephrostomy (PCN) for decompression. The patients then underwent retrograde ureteroscopy, lithotripsy, and stone extraction (URSL) with our novel technique at a separate session. Irrigation was performed with normal saline using a low-pressure system (gravity at 10 cm H2O) through the PCN. Data regarding stone size/location, degree of hydronephrosis, presence of infection, OR time, EBL, stone-free rate (SFR) and efficiency quotients (EQ), complications, and need for ancillary procedures were analyzed.
Result: Mean age was 36.8 years (21–78, 28 males and 14 females). Mean stone burden was 2.3 cm (1.5 to 3.2). Stone number ranged from 1 to > 100. Severe or massive hydronephrosis was present in all patients and renal insufficiency in 28/42 (66.7%) with serum creatinine of 1.6–32 mg/dl. Infection was present in 32/42 (76.2%) of which 8 had pyonephrosis. Mean interval between PCN placement and URSL was 4.2 days. Complete stone clearance was achieved in a single session in 34, and after a second session in an additional 7 pts. (97.6% SFR, 95.2% EQ). Stone migration occurred in 1 patient, requiring PCNL. Mean OR time was 46.4 min., EBL 20 cc, and hospital stay 0.8 days (0–3). Stents were placed in all pts. PCN was removed at time of URSL in 2, the day after URSL in 34, and after 1 week in 6. Complications included fever (4), SIRS (1), extravasation with spontaneous resolution (1), and post-operative stricture (1). Renal function improved in all 28 who had renal insufficiency at presentation. Follow up renal US confirmed absence of significant hydronephrosis in 41/42.
Conclusion: Staged treatment of large volume ureteral stones with PCN placement followed by retrograde URSL with continuous antegrade irrigation is a safe, effective technique with high success and low morbidity.

MP45-16 Urolithiasis - Semirigid and flexible URS ''all prestented'' - Without antibiotic prophylaxis? A prospective evaluation of 250 Patients

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Introduction: With worldwide increasing resistance against antibiotics, every single use of those substances must be critically questioned. We prospectively evaluated the need for antibiotic prophylaxis (ABP) in the context of routinely prestenting and consecutive semirigid (s) and flexible (f) URS.
Patients and Methods: From 6/2011 to 6/2013 all Patients scheduled for URS were routinely prestented with a Double-J-Catheter (DJ) without ABP.

During the URS the DJ was removed and no stent was placed after the procedure. The URS was performed by 4 Urologists differently experienced as well as a resident training procedure always in the same standardized manner. In all patients a urine culture was done minimum 3 days preoperatively. In case of positive culture, antibiotics were administered according to resistogram at least 24 hours before the operation and perioperativly. In case urine culture was negative no prophylaxis was administered. The sURS was performed with a safety wire, in fURS we always used an access-sheath.

We evaluated the number of preoperative infections as well as infection complications postoperatively.
Results: 250 ureterorenal units were treated. The average age was 54 y (15–92). 39 Patients (15,6%) had an UTI preoperatively, so test appropriate antibiotic therapy was given. None of those patients had complications due to infection peri- or postopreatively. In the preop. sterile group (84,4%) only two female patients (0.8%) developed fever due to UTI and persistent obstruction one week after discharge and therefore were treated with DJ stenting and i.v. antibiotics without further problems.
Conclusion: With a postoperative infection rate of 0.8% a perioperatively ABP is not indicated. Instead the exclusion of an urinary tract infection or the test – appropriate antibiotic therapy in case of infection respectively are crucial.

MP45-17 Flexible Ureterorenoscopy and Laser Lithotripsy for Kidney Stones: Does size matter?

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		Group 1 (215)	Group 2 (88)	p
Mean Age (year)		48 (1-78)	51 (2- 81)	0.069
Mean Stone (area)		1.31±0.57 1.25(0.25-2.73)	3.99±1.29 3.75 (3-9)	<0.001
Multiple location		17.7%	29.5%	**0.029**
Length of operation		60 (25-220)	90 (40-350)	**<0.001**
Intraoperative D/J stenting		91.2%	96.6%	0.142
Stone free at first month		79.5%	59.1%	**0.001**
Retreatment		6.0%	14.8%	**0.022**
Additional treatment	SWL	4.7%	11.4%	0.315
	URS	0.9%	0	
	PCNL	1.4%	1.1%	
	Micro PCNL	0.5%	1.1%	
Number of total treatments		1.19± 0.6 (1-4)	1.47±0.93 (1-5)	**0.001**
Stone free rate at third month		89.3%	82.6%	0.127

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Introduction: Flexible ureterorenoscopy (FURS) was gained popularity for treatment of kidney stones as a minimal invasive method. Although, FURS offers acceptable results in renal stones; percutaneous nephrolithotomy (PCNL) is still the first choice for large renal stones. We aimed to compare the results of FURS for renal stones above and below 3 cm^2.
Materials and Methods: Medical records of all patients were reviewed retrospectively who underwent FURS for kidney stone between October 2009 and February 2015 in a single center. The patients with severe skeletal malformation, non-opaque renal stone, and lost to follow- up were excluded. Remaining 303 patients were categorized into two groups according to stone area (SA); Group A (n: 215p, SA < 3 cm^2) and Group B (n:88, SA ≥ 3 cm^2). Demographical, clinical, operative, follow-up data and stone free status was analyzed.
Results: Mean age was 48.07 ± 16.17 years. There were no differences between groups according to age, gender, body mass index (BMI), stone side, stone location, operation history, preoperative DJ stent history, SWL history, ureteral stricture, access sheath rate, intraoperative DJ stenting and additional treatment. The median stone areas were 1.25 cm^2 (0.25–2.73) and 3.75 cm^2 (3–9) in groups A and B, respectively (table). The number of stones with multiple locations were significantly higher in group B ($p = 0.029$). Mean length of operation was longer, retreatment rate and total treatment were higher in Group B according to Group A (table). Stone free rate at the first month was lower in Group B, however third month stone free rate was similar across the groups ($p = 0.002$, $p = 0.127$, respectively) (table). There were two stone street, one fornix rupture in Group A and two urosepsis, one fornix rupture with abdominal distention in Group B as a major complication.
Conclusions: FURS is an effective treatment option for large kidney stones. The third month stone free rate is high, complications are acceptable.

MP45-18 Ureteroscopy and laser stone fragmentation (URSL) for large (≥1 cm) paediatric stones: Outcomes from a University teaching hospital

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Introduction: Treatment of large renal stones (≥1 cm) in paediatric patients is challenging. The usual treatment options include percutaneous nephrolithotomy (PCNL) or lithotripsy. While the former has a high risk of morbidity associated with it, outcome with lithotripsy is variable and often needs multiple sessions, which is done under a general anaesthetic for paediatric patients.

There is a rise in the use of ureteroscopy and laser stone fragmentation (URSL) for paediatric stones, especially in established endourology units. We investigated outcome of URSL for large paediatric renal stones ≥1 cm treated at our university hospital over the last 5-years.
Patients and methods: Retrospective review of a prospectively collected stone database was performed. Only paediatric patients undergoing ureteroscopic (rigid or flexible) procedures for stones ≥1 cm were included. Patient demographics, operative details, stone burden, hospital stay, complications and stone clearance were recorded. Data are given as mean (range).
Results: From April 2010-June 2015, 18 paediatric patients (11 females, 7 males) underwent 35 ureteroscopic procedures for large stones (≥1 cm). Thirteen patients had renal stones and two patients had ureteric stones; three patients had both ureteric and kidney stones. Mean stone size and the total stone burden were 13.2 mm (range: 10–25 mm) and 16.6 mm (range: 10–50 mm) respectively, with 9 patients having multiple stones. The mean intervention age was 10.4 years (range: 3.6–15 years) and a flexible URS was used in 32(91%) cases, either on its own (n = 11) or combined with a semi-rigid URS (n = 21). There was a preceding history of PCNL in three patients with one patient having it combined with a PCNL. Mean follow-up was 2.7 years (range: 0–5 years).

A post-operative stent was inserted in 21(60%) patients. The overall stone free rate (SFR) was 89% for a mean of 1.8 procedures/patient (range: 1–4), of which 6 achieved SFR after the first URSL. Apart from one failure to access a lower pole calyceal stone, there were no other intra or post-operative complications, with a mean hospital stay of 1.1 day (range: 0–5 days).
Conclusion: Our results show that paediatric URSL for large stones achieves a good SFR with minimal morbidity and is a good treatment option in established endourological units.

MP45-19 Simultaneous Bilateral Ureteral Calculi: A New Paradigm for Management

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Introduction: Simultaneous bilateral ureteral calculi (SBUC) are relatively uncommon but can pose a urological emergency if acute renal failure is present. Traditional urologic practice patterns have favored immediate upper tract drainage with subsequent definitive stone management. This study evaluates the initial presentation of SBUC and investigates the need for immediate intervention compared to a cohort of unilateral ureteral stone patients.
Materials and Methods: We retrospectively reviewed our stone database and identified all patients who presented with SBUC over a 10-year period. Patient demographics, stone features, clinical presentation, time between diagnosis of SBUC and initial intervention, as well as postoperative outcomes were recorded. Statistical analyses were then performed to compare SBUC patients with a control group, which consisted of 200 age- and sex-matched patients who presented with unilateral ureteral calculi.
Results: Between 2004 to 2013, a total of 3500 patients presented with ureteral calculi including 37 (1.1%) with SBUC.

Over one third of SBUC patients (13/37, 35.1%) were first time stone formers. Mean patient age was 56 years (22–82) and mean stone size was 6 mm (2–12). Among these 37 SBUC patients, 11 (29.7%) were considered emergent based on anuria (4/37, 10.8%) or > 2 of the following: fever, elevated serum creatinine, leukocytosis, nitrite positive urine, or electrolyte abnormalities (6/37, 16.2%), most commonly acidosis (5/37, 13.5%). No patients required acute dialysis. Serious infection or sepsis was noted in 10 (27.0%). Eighteen patients (48.6%) had intervention within 24 hours of diagnosis: 13/18 (72.2%) were stented and 5/18 (27.8%) were definitively treated with bilateral ureteroscopy. The remaining SBUC patients underwent intervention within < 7 days (8/37, 21.6%) or > 7 days (11/37, 29.7%) of presentation. Compared to controls with unilateral ureteral calculi, SBUC patients were significantly more likely to require emergent management ($p = 0.019$, OR 2.6). Univariate and multivariate analyses revealed this difference to be due to significantly more SBUC patients presenting with anuria ($p = 0.0009$) and significant acidosis ($p = 0.0064$).

Conclusions: In this series, the rate of emergent presentation among SBUC patients was similar to those with unilateral ureteral calculi. Although relatively uncommon overall, SBUC patients were significantly more likely to present with significant acidosis and the rare but serious condition of anuria. The indication for emergent intervention is typically clinical suspicion for infection. SBUC patients can often be managed with definitive stone treatment in an elective setting. However, patients must be thoroughly counseled on clinical signs warranting more urgent or emergent medical attention.

MP45-20 The Efficacy of Extended Antibiotic Prophylaxis Post–Ureteroscopy/Flexible Ureterorenoscopy: A Case Control Study

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Introduction: The recommended duration of post procedure antibiotic prophylaxis are variable between the EAU (European Association of Urology), AUA (American Urological Association) and SIGN (Scottish Intercollegiate Guidelines Network) guidelines. We performed a case control review to evaluate the use of antibiotic prophylaxis in preventing UTIs following URS/FURS. We hypothesized that serious infections would result in hospital readmission, rather than the patient simply receiving a course of post procedure prescription, of antibiotics, which are commonly prescribed without microbiological confirmation of infection in patients suffering stent-related symptoms. This study aimed to determine the effectiveness of an extended post-operative prophylactic antibiotics in reducing readmission for post-surgical infections in patients undergoing ureteroscopy/flexible ureterorenoscopy.

Patients and Methods: The case notes, imaging and operative details of all patients undergoing URS/FURS at a single tertiary referral unit between February 2013 to February 2014 were analysed. Patients who were less than 18 years old, pregnant, immunocompromised or were receiving any other antibiotics were excluded. All patients had pre-operative urine cultures and a single dose of pre-operative antibiotics; 77 patients received no further antibiotics (cases) and were compared against 116 patients who received an additional course of antibiotics post-operatively for three days or more.

Results: 3.9% of the cases who received no post-operative antibiotics were readmitted (3/77, one of whom primarily had stent symptoms). 0.9% of controls (1/116) who received prolonged antibiotics were readmitted (also believed to be primarily related to stent symptoms) [$p = 0.30$, two-tailed Fisher's exact test].

Conclusions: Including patients deemed more likely to be suffering stent-related bother than septic complications, there was no significant difference in post-operative readmissions in patients who had extended antibiotic prophylaxis compared with those who received a single dose at induction of anaesthesia. Given the potential risks of prolonged antibiotic use (allergic reactions and gastrointestinal disturbance including Clostridium difficile infection) and the increasing problem of antibiotic resistance, we recommend liaison with local microbiology services and a ''less is best'' approach for post-operative antibiotic use.

MP45-21 The Effect of Stone Composition on Holmium Laser Lithotripsy

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Introduction and Objectives: Ureteroscopy with laser lithotripsy is a very commonly used procedure to treat ureteral and renal stones. The use of laser allows for intracorporal fragmentation using flexible instruments. Holmium laser is assumed to fragment all different stone types. There is limited contemporary data about the efficiency of laser being used with regard to stone composition. Objective of the study is to test the effect of stone composition, if there is any, on the efficacy of holmium laser in clearing stones during ureteroscopy.

Methods: After approval from Institution Review Board, data regarding patients undergoing ureteroscopy for stone treatment was acquired prospectively between August 2011 and August 2013. Data includes age & gender of patients, stone characteristics (laterality, location, size, number, CT attenuation, radiopacity, & composition), and performing surgeon. All procedures were performed by 2 fellowship-trained endourolgoists with similar surgical technique for stone vaporization and fragmentation. All extracted stones were sent for stone analysis. Primary outcome was the total energy used to clear the stone endoscopically or radiologically. In staged procedures, the total laser energy used was calculated by adding the laser energy used in each session. Cases with failure to clear the stones endoscopically or radiographically, non-laser cases or cases preceded by other stone procedures on the active stone burden were excluded from the study. T-test was used to evaluate the effect of the patient, stone, and surgeon factors on total energy used to clear the stone.

Results: There were 61 cases that met the inclusion and exclusion criteria for the study. Some cases involve staged ureteroscopy, so the total number of procedures was 79 (3 procedures were needed in 2 patients and 2 procedures were needed in 14 patients). Median total laser energy used was 0.3100 KJ with range (0.02–28.23 KJ). By using the mean total energy used (1.9964 KJ) as a cut-off point, T-test showed that only kidney stone size ($p = 0.007$), distal ureter stone ($p = 0.008$), and primary stone composition ($p = 0.035$) were the only significant factors.

Conclusions: Stone composition can play a role in holmium laser efficacy during ureteroscopy. This finding may play a role in preoperative counseling of recurrent stone formers who have large stone burden. In such case, alternative treatments may be more efficient than ureteroscopy.

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MP45-22 Bilateral Same-Session Ureteroscopy for the Treatment of Ureter and Kidney Stones

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Introduction:. Bilateral ureteroscopy for treatment of urinary stones can be attempted in a single stage. We analyzed our experience with bilateral same-session ureteroscopy (BSSU) (semirigid/flexible) to determine its safety and efficacy.
Material & Methods: From 2001 to 2014, BSSU was performed in 37 patients (12 female, 25 male; mean age 46.9) for the treatment of ureter and kidney stones. Flexible ureterorenoscope was unavailable until 2005 (10 patients), and laser lithotripsy was not among the operative armamentarium in 13 cases.

Success of outcomes was assessed with regard to the immediate post-operative status of the entire urinary tract. Stone-free rate was evaluated intraoperatively and/or with a KUB X-ray at four weeks post-operatively.

Stones	RIGHT Urinary Tract	LEFT Urinary Tract	Total
Number	69	77	147
Location			
Proximal Ureter	8	11	19
Distal Ureter	17	13	30
Kidney	19	19	38
Size (millimeters)			
Mean	7.13	8.01	7.54
Min.-Max.	2-20	2-18	2-20

Results: Both semirigid and flexible ureteroscopes had to be utilized in half of the cases. The number, sites and sizes of stones are shown in the Table. In 12 patients there were additionally multiple stones located in any side of the urinary tract. For lithotripsy, Holmium laser was used exclusively in 25 patients (%68). While pneumatic and EHL were used in others, in 5 patients stones were extracted without lithotripsy. Stone retrieval equipment was not required in 70%. Ureteral stents were inserted in 78% of cases (23 bilateral, 6 single). Intraoperative complications were minor ureteral perforation in four (11%) and mucosal injury in 13 (35%). Five patients had post-operative severe pain requiring prolonged hospitalization; 22% of patients had hematuria. After BSSU, 19 patients were stone free (51%), 11 had CIRF < 2 mm (%30) and there were inaccessible/residual stones 7 patients (19%). Stones migrated to the kidney in seven patients with proximal ureter stones, but these were pursued to be extracted or fragmented using flexible ureterorenoscope in 5 cases. Unsuccessful results comprised three cases (2 migrated, 1 impacted proximal ureteral stones) in which we were not equipped with a flexible scope and four cases with multiple, large kidney stones that couldn't be reached or fragmented sufficiently. A successful outcome was observed in 81% of cases.

Conclusions: Bilateral semirigid/flexible ureteroscopy as a single-stage procedure is safe and effective in the management of bilateral stones of the entire urinary tract. Proximal impacted ureteral calculi, large and multiple kidney stones carry the highest risk of unsuccessful results.

MP45-23 Retrograde Intrarenal Surgery (RIRS) for Mid-Size (10–20 mm) Renal Stones

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Introduction: The treatment of choice for mid-size renal stones (10–20 mm) is controversial. According to the European Urological Association guidelines (2015), ESWL is the treatment of choice for kidney stones < 20 mm. Despite the technological advances, familiarity and expertise in high-volume centers, and relatively good success rate, RIRS is not recommended as first line treatment for mid-size renal stones. We investigated the results of RIRS for mid-size renal stones; success rate, complications, and ancillary procedures.
Patients and Methods: In the years 2004–2013, 629 patients underwent RIRS in our center. Three hundred and twenty (50.9%) consecutive patients were treated for a 10–20 mm renal stones and they comprised the study cohort. Clinical, operative, morbidity, and follow-up data were analyzed.
Result: Mean stone burden was 12.7 mm (±2.6, 10–19). A preprocedural DJ stent was inserted in 167/320 (52.2%) of the patients. Mean operative time was 61.4 minutes (±20.5, 21–165) and the mean hospitalization time was 1.9 days (±1.8, 1–14). Endoscopic success rate (at the end of the procedure) was 90.3% (289 cases). A significant stone residual remained in 31 cases due to unreachable stone (23 cases), technical failure (4 cases), bleeding (3 cases) and perforation of ureter (1 case). Overall complication rate was 6.7%; 14 patients had fever postoperatively, 1 case steinstrasse, 1 case perforation of ureter. Additional procedures were performed on 6.5% of patients (18 RIRS, 2 PCNL, and 1 ESWL) whereas 13 patients were conservatively followed. Stone free rate was 86% (275 patients) during a mean follow-up time of 5.2 months. The calculated effectiveness quotient of RIRS preformed for midsize stones was 80.8%.
Conclusion: RIRS is an effective treatment modality for mid-range renal stones and can be safely considered as the treatment of choice. The stone free rate is better than that commonly reported for SWL. As the rate of ancillary and auxiliary procedures is relatively low, the effectiveness quotient is also higher than that generally reported for SWL.

MP46 - URETEROSCOPY: STENTS/LASERS/ACCESS

MP46-1 Evaluating the image quality of a novel single-use digital flexible ureteroscope

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Purpose: To compare image quality between a novel single-use digital flexible ureteroscope and commonly used fiber optic and digital flexible ureteroscopes.
Methods: Flexible ureteroscopy using saline irrigation was performed on 3 ex-vivo porcine kidneys and images of 2–3 renal papilla per kidney were obtained using a MediCapture Device. A

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Ureteroscope	Scope Type	Mean Image Quality	Standard Deviation (SD)	p-value versus LithoVue
LithoVue	Digital	4.59	0.6	N/A
Storz Flex-X2	Fiber Optic	1.87	0.8	<0.001
Storz Flex-X^c	Digital	4.25	0.8	<0.001
Olympus URF-P5	Fiber Optic	1.69	0.8	<0.001
Olympus URF-P6	Digital	3.08	1.0	<0.001
Olympus URF-V2	Digital	3.51	1.0	<0.001
Wolf Cobra	Fiber Optic	1.92	0.8	<0.001
Wolf Boa	Digital	4.53	0.7	0.6

novel single-use digital flexible ureteroscope (LithoVue™ Single-use Digital Flexible Ureteroscope, Boston Scientific Corporation, Marlborough, MA, not yet commercially available) was compared with the following commonly used flexible ureteroscopes: Storz Flex-X2, Storz Flex-X^c, Olympus URF-P5, Olympus URF-P6, Olympus URF-V2, Wolf Cobra, and Wolf Boa. Image quality was rated by 13 endourologists on a scale of 1 to 5 (1 = poor, 2 = below average, 3 = average, 4 = above average, 5 = excellent). All endourologists were blinded to the model of the ureteroscope used to acquire each image, and all images were cropped to a uniform circular shape.

Results: The demographics of the 13 endourologists who participated in the study were as follows: mean age 46.9 (SD 9.5), mean years in practice 14.5 (SD 10.2), mean # flexible ureteroscopies per year 235 (SD 83). LithoVue (mean image quality = 4.59, SD = 0.6) demonstrated superior image quality to the Storz Flex-X2 (mean image quality = 1.87, SD = 0.8), Storz Flex-X^c (mean image quality 4.25, SD 0.8), Olympus URF-P5 (mean image quality 1.69, SD 0.8), Olympus URF-P6 (mean image quality 3.08, SD 1.0), Olympus URF-V2 (mean image quality 3.51, SD 1.0), and Wolf Cobra (mean image quality 1.92, SD 0.8; p-value < 0.001 for all comparisons). LithoVue FlexScope demonstrated similar image quality to the Wolf Boa (mean image quality 4.53, SD 0.7, p = 0.6).

Conclusions: In this blinded study by experienced endourologists, the Boston Scientific LithoVue, demonstrated statistically significant superior image quality to most commonly used digital and fiber optic scopes and similar image quality to the Wolf Boa.

MP46-2 Extending the durability of the flexible ureteroscope: Time for a multi-center database to identify best practice?

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Introduction: Flexible uretero-renoscopy is the first line treatment for upper tract abnormalities, but is fragile, and frequent repairs represent a significant financial burden (reported average number of uses is 10–50 cases). We review our experience with > 170 uses from a single flexible uretero-renoscope (fURS).

Methods: All uses with the fURS (Storz Flex-X2, Karl Storz) were recorded prospectively.

Results: The Flex-X2 fURS was used consecutively on 174 patients before requiring repair. Mean time for fURS was 42 (7–160) mins. All patients underwent a semi-rigid ureteroscopy prior to fURS. Access sheath was used is 23% and failure to access the upper occurred in 3 (2%) cases. Lower pole stones were relocated into a more accessible calyx prior to fragmentation. Lithotripsy was performed using Holmium-YAG laser (reusable laser fibre). All procedures were performed or directly supervised by an experienced endourologist. Sterilisation was performed using an approved chlorine dioxide immersion chamber (Tristel Solutions Limited). Based on our experience, we propose key features in prolonging fURS durability including: (1) in-theatre sterilisation and storage of fURS restricted to trained urology staff, (2) restricting use of fURS to experienced endourologists (either performing/supervising trainees), (3) prior inspection/dilatation of ureteric orifice/ureter using semi-rigid ureteroscope, (4) multi-access sheath use for prolonged cases, (5) relocation of lower pole stones to accessible calyx to minimise fURS deflection, (6) expertise/techniques developed within a high-volume stone referral centre.

Conclusions: Our study demonstrates that fURS durability can be significantly extended by the adoption of simple practices. We propose a prospective, multicentre database to clarify the significance of these contributory factors so best practice can be empirically defined and widely proliferated.

MP46-3 Durability of Flexible Ureteroscopy and Predictors of Repair: A Prospective Multi-Center Study

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Introduction: Flexible ureteroscopy is routinely used to treat upper tract stones and other pathologies. Reusable scopes continue to pose a significant cost and administrative burden to hospital systems, but few studies have examined long-term performance and scope durability. Flexible ureteroscope durability was assessed in a prospective study at six high volume institutions comprising the Western Endourology Stone (WEST) research consortium: University of California San Francisco, San Francisco General Hospital, Oregon Health Sciences University, University of Washington, University of California San Diego, and Puget Sound VA Hospital.

Methods: Surveys were performed using Research Electronic Data Capture (REDCap) software at the start and end of consecutive flexible ureteroscopic procedures to document case characteristics including ureteroscope properties, accessories used, patient characteristics, and stone location. Descriptive statistics and multivariate regression were used to identify possible predictors of ureteroscope damage.

Results: Between August 2014 and April 2015, 383 consecutive flexible ureteroscopy cases were recorded, of which 295 (79.7%) were stone cases. 23 total repairs were recorded. Mean stone size was 11.6 +/- 11.35 mm. 315 (69%) cases were conducted by residents, while 93 (20%) were conducted by attendings. The mean life span of a scope was 6.5 +/- 2.9 cases. Image quality was compromised or unusable in 107 (28%) of cases. Adjusted mulitivariate analysis showed that use of lithotrite was associated with need for ureteroscope repair (OR = 3.66, 95%CI 1.95–6.87, p < 0.0001). The association between time of scope in body and need for repair trended towards significance (OR = 1.011, 95%CI 1.00–1.02, p = 0.052), as did BMI (OR = 1.02, 95%CI 1.00–1.05, p = 0.07). Gender, BMI, primary surgeon type, stone size, and laser time were not correlated with need for repair.

Conclusion: Flexible ureteroscope damage is common. Use of lithotrite during stone cases predicts ureteroscope damage. Further study on the factors accounting for progressive loss of deflection, cost, and surgeon satisfaction and stressors is warranted.

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MP46-4 Effects of silicone hydrocoated double loop ureteral stent on symptoms and quality of life in patients undergoing F-URS for kidney stone: a comparative randomized multi-centre clinical study intermediate rate

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Introduction and Objectives: Silicone Double J ureteral stents are made of soft material which is presumed to be associated with less patient discomfort. We compared patient comfort after flexible ureteroscopy (F-URS) between a Coloplast-Porgès Imajin® hydrocoated silicone stent and a Percuflex® Plus stent (Boston Scientific Corp) over a 5-week prospective follow-up.
Materials and Methods: 4 centres, comparative, randomized, single blind, parallel groups study over a population of 140 patients treated for unilateral renal stones (5–25 mm) by F-URS. The primary endpoint was USSQ pain score at D20. Secondary endpoints were USSQ scores at intermediate dates (D2, D7) and 2 weeks after stent withdrawal (D35), quality of life, adverse events, and encrustation. Exclusion criteria included pregnancy, active infection, chronic pain, urogenital tumor, presence of an implanted double J stent, any treatment for BPH, prostatitis, or neuro/cognitive disease.
Results: The ongoing study started in October 2013. The present results are descriptive data obtained over the first 50 randomized patients. All patients meet our inclusion criteria, except 1 with infection stone. The population characteristics are the following:

	Male *%*	Age *years*	BMI	Mean stone size *mm*	First stone Episode *%*	Asymptomatic calculus *%*	D20 USSQ body pain Score	BB
Gr A: Silicone Imajin® hydro n= 23	57	56.1	26.4	10.9	35	47.8	18.19 +/- 11.16	
Gr B : Percuflex® plus n= 27	70	53.1	26.0	11.3	30	44.4	25.96 +/-15.02	

Analgesic treatment was prescribed to patients if needed. Two patients were withdrawn due to serious adverse events related to the procedure. Severe adverse events were mainly related to pain (4 in group A, 6 in group B). The USSQ score at D20 appears to be lower for group A. This difference persists after correction of the USSQ Scores to take into account the relative imbalance in gender between the groups.
Conclusion: The descriptive data of the first 50 patients of the study show that groups are globally comparable regarding initial characteristics and seem to indicate that the silicone Imajin® hydrocoated stent is better tolerated by patients when evaluated after 3-week indwell time.
This study was supported by funding from Porges Coloplast

MP46-5 Pattency and Safety outcomes of uventatm metallic stent in benign and malignant ureteral obstructions: 5.5 years experiences

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Introduction: The aim of this study is to investigate the patency and safety outcomes of the Uventa metallic ureteral stent and to evaluate predictive factors of patency and complications from our 5.5 years clinical experiences.
Materials and Methods: The medical records of 105 consecutive patients (42 male and 63 female) who underwent Uventa stent placement from December 2009 to November 2014 were reviewed. Among them, patients who underwent stent placement on re-constructed urinary system - uretero-ileal anastomosis, ureter-oneocystostomy and ureterocalycostomy - and on ureterovaginal fistula were excluded. All stents were placed by retrograde approach. Primary success was defined as no obstruction at the last follow-up without any additional intervention, and overall success was defined as no obstruction on at the last follow-up without other additional interventions except supplementary installations or adjustments of Uventa stent. Primary success (PS) and overall success (OS) was evaluated by Kaplan-Meier method and Cox proportional hazards model. Complications rates were classified according to modified Clavien-Dindo system and evaluated by logistic regression model.
Result: A total of 133 ureter units were evaluated. The mean age of patients was 55.5 ± 12.4 years. The PS on 1- and 2-year follow-up was 67.0% and 46.6%, and OS on 1- and 2-year follow-up was 82.5% and 70.8%, respectively. PS in malignant obstruction group was significantly higher than benign group in univariate and multivariate analysis (HR 2.858, CI 1.475–5.539, $p = 0.002$). However, in both groups, OS was not significantly different (HR 2.141, CI 0.921–4.978, $p = 0.002$). Age, gender, laterality, stricture length, previous failure of D-J stent, history of radiation therapy, number of stent placed, balloon dilation (BD), and stent placement across ureterovesical junction were not significant factors of PS and OS. Overall complication rates were not different between groups according to the above preoperative and intraoperative factors. However, grade 3 or greater complication rate was significantly higher in benign obstruction than malignant obstruction (OR 6.767, CI 1.509–30.350, $p = 0.013$) and obstruction that didn't need BD than needed BD (OR 12.274, CI 1.420–106.125, $p = 0.011$).
Conclusions: In malignant ureteral obstructions, the Uventa stent showed more favorable outcomes with higher PS and lower severe complication rate. The ureteral obstruction that needed balloon dilation also showed less grade 3 or greater complications.

MP46-6 Long term outcomes of the resonance® metallic ureteral stent in the management of benign and malignant ureteral obstruction

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Introduction: Metallic stents are placed for ureteral obstruction due to benign or malignant pathology in patients who are not candidates for surgery. They resist compressive forces and have longer indwelling duration than polymeric double pigtail ureteral stents. In this study we present our long term outcomes of Resonance® metallic stents placed for ureteral obstruction secondary to benign and malignant pathology.
Methods: The medical records of patients who had metallic Resonance ® stents from 2006 to 2014 were reviewed. Stent indications, outcomes and complications were reviewed.

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Success was defined as improvement of hydronephrosis and blood urea and serum creatinine with stent tolerability. Failure was defined as non-improvement or deterioration of hydronephrosis or kidney function, or removal of the stent for intolerability. Statistical comparison was performed with Chi-square test.
Results: Twenty five patients 8 males and 17 females had metallic stents placed. Their mean age was 64 ± 12 years and the range was from 27 to 81 years. Eighty six stents were placed in 38 renal units. The median follow up was 40.5 months. Four patients did not have complete follow up.

Table (1): Etiology of Ureteral Obstruction

Etiology of Ureteral Obstruction	Number of Patients	%
Benign:	15	60
• UPJ	7	20
• RPF	2	8
• Periaortitis	3	12
• Iatrogenic/stones	2	8
• Desmoid tumor	1	4
Malignant:	10	40
• Ovarian cancer	3	12
• Cervical cancer	2	8
• Prostatic cancer	2	8
• Prostatic cancer	2	8
• Unspecified malignancy	1	2

UPJ: Ureteropelvic Junction Obstruction
RPF: Retroperitoneal fibrosis

Table (2): Hydronephrosis after Stent Placement

Status of Hydronephrosis	Benign	Malignant
Cured/Improved	9/15 (60%)	3/10 (30%)
Stable	3/15 (20%)	4/10 (40%)
Progressed	0/15 (0%)	1/10 (10%)

Table (3): Stent related Symptoms:

Symptom	Number of patients	%
Flank pain	13	43.3
Dysuria	11	36.6
Hematuria	9	30.0
Frequency	8	26.6
Urgency	5	16.6
Groin Pain	5	16.6
Suprapubic Pain	4	13.3
	1	3.3

Table (4): Success Rates

Successful Resonance	Number of Successful Cases	Total number of Cases	%
All Patients	14	21	66.6
Benign Obstruction	12	14	85.7*
Malignant Obstruction	3	7	42.8*

*P value < 0.05

The four failed resonance stents in patients with malignant obstruction the tumor was large and compressing the two ureters. Two of them received pelvic radiation.
Conclusion: The Resonance metallic stents are effective and generally tolerable in treating chronic ureteral obstruction. Large tumor burden and malignant pathology are predictive factors for low success rate

MP46-7 The JJ stent and urinary tract infection. Is there any specificity?

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Introduction & Objectives: The ureteral JJ stent is widely used in daily practice. Besides its advantages, it is known to have inherent morbidity, mainly from infection and incrustation. The hypothesis behind this study was that a specific microbial load related to indwelling stents may promote encrustation, through the mechanism of urea splitting and struvite stones.
Material & Methods: We retrospectively analyzed three groups of inpatients: group A, patients bearing JJ stents, group B, stone patients without stents, group C, BPH patients. All groups consisted of 50 unselected, consecutive patients. We investigated the presence of urinary tract infection (UTI) and the involved germs. Groups B and C served as controls. Statistical analysis was performed to detect significance.
Results: In group A, 80% of patients had stents inserted for obstruction due to stones and 20% for other types of obstruction (uretero-pelvic junction or ureteral stenosis, external compression). UTI was present in 18 cases (36%) in group A, 21 cases (42%) in group B, and 19 cases (38%) in group C. There was no significant difference between groups A and B ($p = 0.08$) and between groups A and C ($p = 0.32$). The germs most frequently responsible for the infections were: Escherichia coli (Ec), Klebsiella pneumoniae (Kp), Proteus spp. (P), Enterococcus spp. (E), Pseudomonas aeruginosa (Pa). Their relative incidence is shown in the table.

Recorded germs/ Study groups	Group A (%)	Group B (%)	Group C (%)
Ec	50.0	57.15	21.06
Kp	22.22	9.52	31.57
P	5.56	14.29	5.26
E	22.22	9.52	26.32
Pa	-	-	10.53
Others	-	9.52	5.26

Similarity appears between the first two groups, but not with the group C, these patients, with a lower urinary tract condition, seeming to be more prone to infections caused by Klebsiella and Enterococcus. Surprisingly, the incidence of urea splitting germs in group A was very low, which contradicts our hypothesis.
Conclusions: The incidence of urinary tract infections in patients with JJ stents, urinary stones and BPH is high, without significant difference between groups. There is no specificity of microbes for the JJ stents patients. The low incidence of urea splitting bacteria does not support the mechanism of stent incrustation through the struvite stones pattern.

MP46-8 Flexible Ureterorenoscopy and Laser Lithotripsy with D/J stent or not

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Introduction: Ureteral double J (D/J) stenting has been an integral part of Flexibl ureteroscopy (FURS) for renal stones. Although its advantage has been shown in reducing post -operative pain; its contribution for stone clearance has not been fully shown

		Stone free at third month		Univariate	Multivariate		
		Yes (236)	No (53)	p	p	OR	95% CI
Stone area (cm^2)		1.5 (0.3-7.7)	2.5 (0.5-9)	0.005	0.249		
Multipl	No	86.0%	14.0%	0.004	0.025	2.49	1.123-5.553
	Yes	68.3%	31.7%				
Intra-operative stenting	Yes	84.2%	15.8%	0.021	0.038	3.04	1.062-8.684
	No	62.5%	37.5%				
Refused the additional treatment	No	86.5%	13.5%	<0.001	0.998		
	Yes	0	100%				

in long-term follow-up. In this study we aimed to evaluate the effect of D/J stenting on stone free rates at 3 months follow up.
Material methods: We reviewed medical records of all patients who underwent FURS for kidney stone between October 2009 and January 2015 in a single center. The patients with ureteral stricture, severe skeletal malformation, renal unit malformation, conversion of FURS, non-opaque renal stone, lost to follow- up and pediatric patients were excluded. The patients are considered stone free if there is no residual fragment at postoperative 3rd month. The stone free rates was compared in patients whether they had intraoperative DJ stent or not.
Results: A total of 289 patients were included in the study. 160 patients were male, 129 patients were female. The mean age was 50.12 ± 13.38 years. 24 patients had intraoperative D/J stent. There were no differences between groups according to age, gender, body mass index (BMI), operation history, preoperative DJ stent history, SWL history, ureteral stricture, stone size, access sheath rate, retreatment, and additional treatment number and stone location. The rate of refusal for additional treatment (n = 14) at first month was insignificantly lower in stenting group (5.1% vs 12.0%, p = 0.160). Stone free rate in the first month was similar in groups, however third month stone free rate was significantly lower in non-stenting group. Intra-operative DJ stenting, stone area, multiple renal stones were found to be predictors for third month stone free status in univariate analysis. Intra-operative D/J stenting and multiple renal stones were significant independent predictors of third month stone free rate in the multivariate analysis (Table)
Conclusion: Intra-operative DJ stenting and multiple renal stones are associated with higher stone-free rates at third month after FURS. DJ stenting may increase adherence of patients to additional treatments.

MP46-9 Routine stenting following URS is unnecesary and painful. Our results

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Introduction: systematical ureteral stenting following URS is the most common practice referred on numerous published trials in spite of increased morbidity.
Objective: Evaluate the effectiveness and safety of rigid URS and Ho:YAG laser lithotripsy to treat ureteral stones in our area and the use of stenting after URS as directed by the European Association of Urology.
Methods: Prospective and observational study that analyzed 37 patients who underwent URS and laser lithotripsy during 2014. We examine individual characteristics of patients as well as the size, location and qualities of stones. Pain reported by each patient after the surgery is encoded using visual analogue scale (VAS) at 24 hours post-URS and at 7 and 30 days after hospital discharge.
Analgesic and antiobiotic treatment used during admission and at home is scored.
For surgical complications we use Clavien Dindo Classification
Results: 56% of patients are male, median age of 56 years, BMI < 25 in 23.8%, ASA physical classification I-II in 80% and no stent before URS in 68%. Predominance of left stones (81%), only (68%), distal ureter location (76%) and with a size of 6–10 mm (50%) Stenting during URS in 21.6%.
Radiation exposure time < 59 seconds in 70.3% cases. We recorded no pain to moderate pain (< 5) 24 hours after URS in 81%; at 7 days 81.8% and 100% at 30 days. Stone free rate at 30 days is 97.3%. Patient satisfaction with the procedure is 100% Post-operative complications: two patients attending for pain at 2 and 5 days after discharge respectively and a woman admitted within 72 hours after URS by fever, being discharged four days later. No patient has required urgent catheter placement after URS.
Conclusion: Following the recommendation of the EAU non-routine stenting following uncomplicated URS is a safe and effective process, reducing the morbidity associated with the procedure.

MP46-10 Double-blinded prospective study comparing tadalafil Vs Placebo for double j stent symptoms control

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Introduction: Double j stents are widely used in modern urology. However, they are related to urinary symptoms and pain with an impact on quality of life and delayed return to normal activities of patients. Theoretically, ureteral spasms, trigone hypersensitivity, high pressure transmitted to the renal pelvis during voiding and local irritation are possible explanations. Taldalafil, is a selective, reversible and potent inhibitor of cGMP specific of phosphodiesterase type 5 (PDEI5) that promotes increased half-life of nitric oxide causing relaxation on vascular and visceral smooth muscle in the genitourinary tract. We presume it may have a potential use for ameliorating this symptoms.
Materials and Methods: A randomized, double-blinded prospective study was conducted from May 2013 to June 2015 comparing tadalafil (5 mg) vs Placebo. Included patients treated with a rigid or flexible ureteroscopy who had a unilateral double J stent placed. Each subject answered the validated-spanish version of USSQ questionnaire at day 0 (baseline), 1, 3 and 7 after taking medication and a pain rating scale respectively. All patients took 3 ibuprofen doses (400 mg) during the first postop day. A comparative analysis between both treatment groups was completed.
Results: Demographic and therapeutic characteristics are shown in Table 1. The USSQ show no statistical significance between the two groups in any of the primary endpoints.
Conclusions: In this trial, the use of tadalafil 5 mg/day showed no significant improvement in urinary symptoms secondary to double J ureteral stent compared against placebo. An increased

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Table 1: Demographic and therapeutic characteristics.

Characteristics	Tadalafil (n=26)	Placebo (n=26)	p
Age (years)	47.8±16.2	44.73±15.9	0.49
Height (m)	1.7±0.07	1.67±0.09	0.21
BMI (kg/m2)	26±4.2	26±3	0.97
Gender			
Female	10	16	0.13
Male	16	10	
Stent side			
Right	18	16	0.56
Left	8	10	
Stone free rate			
Yes	22	21	0.71
No	4	5	
Extra analgesics			
Yes	8	5	0.33
No	18	21	

BMI: body mass index.

dose or a loading dose are possible alternative administration regimens subject to be tested in the future.

MP46-11 Intrapyelic pressures during flexible ureteroscopy with flow-assisting devices measured by a digital pressure sensor placed on a guidewire. A pilot study.

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Introduction: The purpose of this study was to evaluate intrapyelic pressure during flexible ureteroscopy (f-URS) with irrigation maintained by an automated generator combined with a hand-assisted pump. In order to reach this goal, we evaluated simultaneously the usefulness of a pressure sensing guidewire.
Materials and Methods: This feasibility study assessed patients undergoing f-URS for kidney stones. A 0.014 inch guidewire with a digital sensor at its tip was used to measure pressure continuously in the renal cavities and acted at the same time as a safety guidewire. Irrigation was provided by an automated pressure generator set as 58 mmHg complemented by a pressure chamber fixed to the irrigation tubing and handled by an assistant in order to complement irrigation and increase visibility. During f-URS, we assessed for intrapyelic pressure in different situations for all cases: pressure without irrigation, pressure with only the automated irrigation and pressure with automated and manual irrigation with the assistant blinded and not blinded to the pressure monitor.
Results: Five f-URS in four patients were performed with pressure monitoring, one patient undergoing bilateral URS. For these cases, 12/14 Fr ureteral access sheath (UAS) were used for two cases, 10/12 Fr for two and none for one case. The UAS were positioned in the proximal ureter. Pressure with only the guidewire in the renal cavities varied from 3 to 7 mmHg. When the ureteroscopes were introduced in the kidneys with irrigation maintained by the automated irrigation device only, pressure was constant and averaged 46 mmHg (41–54). When irrigation was coupled with hand-assisting pumping during laser fragmentation, pressure pattern varied from each individual patient and averaged 84.8 mmHg (80.1–103.8), but reached peaks as high as 321 mmHg. We did not observe differences in pressure patterns according to the size or presence of a UAS.
Conclusion: Intrapyelic pressures reached during f-URS for renal stones using a hand-assisting irrigation pressure chamber are quite elevated. Furthermore, using a guidewire with a digital pressure sensor at its tip allowed for precise and practical continuous monitoring of intrapyelic pressure. Whether these high pressures have repercussion on complications and long-term consequences on kidney function still needs to be evaluated adequately.

Intrapyelic pressures during f-URS

Patient	UAS	Pressure without irrigation	Pressure with automated irrigation	Average pressure with combined flow-assisting devices	Maximum pressure reached
1a	10/12	3	54	103.8	321.4
1b	12/14	3	41	81.7	250.7
2	10/12	7	46	80.1	262.9
3	None	5	42	85.5	212.8
4	12/14	4	49	72.9	245.4

Pressures in mm Hg

MP46-12 Cost savings associated with selective retrograde guide wire USE

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Introduction: Various guide wires exist for retrograde endourologic access to the upper urinary tract. Hybrid guide wires combine a hydrophilic tip to enhance access and a polytetrafluoroethylene (PTFE)-coated shaft over a nitinol core to reduce safety wire slippage. Given its multiple advantages, it has been suggested that a hybrid wire be considered a first line choice in all cases of retrograde access. We hypothesize that this strategy is not cost effective.
Methods: Over a three-month period, we prospectively and routinely attempted to gain initial retrograde access, whenever indicated, in a consecutive group of patients with a standard 0.038-inch stainless steel (SS) fixed core PTFE-coated wire with a 5 cm flexible tip. A hybrid guide wire was used as second line when the SS wire was not successful. All urinary diversions and cases of ureteroneocystotomies were excluded. Success rates and cost savings were calculated.
Results: Retrograde access through a rigid cystoscope was attempted in 129 consecutive qualifying cases in 114 patients (15 bilateral). The top five indications for surgery were ureteral stones (50), strictures (31), renal stones (28), ureteral compression (12) and ureteral designation (4). For the whole group (129): 55% were pre-stented, 16% had radiation history and 74% had active ureteral pathology. Overall, initial SS wire placement was possible in 67% (86/129). Among SS failures, a hybrid guide wire was successful as second line in 60% (26/43) while other means for retrograde access were required in 40% (17/43).

Considering indication, 96% (27/28) of renal stones were successfully accessed with the SS wire. Ureteral stones and ureteral strictures were successfully accessed with SS wires in 62% (31/50) and 55% (17/31), respectively. In cases of extrinsic compression, SS wires were only successful in 25% (3/12). In cases of active ureteral pathology, SS wires were successful in 56% (55/97). Given the case volume and at a savings of $41 per case, the SS wire saved $3,526 over three months, for a projected savings of $14,104 per year over initial hybrid guide wire use alone.
Conclusion: Although potentially convenient, exclusive initial use of hybrid guide wires in all patients requiring retrograde

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upper tract access is unnecessary and not cost effective. Inexpensive SS wires can achieve successful access in almost all cases devoid of ureteral pathology and over half the time when active ureteral pathology exists.

MP46-13 Dusting vs Basketing during Ureteroscopic Lithotripsy—What is More Efficacious? A Multi-Centre Prospective Trial from the EDGE Research Consortium

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Introduction: There is controversy and very little evidence as to whether dusting stones is more efficacious than basket extraction of fragments during ureteroscopic lithotripsy. We prospectively followed patients to determine which method resulted in the higher stone free rate.
Materials and Methods: IRB approval was obtained across all sites and patients undergoing ureteroscopy for renal stones between 5–20 mm were eligible. The Endourology Disease Group for Excellence (EDGE) includes high volume stone centers who had a well established dusting (3 sites) or basketing (5 sites) approach to intrarenal calculi that participated in the study. Laser lithotripsy was utilized and patients were imaged within 3 months following ureteroscopy. The definition of stone-free was no fragments of any size on KUB and ultrasound imaging. All patients were stented postoperatively and given alpha-blocker for 30 days.
Results: 106 patients were enrolled and followed for 3 months (N = 61 Basketing, N = 45 Dusting). The stones were slightly larger in the dusting group (see table) and significantly more laser energy was used in the dusting group. There were fragments present in 11.1% in the basketing group compared to 42.3% of the dusting group. This equates to a stone-free rate of 89.1% in the basketing group and 57.7% in the dusting group. Only 3.4% and 12.0% of patients in each group, respectively, became symptomatic from their residual fragments. There was no difference in readmission to ER or hospital between the groups (17.9%-dusting vs 18.4%-basketing) or in reintervention rates (2.7% - basketing vs 7.4% dusting). There were no differences between the groups in post-operative creatinine or stone analyses.
Conclusion: Our analysis shows that in patients undergoing ureteroscopy for renal stones between 5–20 mm that active extraction of all fragments with a basket produces a higher stone-free rate (89.9%) than dusting the stone (60.9%). However, there was no difference in readmission or re-intervention rates and few patients in either group became symptomatic from their residual fragments during our limited follow-up. Long-term follow-up of these patients will also determine the fate of these fragments and whether they become symptomatic and require treatment.

MP46-14 Lubriglide Sequential Ureteral Dilators: a Safe and Effective Method of Ureteral Dilation to Facilitate Primary Ureteroscopic Intervention

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Introduction: Prestenting for passive dilation of the ureter is necessary in up to 12% of cases prior to ureteroscopic stone treatment. The aim of this series is to characterize the safety and efficacy of sequential ureteral dilation (SUD) and to identify factors associated with need for SUD to promote primary ureteroscopy (URS).
Methods: A retrospective review was performed of consecutive patients undergoing primary URS by a single surgeon (NLM) between 2011–2013. Patients were included in the series if they were undergoing primary URS for urolithiasis. Patients were excluded if they were prestented. The rate of Lubriglide sequential dilators® (Boston Scientific) use and need for stenting for passive dilation were captured.
Results: A total of 361 patients were identified. Sixty patients were prestented and were excluded. Thirty patients underwent bilateral procedures resulting in 316 cases for analysis. SUD was performed in 109 (35%) cases and successful in 102 (93.6%) cases. Fourteen (4%) had a stent placed for passive dilation. There were no intraoperative complications associated with SUD. A patient was less likely to require SUD if they had undergone prior shockwave lithotripsy or ureteroscopy. No factor was associated with need for prestenting and passive dilation. One patient who did not undergo SUD developed a ureteral stricture postoperatively.
Conclusion: The use of sequential ureteral dilators is safe and effective to perform ureteral dilation to promote ureteral access and allow for successful stone treatment in a single setting.

MP46-15 Ureteral stenting after flexible ureterorenoscopy with ureteral access sheath; is it really needed?: A prospective randomized study

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Ureteral access sheaths are commonly used in flexible ureterorenoscopy to facilitate ureteroscopic access. However, the necessity of ureteral stent placement after the procedure is not established. The aim of this study was to compare perioperative outcomes of patients who underwent flexible ureterorenoscopy with ureteral access sheath, with and without postoperative ureteral stenting. Between April-December 2014, 38 consecutive patients were randomized into a ureteral stent or non-ureteral stent group following flexible ureterorenoscopy with ureteral access sheath. The patient who had ureteric complication during procedure that needed ureteral stenting was withdrawn. Patient demographics data, operative data and perioperative outcomes were evaluated. Irritative voiding symptom score was calculated by using irritative domains of International Prostate Symptom Score (IPSS). Baseline characteristics were well balanced between both groups. Three patients needed preoperative ureteral stent for passive dilatation. Operative time was significantly shorter in non-stent group: 52 +/-22 vs 71 +/-29 min (p = 0.02). There was no significant difference in postoperative pain, analgesic requirement, postoperative fever, urinary tract infection, stone free rate and length of hospital stay between two groups. Three patients in stent group had unplanned hospital visit. Irritative voiding symptoms scores were increased after operation in stent group (2.5 +/-4.3), while the scores were invariable in non-stent group (-0.3 +/-2.5, p = 0.04). In **Conclusion**, non-ureteral

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stenting may be considered in an uncomplicated case after flexible ureterorenoscopy with ureteral access sheath.

MP46-16 Prospective randomized study between high power laser & Low power laser through FURS for treating renal stones>2 cm size

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Introduction: Typically low power (20–30W) laser machines are used for stone breakage in RIRS. Stone-dusting protocol needs high frequency as high 80 Hz, which can be obtained only with high power machine. We decided to compare these settings in prospective randomized manner for stones > 2 cm.
Material & Methods: Power of study calculated was 20 patients in each arms. Group 1 with low power – Stone breaking protocol – energy varying between 0.5 to 1.5 J & frequency varying between 5 to 20 Hz. (Lumenis P20). Group 2 with high power – stone dusting protocol – Energy varying between 0.3 to 1 J & frequency varying between 35 to 80 Hz. (Lumenis P120H). After 6 patients in each arm, interim analysis was submitted to ethics committee, which was grossly in favor of High power dusting protocol & hence committee recommended to stop randomisation. Hence this analysis is only of 6 patients in each arm. 200 micron slimline ball tip fibers were used in all cases. FURS was either Olympus P6 or Storz Flex X2, and access sheath was kept in all cases.
Results: The mean age of patients (49.2 ± 11.7 and 49.3 ± 10.7), Stone size (27.44 ± 6.68 vs 29.5 ± 7.8 mm) HU (1165 ± 400 vs 1043 ± 388) & access time (4.53 ± 3.6 vs. 4.67 ± 2.33), were comparable in both groups. Lasing time and total operative time were significantly shorter in the high energy group (18.66 ± 10 min vs. 56.67 ± 22 min, $p = 0.04$ and 28.3 ± 12 min vs. 72.2 ± 12.2 min, $p = 0.036$, respectively). None in Gr 2 & 50% in Gr 1 had residual fragments larger than 2 mm at the end of procedure as observed on endoscopy & fluoroscopy. Reduced vision due to clots happened in 16.7% (1/6) and 33% (2/6) cases in group 1 and 2, respectively. The initial & 1 month complete clearance rate was 100% with group 2. While in Gr 1 clearance rate at 1 month was 33% (2/6), which improved to 66.66% with auxiliary procedure. Group 1 patients had Clavien Dindo grade II complications in 2 patients. While in Group 2, none had any complications.
Conclusion: High power laser with dusting protocol is a promising energy source to be used for large stone RIRS.

MP46-17 A novel insertion technique of a modified ureteral access sheath to reduce the fluoroscopic exposure during retrograde intrarenal surgery: a randomized trial

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Objectives: To evaluate the feasibility of a novel insertion technique using a modified ureteral access sheath (mUAS) to reduce the fluoroscopic exposure during the retrograde intrarenal surgery (RIRS).
Methods: A novel insertion technique and a mUSA were developed to reduce the fluoroscopic exposure during RIRS. In a prospective randomized trial, 120 consecutive patients were randomly assigned into two groups (Group 1, $n = 60$, with the novel insertion technique and mUAS; Group 2, $n = 60$, with the standard ureteral access sheath (sUAS) and the conventional technique). X-ray exposure time and outcome of the procedures were analyzed and compared.
Results: A total 109 patients completed the randomized trial, 55 with mUAS and 54 with sUAS. In the mUAS group, all 55 sheaths were placed successfully without reverting to the conventional technique of using continuous fluoroscopy guidance. There was no significant difference between these two groups in reference to the gender, stone locations and stone size, as well as the initial stone free rate (77% vs. 74%), stone fragmentation time (48 vs. 50 minutes), UAS placement time (65.5 ± 7.2 s vs. 54.6 ± 6.4 s), and complication rate (13.3% vs. 15%). There were no complications attributed to the technique of sheath insertion. The fluoroscopy time however was significant shorter by using our insertion technique with mUAS, 3.2 v 22.2 seconds, $p < 0.0001$.
Conclusions: Our novel insertion technique of a mUAS was safe and effective. It significantly shortened the X ray exposure yet achieved the same surgical outcomes when compared to the conventional technique of insertion of sUAS.

MP46-18 Ureteric Stricture Following Ureteral Access Sheaths in the Modern Era: How Rare Is It?

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Introduction and Objectives: Ureteral access sheaths (UAS) can aid ureteroscopy by facilitating multiple passes of the ureteroscope, maximizing irrigation drainage, and reducing intrarenal pressures. However insertion of the access sheath may induce ureteral ischemia, cause iatrogenic ureteric injury, and could ultimately lead to ureteric stricture. In this study, we aim to evaluate the stricture rate following ureteroscopy both with and without the use of UAS.
Methods: We performed a retrospective chart review of consecutive ureteroscopies performed at our center (a tertiary referral center for endourology procedures) between April 2012 and April 2014 to treat ureteric and renal calculi. The primary outcome was the development of new hydronephrosis three months following successful ureteroscopy, not due to an obstructing stone. Patients without follow-up renal ultrasound (US) or CT scan 3 months post-ureteroscopy were excluded. Data on age, sex, size of the stone, location of the stone, stone density, stone-free rate (SFR), time of the procedure, pre-op stenting, post-op stenting, use of the UAS, size of the UAS, length of the UAS, stone analysis, and imaging details were recorded. Baseline and outcome variables were compared with ANOVA and Chi-square analysis where appropriate using SPSS statistical software.
Results: 203 patients were eligible. A UAS was used in 121 (59.6%) patients; 103 (85.1%) for renal stones and 18 for proximal ureteric stones. There was no significant difference in baseline or demographic data. None of the patients developed new hydronephrosis or developed a ureteric stricture, and none required endoureterotomy.

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Conclusions: UAS use during ureteroscopy for renal and ureteric stones is both safe and effective. Even with routine use of 11.5F and 14F UAS, ureteric stricture rates are very low (zero in this series), suggesting that significant ureteric injury is rare with proper technique and case selection.

MP46-19 Economic analysis on ureteric stenting after uncomplicated ureteroscopic laser lithotripsy for urolithiasis: Is stenting necessary?

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Introduction: Routine ureteral stenting after uncomplicated ureteroscopy and laser lithotripsy (ULL) is debatable. Purported advantages include preventing ureteral obstruction and facilitating stone passage; disadvantages include stent colic, potential stent migration and subsequent cystoscopic stent removal. The purpose of our study was to determine whether stenting after uncomplicated ULL is safe and economically sound.
Methods: A decision tree was developed to estimate the costs of ULL with and without stenting in achieving a complication free outcome (CFO) and quality-adjusted life days (QALD) over a one-month period. Complications were defined as any unplanned hospital visits within the first four postoperative weeks including emergency room visits, admissions to hospital, and/or surgeries. Complications were graded according to the Revised Clavien-Dindo Classification System. Complication rates and utility values were derived from recent literature. Costs of surgical procedures (in Canadian Dollars) were obtained from the Ontario (Canada) Case Costing Initiative. Univariate and probabilistic sensitivity analyses were performed to determine the robustness of our model.
Result: ULL without stenting was more cost-effective than ULL with stenting in achieving a CFO. ULL with and without stenting cost $3828 and $3248, respectively, to achieve an overall complication grade of 0.06 and 0.15 ($p < 0.0001$), respectively. Overall postoperative complication rates in the stented versus non-stented groups were 2.6% and 6.5% respectively. ULL with and without stenting generated 25.2 and 26.2 QALDs over one month, respectively. Probabilistic sensitivity analysis reinforced ULL without stenting as the most cost-effective strategy at a willingness-to-pay (WTP) threshold of less than $6000/QALY. ULL without stenting remained the most dominant strategy in our cost-utility analysis at generating QALDs across all WTP thresholds.
Conclusion: After uncomplicated ureteroscopy and laser lithotripsy, not stenting was more cost-effective and yielded one more QALD than stenting over a one-month period at reasonable WTP thresholds. Our study demonstrated that despite the increased postoperative complication rates associated with non-stented ULL, it was still the preferred treatment strategy after uncomplicated ULL.

MP46-20 Cleaving of Reusable Laser Fibers Increases The Risk for Ureteral Injury and Ureteroscope Damage

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Introduction and Objectives: Poorly cleaved quartz laser fibers may have jagged edges more likely to perforate or injure the ureter and the lining of the flexible ureteroscope. Repairs to ureteroscopes are costly and injury to ureters may result in urinary extravasation with increased hospital stay, increased stricture rates, infection or bleeding. The purpose of this study was to determine the effect of laser fiber cleave technique upon the perforation forces for a porcine ureter and lining of a flexible ureteroscope.
Methods: Three reusable laser fibers including the Cook Optilite 273, Lumenis Slimline 200, and the Dornier Meditech RFID 270 were cleaved 10 times using one of 5 different cleaving techniques including the ceramic scissor, a straight Mayo scissor, a scribe pen cleave tool, a diamond cleave wheel, and an #11 blade scalpel. The cleaved fibers were secured to a Mark 10 digital force gauge which was then used to measure perforation force for the working channel of an Olympus URF-P6 flexible ureteroscope and a fresh porcine ureter. Thirty perforation force measurements were recorded on both the ureter and ureteroscope for each fiber type and were also compared to uncleaved fibers (control). An Independent-Samples Kruskal-Wallis test was used for statistical analysis, with $p < 0.05$ considered significant.
Results: The mean pound force (lbf) required for perforation of the ureter was low and varied greatly by cleave technique (p-values reported for comparison to control); control = 0.152, ceramic scissors = 0.132 ($p = 0.19$), scribe pen = 0.122 ($p = 0.058$), diamond wheel = 0.121 ($p = 0.048$), scalpel = 0.117 ($p = 0.019$), and suture scissor = 0.106 ($p = 0.02$). The diamond wheel, suture scissor, and scalpel cleaves had significantly lower ureteral perforation forces than the control in pairwise comparisons. in comparing the force required to perforate the ureteroscope lining to the control; the results reported in lbf were as follows; control = 0.411, ceramic scissors = 0.328 ($p < 0.01$) scribe pen = 0.327 ($p < 0.01$) scalpel = 0.321 ($p = < 0.01$), diamond wheel = 0.300 ($p < 0.01$) and suture scissor = 0.281 ($p < 0.01$).
Conclusions: Poorly cleaved laser fiber tips may increase the risk of damage to the lining of the flexible ureteroscope and the risk of ureteral wall perforation. Cleaving with ceramic scissor or scribe pen may reduce the risk of ureteral injury compared to other cleave techniques. New uncleaved fibers are less likely to injure the ureteroscope lining than all types of cleaved fibers.

MP46-21 Determination of the Optimal Guidewire Type, And Effect of Prior Use, On The Ease Of Ureteral Stent Insertion

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Introduction: The best wire for ureteral stent insertion has not been well characterized. Routine use of some guidewires may lead to injury to the coating, thereby increasing insertion force. The goal of this study was to determine the effect of wire type and prior use, upon average insertion force required for a 6 Fr ureteral stent.
Materials and Methods: An *ex vivo* porcine urinary tract model was utilized. The collecting system was perfused with water down the ureter at a rate of 1 ml/min. For each trial, a new, soft, 6 Fr Cook JJ ureteral stent was advanced over several new and used 0.038'' diameter guide wires including the Glidewire (Terumo), Standard Teflon-coated wire (Cook), Superstiff wire (Cook),

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Sensor wire (Boston Scientific), Zip-wire (Boston Scientific), and Zebra wire (Boston Scientific). Each new wire was reproducibly converted to a used wire with a uniform technique. A Mark-10 digital force gauge was attached to the stent, and at a constant advancing rate of two rotations per second, the forces to advance the stent over the wire were measured. In random order, ten trials of stent insertion were performed on 12 new and 12 used guide wires (for a total of 240 placements).
Results: The unused Glidewire had the lowest mean stent advancement force (0.18N). Using the unused Glidewire as the comparison, the force for insertion of all other unused wires was significantly higher; Standard (1.25N; $p < 0.01$), Superstiff (2.03N; $p < 0.01$), Sensor (1.87; $p < 0.01$), Zip (0.22N; $p < 0.01$), and Zebra (0.61; $p < 0.01$). When comparing the average insertion force between new and used wires, the used wires required greater mean force in the Standard (2.42N vs. 1.25N; $p < 0.01$), Superstiff (2.68N vs. 2.03N; $p < 0.01$), and Zip-wire (0.36N vs. 0.22N; $p < .01$), but there was no difference between used and new fibers in the Glidewire (0.28N vs. 0.18N; $p = 0.14$), Sensor (1.66N vs. 1.87N; $p = 0.18$) and Zebra wire (0.59N vs.0.61N; $p = 0.67$).
Conclusions: Prior use and wire type both could affect the difficulty for stent insertion. Knowledge of these two factors may allow surgeons to perform stent insertion more safely and easily.

MP46-22 Ureteral stent removal without cystoscopy

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Introduction: Ureteral stenting (DJ) is a common procedure in urology. There are certain indications for DJ stenting, for example after ureterorenoscopic stone removal (URS). The cystoscopic removal of a DJ can cause unpleasant side effects, such as urinary frequency, haematuria or bladder and flank pain. The aim of this study was to evaluate the difference between a new magnetic DJ and the standard DJ regarding quality of life with the indwelling DJ and discomfort during the removal.
Material and Methods: The magnetic DJ (Blackstar, Urotech (Achenmühle, Germany)) is a standard 7 french ureteral stent with a small magnetic cube fixed on the loop of the distal part of the stent. For DJ removal a special catheter-like retrieval instrument with a magnetic tip is inserted, the two magnets connect and the retrieval instrument can be removed with the DJ. We evaluated 40 consecutive cases for URS where a DJ placement was needed in a prospective randomised manner. 20 standard DJs and 20 magnetic DJs were inserted. The quality of life was assessed by the ureteral stent symptom questionnaire (USSQ). A visual analoque scale (VAS) was used to document the pain caused by DJ removal. For statistical analyses the trend-test was used.
Results: We collected the USSQ questionnaire and VAS of 18 magnetic and 17 cystoscopic DJ removals. There was a significant difference regarding the pain location with the indwelling DJ ($p = 0.038$). The magnetic DJ caused no pain in 26% and the pain's maximum was located in the lower abdomen around the bladder (48%). The standard DJ caused flank pain in 54%. The median time for the magnetic DJ removal was < 1 min (< 30 sec - 5 min), whereas the median time for the whole procedure of the cystoscopic DJ removal was 15 min (10 – 30 min). There was a significant difference ($p = 0.019$) regarding the pain caused by the DJ removal. There was a significant difference ($p = 0.019$) regarding the pain caused by the DJ removal.
Conclusion: The magnetic DJ can be removed fast and easy without unpleasant side effects comparing to the standard cystoscopic removal. There is hardly no difference regarding the comfort with the indwelling stents. The magnetic DJ seems to improve patient's quality of life for DJ removal. A cost reduction could be obtained by reducing the OR time and nurses as well as surgeons working hour.

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V1 - LAPAROSCOPY: UPPER TRACT - BENIGN 1

V1-1 Laparoscopic Boari Flap in Upper Ureteric stricture

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Introduction: With advances in Laparoscopy, more reconstructive surgeries are performed Laparoscopically and saves the patient from Open surgery. We present our video of our case of Laparoscopic Boari flap in Upper ureteric stricture. Boari flap Ureteroneocystostomy saves the patient of bowel interpostion.
Patients and methods: A 47 year old lady presented with Right Flank pain, Fever. She was diagnosed of Rt Gross Hydronephrosis with hydroureter. A PCN was put to drain the system and later on evalutation she was found to have a dense Upper ureteric stricture. She was planned for Laparoscopic reconstruction. We found the ureteric stricture about 6 cm from the PUJ. As we had found the bladder capacity to be good, we planned for a Boari Flap Neocystostomy. The Boari flap was raised on the Superior vesical Pedicle and taken all the way above the pelvic brim and the ureter was reimplanted in it. A DJ stent was kept for 6 weeks
Results: The surgical time was 400 minutes, there were no intraop complications, postop recovery was smooth. Her J stent was removed at 6 weeks. She is followed up regularly and is doing well. Her MCUG and EC Renal scan are scheduled this month.
Conclusion: Laparoscopic Boari Flap is safe and effective reconstructive surgery for upper ureteric strictures and saves the patient from complications of Bowel interposition.

V1-2 Non-functioning kidney in a duplicated calicial system with extrarenal calyces following a transureteroureterostomy and ureteroureterostomy – a laparoscopic challenge?

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Introduction: A duplicated collecting system is one of the most common congenital renal tract abnormalities. It is characterised by a single renal parenchymal unit being drained by two

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pielocaliceal systems and two ureters (double ureters) that drain separately into the urinary bladder (complete duplication). In spite of being an anatomical variant, duplex-collecting systems may be complicated by vesicoureteral reflux, obstruction or even an ureterocoele. The presence of extrarenal calyces is a very rare finding, with only 20 cases described, in which the major calyces and the renal pelvis are outside the renal parenchyma. They usually do not produce symptoms, but may be responsible for hydronephrosis with impairment of normal drainage with consequent stasis, infection, or lithiasis.

Case Report: We present a case of a 38-year-old caucasian patient with a complete bilateral duplicated collecting system, with recurrent urinary tract infections and bilateral vesico-reflux, as a child. Following successive failed attempts to correct her vesicoureteral reflux (including at first, four neoureteroneocistostomies and four subsequent ureterocutaneous procedures because of the previous failed attempt), she was the submitted to an urinary reconstruction procedure that involved transection of all four ureters (removing all distal scar tissue, from previous surgeries), a left neoureterostomy through a Psoas Hitch (using the left proximal ureter), a left ureteroureterostomy and a right ureteroureterostomy with a sequential transureteroureterostomy: the right proximal and distal ureter, previously joined, from across the midline.

The patient presented to our outpatient clinic with a yearlong history of urinary tract infections and recurrent loin pain on the right. She had been losing weight (unquantified) as she was constantly nauseated and in pain.

Her diuretic deferential renogram showed a compromised right renal unit with a glomerular filtration rate) of only 14 ml/min. Abdominal and Pelvic CT showed a bilateral duplex collecting system, along with bilateral ureterohydronephrosis.

Given her age and absence of any co-morbidities, we decided for a Total Right Laparoscopic Nephrectomy. Adhesions and altered surgical planes were a challenge. Great care and time was spent on dissecting the renal hilum and pelvis with a rare and fortuit finding, the presence of extrarenal calyces, with the pelvis and at least one major calycle located outside the renal parenchyma. After guarantying vascular control of both the right artery and vein, we followed the right ureter up to exact place where the transureteroureterostomy was performed, to prevent leaving a refluxing stump. The ureter was sectioned at this point, close to the left common iliac vessels, at the level of the sacral promontory. The remaining steps of the surgery were straightforward. Recovery was uneventful. She removed the surgical drain the following day and she was discharged on the third post-operative day.

Follow-up, after three months, reveals an improvement on her quality of life, with no urinary tract infections and minimal abdominal pain.

Conclusions: Laparoscopic surgery, even in challenging cases of the upper urinary tract is still a viable option, and can even be better than an (another) open approach. Laparoscopic surgery can decrease postoperative morbidity and hospital stay, and globally diminishing the burden of care in a patient with a dramatic background of retroperitoneal surgeries.

V1-3 Laparoscopic Renal Pedicle Lymphatic Disconnection for Management of Intractable Chyluria

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Introduction: Chyluria is caused by rupture of lymphatic vessels into the urinary collecting system. A variety of diseases can lead to this abnormal communication between perirenal lymphatic vessels and urinary tract including filariasis, trauma, neoplasm, congenital lymphatic malformation, infection, and iatrogenic (usually after partial nephrectomy). Our goal is to describe the technique of renal pedicle lymphatic disconnection to cut the abnormal communication between perirenal lymphatic vessels and urinary tract.

Patients and methods: A forty year-old hypertensive female patient was referred to our center with chyluria, weight loss and anaemia. Conservative treatment failed to solve her problem. Retrograde pyelography showed dilated fistulous communications between perirenal lymphatics and collecting system at renal pedicle and upper ureter.

After induction of general anesthesia, the patient was placed in lateral decubitus position. Through a trans-peritoneal approach using 3 trocars, the posterior peritoneum was opened to expose the retroperitoneum. The upper ureter was identified, then the area from the UPJ till the renal hilum was dissected. The renal artery and vein were individually with control and cutting of all lymphatic vessels surrounding the renal pedicle. A tube drain was left for 2 days.

Results: Total operative time was 60 minutes and estimated blood loss was 100 ml. The patient had uneventful postoperative course with complete resolution of chyluria immediately following surgery. Result was durable at three month follow up.

Conclusion: Laparoscopic renal pedicle lymphatic disconnection is a successful minimally invasive management of chyluria.

V1-4 Laparoscopic (by Retroperitoneoscopy) Repair of Persistent Urinary Fistula after Percutaneous Nephrolithotomy

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Introduction: Persistent urinary fistula after percutaneous nephrolithotomy (PCNL) is uncommon. The conservative approach is mainly upper urinary tract diversion. When the conservative approach fails or is not suitable, there is no standard of care in the literature.

Our purpose is to present a case from our department of a retroperitoneoscopy (RPS) repair of urinary fistula after PCNL.

Patients and Methods: A 45-year-old woman was diagnosed a left complete staghorn calculus after acute pyelonephritis and double-J stenting. Her left kidney showed already thinned parenchyma. No relevant past medical history. In March 2014 she was submitted to a left PCNL, with an upper pole access. The procedure was aborted due to bleeding, remaining important residual fragments in the renal pelvis, middle and lower calyces. A double-J stent and nephrostomy tube were left in place. Two months later she developed lumbar pain and fever and the CT scan revealed a large retro-peritoneal urinoma secondary to an urinary fistula due to a residual calculus in the PCNL access.

We performed RPS with urinoma drainage and fistula tract resection with calculi removal. She was placed in right lateral decubitus, after fistula confirmation by retrograde ureteropyelogram (RUP). The procedure was performed successfully using the standard triangle access ports for RPS and balloon dilation. The urinoma was drained. The calculi were removed, the first the one in the fistulous tract and then the others with access through the fistula with a flexible cystoscope. The fistula was resected and the renal parenchyma closed with running suture. The upper tract closure was confirmed by RUP and methylene blue and a double-J stent was placed.

Result: The operative time was 150 minutes. No per-operative complication was registered. Drainage was removed 72 hours after surgery. The double-J stent was left for 6 weeks.

Post-operative CT scan revealed calculi in renal pelvis (22 and 16 mm) and lower calyx (7 and 8 mm) and complete resolution of the fistula. The patient underwent retrograde intra-renal surgery (RIRS) 3 months later to complete calculi treatment. The double-J stent was removed one month after the surgery and she was stone-free.

Conclusion: If conservative management in urinary fistula after PCNL fails or isn't suitable, a RPS repair is feasible and can be safely performed with very good results.

We propose that laparoscopic repair of persistent urinary fistula with remaining calculi after PCNL should be considered as one of the first approaches for treatment.

V1-5 Laparoscopic Transperitoneal Dismembered Pyeloplasty of Retrocaval Ureter

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Introduction: The retrocaval ureter is a rare congenital entity that causes external compression of the proximal ureter, and usually becomes symptomatic in the third or fourth decade of life. For the treatment of this condition, classically open ureteroureterostomy had been the gold standard for many years. In 1994, Baba *et* al. where the first to report a successful laparoscopic pyeloplasty for a retrocaval ureter. Over the time, other reports were presented with good results in less time. Current evidence supports the laparoscopic approach as fist-line treatment for this condition.

Patient and Methods: Clinical case of a 35-year-old male with 12 months history of intermittent right flank pain. Computed tomography scan (CT) after contrast infusion showed right hydroureteronephrosis, with the classical ''reverse J'' or ''fishhook'' deformity suggesting the presence of a retrocaval ureter. The mercapto-acetyl triglycine (MAG-III) renal scan showed righ-side obstruction with a split function of 41,1% on the right kidney.

Results: A standard four-port transperitoneal approach was used to perform classic dismembered Pyeloplasty with excision of the retrocaval atretic portion of the ureter. The operative time was 170 minutes. A closed suction drain was placed and kept for 48 h. The patient was discharged after 72 h. Ureteral stent was removed after 6 weeks postoperatively. At 3 months follow up, the patient was asymptomatic and MAG-3 renal scan showed no sign of obstruction.

Conclusion: Laparoscopic dismembered pyeloplasty is the standard of care for the treatment of ureteropelvic junction obstruction. When facing a retrocaval ureter additional challenges emerge. Despite this challenges it is possible to maintain the advantages of minimal invasive treatment: quick convalescence and good functional results.

V1-6 Laparoscopic Intraperitoneal Left Ureteroneocystostomy

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Introduction: In this presentation, we aim to show our technique about laparoscopic intraperitoneal ureteroneocystostomy on a patient with left ureterovesical junction obstruction.

Material and Method: 22 years old male patient applied to our clinic with left flank pain for two months. His phsyical examination, routine blood tests, complete blood count tests were normal but he had microscobic hematuria. In the intravenous urography, left ureterovesical junction obstruction and grade 4 hydronephrosis was shown. Then computerized tomography (CT) was performed. All ureter was dilated from the ureterovesical junction and any stone has not seen. The DMSA scan done to see the differentiated kidney function and the contribution of the left kidney was calculated as 35%. In order to protect cortical functions until the surgery date, nephrostomy catheter was placed.

Results: We performed laparoscopic intraperitoneal ureteroneocystostomy without an ureteral cateter. Hematoma developed on anterior bladder postoperatively which decreased conservatively. After showing the transition of the contrast agent to bladder, nephrostomy catheter was removed.

Conclusion: Ureteroneocystostomy is one of the surgeries that laparoscopic thecnique can be used effectively in urology. In patients with nephrostomy catheter, D-J catheter insertion may not be needed.

V1-7 Laparoscopic Ureteroureterostomy: Right Retrocaval Ureter

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Introduction: Retrocaval ureter is a rare congenital anomaly which is described as external compression of ureter by the inferior vena cava. In this presentation, we aim to show our technique about laparoscopic ureteroureterostomy on a patient with right retrocaval ureter.

Methods: We present a case of right ureteral obstruction due to the retrocaval location of the mid-ureter in a 37-year-old female patient. She had a right flank pain in the last 3 months. Her phsyical examination, blood and urine tests were normal. Grade 3 hydronephrosis of the right kidney and proximal hydroureter were observed in the sonographic evaluation. Intravenous pyelography showed severe hydronephrosis in her right kidney, and the ''reverse J'' shape of the collecting system suggested circumcaval course of the ureter. At last computed tomography confirmed the diagnosis of retrocaval ureter.

Results: Right laparoscopic ureteroureterostomy and D-J catheter insertion was performed. The retrocaval segment is brought anterior and lateral to the inferior vena cava, and the ureteral stenosis is excised. There were no intraoperative and postoperative complications. D-J catheter is extracted after 50 days.

Conclusion: Retrocaval ureter is a rare vascular anomaly, which may result in ureteral obstruction. Laparoscopic ureteroureterostomy is an effective treatment for this condition.

V1-8 Laparoscopic Pyelolithotomy for Bilateral Staghorn Renal Stone

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Case: A 51 y/o farmer man with bilateral staghorn renal stone
No history of DM, HTN
No history of previous surgery

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P/E:Rt eye blindness, otherwise not significant
lab data:Hgb:16.4, BUN:29, Cr :1.6, U/A:WBC 5-6, RBC 2-3, few bacteria, U/C:Negative.
He underwent laparoscopic Pyelolithotomy in two sessions and finally discharged with good condition and Cr:1.5

V1-9 A laparoscopic management combined with a flexible ureteroscope for ureteral polyps of more than 3 cm length

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Introduction: There is little reported a laparoscopic management for ureteral polyp as long as we can examine the literatures. Here we report a case underwent laparoscopic ureteroureterostomy with a combination of flexible ureteroscope for ureteral polyps of more than 3 cm length.
Patients and Methods: A 36-year-old man was introduced for the examination of left hydronephrosis from previous physician. The CT scan finding suspected ureteral tumor as the cause of left hydronephrosis. We observed the tumor by ureteroscopy and enforced the transurethral tumor biopsy. The tumor has been filled with ureteral lumen, the biopsy results were inflammatory polyp. Next, the percutaneous antegrade ureteroscopy showed the total length 3 cm or more of multiple ureteral polyps.
Results: For the ureteral polyps, we underwent laparoscopic ureteroureterostomy combined with flexible ureteroscopy. Separation of the ureter was carried out inferiorly to the lower level of the ureter crossing the common iliac artery. During the operation, the part of polyps and ureter stenosis was confirmed by using flexible ureteroscope. Concurrently, we decided the excision part by marking the light guide of ureteroscopy and dissected an approximately 3 cm length of the ureter. After the dissection of the ureter, the end-to-end anastomosis of the ureter was performed by knotted sutures using 4–0 monofilament. The surgery was completed by placing a 6Fr double J ureteral stent via the transurethral approach. The total operation time was 219 minutes, and total bleeding volume was only a little. During and after the operation, there was no complications. The final pathological finding of the ureteral mass was inflammatory polyp as the previous reports.
Conclusion: The length of ureter resected surgically is one of the problems of the ureteroureterostomy. In this case, we used ureteroscopy with laparoscopic approach to minimize the length of ureter resection. The using the light guide of ureteroscopy is very useful for us to decide the exact and minimal excision range for ureteroureterostomy.

V1-10 Laparoscopic retrocaval ureter correction

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Retrocaval ureter is a rare congenital abnormality that can lead to hydronephrosis, flank pain or nephrolithiasis.
In this video we present a case of retrovaval ureter which was corrected with transperitoneal laparoscopic approach.

V1-11 Laparoscopic off-clamp unsutured partial nephrectomy for renal angiomyolipoma after transarterial embolization for rupture.

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Introduction: We report a case of renal angiomyolipoma (AML) successfully treated by laparoscopic off-clamp unsutured partial nephrectomy after transarterial embolization (TAE) for rupture.
Patient and Method: The patient was a 53-year-old female with complaints of abdominal pain and vomiting. Under diagnosis of spontaneous rupture of AML (85 mm × 81 mm), TAE was performed in a community hospital. Since the size of the tumor was not sufficiently decreased by TAE, she was referred to our clinic for the purpose of surgery. Laparoscopic off-clamp partial nephrectomy was performed. Tumor resection was carried out using a combination of scissors, bipolar forceps and a ball electrode using the soft coagulation system without hilar clamping. After completion of the resection, saline with indigo carmine was infused through an inserted ureteral catheter. Since leakage from urinary tract was not found by the infusion, suturing of the resected bed was not performed.
Results: The operative time was 372 minutes including 86 minutes for the resection, and the estimated blood loss was 50 mL. The postoperative course was uneventful. The histopathological diagnosis was AML. Pre- and postoperative serum creatinine levels were 0.66 mg/dL and 0.65 mg/dL, respectively.
Conclusion: Laparoscopic off-clamp partial nephrectomy for a ruptured AML pretreated by TAE was successfully performed without suturing of the resected bed.

V1-12 Minilaparoscopic Excision of Retroperitoneal Tumor

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Introduction and objectives: Minilaparoscopy has been described as an alternative to both conventional laparoscopy and laparoendoscopic single-site surgery (LESS) for treatment of different urologic pathologies. However, minilaparoscopic instruments may have limitations in complicated procedures. We present a video that shows minilaparoscopic excision of a retroperitoneal tumor.
Materials and methods: In this video we present 29 years old female that gave a past history of open appendectomy and open cholecystectomy 9 years and 11 months, respectively. Her computed tomography (CT) of the abdomen and pelvis showed a retroperitoneal tumor that measured 9 × 6 × 5 cm. That mass was located between the inferior vena cava and hilum of the right kidney. CT confirmed crossing of right renal vein anterior to the tumor. Transperitoneal minilaparoscopic excision of the tumor was done using three 3-mm ports (including one for 3-mm laparoscope) and only one 10-mm port that was used for introduction of 10-mm shear of LigaSure, clip applier and the endobag. Adhesolysis of previous surgical adhesions was carefully done. The tumor was quite adherent to surrounding structures and it was dissected using both sharp and blunt dissection. The right

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renal vein was carefully dissected. The tumor had a feeding artery that was clipped and divided. The specimen was retrieved through the site of insertion of the 10-mm port.
Results: Operative time was 170 minutes. There were no intraoperative or postoperative complications. Blood loss was 150 c.c. The patient was discharged from the hospital after 2 days. Visual analog pain scale at discharge was 2. Histopathology confirmed the diagnosis of ganglioneuroma. Follow-up of the patient for 12 months showed no recurrence.
Conclusion: Minilaparoscopy provides a safe alternative for both traditional conventional laparoscopy and LESS even in complicated procedures.

V2 - BPH 1

V2-1 Estabslishing the Role of Video Information for Patients in Urology – Flexible Cystoscopy as a Pilot Study

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Introduction: 1/6 UK adults have a literacy level below that of an 11 year-old [1]. Patient information leaflets are not sufficiently readable. Patient information videos offer a solution. Flexible cystoscopy was chosen as the pilot procedure for an evaluation of video versus written information. An animated video information resource that aims to simply and clearly explain flexible cystoscopy has been produced, in partnership with a professional animation studio. A randomised, controlled trial is now recruiting, to formally evaluate the benefit of this resource.
Methods: In collaboration with 42Video ™, a professional film and television animation studio, we developed an animated patient information video, to explain flexible cystoscopy to patients. We surveyed patients' views on the new information resource.

Subsequently, a detailed protocol for randomisation and assessment of outcomes was determined and submitted to our local ethical review board. This trial is currently recruiting.
Results: We present the video information resource and initial results from the pilot survey, in which patients universally found the video useful, informative and easy to understand.
Conclusions: Patient information videos seem popular among patients and present a valuable resource for communicating complex information to patients with varying literacy levels. We present flexible cystoscopy as the first in a forthcoming series of urological patient information animated videos.

V2-2 Enhanced prostate vaporization using high power holmium and improved fiber

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Introduction and objectives: Benign Prostate Hyperplasia (BPH), is a common condition affecting large percentage of men above the age of 60. Holmium laser is well established tool for vaporization of BPH. Initial experience for the functional outcomes of the newly developed, high power 120w laser machine (Lumenis.LTD), with a new high transduction side firing fiber (Xpeeda, Lumenis.LTD) is the aim of this work.
Methods: Patient with prostates between 30 to 100 grams were treated with high power holmium laser, up to 60 Hz and 2J, using direct tissue vaporization. All patients were treated with only one side firing fiber, and were assessed for their residual urine volume, maximum urine flow rate, International Prostate Symptom Score and postoperative complication rates. In addition, procedure time, hospitalization and catheterization time was measured.
Results: In this initial experience, 30 patients were treated with holmium laser vaporization, and the main outcome is pointing towards excellent visualization peri-procedure, short catheterization post procedure, and resulted in short hospital stay. Procedure time was short (maximum of 65 minutes), and no side effects were observed. The clinical parameters such as IPSS, residual urine, Q max and more, were markedly improved post Holmium Laser Vaporization of the Prostate (HOLVAP)
Conclusions: Holmium Laser Vaporization of the Prostate offers excellent intraoperative hemostasis, thus improved visualization, shorter catheterization time, and shorter hospitalization stay. The combination of high power laser machine and durable and efficient fiber is a promising tool for effective and safe vaporization.

V2-3 The en-bloc no-touch HoLEP technique

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Introduction: Holmium laser enucleation of the prostate (HoLEP) is a safe and effective procedure for benign prostatic hyperplasia (BPH) treatment. Being considered difficult to perform HoLEP is still limited to expert teams at high volume centers. To minimize its steep learning curve, we progressively modified the traditional 3-lobe technique as reported.
Materials and methods: From 01/2012 to 10/2014 170 patients with BPH underwent en-bloc no-touch HoLEP (range of adenoma weight 10–290 g). A continuous flow 26F Storz resectoscope (12° optics, 550-μm end-firing laser fiber) were employed. A 100W Versapulse holmium laser (Lumenis) was used (2J/50 Hz), the 120W one in the last ones (2J/30 Hz/medium/long pulse). Transurethral morcellation was performed using a 24F rigid nephroscope (Storz) and the Versacut mechanical morcellator (Lumenis).
Results: Enucleation begins at the left apex, proximal to the verumontanum, finding the right plane between adenoma and capsule. The 5 o'clock incision from the left apex to the bladder neck is optional. The left lobe is isolated from the apex upwards in a side-to-side manner from 5 to 3 o'clock. Its detachment is completed from 3 to 12 o'clock and goes on towards the right side from 12 to 9 o'clock. Going back to the initial left apical incision the mucosa is transversally incised above the veru, the

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median lobe isolated reaching the bladder neck, the apex of the right lobe reached, and enucleated as for the left lobe from 7 to 9 o'clock, joining its already detached superior part. The enucleated adenoma is now fixed from 10 to 2 o'clock by the residual mucosa, to be incised respecting the external sphincter, obliquely on the lateral lobes, transversally on the residual 12 o'clock mucosa, nearer to the bladder neck. Mechanical detachment of the lobes and a reduced application of energy separating adenoma and capsule, with the laser fiber acting at a short distance (no touch approach), allow a bloodless and precise procedure. Among the advantages we number: the ability to promptly find the right plane between capsule and adenoma only once instead of three times; the possibility to progressively develop the right plane under vision avoiding capsular perforation and major bleeding; less mobility of the adenoma during enucleation; a good control over the external sphincter; less energy supply to the capsule.
Conclusions: This technique seems to make HoLEP easier to teach and to learn. Efficiency and safety are increased by experience but also by this modified procedure.

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V2-4 Bladder Neck Incision under Local Anaesthetic Using a Thulium Laser

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Introduction: Surgery for bladder outflow obstruction has evolved to become safer with the use of bipolar TURIS, and laser technologies such as HolEP and PVP. However, these cases still require an anaesthetic in the form of spinal or general anesthesia to proceed. For the patient with significant comorbidities, these types of anaesthesia can pose significant risks. Furthermore, fluid absorption, bleeding, and infection risks involved with the surgery itself, are important considerations in the high risk group. The authors report a video presentation of an 82 year old man with significant co-morbidities who underwent a bladder neck incision using local anaesthesia.
Patient and Methods: This 82 year old gentleman presented with acute urinary retention, and despite initiation of alpha blockade, he had two failed trials without catheter. His co-morbidities include diabetes, ischaemic heart disease, hypertension, CKD IV, superficial bladder TCC. Owing to these co-morbidities, spinal or general anaesthesia and subsequent bipolar TURP was considered high risk. The patient was extremely bothered by his catheter, however.

At flexible cystoscopy using instillagel, urethroscopy and cystoscopy was performed. This did suggest an intrusive prostate gland with a moderately high bladder neck. Via the flexible cystoscope, 20 ml 0.5% bupivacaine local anaesthesia was injected via a 27G, 4 mm needle (as used for bladder botox injection) into the bladder neck and towards the verumontanum. The patient was unaware of this infiltration. Following on from this, bladder neck incisions at 5 and 7 o'clock were performed using the Revolix continuous wave thulium laser. A total of 5918 J energy at 20 W was used. The patient was not aware of the laser being used. Bleeding was minimal, and a 16 F catheter was inserted postoperatively. The patient tolerated the procedure very well.
Results: He had a successful trial without catheter the following day and was discharged home. Upon a follow-up telephone consultation 2 months after this procedure, the patient remains very pleased with the outcome reporting no bothersome urinary symptoms.
Conclusions: This video presentation highlights that a local anesthetic BNI using thulium laser is a viable option in the patient with significant co-morbidity.

V2-5 Greenlight Laser Hybrid Enucleation of Prostate

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Introduction: Greenlight prostatectomy is done more frequently to treat BPH. One of the concerns with the procedure is that the adenoma is not completely removed as it is difficult to reach the surgical capsule with vaporization technique. This may be associated with higher recurrence rate. On the other hand, Holmium laser enucleation (HoLEP) has a durable response as the prostate is enucleated at the level of surgical capsule. We developed a hybrid technique of enucleation then vaporization to ensure complete removal of adenoma and avoid the use of a morcelator that may not be readily available.
Material and Method: Patient is placed in lithotomy position. Continuous flow resectoscope sheeth with laser port is used along with the Moxi fiber with XPS generator (AMS, Minnetonka, MN). Starting on the left side at 5 O'clock position, incision of the lateral lobe is done between the bladder neck proximally and the verumontanum distally all the way down to the capsule. Incision is then extended laterally at the level of verumontanum to the lateral capsule. After that, an incision at 1 O'clock at bladder neck proximally is done down to capsule and extending to the level of verumontanum distally. The lobe is now well defined and can be vaporized all the way down to the incision level at the surgical capsule. Same technique is mirrored for the right lobe. Median lobe is removed similarly, usually as first step by incising at 5 and 7 O'clock down to capsule then vaporizing all tissue above it.
Results & Conclusion: Five procedures were performed with that technique. Two patients had large prostates (> 100 cc) that needed a staged procedure for complete removal. Three patients were in complete retention prior to procedure and their retention resolved post operatively. No post-operative adverse events were noted. Early results show that the hybrid technique is feasible and safe in removing the adenoma similar to HoLEP enucleation without the need for morcelation or a steep learning curve.

V2-6 Holmium Laser Enucleation of the Prostate (HoLEP): THe Crucial Technical Aspects to Decrease the Learning Curve, Our Institutional Experience

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Introduction: Holmium laser enucleation of the prostate (HoLEP) is a minimally invasive procedure and a size-independent treatment for benign prostatic hyperplasia with excellent long-term surgical outcome. HoLEP has become an alternative to conventional transurethral resection of the prostate or open prostatectomy owing to its efficacy and safety. However, adopting this technique has been limited because it is difficult and time-consuming to learn. To help reduce the frustrations encountered during training, we have produced a video presentation of the technical details that we have found to be crucial in a successful and efficient enucleation of the prostate

Materials and Methods: The technique for HoLEP was captured using a digital video endoscopic capture system. Digital videotaped sequences obtained during surgery in two patients (one using a three-lobe technique and one a two-lobe technique) were selected for the video component of this presentation. The video clips were edited using video editing software. The presentation was compiled using Microsoft Office Powerpoint 2007. A pulsed high power 100 Watts Holmium Laser (Lumenis) with 26F resectoscope sheath was used for enucleation and tissue was removed by transurethral morcellation. Depending on the anatomy and size of the prostate, it is best to use one of the two methods for HoLEP, i.e. a two- or a three-lobe technique. We describe both of these techniques, together with specific steps detailing the differences between one step and the other.

Results: Tan and Gilling initially described the technique of HoLEP. Four steps were described based on the anatomy, i.e. bladder neck incisions, enucleation of the median lobe, enucleation of lateral lobes and morcellation. This is analogous to the three-lobe technique described here. Given our concerns about the difficulty in learning HoLEP, our approach involves a detailed account of the steps where we feel the beginner will encounter the most challenges when adopting the technique. Proper understanding of the technical details help to speed the process of learning.
Conclusion: HoLEP offers a clear advantage over TURP in reduced catheter time, hospitalization and blood loss, and can be used to treat anticoagulated patients and those with large prostates.. A clear understanding of the steps of the two-and three-lobe technique should help to reduce the frustrations encountered during the early adoption of this technique and helps to shorten the learning curve.

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V3 - LAPAROSCOPY: UPPER TRACT - BENIGN 2

V3-1 Laparoscopic management of Rt Ureterocolonic Fistula with Non functioning Kidney

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India

Introduction: We present a case of a 27 year old lady with recurrent UTI, on workup found to have Rt Poorly functioning kidney with Uretereocolonic fistula
Patients and methods: A 27 year old lady presented with recuurent UTIs with gas forming organisms in the Pelvis as found on Xray and Ultrasound. She was initially managed by a J stent and iv antibiotics. On further workup, it was found that she had poorly functioning kidney with Right Ureterocolonic fistula which explained the gas in the Pelvicalyceal system. A colonoscopy revealed mild divierticulitis. She underwent Laparoscopic Right Nephroureterectomy with repair of the Ureterocolonic fistula, which was sutured in layers.
Results: There were no intraop complications, the OR time was 240 minutes. Postoperative recovery was smooth, drain was removed at 72 hours. There were no further episodes of UTI till the latest followup of 8 months.
Conclusion: Ureterocolonic fistula are rare and have to be suspected in cases of Recurrent UTI with gas in the Pelvicalyceal system. Laparoscopic management of such fistulae is safe and effective with mimimum morbitity and good results

V3-2 Robotic Nephroureterectomy of a Symptomatic Atrophic Pelvic Kidney with Ectopic Insertion into a Seminal Vesicle

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Introduction: Pelvic kidneys occur in 1 in 2200 to 1 in 3000 people and can be prone to recurrent infections and kidney stones. We present a video of robotic nephroureterectomy performed in a patient with recurrent epididymitis secondary to an atrophic pelvic kidney with ectopic insertion into his right seminal vesicle (SV).
Patient: A 24-year-old male with no significant past medical history presented with complaints of recurrent epididymitis. On work-up he was found to have an atrophic right pelvic kidney with ectopic insertion into the right SV on CT imaging. His left kidney was normal. He had normal renal function with a creatinine of 1.1. After discussion of treatment options and risks he elected to undergo robotic nephroureterectomy.
Results: On the day of surgery, cystoscopy was performed which showed a normal orthotopic left ureteral orifice, absent right ureteral orifice and normal appearance of the patient's prostate and ejaculatory ducts. The patient was then positioned in low lithotomy and laparoscopic ports were placed in similar configuration as used for robotic prostatectomy with the assistant port in the right lower quadrant. The patient was placed in trendelenberg. The atrophic hydronephrotic kidney was easily identified in the pelvis. This kidney was mobilized with caution as its blood supply was not easily discerned on preoperative imaging. The vasculature between the kidney and the iliac vessels was presumed to be the hilum and was carefully taken with multiple clips. The kidney was decompressed to facilitate dissection. The ureter was identified and was traced down to the right SV. The pelvic kidney and a portion of the SV where the ureter inserted was taken en bloc. The SV stump was oversewn. Estimated blood loss was 25 mL and operative time was 164 minutes. There were no complications and the patient was discharged home on the second postoperative day. Final pathology was benign atrophic kidney with seminal vesicle cysts. At the patient's 6-week follow-up appointment he was doing well and denied any recurrent episodes of epididymitis.
Conclusion: Robotic nephroureterectomy is a safe and effective treatment approach for the management of symptomatic atrophic pelvic kidneys with ectopic insertion.

V3-3 Robotic Pyelolithotomy in a Horseshoe Kidney

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Introduction: Laparoscopic pyelolithotomy is uncommonly performed, but is an excellent minimally invasive treatment option for patients with renal anomalies or a single large renal pelvic stone. We present a video of robotic-assisted laparoscopic pyelolithotomy performed for symptomatic nephrolithiasis in a horseshoe kidney (HSK).
Patient: A 54-year-old male with a history of obesity, nephrolithiasis, and a HSK presented with a symptomatic 4 cm stone in the renal pelvis of his left renal moiety. A ureteral stent had been placed at an outside hospital. On review of CT imaging, the infundibula of the posterior calyces were quite narrow making a percutaneous approach to manage this large stone burden unfavorable. After discussion of treatment options he elected to go forward with robotic pyelolithotomy.
Results: The patient was placed in the flank position with his left side up. Cystoscopy was performed in while in flank and his ureteral stent was exchanged for an open-ended ureteral catheter. A robotic camera port, two 8 mm robotic arm ports and a 5 mm assistant port were placed. In this video, the left colon was mobilized and the dilated left renal pelvis was identified and dissected out. A 5–6 cm incision was made in the renal pelvis and the large kidney stone was removed. The renal pelvis was then partially closed with two running 4-0 vicryl sutures starting at the apices of the incision. Next, flexible nephroscopy was performed through a trocar while pulling up on the two sutures in the renal pelvis to enable irrigant to fill the collecting system. No remaining stone fragments were identified. A ureteral stent was placed over a wire under cystoscopic and robotic guidance. The renal pelvis was then closed with the two vicryl sutures already in place. A drain and foley catheter were left in place at the end of the procedure. Estimated blood loss was minimal and operative time was 168 minutes. He was discharged home on the first postoperative day. Stone analysis was 77% calcium oxalate and 23% calcium phosphate. His stent was removed six weeks postoperatively. He reports significant symptomatic improvement since surgery. Interval imaging following stent removal is pending.
Conclusion: Robotic pyelolithotomy can be performed safely and successfully in patients with HSKs.

V3-4 Simultaneous Laparoscopic Ureterolithotomy and Ureteroscope-assisted Double-J Stenting

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Introduction: Ureteroscope-assisted double-J stenting following laparoscopic ureterolithotomy is a simple and safe method allowing fluoroless stent placement and prompt management of residual stone fragments.[1] In order to save repositioning and redraping time, we have developed a positioning technique to simultaneously perform retroperitoneal laparoscopic ureterolithotomy and ureteroscope-assisted double-J stenting.
Patients and Methods: We present a video demonstrating our technique. The patient was placed in the modified decubitus and lithotomy position, and simultaneous ureteroscopy was performed to confirm if there is any residual stone fragment and intraluminally place the stent in the correct position. On the other hand, when severe periureteral adhesions were encountered, it could help locating the ureteral calculus to shorten the operation time.
Results and Conclusions: Three consecutive procedures were uneventful without intraoperative or perioperative complications. The positioning technique provides full access to the urethra, and promotes simultaneous execution of the ureteroscopic procedures. This modified approach will facilitate stenting procedures during laparoscopic ureterolithotomy, and enhance the stone-free rate, without compromising ureteral closure.

References

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V3-5 Laparoscopic nephrolithotomy and ablation of calyceal diverticulum

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Introduction: Caliceal diverticula are cystic cavities of the upper collecting system of probable congenital origin. Stones can be found in approximately 50% of the cases, in relation with urinary stasis and recurrent infection.
With the advent of minimally invasive surgery, the traditional open treatment became obsolete.
Material/ Methods: We report the case of a 53 years old male with a history of recurrent left renal colic. The uro CT scan revealed a conglomerate of stones in a diverticulum of the anterior middle calyx of the left kidney.

The patient was proposed to laparoscopic nephrolithotomy and diverticulectomy.

Briefly, the technique was as follows: After retrograde catheterization of the ureter the patient was positioned in a flexed, lateral decubitus. The peritoneal cavity was accessed using a minilaparotomy technique at the level of the umbilicus. The camera trocar was positioned and insufflation of the pneumoperitoneum started. Two remaining trocars were placed under direct vision. After mobilization of the colon and exposure of the kidney, the renal artery was dissected and referenced. The diverticulum was easily identified in the anterior surface of the kidney. A nephrotomy was performed followed by marsupialization of the diverticulum. The stones were retrieved to a endobag^{Tm}. The diverticular neck was identified with retrograde injection of saline. Fulguration of the diverticular neck and wall was then performed with the monopolar hook. The defect was covered with the Gerota and a drain was left in place.
Results: The BMI of the patient was 27,9 Kg/m^2
Operative time was 70 minutes. Estimated blood loss was 40 cc. The external ureteral catheter and the abdominal drain were removed and the patient was discharged in the 2nd post op. day. Post-op serum creatinine was 0,72 mg/dl.

The CT scan 1 month after the procedure showed complete resolution of the diverticular cavity.
Conclusions: The laparoscopic nephrolithotomy and diverticulectomy provides the highest success rates of the minimally invasive techniques for the management of symptomatic anterior

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diverticula. Our video shows that this operation can be successfully performed without need of extensive experience in advanced laparoscopic techniques.

V3-6 Laparoscopic Partial Nephrectomy in renal tumours with high RENAL scoring system; tips, tricks and pitfalls

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Introduction: Nephron sparing surgery (NSS) has now become the gold standard for small renal masses. However, these procedures represent significant challenge with higher morbidity. We aim to show with this video presentation our centre's experience in laparoscopic partial nephrectomy, concentrating on complex renal masses according to the RENAL scoring system, with surgical tips, intra-operative complications and their management.
Methods: The records of all NSS patients were reviewed between April 2003 and April 2015. Data on perioperative parameters and tumour complexity on preoperative CT scans were collected. Laparoscopic partial nephrectomy operations were recorded and edited for teaching purposes.
Results: This video presentation will aim to demonstrate the technical challenges encountered with these procedures. We will present the intra-operative complications and the post-operative outcomes. In our series, conversion to open NSS occurred in 12%, and conversion from NSS to radical nephrectomy was necessary in 14% of the cases. Incidence of positive margins occurred in 13.1% of the cases. Median change in eGFR was 0 (−27 - +12). Median blood loss was 150 ml (<50–2000 ml). Median WIT was 19 minutes (0–50 min). Four patients had significant post-operative haemorrhage requiring angiography or return to theatre. Five patients developed urine leak, all of which resolved spontaneously after a period of drainage.

We found that RENAL nephrometry scores correlate with blood loss, positive surgical margin rate, length of hospital stay as well as postoperative changes in eGFR. There was no statistically significant difference in warm ischaemic times or major complication rates based on nephrometry scores.
Conclusion: Our results showed that NSS in complex renal masses is safe in experienced hands with good preservation of the renal function with similar oncological outcomes compared to the current literature.

V3-7 Laparoscopic Boari Flap Ureteroneocystotomy

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Introduction: Ureteral reimplantation techniques vary with the distance from the bladder to the ureteral end, including direct ureteroneocystostomy, psoas hitch and Boari flap. In this video we present the technique of laparoscopic Boari flap reimplantation.
Patients and Methods - Clinical case: 42 y.o male with history of ankylosing spondilitis and left hip prosthesis presenting with left lumbar pain. Grade III-IV hydronephrosis was detected on abdominal ultrasound. Abdominopelvic IV contrast CT Scan showed sacral ureter stenosis 7 cm above the bladder. Ureteral DJ catheter was inserted and ureteral reimplantation was indicated.
Operation: Laparoscoic transperitoneal approach with 4 trocars.

- Opening of the left posterior peritoneum and mobilization of the left colon.
- Identification and dissection of the uréter down to the stenosis, over the iliac vessels'crossing. Ureteral sectión and spatulation. The uréter showed wall fibrosis and was opened up to the point were normal ureter was found. The end of the uréter lied above the iliac vessels.
- The bladder was widely mobilized including the contralateral side, and then opened shaping a flap. Bladder and flap were fixed to the psoas muscle.
- Ureter was reimplanted to the flap and then the flap and bladder were closed using runnig sutures

Results: Operative time was 270 min; Estimated blood loss 150. There were no postoperative complications and length of stay was 6 days.

Postoperative IVU showing normal upper urinary tract drainage. After 55 months of follow up the patient continues well with normal upper urinary tract on imaging techniques.
Conclusion: Laparoscopic Boari flap ureteral reimplantation is a valid option for ureteral reconstruction for long ureteral-bladder distances when other options are not viable.

V3-8 Flexible 3D laparoscopic segmental ureterectomy and end-to-end ureteral anastomosis for benign diesease

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Introduction: Fibroepithelial ureteral polyps are rare benign mesothelial tumors. Their treatment, according to their size and location, consist of ureteroscopic laser or segmental ureteral resection. In this video we present the laparoscopic treatment of a right ureteral polyp with a length of 9 cm.
Patient and method: A 48 year old female patient presented with macroscopic hematuria. The IVU demonstrated a filling defect of the right middle ureter. A right ureteroscopy was performed, and the biopsy excluded a urothelial cancer and revealed an fibroepithelial polyp. Because of the lesion's length, a DJ stent was placed and a laparoscopic treatment was decided.

The flexible 3D endoscope (Olympus Endoeye™) combines a minimal weight with a premium 3D-HD quality. Its flexible tip provides the user with 6 degrees of freedom and offers optimal view even during the most difficult steps of the procedure. The patient is placed in a left modified lateral decubitus position. The first trocar is placed infraumbilically, then, after inspection of the abdominal cavity, another 2 trocars are placed in a standard triangular fashion. A fourth trocar for the assistandt is optionally placed. The lateral peritoneum is incised at the level of the right paracolic line and the caecum with the ascending colon are mobilised medially. The ureter and the ovarial vein are visualised below the lower renal pole and they are prepared and mobilised, until the bladder. The position of the tumor at the level of the ureteral vascular crossing is verified. The ureter is then cut procimally and distally, and the segment incolved is excised using curved scissors. A frozen section confirms the non-malignancy of the lesion. Both ureteral ends are spatulated at a length of 1 cm. The anastomosis is performed using two 4-0 V-Loc continuous sutures, one for the posterior and one for the anterior part. An easy-flow drainage is placed in the small pelvis through the lateral trocar.

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Results: The final histology confirmed the fibroepithelial polyp. The 4-day hospital stay of the patient was without complications. The procedure lasted for 90 mins with almost no blood loss. The ureteral stent was removed after 6 weeks and the control urogram showed no pathology. The patient has no symptoms after 10 months.
Conclusion: The laparoscopic treatment of benign lesions with a big length is feasible, with rare complications and short hospital stay. An additional benefit is gained by adding a 3D-HD vision to our armamentarium.

V3-9 Renal denervation via bilateral kidney autotransplantation for the treatment of refractory hypertension

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Introduction: Hypertension (HTN) is an important and preventable contributor to disease and death, yet suboptimal blood pressure control remains a challenge and is responsible for 7 million deaths annually. Drug refractory hypertension,(blood pressure above control despite the use of five or more antihypertensive medications), and resistant hypertension (above goal blood pressure in spite of concurrent use of three different class antihypertensive agents, one of them being diuretics) are associated with poor clinical outcomes. In recent years catheter based renal sympathetic denervation generated strong promise in treating resistant hypertension (8–10). However, the latest Symplicity HTN-3 trial failed to demonstrate a benefit in denervated patients compared to the sham-controlled group. Here we describe a patient, refractory to full doses of nine medications, who was managed with bilateral surgical renal denervation via laparoscopic donor nephrectomy with autotransplantation.
Methods: At our institution, full IRB approval is not required for reports on single patients. Office seated blood pressures were measured according to the American Heart Association guidelines with an Omron oscillometric device. Ambulatory blood pressure was measured with a Spacelabs™ ambulatory monitor. Complete renal denervation was accomplished by staged transection of the bilateral renal arteries via laparoscopic donor nephrectomy and subsequent autotransplantation of each kidney into the ipsilateral pelvis. The two procedures were staged 8 months apart.
Results: This was a 39 year old female with resistant hypertension on nine medications. She had failed previous carotid baroreceptor placement and continued to have hypertensive emergencies with resultant end organ damage. She underwent staged, bilateral laparoscopic nephrectomy with autotransplantation. The mean operative time for the lapaoscopic portion of the procedure was 300 minutes, mean EBL was 200 mL and mean LOS was 3.5 days. Follow up is 12 months from her first operation and 4 months from her second. She is currently on four antihypertensive medications at low doses and normotensive without any further hypertensive emergencies.
Conclusion: Renal denervation with nephrectomy and autotransplantation shows promise for patients with severe and resistant hypertension as a means of decreasing the overall blood pressure to safe and physiologic levels.

V3-10 How hard can it be? Retroperitoneal laparoscopic adrenalectomy in a patient with a horseshoe kidney: operative findings compared with available literature

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We present the case of a 55 year old man with a horseshoe kidney (HSK), who underwent left retroperitoneal laparoscopic adrenalectomy. This was following discussion at local multi-disciplinary team meeting due to radiological finding of an adrenal mass of unclear aetiology.

HSK represents a frequent renal malformation with an incidence of 0.25%; it is characterised by ectopia, malrotation and vascular anomalies (Natsis. Surg Radiol Anat 2014; 36(6): 517–526). Furthermore, the HSK is limited by the inferior mesenteric artery during ascent; a common, lower position is at L4 (Garza. Int J Morphol 2009; 27(2) 491–494). This anatomical variation, alters the usual landmarks relied upon in retroperitoneal surgery.

The kidneys and adrenal glands have separate embryological origins however in the absence or malformation of the kidneys the adrenal glands may be affected (Moore. *The Developing Human.* 1998). Traditionally, the paired adrenal glands are known to have three arterial supplies and asymmetrical venous drainage; however there is variation.
Methods: The patient underwent a retroperitoneal laparoscopic left adrenalectomy. The patient gave written consent for the procedure to be recorded. Standard CT images with contrast were available prior to procedure.

A full literature search was conducted (pre and post-operatively), including case reports and cadaveric dissection reports. This was to better understand the potential difficulties that may be encountered during this procedure.
Results: Despite concerns, the procedure was much more straightforward than anticipated; mainly in view of a long, easily identifiable left adrenal vein which could be ligated easily. This is easily viewed on the recorded operation video. The inferiorly sited HSK meant the left adrenal vein was elongated due to its inferior course towards the low left renal vein.

The patient has had no immediate or medium term complications; he made an uneventful recovery on the ward and was discharged 2 days post procedure. The histology confirmed a benign mass.

There are few available studies commenting on the anatomy and vasculature of the adrenal glands in the context of a HSK, most only describe the renal vasculature. Multiple studies describe variation in adrenal vasculature and the safety of laparoscopic adrenalectomy.
Conclusion: Literature on this subject is scarce, however in our experience the easily identifiable left adrenal vein actually made the procedure on this patient easier than normal. A HSK is not a contraindication for retroperitoneal laparoscopic left adrenalectomy. Other surgeons' experiences of left and right adrenalectomy in a HSK should be sought.

V3-11 Laparoscopic Partial Adrenalectomy for the Management of Pheochromocytoma: a Case Report and Review of Literatures

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Introduction: Bilateral pheochromocytoma is a rare disease requiring surgical intervention for adequate disease control. Laparoscopic adrenalectomy is the treatment of choice for adrenal tumor since 1991. Herein we reported a case of bilateral pheochromocytoma who received right robotic adrenalectomy

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previously. This time he received laparoscopic partial adrenalectomy for the treatment of left pheochromocytoma.
Case report: A 35-year-old man had hypertension under regular medication for 3 years. He had progressively poorly controlled pressure since 2012. Magnetic resonance imaging showed bilateral adrenal mass, in favor of bilateral pheochromocytoma (right: $3.5 \times 2.0 \times 1.9$ cm, left: $3.0 \times 2.7 \times 3.8$ cm). The hormonal profile examinations showed elevated urinary vanillylmandelic acid, epinephrine, norepinephrine, and dopamine. Robotic right adrenalectomy was performed in 2013. The pathology showed right pheochromocytoma. Elevated urinary catecholamines level was noted after operation. Left laparoscopic partial adrenalectomy was performed in 2014. Total operative time was 120 mins and total intraoperative blood loss was 30 ml. Convalescence was uneventful and the patient was discharged under stable condition. Post-operative prednisolone was given for 5 months. Normal hormone profile was noted 6 months after the operation.
Conclusion: Laparoscopic partial adrenalectomy is a feasible method for patients with pheochromocytoma.

V3-12 Laparoscopic non-clamping tumor enucleation of renal hilum schwannoma of single kidney

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Laparoscopic partial nephrectomy is one of the widely used first line treatments for renal tumors of T1a, but this form of surgery has many technical limitations. Nevertheless, if tumor grows at renal hilum in a patient who only has a single kidney, it requires a more skilled operation.

Non-clamping partial nephrectomy could be used as one of the procedure in this situation; however, it would be an even more challenging surgery.

A 60-years- old woman underwent laparoscopic surgery onto the right nephrectomy at her age of 56 due to pyonephrosis associated with right ureteral stones. This patient also developed a brain stem hemorrhage and became bedridden. At the time of nephrectomy, a renal tumor, sized $24 \times 24 \times 20$ mm, was observed in the left renal hilum; the tumor lacked contrast on a computed tomography. 3 years later, the tumor grew slowly in the patient and became to a size of $45 \times 35 \times 34$ mm; thus, laparoscopic non-clamping tumor enucleation was performed.

Part of the tumor was found while renal hilum exfoliation, however confirmation of the entire tumor was not possible. Therefore, dissecting the renal parenchyma facilitated confirmation of the entire tumor even without clamping vessels. Under conditions in which bleeding was in control, the tumor was exfoliated gradually by blunt dissection from renal parenchyma, followed by renorrhaphy with the closure of urinary tract. No post-operative complication was recorded, and CT confirmed the function of renal parenchyma three months after the operation. Pathological examination confirmed a diagnosis of renal schwannoma.

In conclusion, non-clamping laparoscopic procedure could be a choice even for renal hilum tumor.

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V4 - ROBOTIC SURGERY: LOWER TRACT - BENIGN

V4-1 Robot-Assisted Laparoscopic Cystorrhaphy for a Chronic Bladder Perforation Following Transurethral Resection of Bladder Tumor

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Introduction and Objectives: Bladder perforation is a known complication during transurethral resection of bladder tumors (TURBT). We present a unique case of a chronic extraperitoneal bladder perforation (eBP) following TURBT that failed to close despite 4 months of conservative management. The technique of robot-assisted laparoscopic cystorrhaphy is demonstrated to treat this bladder injury.
Methods: Robot-assisted laparoscopic cystorrhaphy was performed in a 71 year-old female who sustained an unrecognized eBP at the time of TURBT for pTa, high grade papillary urothelial cell carcinoma. The patient was treated with intravesical Mitomycin C at which point she developed abdominal pain, and was found to have an eBP on CT scan. The patient was treated conservatively with bladder drainage for 10 days. One month after TURBT she was treated with intravesical BCG after which she became acutely ill. CT scan revealed extravesical fluid and inflammatory changes consistent with a persistent eBP. The patient was treated The patient was treated conservatively with bladder drainage for 30 days without success and was referred for surgical management.

The patient was placed in the dorsal lithotomy position and the robotic system was side-docked to allow for access to the urethra. Cystoscopy was performed concomitantly with a transperitoneal robotic approach. Dense intraperitoneal adhesions were encountered, and extensive inflammatory changes were noted in the space of Retzius. Cystoscopic passage of a 5 Fr open-ended catheter through the perforation aided in transperitoneal identification of the bladder perforation. The edges of the bladder perforation were excised until healthy mucosa was identified. A three layer cystorrhaphy was performed using absorbable suture. A Jackson-Pratt drain and Foley catheter were placed for postoperative drainage.
Results: Operative time was 222 minutes and blood loss was 10 cc. The patient had an uncomplicated postoperative course, and was discharged on postoperative day 2 after the JP drain was removed. The Foley catheter was left in place for 14 days due to extensive perivesical inflammation that was encountered. Following removal of the catheter, cystoscopy and cystogram confirmed a water tight repair.
Conclusion: To our knowledge, this is the first report of robot-assisted repair for a chronic eBP following TURBT. Robot-assisted cystorrhaphy with concomitant cystoscopy was successful in repairing this complex urologic condition in the setting of extensive perivesical inflammation. This case demonstrates the versatility of applying robot-assisted surgery to simple as well as complicated cases.

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V4-2 Robotic-assisted Laparoscopic Enucleation of Anterior Bladder Wall Leiomyoma in Patient with Chronic Urinary Retention.

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Introduction: Bladder leiomyomas are soft tissue neoplasms that occur predominantly in middle-aged women. While rare at 0.43% of all bladder tumors, they are the most common benign soft tissue neoplasm of the bladder. We present a robotic-assisted laparoscopic extra-mucosal enucleation of bladder leiomyoma in a complex patient with morbid obesity, prior abdominal surgeries and chronic urinary retention managed with CIC.
Patients and Methods: A 60 year old obese (BMI 55) female with a 10 year history of urinary retention on CIC presented with a 3.7 cm anterior wall bladder mass. The patient's past history is also significant for prior abdominal hysterectomy and exploratory laparotomy with lysis of adhesions. Imaging identified an enhancing 3.7 cm mass in the anterior bladder wall. Cystoscopy confirmed an anterior mass without mucosal involvement. A transvaginal biopsy was performed with pathology revealing an atypical smooth muscle neoplasm. The patient underwent a robotic-assisted laparoscopic lysis of intra-abdominal adhesions and extra-mucosal mass enucleation.
Results: There were no intraoperative or postoperative complications. The catheter was removed on postoperative day 7 and the patient was able to void to completion and discontinue CIC. Pathology confirmed a 4.2 cm benign bladder leiomyoma of uterine type.
Conclusion: This patient presented two major surgical challenges with superobesity (BMI 55) and prior abdominopelvic surgeries. To our knowledge this is the first description of complete resolution of bladder outlet obstruction following robotic removal of an obstructing leiomyoma of the bladder. The robot-assisted approach is feasible for resection of theses masses in complex patients.

V4-3 Robot-assisted ureteral reimplantation with neobladder Boari flap

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Introduction: We report a robot-assisted ureteral reimplantation in a 58 yr old patient who previously underwent a robotic radical cystectomy and intracorporeal orthotopic Ileal neobladder. A 9-mo post-operative CT scan showed a 3 cm stricture of left distal ureter with concomitant grade III hydronephrosis, treated with percutaneous nephrostomy.
Materials and Methods: Patient position and port placement were similar to Robotic radical cystectomy. The neobladder and a thin left distal ureter were easily identified. The ureter was identified and sharply dissected before ending in a fibrotic tissue. The ureter was spatulated and passed through the mesosigma. Neobladder was opened and a Boari flap prepared. A direct refluxing reimplantation was performed on a double J stent. The neobladder was closed with running sutures and irrigated to confirm water tightness. A drain was left in place.
Results: Perioperative course was uneventful; no urine leakage occurred; patient was discharged on third post-operative day. Double-j stent was removed after 3 weeks. A 6-mo renal function assessment and a CT-scan showed normal eGFR values and relief of ureteral obstruction.
Conclusions: Robot-assisted ureteral reimplantation in orthotopic neobladder is a safe, feasible and minimally invasive procedure. Neobladder Boari flap is viable option to overcome ureter shortness.

V4-4 Vaginal Sparing Robot Assisted Laparoscopic Radical Cystectomy: Technique and Outcomes

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Introduction: Vaginal sparing cystectomy in conjunction with an orthotopic neo-bladder was popularized in the early to mid-1990's. One of the other afforded benefits of the vaginal sparing procedure was improvement in sexual functional outcome for the treated women. There have been limited case series describing open and laparoscopic vaginal sparing cystectomy and very few describing this technique via a robot assisted platform. In this video, we present our technique for a vaginal sparing robot assisted laparoscopic radical cystectomy.
Methods: We present two patients, who were otherwise healthy and sexually active. They underwent robotic assisted laparoscopic cystectomy for recurrent high grade T1 bladder cancer following failed induction BCG therapy. The radical cystectomy, hysterectomy and extended pelvic lymph node dissection were performed via the robotic platform, whereas the urinary diversion was performed open.
Results: Mean robot time was 205 minutes. EBL was 200 mL. No nasogastric tube was left in place and mean LOS was 8 days. Mean follow up is 12 months. Mean time to return to flatus was 5 days. There were no post operative complications. Both women are sexually active. Final pathology for each patient was pT0, N0, Mx, and pTis, N0 Mx and margins negative for both.
Conclusion: Vaginal sparing robot assisted laparoscopic radical cystectomy is a suitable option for the female patient who wishes to remain sexually active following her cystectomy as it allows for preservation of the length and girth of the vagina.

V4-5 Wallace versus Conventional Bricker Ureteroileal Anastomoses during Robot Assisted Radical Cystectomy with Totally Intracorporeal Urinary Diversion

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Introduction: The video demonstrates surgical steps of ureteroileal anastomoses performed according to either the Wallace or to a modified Bricker technique, respectively, during robot assisted radical cystectomy (RARC) with totally intracorporeal urinary diversion.
Materials and methods: A 20 cm Ileal loop was prepared according to the standard criteria. The distal cut point was at 20 cm from the ileocecal valve and the length of the loop was about 20 cm. Stay sutures were placed and a motorized stapler was

applied within the stay sutures perpendicularly to the ileum. The ileal loop was extracted and externally fixed to the fascia. The ureters were spatulated and a laterolateral anastomosis performed as for the Wallace technique. Single-j stents were inserted through a 2 mm miniport on a guidewire and the posterior aspect of the anastomosis was completed. The anterior aspect of the anastomosis was completed and the water tightness of the loop confirmed by irrigation of the loop. The second video highlights the surgical steps of ureteroileal anastomoses performed according to a modified Bricker technique. Once prepared the ileal loop, as demonstrated in the previous video, the ileal loop is cut and the ureters were pulled through the cut-point. Ureters were left intussuscepted into the ileal loop, spatulated and single-j inserted on a guidewire through the stoma. Ureteroileal anastomoses were performed with sero-muscolar sutures without including the mucosa.

Result: Perioperative outcomes were uneventful in terms of urine leakage for all patients. At 6-mo evaluation, 21 patients were evaluable, 9 treated with the Wallace technique and 12 with the modified Bricker technique. A single right ureteroileal stenosis occurred in the second group. The stenosis was successfully treated with antegrade stenting.

Conclusion: An early evaluation of both perioperative and early functional outcomes confirmed both techniques as equally effective. Longer follow-up and larger cohorts of patients are necessary to draw conclusions about the renal functional outcomes.

V4-6 Initial outcomes of robotic assisted radical cystectomy for bladder carcinoma

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Introduction: Robot-assisted radical cystectomy (RARC) is fast gaining momentum. This video focuses on the surgical technique and early outcomes of RARC in a single institution, and compares outcomes with a contemporary open cohort (ORC).

Materials and Methods: All patients treated by radical cystectomy from 1st January 2013 to 30th September 2014 were identified. The demographic, pathological, perioperative and oncological outcomes were evaluated and compared between RARC and ORC.

The video also demonstrates the RARC procedure including patient positioning, port placement, bladder extirpation, and intracorporeal urinary reconstruction.

Results: There were n = 5 and n = 8 patients who underwent RARC and ORC respectively. In the former, n = 2 and n = 3 underwent extracorporeal versus intracorporeal ileal conduit creation respectively. The mean operative time was longer and estimated blood loss (EBL) was lesser in RARC (606 min versus 465 min; 600 ml vs 1225 ml)).

Clavien-Dindo grade III complications occurred in n = 2/8 (25%) and n = 1/5(20%) in ORC and RARC respectively. The median duration of ileus was 4 and 5 days respectively.

The pathology comprised n = 1/5(20%) pT1, n = 1/5 (20%) pT2 and n = 3/5 (60%) pT3 disease in the RARC series. The ORC series comprised n = 3/8 (37.5%) pTa/T1, n = 1/8 (12.5%) pT2, 2/8 (25%) pT3 and n = 2/8 (25%) pT4 respectively. The node positivity rate was n = 2/5 (40%) (RARC) and n = 4(50%) (ORC). There were n = 1 patient (ORC) who received neoadjuvant chemotherapy, while n = 3 patients (RARC) and n = 2 (ORC) received adjuvant chemotherapy. At a median follow-up of 12 months, there were no recurrences in RARC series, while systemic recurrence occurred in n = 5/8(62%) in ORC series.

Conclusions: RARC is associated with lower EBL and equivalent oncological outcomes.

V5 - ROBOTIC SURGERY: NEW TECHNIQUES - ONCOLOGY

V5-1 Salvage Robotic Bilateral Retroperitoneal Lymph Node Dissection Using a Novel Single-Dock Technique

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Introduction and Objectives: Although laparoscopic and robot-assisted laparoscopic primary retroperitoneal lymph node dissection (RPLND) has previously been described in the literature, there have been no reports of successful completion of a post-chemotherapy salvage bilateral RPLND using either of these approaches. In addition, a major deterrent to robotic bilateral retroperitoneal procedures is that accessing both right and left retroperitoneal spaces usually requires patient repositioning and redocking of the surgical robot in order to access the second side, which significantly increases operative times. Herein, we provide the first description of a single-dock technique for robot-assisted full-template RPLND in the salvage setting, including the results of our initial experience in two patients. This single-dock approach is ideally suited for cases in which the majority of the post-chemotherapy residual mass is located in the para-caval region, and additionally enables sparing of the inferior mesenteric artery.

Methods: We provide a step-by-step description of our single-dock approach to bowel mobilization, removal of the gonadal vein, right template node dissection, interaortocaval node dissection, and left template node dissection. We also describe our operating room configuration, port placement, technique for robot positioning in order to optimize access to bilateral retroperitoneal spaces with a single dock. Finally, we demonstrate the feasibility of sparing the inferior mesenteric artery when utilizing this approach.

Results: Robot-assisted laparoscopic salvage bilateral RPLND was successfully performed with the single-dock technique in two patients at our institution who had residual para-caval masses following chemotherapy for metastatic testicular cancer. Mean operative time was 6 hours, without significant blood loss or intraoperative complications. Mean length of stay was 2.5 days, and neither patient suffered complications in the perioperative period.

Conclusions: We demonstrate that our single-dock technique for robotic RPLND allows access to bilateral retroperitoneal spaces in select patients and facilitates shorter operative times.

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Furthermore, this procedure enables sparing of the inferior mesenteric artery. To our knowledge, this is the first description of a single-dock technique for salvage robotic full-template RPLND for a post-chemotherapy residual mass.

V5-2 A Video of a Novel Transversus Abdominal Plane Block During Robotic Assisted Radical Prostatectomy

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Introduction: Classically transversus abdominis plane (TAP) block is done at the level of the anterior axillary line between the iliac crest and the costal margin and the analgesic is injected percutaneously through the external oblique, and infused between the internal oblique and transversus abdominis muscles. However, proper injection requires ultrasound guidance to place the medication in the proper layer. In this video, we demonstrate our technique for TAP block performed during robot assisted radical prostatectomy (RARP).
Materials and Methods: Our patient received standard general anesthetic, and after the conclusion of the case, the 21 gauge butterfly needle with the ''wings'' trimmed down is placed through the assistant port. By focusing our attention to the anterior axillary line, the bedside assistant palpates between the costal margin and the anterior superior iliac crest approximately at the level just cranial lateral to our most lateral ports. The surgeon robotically punctures the transversus abdominis muscle wall and the assistant injects 5 cc of 0.5% bupivacaine bilaterally. A raised wheal easily confirms our location, thus completing our TAP block. He was assessed after the operation by a blinded registered nurse at 6 hour intervals until 24 hours after surgery.
Result: Ninety patients undergoing RARP were evaluated with 40 receiving the TAP block and 50 men receiving our usual protocol of infiltrating the laparoscopic port sites with bupivacaine. Robot assisted TAP block significantly reduced postoperative adjusted morphine equivalent consumption [mean (SD) 11.9 (13.3) vs 19.7 (19.1) mg, P = 0.0254]. Postoperative pain scale scores were also decreased in the TAP block group for all times with hours 6–12 postop being statistically significant (P = 0.0075]. There were no adverse reactions attributable to the TAP block. In this demonstration case, the console time was 136 minutes. Estimated blood loss was 100 ml. Hospital stay was 26 hours. The foley catheter was removed 6 days after surgery. Total morphine equivalent was 12 mg in overall hospital stay versus 20 mg in our standard lidocaine subcutaneous port site infiltration. Patient's pain score was also decreased on nurses Q6 hourly rounds.
Conclusion: We have demonstrated a novel robot-assisted TAP block which shows considerable promise in not only decreasing our patients' pain levels, but also reducing narcotic reliance and potentially avoiding undue deleterious effects. We have also simplified the technique but obviating the use of ultrasound due to the direct vision the laparoscopic approach provides.

V5-3 Our Successful Experience Utilizing Posterior Rhabdosphincter Reconstruction During Robotic Prostatectomy

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Introduction: There have been numerous techniques employed to maximize continence after robot-assisted radical prostatectomy (RARP), including posterior rhabdosphincter reconstruction (PRR). However optimum PRR stitch location remains relatively undefined. We aimed to apply our modified posterior reconstruction of the rhabdosphincter (M-PRR) in 570 consecutive patients undergoing RARP for adenocarcinoma of the prostate. In this video, we demonstrate our technique for M-PRR performed during RARP.
Material and Methods: This patient had his prostate removed in the standard fashion as previously described. Due to the extirpation, the posterior supportive layers of the bladder and prostate are divided, including Denonvilliers' fascia and its confluence with the posterior rhabdosphincter. Reconstituting the posterior support to the anastomosis is accomplished by re-approximating the remnant Denonvilliers' fascia and posterior bladder neck to the posterior rhabdosphincter beneath the urethra using a running continuous 2–0 V-loc™ suture (Covidien, Mansfield, MA) before completion of the vesicourethral anastomosis. This is then anchored to the posterior wall of the bladder at the trigone to complete the traditional 'Rocco Stitch.' Conversely, the M-PRR uses the posterior layer of whitish connective tissue that may by reproducibly seen on dissection after division of the posterior bladder wall during the bladder neck transection, and prior to identification of the vasa deferentia and seminal vesicles. This retrotrigonal layer anchor tissue is in clear distinction to Denonvilliers' fascia, which should not be encountered until after division of the vasa deferentia and seminal vesicles.
Results: Patient and intraoperative variables were similar between the PRR and M-PRR groups, and there were no surgical technique differences between the two groups. Weeks to 0 PPD was statistically different at the three **month** interval (p = 0.0466). Mean weeks to 1 PPD was 13.1 weeks in the control group and 11.76 weeks in the intervention arm. There were no significant differences in post-operative AUASS or EPIC scores between groups. Console time in this case was 112 minutes. Estimated blood loss was 100 ml. Hospital stay was 26 hours. The foley catheter was removed 6 days after surgery. By also utilizing preoperative kegel exercises, our patient was continent on urethral catheter removal.
Conclusion: Retrotrigonal stitch placement during PRR resulted in statistically significant improvement in time to reach total continence post-operatively. Our M-PRR robotic approach for radical prostatectomy is safe and effective. This study is one of the largest to date examining the effect of varied stitch location at the time of RARP on continence outcomes.

V5-4 Endopelvic Fascia Sparing Robotic Assisted Laparoscopic Radical Prostatectomy

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Purpose: Robotic radical prostatectomy is continued to be applied to an increasing number. Techniques like prostatic fascia sparing, bladder neck reconstruction, endopelvic fascia sparing, anterior and posterior reconstruction and nerve sparing are performed for getting better functional outcomes. In this video we wanted to show our endopelvic fascia sparing technique.
Methods: The patient of this video is sixty years old. His PSA level was measured 7 ng/ml. Rectal examination was clear. Prostate volume was 30 cc. Then prostate biopsy was performed. Pathology result showed us Gleason 3 + 3 = 6 prostatic adenocarcinoma. Patient's IIEF-5 score was 21. In our method, seminal vesicles and

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ductus deferenses are classically dissected from inside excavation rectovesicalis. Then bladder neck resection is made. Intrafascial prostatic dissection is made by sparing endopelvic fascia and neurovascular bundle. Dorsal vein complex is dissected by cold incision without suturing. Then the veins are sutured selectively. Urethra is dissected without using any cautery and prostate is removed. After anastomosis is complete, endopelvic fascia is reciprocally sutured to the bladder wall.
Findings: Operation time was 130 minutes. Approximately blood loss was 150 cc. Drainage tube was removed at thirth day postoperatively. And the urethral catheter was removed at tenth day postoperatively.
Result: Prostatic fascia and endopelvic fascia's parietal leafs are rich with vascular, neural and smooth muscle structures. With various modifications like anterior and posterior reconstruction, sparing of these fascias are useful to get better results either potency or continence.

V5-5 Complex Robotic Ureteroplasty Using Buccal Mucosal Onlay Graft for Treatment of 3 cm Proximal Ureteral Stricture

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Introduction and Objectives: Ureteral strictures of the proximal ureter > 2 cm pose a difficult management dilemma. Options for repair include autotransplantation, ileal ureter bowel interposition, transureteroureterostomy in situations where the distance can not be bridged by pyeloplasty +/− nephropexy, and in situations where there is poor renal function, nephrectomy is a last resort. In this video we present a step-by-step alternative technique for successful use of buccal mucosa for repair of a ureteral stricture.
Methods: A 28-year-old male was referred with iatrogenic ureteral stricture 3 cm and left flank pain. He had undergone multiple prior ureteroscopy for stone disease, the suspected cause of his stricture disease, and two prior endopyelotomies. Cystoscopy and retrograde pyelogram demonstrated a 3 cm stricture at the proximal ureter with a small renal pelvis. The distance from the renal pelvis was too large to have a tension free pyeloplasty. Relative functional decrease from 45% to 40% on the symptomatic side was seen on his nuclear medicine renal scan. The patient was consented for robotic assisted laparoscopic buccal mucosa ureteroplasty.
Results: Buccal mucosa was harvested by otolaryngology and utilized for ureteral reconstruction. Technical steps, emphasized in the video, include the following: 1) Buccal mucosa harvested using Xylocaine with epinephrine; 2) Buccal mucosa fat debrided; 3) Vessel loop used as a temporary hitch stitch to elevate, isolate and stabilize ureter; 4) With the robotic camera light dimmed, concommitant ureteroscopy is performed to visually identify level of the stricture; 5) Stricture incised with ventral ureterotomy; 7) Onlay graft with running 4-0 Vicryl suture to secure buccal graft to ureterotomy; 8) Double J ureteral stent is placed; 9) Omental wrap around the graft is performed. After minimal drain output, the patient was discharged the next morning. Ureteral stent was maintained for 6 weeks. Subsequent ureteroscopy performed at time of stent removal confirmed resolution of stricture and healthy, well-perfused graft tissue. 8 month followup demonstrates Cr of 1.1 mg/dl with renal scan demonstrating improved t 1/2 and renal function.
Conclusions: This video demonstrates the key steps to perform a successful buccal mucosa onlay graft for treatment of a complex, 3 cm proximal ureteral stricture.

V5-6 Stapling from below is ergonomically favourable for intra-corporeal ileal conduit reconstruction during Robot Assisted Laparoscopic cystectomy in males and females

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Introduction: Intra-corporeal ileal conduit formation is now feasible, however the procedure is technically demanding and continued development of methodology decreases the time taken to complete this lengthy operation. Use of an endo-GIA stapler is helpful in the isolation of a segment of ileum for conduit formation and subsequent ileo-ileal anastomosis, however the ergonomics of this can be challenging when the stapler is placed via a lateral port as is commonly practised.
Materials and Methods: Between January 2012 and January 2014 robotic intra-corporeal ileal conduit formation (RICIC) was performed on 15 patients. We have developed a method to facilitate the use of the endo-GIA stapler. Here we demonstrate the improved ergonomics using this method wherein the stapling device is introduced in the midline from a caudal direction, transvaginally in females and through a suprapubic port in males.
Results: Introduction of the stapling device from a midline caudal direction represents the optimal orientation to staple across the small bowel mesentery. Being perpendicular to the bowel axis it helps in isolating a well vascularized segment of ileum. The suprapubic port can be included in a Pfannensteil incision for specimen removal in men. In women the vagina is used for specimen removal. The operation was covered with standard antibiotic prophylaxis (Co-Amoxyclav and gentamicin). Mean operative time was 241 min of which 142 min were for ileal conduit formation. Mean blood loss was 275 ml. We have had no incidence of ileo-ileal anastamotic leak nor intra-abdominal infection.
Conclusion: Here we present edited video demonstrating the altered ergonomics using our technique for intra-corporeal ileal conduit formation. Use of this simple modification facilitates the use of the endoGIA stapler and is not associated with any extra toxicity.

V5-7 Extended pelvic lymph node dissection during extraperitoneal endoscopic radical prostatectomy

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Objective: Extraperitoneal access in endoscopic (laparoscopicic or robotic assisted) radical prostatectomy is a standard approach in the management of prostatic cancer with well established advantages over transperitoneal access. Still, traditionally, extraperitoneal endoscopic radical prostatectomy (EERP) has been associated with an inability to offer an extended pelvic lymph node dissection (PLND). The former is due to the fact that in the extraperitoneal space, peritoneal folding covers the majority of common iliac vessels and as a result in extraperitoneal PLND, lymph nodes (LNs) located above the bifurcation of common iliac vessels cannot be dissected. We herein present a simple and easy technique to offer an extended PLND during EERP.
Methods: After a conventional extraperitoneal PLND, a peritoneal fenestration cranially to extrernal iliac vessels is performed bilaterally exposing the common iliac vessels.

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Results: Upon peritoneal fenestration PLND can be continued in a standard fashion as in transperitoneal approach until the uppermost limit of the extended PLND template which is the ureteral crossing over common iliac vessels. Following LN dissection, both peritoneal fenestrations are left open at both sides.
Conclusions: Peritoneal fenestration over common iliac vessels during extraperitoneal PLND is an easy approach that allows surgeon to reach the uppermost limit of extended PLND template. The latter peritoneal dissection is not time consuming. In addition, as it has been previously documented peritoneal fenestration at the end of an extraperitoneal PLND decreases the incidence of postoperative lymphocele formation and as a result the described technique for extended PLND is not expected to increase but to reduce the morbidity of the operation

V6 - ROBOTIC SURGERY: LOWER TRACT – BENIGN

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V6-1 Concomitant Management of Lower Urinary Tract Obstruction and Bladder Diverticulum with Robot Assistance

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Introduction: In this video concomitant management of lower urinary tract obstruction and robot assisted bladder diverticulectomy in a 70 years old man is presented.
Patients and Methods: First cystourethroscopy was performed with the patient in dorsal lithotomy position. Obstructing prostate lobes were seen. There were left and right sided diverticula on lateral walls of the bladder. The diverticula were examined to exclude any stone and tumor. Transurethral resection of the prostate was performed to have a good quality prostatic cavity in a short period of time. Following transurethral resection, photoselective vaporization of the prostate (PVP) was done and maximal hemostatic control was achieved. After completion of PVP, bladder diverticula were identified and catheterized. 12F Foley catheters were introduced into the diverticula using internal urethrotome's outer sheath under fluoroscopic guidance. Additional Foley catheter was introduced into the bladder and the balloon was filled with contrast material. Patient was placed in Trendelenburg position for robotic diverticulectomy. Peritoneal incision was made and Retzius space was created. The bladder was freed from its attachments and pubic bone was seen. Right sided diverticulum was inflated via the preoperatively placed Foley catheter. The neck of the diverticulum was identified and transected. Foley catheter inside the diverticulum was grabbed and taken out of the bladder. The diverticulum neck was secured with 3/0 barbed suture in order to close the diverticulum neck properly. The bladder was filled with saline to confirm water-tight closure. The diverticulum was removed through the 12 mm. assistance port. Left sided diverticulum was excised and the defect was closed in the same manner. A Jackson Pratt drain was placed in the Retzius space.
Results: Prostate volume was 110 ml. Dimensions of the diverticula were 45 and 30 mm. Duration for endourological part of the procedure was 91 minutes. Console and total operative time were 64 and 155 minutes, respectively. Estimated blood loss was 20 ml. No complications were observed. Postoperative period was uneventful. Bladder irrigation was not required. Hospitalization and catheter removal time was 3 and 7 days, respectively.
Conclusion: Management of lower urinary tract obstruction and robot assisted bladder diverticulectomy can be concomitantly performed in the same session. Easier identification of the diverticulum with our technique enables the procedure to be performed with reasonable operative time even in the presence of more than one diverticulum.

V6-2 Step-By-Step Approach for Robot-Assisted Ureteral Reimplant for Anastamotic Stricture after Orthotopic Ileal Neobladder

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Introduction and Objectives: Although robot-assisted ureteral reimplantation into an ileal conduit has previously been described, to our knowledge there have been no reports of robot-assisted ureteral reimplantation into an ileal neobladder in the literature. Recently, we have described our experience with reimplantation of the ureter following robot-assisted radical cystectomy. Herein, we provide a description of our technique of robot-assisted robot-assisted ureteral reimplantation into an orthotopic neobladder, including the results of our initial experience in a patient.
Methods: We provide a step-by-step description of our approach to robot-assisted ureter reimplantation. We follow the basic steps of an open ureteral reimplantation: isolation of the ureter, preparation of the anastomotic site, and reimplantation. We also include instruments and sutures required and describe optimization of port utilization and technique for robot positioning.
Results: Robot-assisted ureteral reimplant for a ureteroenteric anastomotic stricture after orthotopic ileal neobladder was successfully performed in one patient at our institution using the described technique. Operative time was 3 hours, 100 cc of blood loss, and no intraoperative complications. Length of stay was 2 days and the ureteral stent was removed after 8 days. The patient developed a urinary tract infection 29 days after the procedure that was treated with antibiotics. No other complications were observed during the 90 days following the procedure. At 10 months post-procedure, the ureteroenteric anastomosis is patent and intact.
Conclusions: We demonstrate that robot-assisted robotic ureteral reimplantation into an orthotopic neobladder is technically feasible and safe. Early functional results are promising. To our knowledge, this is the first description in the literature of robotic reimplantation of the ureter into a neobladder.

V6-3 Robotic Intracorporeal Neobladder: Video Presentation of an Evolved Technique

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Introduction: In 2003 several centers presented initial case reports of robotic cystectomy with extracorporal neobladder. In these reports the extirpative portions of cystectomy were

performed robotically followed by formation of extracorporeal neobladder with subsequent closure of the abdomen and re-docking for urethral to neobladder anastomosis. Since this time some surgeons have pushed away from this hybrid technique towards a completely intracorporeal robotic diversion. Potential advantages include lower blood loss, shorter post-operative ileus, and possibly lower bowel-related complications with the inctracorporeal technique.
Patients and Methods: Since 2008 we have continually developed our own technique of robotic cystectomy with intracorporeal orthotopic diversion. We now prefer a modified Studer neobladder for intracorporeal diversion due to its simple geometry and adaptability to most patients. A video presentation was developed outlining the evolution of our current technique with emphasis on technical tips and tricks.
Results: Key points of current technique include placement of assistant ports in left lateral as well as paramedian locations to facilitate intracorporeal bowel stapling, use of color-coded vessel loops applied around pre-measured segments of small bowel to maintain pouch geometry and reduce direct traction, use of early urethral to bowel anastomosis to ensure adequate reach and help with intracorporeal bowel manipulation, and use of extra long robotically placed internalized ureteral stents to facilitate later cystoscopic retrieval from the afferent limb.
Conclusions: Robotic intracorporeal neobladder with a modified Studer pouch reflects our current preference for robotic orthotopic diversion following robotic cystectomy. Important technical modifications have been made to adopt the neobladder to the robotic environment and allow for a reproducible procedure.

V6-4 Robotic assisted laparoscopic seminal vesicle cyst excision from ectopic ureteral insertion with nephroureterectomy

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Introduction: We present a case of robotic assisted laparoscopic seminal vesicle cyst excision from an ectopic ureteral insertion of an ectopic right multicystic dysplastic kidney with concomitant nephroureterectomy in a symptomatic 17-year-old male.
Materials and Methods: A daVinci Si surgical system was utilized. The patient was placed in the modified flank position. A 12-mm trocar was placed through the umbilicus in an open fashion. An 8-mm robotic trocar was placed on each side of the abdomen along with a 5-mm assistant port on the right side of the abdomen. The right colon was reflected. The dilated ureter was easily identified, isolated, and dissected proximally towards the ectopic right kidney. The nephrectomy was performed. Hilar vessels were taken with LigaSure. The ureter was dissected distally towards the seminal vesicle cyst. The peritoneum overlying the cyst was incised, and the cyst was dissected free. Careful attention was made to identify and preserve the vas deferens. The cyst was decompressed and further dissected. As portions of the cyst were freed, they were excised and removed. Following removal of all evident cystic structures, the remaining wall was marsupialized to promote adequate drainage of any potential remaining undrained cysts. A Jackson-Pratt drain was placed, and the peritoneum was re-approximated.
Results: Surgical time was 135 minutes. There was no blood loss. There were no complications. Following recovery from surgery, the patient was no longer symptomatic.
Conclusion: The robotic assisted laparoscopic approach is a useful modality for performing pelvic surgery of seminal vesicle cysts resulting from ectopic ureteral insertion as well as concomitant nephroureterectomy.

V6-5 Robot-assisted technique for Boari flap ureteral reimplantation

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Introduction: Ureteral iatrogenic injury is a potential complication of endoscopic surgery. Although distal ureteral injuries are treated with ureteroneocystostomy, mid and proximal ureteral injuries can potentially be treated with ureteroureterostomy. If there is loose of distal segment, some of complicated procedures like Boari tubularized bladder flap must be performed. Robotic technology allows the operator to perform complex ureteral reconstructive surgery through small ports. We report a case of Robotic-assisted technique for Boari flap ureteral reimplantation.
Method: A 33-years-old male patient with left distal ureteral stricture due to ureterorenoscopy was admitted to our clinic. Left hydronephrosis was detected on urinary ultrasound. IVP revealed the presence of a long stricture that reaches out to the iliac crossing, on the left distal ureter. Robotic-assisted Boari flap ureteral reimplantation was planned.
Results: The operation time was 180 minutes. The estimated blood loss was 150 cc and there was any postoperative complication. The drainage catheter was removed on the third postoperative day. The postoperative IVU at 3 months confirmed normal drainage of contrast.
Conclusion: Robot-assisted laparoscopic surgery can be safely used for Boari flap ureteral reimplantation. Robot-assisted surgery offers intraoperative advantages, including three-dimensional visualization with magnification and wristed movements with additional degrees of freedom, greater surgeon comfort, and easier intracorporeal suturing. The benefits of laparoscopic surgery include decreased blood loss, low complication rate, quicker recovery time, and improved cosmesis.

V6-6 Robot-Assisted Laparoscopic Urethral Diverticulectomy for the Management of a Symptomatic Large Anterior Urethral Diverticulum

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Introduction: Urethral diverticula affect between 1% and 6% of adult women. Presenting symptoms can include sensation of a vaginal bulge, stress urinary incontinence and/or post-void dribbling, dyspareunia, recurrent urinary tract infections, or urinary obstruction. Symptomatic urethral diverticula can be surgically managed via a transvaginal approach. We report a unique case of robot-assisted laparoscopic urethral diverticulectomy for a large saddle-shaped urethral diverticulum with a significant anterior component that could not be accessed transvaginally.
Materials and Methods: The patient is a 48-year-old female who presented with acute onset of urinary retention. An MRI of the pelvis was performed during the evaluation and revealed a large saddle-shaped urethral diverticulum near the bladder neck, with a

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significant anterior component that wrapped posterolaterally on either side of the urethra. A transperitoneal robot-assisted laparoscopic approach was selected due to the anterior location of the urethral diverticulum and the proximity to the bladder neck.
Results: A 4 trocar transperitoneal approach was selected utilizing a standard configuration for robotic pelvic surgery. The area of the bladder neck was exposed by incising the peritoneum and dropping the bladder from the anterior abdominal wall. Meticulous dissection was carried caudally until the diverticulum and urethra were encountered. The anterior aspect of the diverticulum was dissected away from the proximal urethra and bladder neck. Concurrent cystoscopy allowed for proper orientation to the bladder neck and urethra. The dissection was continued until the diverticulum was entirely freed from the urethra at which point the diverticulum was excised. The urethra was oversewn with absorbable suture and closure was confirmed with cystoscopic inspection. The total operating time was 183 minutes and blood loss was minimal. There were no surgical complications and the patient was discharged home with a urethral catheter. The patient passed a voiding trial one week postoperatively, and has had complete resolution of her lower urinary tract symptoms since surgery.
Conclusions: To our knowledge, this is the first report of robot-assisted laparoscopic urethral diverticulectomy in women. We demonstrated the feasibility of a robot-assisted laparoscopic approach to effectively treat appropriately selected patients with an anteriorly located urethral diverticulum.

V7 - ROBOTIC SURGERY: UPPER TRACT - BENIGN

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V7-1 Transperitoneal robotic management of a calyceal diverticulum

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Calyceal diverticula are eventrations of the collecting system that lie within the renal parenchyma lined by urothelial epithelium. Shock wave lithotripsy, ureteroscopy, percutaneous approaches and laparoscopic interventions have been described as successful treatments. Here, we describe this laparoscopic robot-assisted approach of a calyceal diverticulum that caused chronic flank pain in a middle age woman.

A 39 year old lady was referred after complaining of chronic constant right sided flank pain. Imaging with a CT urogram revealed a calyceal diverticulum situated in the mid anterior aspect of the right kidney making a percutaneous approach unfeasible. A robot-assisted laparoscopic approach was proposed due to the presence of a long neck infundibulum that precluded a retrograde approach.

A 5-port robotic transperitoneal approach was performed. After removing the overlying fat of the right kidney, the intraoperative ultrasound revealed the exact location of the diverticulum. The parenchyma was incised, the diverticulum marsupialized and the stones extracted. The diverticulum neck was confirmed with retrograde methylene blue. The cavity defect was closed and the epithelium fulgurated. The procedure was performed in 197 minutes without hilar clamping. Estimated blood loss was 25 ml. Postoperative evolution was uneventful and patient was discharged on the second postoperative day. In further follow-up the patient denied flank pain.

A laparoscopic robot-assisted marsupialization of a calyceal diverticulum is a feasible option when an endourological approach is unsuitable. An intraoperative ultrasound is fundamental to identify the anomaly and avoid surrounding vessels to allow completion of the procedure off-clamp.

V7-2 Robotic excision of right adrenal mass encasing renal vessels with retrocaval extension and abutting the left renal vein

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Introduction: Robotic surgery has been increasinlgy utilised for larger tumours with vascular involvment. We present one such case which was dealt effectively by robotic assited surgery.
Patients and Methods: A 17 year old boy presented with right adrenal mass which was encasing renal vessels with retrocaval extension and abutting the left renal vein. Patient was placed in right lateral position and 4 arms where utilised. The retroaortic mass was dissected from the interaortocaval region and the retrocaval extension was delivered to the right side. Then branches of renal vessels were dissected out and the mass pulled superior to the renal hilum. The retro left renal part was dissected free subsequently. Then the mass was dissected in the paracaval region and adrenal vein was ligated. Then it was dissected free of the superior pole of the kidney. Mass was extracted through a pfannesteil incision and haemostasis attained.
Results: Operating time was 345 minutes, console time 290 minutes, blood loss was 250 ml and hospital stay was four days. The pathological examination demonstrated ganglioneuroma.
Conclusion: Robotic surgery is not a contraindication for tumours with vascular involvement.

V7-3 Peripelvic Cysts Causing UPJ Obstruction: Pearls in Diagnosis and Surgical Repair

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Introduction and Objectives: Ureteropelvic junction obstruction (UPJO) can be secondary to intrinsic or extrinsic etiologies. Peripelvic cysts, thought to originate from peri-renal lymphatics, are rare causes of UPJ obstruction and their diagnosis can easily be overlooked. In this video, we present a case of symptomatic UPJ obstruction due to a large peripelvic cyst, highlighting pearls in diagnosis and management.
Methods: A 63-year old male, diagnosed 5 years previously with presumed incomplete UPJ obstruction, presented with right flank pain. An initial CT scan demonstrated ''marked hydronephrosis'' with a subsequent prone CT urogram demonstrating UPJ obstruction secondary to a compressive 11×8 cm peripelvic cyst.

Obstruction was confirmed by diuretic renography. During surgery, a retrograde ureteral catheter was first placed and retrograde pyelography was performed. A transperitoneal robotic-assisted laparoscopic approach was selected. The ureter and renal cyst were mobilized, the cyst was aspirated and unroofed, and the cyst cavity was packed with peri-renal fat. Fulguration of the cyst bed was avoided to prevent renovascular injury. A surgical drain was placed.
Results: Operative time including time for cystoscopy and ureteral catheter insertion was 240 minutes. There were no intra- or postoperative complications. The cyst fluid and cyst wall had benign histology. The patient was symptom-free at 2-month postoperatively.
Conclusions: Peripelvic cysts are uncommon etiologies of UPJ obstruction. Prone CT urography can help identify the etiology of obstruction in equivocal cases. Energy ablation should be avoided. Robotic-assisted repair is feasible and safe.

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V7-4 Pediatric Robotic-Assisted Laparoscopic Ureterocalicostomy

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Introduction: Robotic-assisted laparoscopic ureterocalicostomy is a treatment option for patients with recurrent ureteropelvic junction (UPJ) obstruction after failed pyeloplasty. We present the role of flexible cystoscopy and the harmonic scalpel to aid in identification of the dependent renal calyx and hemostatic anastomosis, especially those with a thick renal cortex at the lower pole.
Methods: In this video, our patient was a 4 year-old female with a right UPJ obstruction who had failed prior pyeloplasties with increasing hydronephrosis and recurrent urinary tract infections. The patient was placed in the left lateral decubitus position, and a transperitoneal approach was employed. The colon was reflected, and the right ureter and hydronephrotic kidney were identified. The ureter was spatulated before transection, to take advantage of two fixed points. A flexible cystoscope was inserted through the transected UPJ via a 5 mm assistant port to identify the most dependent lower pole calyx, which was then amputated with harmonic shears to expose the calyx with bloodless edges. The proximal ureteral stent was placed into the lower pole through this opening. Interrupted sutures were placed from the calyceal epithelium to the spatulated ureter at 3, 6, 9, and 12 o'clock and then tied simultaneously to prevent tearing. A hemostatic agent was applied to the surgical site, and a drain was placed.
Results: The procedure was uneventful without intraoperative or perioperative complications. The ureteral stent was removed at four weeks, and postoperative ultrasound showed improvement of her hydronephrosis.
Conclusion: Flexible pyeloscopy and the harmonic scalpel aid in identification of the dependent calyx and maintain a bloodless field, especially with a thick renal cortex, for anastomosis in robotic-assisted laparoscopic ureterocalicostomy.

V7-5 Pediatric robotic complex upper urinary tract reconstruction for duplication anomaly

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Introduction: A robotic assisted laparoscopic upper to lower ipsilateral ureteroureterostomy and concomitant lower pole ureterocalycostomy in a symptomatic 6-year-old male with a complex upper urinary tract duplication anomaly is presented. The patient was diagnosed with an obstructed ectopic upper pole ureter and lower pole ureteropelvic junction obstruction.
Materials and Methods: The daVinci Xi robotic surgical system was utilized. The patient was placed in a 45-degree flank position. Three 8-mm robotic trocars were placed along the midline. The lens was 30 degrees down. No assistant ports were utilized. The left colon was reflected. The dilated ureters were identified and dissected proximally towards the left kidney. A single set of renal vessels was identified. After the anatomy was defined, the upper to lower end to side anastomosis was performed at the mid lower pole ureter with running 4-0 PDS. A longitudinal ureterotomy was made in the recipient ureter to match the lumen of the upper pole ureter. The lower pole ureter was ligated at the ureteropelvic junction and transected. A longitudinal nephrotomy was made in the most dependent lower pole calyx. The lower pole ureter was spatulated. The ureterocalycostomy anastomosis was performed with interrupted 4-0 PDS. A percutaneous antegrade ureteral stent was placed during the ureterocalycostomy. The remnant upper pole ureter was excised.
Results: Console time was 4 hours 18 minutes. There was no blood loss or complications. No narcotic analgesia was required during the hospital stay, using scheduled intravenous Tylenol and intravenous Toradol. The patient was discharged on postoperative day #1. Ureteral stent was removed 1 month after reconstruction. Postoperative ultrasound at 6 months demonstrated improvement of both upper and lower pole hydronephrosis.
Conclusions: Pediatric robotic assisted laparoscopic complex upper urinary tract reconstruction can be performed with minimal morbidity as an alternative to stage procedures and open operative intervention.

V7-6 Robot-assisted laparoscopic hemi-nephrectomy for non-functioning duplex renal collecting system in adults: video review of technical challenges and outcomes

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Introduction: Duplex ureter or kidney is one of the commonest congential urological abnormalities. Surgical excision of non-functioning moeity is required in symptomatic patients. While open and laparoscopic hemi-nephrectomy techniques are established, the role of robot-assisted hemi-nephrectomy (RALH) is yet to be determined. We reviewed the peri-operative outcomes of our series of RALH, and described several points-of-technique learnt from our experience.
Methods: 4 patients underwent RALH by a single console surgeon for symptomatic, non-functioning duplex systems, between 2010 and 2015 (2 right and 2 left). 3 patients RALH for non-functioing upper moiety, while 1 had lower moiety RALH for 'burnt-out' pyelo-ureteric junction obstruction. Cystoscopic retrograde insertion of ureteric stent to the normal moiety was carried out prior to RALH. All RALHs were performed via a standardised transperitoneal 5 ports approach. Total operation time, warm ischaemia time (WIT) and estimated blood loss

(EBL) were recorded. Continuous intra-operative HD video recording was edited with Final Cut Pro X software.
Results: Mean age was 30.0 years. Mean operative time was 200 min (150 – 240 min), WIT was 17.4 mins (9.5–35 mins) and EBL was 200 mls (100–400 mls). No blood transfusion, open conversions or total nephrectomy were required. 1 patient had a small peri-renal collection post-operative treated conservatively. All patients became asymptomatic post-operatively and were discharged.
Points of technique learnt:

- Stenting of ureter to normal moiety made intraoperative identification and preservation of normal ureter and moiety easier
- Full mobilisation of the kidney and ureters is required to assess anatomical variations of the renal hilum, which are usually complex and multiple, and to enable selective arterial clamping
- Haemostasis by oversewing of the cut edge was facilitated by the robotic approach.
- The distal end of the ureter was left unclipped and open to prevent infection.

Conclusions: RALH permits precise dissection and excision of symptomatic, non-functioing duplex moieties. The robotic approach appears to facilitate assessment of complex duplex moiety anatomical vascular variations. It is a safe treatment modality, associated with low morbidity and good outcomes.

V8 - ROBOTIC SURGERY: UPPER TRACT – ONCOLOGY

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V8-1 Robot assisted right nephrectomy with inferior vena cava double thrombectomy

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Introduction: Robotic nephrectomy with inferior vena cava (IVC) thrombectomy is a challenging surgical procedure. Despite an increasing number of reports, open surgery remains the standard of care for these tumors. In this video we describe surgical steps of a robotic right nephrectomy with an IVC double thrombectomy in a 51 yr old man with a 10.8 cm renal mass and two venous thrombi abutting into the IVC from the renal and the adrenal vein, respectively.
Materials and Methods: With the patient in extended flank position a 6 trocar access was performed. The Steps of open surgery were meticulously replicated: Identification and the anterior aspect of the IVC and of gonadal vein, isolation of the ureter and complete mobilization of the lower pole of the kidney. Nodal clearance of the interaortocaval space, identification of the left renal vein and complete isolation of the posterior IVC wall. Isolation of the right renal vein and sealing of the renal artery previously embolized. Exposure of the anterior aspect of the IVC over beyond the adrenal vein confluence. Closure of all lumbar veins and of Spigelius veins with weck clips or with 10 mm Ligasure. The lower Tourniquet was closed 2 cm lower than the right renal vein, while the upper one was closed immediately lower than the left renal vein in order to preserve a continuous flow through the left renal vein. IVC incision around the right renal vein rim, thrombectomy and IVC suture. The same procedure was performed for the right adrenal vein thrombus. Adrenal gland was removed en bloc with the specimen. Precaval and paracaval lymph node dissection was completed.
Results: Operative time was 310 minutes. Estimated blood loss was 400 mL. The patient received 2 blood transfusions on 1st postoperative day and was discharged on 5th postoperative day with hgb serum and creatinine levels equal to 10.5 g/dL and 1.35 mg/dL, respectively.
Conclusions: Robot assisted nephrectomy with IVC thrombectomy, although challenging, is a feasible and safe technique with high potential for reducing morbidity of open surgery.

V8-2 Transperitoneal Robotic Assisted Laparoscopic Partial Nephrectomy for Clinical T2 Renal Mass

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Introduction: The role of robotic partial nephrectomy in the management of clinical T2 renal masses has yet to be determined. We assessed the feasibility of performing a robotic partial nephrectomy in a patient who presented with a cT2a right lower pole renal mass.
Materials and Methods: A 53 year old male presented with cT2a right renal mass. Metastatic workup was negative. BMI was 29.7 Kg/M2. RENAL score was R3 + E1 + N3 + Ax + L1 = 8x.
Results: Patient underwent transperitoneal robotic partial nephrectomy (operative time 3 hours, ischemia time 30 minutes, EBL 100 mL) and was discharged on postoperative day 2. He suffered no complications. Preoperative/postoperative serum creatinine (mg/dL) were 0.96/1.13. Final pathology revealed Clear Cell RCC, Furhrman Grade 1, tumor diameter 8.5 cm, negative margins, pT2aNx.
Conclusion: Robotic Partial Nephrectomy is feasible in clinical T2 renal masses and confers benefit of minimally invasive surgery. Long-term oncological outcomes are requisite.

V8-3 Partial Nephrectomy For Enophytic T1b Leasions

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Introduction: Partial nephrectomy is an optimal treatment modality for addressing individuals with renal masses. Classically T1b lesions in close proximity to the collecting system have been managed with radical nephrectomy. We describe our technique for addressing these lesions using nephron sparing surgery.
Methods: Two patients, a 57 year old female and 61 year old female, were found to have a right sided 4.6 cm and left sided 4.4 cm renal mass respectively. They were taken to the operating room (different dates) for a partial nephrectomy of their T1b lesions. Their charts were pulled and retrospectively examined.

Results: The 57 year old female and an operative time of 179 minutes, estimated blood loss of 400 cc, and an ischemia time of 34 minutes. Post-operatively the creatinine was 1.4, length of stay was 2 days, most recent creatinine was 0.8, and pathology showed clear cell type RCC. The 61 year old female had an operative time of 151 minutes, estimated blood loss of 325 cc, and an ischemia time of 28 minutes. Post-operatively the creatinine was 1.3, length of stay was 2 days, most recent creatinine was 1.2 and pathology showed oncocytoma.
Conclusions: Although technically challenging, partial nephrectomy in patients with T1b renal lesions is feasible. We suggest considering 3D imaging and virtual surgical planning to help define boarders and approach, as well as to define surgical feasibility. Meticulous intra-operative ultrasound and pre-resection scoring to ensure safe margins is also crucial. Finally, when feasible, tissue planes should be exploited so the tumor can be peeled of the collecting system.

V8-4 Robotic Assisted Laparoscopic Partial Nephrectomy Challenging Case

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Purpose: Growing evidence supports the use of nephron-sparing techniques for the management of appropriately selected renal masses up to 7 cm. Compared with the surgical standard of open partial nephrectomy, minimally invasive approaches have demonstrated equivalent cancer control with reduced patient morbidity. Robot assistance has the potential to provide patients and physicians greater access to minimally invasive nephron-sparing surgery. We wanted to show in our video robotic assisted laparoscopic transperitoneal partial nephrectomy for 5 cm left lower pole renal mass.
Methods: 46 years old male patient came to the hospital with flank pain. Upon examining the patient, 52x45 mm left lower pole renal mass, which is very near to renal pedicle, was detected at Magnetic Resonance Imaging. We performed robotic assisted partial nephrectomy with renal arterial clamping.
Result: Operation time was 195 minutes and the estimated blood loss was 200 cc. Warm ischemia time was 19 minutes. There was not any post- operative major complication. The drainage catheter was removed on the second day of post-operation.
Conclusion: With the advancement of technology via use of robotic assistance, partial nephrectomy is requiring more expertise and experience. RPN appears to be an efficient alternative to OPN with the advantages of a lower rate of perioperative complications, shorter length of hospital stay and less blood loss. The robot offers two main advantages over conventional laparoscopy. First, the binocular camera allows the surgeon depth perception to easily operate in 3 dimensions. Second, the ''wrist'' of the robotic arms has 7 degrees of freedom, which allow the surgeon better control over certain aspects of the operation, most importantly precise suturing with minimal tissue manipulation.

V8-5 Triple, robot assisted laparoscopic partial nephrectomy for a patient with multiple, ipsilateral renal masses: Technique and outcomes

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Introduction: With the advent and application of the robotic platform, more complex renal operations are being attempted via a laparoscopic approach. In this video, we present a patient who underwent a triple partial nephrectomy on the same kidney for multiple renal masses.
Methods: In this video, we present a 69 year old male who was worked up for microscopic hematuria and renal failure. His preoperative imaging, via MRI, revealed multiple solid renal masses in his left kidney (4.1 cm, 2 cm, 1.8 cm). After discussion, he elected to proceed with robot assisted laparoscopic partial nephrectomy. He underwent a robotic assisted partial nephrectomy with the da Vinci Xi robotic platform. We performed off clamp enucleation/partial nephrectomies for his two smaller masses and early unclamping for the larger, > 4 cm mass.
Results: Total operative time was 300 minutes, total robotic console time was 240 minutes. Total warm ischemia time was 18 minutes and EBL was 400 mL. His eGFR pre and post op was 47 and 59 ml/min/1.73 sq m, respectively. His final pathology was chromophobe carcinoma for all three masses.
Conclusion: Robot assisted laparoscopic partial nephrectomy for multiple masses in the same setting is feasible and safe and can allow for curative surgery in a minimally invasive fashion.

V8-6 Robotic Assisted Adrenalectomy in the Management of a Large Adrenocortical Carcinoma

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Introduction: Laparoscopic or retroperitoneoscopic adrenalectomy has become the gold standard for the treatment of benign adrenal tumours. It has been shown that robot-assisted adrenalectomy can be performed safely and effectively with operative time and complication rates similar to laparoscopic adrenalectomy (Brandao LF, et al. Eur Urol. 2014;65:1154–61). Although initially this technique was restricted to small tumours, today experienced surgeons can safely remove benign tumours up to 12 cm (Gumbs AA, et al. Best Pract Res Clin Endocrinol Metab 2006;20:483–99). The role of laparoscopic adrenalectomy in the treatment of patients with adrenocortical carcinoma (ACC) is still controversial. A growing number of reports on laparoscopic surgery for ACC suggest a comparable or even superior oncologic outcome compared with open surgery (Saunders BD, et al. Lancet Oncol 2004;5:718–26., Moinzadeh A, et al. J Urol 2005;173:519–25) and laparoscopic surgery for malignant tumours with a size up to 15 cm has been reported (Porpiglia F, et al. Eur Urol 2010;57:873–8).

In this video we demonstrate the important aspects of robotic assisted adrenalectomy in a patient with an adrenocortical carcinoma larger than 10 cm in size.
Patient and Methods: A 79 year old male patient was reffered to our department because of an enlarging left adrenal mass during his follow-up for non-muscle invasive bladder cancer. His CT scan in Dec., 2013 revealed a 10 cm mass at the site of left adrenal with heterogeneous contrast uptake. Analysis of hormonal profile of the patient indicated a non- functional tumor. After detailed discussion of the avilable treatment options with the patient he opted for robotic assisted adrenalectomy which was performed in April 2014.
Results: After an uneventful surgery the patient was discharged on post op day 2 and the final pathology report revealed an adrenocortical carcinoma which was 228 g in weight and

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11x7.5x5 cm in size. Wide areas of necrosis and focal capsular invasion was observed on pathological evaluation, however surgical margins were entirely clear of any tumor. The patient remained free of any signs of recurrent disease at his last follow-up after 1 year of surgery.
Conclusion: As has been suggested by the recent publications minimally invasive management of adrenocortical carcinomas appears feasible and robotic assisted adrenalectomy can be one of the surgical alternatives in the management of large adrenal masses provided that the basic principles of oncology is safeguarded.

V8-7 Video case series of robot-assisted surgical treatment of renal epithelioid angiomyolipoma – "the wolf in sheep's clothing".

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Introduction: Epithelioid Angiomyolipoma (E-AML), is a rare variant of renal AML that unlike classical AML exhibits malignant properties. This presents a diagnostic challenge, being difficult to differentiate from AML both radiologically & intra-operatively, and is therefore usually made histologically. We present with videos a 4-patient case series of E-AMLs who undertook robotic resection, the first of its kind in the UK.
Methods: 4 patients with an E-AML were incidentally identified on histopathology review following robot-assisted excision of renal mass diagnosed radiologically. 3 underwent robotic partial nephrectomy (RPN), & 1 underwent robotic assisted radical nephrectomy, all completed by a single surgeon. Peri-operative data was collected prospectively from September 2013 to May 2015.
Results: Mean age of patients was 38 years. All ASA 1. Mean tumour size was 3.23 cm; mean operation time was 150 mins; mean warm ischaemia time was 14.3 min; and mean estimated blood loss was 117 ml. No peri-operative complications were identified. None of these tumours were identified as an AML/E-AML pre-operatively, due to all having a fat poor appearance. Only 1 tumour exhibited atypical mitosis, with 2 revealing necrosis. 1 patient had a positive surgical margin and required a 're-do' RPN which showed no tumour growth and negative margins.
Conclusion: Renal neoplasms with certain unusual features such as fat poor AML should provoke consideration of E-AML. E-AML should be managed as a malignant tumour, even when identified on post-operative histological analysis. This can safely be managed by a 're-do' RPN if indicated.

V8-8 A Case Report (Video): Retroperitoneoscopic Robotic Partial Nephrectomy

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Introduction: The majority of robotic assisted partial nephrectomy are performed via the transperitoneal approach. Retroperitoneoscopic robotic partial nephrectomy is especially useful patients with posteriorly located renal tumor and prior history of intraperitoneal pathology or surgery.
Patients and Methods: We have performed such surgery for several patients with history of bariatric gastric bypass surgery, history of significant colon diverticulitis, etc.. Here we present a case of robot-assisted retroperitoneoscopic partial nephrectomy. A 65 year-old lady presented with an incidentally found 1 cm left posterior renal mass. She had past history of diabetes, asthma, nephrolithiasis, deep vein thrombosis, morbid obesity s/p bariatric surgery and s/p cholecystectomy. In this video, we show partial warm ischemic of the kidney lasting only 15 minutes. The accessory renal artery and renal vein were not clamped.
Result: The postoperative course was rather smooth. The pathology revealed a grade 2 clear cell renal cell carcinoma, with negative surgical margin.
Conclusion: Retroperitoneoscopic robotic partial nephrectomy is a good approach for patients with posterior renal tumors. Tricks of robot-assisted retroperitoneoscopic exposure will be discussed.

V8-9 Radical nephroureterectomy without patient or trocar repositioning using the da Vinci Xi® robotic system: Initial experience

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Introduction: We report our initial experience of robot assisted radical nephroureterectomy (RARNU) using da Vinci Xi® robotic system without patient or trocar repositioning in two patients.
Material and Methods: Patients were positioned in modified flank position (Image 1). Cystoscopy was performed and ureteral orifice was cauterized with Bugbee electrode to aid in the final robotic excision of the distal ureter. Primary port configuration is shown (Image 2). A 8 mm camera port is placed 3 cm lateral to the umbilicus. Three 8 mm ports are placed additionally. Two 8 mm trocars were placed lateral to the rectus sheath and 8 cm cranial and caudal to the camera port on the same line. The third 8 mm port is placed 15 cm lateral to the camera port. A 12 mm assistant port is placed on the midline, 5 cm cranial to umbilicus. The da-Vinci Xi robot is docked perpendicular to the bed over the backside.

For the nephrectomy and lymphadenectomy step, 2nd robotic arm holds the scope. Fourth robotic arm holds port 1 and is used as the right arm (hot scissors). First robotic arm holds Port 2 and is used as the left arm (bipolar forceps). Third robotic arm holds Port 4 and is the accessory arm with Prograsp forceps. For the ureter excision, all robotic arms were reconfigured for distal ureteral dissection. The robotic crane was positioned to the lower pelvis. Third and second robotic arms were switched between the camera port and 4th port. First port remained as monopolar curved scissors while prograsp forceps moved to the 2nd port and fenestrated bipolar forceps to the 3rd port. This port configuration is used to manage for both distal ureter and bladder cuff reconstruction. During bladder cuff suturing, a large needle driver is placed into the right hand (port 1) (Fig 1).
Results: The console time for the first patient was 150 minutes whereas the estimated blood loss was 200 ml. The console time and blood loss for the second patient were 140 minutes and 300 ml. respectively. The hospitalization time and catheter removal time were both 3 days and no complications were observed.

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Conclusion: Use of da Vinci Xi® robotic system enabled us to perform both nephrectomy and distal ureterectomy/bladder cuff excision without any repositioning of the patient or trocars. This minimally invasive surgical technique may be an alternative to open surgery, which necessitates two separate incisions.

V8-10 Da Vinci nephro-ureterectomy with single robotic placement: utility of the Xi system

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Introduction: Open nephro-ureterectomy is a historically morbid procedure, requiring 2 incisions with per-operative repositioning of the patient. The da Vinci robot has enabled to perform this procedure mini-invasively, however with the need to change its place during the intervention. This unfortunately lengthens operative time and complicates initial patient positionning. As the new Xi version of the system appears to allow to work in a wider surgical field, we have attempted to elaborate a new placement strategy of the robot and the trocars, which avoids the time-consuming repositionning of the system. This video shows the tips and tricks of this single robot and patient position, so as some important steps of the technique.
Patients and Methods: The patient is placed in lateral 45 degrees decubitus with a transurethral bladder catheter inserted in the surgical field. The robot comes exactly lateral to the patient. Four da Vinci trocars are inserted on an oblique line, starting cephalad on the mid-clavicular line sub-costally, and finishing in the middle of the infra-umbilical midline. During the nephrectomy part of the procedure, the 3 cephalad trocars are used for the camera and the 2 working instruments, the inferior trocar being used for exposure. For the distal ureterectomy part, the 3 inferior trocars are used for the camera and the 2 working instruments, while the subcostal trocar allows for excellent exposure, especially in women under the Fallopian tube. The specimen is retrieved through a 5 cm lower midline or Pfannenstiel incision.
Conclusion: The new Xi da Vinci system simplifies significantly laparoscopic nephro-ureterectomy, allowing this procedure to enter in the select group of procedures which distinctly benefit from the robotic approach.

V8-11 Endovascular extraction of caval tumor thrombus to facilitate minimally-invasive cytoreductive nephrectomy for metastatic kidney cancer

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Objective: This video will describe a novel technique of endovascular extraction of caval tumor thrombus to facilitate minimally-invasive cytoreductive nephrectomy.
Patients and Methods: A 60-year-old male with widely metastatic renal cell carcinoma and inferior vena cava thrombus desired a minimally-invasive cytoreductive nephrectomy to help enroll in a clinical trial. The patient underwent endovascular extraction of caval thrombus using the AngioVac device in the interventional radiology suite one week prior to minimally invasive cytoreductive nephrectomy.
Results: Intravascular ultrasound and subsequent MRI confirmed that the endovascular extraction procedure using the AngioVac device was successful. Histological examination of the extracted tissue confirmed renal cell carcinoma. One week later, the patient underwent an uncomplicated robotic assisted laparoscopic cytoreductive nephrectomy. The patient was discharged on postoperative day 2 and went on to receive systemic therapy.
Conclusions: We report the first case of endovascular management of caval tumor thrombus to facilitate subsequent minimally invasive cytoreductive nephrectomy. This technique could increase the use of minimally invasive cytoreductive nephrectomy by avoiding cavotomy, direct thrombectomy and caval reconstruction.

V8-12 Retroperitoneal robot-assisted partial nephrectomy: Exceeding limits in high-complexity cases

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Introduction: Partial nephrectomy is the gold standart treatment of small size and early stage renal tumors, with oncologic outcomes similar to radical nephrectomy. Besides, nephron-sparing surgery decreases morbidity and mortality resulting from chronic renal failure. The desire to provide minimally invasive alternative to treat patients with small renal masses led to the application of laparoscopic and robot-assisted techniques to partial nephrectomy. With increasing laparoscopic confidence and experience, the indications of partial nephrectomy expanded to patients with challenging tumor anatomy. However, the use of a robot minimizes the techniques challenges of the pure laparoscopic surgery, providing better approach to complex renal masses. The retroperitoneal access may assist the approach to posterior tumors, but the reduced work area is a challenge for the use of the robot-assisted technique.
Objective: Demonstrate retroperitoneal robot-assisted partial nephrectomy of a complex renal mass, with short warm ischaemia and surgical time.
Patient and Methods: A 43-years-old male, asymptomatic, without comorbidities or previous surgeries, with incidental ultrasonography finding of a right renal mass. CT scan shows solid, right posterior renal mass, measuring 3,3 centimeters, between polar lines, with enhancement after contrast administration. R.E.N.A.L. nefhrometry score = 9p.
Results: Patient underwent a retroperitoneal robot-assisted partial nephrectomy, with only renal artery clamping and warm ischaemia of five minutes. Total time of surgery was 70 minutes and console time 36 minutes. Patient was discharge on the first postoperative day, without complications. Histopathological study showed a clear cell renal cell carcinoma, measuring 3,4 centimeters, ISUP 3, limited to kidney, with free margins (pT1apNxpMx).
Conclusion: Robot-assisted partial nephrectomy is viable alternative to overcome techniques challenges related to pure laparoscopic surgery. Moreover, allows safe approach to complex renal masses, with short operative and warm ischaemia time. The retroperitoneal access may improve this outcomes for posterior renal masses.

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V9 - ROBOTIC SURGERY: NEW TECHNIQUES - BENIGN

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V9-1 Video: Combined Robotic Assisted Bladder Diverticulectomy and Photoselective Vaporization of the Prostate

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Introduction: The standard management of large bladder diverticula (BD) with bladder outlet obstruction (BOO) is open surgery, but recent reports describe a robotic approach for diverticulectomy. However, robotic management of BOO in small prostates is technically difficult. Therefore, we describe a novel combination of photoselective vaporization of the prostate (PVP), and robotic assisted bladder diverticulectomy (RABD) for BD.
Methods: Prior to RABD or at the same time as RABD, a PVP was performed transurethrally to the prostate capsule. Ureteral stents are placed if BD was close to the ureteral orifice. At the conclusion of RABD, the peritoneum is repaired so the bladder is in the retroperitoneal position. A cystogram is performed 5–7 days just prior to catheter removal. A retrospective review of PVP and RABD for benign BD was performed identifying patient characteristics, lasing time, joules, operative time, estimated blood loss (EBL), and length of stay (LOS)
Results: A total of 10 patients underwent both PVP and RABD: 5 with PVP and RABD in separate settings and 5 received PVP and RABD together. The results are summarized in the table below. No significant differences were identified between the PVP performed separately vs. same time as RABD.
Conclusions: Combination photoselective vaporization of the prostate (PVP), and robotic assisted bladder diverticulectomy (RABD) for bladder diverticula is an effective treatment regardless of prostate size. This combination can be considered in the same setting with no significant changes in outcome.

	Age (years)	Lasing Time (minutes)	Laser Energy (joules)	Operative time (HH:MM)	EBL (cc)	LOS (days)
Median	61.5	31.5	191,544	4:27	37.5	1
Range	59-77	6-172	44,903-829,631	3:57-6:11	3-150	1-3

V9-2 Novel Technique of Concurrent Perineal and Robotic Assisted Abdominal Approach for Repair of Rectourethral Fistula

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Introduction: We describe our combined robotic and perineal approach for repair of recurrent rectourethral fistulas. The standard perineal approach may have inadequate exposure to the proximal urethra and bladder neck. Abdominal approach may be compromised by poor exposure of tissue planes between the rectum and the bladder. The combined robotic and perineal approach allows for improved visualization of the pelvis, and placement of gracilis flap for interposition.
Methods: The patient is placed in lithotomy, with the thigh and perineum exposed for perineal dissection and gracilis flap harvest. The robot is side-docked. Robotic assisted abdominal dissection can proceed concurrently with perineal dissection. Dissection between the rectum and urethra is facilitated by placement of an EEA sizer into the rectum. Cystoscopy is performed concurrently to facilitate dissection, as the light from the cystoscope can be visualized through the tissues using the near-infrared fluorescence mode on the robotic camera. A gracilis flap is placed through the perineal incision, between the bladder and the rectum, and pulled up with the robot from the abdominal side, and sutured to the bladder.
Results: Robotic rectourethral fistula repair was successfully performed in a patient with previous surgery for rectal cancer, radiation therapy, who had failed previous open perineal repair. There has been no recurrence at 10 months of follow up.
Conclusion: Concurrent perineal and robotic assisted abdominal approach is a feasible approach for recurrent rectourethral fistulas.

V9-3 Robotic transperitoneal kidney donor nephrectomy

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Over the last 10 years, laparoscopic kidney harvesting has improved the outcome of renal donors by shortening hospital stay and recovery time to full performance status, so as decreasing the unesthetic size of open surgery abdominal scars. However, while the da Vinci robot is increasingly accepted as a useful tool to improve the results of prostate and renal cancer, it remains questioned in the field of donor nephrectomy, since it may not significantly improve the minimally invasive outcome already provided by laparoscopy. Also, the high costs of robotics have deterred surgeons from using it in this indication.

However, precision is one of the prerequisites of minimally invasive surgery, since it minimizes tissue trauma on the surgical site. By using the da Vinci robot, one may postulate that the fine quality of dissection it provides may serve the minimally invasive endeavour of the procedure, and possibly improve the postoperative quality of life of donors.

This video illustrates a transperitoneal robotic technique of kidney donor harvesting. 5 trocars are used altogether, 2 of them being placed through a Gelport inserted in the ipsilateral iliac fossa, through which the kidney will be safely retrieved. Fine dissection is particularly appreciated while securing a generous tissue-surrounded uretero-gonadal packet, so as when preparing vascular structures. The confortable surgical ergonomy of the robot also improves the surgeon's capacity to concentrate on the key issues of this challengiong operation. Final expedite kidney extraction depends on a well coordinated team of 2 on site surgeons.

V9-4 Robotic-Assisted Simple Prostatectomy Step-by-Step

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Introduction: In patients affected with symptomatic BPH (Benign Prostatic Hyperplasia), open simple prostatectomy either with transcapsular (Millin) or transvesical (Freyer) approach is still the most appropriate treatment method for high volume prostates (>80–100 ml). Recent advancements in technology has lead to minimally invasive surgical approaches in surgical treatment of BPH such as holmium laser enucleation, and laparoscopic or robotic-assisted simple prostatectomy. The aim of this video is to describe our technique of robotic-assisted simple prostatectomy (RASP) step-by-step using Millin technique.
Material and Methods: A 63-year old patient with symptomatic BPH (129 gr prostate) had undergone RASP. Our surgical technique involved similar port placement and positioning as transperitoneal robotic-assisted radical prostatectomy using daVinciTM 4S HD System. After the development of Retzius space and isolation of the anterior surface of prostate, bladder neck was dissected horizantally proximal to vesicoprostatic junction to enter bladder and expose the adenoma. The adenoma was dissected from the prostatic capsule starting from the posterior surface and then extending laterally and anteriorly. Two stay sutures were placed bilaterally for traction during the dissection and adenoma was cut in the midline anteriorly to reach the apex the enucleation was completed. Following hemostasis, the prostatic fossa was trigonized by advancing bladder neck mucosa to posterior urethra. After the placement of urethral catheter, prostate capsule and bladder neck was closed with running sutures.
Results: Estimated blood loss was 150 cc with an operative time of 90 minutes. No blood transfusion was required and no perioperative complications were observed. Continous bladder irrigation was not required. The catheter was removed on postoperative day 3. Uroflowmetric study on postoperative week 6 revealed a Qmax of 30 ml/sec and no incontinence.
Conclusion: RASP is a safe and an efficient technique in patients with large prostate adenomas, with minimal complications and early postoperative recovery period.

V9-5 Zero-Ischemia Partial Nephrectomy for a Large Renal Angiomylipoma with the Aid of Indocyanine Green Fluorescence

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Purpose: Near infrared fluorescence (NIRF) with indocyanine green (ICG) is increasingly used in robotic partial nephrectomy. With the aid of the technology, vascular structures can be clearly identified. Moreover, the perfusion status can be seen with the use of ICG under NIRF. We herein present a successful application of the ICG with NIRF to perform a zero-ischemia partial nephrectomy.
Patient and Method: A 65 year-old female patient was found to have a 7.6 cm fat-containing tumor incidentally on physical check-up. A huge angiomyolipoma abutting the hilar area was impressed. The R.E.N.A.L. nephrometry score was 7p. A robotic partial nephrectomy was suggested.
Result: A 3-arm robotic partial nephrectomy was performed transperitoneally. The renal artery was dissected to the hilar area and the feeding arteries of the tumor were clearly identified. Clamping the feeding arteries with Bulldog clamps was done. The tumor was successfully resected without ischemia of the affected kidney. The total operative time was 220 minutes with a blood loss of 250 ml. No intraoperative complication was encountered and the patient was discharged from the hospital uneventfully 5 days after operation.
Conclusion: NIRF with ICG made perfusion status visible. The dissection can be more delicate with the aid the technology and zero-ischemia partial nephrectomy could be achieved.

V9-6 Robotic-assisted pelvic exploration and bilateral orchiectomy in a patient with complete androgen insensitivity

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Introduction: Complete androgen insensitivity syndrome is an X-linked disorder of sexual development that arises from androgen receptor resistance. Clinically, a genotypic male will exhibit phenotypic female features due to lack of virilization normally induced by the action of testosterone (Massanyi et al. J Pediatr Urol 2013 Jun;9(3):368–79). Patients with AIS presenting with a male genotype and testosterone elevation mandate surgical exploration to identify and remove residual gonadal tissue given the risk of malignancy if not performed by adulthood. Laparoscopic exploration provides a minimally invasive option, and we describe a robotic-assisted approach in this patient population.
Patients/Methods: An 18 year old female patient with a history of bilateral inguinal hernia repair at age 2 was seen by her primary care physician for primary amenorrhea. She was subsequently referred to obstetrics and gynecology, where transvaginal ultrasound revealed an absent uterus, and total testosterone was elevated at 478. Chromosomal analysis confirmed a 46 XY karyotype. The patient was taken to the operating room for intra-abdominal exploration to search for undescended gonads, which were identified bilaterally, just proximal to the internal inguinal ring. Remnant Wolffian structures were also seen intraoperatively. Bilateral gonadectomy was performed with division of the gonadal vessels. Blood loss was minimal, and the patient had an uncomplicated post-operative course. Final pathology confirmed testicular tissue with Leydig cell hyperplasia but evidence of malignancy.
Conclusion: Robotic-assisted surgery in the patient with AIS may be a safe and effective minimally invasive approach for abdominal exploration and orchiectomy in prevention of malignancy.

V9-7 Robotic Augmented Anastomotic Ureteroplasty with Buccal Mucosa Graft Interposition: A Novel Technique for Repair of Ureteral Stricture

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Introduction: Surgical management of complex proximal ureteral strictures poses a significant challenge. The morbidity of established techniques such as ileal interposition and renal autotransplantion has led to interest in alternatives including buccal mucosa graft ureteroplasty. We previously reported robotic ureteroplasty using buccal mucosa graft as an onlay. We now report robotic ureteroplasty of a transected segment of ureter using buccal mucosa graft in an augmented anastomotic technique.
Material and Methods: We performed a robotic augmented anastomotic buccal mucosa graft ureteroplasty on a 23-year-old male with history of failed pyeloplasty for ureteral obstruction

due to injury during a motor vehicle accident. The patient was placed in modified right lateral decubitus position with genitalia prepped in the field to allow access to the bladder. The mouth was draped separately to allow simultaneous harvest of a buccal graft from the left cheek. Port placement was similar to the configuration for robotic pyeloplasty. Excision of the scarred ureteral segment revealed a 2 cm defect. It was determined that end-to-end anastomosis was not feasible due to tension. Therefore, augmented anastomosis was performed. The back walls of the ureter and the renal pelvis were brought together in running fashion. The buccal mucosa graft was then placed on the remaining ventral defect. An omental wrap was used. Ureteroscopy after placement of the graft demonstrated a widely patent ureter. A double-J stent, Jackson-Pratt drain and Foley were placed.

Results: Operative time was 192 minutes and blood loss was 65 cc. The patient was discharged on post-operative day 2 with Foley and nephrostomy tube to drainage. Foley was removed at post-operative week 2. Nephrostomy tube was capped and ureteral stent was removed at post-operative week 4. At post-operative week 6, the nephrostomy tube was removed after a nephrostogram demonstrated a patent left ureter. Three months post-operatively, renal ultrasound demonstrated no hydronephrosis and symmetric ureteral jets.

Conclusion: Augmented anastomotic technique analogous to that used in urethral reconstruction can be used in ureteral reconstruction with the application of buccal mucosa graft. The technique is easily adapted in the robotic minimally invasive approach. Further prospective studies are necessary to delineate the efficacy and morbidity of this technique.

V9-8 Novel Use of Indocyanine Green for the Localization of a Ureteral Stricture during Robotic Ureteroneocystotomy

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Introduction: The gold standard treatment of distal ureteral strictures is ureteroneocystotomy, with Psoas Hitch and Boari flap used to bridge large defects. Recently there have been several published series touting the efficacy of robotic ureteral reimplantation. Success depends upon maximization of ureteral length to afford a tension-free anastomosis. A number of technical advantages exist with the robotic platform, including 3-D magnification and the ability to utilize novel optical filters for enhanced anatomical precision. One such optical system is near-infrared immunofluorescence mapping using indocyanine green (ICG). ICG has found multiple applications in urological surgery, including selective clamping in robotic partial nephrectomy. We describe a novel use for ICG to determine the location of a ureteral stricture during complex robotic ureteroneocystotomy with Psoas hitch and Boari flap.

Materials and Methods: The patient is a 71 year-old man with a history of nephrolithiasis who had undergone right ureteroscopy and laser lithotripsy complicated by right ureteral obstruction. Subsequent nephrostomy tube placement and antegrade nephrostogram revealed a blind-ending ureteral stricture at the L5 vertebral level. After obtaining patient consent, the operative video for the above procedure was recorded. The surgical approach and port-placement mirrored the template of robotic cystectomy with the patient in lithotomy and steep-Trendelenberg position. After dissection of the ureter, ICG was injected into the nephrostomy tube to identify the site of obstruction. The defect was promptly localized under infrared imaging (FIREFLY, Novadaq Technologies Inc). After Psoas hitch, a Boari flap was achieved with an upside-down ''U'' incision from the dome to anterior bladder wall. The ureteral anastomosis was performed tension-free with a several running 4-0 polyglactin sutures, and a 6Fr ureteral stent was placed under direct visualization. The integrity of the anastomosis was tested with saline instillation and observed to be watertight.

Results: Total robotic time was 220 min and patient tolerated the procedure well with estimated blood loss < 50 cc. There were no intra- or postoperative complications and the patient was discharged home in good condition on post-operative day 1 after removal of the closed-suction drain. Foley catheter was removed on POD#14, and ureteral stent was removed on POD#54.

Conclusions: ICG effectively localized the site of a ureteral stricture with near-infrared imaging without permanently staining or obscuring the surgical field. We were able to maximize ureteral length and allow for a proximal ureteral stricture to be repaired robotically above the common iliac vessels with minimal morbidity and without the need for patient repositioning.

V9-9 Intra-corporeal Robotic Renal Auto-transplantation - Minimizing Ischemia

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Canada

Introduction: Renal auto-transplantation (RATx) has been shown to be a suitable option for managing patients with long upper ureteric or pan-ureteric strictures. The current gold standard approach to RATx is a laparoscopic nephrectomy followed by open auto-transplantation. The advent of robotic-assisted laparoscopic surgery has allowed for the application of minimally-invasive techniques to ever-more complex surgical procedures.

Patient Information: We present the case of a 38-year old woman that was referred to our institution for definitive management following a failed right laparoscopic pyeloplasty for UPJ obstruction. She presented with a nephrostomy tube in situ and initial fluoroscopic evaluation demonstrated a long 3.5 cm segment of upper ureter that was completely obliterated. Renal scintigraphy demonstrated 30% differential function in the right kidney and axial CT images demonstrated renal vascular anatomy suitable for RATx. To date, there is only one other published report of a completely intracorporeal robotic RATx. The authors demonstrated feasibility and safety of this novel procedure, however with their technique, reported a slightly prolonged total ischemic time of 126.6 minutes. With a slight modification in technique, we report a completely intra-corporeal robotic RATx with improved ischemic times, further demonstrating the feasibility of this procedure and building on their pioneering work.

Results: Completely intracorporeal right RATx was performed robotically with intraperitoneal cold perfusion. Total operative time was 390 minutes, EBL was 400 cc and total ischemia time was 79 minutes (4 mins warm ischemia, 48 mins cold ischemia, 27 mins re-warming time). Doppler ultrasonography on POD1 was normal. The patient developed a low-grade fever post-op due to atelectasis and was also found to have candidal bacteriuria on POD3 but was discharged home on POD5 without a foley catheter. Follow-up renal scintigraphy at the time of stent removal (4 wks post-op) demonstrated 36% differential renal

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function. The patient will return in 6 weeks with a lasix renal scan to assess the drainage of the transplanted kidney.
Conclusion: With our slightly modified technique, completely intracorporeal robotic renal autotransplantation is a safe and feasible option for managing long upper ureteric strictures. Moreover, this procedure can be associated with ischemic times comparable to the gold standard laparoscopic nephrectomy with open autotransplantation.

V9-10 Robotic anatrophic nephrolithotomy using near infra-red fluorescence image-guidance: Idea, Development, Exploration, Assessment and Long-term monitoring (IDEAL) Phase 0 Study

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Introduction: We undertook an Idea, Development, Exploration, Assessment and Long-term monitoring (IDEAL) Phase 0 study to assess the feasibility of robotic anatrophic nephrolithotomy (RANL) for removing staghorn calculi. Our aims were: 1) to develop a reproducible *in vitro* stone model; 2) to evaluate near infra-red fluorescence (NIRF) imaging (Firefly™, Intuitive Surgical Inc., CA) in identifying the anatrophic plane; 3) assess the feasibility of a novel technique of RANL.
Materials and Methods: We performed two RANLs in two anesthetized pigs (~20 kg). The robot was docked to the flank utilizing two robotic ports and a mini-GelPOINT (Applied Medical, CA). For creating the stone, low viscosity DenMat Precision material (DenMat Inc., CA) was injected into the renal pelvis through an incision, via a 14F Foley catheter. Following dissection of the anterior and posterior divisions of the renal artery, the posterior segment was clamped and 2 mg IV indocyanine green given to aid in identification of the anatrophic plane using NIRF imaging (Firefly). Next, the hilar vessels were clamped with RANL performed under warm and cold ischemia in cases 1 and 2, respectively. For cold ischemia, ice-slush was injected onto the kidney via syringes through the mini-GelPOINT.
Results: Replica staghorn stones could be created reliably in both pigs (mean size 5.1 cm). DenMat resin utilized was 45–50 cc; the material solidified within 2–3 minutes. Firefly aided in precise identification of the anatrophic plane. In both cases, the replica stones were removed successfully *in toto* through the anatrophic incision. The mean console time was 114 minutes. The warm and cold ischemic times were 36 and 33 minutes, respectively. Cold ischemia led to renal surface temperature of 15.4°C. Both kidneys were closed successfully using two-layer sliding-clip renorrhaphy. Mean blood loss was 160 cc.
Conclusions: The use of NIRF image-guidance accurately identifies the renal avascular plane, permitting a true anatrophic robotic approach for staghorn stones. IDEAL Phase 1 studies are needed to validate these findings.

V9-11 Zero-fragment nephrolithotomy: Robotic retroperitoneal approach for posterior calyceal diverticular stone

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Introduction: Previous reports of robotic nephrolithotomy to treat complex renal stones have used the transperitoneal technique. A retroperitoneal robotic approach may be an alternative to percutaneous nephrolithotomy for treating posterior diverticular stones. In this video we demonstrate our technique of retroperitoneal robotic nephrolithotom, and introduce the concept of robotic zero-fragment nephrolithotomy.
Materials and Methods: A 51 year old male with a three-year history of right flank pain was found to have a 2 cm right-sided upper pole stone on computed tomography suspicious of a calyceal diverticular stone. Flexible ureteroscopy failed to locate the stone or an ostium. As the parenchyma overlying the stone was noted to be thin, the patient underwent stone removal with a robotic retroperitoneal approach. The patient was placed in the full flank position with the table fully flexed to increase the space between the 12th rib and iliac crest. The camera port was placed a finger breadths space above the iliac crest, lateral to the triangle of Petit with all ports (2 robotic and 12 mm assistant) placed at least 7 cm apart. A balloon-dilating device (OMSPDBS, Kidney Distension Balloon, Covidien, Mansfield, MA) was used for retroperitoneal space creation. The patient side-cart was docked straight over the patient's head parallel to the spine.
Results: Hilar vessels were exposed but not clamped. The perinephric fat was cleared off the upper pole. A robotic ultrasound probe (Hitachi-Aloka, Tokyo, Japan) was used to identify the renal stone with evidence of acoustic shadowing. A nephrotomy incision directly over the stone was planned using the ultrasound. An off clamp linear incision was made, using the hook cautery, with minimal bleeding. The stone was retrieved using the Prograsp *in toto*: zero-fragment nephrolithotomy. The cavity was ablated using an argon beam and hook cautery. The incised parenchyma was closed using a single parenchymal layer sliding-clip renorrhaphy technique. Total estimated blood loss was 25 cc and the patient was discharged the following day. Stone analysis demonstrated a struvite stone. At 6 month follow-up patient was symptom free and stone-free on imaging.
Conclusions: The retroperitoneal robotic approach is a suitable option for treating posterior calyceal diverticular stone. We recommend ablating the cavity in order to avoid a urine leak in case the cavity is a dilated hydrocalyx. A minimally invasive robotic approach permits zero-fragment nephrolithomy where the stone is removed *in toto* thereby maxmising chances of a 100% stone-free rate.

V9-12 CO2-assisted nephroscopy during robotic pyeloplasty: The suggestion of a novel approach

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The traditional surgical management of pelvi-ureteric junction obstruction (PUJO) has been that of open pyeloplasty. Over recent times, this has been superseded by the minimally invasive laparoscopic approach. However, in units that offer robotic surgery; laparoscopic robotic pyeloplasty (LRP) has become more popular due to the benefit of reduced pain and morbidity, with comparable outcomes. Due to the very nature of PUJO, many patients present with a concurrent stone burden - thought to be secondary to urinary stasis. Traditionally, these stones may have needed staged interventions or have required protracted operating times whereby a robotic-assisted pyelolithotomy may have been utilised. The authors present a video abstract whereby

CO2-assisted nephroscopy with a flexible cystoscope is used during a transabdominal LRP (daVinci Xi). The cystoscope is passed through an Airseal (SurgiQuest) access port to prevent loss of pneumo-peritoneum with successful removal of calyceal stones using a nitinol-coated endoscopic basket (NGage, Boston Scientific). Real-time video capture is used to demonstrate the technique by simultaneously using both cystoscopic and robotic cameras. Commentary is provided explaining: (1) Entry into abdomen and positioning of flexible cystoscope adjacent to the renal pelvis, (2) Entry into the collecting system by incision using diathermy scissors on robotic arm, (3) Flexible cystoscope manipulated into the collecting system by robotic arm, (4) Orientation of the cystoscope and stone extraction by use of endoscopic stone basket. The procedure is clarified through the use of bespoke animation, with essential landmarks clearly identified. Through the use of this video abstract, the authors aspire to show that CO2-assisted nephroscopy during LRP is a feasible approach with minimal morbidity to the patient and acceptable procedural time.

V10 - LAPAROSCOPY: LOWER TRACT – ONCOLOGY

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V10-1 High burden Radical Cystectomy (>10 cm): Is laparoscopy feasible?

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Introduction: Laparoscopy is effective modality for performing radical cystectomy and lymph node dissection. It is indicated for non-bulky bladder malignancy.
Objective: To evaluate the feasibility of LRC in bulky bladder mass.
Material and Methods: We demonstrate LRC, lymph node dissection in a 56 year old gentleman presenting with cT3b, Nx bladder mass of size11 cm. Case specific changes were additional port placement for lifting the bladder mass anteriorly by assistant to expose the posterior dissection, using 30 degree upward direction laparoscope for dissecting seminal vesicle and prostate, freeing the specimen before ligature fixing of dorsal vein complex and facilitating node dissection after cystectomy.
Results: The case could be completed with an OR time of 252 minutes, without blood transfusion and estimated blood loss of 250 ml. There was no post- operative complication, hemoglobin drop of 1 gm% and hospital stay of 6 days. The final histo-pathologic result was bladder mass weighing 493 grms, size of 11x11x 8 cms, transitional cell carcinoma pT3aN1 (1 of 42 nodes).
Conclusion: We demonstrated the feasibility of high burden cystectomy with laparoscopy. The procedure maintains minimally invasive advantage without compromising oncological outcome.

V10-2 Laparoscopic Reconstruction of Vesico-urethral Anastomosis Dehiscence After Laparoscopic Radical Prostatectomy

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Introduction and Objective: Dehiscence of the vesico-urethral anastomosis (VUA) after laparoscopic radical prostatectomy (LRP) is rare. There are several conservative treatment methods, including passive drainage and bladder catheter traction. When the conservative approach fails, it is stated in the literature that a laparoscopic approach is safe and effective. Our purpose is to present the only case reported in our department of laparoscopic reconstruction of VUA after LRP.
Patients and Methods: A 48-years-old man was diagnosed of prostate cancer (PC) after PSA elevation (8.9). No relevant past medical history. He was submitted to totally extra-peritoneal (TEP) LRP in February 2015 in another institution. The Histology was Gleason 6 (3 + 3) PC (pT2cNxM0R0). Seven days postoperatively, after catheter removal, he presented with acute urinary retention (AUR). A bladder catheter was put without difficulties. The catheter was removed 2 weeks after and he presented again with AUR. An uretroscopy was performed confirming dehiscence of VUA - bladder neck with normal characteristics but totally separated from the urethra. A bladder catheter was put over a guide-wire with traction of the bladder for 2 weeks, when he performed a CT scan which showed urinary leakage.

He was referred to our institution for laparoscopic VUA reconstruction. The patient was supine. The procedure was performed successfully using the standard pelvic TEP laparoscopic ports placement along an inverted V line between the umbilicus and both anterior superior iliac spines, using the previous accesses. A residual urinoma was drained and, after good VUA site exposure, reconstruction was performed with 6 interrupted sutures over a catheter. A drain was left in place.
Results: The operative time was 160 minutes. No peri-operative complication was registered. Drainage was removed the next day. He performed a CT scan 2 weeks after which showed minor leakage that was approached conservatively, with bladder traction for another 2 weeks. Reevaluation CT showed no leakage. The catheter was removed and there was no recurrence. The patient has minor incontinence 2 months after the procedure (1 pad a day).
Conclusion: We think that if the patient presented earlier to our department the procedure would have been easier. It supports the literature that laparoscopic VUA repair after dehiscence is feasible and can be safely performed as an effective treatment.

V10-3 En bloc bladder tumor resection: back to oncologic basics

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Introduction: Fundamental oncologic surgical principles dictate en bloc excision of a tumor with a margin of normal tissue. Conventional piecemeal TURBT is the accepted standard of care for bladder cancer diagnosis and treatment of non-invasive tumors but does not adhere to this basic tenant. In this video we describe currently available techniques in en bloc TURBT.
Methods: In this educational video we review our experiences with transurethral en bloc resection of bladder tumors using monopolar and bipolar electro-resection, holmium and thulium lasers, and the Hybrid Knife.
Results: En bloc bladder tumor resections produce whole specimens ideal for pathological assessment of tumor depth and staging. Unlike piecemeal resections, the en bloc technique also allows the pathologist to determine tumor margin status. Some series have shown a reduction in tumor recurrence rates and prolonged recurrence free survival; however, progression rates remain unchanged. Modified monopolar resection loops with a single electrode have been fashioned for circumferential tumor excision and undermining. Similarly, the bipolar Collins knife can be used in this fashion with saline irrigation and a reduction in obturator reflex and perforation risk.

Holmium and thulium laser en bloc excision are also performed with saline irrigation but eliminate obturator reflex completely and minimize perforation risk. Randomized studies have shown excellent specimen quality with muscle in all submitted tissue. The Hybrid Knife translates techniques used in endoscopic excision of localized colon tumors to the bladder. There is an initial hydro-dissection of the tumor and submucosa off of deeper bladder muscle prior to the circumferential electrodissection of the tumor from the bladder wall. The submucosal water cushion minimizes perforation risk and cautery artifact. Studies have shown excellent preservation of tissue architecture and depth of excision for tumor staging.
Conclusion: Transurethral en bloc bladder tumor excision adheres to the principles of cancer surgery by removing the tumor and a margin of normal tissue. Several readily available technologies are adaptable to en bloc excision while newer modalities are being investigated. With its potential oncologic benefits and enhanced patient safety, en bloc excision should be more widely used in the treatment of non-invasive bladder cancer.

V10-4 Visualizing bladder tumors: seeing beyond white light

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Introduction: White light cystoscopy (WLC) is the gold standard for bladder cancer diagnosis; however, small or sessile tumors may be missed resulting in delayed diagnosis or incomplete tumor resection. Here we demonstrate advances in the cystoscopic diagnosis of bladder cancer.
Methods: In this educational video we review our experience with narrow band imaging (NBI), photodynamic diagnosis (PDD), optical coherence tomography (OCT), and the Storz professional image enhancement system (SPIES) and their implications in bladder cancer management.
Results: NBI detects specific wavelengths (415 nm and 540 nm) to allow heightened enhancement of mucosal vasculature, a hallmark of bladder malignancy. NBI has increased sensitivity and specificity over WLC, increase the detection of CIS and delay recurrence.

PDD utilizes a pre-operatively administered hexaminolevulinate (HAL) which is preferentially metabolized by malignant cells into a red fluorescent compound detectable by blue light cystoscopy. HAL improves detection of papillary tumors and CIS over WLC and reduces residual tumors on repeat resection. HAL also increases recurrence free survival intervals 7–9 months compared to WLC, but data with improved progression free survival is limited.

OCT is conceptually similar to ultrasound, but utilizes near infrared light rather than sound waves to deliver high resolution subsurface micro architectural images, in situ. In addition to being able differentiate benign from malignant tissue with high sensitivity and specificity, OCT has also been able to demonstrate depth of tumor to differentiate non-invasive from muscle invasive disease allowing for directed biopsies and resections.

The SPIES platform, now in development, includes software that variably enhances image exposure including red color to improve vasculature visibility. Similar to NBI, SPIES can also appreciate specific wavelengths to highlight hypervascularity and improve tumor detection.
Conclusion: Advances in transurethral visualization of bladder malignancy have improved the detection of cancer and allow for more accurate diagnosis and complete resection. While PDD has been integrated into the European guidelines, each of these technologies may play a role in the future standard to reduce disease recurrence and progression.

V10-5 Extracorporeal Ileal Neobladder Reconstruction through a Minimal Umbilical Incision after Laparoscopic/Robotic-Assisted Radical Cystectomy: A Simple and Effective Method

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Introduction: Open radical cystectomy (RC) is the treatment of choice in invasive bladder cancer. With improvements in minimally invasive surgical techniques, increasing attention has focused on laparoscopic or robotic-assisted RC. We reported our experience of ileal neobladder reconstruction.
Patients and Methods: During March 2014 and June 2015, two male patients (41 and 74 years old) received laparoscopic and one female patient (69 years old) underwent robotic-assisted RC. After RC and extended pelvic lymph node dissection, the umbilical port incision was extended to 4–5 cm. Alexis wound retractor was applied, through which all the bagged specimens were extracted. A 65-cm distal ileum was isolated and hand-sewn to form a W-shape neobladder by continuous suture using 3-0 Vicryl. A 10-cm segment on the proximal end was reserved as the afferent limb. Bilateral ureters were anastomosed to the afferent limb with 4-0 Vicryl in Wallace II fashion. Bilateral double-J ureteral stent was inserted. Bowel anastomosis was completed with GIA and TA. The neobladder was placed into the pelvic cavity for urethra-neobladder anastomosis. The wound retractor was capped with a surgical glove, which allowed regain of pneumonperitoneum.
Results: The neobladder reconstruction, bowel anastomosis, and ureteral anastomosis was completely in 52, 64, and 70 minutes in the three patients. No leakage from ileal-ileal, ureteral-neobladder, or urethra-neobladder anastomosis in all patients. No

stricture developed in the urethral or ureteral anastomosis. The functional bladder capacity was greater than 300 mL at one month. Daytime continence was good or acceptable.
Conclusion: After laparoscopic or robotic radical cystectomy, neobladder reconstruction, bowel anastomosis, and ureteral anastomosis and stent insertion can be achieved effectively and efficiently through a minimal umbilical incision using a wound retractor. The regain of pneumoperitoneum can be done by capped the wound retractor with a surgical glove. If an extra port is required, another trocar can be also inserted through the surgical glove.

V10-6 Ureteral reimplantation in urinary diversions: is it the laparoscopy a good option?

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Introduction: Radical cystectomy is the gold standard for the treatment of invasive bladder cancer. The morbidity is high for Radical cystectomy and the ureterointestinal stenosis with consequent renal damage is a relatively frequent complication for all types of urinary diversion. The endoscopic approach is a therapeutic option although it is not very effective. Open surgery is a more effective option, but with significant associated morbidity. The laparoscopic approach has not been widely used because the relative contraindication of previous abdominal surgery and because it is considered technical demanding.
Purpose: To show the surgical technique, step by step, of the laparoscopic ureteral reimplantation in orthotopic neobladder.
Matherial and methods: We present two cases of laparoscopic ureteral reimplantation in patients that previously undergone laparoscopic radical cystectomy with orthotopic neobladder confection. Both patients developed right ureterohydronephrosis in the first 1 year after the surgery requiring placement of percutaneous nephrostomy. Attempt was made to endoscopic dilation in both cases without success.
Results: It was possible the reimplantation of right ureter in afferent loop of neobladder in both patients. The surgical time was 180 minutes in the first case and 200 minutes in the second. The hospitalization time was 6 days in both cases and the nephrostomies were removed after a week in both. There were no complications during and after the procedures. During second month after surgery evaluation patients were asymptomatic and with no evidence of hydronephrosis.
Conclusion: The laparoscopic approach proved effective technique for treating stenosis of the ureterointestinal anastomosis and should be taken as an good option approach for this clinical problem.

V10-7 Video Endoscopic Inguinal Lymphadenectomy

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Introduction: The inguinal lymphadenectomy allows staging and treatment of penile carcinoma. It is indicated for patients with palpable lymphadenopathy or >pT1G2. It is a complex surgical procedure with high rates of morbidity (skin necrosis, infection, lymphatic drainage, etc). The video-endoscopic inguinal lymphadenectomy follows the same guidelines of classical open surgical technique, but has lower morbidity associated.
Clinical Case: We present a case of a 57 years old male patient, with no relevant medical background. He was subjected to Circumcision plus partial glansectomy with subsequent histological diagnosis of penile carcinoma - pT1bG3. The patient was posteriorly proposed for video-assisted inguinal lymphadenectomy. Postoperative period progressed uneventfully, with favorable outcome. No significant lymphatic drainage during hospitalization was registered and discharged was given after 8 days postoperative, without drains and with almost complete functional recovery.
Conclusion: In our experience, the video-assisted inguinal lymphadenectomy appears to have advantages of convalescence and early resumption of daily activity compared to classical open surgical technique, however it is considered a technically complex procedure. Therefore it should be implementable by a surgeon with experience in laparoscopy.

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V11 - STONES: PCNL

V11-1 Micropercutaneous Nephrolithotomy in Modified Lithotomy Position

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Introduction: Miniaturization of optical fibres and fragmentation tools allowed to progressively reducing the calibre of nephroscopes. In this film, we illustrate the technique of micropercutaneous nephrolithotomy in Galdakao-modified supine Valdivia position.
Material and methods: The technique is demonstrated with 4 diverse clinical cases. All patients were positioned in Galdakao modified supine Valdivia position. Puncture of collecting system was achieved under ultrasound and fluoroscopic guidance with the Polydiagnost ''all seeing needle''. The stones were dusted using holmium laser via a 270 μm fibre and 0.8 Joule - 15 Hz settings. The energy was increased if necessary.
Results: All procedures were successfully completed, there were no complications. Hospital stay was 1 day in 3 patients and 3 days in the tetraplegic patient. All patients were stone free at one month.
Conclusion: MicroPerc is a valuable method in specialized stone centers for specific indications. It can be proposed as an alternative of retrograde intrarenal surgery after informed consent of the patient, in specific anatomical configurations of the collecting system or as a supplement to flexible ureteroscopy or percutaneous nephrolithotomy. Microperc profitably completes the armamentarium of endourologic treatment modalities for stone disease.

	Patient history	Stone characteristics	Technique
# 1	64 year old male, failed ESWL, patient refused RIRS and double-J	15 mm left kidney pelvis 1.400 HU	Dusting
# 2	25 year old male, history of uretero-caliceal anastomosis in childhood, recurrent UTI, failed ESWL and RIRS	Two 8 mm stones in two different lower calix on left side	Two punctures, dusting
# 3	45 year old female, residual stone after PCNL for staghorn, recurrent UTI, failed RIRS	8 mm lower pole of left kidney inaccessible with RIRS	Micro-ECIRS, dusting
# 4	62 year old male, tetraplegic, ileal conduit, bilateral staghorn stone, recurrent UTI	Staghorn stone in left kidney	MiniPerc through lower calix, MicroPerc through mid-calyx and flexible ureteroscopy for upper calix

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V11-2 Experience with a novel'steerable' basket in PCNL

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Introduction: During standard PCNL using a rigid nephroscope, entry into another calyx situated at an angle can be a problem. We are presenting a novel indigenous steerable basket for stone extraction from inaccessible calices in standard PCNL with a rigid nephroscope. To the best of our knowledge use of such an instrument has never been reported earlier.
Methods: Since October 2013, we have been using an indigenous novel extraction device for removal of stone during PCNL using the standard nephroscope (Wolf 24F) through 26 – 30 F Amplatz sheath. This steerable basket has been developed indigenously, made of metal alloy of reusable quality, which can be angulated upto 30 degrees in any direction for entering calyces which are situated at an inaccessible angle. The procedure is done under endoscopic and fluoroscopic guidance. Whenever a situation arises that the angle of the infundibulum does not allow direct entry and visualization of the calyx, the steerable basket is put in use by introducing through the instrument channel and then it is passed into the desired calyx under endoscopic and fluoroscopic control to engage the stone and deliver it into the pelvis, from where it is extracted under vision as usual.
Results: The basket has been used successfully in more than 50 cases in the last 8 months of use. Being a metallic reusable instrument, it is also a cost-effective device. The success rate of the steerable basket in extracting the stone in the inaccessible calyx was 80% in our initial experience. The details of the technique will be shown in the video in the presentation.
Conclusion: The initial results of 'steerable' basket demonstrate it to be a useful new accessory to percutaneous renal stone removal technique in selected stone population. Further studies will validate these early results.

V11-3 Capsule to Calculus Optical Dissection for Tract Creation during Difficult Percuataneous Nephrolithotomy (PCNL)

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Introduction and Objectives: PCNL remains the mainstay modality for large burden kidney stone management. Access to pelvicalyaceal system is the key step for success of PCNL for complete stone clearance and minimal complication. However, many times in cases of impacted stones, staghorn calculi, non-dilated pelvicalyceal systems or thin renal cortex, it becomes difficult to establish a tract into the calyx after initial puncture and the procedure may have to be abandoned. In this video we present our technique of intrarenal dissection to salvage difficult cases using standard PCNL instruments.
Methods: We performed this novel technique in 9 patients with staghorn stones or impacted calyceal stones. As per standard PCNL protocol, fluoroscopic guided puncture and guide wire placement into the collecting system is performed, then the tract is dilated with balloon or Amplatz dilators and a sheath is placed. A nephroscope is passed under direct vision and an atraumatic forceps is used to genly dissect the renal capsule and parenchyma until the calyx is entered. Standard PCNL is then performed with stone fragmentation and extraction and placement of a small bore nephrostomy tube when indicated.
Results: We used this novel technique in 9 patients where it was difficult to do standard tract dilatation and successfully established access and a stable tract into the pelvicalyceal system. There were no complications with this technique.
Conclusions: This novel technique of intrarenal dissection for tract/access to pelvicalyeal system is feasible, safe, and effective and does not increase morbidity in patients with impacted stones, staghorn calculi, or nondilated collecting systems.

V11-4 Early Clinical Experience with the ShockPulse Intracorporeal Lithotriptor in Percutaneous Nephrolithotomy

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Introduction: Percutaneous nephrolithotomy (PCNL) is a standard for stones larger than 2 cm in diameter. The newest intracorporeal lithotripter, the ShockPulse™ Stone Eliminator (Olympus), is a single probe ultrasonic lithotripter with dual action lithotripsy. In addition to the constant ultrasonic wave energy, there is intermittent ballistic and mechanical energy shockwaves that occur at 300 Hz. Activation of the energy and variable suction are both controlled by the surgeon via the handpiece. The 3.7 mm probe also boasts a larger diameter than other 3.7 mm probes from other systems allowing it to suction larger fragments and blood clots. We sought to examine its clinical use in our first 6 cases.
Methods: Nine patients who underwent PCNL were evaluated. Patient factors, stone size, stone free status, stone analysis, creatinine and hemoglobin were evaluated. A rigid 26 cm nephroscope, dilation with a 30 Fr balloon and the ShockPulse were used to fragment and remove stones. Graspers were used at the surgeon's discretion. Flexible nephroscopy and fluoroscopy were carried out to ensure the patient was stone free.
Results: Nine patients (5M, 4F) with an average BMI ($25.3 \pm 2.9\ kg/m^2$) had PCNL (5Left, 4Right). The stone area was $505 \pm 209\ mm^2$ and there was an 89% stone free rate (8/9). One patient with a residual stone had a uric acid stone in a calyx adjacent to the calyx of puncture. There were no perforations or

complications from the ShockPulse. The average rise in creatinine was 1.6 ± 6.3 umol/L and drop in hemoglobin was 15.1 ± 5.4 g/L postoperatively. There were no problems with utilization of the ShockPulse handpiece intraoperatively in the nephroscope. Using the handpiece activation resulted in better ergonomics regarding the floor space around the operating table. The noise from the handpiece was noted to be quieter than the Cyberwand. Only gentle pressure was needed to fragment each stone and did not vary greatly from soft to hard stones. The device was also very effective at vacuuming blood clots from the collecting system.
Conclusions: The larger lumen of the ShockPulse probe allows bigger fragments and blood clots to be suctioned through it. The constant ultrasonic energy and 300 Hz ballistic action is more consistent than the alternating A and B mode of the Cyberwand. Standardized bench testing of this device compared to other commercially available devices has been submitted to this meeting for presentation. The ShockPulse intracorporeal lithotripter is an effective and safe device for stone comminution for PCNL.

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V11-5 Laparoscopic assisted PCNL in ectopic pelvic kidney: a critical appraisal

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Introduction: The treatment of renal stone disease has undergone a great advance with the evolution of extracorporeal shock wave lithotripsy (ESWL) and endourology. The presence of anatomical anomalies, such as the pelvic kidney, imposes limitations to such therapeutic procedures. Renal stones in pelvic kidney can be managed by means of open surgery, ESWL, RIRS or percutaneous nephrolithotomy. Open surgery is associated with higher morbidity, longer skin incision, and causes more pain post-operatively. Extracorporeal lithotripsy results in only 54% stone clearance in such cases. Percutaneous surgery has also been proposed, but it cannot be done in the conventional manner. It must be performed by anterior abdominal approach with laparoscopic assistance to prevent injury to bowel and major vessels while getting the initial access with puncture needle/dilators and subsequent nephroscopy. Herein, we describe the successful management through the laparoscopic assisted percutaneous nephrolithotomy (PCNL) in ectopic pelvic kidneys.
Material and method: Eight patients with pelvic kidney stones underwent laparoscopic assisted PCNL. The approach was superior calyceal in the majority and two patients required additional puncture for complete clearance. Retrograde ureteric catheter was inserted cystoscopically under image intensification. Next the patient was placed supine and through Hassans open technique a 10 mm laproscopy port was introduced in the umbilical region. Two 5 mm ports were inserted in the mid clavicular line and iliac fossa according to location of ectopic kidney. Posterior peritoneum over the pelvic kidney was dissected. Once the renal capsule was identified, the initial puncture needle, placement and subsequent steps were similar to conventional PCNL.
Results: The mean age was 33.4 years (range 20–45). The male to female ratio was 3 (6:2), the left to right ratio was 0.6 (3:5). The mean stone size was 29.2 mm (range 20–50). Mean Operative time was 90 min. (65–145), mean hemoglobin decrease was 1.4 g/dl (0.8–2.5) and mean hospital stay was 4.7 days (4–7). Complete clearance was achieved in all except one because of multiple stones distributed in all calyces, which required post operative SWL.
Conclusion: We believe laparoscopic assisted transperitoneal PCNL to be a safe, feasible and valid minimally invasive management option for this uncommon but challenging urological condition.

V11-6 Microperc Armamentarium: Expanding the Indications – A Video Demonstration

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Introduction: Microperc is safe and efficient in the management of small renal calculi (< 1.5 cm) in adults. We have extended the use of Microperc system for the management of adult renal (ectopic), pediatric renal and ureteric calculi, in deploying deflux in the management of reflux and biopsy of renal pelvic mass. We present a video demonstration wherein we used the All-seeing needle in these clinical scenarios.
Patients and Methods: The Microperc needle is 4.85 Fr three part needle, onto which a three way adapter is attached. One channel of the adaptor helps in introduction of the 0.9 mm fiberoptic telescope, the second for the irrigation source and the third admits miniaturized instruments (laser fiber/ forceps).

Scenario 1: In ectopic kidneys
Two cases of pelvic calculus in ectopic left kidney. Access obtained with ultrasound + fluoroscopic guidance into the LC using 'All seeing needle'. Laser energy was used and complete clearance obtained.

Scenario 2: In pediatric renal calculi
11 month male child presented with right renal pelvic calculi. Pt underwent Right Microperc for a 14.5 mm pelvic calculus. Access was obtained using USG guidance and 4.85 Fr tract size used for laser fragmentation. Complete clearance achieved.

*Scenario 3: In lower ureteric calculus **(micro-URS)***
3 years female child was identified with 9 mm left lower ureteric calculus. Glide wire was placed across the calculus and the assembled Microperc system was introduced through the urethra into the bladder and left ureteric orifice. Stone visualized and laser fragmentation of the calculus was done.

Scenario 4: Deflux injection
6 year female child with recurrent urinary tract infections found to have bilateral reflux. Successfully deployed Deflux injection bilaterally.

Scenario 5: Antegrade biopsy of renal pelvic mass
66 year male with gross hematuria and renal pelvic mass underwent ultrasound guided puncture. Biopsy was retrieved using forceps inserted through 10 F micro-mini sheath. Histopathology revealed transitional cell carcinoma for which patient underwent nephroureterectomy.
Results: Microperc system was successfully used in the mentioned scenarios, with short hospital stay, no significant complications and no requirement of transfusion.
Conclusion: Microperc and its accompanying armamentarium, besides being the most minimally invasive modification of percutaneous nephrolithotomy, can also be used efficaciously and safely in the management of above mentioned clinical

indications, both calculous and non-calculous. This feasibility video demonstration may serve as a guide for broadening the realms of utilization of microperc armamentarium.

V11-7 A Unique Transgluteal Access Technique in Percutaneous Nephrolithotomy: Video Presentation

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Introduction: Percutaneous nephrolithotomy (PCNL) access can be technically challenging particularly in patients with anatomic abnormalities. Due to these variations, the urologist may need to resort to a more innovative approach in order to access and treat these large calculi. In this video, we demonstrate how a transgluteal access technique facilitated PCNL in a patient with a pelvic kidney.
Materials and Method: The steps in achieving transgluteal access for PCNL in a 31 year-old female will be demonstrated in this video. The patient had a history of spina bifida and VATER, and had a right staghorn calculus located in an ectopic pelvic kidney. Due to the location of the ectopic kidney, a conventional flank PCNL was not possible. Given the patient's previous history of multiple abdominal surgeries and severe spinal abnormalities, an abdominal approach would have been complicated. A transgluteal access approach was employed in this complex patient undergoing PCNL.
Results: Using an innovative approach, the 3.8 cm staghorn calculus was successfully accessed. The operative time was 117 minutes and the estimated blood loss was 50 mL. The patient tolerated the procedure well without any perioperative complications. On post-operative imaging an 8 mm residual fragment was identified that required a second look PCNL during the same hospitalization. The patient tolerated both procedures well and was rendered stone free. The patient had her nephrostomy tube clamped and subsequently removed on the day of discharge. The patient‘s right lower quadrant pain improved after surgery and she was discharged on postoperative day 5.
Counclusion: We describe a novel transgluteal access approach for patients undergoing PCNL when standard access is not feasible. This technique allows for access to ectopic pelvic kidneys as an alternative to conventional PCNL.

V11-8 Video Presentation of the Laser Direct Alignment Radiation Reduction Technique (DARRT) For Percutaneous Nephrolithotomy Access

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Introduction: Patients with large renal calculi treated with percutaneous nephrolithotomy (PCNL) are at risk for high radiation exposure as they routinely undergo radiation during diagnosis, treatment, and follow-up. We developed a novel access technique called the Laser Direct Alignment Radiation Reduction Technique (DARRT), in an attempt to reduce the radiation exposure of stone patients treated with PCNL. This video demonstrates this technique.
Materials and Method: This video demonstrates the Laser DARRT in a 42-year-old male with a large right renal staghorn calculus. Utilizing a flexible cystoscope, an angle-tipped glidewire was placed into the right kidney from below and converted to a super-stiff guidewire. Over the super-stiff guidewire, an ureteroscope was inserted using a fluoroless technique and was used to identify the optimal calyx for access. A portable C-arm equipped with a laser aiming beam was brought in over the flank region and used to target the ureteroscope tip through the 11th intercostal space. Once the tips of the ureteroscope, the access needle, and the hub of a Chiba needle were aligned, the laser beam was used to maintain proper alignment during needle insertion. A stone basket was used ureteroscopically to pull a wire into the ureter. The wire was converted to a super-stiff guidewire. Stone fragmentation was accomplished using a combined ultrasonic/pneumatic lithotripter. Stone free status was noted intraoperatively and confirmed using fluoroscopy. A nephrostomy tube, JJ stent and multipurpose reentry catheter were placed at the conclusion of the procedure.
Results: This video demonstrates the successful use of the Laser DARRT in this patient. Total operative time was 3 hours and 45 minutes. Estimated blood loss was 40 mL. Access fluoroscopy time was 6.5 seconds and the total fluoroscopy time was 9.7 seconds. A low-dose CT scan on postoperative day 1 confirmed stone free status and the patient was discharged home with no complications.
Conclusion: The Laser DARRT is a simple radiation reduction technique for establishing percutaneous renal access that is much easier to learn and use than using only ultrasound guidance. The laser sight during needle insertion allows the surgeon to obtain tactile feedback without receiving radiation exposure to his hands. We feel that this procedure can simplify access in patients undergoing fluoroscopically guided renal access and shows significant promise as a method to reduce radiation exposure to both the patient and surgeon.

V11-9 Ultrasound-guided renal access for percutaneous nephrolithotomy: a description of three novel ultrasound-guided techniques

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Objectives: Ultrasound-guided renal access for percutaneous nephrolithotomy (PCNL) is a safe, effective, and low-cost procedure commonly performed worldwide, but a technique underutilized by urologists in the United States. The purpose of this paper is to familiarize the practicing urologist with methods for ultrasound guidance for percutaneous renal access.
Methods: We discuss two alternative techniques for gaining renal access for PCNL under ultrasound guidance. We also describe a novel technique of using the puncture needle to reposition residual stone fragments to avoid additional tract dilation.
Conclusion: With appropriate training, ultrasound-guided renal access for PCNL can lead to reduced radiation exposure, accurate renal access, and excellent stone-free success rates and clinical outcomes.

V11-10 Super-perc – A new technique of Minimally-Invasive PCNL

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Introduction: PCNL (Percutaneous Nephrolithotomy) has undergone significant changes in recent years in the quest for improving efficacy and reducing morbidity. Newer modalities like Mini-PCNL, Ultra-mini PCNLand Micro-PCNLhave evolved with advancement in optics and technology. However, with these newer advancements, scattering of small fragments produced with laser lithotripsy and complete stone clearance remains a concern. We have devised a new technique of PCNL termed 'Super-perc' utilizing the principles of keeping one-way flow and suction to remove all the fragments and keeping intra-pelvic pressure low. This method is performed using a specially designed sheath with a suction attachment.
Materials and methods: This was a prospective observational study involving 52 consecutive patients who underwent PCNL with the 'Super-perc' technique from June 2015 till May 2015. Salient features of Super-perc are specially designed Super-perc sheath (Shah Sheath) of 10/12F tract size with suction mechanism, and use of a 4.5/6 F Pediatric Ureteroscope (Wolf, Germany) as the nephroscope. The initial steps of puncture and tract dilatation were same as standard PCNL. Stone fragmentation was performed using holmium laser. The metallic Super-perc sheath has a rear suction channel, allowing application of surgeon-controlled suction to the outflow tract, thus helping extraction of the fragments.
Results: Mean age of the group was 41.8 years (range 6–84) with 33 males and 19 females. Mean stone size was 19.1 mm (range 10–37 mm) and mean operative time was 40.9 min (range 26–92 min). 27 renal units had upper calyceal puncture whereas 12 had middle, 8 lower calyceal and 5 with two punctures. DJ stent was placed in 12 patients whereas 37 patients were totally tubeless, with only a ureteric catheter left indwelling overnight. Only 3 patients required nephrostomy tube. The mean Hemoglobin drop was 0.32 units with no blood transfusion. Post-op 3 patients reported fever and one had hematuria. The mean hospital stay was 31.5 hours (range 22 – 76 hrs). The stone clearance rate on follow-up NCCT was 96.15%.
Conclusion: 'Super-perc' is a new technique of Minimally-Invasive PCNL and can be successfully done with minimal modification in armamentarium, with potential advantage of good stone fragment clearance and low intra-renal pressure. Direct comparative studies will validate the initial results which are promising.

V11-11 Mini PCNL with Storz MIP XS Nephroscope is ideal for Pediatric Urolithiasis: A pilot study

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Introduction: Management of pediatric urolithiasis has always been a situation requiring special concern due to the limitation of available instrumentation. With advancement in technology, newer equipment has evolved which has helped in dealing with pediatric stones. Storz MIP XS (Karl Storz, Germany) is a newly developed 7.5F nephroscope which uses Amplatz sheaths of 8.5F/11F and is ideally suited for these small size patients. We evaluated the efficacy and feasibility of Storz MIP XS system in pediatric age group in this study.
Materials & Methods: We used Storz MIP XS nephroscope for PCNL in 8 pediatric patients from March 2015 till June 2015. We had 8 pediatric patients with 5 male and 3 females. The mean age was 9.5 years (range 6–14). Mean stone size was 14.75 mm (range 11–22). The initial puncture was ultrasound-guided followed by tract dilation under fluoroscopic guidance. Holmium Laser was used for fragmentation in all the cases and fragments washed out through the Amplatz sheath.
Results: The mean operative time was 28.87 minutes (range 19–45). Two renal units had upper calyceal puncture whereas 3 had middle, 3 lower calyceal punctures. DJ stent was placed in 2 patients whereas 6 patients were totally tubeless, leaving only a ureteric catheter indwelling overnight. No patient required nephrostomy tube. The mean Hemoglobin drop was 0.31 gm% with no blood transfusion. Post-op one patient had mild fever which was managed conservatively. The mean hospital stay was 57.25 hours (range 36–72 hours). Complete stone clearance was confirmed in all cases (100%) on post-op X-ray KUB and ultrasound.
Conclusion: The new Storz Xs nephroscope is ideally suited for pediatric PCNL cases as small-sized tract is associated with minimal trauma and chances of bleeding. This should be accepted as the standard of care in pediatric nephrolithiasis, where flexible ureteroscopy is not a feasible alternative.

V11-12 Expanding opportunities: miniperc nephrolithotripsy under ultrasonic control

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Introduction: In 1998 S. Jackman described technique with the smaller endoscope which was called miniperc. Traditionally miniperc is performed under X-ray control or in combination with ultrasonic control. The role of ionizing radiation is negative. As well known radiological protection is not an absolute protection against X-ray exposure. Ionizing radiation should be used with caution, especially during medical procedures, in order to protect the patient and the surgical team from unnecessary exposure.
Materials & methods: we studied whether US guided miniperc (US MPCNL) is as safe and effective as MPCNL performed conventionally.

We retrospectively reviewed the period from April to June 2014. In this study were included 50 patients (32 - females; 18 - male) with a solitary stones located: in a lower calix (n-15), middle calix (n-16) and in the renal pelvic (n-19). There were performed 50 MPCNL. Patients were divided in two groups according to the method of intraoperative control. Group I (n-25) - patients whom underwent totally US MPCNL, and in group II (n-25) MPCNL where performed under combined navigation (US and x-ray guidance). The safety, efficacy, operative time, hospital stay and outcome in those two groups were compared and analyzed.
Results: Mean operating time – GI $40{,}5 \pm 5{,}0$ min; GII 38 ± 7.0 min ($p > 0.5$); Percentage of successful first puncture in GI was 90% and 95% in GII. The initial stone-free rate (SFR) was 99%. After 3 months we performed CT-scan, which proved the initial SFR data. Hospital stay: 2 ± 1 ($p > 0.5$) days, similar in both groups. Hemotransfusion was not required.

Postoperative complications were scored using Clavien Grading Classification and complication score - ''0'' is all cases.

Only 2 observations in the first group required an additional control of puncture needle position with the help of X-ray.
Conclusion: based on investigation's data we conclude that totally US MPCNL is as safe as under conventional combined control PCNL. US MPCNL is a solution of the radiological safety of the patients, the surgeon and the surgical team with comparable efficiency and safety of the techniques.

V12 - BPH 2

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V12-1 Our experience in Laparoscopic transvesical adenomectomy

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Introduction: Laparoscopic transvesical adenomectomy (LA) is an alternative in surgical treatment of patients with large prostate volumes. In this video we aimed to share our experience in LA.
Methods: A total of 45 patients were underwent LA between March 2008 and March 2015 in a single referral center. Perioperative data was collected from the patient charts retrospectively. International Prostate Symptom Score (IPSS), Qmax values were compared preoperatively and post operatively at 3rd month.
Results: Mean patient age was 67.9 ± 7.45 years, mean prostate volume was 137.5 ± 34.85 (78–235) cc, mean length of operation was 138 ± 51.05 (75–330) minutes, mean estimated blood loss was 156 ± 86.18 (75–550) ml and mean length of foley catheterization was 6.3 ± 0.47 days. Only one patient needed blood transfusion. Mean post-operative IPSS was significantly lower than preoperative scores (7.7 ± 2.19 vs 18.5 ± 6.0, $p < 0.001$ respetively) Mean post-operative Qmax value was significantly higher than preoperative values (25.7 ± 4.94 vs 7.36 ± 4.86 $p < 0.001$)
Conclusions: LA is a safe and effective surgical technique for patients with large prostates.

V12-2 Comparison of the different techniques for laser enucleation of the prostate: PVEP, HoLEP, ThuVEP

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Introduction: Transurethral laser enucleation of the prostate was first described in the late 1990s as an endoscopic alternative to open prostatectomy. Ever since, these procedures have experienced increasing popularity worldwide. Herein, we compare the technique and clinical outcomes of three commonly used lasers: Holmium laser enucleation of the prostate (HoLEP), thulium vapoencleation of the prostate (ThuVEP), and 532 nm photoselective vapoenucleation of the prostate (PVEP).
Patients and Methods: This video illustrates the surgical technique of three different laser prostate enucleations (HoLEP, ThuVEP, PVEP) as performed by experts. The relative advantages and potential drawbacks of each are discussed according both to expert opinion and clinical evidence.
Results: Prior work reported on 1065 HoLEPs (JL), 1080 ThuVEPs (AG), and 170 PVEP (AT) has shown all techniques are highly effective at treating lower urinary tract symptoms (LUTS) in men and can be applied to prostates of any size and to actively anticoagulated patients. In the PVEP group, median prostate volume was 83 ml and median followup was 24.7 months. Mean international prostate symptom score (IPSS) improved from 17 to 5, quality of life from 3 to 1, and Qmax from 11 to 16.5 ml/s, and no patient required a blood transfusion or retreatment for LUTS. In the HoLEP group 313 patients had greater than 12 month followup with a mean IPSS improvement from 20.3 to 5.3, and mean Qmax improvement from 8.4 to 22.7 ml/s. The transfusion rate among the first 507 patients was 0.4%. In the ThuVEP group median Qmax improved from 8.9 to 18.9 ml/s and post void residual reduced from 120 to 20 ml. In first 124 ThuVEP patients at 24 months followup, median IPSS improved from 21 to 3 and quality of life improved from 5 to 1. Complications were infrequent for patients in each group including urethral strictures (≤ 1.3%), bladder neck contractures (≤ 1.8%), and transfusions (≤ 1.7%). There were no mortalities.
Conclusion: Endoscopic prostatic enucleation can be successfully performed with a number of different lasers and surgical techniques including HoLEP, ThuVEP and PVEP. HoLEP has the most robust evidence base and longest follow-up. The holmium and thulium laser have urologic indications outside of the prostate making them potentially more cost effective, but appear to require a longer learning curve. PVEP may cause less immediate postoperative stress urinary incontinence and retrograde ejaculation. Short-term outcomes and complications appear favorable for HoLEP, ThuVEP and PVEP when performed by an expert.

V12-3 Bipolar enucleation of the prostate. Comparison between two different loops

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Introduction: Bipolar retrograde enucleation of the prostate (BEP) is a relatively new technique in the treatment of BOO. It can be performed either by a resectoscope equipped with a common bipolar loop or by a dedicated loop. Aim of this study is to analyze our initial experience about bipolar enucleation of the prostate (BEP) using two different loops.
Material and Methods: Between June 2014 and May 2015 we treated with BEP 41 patients. Twenty-six procedures were performed with a Storz® bipolar continuous flow resectoscope with a common bipolar loop and 15 procedures with an Olympus® bipolar continuous flow resectoscope with a dedicated device. Once identified the proper cleavage plane between the adenoma and the capsule, adenoma is mechanically enucleated in an retrograde approach, using bipolar energy for hemostasis and refinements. The enucleated prostatic lobes are subsequently morcellated. We present our experience using two different systems, ERBE VIO 300D® and Olympus Gyrus Pk-Pulse electrosurgical units, Lumenis Versa Cut + ® morcellator.
Results: Age and prostatic volume were not statistically significant between two groups. Mean operative time was 78 min (SD +/− 14) in common loop group (CLG) and 69 min (SD +/− 12) in dedicated loop group (DLG). Mean length of stay was 1.3 (SD +/− 0.6) in CLG and 1.2 days (SD +/− 0.5) in DLG. We observed one grade 5 complication according to Clavien-Dindo classification in CLG (myocardial infarction). No major complication was observed in DLG. At a mean follow-up of 7 months (SD +/− 3) we had one case of SUI treated with AdVance® in CLG and one case of severe bladder neck stricture in

DLG. The mean IPSS reduction was 16 points (SD +/− 2) in CLG and 15 points (SD +/− 3) in DLG (not statistically different, $p > 0.05$).
Conclusions: Despite new numerous minimally invasive approaches, monopolar TURP remains the most frequently performed operation for BPH. BEP is a rising, safe, reproducible, relatively easy, new technique that can be performed by a common bipolar loop, even if a dedicated loop could reduce operative time and probably the learning curve. In our preliminary experience Bipolar Retrograde Enucleation of the Prostate with morcellation has proved to be an effective and safe technique with intra and perioperative outcomes similar to conventional techniques reported in the literature. The availability of a dedicated loop seems to reduce operative time. Large prospective randomized trials are needed to confirm our results.

V12-4 Holmium laser resection of a symptomatic anterior prostatic cyst

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Introduction: Anterior prostate cysts are rare, with few cases reported in the literature.
This video demonstrates resection of a symptomatic anterior prostate cyst in a 33-year old man who presented after passing a small urinary stone with a 6 month history of worsening lower urinary tract symptoms. His IPSS score was 16/35 with bother score 5/6. Trans-abdominal ultrasound and pelvic MRI revealed a multiloculated anterior prostatic cyst projecting into the bladder. At flexible cystoscopy the cyst was located anteriorly between 12 and 1 o'clock and could only be seen after performing the J manoeuvre and looking back towards the bladder neck. The flow tracing showed a brief strong flow, followed by a prolonged, obstructed flow pattern with a peak flow of 7 ml/s, presumably due to the cyst ''ball-valving'' into the bladder neck during micturition. PVR was 156 ml.
Methods and results: Using laser settings of: Energy = 1.6 Joules, rate = 50 Hertz, power = 80 Watts, the cyst was excised intact using an end-firing 500 micron fibre. Care was taken to preserve the bladder neck muscle fibres. After detachment to the bladder the cyst was removed with a grasping loop. Operative time was 6 minutes. An 18Fr 2-way catheter was inserted.
The patient was discharged on the first postoperative day after a successful trial without catheter. Urinary flow was significantly faster from the outset. Histology was benign. At 3 month follow-up IPSS score was 2/35 and bother score 1/6. Qmax and PVR improved to 31 ml/s and 40 ml respectively. Sexual function remains unchanged.
Conclusion: We found high powered Holmium delivered via an end-firing fibre to be an ideal energy source for excision of an obstructing prostatic cyst. Post operatively there was significant improvement in symptom score, Qmax and PVR, with preservation of sexual function.

V12-5 Holmium Laser Enucleation of the Prostate, Tips and Tricks Not Just for Beginners

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Holmium laser enucleation of the prostate (HoLEP) was introduced in 1998 by Peter Gilling. Numerous studies and many investigators now consider HoLEP the new gold standard.
Begin the capsular plane by making two incisions at the 5- and 7-o'clock positions from the bladder neck to the verumontanum. Proceed one layer at a time while opening the bladder neck until the circular fibers of the neck are exposed. Then proceed deepening and widening the incision separating the lateral lobe from the median portion. At this stage to push laterally with the whole instrument in the apex region detaching the adenoma from the capsule bluntly, detaching the lateral lobe from the capsule. The transversal incision in front of the verum makes it possible to detect the central cleavage plane at the level of the lateral incisions and to free the median lobe in a retrograde manner. Than lift and push the median lobe distally detaching it along the groove plane until the circular fibers of the neck. The anterior commissure incision begin at the 12-o'clock position corresponding to the veru proceeding in a retrograde manner, this incision must be extended laterally from the 1-o'clock to 11-o'clock positions, separating the lateral lobes and creating a space in which the instrument can be inserted. The lobe should be pushed in a posterior direction to uncover the cleavage plane, which is opened by the laser's pulsating action. At this point proceeds to enucleate the lateral lobe beginning at the cleavage plane at the 6 o'clock position until detachment is attained at the level of the neck. The apical detachment: when detached the hypertrophic lobe from the capsule from the neck with only a mucosal bridge left the lobe is pushed toward the bladder placing the apical peduncle in traction at the 12-o'clock position distancing it from the sphincter to safely dissect it close to the adenoma. Use warm irrigation fluid during hemostasis, inspects for only small arteries, and defocuses the laser to 2–3 mm. For Morcellation: engaging the piece of the prostate and bring it to the center of the bladder filled with warm irrigation liquid. Move morcellator shaft in and out of the working channel in small increments to favor the engagement of the lobe and efficacious morcellation. Hard fibrous specimens can be removed by slowing the blades' velocity.

V12-6 Feasibility of Thulium Laser VapoEnucleation of the prostate (ThuVEP) after prior prostate surgery for benign prostatic hyperplasia (BPH)

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Introduction: Transurethral resection of the prostate (TURP) is the standard treatment for decades. Data about laser treatment of the prostate after previous surgical treatment for BPH are rare. In this video we demonstrate the feasibility of ThuVEP after prior prostate surgery for BPH.
Material and Methods: Three patients with previous surgical treatment for BPH (180 W GreenlightTM XPS prostatectomy 2013, TURP 1998, TURP 2013) were treated by ThuVEP. All patients had recurrent prostatic tissue after prior surgical treatment. Crucial steps of the procedure are presented in the video: Circumferential incision of the verumontanum, 5 and 7 o'clock incisions at the middle lobe, retrograde removal of the median lobe, apical incision of the lateral lobes, retrograde removal of the lateral lobes, removal of prostatic tissue by mechanical morcellation. The surgical technique was modified according to

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the changed anatomy in each case. The Thulium laser was applied at a power level of 90 W. A 550 nm bare-ended laser fibre and a 26 F resectoscope were used.
Results: Operations were completed successfully without complications. Resected specimen weighted 100 g (180 W XPS prostatectomy 2013), 20 g (TURP 1998) and 8 g (TURP 2013). Postoperative courses were uneventful. Catheters could be removed after 2 days; hospitalization time was 2 or 3 days.
Conclusions: The technique of ThuVEP is feasible after previous prostate surgery for BPH. The same principles of ThuVEP that are used in untreated prostates can be applied in a treated one, although it is more challenging to find the surgical planes.

V13 - BPH 3

V13-1 GreenLight 180W XPS Prostatectomy: How I Do It.

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Introduction: GreenLight laser has been proved to be effective for relief of BPH obstruction. However, limitations of the 80W or 120W system were reported in the treatment of large prostates greater than 100 g and increased cost related to fiber devitrification and fracture. (1) The new GreenLight XPS 180W laser system has been shown to be more cost-effective and efficient tissue removal. (2) The optimal surgical techniques of the XPS 180W laser prostatectomy remain a great diversity.
Patients and Methods: From Jan 2010 to Dec 2014, 120 patients with lower urinary tract symptoms secondary to BPH were treated with GreenLight laser. 58 of 120 patients have prostate volume more than 80 g. 48 patients were treated with GL-HPS 120W and 10 with GL-XPS 180W laser system. Perioperative variables including IPSS, IIEF, QOL, Qmax, post-void residual were recorded at baseline, 1, 3, 6 and 12 months. We will present a 6 min video of a 90 year-old male with 130 g prostate, who was treated with XPS 180W laser. In this case, we demonstrate the techniques of pure vaporization, vapo-incision, and vapo-resection with the only one fiber.
Results: The preoperative characteristics were comparable. Mean operating time, mean laser time, mean energy delivery, mean fiber use, change in hemoglobin postoperatively, and complications will be provided during the oral presentation.
Conclusion: The XPS 180W system is superior to its predecessor not only with increased power but a significant improved fiver-design, including internal cooling and metal-tip cap protection. (3) The techniques of pure vaporization, vapo-incision, or vapo-resection can be applied to suitable cases.

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V13-2 Semi-robotic mpMRI/TRUS-guided transrectal fusion biopsy of the prostate using the ArtemisTM-device (Eigen, USA)

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Introduction: Recent studies showed that combination of mpMRI/TRUS-guided fusion biopsy with systematic biopsy of the prostate improves detection of clinically significant cancer. In this video we describe the sequence of a 68 year old patient with a history of prior negative systematic biopsy, a PSA of 6,94 ng/ml and a PI-RADS 5 lesion in mpMRI who underwent mpMRI/TRUS-guided prostate biopsy with Artemis™. This patient was enrolled in a prospective study collecting data of mpMRI/TRUS-guided fusion biopsies.
Material and Methods: Artemis™ is a semi-robotic biopsy platform which devises a 3D-model of the prostate from the 2D-transrectal ultrasound in real-time and an elastic fusion with the mpMRI. The mpMRI (3 Tesla) of this patient showed a PI-RADS 5 lesion in area 14as. The patient had no history of infection or prior antibiotic therapy within the last 6 months and urine culture was sterile. The prostate was segmented and the ROI (Region of Interest) marked in the ProFuse™ software before. After informed consent biopsy was performed in general anaesthesia. Before 12-core systematic biopsy three target biopsy cores were obtained from the ROI.
Results: Histological results showed a Gleason 7 (3 + 4) prostate cancer in one target core of the PI-RADS 5 lesion. Two cores of systematic biopsy showed a Gleason 6 (3 + 3) cancer in left apex. Biopsy was performed without technical complications or related adverse events and the patient left hospital the following day without any discomfort.
Conclusion: Artemis™ is a comfortable biopsy platform that offers potential to detect clinically significant prostate cancer and to reach regions of the prostate that might be missed by systematic 12-core biopsy. Elastic fusion of mpMRI and live ultrasound combined with semi-robotic navigation provide high accuracy. Due to registration of planned and obtained cancer sites within a 3D-prostate model especially patients undergoing active surveillance of low to intermediate prostate cancers might profit regarding the re-biopsy.

V13-3 Combining Laser TUVP with Urethral Reconstruction - A Successful Experience

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Introduction: A urethral stricture co existing with an obstructing, enlarged prostate is a common clinical condition. The oft used technique is to dilate the stricture or do a Visual Internal Urethrotomy and then proceed with a TURP/TUVP. And then do a definitive reconstuctive surgery for the urethra (Urethroplasty) at a later stage. At our centre, we have successfully been able to combine a definitive urethral reconstruction with a Diode Laser

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TUVP in the same sitting - with good, satisfactory long term results.
Materials and Methods: Patients who are found to have a combined Bladder Outlet Obstruction due to Prostatomegaly co existing with a stricture urethra, either in the pre op investigations or intraoperative findings, undergo this combined procedure. After dissection of the urethra, through a dorsal urethrotomy, the Diode Laser TUVP is performed. After the TUVP is complete, the dorsal onlay urethroplasty or anastomotic urethroplasty is completed. About 192 patients have undergone this combined procedure at our centre, in the past 4 years.
Results: All patients underwent a Diode laser procedure for the prostate varying from a complete vaporization, bladder neck incision or vaporization of a bladder neck stenosis. All patients underwent a Urethroplasty - (Buccal Mucosal Graft urethroplasty or an end to end anastomotic urethroplasty), depending on the nature of the stricture. On followup, the flow pattern has been fund to be satisfactory in the majority of the patients. On followup, we found recurrent urinary tract infection (4%) and a stenosis of the anastomotic site/ recurrent stricture (6%) to be the common long term complications.
Conclusion: Presence of an obstructive, enlarged prostate co existing with a stricture urethra is not a contraindication for doing a definitive urethral reconstruction or a TUVP, in the same sitting. The excellent haemostasis that a Diode laser vapourization offers, with almost no possibility of clot retention, allows us to combine both procedures with no added risk or concern.

V13-4 Sequential photoselective vaporization of the prostate (PVP) and robot-assisted laparoscopic bladder diverticulectomy (RABD)

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Purpose: Open surgery, endoscopic and laparoscopic techniques are surgical options for the management of bladder diverticuli. We report photoselective vaporization of the prostate (PVP) and robot-assisted bladder diverticulectomy (RABD) in the same patient for the management of a large symptomatic bladder diverticulum.
Patients and methods: A 69 year old patient with normal PSA values suffered benign prostatic hyperplasia symptoms due to bladder outlet obstruction. The ultrasound examination revealed a prostate size of 80 cc and a large diverticulum of 7 cm at the right side of the bladder wall.

A PVP procedure was initially performed and a 20 Fr open end urethral catheter was inserted into the diverticulum over a guide wire, in order to distend it with normal saline infusion. After docking the robot the distended diverticulum was easily detected and transected at its neck from the bladder. Then, the bladder opening was closed in two separate layers and a Jackson-Pratt drain left in place.
Results: The operative times were 50 min for the PVP procedure and 60 min for the robotic procedure (total 110 min). No intraoperative complications were encountered. The postoperative period was uneventful. The patient was discharged from the hospital the following day without catheter. Follow up ultrasound examination revealed a normal bladder wall and a prostate size of 30 cc.
Conclusions: Sequential PVP and RABD appear to be a safe and effective minimally invasive procedure for the management of benign prostatic hyperplasia and large bladder diverticulum.

V13-5 Holmium Laser Enucleation of a Severely Calcified Prostate

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Introduction: Holmium laser enucleation of the prostate (HoLEP) is an effective and safe minimally invasive treatment option for BPH. We present a complicated case of a patient with persistent symptoms following an outlet procedure who was then successfully managed with HoLEP.
Patient and Methods: A 69-year-old male with history of BPH, chronic prostatitis and UTIs presented with complaints of persistent LUTS (IPSS of 23 with bother score of 5) following button vaporization of the prostate and cystolithopaxy. His Qmax was 11 mL/s and PVR was 15 mL. CT scan revealed a $\sim$150 g prostate with severe prostatic and peri-prostatic calcifications measuring up to 4 cm in greatest dimension. Cystoscopy revealed coarse calcifications throughout the prostatic urethra, significant lateral lobe hypertrophy and a severe bladder neck contracture. After discussion of risks and benefits the patient elected to undergo HoLEP and cystolithopaxy.
Results: At the time of HoLEP and cystolithopaxy the posterior plane of dissection was maintained above the layers of calcifications that appeared to extend into the perirectal space on CT. The tissue did not morcellate easily. EBL was 25 mL and operative time was 229 minutes. The patient passed a TOV on POD#1. Final pathology was 125 g of benign calcified prostatic tissue. Eight weeks following the surgery the patient reported significant symptomatic improvement with an IPSS of 5, bother score of 1 and Qm of 15 mL/s after voiding 200 mL.
Conclusion: HoLEP is an excellent minimally invasive option for the management of complex BPH associated with severe calcifications.

V13-6 HoLEP for a 560 cc prostate

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Introduction: Holmium laser enucleation of the prostate was first described in 1998 and since that time has accumulated a significant level 1 evidence base. It has been well documented that HoLEP is safe and effective for large prostates and that, in experienced hands, HoLEP appears to have no upper prostate size limit. We believe that the case described in this video is the largest documented HoLEP involving tissue morcellation.
Subject: This video demonstrates HoLEP for a 560 cc prostate. A 66-year old man presented acutely with intractable visible haematuria secondary to a massively enlarged prostate. After failed conservative measures the patient proceeded to HoLEP on a semi-emergency basis.
Materials and Methods: Using laser settings of: Energy = 1.6 Joules, rate = 50 Hertz, power = 80 Watts, and the traditional 3-lobe enucleation technique, the prostate was enucleated successfully and the prostate lobes placed in the bladder. Initial morcellation was very slow due to the large size and fibrous nature of the prostate tissue. We opted to avoid cystotomy and instead planned a staged morcellation 4 days later. At this stage the remaining prostatic lobes were much softer and completion morcellation was more than twice as fast as the initial morcellation

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Results: The patient was discharged home on the 3rd postoperative day. The enucleation time was 1 hour 40 minutes. The initial morcellation removed 188 g in 2 hours. The second morcellation removed the remaining 230 g in 1 hour. All tissue was benign and was predominately fibromuscular stroma. The patient developed a urethral stricture at 4 months follow up which was treated with optical urethrotomy. At last follow up his IPSS score was 0/35 and his bother score 0/6. He reported no incontinence at any stage post HoLEP.
Conclusion: In experienced hands HoLEP is a safe and effective treatment for massive benign prostatic enlargement. If initial morcellation is slow, staged morcellation can be considered, and after 4 days we experienced significantly faster morcellation due to softening of the prostate tissue.

V14 - STONES: URETEROSCOPY

V14-1 Introduction of a Renal Papillary Grading System for Patients with Nephrolithiasis

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Introduction: Inspection of the papillae is an overlooked and underappreciated source of information at the time of renal endoscopy for patients with nephrolithiasis. Variable appearances are likely to have clinical significance, yet the ability to study these associations is limited by the lack of a grading system. Herein, we describe a novel grading system designed to standardize and simplify the description of renal papillary appearance.
Materials and Methods: Over 300 patients undergoing ureteroscopy or percutaneous nephrolithotomy have been prospectively enrolled and given consent to participate in a clinical project studying the pathogenesis of stone formation at a single institution. Digital scopes are preferentially utilized to map the affected renal unit(s) at the time of the procedure.
Results: Four recurring abnormal papillary features were identified based upon the collective knowledge and expertise of the primary research team: ductal plugging, pitting, loss of papillary contour, and amount of Randall's plaque. Upon papillary inspection, every papilla receives a score in each domain corresponding to the severity of the particular feature. A final score is then calculated.
Conclusions: The creation of a standardized system to describe papillary appearance in stone formers has considerable potential clinical utility as a tool to distinguish high-risk patients with more pressing needs of metabolic evaluations and follow them over time. It also has potential as a research tool to create a common language to describe papillary appearance. This might improve collaboration between scientists and allow surgeons to better correlate endoscopic findings to pathological findings and clinical outcomes.

V14-2 Utilization of variable pulse width holmium:YAG laser for treatment of large upper tract urothelial carcinoma

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Ureteroscopic laser resection has emerged as an effective treatment for upper tract urothelial carcinoma in appropriately selected patients. Holmium:YAG (wavelength 2100 nm) is the most commonly utilized laser for this application. It is a pulsed laser which can both coagulate and ablate tissue. Due to its shallow depth of penetration (0.5 mm), holmium:YAG causes minimal tissue damage and therefore can be safely utilized in the entire upper urinary tract. One advancement of this technology is the variable pulse width holmium:YAG laser, which allows the surgeon to switch from a short (350 microseconds) to a long (700 microseconds) pulse duration. In doing so, it delivers the same amount of energy over a longer period of time and thereby improves coagulation. This laser is particularly useful for the treatment of large ureteral tumors due to its coagulative properties and safety profile. While neodymium:YAG (wavelength 1064 nm) is typically reserved for treatment of collecting system tumors, the variable pulse width holmium:YAG laser can be judiciously used in the ureter with possible decreased risk of ureteral stricture formation. In this video, we demonstrate the unique features of this laser in the treatment of a 3 cm lower proximal ureteral tumor.

V14-3 Developments in Ureteroscopic Stone Treatment (DUST): Tips and tricks for lithotripsy using multi-cavity high-power holmium lasers

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Introduction: ''Dusting'' is the use of high frequency and low pulse energy (HiFr-LoPE) laser settings to ablate stones into submillimeter fragments. In this video we demonstrate our technique of ureteroscopic stone dusting for large renal and ureteral stones using multi-cavity high-power Holmium:YAG systems.
Patients and Methods: We present three cases of renal pelvic stones (1.8, 1.5 and 1.4 cm, respectively), one partial staghorn (3.0 cm), and one impacted upper ureteral stone (1.7 cm) treated with dusting technique via flexible ureteroscopy. We used a 100-Watt (VersaPulse, Lumenis Inc, San Jose, CA) or a 120-Watt holmium laser (Pulse 120H, Lumenis). The 120-Watt system permits dual lithotripsy mode of 'Fragmentation' and 'Dusting' as well as change in pulse width. Energy settings were adjusted according to stone composition, location and size, varying from 0.2–0.5 Joules (J) with repetition rates between 30–80 Hertz (Hz).
Results: Effective strategies for dusting renal stones include the technique of ''nudging'' and ''herding'' to displace renal stones into upper pole calyces. Dusting methods include chipping, dancing and pop-corning maneuvers. For chipping, the laser fiber is directed to the periphery of the stone to allow small fragments

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to break off. For dancing, the tip of the laser fiber is brushed back and forth across the stone surface. Pop-corning (i.e. 1J × 15–20 Hz) can help break down fragments in dependent calyces. We also illustrate the technique of ''dust-corning'' (i.e. 0.5J × 80 Hz) for rapidly ablating fragments within calyces into powder. For impacted ureteral stones, dusting technique leads to small fragments which do not interfere with ureteroscopic vision. Use of long pulse width can reduce retropulsion and prevent stone migration. With dusting technique, the utilization of retrieval devices is minimized.
Conclusions: Dusting technique using high-power holmium lasers have opened a new frontier in laser lithotripsy. Strategies that optimize fragmentation and post-procedural drainage include nudging, herding, dancing, chipping, and dust-corning. Further clinical evidence is needed to determine if outcomes are similar to conventional laser lithotripsy strategies.

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V14-4 Flexible Ureterorenoscopy with Holmium Laser Lithotripsy Under the Guide of B Ultrasound In the Management of Caliceal Diverticular Calculi

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Introduction and Objective: To study the efficiency and safety of flexible ureterorenoscopy (F-URS) with holmium laser lithotripsy under the guide of B ultrasound in managing caliceal diverticular calculi.
Methods: The messages of 15 patients by F-URS with holmium laser lithotripsy under the guide of B ultrasound in the management of caliceal diverticular calculi from June 2013 to September 2014 were analyzed retrospectively. The 15 cases included 9 males and 6 females (mean age 46 years : range from 35–65 years). All patients had unilateral caliceal diverticulum stone, with 13 cases in the upper pole and 2 cases in the middle portion, respectively. The ureteral access sheath was placed firstly, and then ureterorenoscope was inserted into the renal cavity. The orifice of caliceal diverticular neck was identified under the guide of B ultrasound, the diverticular neck was incised with holmium laser, and a 200 um holmium laser fiber was used to crush diverticular stone. The stones were either evacuated using the manual pump to flush them or extracted with a basket catheter.
Result: All the ureteral access sheaths and flexible ureterorenoscopes were placed successfully. The ostium of caliceal diverticular neck was identified under the guide of B ultrasound, including 3 pinpoint ones and 2 shutting ones, which were incised with holmium laser. Fish roe-like stones were found in some cases and bigger stones were found in other cases. Postoperatively, 14 patients were rendered stone free (SF) or had clinically insignificant residual fragments(less than 4 mm) (CIRF) after 1st operation, and 1 patient with large stones was rendered stone free after twice operations. All patients were symptom free after operation. No severe complications occurred in them. A follow-up of 1–3 months showed no recurrence stones in these patients.
Conclusions: F-URS with holmium laser lithotripsy under the guide of B ultrasound is a safe method with high success rate for the treatment of caliceal diverticular calculi, it could be the best option in managing caliceal diverticular calculi.

V14-5 Step by step flexible ureteroscopy supported with SPIES technology for conservative treatment of UTUC

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Objective: to describe step by step, the technique of flexibile ureteroscopy (fURS) in the treatment of upper urinary tract carcinomas (UTUC) reporting the different modalities of visualization supplied by SPIES technology and to determine whether this enhancing system could improve detection of malignancy.
Materials and Methods: Twelve patients underwent 17 fURS procedures for UTUC using white light (WL) and the five modalities of SPIES technology (Clara, Chroma, Clara + Chroma, SPECTRA A and SPECTRA B). Biopsies were carried out from all suspicious areas. All procedures were performed by a single urologist.
Results: Optimal outcomes in the conservative management of UTUC are possible only with rigorous standardization of the procedure as follows: cystoscopy, ureteroscopy, urinary cytology in situ, navigation of the collecting system with white light and with SPIES technology (the different modalities are shown in the video), identification of the defect of upper urinary tract and the suspicious areas, biopsy and consequent laser treatment of the tumours and, last but not least, teaming up. A total of 35 pelvicalyceal biopsies were performed; 22 (63%) were visualized by both WL and SPIES technology and 91% of these were malignant, while 13 (37%) lesions were seen only under SPIES technology and 69% of these were malignant.
Conclusion: We have described step by step fURS in the treatment of UTUC using SPIES technology. These findings on the use of SPIES technology are preliminary; in this pilot study SPIES technology improves tumour detection rate by 26% compared with WL. Randomized studies with a larger population of patients are needed to confirm whether or not this technology will be useful to increase UTUC detection rate easing a safe endoscopic management of this rare oncological disease.

V14-6 Evaluation of the ''Richard Wolf Cobra™ vision'' – The only digital dual lumen flexible ureterorenoscope in the world.

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United Kingdom

Introduction: Resolution and image quality of digital ureterorenoscopes is considered superior to that of conventional fibreoptic flexible instruments. This video evaluates and demonstrates the optics, maneuverability and usefulness of the ''Wolf Cobra™ vision'', the only dual lumen digital flexible ureterorenoscope of its kind in the world.
Methods: The Cobra™ vision (Richard Wolfe, Germany) is 680 mm in length and has an external diameter of 9.9 Fr. Its large irrigation channel measuring 3.6 Fr. enables good flow of the irrigation fluid providing an unrestricted clear view throughout the procedure. The main feature of the scope is the dual lumen which allows simultaneous insertion of a laser fiber and a basket. The laser channel accommodates up to 360 mm fiber and its exit

point on the tip facilitates precise positioning. The scope has integrated LED illumination and therefore needs only a single cable. The tip of the scope deflects to 270 degrees both upwards and downwards. The scope plugs into the Wolf HD1080p camera and is compatible with the Wolf ENDOCAM controls. The stack comes with recording facility and a printer.

Results: The scope provides excellent digital vision of the renal calyceal and pelvic anatomy. The second lumen helps the passage of a basket and entrapment of the stone, laser fragmentation and extraction. Stabilisation of the stone makes fragmentation faster while stone extraction is easy and reduces multiple passages of the scope. The high quality vision helps clear visualisation of urothelial carcinoma or other upper urinary tract pathology. The good flow maintains great vision during procedures such as urothelial biopsies where bleeding can be a hindrance. Due to the caliber of the instrument, a ureteric access sheath (10–12Fr) may be required in a significant proportion of cases, especially in the virgin ureter or if stone extraction with basket is contemplated.

The video demonstrates all features of the ureterorenoscope in a succinct fashion. The video also covers the patient positioning, insertion of the scope and other nuances of the technique. Post-procedure stenting is recommended if an access sheath has been used.

Conclusion: Dual lumen ureterorenoscope such as the Wolf Cobra™ vision is a valuable addition to the armamentarium of the endourologist. The high-quality view and instrument access capability help making complex retrograde intra renal surgery more effective. Its use does however require expertise and access may not be always possible in the non-stented virgin ureter.

V14-7 Robotic assisted retrograde intrarenal surgery (RA-RIRS), the new concept for the treatment of large or complex renal stones.

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Introduction: A previously published study demonstrated the safety and effectiveness of a new robotic device for flexible uretero-renoscopy. Here we examined possible advantages of robotic assisted retrograde intrarenal surgery (RA-RIRS).

Methods: The Avicenna Roboflex (Elmed, Ankara, Turkey) was used for RA-RIRS. It consists of a console linked to an instrument manipulator. The ergonomic chair position, arm-rest and control panel, can be individually adjusted for comfort. The flexible uretero-renoscope is manually introduced into the access and the scope hand-piece is locked to the robotic manipulator arm. The console surgeon controls two joy-sticks to manipulate rotation, deflection, advancement and retraction movements. Console controls permit monitoring of scope tip deflection degree, and interchange between European (illogical) vs. United States (logical) deflection types. The right manipulator miracle wheel enables, fine tuning of deflection inside collection system. The left joy-stick allows for 440 degrees of flexible scope rotation, which is impossible by hand. This minimizes endoscope torsion risk-damage. Once the tip approaches the stone, the speed of in and out movement is usually decreased to 2 mm per second to provide excellent precision for dusting. The laser fiber can be remotely moved in and out and fixed, aiding optimisation of between tip of the laser fiber and the stone or other target. Software prevents firing of the laser shot, when the laser tip is very close to the endoscope, to prevent the laser damage to the instruments. The console controls also permit variations of irrigant flow rates and flushing.

Results: Robotic flexible ureteroscopy, provides unique and improved ergonomics and reduces the human fatigue during instrument manipulation especially when treating larger stone burdens. Remote console positioning control also minimizes the user from radiation exposure and has features to prevents instrument damage. Based on a validated ergonomic questionnaire, there was a significant difference when comparing the ergonomics of classical versus robotic flexible ureteroscopy. Meanwhile more than 162 renal stones have been treated with Avicenna Roboflex and a variety of different existing endoscopes.

Conclusions: Avicenna Roboflex is a new, safe and effective platform, for the tackling large or complex renal stones with flexible retrograde intrarenal (natural orifice) surgery, with freely rotatable manipulator, fine and scaled movements steerable at a console, versatile for both American and European strung endoscopes, and allows laser fiber manipulation and flushing. The Avicenna Roboflex improves ergonomy by sitting at console with arm-rest and free control of all functions.

V14-8 Robotic Flexible Ureteroscopy: Live Surgery

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Introduction: The new robot for flexible ureteroscopy has been installed in Ankara, Heillbronn and Paris. Jens Rassweiler did live surgeries during the EAU 2014 in Stockholm, ERUS 2014 in Amsterdam and FLEXIST 2014 in Istanbul. This video is a 7 minutes part of a live surgery by Jens Rassweiler during the Flexible ureteroscopy course in Istanbul, Turkey.

Material and Method: The patient was 77 years old female and she had 2 cm non opaque pelvic stone. She had an unsuccessful ESWL in 2005 and a PCNL in 2006. There was no dilatation of collecting system.

After insertion of two DJ catheter, through rigid ureteroscope, we inserted a 10,7F Cook Access sheath, over one of them, the other stayed as a safety guide wire. We prepared the robot and inserted the FlexXC ureteroscope through the access sheath and locked the hand piece. The connection time of the FlexXC to the Roboflex, was shorter than one minute.

We found the stone in the pelvis and started to dust it. The lithotripsy system was consist of a manipulator and console and it was very comfortable and precise, It was possible to control rotation, deflection and in and out movement precisely. In addition, remote control of in and out movement of the laser fiber was possible. Integrated pump could be adjusted for the best suitable irrigation.

During the treatment, we could use the respiration movement because of very stabile device tip and we popcorned even without using our hands.

We could also remove some fragments using the engage catheter, for analysis, while we were controlling the basket catheter with Roboflex.

Result: We dusted all of the stone and removed the last residual fragments using the Roboflex, we did not feel any tiredness and we finished the operation in a suitable time.

Conclusion: The new robot Avicenna Roboflex for flexible ureteroscopy is an ergonomic solution to protect the doctor, provides better dusting of the stone and we are expecting it will

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increase the life time of the flexible device. According to us it is the future of flexible ureteroscopy. Once we started to use it in our clinics we do not want to go back, and don't want to use the device manually.

V14-9 Performance of a novel single-use digital flexible ureteroscope in a live porcine model

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Purpose: To evaluate the performance of a novel single-use disposable flexible uretroscope.
Methods: Flexible ureteroscopy was performed using fluoroscopic guidance and standard techinques with the Boston Scientific LithoVue™ Single-Use Digital Flexible Ureteroscope in 2 live anesthetized pigs by 3 experienced endourologists (LithoVue is not yet commercially available). The Olympus URF-P5 fiber optic flexible ureteroscope was used for comparison during the study.
Results: Herein is a representative video of the use of the Boston Scientific LithoVue Ureteroscope during flexible ureteroscopy in a live anesthetized pig. The LithoVue Ureteroscope was introduced into the kidney both over a guidewire and subsequently using a ureteral access sheath. All calyces were able to be accessed and all renal papillae could be viewed on both direct vision endoscopy and fluoroscopy.
Conclusions: The Boston Scientific LithoVue Single-Use Digital Flexible Ureteroscope was easily introduced into the porcine kidney and was able to access all calyces in a porcine model.

V14-10 Step by Step Technique of Retrograde Uventa Metallic Stent Placement

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Introduction: To introduce our step-by-step technique for placement of double-layered coated metallic mesh stent (Uventa™) in intractable ureteral obstruction from our experiences.
Materials and Methods: In all cases, retrograde pyelography was performed to evaluate the stricture level and severity. And subsequently, a 0.038-inch rigid Amplatz guide-wire was inserted through an open-end ureteral catheter to provide enough strength during stent placement. The stricture length was measured by using either of following methods. First, open-end ureteral catheter and two Kelly clamps were used. When the proximal tip of ureteral catheter was placed at the distal margin of the stricture under fluoroscopic guidance, one Kelly was clamped on the guide-wire at the level of distal tip of ureteral catheter. And then, the ureteral catheter was advanced upwardly until the proximal tip was placed at the proximal margin of the stricture. And another Kelly clamp was also fixed on the guidewire at the level of distal tip of ureteral catheter. By measuring the distance between two Kelly clamps, the stricture length was measured. Second, a scaled angiographic catheter that has radiopaque markers was used. The stricture length was measured by counting the number of radiopaque markers in the ureteral stricture segment. In case of severe obstruction, ureteral balloon dilation was performed using a 6-mm wide ureteral balloon catheter before stent placement. The length of stent was determined to cover enough normal ureter at both ends. The deployment was performed by pulling the outer sheath. The stent that was loaded in the introducer system automatically expanded during deploying. The surgeon should be careful that internal obturator should be fixed to place stent on the intended ureteral segment. If the expansion of stent was not satisfactory, ureteral dilation was performed in the stent by using balloon catheter. If more than two stents were placed, the stents overlapped by more than 2 cm to reinforce radial force.
Results: The Uventa stent placement was performed in a total of 167 cases in 138 ureter units (138 cases as primary placement, 29 cases as supplementary placement after primary failure) from December 2009 to November 2014. In all cases, the procedure could be placed successfully and there was no case of technical failure. There is no case of intraoperative complication too.
Conclusions: By using this retrograde procedure, Uventa stent could be placed successfully and safely. Retrograde Uventa stent placement is simple, easy to learn and reproducible procedure.

V14-11 Evaluation of the Cook's Flexor® Vue™ Deflecting Endoscopic System for flexible uretrorenoscopy.

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Introduction: Newer telescopes and gadgets are being developed to enrich our endoscopic armamentarium. The Cook's Flexor® Vue™ Deflecting Endoscopic System complements the standard endourological instruments by providing a 'disposable' flexible ureterorenoscope to facilitate retrograde intrarenal surgery. The aim of this video is to evaluate and demonstrate the capability, vision quality, maneuverability and technical tips for the use of this new system.
Methods: The Flexor Vue includes a flexible single-use disposable sheath and a thin fiberoptic visualization device that can be reused up to ten times with careful handling. As is it is a disposable system, it is readily available 24 hours a day without the problems of sterilization and may additionally reduce the risk of biological cross-contamination between patients.

The disposable sheath (external diameter 15Fr. inner working channel 9Fr.) has a deflecting mechanism and an adaptor with four portals for irrigation, insertion of the thin fiberoptic device, the laser fibre and a 3 Fr. working channel for instruments such as baskets.

For institutions without a flexible ureterorensocopes, the Flexor Vue is intended to provide an opportunity to expand the procedural capabilities without incurring in capital costs.
Results: After cystoscopy and insertion of safety and working guide wires, the Flexor Vue disposable sheath is inserted under fluoroscopic control. The adaptor with portals and irrigation are then connected. The fiberoptic visualization device is then passed through its portal and maneuvered into the renal pelvis. Further manipulations under vision will lead into the calyces. The vision is good especially considering the very limited size of the telescope. The degree of lower deflection with the laser fibre in situ is however limited. The irrigation flow is satisfactory. Stones in the renal pelvis and upper calyces can be easily localized and fragmented. In view of the large size of the

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disposable sheath, usage in previously stented ureters and post-procedural stenting are advised.
Conclusion: Flexor Vue provides a valuable addition to the usual endourological equipment, offering the option of having a readily available ureterorenoscope at any time. The vision and maneuverability are satisfactory. However, its large caliber and the subsequent need for pre-operative stenting may limit its usage. One cannot over emphasize the importance of having a consolidated endourological expertise to be able to safely and effectively using this system.

V14-12 Thulium laser use in stone and bladder cancer disease: How I do it

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Aim of the study: Thulium laser is the newest laser available for the treatment of benign prostatic obstruction. Still, reports on its use in other clinical entities is sparce. In this video we demonstrate our technique employing a high power (200W) Thulum laser in the management of stones and urothelial tumors.
Results: Thulium laser lithotripsy of a 1 cm bladder stone was accomplished uneventfully following the same principles as with a conventional Holmium laser. A 1.5 cm urothelial carcinoma was resected en block with the use of Thulium laser. Pathological analysis verified the presence of muscle in the specimen and revealed a non muscle invasive disease.
Conclusion: Laser lithotripsy with the use of Thulium laser is feasible. Still, lithotripsy is slower than holmium laser lithotripsy due to the continuous nature of Thulium laser. Bladder tumors can be safely treated with the use of Thulium laser. A muscle layer is present in the resected tissue documenting that laser resection of bladder tumors does not compromise oncological principles of non muscle invasive disease management.

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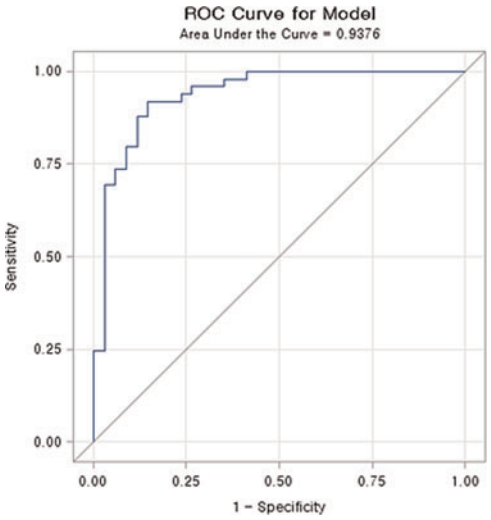
U1 – STONES

U1-1 The GUUN score: a comprehensive standardized system for predicting necessity of ureteral dilatation to treat proximal ureteral calculi. Running title: The GUUN scoring system

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Purpose: For treating proximal ureteral calculi, treatment decision has been known still difficult to choose ureteroscopic lithotripsy (URS) or shockwave lithotripsy (SWL). The aims of our study are to identify the possible predictors for necessity of URS and to propose the Gachon Univeristy Ureteral Narrowing scoring system (GUUN score) as a helpful predictor.
Materials and Methods: We evaluated 83 consecutive patients who underwent semi-rigid URS due to proximal ureteral calculi between April 2011 and February 2014 by a single surgeon (JKO). We reviewed patient characteristics and pre- and post-operative parameters and surgical records. We divided the patients into two groups according to whether or not balloon dilation was performed. We defined 'U1' as density of the ureteral area immediately below the ureteral stone and 'U2' as density of the ureteral area on the far distal level, which was identified as the stricture-free level on the CT scan by retrospective review of surgical records and designated 'UD' as the difference of HFU between U1 and U2. A stepwise logistic regression was performed to identify the factors that predict dilatation. ROC curves were plotted and AUC were calculated using GUUN score.
Results: Mean patient age (±SD) and stone size were 48.53 (±12.90) years and 7.79 (±2.57) cm, respectively. Significantly smaller stone size ($p=0.009$), lower stone density ($p=0.005$), and lower UD ($p<0.001$) were observed in group 1 (non-dilation group, n=34) than in group 2 (dilation group, n=49). ROC curves demonstrated that GUUN score was the most predictive parameter for determination of whether or not to perform URS (AUC 0.938). Cut-off value was 4.86 using Youden index (sensitivity 0.898, specificity 0.882). Overall stone-free clearance rate was 85.5%.
Conclusions: Our results demonstrated the feasibility of semi-rigid URS for treatment of proximal ureteral calculi. In addition, our results strongly suggest that our GUUN scoring system may be predictive in determining endoscopic manipulation.
Key words: Ureterolithiasis, ureteroscopes, multidetector computed tomography
Figure. ROC curve for predicting ureteral dilatation using GUUN scoring system
GUUN score = age*(−0.105) + size*0.762 + UD*0.303



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U1-2 Transurethral contact lithotripsy in a gas (CO2) medium.

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Introduction: Urolithiasis is one of the most common diseases of the urinary tract. Its prevalence rate is around 34.2%. Currently, endolithotripsy is becoming a preferred method of treatment of patients with urolithiasis. The article describes a novel technique of endolithotripsy in a gas (carbon dioxide) medium and gives results of its initial utilization in patients with ureteral and bladder stones in comparison to contact cysto- and ureterolithotripsy in a conventional liquid medium. A new index - ''cystolithotripsy rate'' measured in terms of g/min is introduced.
Material and Methods: 30 contact ureterolithotripsies (CU) and 30 contact cystolithotripsies (CC) in a gas (CO_2) medium were performed from January 1, 2012 through January 1, 2013. A LithoClast® Master lithotripter was used for stone fragmentation. The pressure of CO_2 was 13–16 mm Hg. The results of gas-medium endolithotripsies (CU and CC) were compared with those of the control group (n = 60), where endolithotripsies were conducted in a liquid medium (0.9% NaCl solution). Included patients were aged 26–73 years (CU group) and 50–82 years (CC group). CU group comprised patients with ureteral calculi of any location up to 1 cm in size. Carbon dioxide consumption per operation ranged from 0.5 to 3 liters. CC group: 59 male patients had bladder stones secondary to bladder outlet obstruction. A female patient had a ligature-associated stone. CO_2 consumption per operation ranged from 2.0 to 30.3 liters.
Results: CU group: the frequency of retrograde calculus migration in the study group equaled to 0%, in the control group - 8.33% (n = 5). No cases of acute pyelonephritis were observed in the study group, whereas in the control group it was diagnosed in 5% of patients (n = 3). CC group: cystolithotripsy rate for small stones (less than 10 g) in a gas medium is 1.47 times higher than that in a saline medium. Similarly, it is 2.3 times higher for bigger stones (more than 10 g).

Surgical technique. CU: ureteroscopy in a gas medium is conducted. The stone is located and either extracted (when feasible) or both fragmented and extracted.

CC: cystoscopy in a saline medium is performed, after that the bladder is emptied and carbon dioxide is introduced. Next step is cystoscopy in a gas medium. Once the stone is located the probe of the lithotripter is drawn to the calculus which is fragmented. The pieces are irrigated with saline water and removed from the bladder. Total cost per procedure is around 1.85€ in a CO2 medium and 9.19€ in a saline medium.
Conclusion: Essentially, endolithotripsy in a gas medium is safe and gives several advantages in comparison to a saline endolithotripsy. Gas-medium endolithotripsy in convenient for the surgeon because there is no migration of the calculus as there is in a saline. This results in more than 2-fold decrease in operative time. Secondly, CO_2 optical properties enhance visualization. Finally, endolithotripsy in a CO2 medium appeared to be more cost-effective.

U1-3 Epidemiology of Urolithiasis in India-study of 3000 case and its inferences

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Introduction: Urolithiasis is a common urological disesase with prevalenceof 5–10% that is increasing throughout the world. Stone analysis is important in determimnig possible etiology and pathophysiology of stone formation. There is wide geographical variation in the incidence and composition of stone. Stone analysis some times help prescribing metabolic evaluations to the patients to prevent recurrence.
Material and Methods: Stone components were analyzed by Fourier transform infr-red spectroscopy Predominant component was recorded. Patients were divided in to four age groups as 0 – 18, 19–40, 41–60–60, 61–92 yrs.
Results: Out of 3000 stone cases, 2120 were males and 880 were female patients. Commonest components were Calcium oxalate 81.4%, followed by Uric acid 0.4%, Calcium phosphate 4.6%. and Struvite 3.46%. Rares stones were only 0.25% which includes two Cystine stones. We found highest incidence of stones in age group of 41 to 60 yrs.
Conclusion: Recurrance of stone is a big problem and prevention is a greter challenge. In the study of urinary stone formation mechanism and prevention of recurrent Urolithiasis, knowing of stone composition is important. Only endoscopic visual impression of stone can some time be misleading.

U1-4 Prevalence and association of renal stones, renal cysts and renal impairment in patients with gout and asymptomatic hyperuricemia

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Introduction: Urinary stones, renal failure and gout are known complications of hyperuricemia. This study aims to elucidate the complex relationship among them.
Patients and Methods: In this prospective study conducted between August 2014 and June 2015 at a tertiary care institution, 87 patients with gout (63 patients) and asymptomatic hyperuricemia (24 patients) were included. Clinical assessment, BMI, co-morbidities, dietary habits, urine microscopy, serum uric acid and renal functions were noted in all patients. Ultrasonography was used to detect urinary stones, renal cysts or any other abnormality in urinary system. Data was analysed to find and compare the prevalence and association of urinary stones, renal cysts and renal impairment in gout and asymptomatic hyperuricemia (AH) groups. Statistical significance was taken as $p < 0.05$.
Result: Mean age, BMI and co-morbidities were similar in gout and AH groups. In patients with hyperuricemia, overall prevalence of urinary stones, renal cysts and renal impairment (eGFR < 60 ml/min/1.73 m^2 body surface area) was 21%, 15% and 27% respectively. Prevalence of urinary stones in patients with gout was 23.8% vs. 12.5% in those with AH. Renal cysts were noted in 19% patients of gout and 4% patients of AH. Impaired renal function was noted in 28.5% patients of gout and in 25% patients of AH. Presence of renal stones and duration of disease were associated with impaired renal function in gout patients. Serum uric acid level was significantly higher in those with impaired renal function. Occurrence of urinary stones was not related to serum uric acid levels or duration of hyperuricemia/symptoms. There was no association between renal stones and renal cysts.
Conclusion: Urinary stones and renal impairment are significant health problems in hyperuricemic patients. Presence of urinary stones and longer duration of hyperuricemia are associated with renal impairment in these patients.

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U1-5 Comparison Of The Effectiveness And Financial Aspects Of Emergency URS And Elective URS In Patients With Symptomatic Ureteral Calculi

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Aim: There is a new trend in the literatüre that intervention before development of inflammation or eudema in patients with acute colic pain due to ureteral stone it would be more succesfull and cost-effective. For this purpose, a properly controlled study aiming to compare the financial profile, treatment efficacy and complications of the emergency URS versus elective URS in patients with symptomatic ureteral calculi is planned.
Material and Method: Between June 2012- 2014 patients detected to have calculus in the distal and middle ureter with a size of 5–20 mm and experiencing acute colic pain included this study. All patients fistly underwent KUB graphy and ultrasonography, IV Urogram/computed tomography when needed. Serum creatinine levels, whole urinalysis, hydronephrosis levels of all subjects were evaluated. Patients with colic pain that has started within 12 hours who also agreed to be operated included urgent URS, whom don't accepted elective URS group. MET was started in elective URS group for 14 days. URS was performed if they couldn't throw away the stone. Duration of the process, whether accessing the calculus was difficult, or easy, efficacy of lithotripsy, intraoperative complications, durations of hospitalization, necessity for additional treatment in the clinic or during follow-up was recorded. In addition, costs of treatments of acute URS and elective URS groups were evaluated.
Results: Urgent and elective URS was performed 16 and 19 time, respectively. There wasn't statistical difference between groups in terms of sex, age, comorbidity, laboratory findings, location of the stone in ureter, side and size of the stones. Hydronephrosis, edema presence, additional intervention required, minor ureteral injury, stenting, treatment needed at postoperative period in hospital was more seen in elective URS group but no statistical difference was present between groups. In elective group, difficulties in access to stone, hospitalization time, additional treatment needed at discharge period was different from urgent group and in urgent URS group, operation time was short than elective group. Additionally, costs were lower in urgent group than elective group.
Conclusion: Although it is known that spontaneous passage of stones with medical expulsive therapy and SWL is effective treatment modalities; urgent intervention with URS at first renal colic pain time is effective and reliable treatment options especially lower ureteral stones. The major advantages of this intervention is analgesic effect at early period and lower costs. Also it reduces the additional treatment requiring and work force loss. It increases the quality of life with early intervention.

U1-6 Presentation and Management of Renal Calyceal Diverticula

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Introduction: Renal Calyceal Diverticula (RCD) are cystic cavities of the upper collecting system lined by non-secretory transitional epithelium. Whilst uncommon, stone formation in these outpouchings may cause symptoms and hence require treatment. There is limited evidence to inform RCD management and we present our experiences of RCD presentation and management at a District General Hospital.
Methods: Patients with RCD were extracted from a departmental database spanning from January 2012 to present. Their demographics, imaging, clinical and operation notes were reviewed retrospectively.
Results: There were 8 cases of RCD (male: female 1:3) with ages ranging 28–73 years (median 54). Most patients were symptomatic (7 out of 8) which included recurrent urinary tract infections and loin pain. No patients presented with haematuria. All RCD were diagnosed at a retrograde contrast study, with diverticula most commonly found in the lower pole (50%). All RCD were found to have stones, some multiple, with maximum size ranging from 7–19 mm. Stone analysis was largely mixed. Most patients (7 out of 8) opted for treatment due to symptoms: 4 FURS with laser, 2 PCNL, 1 - awaiting operation. Of those treated, 4 out of 6 patients were found to be stone free on repeat imaging and 5 out of 6 patients were symptom free. There were no complications in any of the operative patients.
Conclusions: RCD are frequently associated with stones, which may account for their symptomatology. Minimally invasive procedures are safe and relatively effective in treating RCD with stones.

U1-7 YouTubeTM as a source of patient information for ureteroscopy

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Introduction & Objectives: Since its inception in 2005, YouTubeTM has provided a video sharing platform utilised by millions worldwide. Patients are increasingly utilising this as a source of information. Consequently, we set out to systematically analyse the quality of ureteroscopy videos for information content.
Materials & Methods: YouTubeTM was searched using the term 'ureteroscopy'. The first five pages were reviewed. Content was assessed by two urology trainees using criteria based on recommendations from the British Association of Urological Surgeons (BAUS) website. Points were awarded for information relating to management options, procedural description, possible need for stent insertion, recovery and complications. An overall rating of 'poor', 'average', 'good' or 'excellent' was given. Videos were also analysed in terms of country of origin, view count, likes, dislikes, source and technical quality. The kappa statistic was used to measure interobserver variability.
Results: A total of 59 videos were analysed. The total number of viewings was 557,896 (range: 42 – 121,943), with an average number of 9,456 viewings per video. The information content was either poor or average in 98% (n-58) of videos, with only 2% (n-1) rated as good and 0% achieving an excellent rating. Technical quality was rated as poor in 28 videos, average in 22 and good in 9 videos. Most videos were broadcast by surgeons or surgical institutes (48/59).
Conclusions: The quality of YouTubeTM videos is variable; consequently patients should not be encouraged to use this as a

platform for education. Opportunity has arisen for the endourology community to produce high quality video broadcasts to optimise patient understanding.

U1-8 Case series of laparoscopic ureterolithotomy for large proximal ureteral calculi with concomitant renoscopic extraction of renal calculi.

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Introduction: Laparoscopic ureterolithotomy is an option in treating large proximal ureteric calculus. When there are coexisting small renal calculi, renoscopic extraction of the calculi can be done to achieve 100% stone clearance rate in a single procedure. In this video, we present a series of three cases of this technique and report its efficacy.
Methodology: Three consecutive cases performed by a single surgeon were reviewed. A retrograde pyelogram was performed to identify the site of the ureteric calculi. A four trocar configuration was used similar to that for laparoscopic nephrectomy. After the ureter was identified, the calculus within it was localized. The calculus was removed through a ureterotomy. Using a 16F flexible cystoscope inserted through a 5 mm trocar, renoscopy was performed through the ureterotomy and the renal calculi were removed using an extraction basket. Double-J ureteric stent was inserted and the ureterotomy was closed with interrupted sutures.
Results: The ureteric stones measured 15 mm, 18 mm and 30 mm. The renal stones ranged from 3 mm to 6 mm, numbering from 1 to 4 stones. Both the ureteric and renal calculi were successfully extracted in all three cases, achieving 100% stone clearance rate in one sitting. All three patients were discharged on second post-operative day without any complication. The ureteric stents were removed 4 weeks post-operatively.
Conclusion: Laparoscopic ureterolithotomy with concomitant renoscopic extraction of renal calculi is an effective procedure in managing patients with a large ureteric calculus and coexisting ipisilateral small renal calculi. It is a one-stage procedure to achieve 100% stone clearance rate.

U1-9 PCNL in the Prone Oblique Position - Results of a Single UK Centre

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Introduction: Percutaneous nephrolithotomy (PCNL) is well established in the management of intra-renal calculi. Patient positioning and techniques for access have continued to evolve. The supine position is widely recognised, however, the majority of PCNL's are performed with our patients prone. Due to intra-abdominal and cardiorespiratory pressure changes the prone position can raise physiological concerns for both anaesthetist and surgeon. An alternative approach with patients positioned 'prone oblique' offers potential advantages for anaesthesia but baseline outcomes using this method are not widely published. We report results of the 'prone oblique' approach for PCNL from a single UK centre.
Methods and Methods: Data for PCNL cases using the 'prone oblique' approach performed by a single surgeon were collected over a 5 year period. Case notes, radiology studies and electronic hospital records were used to compile key parameters and outcomes.
Results: We identified complete data for 53 cases with a median age of 53 (18 – 86) years. Median BMI 28 (21.5–42.6) kg/m^2. Left and right-sided stones accounted for 67% and 29% respectively and 4% of patients had bilateral stones. Partial 'staghorn' calculi were seen in 22% of patients and multiple stones present in 34%. Stones greater than 2 cm were seen in 40%. The vast majority of calculi were located in the renal pelvis (81%). A single renal tract was used in 50 cases. Complete stone clearance was achieved in 91.5% (residual fragments < 4 mm). A small number of procedures ($n = 5$) were not completed due to bleeding or access failure. One patient required radiological intervention in the post-operative period. We identified 1 confirmed episode of significant post-operative sepsis and 8 patients experienced transient post-operative fever. One patient needed a blood transfusion. There were no requirements for ITU/HDU admission. Median length of stay was 4.5 days (mode 3) and 30-day mortality was zero.
Conclusions: Our results reflect excellent overall safety and efficacy for PCNL in the 'prone oblique' position which appear comparable to 'standard' positions. Having reported our baseline outcomes, we now aim to complete a further prospective study exploring potential advantages in respiratory and haemodynamic parameters.

U1-10 Staghorn Kidney Stone patient treated Acalculous with Percutaneous Nephrolithotomy: Single session two port access

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Introduction: Treatment options for kidney stones may form conservative, miminal invasive and invasive. Percutaneous nephrolithotomy (PCN) is an effective minimally invasive treatment option for kidney stones. Staghorn kidney stone is a form of kidney stones forming the maximum load and acalculous case in a single session using minimally invasive techniques are very rare. We present our case, staghorn kidney stone surgery with PCN a single session with two access with the residual acalculous.
Materials and Methods: 21-year-old male patient was admitted to our clinic with left flank pain continued for nearly one year. Examinations were identified as a result of the left staghorn kidney stone. In his medical history, was learned that the laparotomy story due to penetrating wounds. The patient was scheduled for PCN surgery. During the operation including the lower pole and the middle pole, two ports access were performed and the operation was finished as stone free. There were no postoperative complications and the patient was discharged postoperative seventh day.
Result: Percutaneous nephrolithotomy is preferable to open surgery because it is minimally invasive technique. Minimal invazive techniques are not preferred for the teatment of staghorn kidney stones because it is much stone burden, long operation time, requiring extra port access and can cause blood loss, etc. In our case we may have experienced no postoperative complications because of the patient's young age.

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Conclusion: Percutaneous nephrolithotomy is an effective minimally invasive treatment option for staghorn kidney stones. Multi-port access can be useable and young age minimize the risk of postoperative complications in staghorn kidney stones patients.

U1-11 Minimally invasive therapy of urolithiasis in urinary upper tract anomalies

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Introduction and Objectives: Stones formation is a natural sequela of upper tract anomalies although the correct indication to an active surgery is still unclear. The endourological treatment, especially RIRS (Retrograde Intrarenal Surgery), can be a valid procedure but till now few data exist in literature. The aim of our study was to evaluate the role of the RIRS in this particular population.
Methods: A high volume single centre study was conducted. From May 2012 to February 2014 we retrospective collected patients with urinary upper tract anomalies with concomitant urolithiasis. All patients underwent a CT urogram for a better preoperative study of stone location, size, density, and urinary tract anatomy. All the endourologic treatment were performed by a single surgeon with more than 20 years of experience in this field. The indications for an active treatment were: obstruction caused by stones, infection, symptomatic stones or calculi of significative dimensions (more than 10 mm). Percutaneous nephrolithotomy was considered in the presence of lithiasis of great dimensions (over 40 mm of stone burden). Complications (Clavien-Dindo), stone free rates (SFRs) and hospital stays were evaluated.
Results: We enrolled 9 patients, 7 men and 2 female, of which 2 had bilateral urolithiasis. The renal anatomic anomalies of these patients were: 2 pelvic ectopy, 5 horseshoe kidneys, 1 sigmoid kidney and 1 bilaterally crossed ectopy. Stone locations were: 2 complex staghorn, 4 pelvic, 2 medium calyx, 3 inferior calyx and 6 multiple locations. The median stone diameter was 20 mm (range 10–80 mm). For calculi of less than 20 mm, the RIRS SFRs was 100% with a single treatment. In the early postoperative we had a Clavien 1 and a Clavien 3 complications. The median hospital stay was 3.4 days (range 1–24).
Conclusions: The management of urolithiasis in urinary upper tract anomalies is a challenging surgical procedure. It differs from the routine practice since there are an unusual kidney position and rotation, a concomitant vascular abnormalities, different calyx and pelvic conformation, a different relation between the urinary system and the kidney parenchyma and unusual ureteral positions with possible kinking. For all of these, the correct surgical management is depending by a combination of: stone dimension and position in the urinary system, a careful preoperatory study of the kidney anatomy and its vascular and urinary system. RIRS treatment of urolithiasis in upper tract anomalies is safety and reliable with a good SFRs.

U1-12 Minimally Invasive (MINI) Percutaneous Nephrolithotomy In The Management Of Staghorn Stones

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Introduction: Percutaneous nephrolithotomy is a minimally invasive treatment modality for patients with large kidney stones. Despite continuous improvements in surgical techniques and technology, there are significant complications associated with the procedure. Hemorrhagic complications are one of the most commonly encountered during and after PCNL reported around 8% with subsequent transfusion rates of 6–7%. In order to reduce bleeding complications following the procedure, minimally invasive (mini) PCNL has been developed and recently introduced for the management of small renal stones. However, recent reports indicated the feasibility of this mini-PCNL technique and have expanded the indications of the procedure to larger stones. In this study we report our own, single-center, single-surgeon experience of mini-PCNL in the management of stagrhon calculi.
Methods: We performed a retrospective review of prospectively maintained database of patients who underwent PCNL for kidney calculi at a single, academic institution. Staghorn stone was defined as a continuous stone involving at least 3 calyces. Formation of access was performed with the installation tube by Amplatz Storz 16,5Ch under the combination of ultrasonography and fluoroscopic guidance. A mini nephroscopy developed specifillay for these procedures has been utilized throughout the nentire procedure (Storz). We used a standard Lithoclast-Olympus fragmentation ''Tubeless'' technique doesn't apply in the treatment of staghorn calculi.

Of the features of the mini PCNL technique should be noted the high rate of elimination of stone fragments due to the special hydrodynamic tube Storz and the ability to work in safe conditions of miniature anatomy of pyelocaliceal system.
Results: a total of 52 patients were identified who underwent mini-PCNL for a complete staghorn stone. The mean duration of the procedure was 89 mins. The average decrease of hemoglobin was 0,92 g/dl. Stone free rate at the termination of the procedure was 72%. Several patients had episodes stone passage after the procedure and before the discharge. At the time of discharge full clinical effect has been achieved in additional of 6 patients, demonstrating final stone free rate of 83%. There were 13.5% of complications. Postoperative complications were mostlyin the range of 1 and 2 groups of Clavien gradeign system. Only two patients had clinically significant bleeding with indications for transfusion (3,8%).
Conclusions: Our initial experience demonstrated that the mini-PCNL technique in the management of staghorn calculi is a safe and effective method of treatment of nephrolithiasis. We continue to evaluate our data in a prospective fashion in order to improve techniques and indications for mini-PCNL. Further studies are needed in order to confirm our results and elucidate the role of mini-PCNL in the setting of a staghorn stone.

U1-13 Supine PCNL - Road from novice to expert: Lessons we have learnt

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Introduction: Supine position provides ease of combined lower tract access during percutaneous nephrolithotomy – PCNL; simultaneous ureterscopy, & JJ stent, easier respiratory control by anaesthetist. There is increasing popularity for supine PCNL with emerging evidence that this access can replace the prone

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PCNL. < 25% of UK urologists procure their own access tract. By using basic equipment, we itemise the challenges, and lessons learnt.

45 consecutive patients had supine PCNL by a novice surgeon with considerable prone experience, after watching two supine cases performed by an expert. [A] Position: Supine Lloyd Davies on standard operation table. Ureteric balloon occlusion catheter (Occluder ™, Boston Scientific) and urethral catheter is inserted and taped to the ureteric catheter preventing displacement. Reposition:. A 3 litre fluid bag is pushed under the patient's thorax, 30° turn to horizontal. 1 litre bag placed under the bottom. The ipsilateral arm is transferred across the chest and fixed to an arm rest.. [B]Access: 18G spinal needle inserted at 45 degrees to the sagittal plane and 60 – 90 degrees to the vertical plane, subcostal space dorsal to the posterior axillary line, imid or lower pole calyx. dilatation is carried out in the normal fashion. We used high pressure nephrostomy access balloon catheter – (Nephromax ™ Boston Sci.). Other kits include 1. plastic amplatz sheath (22 cm), A long nephroscope avoids conflict with patient's body and the edge of the operating table.

Results: 45 consecutive patients had supine access PCNL performed successfully. 34 accesses into lower calyx, 5 middle calyx & remaining 6 double puncture into both lower & middle calyces. 8 initial patient had a shorter amplatz sheath, 37 patients routinely had a longer sheath. One patients had a colonic injury intra-abdominal injury, 2 patients had their procedure abandoned because of bleeding, and later had prone PCNL. Stone clearance was not compromised in supine pcnl.

Conclusions: In our small series, we have demonstrated that supine PCNL can be performed by a district general hospital urologist without the need for a radiologist. The challenges are the more acute angle of access to the sagittal leading to need for longer amplatz sheath. The 30–45° rotation of the patient to the horizontal leads to kidney displacement medially increasing depth of access. The supine access potentially shortens repositioning time and provides alternative access to the renal tract via the urethra. Intra abdominal injury can is a real possibility.

U1-14 Laparoscopic Assisted Mini Percutaneous Nephrolithotomy (MPCNL) with Laser in Ectopic Pelvic Kidney

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Introduction and Objective: The Pelvic Kidney often has anomalous blood supply and tortuous ureteral anatomy. ESWL has success rate of about 54%. Standard-PCNL has a larger tract and involves blind puncture in a supine position, posing risk to the overlying bowel and blood vessels and risk of urinary extravasation, causing ileus and morbidity. RIRS is popular, but sometimes becomes technically difficult in large stone burden and difficult to negotiate the tortuous ureter of pelvic kidney. Mini-PCNL offers advantages in reducing the size of the puncture tract, hence reducing morbidity. We report the surgical management through laparoscopic-assisted mini-PCNL with laser.

Materials & Methods: Fifteen patients underwent treatment for calculi in ectopic pelvic kidneys at our hospital from January 2011 to December 2014. Five patients had stone size over 2.5 cm and opted for primary percutaneous procedure, and two each failed ESWL therapy and RIRS. The mean age of the patient was 38 years (range 22 to 58). The mean stone size was 2.2 cm (range, 1.6 to 3 cm). Six patients had successful stone clearance with ESWL or RIRS. The other nine patients underwent laparoscopic assisted Mini- PCNL with Laser. Laparoscopy was performed using three 5 mm ports in midline, after retrograde pyelography. Bowel and peritoneum were mobilized and puncture made under vision. Using rigid mini-nephroscope, stones were dusted with laser. 5F-DJ stent was placed and extravasated fluid aspirated.

Results: Procedure was tubeless, except in 1 patient. Mean duration of surgery was 80 minutes (range, 40 to 150 mins). Post-op CT-KUB showed residual calculi in one patient, where a nephrostomy was placed, and subsequently used for re-entry and clearance. Stone clearance was 88.9%. All other patients had uneventful post-op stay. DJ stent was removed at 4 weeks. Average duration of hospitalization was 5 days (range, 3 to 6 days).

Conclusion: Laparoscopy assisted Mini-PCNL with Laser offers advantages in ectopic pelvic kidneys in achieving good stone clearance with less convalescence, pain, ileus and bleeding by offering a very small puncture tract and a tubeless procedure, especially in patients with a large stone burden or failed ESWL or RIRS.

U1-15 The simultaneous endoscopic treatment of bilateral renal and ureteral stones

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Introduction: In cases of bilateral renal and ureteral stones obstructive acute renal insufficiency may occur. In such cases, emergency step taken is to eliminate the obstruction by performing bilateral percutaneous nephrostomy or bilateral ureteral stenting. Further, after acute condition been resolved, stones may be removed from the upper urinary tract alternately in two stages: first from one side, over a certain period of time – from the opposite one. Using this technique may prolong patient's treatment time and rehabilitation period.

We proposed to evaluate the efficacy and safety of simultaneous and PCNL in the treatment of bilateral renal and ureteral stones.

Material and Methods: For the period from September 2010 to May 2014 we performed 27 bilateral simultaneous PCNLs in our clinic. Interventions were performed in cases of those with preliminary drained kidneys or with absence of the manifested UTI.

Technique of simultaneous bilateral stone removal from the kidneys or ureters consisted of 2 stages: first - the removal of the stone from the ureter or kidney from that side with kidney less impacted; second - removal of the stone from the opposite side in cases with no serious complications of first stage. In 17 (62.9%) patients, stones were located in the renal pelvis on both sides, in 10 (37.1%) - in the both ureters. Diameter of renal stones ranged from 20 mm to 28 mm (24.1 ± 6.2 mm), of ureteral stones - from 8.0 mm to 14 mm (10.0 ± 5.1 mm). The results of treatment were assessed by stone-free rate, length of operative time, length of in-hospital stay, complication rates, and the volume of blood loss, transfusion requirements, and the need for additional interventions.

Results: In all cases, the patients were completely free of stones. Mean operative time was 76.3 + 6.5 minutes. The mean hospital

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stay was 4.1 ± 0.8 days (range, 1 to 5 days). The only complication as prolonged haematuria was observed in 4 patients (14.8%) but amount of blood loss not exceeded 100 cc and there was no necessity of blood transfusion. Due to absence of residual stones and other serious complications not any additional interventions were needed.
Conclusion: Simultaneous PCNL is an affordable and effective method for the treatment of bilateral renal and ureteral stones. Such technique may simultaneously free the patient from bilateral stones and avoids the need for repeated anesthesia and psychological stress associated with multiple interventions.

U1-16 Prevention and treatment of postoperative urosepsis of ureter endoscopiclithotripsy for not being infected

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Introduction and Objective: To investigate a more effective and safer preventive and therapeutic strategy, we analysised the risk factors causing postoperative urosepsis in ureter endoscopiclithotripsy with no infection preoperatively.
Patients and Methods: A retrospective clinical study, from Jan 2010 to Jan 2015, was performed on 5 patients undergoing ureter endoscopiclithotripsy with holmiumlaser, and presenting urosepsis postoperatively, which they had no infection in their blood and urine preoperatively. In accordance with the presentations and test results, patients were confirmed urosepsis. Without delay, 5 patients were treated by anti-inflammation and anti-shock.
Results: After 12–36 h, stopping vasopressor drug gradually, patients' body temperature reduced to normal in two or three days, and checking results about blood and urine were not abnormal in 7 days. At last, 5 patients were all cured.
Conclusions: Urosepsis is one of the serious complications after ureter endoscopiclithotripsy. Stone and operation themselves are potential factors to cause urosepsis postoperatively. Especially for patients who had not presented infection preoperatively, many doctors often neglected to take preventively some antibiotics for them, or took some medicine but not adequate duration. Therefore, preoperatively careful preparation can reduce the chance of serious infection postoperatively; corrective manipulation, low pressure irrigation, drainage and controlling time during operation are the effective ways to decrease the occurrence of urosepsis; early diagnosis and appropriate treatment postoperatively are the key to cure patients with urosepsis.

U1-17 MiniPCNL in modified lithotomy position: cost effective management option in renal stone

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Introduction: The mini PCNL (track size 15F) with laser pulverization of the stone is used as an effective alternative to conventional PCNL (track size 30F) to decrease the morbidity. This is review of first 50 cases of mini PCNL done in modified lithotomy position with lithoclast and evacuation of the fragments with pulsatile irrigant flow. The MacDonald straw was used as amplatz sheath and lithoclast instead of laser was used for stone fragmentation as cost effective measures.
Materials and Methods: Renal stones upto 2 cm in adults were selected for cost effective miniPCNL option. After giving regional anesthesia, modified lithotomy position with roatation of torso was used. Retrograde ureteric catheterization and PCNL under C arm fluoroscopy was performed in this same position. Calyx giving straight access to the stone was punctured under fluoroscopy by triangular technique. Single step dilation up to 15F was performed. Mac donald's straw was used as Amplatz sheath. Olympus mini nephroscope and lithoclast was used to fragment the stone. The fragments were evacuated by sheath entrapment and whirlpool created by the pulsatile flow of the irrigant. Ureteric catheter was changed over to DJ stent retrogradely and upper end of the DJ in kidney was confirmed with nephroscope. 10 F feeding tube was used as nephrostomy for 24 hrs. Stone clearance was documented on Plain Xray KUB and ultrasonography at the end of 1 month.
Results:

Complete stone clearance at 1 month	45	90%
Residual stone less than 4mm	05	10%
Blood Transfusion	00	00%
Staged procedure	1	2%
Change to prone position	1	2%

Conclusion: The obvious economical advantages

- Single use of drapes
- Change of position not required hence requirement of lesser man power in Operation room.
- Use of regional anesthesia as against general anesthesia
- Absolutely indicated in morbidly obese patients who can not be given prone position.
- Fluoroscopy time reduced since retrograde stenting can be done with nephrosocpic confirmation of the upper end of the stent.
- Gravitational help to evacuate the fragments since amplatz sheath is in dependant position.
- Use of expensive laser machine oblivated.

Mini PCNL can be preformed effectively in modified lithotomy position without the need of expensive laser equipment. Further randomized controlled trials would establish its role in the minimally invasive management of renal stones.

U1-18 Treatment of Paediatric Renal Stones with Endoscopic Surgical Procedures:Our Clinical Experience

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Introduction: Paediatric stone disease is an important clinical problem in paediatric urology practice. The standard procedures to treat urinary stone disease in children are the same as those used in an adult population. However, there is concern regarding the safety of endourological treatment in these paediatric patients. Although there is an international consensus on the guidelines for the

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management of stone disease in adults, consensus on the management of paediatric stone disease has been still unavailable.
Objective: The purpose of this study was to compare percutaneous nephrolithotomy, micro percutaneous nephrolithotomy, and retrograde intrarenal surgery in paediatric patients who were not eligible for SWL or non-interventional follow-up procedure.
Study design: In this study, 43 paediatric patients, aged 17 years or younger, who underwent 47 endoscopic surgeries between January 2010 and April 2015 due to renal calculi, were assessed retrospectively.
Results: Stone burden was lower and the patients were younger in microperc group compared to the PNL group and those differences were statistically significant. There was also a statistically significant difference in terms of the most frequent localisation of stones. We applied PNL mostly for the renal pelvis stones and performed microperc for lower calyx stones. The difference between PNL and microperc groups in terms of length of hospitalisation after surgery was found to be statistically significant. Patients who underwent microperc were discharged from clinic earlier. Hyperthermia without bacteraemia was observed in 2 children in PNL group and treated by using a single dose of paracetamol and also three children in the same group needed blood transfusion. There was a tendency for low haemoglobin decrease in microperc group compared to PNL.
Discussion & Conclusion: All of the endourological interventions are invasive treatments; therefore, they may sound like offensive for paediatric patients and especially for their relatives. The management of paediatric stone disease has evolved with improvements in the techniques and miniaturisation of surgical instruments and thus, it can be effectively and safely used in children by veteran surgeons.

	PNL	microperc	RIRS
Patient (n/%)	36/%76.6	8/%17.0	3/%6.4
Age at time of surgery mean±SD (min-max)	9.6±5.4 (2-17)	4.4±3.7 (2-13)	7.3±5.0 (2-12)
Stone burden (mm2) mean±SD (min-max)	275±211.9 (25-900)	125±45.7 (60-180)	149±87.1 (50-214)
Stone clearance rates	91.7%	87.5%	66.7%
Mean decreases in haemoglobin	1.03±1.22	0.58±0.46	--

U1-19 PCNL outcomes in an obesity society

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Introduction: With the global epidemic of obesity, patients presenting for PCNL are increasingly overweight. Analysis of the CROES database has shown that super obese (BMI > 40) patients undergoing PCNL have the potential for increased morbidity. Within our institution a high proportion of the patients treated with PCNL are obese. This is markedly different when compared to the proportions of the total population classed as obese from within the CROES database. This allows for a unique analysis of obese patients and provides clearer outcomes specific to them.
Methods: A retrospective review of all PCNLs performed from Jan 2011 to July 2013 was performed. Patient data was recorded in similar fashion to the CROES dataset. All procedures were performed in the prone position with radiologist assistance for access. All tracts were dilated using a balloon dilator. Patients presenting for repeated procedures were excluded along with patients with single kidneys. Complications were classified using the Clavien Dindo system. Patients were classified by BMI into four categories (normal, overweight, obese, super obese)
Results: Of the 142 patients undergoing PCNL during the time period 99 met inclusion criteria.

16% of the patients were classed as super obese with 49% of all the patients having a BMI > 30.

Raised BMI was not associated with higher rates of comorbidities or anticoagulant use ($p = 0.183$).

Mean operative time was prolonged in obese and morbidly obese patients compared patients with normal BMI, but this was not statistically significant ($p > 0.05$).

There was no association seen between BMI and transfusion rates but a significant increase in overall complication rates for those patients with a BMI > 40 ($p = 0.026$).
Conclusion: Our current cohort of patients is vastly different from that reported in the CROES database where only 2.6% of patients are classified as super obese. This reflects a growing trend in stone surgery of more patients being obese and the potential challenges of this. It also highlights the considerable demographic difference in populations treated for PCNL through out the world. Within our data we found that there was increased operative time and complication rates for those obese patients undergoing PCNL when compared to patients of normal weight.

U1-20 Percutaneous nephrolithotomy versus shock wave lithotripsy for high density moderate sized kidney stones

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Introduction and Objective: To compare the outcomes of percutaneous nephrolithotomy (PNL) versus shock wave lithotripsy (SWL) for high density (> 1000 HU on non-contrast computed tomography [NCCT]) moderate sized (10- 25 mm) renal calculi with regards to stone-free rate (SFR), procedure morbidity, and patients' quality of life (QOL).
Methods: A prospective hospital-based study was conducted in our department from March 2012 till May 2014. Eighty consecutive patients were randomized to receive either PNL or SWL (40 in each arm). Patients were followed-up by abdominal ultrasound and plain X-Ray (NCCT if indicated) till clearance of stone. Outcomes, complications (the modified Clavien system), costs, and SF-8 Health Survey scoring were recorded for each group. Median followup was 8 months (range 6 to 30).
Results: Basic characteristics of both groups were comparable. After single treatment session, 3-week success rates were 80 and 27.5% for PNL and SWL ($p < 0.001$). Overall 3-month SFR after PNL and SWL monotherapy were 87.5 vs. 90%, respectively ($p = 0.723$). Median number of maneuvers till stone clearance was one (range 1–3) for PNL vs. two (range 1–4) for SWL ($p < 0.001$). The complication rates for the PNL and SWL were 10 and 7.5%, respectively ($p = 0.692$). SWL was done as

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outpatient procedure while median hospitalization time per patient was 2 days (range 2–6) in the PNL group. The cost of ESWL was significantly lower ($p < 0.001$). Patient-reported outcomes, including overall physical and mental health status, were comparable for both PNL and SWL.
Conclusions: For treatment of moderate-sized high dense renal stones, PNL provides significantly higher initial success and lower retreatment rate compared with SWL. Although PNL is effective, it has some limitations including invasiveness and cost. SWL is another alternative for such stones with comparable outcome after 3 months of therapy.

U1-21 Withdrawn

U1-22 Comparative analysis of the effectiveness and safety of upper versus lower calyceal access in Percutaneous Nephrolithotomy (PCNL)

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Introduction: The goal of PCNL is to achieve a high stone-free rate while minimizing complications. Its success results from an interplay of patient, stone and renal anatomical characteristics, the access site, and the level of surgical expertise. There is limited data comparing upper versus lower pole PCNL as regards efficacy and safety.
Objectives: We compared the clinical efficacy and safety outcomes of upper versus lower calyceal access in patients who undewent PCNL in our institution.
Materials and Methods: A retrospective chart review was done on patients who underwent PCNL in our institution from January 2010-January 2015. The patients were classified based on the renal access site: Group 1 (upper pole) and Group 2 (lower pole). The stones were classified according to Guy Stone Score and complications were summarized using the modified Clavien classification.
Results: A total of 91 patients underwent PCNL during the study period. Of these, only 84 patients were analyzed. Seven were excluded due to lack or incomplete postoperative imaging on follow up. Forty-one were included in Group 1, while 43 were included in Group 2. According to the Guy Stone score, the stones in Group 1 were 21(IV), 6(III), 7(II) and 7(I) while in Group 2, 18(IV), 5(III), 8(II), 12(I) (p-value = 0.516) with a mean stone volume of $38.2 \pm 44.24\,cm^3$ and $28.0 \pm 31.04\,cm^3$ in Groups 1 and 2 respectively (p-value = 0.228). Success rate was 80.5% and 83.7% for Groups 1 and 2 (p-value = 0.699), respectively and mean stone clearance rates of 98.5% and 95.8% (p-value = 0.126), respectively. The mean operative time was 181.0 ± 82.26 and 169.5 ± 52.12 mins for Groups 1 and 2 (p-value = 0.451) with mean blood loss of 144.1 ± 216.24 cc and 103.72 ± 198.65 cc (p-value = 0.375), respectively. A total of 36 complications (13 from Group 1 and 23 from Group 2) were evaluated. Fever (Grade 1) occurred in 10(24%)and 17(39%) for Groups 1 and 2, respectively. Blood transfusion (Grade 2) was observed in 4(9%) patients and 3(7%) in Groups 1 and 2, respectively. Two patients (5%) in Group 2 required postoperative double-J stent insertion due to ureteral stone migration (Grade 3). There was no significant difference noted among the groups as regards complication rates (p-value = 0.097) and length of hospital stay (p-value = 0.687). There was no mortality in either group.
Conclusion: Based on our experience, both upper and lower pole access PCNL achieve equivalent efficacy and comparable safety profile in the treatment of complex renal stones.

U1-23 Recurrent renal colic in pregnant women with hydronephrosis as a potential suggestion of ureteral stone disease

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Introduction and Objective: We evaluated the clinical factors which can differentiate between ureteral stone disease and physiological hydronephrosis in pregnant women with a renal colic.
Methods: We retrospectively reviewed the records of 57 consecutive pregnant women who visited a hospital for renal colic and were identified to have hydronephrosis between July 2006 and November 2014. Among these patients, 39 women who underwent computed tomography for confirming a ureteral stone after childbirth were selected. All women were treated conservatively at the first hospital visit. Ureteral stent insertion was done when recurrent renal colic took place after relief of first renal colic. Age, gestational age, presence of hematuria and pyuria, comorbidity of urinary tract infection, ureteral stent insertion were analyzed for the predictors of ureteral stone disease.
Results: Among 39 patients, 13 patients (33.3%) were confirmed to have a ureteral stone. There were significant differences between patients with and without a stone in presence of pyuria, comorbidity of urinary tract infection, and ureteral stent insertion ($p = 0.034$, $p = 0.018$, and $p = 0.014$, respectively). Logistic regression analysis revealed that only ureteral stent insertion was a significant predictor of ureteral stone disease (OR = 7.290, 95% CI = 1.307–40.655, $p = 0.023$).
Conclusions: Ureteral stent insertion resulted from recurrent renal colic was a significant predictor of ureteral stone disease. If the recurrent renal colic develops consecutively after a relief of first renal colic in pregnant women with hydronephrosis, the ureteral stone should be strongly considered.

U1-24 Unique experience in management of patients with previous open renal surgery and anatomical abnormality by percutaneous nephrolithotomy (PCNL).

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Purpose: To study the impact of previous open renal surgery and anatomical abnormality on outcomes of percutaneous nephrolithotomy (PCNL).
Patients and Methods: All patients with previous open renal surgery and anatomical abnormality who were treated with PCNL at our center in the period between Jan 2005 to Dec 2014 were reviewed. Patient characteristics, operative and postoperative data were collected. Stone free rate was recorded. All procedures performed on prone position and by same surgeon.

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Results: 45 patients with either previous open renal surgery or anatomical abnormality they underwent 54 PCNL procedures. 20 patients (25 procedures) with previous open renal surgery and 35 patients (39 procedures) with anatomical abnormality. 10 procedure performed in patients with both previous open renal surgery and anatomical abnormality and 16 procedure performed in patient having failed other modality of stone treatment. The mean age was 31 years (range 2–75 years). Staghorn stone present in 30 (55.5%) procedure. The operative time range 50–315 minutes, average 154 minutes. Postoperative complication seen in 11 (20%) procedure, bleeding required blood transfusion was the most frequent complication seen in 5 (9%) procedure. Overall stone free rate archived in 86.5%. There is no significant difference in complication rate or operative time.
Conclusion: In experienced hand PCNL in previously operated patients or patients with anatomical abnormality can be performed with excellent result and acceptable rate of complication and operative time. The access creation is the most important critical step especially in those kind of patients.

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U1-25 Can factors affecting complication rates for PCNL be predicted? Use of the modified Clavien classification system in a pediatric population.

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Purpose: To determine preoperative predictive factors of post-operative complications of PCNL in children by using the modified Clavien classification system (MCCS), which has been widely used for complication rating of surgical procedures.
Material and Methods: In all, 145 children and 169 renal units who underwent PCNL for renal stone between June 2006 and January 2013 were included in the study. Complications were evaluated according to the MCCS. Univariate and multivariate analyses were used to determine predictive factors affecting complication rates.
Results: In all, 66 girls and 79 boys were studied. The mean (sd) age was 11,27 ± 4,54 years and the mean (sd) follow-up was 18.4 (9.8) months. The mean (sd) hospitalisation time was 3,3 (1.4) days. Complications occurred in 68 (40,2%) cases; 22 (13%) were MCCS grade I, 24 (14,2%) were grade II and 22 (13%) were grade III. High stone size ($p < 0{,}001$) and multiple access ($p = 0{,}003$) were statistically significant predictors of complications on univariate analysis. Hydronephrosis, stenting, gender, age, access location were not significant predictors of complications In the multivariate analysis stone size > 20 mm($p < 0{,}001$) was statistically significant predictor of complications. Further treatment procedures were required in 28 patients: ureteroscopy in nine, second-look PCNL in six, SWL in nine, and retrograde intrarenal surgery in four. The initial stone-free rate was %78,1 (132/169), and the overall stone-free rate was 85,7% (145/169),.
Conclusion: PCNL has high succes ratio in the renal stone disease of paediatric population. It can initially be considered for the patients who have high stone burden in the experienced centers with low major complications rates.

U1-26 The Effect Of Infindibulopelvic Angle On Operation Time Of Flexible-URS (F-URS) Procedures

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Objectives: Infindibulopelvic angle (IPA) is an important factor for surgical success of lower pole stones. In this research we wanted to examine the effect of IPA in operation time.
Materials and Methods: Between March 2014 and December 2014, a total of 25 patients with lower pole stone were performed flexible ureterorenoscopy (F-URS). The operation time (OT) was defined as the total time of the following steps: cystoscopy and guide wire application into ureter, entrance of the UAS with obturator, UAS placement, any additional intervention for UAS placement, placing the UAS to the appropriate position and the application of the F-URS procedure. IPA was measured by calculating the angle at the intersection point of ureteropelvic axis and central lower pole axis. Pearson correlation was used to identify the relation between OT and IPA.
Results: The mean operation time was 57 minutes (20–160). The mean IPA was 65.41 minutes (32–124). There was no correlation between IPA and OT ($p = 0.769$)
Conclusions: IPA does not significantly affect the OT while F-URS procedures.

U1-27 Does Body Mass Index (BMI) affect the outcome of Percutaneous Nephrolithotomy (PCNL)? – a single centre experience.

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Introduction: The effects of body mass index (BMI) on outcomes and complications following percutaneous nephrolithotomy (PCNL) are not well described. Obesity poses greater technical challenge in performing PCNL and thus, theoretically may pose greater risks for complications. In this study, we aim to evaluate outcomes and complications of PCNL in relation to BMI in our centre.
Methods: Patients who underwent primary PCNL from 1st January 2011 to 31st December 2013 were retrospectively reviewed. Using WHO BMI classification, we divided our patients into four groups (normal weight, overweight, obese, and morbidly obese). Clavien classification was used to record post-operative complications. Information such as length of hospitalisation, operating time, and stone clearance rate were analysed.
Results: 134 patients were included in the study. Within the sample, 7 (5.2%) were morbidly obese, 16 (11.9%) obese, 51 (38.1%) overweight and 60 (44.8%) were within or below their ideal body weight (IBW). Stone clearance rate was 57.1% in morbidly obese patients, 62.5% in obese patients, 58.8% in overweight patients and 48.3% in IBW patients ($p = 0.629$). Mean length of hospitalisation was 3.75 days for all patients and statistically insignificant across all groups. Operating time was 136.43 ± 85.41 minutes for morbidly obese, 143.56 ± 69.56 minutes for obese and 135.12 ± 49.46 minutes for overweight and 160.23 ± 62.01 minutes for IBW patients ($p = 0.163$). Mean Clavien score was 1.0 for morbidly obese, 0.38 for obese, 0.55 for overweight and 0.78 for IBW patients ($p = 0.128$).
Conclusion: Stone clearance rate, length of hospitalisation, operating time and mean Clavien score following PCNL are independent of the patients' BMI in our study.

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U1-28 Impact of ureteral stent size on stone-free rates in ureteroscopic lithotripsy for ureteral stones: Randomized controlled trial

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Introduction: The main advantage of stenting after ureteroscopic lithotripsy (URSL) is to prevent ureteral obstruction and may help the passage of stone fragments. However, the impact of ureteral stent size on stone-free rates and stent-related adverse effects have not been established.
Objective: To determine the association between size of ureteral stent and stone-free rates after URSL.
Materials and Method: We prospectively enrolled the patients who underwent URSL between January 2014 and April 2015. The patients who had an indication for postoperative stenting were excluded from this study. Sixty eligible patients were randomized into 3 groups: nonstented as a control group (N = 20), 4.7Fr stented (N = 20) and 6Fr stented group (N = 20). The lithotripsy technique used was stone fragmentation by Holmium laser (Lumenis model™) until no larger than 2 mm and the stone fragments were left in situ without extraction. Primary outcome was stone-free rates detected by non-contrast CT scan. Secondary outcomes were postoperative pain, irritative symptoms evaluated by OABSS (overactive bladder symptoms score), hematuria, urinary tract infection rates, auxiliary procedure and readmission.
Results: The preoperative characteristics of each group were similar. A stone-free rate in nonstented, 4.7Fr stented and 6Fr stented groups was 95%, 85% and 85% ($p = 0.524$), respectively. Hematuria was 5%, 45% and 30% ($p < 0.001$) and increased irritative symptoms was 0%, 25% and 45% ($p = 0.004$) in nonstented, 4.7Fr stented and 6Fr stented groups, respectively. However, there was no statistically significant differences between 4.7Fr and 6Fr stented groups in an aspect of hematuria (45% vs 30%, $p = 0.327$) and irritative symptoms (25% vs 45%, $p = 0.185$). There was no significant difference in postoperative pain, urinary tract infection rates, auxiliary procedures and readmission.
Conclusions: There was no difference in stone-free rates and stent-related adverse effects between small and large size ureteral stent after URSL. The irritative symptoms seem to be less in small stented group.
Key words: ureteric calculi, ureteroscopic lithotripsy, ureteral stent, stone-free rate

U1-29 The evaluation of PCNL results in pediatric renal stones between March 2012 and October 2014

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Background: Complex pediatric renal calculi as a management dilemma require deliberate plan to achieve higher clearance rates and reduce complications. Over the time PCNL has been gradually replaced with ESWL in the management of pediatric stone disease, because of improvements in surgical techniques and instruments. We conducted the present series to evaluate the efficacy and complications of PCNL in pediatric renal calculi treatment between March 2012 and October 2014 in Imam Reza hospital of Mashhad.
Method: In this case series study, 52 pediatric patients, underwent PCNL with the diagnosis of renal calculi in the urology department of Imam Reza hospital of Mashhad between March 2012 and October 2014. Demographic data, surgical details and postoperative complications and clearance rates were recorded and subsequently analyzed using SPSS statistical software.
Results: The mean age of all patients was 10 ± 5.39 years. The mean stone diameter was 22.1 ± 6.8 mm. Of 52 cases 26 were complex staghorn stones (50%), and 26 were simple stones. The stone-free rate at 3 months was 92.3% (48 cases); 4 patients required supplementary ESWL in order to be rendered stone free. All 52 PCNL were completed successfully with no intraoperative complications. Post-operative complications were encountered in 13 cases (25%) mainly including fever, hematuria, nausea, vomiting and abdominal pain.
Conclusion: Although PCNL is an invasive treatment, it can be used in pediatric stone disease as an effective and safe modality either as monotherapy or in combination with ESWL.

U1-30 Minimally-Invasive (Mini) Percutaneous Nephrolithotomy in the Manamagent of Staghorn Stones

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Introduction: We report our experience minimally invasive (mini) percutaneous nephrolithotomy in the management of staghorn kidney stones.
Materials and Methods: We performed a retrospective review of prospectively maintained database of patients who underwent mini PCNL. Patients demographics and clinical characteristics, stone data, intraoperative and postoperative outcomes were recorded and analyzed. The laser Nd:YAP (KTP) lithotripter ''Lazurite'' with microsecond pulse duration and second harmonic generation was used. The laser mechanism of stones destruction has photoacoustic nature. Two-wavelength exposure (0,54 μm and 1,08 μm) with pulse energy (up to 0,15 mJ) guarantees absence of thermal injury of the renal tissue. Mean operation time – 124 min. The additional time, which spent on fine fragmentation of the calculus, was offset by the fact that most of the stone fragments were evacuated from the collection system by irrigation fluid flow during renoscope removed.
Results: A total of 49 patients underwent mini-PCNL. Of these, 30 patients had partial and 19 patients complete staghorn calculi. In 20 patients single access was used and in 21 patients 2 accesses, 5 – 3, 4 – 4 and 5 accesses were required. PCNL procedures were performed through a 16–18F Amplatz sheath by semirigid nephroscope or Karl Storz mini-perc and micro-perc sets with 16.5, 12, 9 F metal sheaths. In 19 cases the fiberscope was additionally required. A stone-free rate 93,3% (28) and 79% (15) in partial and complete calculi groups respectively. Other patients had secondary stones which were located in isolated calyces. Mean number of procedures per patient – 1,1/2,3. In two case there were bleeding requiring temporary surgery delay. Other complications were not recorded. Drains were removed next day after surgery if residual stones weren't found.
Conclusion: Mini Nd:YAP laser PCNL is effective and safe procedure in treatment of staghorn nephrolithiasis. The advantages

of this technique are: less traumatic, reduced bleeding and consequently earlier rehabilitation of patients. The applied laser system allows us to destroy significantly more stone material per time unit in comparison with holmium laser. The phenomenon of fragments flotation which appears in case of using 16–18 F Amplatz sheath, solves the problem of efficient stone fragments removal, and makes the laser mini-perc operation time comparable with conventional PCNL with 26–30 F Amplatz sheath. The effect of fragments flotation is weak if we using ultramini and micro size sheaths and this diameter sheaths can be recommended only for additional accesses creation.

U1-31 The Infected, Obstructed Kidney: A Patient Pathway Based on Sepsis Six, NICE, UK and EAU 2015 Guidelines

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Introduction: The acute infected obstructed kidney constitutes a urological emergency. Current guidelines recommend urgent decompression of the collecting system by way of either a percutaneous nephrostomy or retrograde placement of ureteric stent. There is little evidence to support the superiority of one over the other between these two methods of drainage and either method may be used. We sought to determine current UK real life practice and create a patient pathway for treatment of the obstructed kidney based on current guidelines / literature and what is realistically feasible with the resources available in a small UK district hospital.
Methods: All patients undergoing treatment for an obstructed kidney were studied retrospectively using patient charts over a period of one year. A proforma was created to determine the presence and severity of sepsis and acute kidney injury (AKI) on presentation. The interval between presentation and decompression, outcomes and complications for a stent versus ultrasound guided versus CT guided nephrostomy was also entered on the proforma and compared.
Results: The majority of the patients underwent a CT guided percutaneous nephrostomy as the initial modality of de-compression of the obstructed kidney. The decision to choose this modality was based on preference of the admitting Urologist. There was no significant difference in outcome and major complication rate between the various modalities. However, there was a delay in obtaining initial de-compression in some patients. The CT guided nephrostomy group had the highest incidence of malpositioning, falling out and re-insertion of drainage catheter.
Conclusions: UK practice may be skewed towards performing a percutaneous nephrostomy as the default modality for de-compression of the kidney. Logistic issues such as availability of interventional radiology can lead to significant delay in delivery of optimal care. A locally designed patient pathway based on current NICE / EAU guidelines with a buy in from the key stake-holders of radiologists, intensivisits and urologists can optimize care in this patient population with a high risk of mortality. Also, based on emerging trends, an approach of ''Where Possible, Stent First'' may be used to optimize care, especially in the smaller hospitals.

U1-32 ''Totally tubeless'' or not? How to decide?

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Objective: One of the complications of the PCNL is catheter associated urinary tract infection (UTI). The best way of the prevention of UTI is refusing of leaving any tube (''tubeless'' operation) or removal of the tubes as soon as possible.
Method: At the end of the procedure when the operation is finished ''stone free'', for the stimulation of the diuresis its prescribed intravenous furosemid 10 or 20 mg. We left in the pelvis a guidewire through tube of the nephroscope and then remove the nephroscope. In that time by the ureteral catheter we inject contrast agent for checking of the leakage of the urine into the paranephral space. If there is no leakage and all contrast are past by guidewire outside, we connect the irrigation of sterile liquid into the ureteral catheter. For the 2–3 minutes we check the color of the intensity of the bleeding on irrigating liquid. If there is no sign of bleeding then guidewire could be removed. After checking the color of the urine which is coming from ureteral catheter for 5–10 minutes we remove it too.
Results: We performed 107 totally tubeless PCNL. Mean operative time was 45 ± 10.3 minutes (range 30 to 90). Postoperative hospital stay 2.5 ± 0.3 days (range 1 to 4). There were not any case of perioperative bleeding. Stone free rate in this cohorts of the patients was 94.5% (100 cases). In 1 case we performed ESWL due to residual stone and others were clinically insignificant. Manifestation of UTI was checked in 5 cases (4,7%), which were corrected conservatively.
Conclusion: Totally tubeless PCNL is effective, a minilmally invasive and safe method of the treatment of the patients with nephrolithiasis. This method could be used widely in uncomplicated, selected cases, there is no harm for patients and this procedure is the method of choice for the prevention of the catheter associated UTI.

U1-33 ''Multy-accessed'' PCNL in patients with staghorn and multiple stones of the kidney

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Introduction and Objectives: Urolithiasis is one of the most widespread urological diseases and occurs in 3–6% of the human population. Some of the patients has staghorn or multiple renal stones, and usually requires repeated open or percutaneous procedures. Conventional single-access PCNL procedure which is recognized as ''procedure of choice'' in the treatment of urolithiasis may not always guarantee a state of «stone free» in such complicated cases. We therefore aimed to evaluate the results of single-stage ''multy-access'' PCNL performed through 2 or more accesses in patients with staghorn and multiple renal stones.
Materials and Methods: During the years from 2009 to 2014 we performed PCNLs in 852 cases with staghorn and multiple renal stones, among which 189 procedures were performed by ''multy-accessed'' approach. All the patients signed informed written consent before the intervention. Average age of the patients was (Mean ± SD) 34.4 ± 3.2 years. Summary stone diameter ranged from 35 to 130 (45.2 ± 2.3) mm. Interventions were started as conventional procedure. Additional accesses were performed when required, after the nephrostomic tube was installed through previous access or simultaneous installation of additional nephroscopy tube.

We assessed the duration of the surgery, frequency of perioperative complications, need for blood transfusions, length of

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hospital stay, rates of getting free of stones and the need for additional interventions.
Results: 141 patients (74.6%), underwent 2-accessed procedure, 37 (19.6%) – 3-accessed and 11(5.8%) 4-acessed. Average time of surgery was estimated as (Mean ± SD) 82.1 ± 5.3 (range from 30 to 140) min. No any serious life-threatening complications were observed. Two patients had haematuria, required re-installation of the nephrostomic tubes through another access (1.1%). In 164 (86.8%) cases, procedure was completed with the installation of single nephrostomic tube and in 25 (13.2%) two tubes were installed. Duration of tube use ranged from 3 to 6 (4.1 ± 1.2) days after surgery. The average hospital stay time was 6.8 ± 0.3 days. 173 (91.5%) patients reached complete ''stone-free status''. In 7 (3.7%) patients with residual stones required further ESWL for reaching ''stone-free status''. Remaining 9 (5.6%) patients with residual stones recognized as clinically insignificant were discharged for further follow up.
Conclusion: Single-stage ''multy-accessed'' PCNL allows more than 90% of patients free of stones, and not associated with significant complications in experienced hands.

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U1-34 Long term follow up of Holmium: YAG laser endopyelotomy in patients with ureteropelvic junction obstruction

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Purpose: Ureteroscopic Holmium:YAG laser endopyelotomy in patients with ureteropelvic junction (UPJ) obstruction can be performed safely, and the success rate is comparable to pyeloplasty in short term follow up. We aimed to evaluate the outcome of the ureteroscopic Holmium:YAG laser endopyelotomy in long term follow up.
Materials and methods: Between 2001 and 2013, 22 patients underwent ureteroscopic Holmium:YAG laser endopyelotomy for the treatment of primary (n = 15) or secondary (n = 7) symptomatic UPJ obstruction. Previous pyeloplasty was performed in 4 patients (18.1%). All patients were stented after the procedure for 6 weeks. Clinical and radiological evaluation (IVP or MAG-3 scan) was performed in all patients after the surgery at 3 months, and yearly thereafter. Success was defined as symptomatic relief and radiographic resolution. The mean follow-up was 91 months (12–166 months).
Result: The mean age of the patients was 39.4 years old (15–74 years old), and 11 patients (50%) were male. The mean operative time was 58 minutes, and mean hospital day was 3.2 days. There were no intraoperative and postoperative complications. The overall success rate was 72.7% (16/22) including 1 patient with previous pyeloplasty. The success rate was higher in secondary (85.7%, 6/7; mean follow up duration 57.2 months) than primary UPJ obstruction (66.7%, 10/15; mean follow up duration 106.9 months). In 6 patients with failure, 2 patients performed pyeloplasty (4 and 52 months after endopyelotomy) and 4 patients performed repeated endopyelotomy (3, 4, 5 and 75 months after endopyelotomy). All patients with repeated endopyelotomy had symptomatic relief (i.e. no need for pain killing medication) but not radiological improvement of UPJ obstruction.
Conclusions: Ureteroscopic Holmium:YAG laser endopyelotomy was feasible procedure in the patients with UPJ obstruction in long term follow up, especially in secondary cause. Repeated endopyelotomy might be helpful for symptomatic relief in selected patients.

U1-35 An Investigation into the Influence of the Gut Microbiome on Kidney Stone Disease

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Introduction: The trillions of microbes that colonize our adult intestine function collectively as a metabolic organ that communicates with, and complements, our own human metabolic apparatus. While not previously studied in kidney stone disease, investigations into the gut microbiome (GMB) in other physiologic systems strongly suggest a relationship between gut dysbiosis and diabetes, obesity and cardiovascular disease. In a small pilot study we sought to identify unique changes in the gut microbiome of kidney stone patients as compared to a non kidney stone formers.
Methods: With an IRB approved protocol we enrolled 12 patients into our pilot study. 8 patients were kidney stone formers and 4 non stone forming controls. All specimens were collected after a 6 hour fast and were flash frozen in dry ice and then stored at −80°C. Urine: Gas Chromatography-Mass Spectrometry was performed to identify urine metabolites. Microbiome: All samples were sequenced using next generation sequencing. Identification of bacterial abundance was identified using 16s rRNA marker gene sequences.
Results: Sequencing of the gut microbiome demonstrated Bacteriodes genus to be 9 times more abundant in the KSD group as compared to controls (27.2% vs 2.9%; $p = 0.0004$). Prevotella genus was 3.4 times more abundant in the control group as compared to the KSD group (41% vs 12.2%;$p = 0.0004$). 5 kidney stone patients completed 24 hour urine analysis. At the phylum level, Bacteroidetes was inversely correlated with SSCaOX (-0.97: $p < 0.001$) and pH (-0.88: $p < 0.05$) and Firmicutes was inversely correlated to SSUA (-0.92: $p < 0.03$). 9 urinary metabolites were significantly different between the groups. Lactic acid was 2 fold higher in the kidney stone group ($p = 0.003$). 3-4dihydroxyphenylacetic acid, a major phenolic acid formed during microbial fermentation of tea, citrus, and soy was 2 fold lower in the kidney stone group ($p = 0.04$) and 3-aminoisobutyric acid, recently found to be involved in adipocyte metabolism was significantly higher in the kidney stone group ($P = < 0.02$).
Conclusions: We identified 2 genus of bacteria not previously considered to be associated with kidney stone disease. Interestingly, components of the 24 hour urine appear to be correlated to bacterial abundance. Similarly, we identified urinary metabolites that differ between kidney stone patients and controls. This is preliminary data that requires further study. Ongoing work to accrue more patients and to further understand these associations is underway.

U1-36 Pilot experiments on the use of a fiber-optic microsensor to measure renal papillary duct urine pH in real time, in vivo

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Introduction: Chemical sensor systems exist that allow the optic sensing of fluid pH. Such technology use very small fiber-optic microsensors. We describe the use of a fiber-optic phase detection system and pH microsensor (pH-1 micro system from PreSens, Germany) to measure fluid pH within the pig urinary system, in vivo.
Methods and Results: In vitro experiments: Ethylene oxide sterilized or unsterile microsensors (tip diameter of 140-μm) were calibrated and tested against commercially available colorless pH buffer solutions. There was excellent linear correlation between microsensor measured pH values of buffer solutions in the pH 5–8 range ($r^2 > 0.99$). In vivo experiments: Anesthetized adult female pigs underwent percutaneous nephrolithotomy to access the renal collecting system. A flexible nephroscope was advanced towards a papilla with the microsensor contained within a protective catheter inside the working channel. The microsensor was then advanced from the protective sheath and inserted into Bellini ducts to measure tubule urine pH in real time. The microsensor was inserted into two Bellini ducts in a farm pig kidney and measured tubule urine pH values of 7.04 and 6.78. This is consistent with the kidneys of such farm pigs producing urine that is close to neutral pH (whole kidney urine $pH = 6.86 \pm 0.17$, $n = 9$). Urine pH measurements were also obtained from shock wave (SW) lithotripsy treated kidneys of two Ossabaw pigs with metabolic syndrome (MetS). The MetS pigs had been treated $\sim$60-days earlier with a single session of 2000 SWs (12 kV, 120 SWs/min) to an upper pole renal calyx using the HM3 lithotripter. Such MetS pigs produce acidic urine (whole kidney urine $pH = 5.69 \pm 0.21$, $n = 5$). We found that intraluminal papillary duct urine pH in SW-treated regions of the kidney was $\sim$1 pH unit greater than urine from the entire unit (whole kidney urine pH in the two MetS pigs was 5.2 and 5.8). That is, tubule urine in the SW-treated regions of the kidney was considerably more alkaline than bulk urine from the same unit.
Conclusions: These results demonstrate that optical microsensor technology can be successfully adapted to measure intraluminal papillary duct urine pH in real time, in vivo. Such technology revealed that SW-treated regions of the kidney appear to be associated with an alkalization of tubule urine. Also, the high resolution of the pH microsensor was maintained after routine hospital sterilization procedures allowing its potential use in humans.

U1-37 The use of Magnetic Resonance Imaging to evaluate injury caused by burst wave lithotripsy for stone comminution.

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Introduction: A new extracorporeal lithotripsy method that uses several-cycle bursts of ultrasound rather than single shock waves to fragment stones has been developed and termed burst wave lithotripsy (BWL) (Maxwell et al. JASA 2013;134:4183). Studies are being performed to evaluate the safety of this new technology. Real-time methods to predict injury are being developed in combination with methods for post-treatment injury quantification. Morphometric quantification of haemorrhagic injury is a standard method for quantifying injury caused by SWL. However, this method is labour-intensive, requires highly specific expertise, can take several weeks to obtain a result and is tissue destructive. This study is a preliminary evaluation of the use of MRI to quantify renal injury caused by BWL.
Methods and Materials: Kidneys of four anesthetized pigs were targeted with different levels of BWL therapy (18 treatments) using custom low frequency ultrasound transducers. The treatments applied have previously been found to be effective in fragmenting stones. To establish positive injury controls, several kidneys ($n = 3$) were deliberately exposed to treatments for which high and super high levels of injury were predicted by real-time ultrasound imaging (Kreider et al. IEEE IUS 2014). Kidneys were perfusion fixed in situ before undergoing ex vivo MRI. T1- and T2-weighted (T1W and T2W) and susceptibility weighted (SW) imaging were performed using a 3T MR scanner (Achieva, Philips Healthcare, The Netherlands). Images were reconstructed and the volume of injury in relation to the total kidney volume was evaluated using 3D segmentation (Amira 3D software, FEI Corp., Hillsboro, OR, USA). After MR imaging, kidneys were either processed for standard morphometric quantification of haemorrhagic injury or for histological evaluation.
Results: Using a combination of the three MR scans (T1W, T2W, and SW), haemorrhagic regions were easily identified within the renal tissue. Injury was not visible with the high exposure on gross inspection, but was apparent in the MR images. Injury was found to be less than 0.5% of the total kidney volume. Injury was observed macroscopically in all kidneys treated at the super high exposure. The volume of injury generated by the super high exposure was found to be less than 2% of the total kidney volume.
Conclusion: Even at the high treatment doses, the injury caused was less than 0.5% of the total kidney volume. MRI has the potential to offer a fast method for renal injury quantification. Ongoing studies include benchmarking MR injury quantification to the standard morphometric quantification methods.

U1-38 Is the cut off limit of normal uric acid and Calcium in tropical countries different?

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Introduction: Nephrolithiasis is quite common in this part of the world. In the metabolic workup uric acid and calcium assay are important. Calcium & Uric acid lithiasis accounts for significant number of cases. But, the value given as reference do not seem to apply in tropical countries like India. We tried to analyse the values of Serum Calcium & uric acid in both normal healthy individuals and those with calculus disease in out patient department.
Material and methods: The study was conducted in outpatient department wherein Serum Uric acid, Calcium & phosphorus levels were asessed in fasting state in all patients irrespective of age and sex in the period Jan 2010- June 2015. A total of 9887 patients with stone disease were kept in Group A and 8967 patients with other diseases in group B who acted as control, were enrolled for the study. The demographic profile was recorded and stone characteristics with analysisby FTIR(Fourier Trasnsform Infrared Spectroscopy) were charted seperately. Patients with associated features of bony pains and gout were also specified.
Result: The Uric acid levels in the control group B was quite lower than the reference values in either sex. However, the values were more than 6 mg/dl in nephrolithiasis group A. The S. Calcium levels of control in group B were significantly lower than

	Group A 9887	Group A 9887	Group B 8967	Group 8967
	Male6193(62.64)	Female3694(37.36%)	Male5890(65.69%)	Female3077(34.31%)
S. Uric acid mg/dl	6.8+_2.1	6.1+_1.9	4.1+_0.9	3.2+_0.8
Total S. Calcium mg/dl	7.5+_1.1	6.9+_0.8	8.1+_1.3	7.4+_1.2
S. Phosphorus mg/dl	2.2+_1.0	2.2+_0.9	2.3+_1.2	2.2+_1.2

Stone analysis according to FTIR	Male	Female
Calcium Oxalate Monohydrate (COM)	3987	1945
COM+Calcium Oxalate Dihydrate (COD)	1097	880
Struvite	498	293
Apatite	167	81
Uric acid	234	260
Mixed (COM+COD+Calcium phosphate+carbonate,magnesium etc;)	210	235

the reference value and patients wirh nephrolithiasis in group A also had hypocalcemia. Majority of patients had either COM or COM + COD(80%) stones and there was no sex predeliction. But, we found higher number of Uric acid lithiasis494 (5%) and the struvite accounted for 8%(791) with apatite 2.5%(248).
Conclusion: Nephrolithiasis is a metabolic disorder with majority of patients having higher Uric acid levels with hypocalcemia in our population. The normal values in control group is on the lower side of reference value which could be due to variation on account of climatic, dietary and geographical factors. It needs broader studies to redefine reference values of Uric acid and Calcium in tropical countries like India.

U1-39 Colonic perforation during percutaneous nephrolithotomy: An 18-year experience

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Introduction: Percutaneous nephrolithotomy (PCNL) is the treatment of choice for large, extracorporeal lithotripsy failure stones and those in the inferior calyx. Despite the development of new techniques and the increasing experience in recent decades, complications may still occur. Colonic perforation is one of the most dangerous and rare complications of PCNL, which may lead to peritonitis and sepsis. We present our 18-year experience on the diagnosis and management of colonic perforation during PCNL.
Material & Methods: We retrospectively reviewed the data of 5260 PCNL procedures performed between May1995 and August 2013. Preoperative and operative factors, such as age, sex, history of previous ipsilateral stone intervention, stone side, stone location, site of skin puncture and punctured calyx, were reviewed in patients with colonic injury.
Results: Colonic perforation was found in 11 patients (5 males and 6 females) and the mean age was 40.4 ± 22.2 years (range: 4 to 71). All injuries were retroperitoneal. The left side was affected in 5 patients and the right side was injured in 6 cases. Conservative management was the treatment planned for all patients. It included withdrawal of the nephrostomy tube outside the kidney to the colon as a percutaneous colostomy, insertion of a double-J ureteral stent, intravenous broad-spectrum antibiotics, bowel rest and total parenteral nutrition. Under this conservative management, complete healing of the colon was achieved in all patients.
Conclusion: Early diagnosis and conservative management of colonic perforation can minimize patient morbidity and mortality and result in excellent healing of the fistulous tract without any serious complications.

U1-40 Effect of Active Aspirin Therapy on blood loss and complications of Percutaneous Nephrolithotomy

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Introduction: With increasing prevalence of cardiovascular disease, many patients who need percutaneous nephrolithotomy (PCNL) for treatment of large stone burden also take aspirin. A recent single-institution study presented acceptable outcomes in 14 patients taking aspirin perioperatively. We reviewed the outcomes of patients who underwent PCNL at our institution while taking aspirin to assess the generalizability of their conclusions.
Methods: We identified patients who underwent PCNL at our institution between 2009 and 2014 for whom we had specific data about perioperative aspirin use. Perioperative outcomes for those who discontinued aspirin 5 or more days prior to surgery were compared to those who continued aspirin or stopped for less than 5 days.
Results: Thirty-one patients met inclusion criteria, 13 in the study (on aspirin) group and 18 controls. Median age was 61.0 years for the control group and 64.0 for the study group, with 44% and 46% males in the two groups, respectively. On average, patients who discontinued aspirin did so 12.1 days (range 5 – 30) before surgery, while study patients stopped an average of 1.0 days (range 0 – 3) prior ($p < 0.0001$). Preoperative hemoglobin levels for both groups were in the normal range, at 11.92 g/dl (control) vs. 11.52 g/dl ($p = 0.60$). Mean preoperative ASA score of the control group was 2.61 and of the study group, 2.77. With regard to surgical outcomes, mean EBL in controls was 150.0 ml vs. 88.08 ml in the study group ($p = 0.27$), while change in hemoglobin level was 0.87 g/dl in the control group and 0.95 g/dl in the study group ($p = 0.85$). No patient from either group required blood transfusion. Length of stay was also equivalent between groups, with controls staying for 2.17 days vs. the study group staying for 1.77 days ($p = 0.54$). In each group there was one Clavien grade 3 or higher complication. There were no deaths and no renal units lost.
Conclusions: Based on our results, we conclude that PCNL may be safely performed for patients who are taking aspirin without evidence of increased risk of bleeding, prolonged hospital stay, or other complications. We recommend that patients at high risk for thrombotic events who need PCNL can safely continue aspirin perioperatively.

U1-41 Prediction of life-threatening complications of endoscopic treatment of urolithiasis through separation of patients by category complexity of stones

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Introduction: It is our deep conviction that complexity of urinary stones should be determined individually for each method of treatment. Some stones, representing the complexity of the treatment by ESWL without any difficulty can be removed endoscopically. At the same time, when there are multiple and staghorn stones possibility of endoscopic surgery for the completeness of their removal in one intervention is limited and you may need to perform multiple PC accesses and/or multistage interventions that lead to increased frequency and severity of complications.
Material and methods: A retrospective analysis of case histories of 1027 patients with stones located in the upper urinary tract (597 men - 58.1% and 430 women - 41.9%), aged 4 to 84 years (38,9 ± 15,6), age 46 (4.5%) patients - from 4 to 15 years. The average stone size was 30,3 ± 0,6 (3–150) mm. Regardless of the type of access (percutaneously, transurethral - over single and multiple ureteral stones) was performed only pneumatic lithotripsy, which made it possible to objectively evaluate the effectiveness of the treatment in different groups. Endoscopic procedures were performed by three experienced surgeons performing 250 such interventions per year.

Patients with a single stone, localized in a calix or in the pelvis or in the ureter, regardless of its size and the presence of anomalies of the kidneys and urinary tracts were 446 (we considered as ''simple'' stones - I group); to the ''complex'' stones related: with multiple stones localized in the calix and/or in the pelvis and/or ureter - 384 (II gr); with staghorn stones - 197 (III gr).
Results: Analysis of the completeness of the removal of stones after the first stage of intervention, depending on the initial complexity of the stones showed that clinically significant rezidual stones were: in group I in 15 (3.4%), in II - 63 (16.4) in III - 59 (29,9), $P < 0.01$ between all groups.

Totally 13(1.3%) patients due to significant blood loss needed blood transfusion (due to intraoperative 6 (0.6%) and postoperative 7 (0.7%) complications), of which 1 (0.2%) patient - a group of I, 2 (0.5%) of II, 10 (5.0%) - of III. In all cases, access to the stone was done percutaneously through the renal parenchyma. When the transurethral removal of stones, irrespective of their initial complexity stones such complications we did not observe.

According to the Clavien grading (2004) system complications were as follows: in 195 (19%) patients observed 250 complications: grade I - 64 (6,2%), g.II - 111 (10,8%), g.IIIa - 33 (3, 2%), g.IIIb - 39 (3,8%), g.IVa - 3 (0,3%), g.IVb- 0, g.V - 0.
Conclusions: Patients with upper urinary tract stones useful to divide into groups of ''simple'' and ''complex'' stones from the position of endoscopic surgery, which differs from the conventional separation. In order to ensure patient safety, the division of patients into categories of stone complexity and given the systematization of postoperative complications made it possible to develop a prognostic preoperative protocol for endoscopic treatment of urolithiasis. Therefore, at the preoperative stage, defining complexity of stones from the position of endoscopic surgery we can predict the effectiveness of endoscopic treatment, the risk of unwanted and dangerous complications, including bleeding with a probability of blood transfusion, and that is very important to their prevention and monitoring.

U1-42 Is there a role for open surgery for stone disease in modern urology?

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Introduction: In modern minimally invasive urology, open surgery for stones is almost obsolete (1 in 500 cases according to A. Bove et al. Case Rep Urol. 2012; 2012: 851020). However on the rare occasion there still is a case to offer open surgery as definitive management offering complete stone clearance and reconstruction in one sitting.
Case:A 34 year old fit male presented with ongoing right loin pain. Imaging revealed multiple stones including a large staghorn on the right side filling up almost all of the pelvicalycael system. The patient initially underwent a PCNL but only a very small portion of the stone was cleared. The procedure was terminated and the patient given option of repeat PCNL using Holmium laser which may require more than one sitting or an open procedure. The patient made an informed choice and underwent an open anatrophic nephrolithotomy with calico calycostomy.
Method: The kidney was accessed retroperitoneally via a loin incision. Renal hilum was clamped with bulldog clips having cooled the kidney with ice slush. Nephrotomy was performed over the Brodel's line and kidney bivalved. All stones were removed and infundibuloplasty was performed to treat infundibular stenosis. The kidney was then closed with absorbable sutures over surgicel rolls and a malecots catheter was left in situ. Cold ischaemia time was 2 hours. Blood loss was estimated at 150–200 ml.
Results: Patient recovered uneventfully with no deterioration of renal function and only a 2 mm residual fragment on follow up CT. At 4 year follow up, the patient was found to have no further renal stones and was asymptomatic. The outcome was therefore similar to previously described cases (Mansi, BJU International 2001 88 (cr7), 803; Morey et al. The Journal of Urology 1999 Vol 162, Issue 3, Part 1: 670–673)
Conclusion: In this minimally invasive era there is still a place for the rare open case. Complete stone clearance reduces the risk of readmission and UTI. Open surgical skills are still necessary for a modern stone surgeon. Open surgical treatment can be delivered with minimal morbidity and excellent outcome and training of such techniques in future generations of Urology may be significantly lacking (A. MacNeily, Can Urol Assoc J. 2010 Feb; 4(1): 47–48.)

U1-43 Ultra-mini-percutaneous Nephrolithotomy in lithotomy position

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Objectives: In an effort to diminish the morbidity of PCNL, miniaturization of instruments has been proposed with the aim of reducing renal parenchymal trauma. In this video we present ultra-mini-percutaneous nephrolithotomy (UMP).
Material and Methods: The UMP set consists of a telescope of 1 mm in diameter and 17.000 optical fibers. It is fitted into an inner sheath which comes in two sizes: 7.5 and 6 Fr. The outher sheath (or Amplatz sheath) is also available in two sizes: 13Fr and 11Fr. This outher sheath has a side port, which connects to a very fine tube, which runs parallel inside the sheath and create a waterjet at the tip. After creating the percutaneous tract with ultrasound and fluoroscopy guidance, the stone is fragmented with a 272μm laser fiber. The laser is set to dusting mode i.e 0.8 Joules and 15Hz. After fragmentation, the fragments are removed with the waterjet. It produces a whirlpool inside the collecting system agitating the fragments and washes them out due to the pressure gradient.

Results: UMP is a viable option for the treatment of medium sized stones preferentially located in the lower calyx or renal pelvis. It is a usefull adjunct in case of failure of other treatment modalities such as ESWL or retrograde intrarenal surgery. The equipment is robust and cost effective. It helps to reduce the morbidity of percutaneous nephrolithotomy.
Conclusion: UMP is a further step in the miniaturization of PCNL allowing to minimize tissue trauma to the patient. This novel technique enriches the armamentarium of stone surgery.

U1-44 Supine Mini PCNL for Upper Tract Renal Stones-Outcomes of 100 cases

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Introduction: Mini-percutaneous nephrolithotomy (mPCNL) can potentially reduce the morbidity associated with standard PCNL while maintaining its efficacy for stone removal in patients with upper tract renal calculi. Supine PCNL offers the potential advantages of less patient handling, the need to drape only once, avoiding change of positions and the ability to perform ECIRS. Supine position allows better access to the airway and may be less hazardous than other positions, especially for patients with associated comorbidities.
The aim of the video presentation is to discuss the point of technique, lessons learnt and the outcomes of performing 100 cases of complete supine mini PCNL.
Materials and Methods: 100 consecutive patients underwent mini sPCNL by a single surgeon from 2013 till date. Data collection included stone size and location on CT, BMI, previous renal surgery, operative time, and use of stent/uereteric catheter, length of hospital stay, stone clearance and complications. Cases were performed using Karl Storz mini PCNL set, in a modified lithotomy position using fluoroscopy. Success was defined as patients free of stones or with residual stone fragments < 2 mm.
Results: The mean stone size was 22.8 mm. Stones were successfully cleared in 94 patients including upper ureteric stones. 6 patients required additional ESWL for residual stone. DJ stent was placed in 6 patients and ureteric catheter was left in situ for 24 to 48 hrs in rest. Nephrostomy was deployed in 2 cases. Median hospital stay was 2 days. Overall complication rate was 6% (infection, haematuria).
Conclusion: Complete supine mini PCNL is a safe, versatile, cost effective approach for the management of upper tract renal calculi.

U1-45 PCNL-URS rendezvous for the management of complex upper urinary tract calculi

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Introduction: Urolithiasis is a common disease that can assume a wide array of presentations. Management of urolithiasis can be achieved using different techniques, including pharmacologic treatment, external shock wave lithotripsy (SWL), ureterorenoscopy (URS), percutaneous nefrolithotomy (PCNL), laparoscopic and open surgery, depending on stone and patient characteristics.
Patient: A 47 years-old female patient presents with left renal colic in relation to a 20 mm radiopaque stone in the left renal pelvis. A left JJ stent was placed and the patient underwent 2 sessions of SWL, with partial fragmentation of the stone, after which the patient abandoned further treatment and follow-up. After 6 months, the patient intended to continue treatment and a RIRS was proposed. During the procedure, an incrustation of the distal coil of the JJ stent is identified and fragmented using pneumatic endoscopic lithotripsy. However, the JJ stent revealed impossible to mobilize and a second JJ stent was placed. The abdominopelvic computed tomography revealed a large coraliform stone in the renal pelvis and calyxes, involving the JJ stent proximal coil, and several calculi in the proximal ureter.
Results: The patient underwent a simultaneous PCNL and URS in the modified Valdivia position, with complete fragmentation and removal of stone fragments, without immediate or postoperative complications. The patient remains stone free at 9 months follow-up.
Conclusion: In selected cases, complex urolithiasis of the upper urinary tract can be managed safely and effectively with a simultaneous approach with PCNL and URS, thus avoiding more aggressive treatment modalities.

U1-46 Endoscopic Diagnosis and Management of Calyceal Diverticular Calculi

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Introduction and Objectives: Calyceal diverticula are uncommon urine-containing cavities within the renal parenchyma that communicate with the collecting system through a narrow channel. Diverticula that are located deep within renal parenchyma can be difficult to manage due to challenges in identifying the patent communication of the diverticulum to the collecting system and the potential blurring of the endoscopic vision due to significant hemorrhage from surrounding parenchyma. This report aims to demonstrate an endoscopic approach for the diagnosis and management of calyceal diverticular calculi.
Methods: The video demonstrates the aforementioned approach in a 45-year-old female who initially presented with left flank pain and recurrent urinary tract infections. CT urography revealed an 8 mm left intra-parenchymal lower renal calyceal diverticulum stone. She had a previous history of unsuccessful ESWL. A ureteral catheter was placed cystoscopically to allow contrast injection (retrograde pyelography) for the localization of the diverticular opening to the renal collecting system. During the procedure, a flexible digital ureteroscope was inserted over a guide wire. Inspection of the pelvicalyceal system revealed no stone and the calyceal diverticulum was suspected. A second injection of contrast with blue dye took place and diverticular opening has been located. A guide wire was inserted through the diverticular opening followed by flexible ureteroscopic dilatation and the stone could be eventually visualized. Laser litrotripsy was performed to fragment the stone.
Results: Operative time was 90 minutes. There were no intraoperative or post-operative complications. Intraoperative blood loss was insignificant. The patient was discharged on the same day. Post-operatively, no complications were encountered. The symptoms of flank pain and recurrent urinary tract infections were resolved during the follow-up period of twelve months.

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Follow-up CT urography at three months showed no residual stones in the diverticulum.
Conclusions: In the current video, we demonstrate a safe and reproducible way for the management of a symptomatic calyceal diverticular stone. Essential technical tricks during the presented endoscopic approach include the placement of a ureteral catheter, performance of multiple retrograde pyelographies and the good visualization of the pelvicalyceal system with the use of new generation of digital flexible ureteroscopes. Careful preoperative imaging and high degree of suspicion are also essential.

U1-47 Guy's Stone Score predicts stone clearance rate after percutaneous nephrolithotomy (PCNL) – a single centre experience

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Introduction: The Guy's stone score (GSS) was first described by Thomas et al (2010) to grade the complexity of renal calculi prior to percutaneous nephrolithotomy (PCNL). Previous studies suggested strong correlation between GSS and post-operative stone clearance rate. In this study, we aim to assess the association between GSS and post-operative outcome following PCNL in our centre.
Methodology: The study sample was patients that underwent PCNL in our institution from 1st January 2011 to 31st December 2013. Patients with neither pre-operative computed tomography (CT) scan nor intravenous urogram (IVU) were excluded. The pre-operative imagings were assessed by two urology residents and graded according to GSS. Residual fragments (RF) were evaluated on post-operative CT scan. The study sample was analysed to determine the association between GSS and treatment outcomes based on CT findings, and complications according to the Clavien criteria.
Results: 134 patients were included in the study (mean age: 57.23 ± 10.85; 70.1% male). Following PCNL, post-operative stone clearance was 100% in GSS-1, 86.84% in GSS-2, 36.67% in GSS-3 and 28% in GSS-4 ($p < 0.001$). Thus, higher GSS was associated with lower post-PCNL stone clearance. Using Clavien criteria, there was no association between GSS and post-PCNL complications.
Conclusion: The GSS accurately predicted stone clearance rate after PCNL for renal calculi. It is a simple and reliable tool to grade the complexity of renal calculi prior to PCNL. It provides an objective description of the complexity of renal calculi so that adequate pre-operative preparation and advice to the patients can be given.

U1-48 A test of the hypothesis that papillary plaque represents stone phenotype

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Introduction: An accepted hypothesis is that most kidney stones form on papillary plaque, and different plaques represent different stone phenotypes. The most common type of stone former, the idiopathic hypercalciuria stone former (ICSF) grow calcium oxalate stones on Randall's plaque while most other stone formers (i.e. patients with primary hyperparathyroidism, bowel disease, primary hyperoxaluria, renal tubular acidosis, calcium phosphate stones and some other) form stones mostly within the ducts of Bellini. The goal of our study was to assess whether we could predict different stone compositions by observing various papillary plaque formations, thus supporting the above hypothesis.
Patients and methods: In 43 random patients undergoing percutaneous nephrolithotomy (PCNL), kidney stones were observed during surgery and their probable composition was attributed and recorded. After observing papillary videos from the same patients, stone composition was assigned and recorded again. Next, we have sent the stones for a formal x-ray diffraction analysis. The ability to better identify the final stone composition by first observing the papilla was assessed.
Results: 28 patients (65%) had a pure stone and 15 had complex stone. Exact match between the observed stones with the final analysis before and after viewing the papillary plaque was in 16 (37%) and 36 (87%) patients, respectively ($p = 0.0006$). Concordance with the final analysis was higher with pure stones in both groups.
Conclusions: In our work, we could correctly identify different stone compositions during PCNL when we had viewed the papillary plaque first, thus supporting the hypothesis that different papillary plaque correlates with different stone phenotypes.

U1-49 Percutaneous Treatment of Bladder Stones in Children: 10 Years Experience, Is Blind Access Safe?

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Purpose: Bladder stones are more common found in children from developing countries. Open Cystolithotomy or transurethral cystolithalopaxy are the traditional treatment but a percutaneous approach ha been advocated. We present our experience with percutaneous cystolithotomy in children with bladder stones without any ultrasonic or fluoroscopic guidance.
Materials & Method: From April 2001 to October 2011, A total of 147 children(135 boys and 12 girls) with a mean(range)age of 4.07(1–12.5)years underwent Percutaneous cystolithotripsy (PCCL). The mean(range)stone diameter was 2.74(0.8–5)cm. 138 children (94%)had a solitary stone while nine (6%) had more than one stone. The main component of the stones were calcium oxalate in 70 patients(48.6%).
Results: All children were stone-free after one PCCL; no recurrent stones developed. The mean (range)PCCL procedure time was 29.6(12 to 48)min and intraoperative blood loss was scant. Perioperative complications were few. The mean (range) hospital stay was 1.2(1- 3)days.
Conclusions: Blind access PCCL (without any ultrasonic or fluoroscopic guidance) is a facile and safe approach for removing stones in the pediatric bladder stones. Advanta es include the lack of ionizing radiation, no need for opacification by iodine contrast media and low relative cost. We recommend this minimally invasive technique for management of large bladder stones (larger than 1 cm)in children. To our knowledge, this is the largest single

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center series reported on percutaneous cystolithotripsy of endemic bladder stones in children.

U1-50 Percutaneous nephrolithotripsy inimmunocompromised patients: a matched case-control study

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Introduction: Percutaneous nephrolithotomy (PCNL) is the gold standard treatment for large kidney stones (>2.0 cm). Although it has been considerate safe for healthy patients, there is a paucity of data regarding high-risk patients. Furthermore, to best of our knowledge, there is no study evaluating the outcomes of PCNL in immunocompromised patients. Herein, we aim to assess the outcomes of PCNL in immunocompromised patients.
Methods: A matched case-control study, 1:2, was performed from jan-09 through Dec-14 using our institute stone database. Case group (n=21) included patients with positive serology to HIV or hepatitis C (cellular immune dysfunction), and patients with autoimmune diseases on high-dose of corticosteroids or immunosuppressive drugs (i.e. lupus, rheumatoid arthritis, Sjogren's syndrome) who underwent PCNL. Control group (n=42) included healthy patients who underwent PCNL in the same frame of time. Patients were matched based on Guy's score as a surrogate of case complexity. Groups were compared for demographic data, patient's position, number of punctures, operative time, complications, drop of hemoglobin, blood transfusion, time with nephrostomy tube, length of hospital stay, and stone-free rate. Stone-free rate was evaluated by CT scan on the 1st postoperative day. Statistical analysis was performed with SPSS version 20.0 (SPSS Inc., Chicago, IL) and significance level was set up at $p<0.05$.
Results: There were no significant differences in age, gender, and BMI between groups. Regarding intra-operative data, there were also no difference in patient's position, number of punctures, and operative time. Complications were higher in case group (33.3% vs. 11.9%; $p<0.041$), however major complications, defined by Clavien score ≥3, were not statistically different (4.8% vs. 2.4%; $p=0.611$). Drop in hemoglobin level (3.3 vs. 2.4 mg/dL; $p=0.037$) and blood transfusion (28.6% vs. 4.9%; $p=0.008$) were significantly higher in case group. Immunocompromised patients had a 2.8-fold increased risk of complications (OR=2.8, 95%CI 1.01–7.74) and a 5.8-fold increased risk of blood transfusion (OR=5.8, 95%CI 1.29–26.55). There were no differences in time with nephrostomy tube (1.8 vs. 2.1 days; $p=0.599$), length of hospital stay (4.3 vs. 4.1 days; $p=0.777$), and stone-free rate (52.4% vs. 69%; $p=0.195$).
Conclusion: PCNL in immunocompromised patients has a higher risk of surgical complications, mainly blood loss and blood transfusion.

U1-51 Comparison of Electrohydraulic and Electromagnetic Extracorporeal Shock Wave Lithotriptors for Upper Urinary Tract Stones in a Single Center

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Inroduction: To compare the efficacy and outcomes of upper urinary tract stones (renal and ureter) treated with two shock wave machines, the electrohydraulic lithotriptor (E3000) and electromagnetic lithotriptor (EM1000) in a single center retrospectively.
Patients and Methods: The efficacy and outcomes using Medispec's E3000 electrohydraulic shock wave lithotripsy (EH group, 179 cases) and Medispec's EM1000 electromagnetic shock wave lithotriptor (EM group, 93 cases) in 272 patients with upper urinary tract stones in a single center were reviewed. Stone size larger than 2 cm were excluded from this study. These two groups had different anesthesia method (EH group, intravenous anesthesia; EM group, no anesthesia). The demographic data, stone parameters (i.e., stone site and size), stone free rate and complications in both groups were analyzed. The patients were evaluated after lithotripsy by plane abdominal X-ray. The residual renal and upper third ureter stones were re-shocked with the same machines. The residual middle and lower ureter stones after once lithotripsy were treated with ureteroscopic lithotripsy.
Results: Pre-SWL, the patient characteristics, treatment parameters, and stone-related parameter were similar for both groups. The EH group had higher stone-free rate for renal and upper third ureter stones compared with EM group (53.6% vs. 30.1%, $p<0.001$). The EM group had higher retreatment rate (32.4% vs. 61.2%, $p<0.001$) for renal and upper third ureter stone. The stone-free rate for ureter stones less than 1 cm is superior in the EH group. There was no significant difference for stones at the middle and lower ureter. One subcapsule hematoma occurred in the EH group. Once rescue ureteroscopic lithotripsy free all the stone located at lower third ureter. More retreatment or upward migration happened in the middle and upper third ureter groups.
Conclusions: EH group and EM group (no anesthesia required) have rare complication and acceptable stone free rates for upper urinary tract stones. Considering the treatment, for renal stone less than 2 cm and ureter stone less than 1 cm EH machine is the better option.

U1-52 Predictive factors and treatment outcomes of steinstrasse following extracorporeal shock wave lithotripsy for ureteral calculi: A Bayesian regression model analysis

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Purpose: The aim of this study was to investigate the predictive factors and treatment outcomes of steinstrasse after extracorporeal shock wave lithotripsy (ESWL) for solitary ureteral calculi using non-contrast computed tomography (NCCT).
Materials and Methods: We reviewed the data from 551 patients who underwent primary ESWL for solitary ureteral calculi. Maximal stone length (MSL), location, Hounsfield units (HU), and skin-to-stone distance (SSD) were determined on pretreatment NCCT. Propensity score-matching minimized selection bias, and predictive factors for steinstrasse formation were evaluated by non-Bayesian logistic regression and Bayesian modeling.
Results: Steinstrasse incidence after ESWL for ureteral calculi was 2.2% (n=12). The steinstrasse group had a significantly larger mean stone burden, lower HU level, and shorter SSD compare to non-steinstrasse patients (all $P<0.05$). After propensity-score

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matching, the steinstrasse group had a significantly shorter SSD versus the non-steinstrasse group (P = 0.013). By multivariate logistic regression and Bayesian modeling, MSL, HU, and SSD were independent predictors for steinstrasse development. Of the 12 steinstrasse cases, 6 patients were resolved with expectancy and the remaining 6 patients were successfully managed by repeat ESWL without other serious complications.
Conclusions: Steinstrasse development after ESWL for ureteral calculi was relatively rare and could be easily and safely treated by conservative management. MSL, HU, and SSD were significant predictors for developing steinstrasse after ESWL for ureteral calculi. If a patient has a high probability of steinstrasse formation after ESWL for ureteral calculi, patient counseling is indicated.

U1-53 Ureteroscopic Stone clearance and complication rates: surgical outcomes from a single unit

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Introduction: Ureterorenoscopy for ureteric or renal calculi may require multiple procedures to achieve stone clearance. They are associated risk of infection and sepsis. We performed an audit over 30 months at a single centre to evaluate the stone clearance and complication rates.
Methods: Retrospective analysis of all rigid and flexible ureterenoscopy procedures performed for ureteric or renal calculi in a single institution from May-12 to Dec-14. Data was obtained from electronic patient records and paper notes. Patients without documentation were excluded. Three months after surgery, stone clearance was evaluated with a non-contrast computed tomography (CT) or ultrasound (US)
Results: There were a total of 102 ureterenoscopy procedures performed on 74 patients over the audit period. Mean age was 47.6 years (range 23–87), with M: F ratio of 1.3:1. The average stone burden was 6.9 mm. Number of patients who had unilateral 1, 2 and ≥3 calculi was 37, 19 and 18 respectively. 23 patients had bilateral calculi. The number of patients who had 1, 2, 3 and ≥4 procedures performed to clear the stone was 54, 14, 5 and 1 respectively. 18 patients had complete stone clearance (on CT/US) after one procedure. 21 patients required further ureterenoscopy, 5 required ESWL and 2 required PCNL. Eight patients developed new stones requiring further procedures. 3 patients did not attend their follow-up imaging; 24 patients were not booked for any follow-up. 1 patient, a repeated stone former was referred to a tertiary centre.

61 procedures had urine culture performed pre-operatively, of which 3 had bacteria isolated. All urine dip tests performed on the day itself were nitrite negative, 13 were leucocyte-positive. All patients had a prophylactic dose of gentamicin +/− co-amoxiclav intraoperatively. Antibiotics were started peri-operatively for all the patients whose urine culture isolated bacteria, including proteus, ESBL and E.coli. The sepsis rate was 2.7% requiring admission (1.3% required intensive care), 6.8% stent symptoms; 4% UTI; 4% urinary retention; 1.3% acute renal failure; 2.7% ureteric perforation. 2 patients who had ureteric perforation were secondary to a complicated basket removal and extravasation of contrast. In both patients the procedure was abandoned. Readmission rate was 4%.
Conclusion: One procedure resulted in 24.3% successful stone clearance. However it is unlikely that multiple stones can be cleared in one session on rigid or flexible ureteroscopy alone. 36.4% of patients did not have any follow-up imaging. Our complication rates for sepsis and perforation are comparable to the literature.

U1-54 Our Retrograd Intrarenal Surgery (RIRS) experience in a patient with right Soliter Kidney to accompany Ureter Duplication who has D-J Catheter which causes Renal Perforation

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Introduction: Upper urinary duplication is the most common congenital anomaly of the urinary tract and endoscopic stone surgery for congenital urinary tract anomaly is more difficult than normal anatomy. Retrograde Intrarenal Surgery (RIRS) is a minimally invasive surgical technique increasingly used in stone surgery. We want to share our RIRS experience in a patient with right soliter kidney to accompany üreter duplication who has d-j catheter which causes renal perforation.
Patients and methods: A 50-year old female patient presented our clinic with left flank pain. His pysical examination was normal. She has a left simple nephrectomy history because of renal atrophy. One mounth ago D-J catheter implanted due to right hydronephrosis in an other medical center. Non contrast computed tomograpy was performed and d-j catheter perforation from upper pole of renal parenchyma with no hematoma around the kidney and 11*14 mm lower pole stone were detected but the distal end of the catheter wasn't in the bladder.
Result: We extracted d-j cathter with URS and we detected üreteral duplication in system. After that RIRS was performed under general anesthesia in the lithotomyposition. The stone was fragmanted with Holmium YAG laser. The patient was discharged on postoperative first day. D-j catheter were extracted postoperative 20th day.
Conclusion: Surgical procedures in patients with urinary tract abnormalities are more diffucult than the normal anatomy. RIRS is a preferable method in duplicated ureter with stone formation but Sometimes complications may develop because of endoscopic procedures in the system with duplicated ureters so we recommended that endoscopic procedures applies carefully and guided with imagining system like fluoroscopy.

U1-55 Limiting needle movement to one plane during percutaneous renal access:initial experience with a novel simple device

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Introduction: For triangulated percutaneous renal access (PRA), non-intended mediolateral deviation of Chiba needle is common under oblique fluoroscopy. We aimed to limit this deviation after proper alignment with target calyx (vertical fluoroscopy), providing only one needle-movement plane (cephalocaudal; under oblique fluoroscopy).
Materials and methods: Device consists of radiolucent cylinder (12x2 cm). Starting from edge; a longitudinal tunnel (6x0.2 cm) and an opposite hole allowing Chiba needle passes diagonally from the tunnel exiting from the hole. During PRA, the tunnel is

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aligned with target calyx (under vertical fluoroscopy), cylinder is fixed to patients' back by silk-sutures (the needle freely moves only within the tunnel, i.e. cephalocaudally, preventing needle's meidolateral drifts, while the hole acts as fulcrum) and the puncture is monitored simply under oblique fluoroscopy (for angle/depth) •Study design: two groups of PRA well-experienced urologists (group A) and junior urologists (mentored practice; group B) did both 20 non-device assisted and 20 device assisted PRA. The fluoroscopic time (FT) required getting inside the calyx, number of needle re-adjustment trials (NRATs) and access-related complications were monitored.
Results: Well-experienced staff: mean FT and NRATs decreased with device assistance ($p > 0.05$). Junior staff: mean FT and median NRATs decreased after device-assistance (47 ± 10.7 seconds and 0 trials) in comparison to 76.2 ± 14.7 seconds and 4 trials without device-assistance ($p < 0.05$). PRA-failures (taken over by mentors) were 5% and 25% with and without device-assistance. No PRA-related complications.
Conclusion: Current device stabilized the needle during triangulated PRA allowing minimal or no-mediolateral deviation during targeting the desired calyx. This was more significant for junior urologists.

U1-56 Imaging Modalities Post Shockwave Lithotripsy (SWL)

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Introduction: Imaging for urinary calculus accounts for a significant portion of the total imaging requested by urologists with the majority of patients diagnosed using radiology. However, post-diagnosis many are also subjected to numerous scans. Studies in America suggest that the proportion of capital expenditure on imaging for urinary stones is as high as 16% of the overall radiology budget.

Detailed research has been completed looking at the effectiveness of the alternate imaging modalities at picking up and diagnosing stones. However, there has been no or minimal guidance as to the best imaging plan for patients who have undergone lithotripsy and need further imaging to assess the efficacy of the treatment, location of the stone and occurrence of fragmentation
Method: 31 Patients underwent lithotripsy in 2013. Subsequent imaging preformed pre and post-lithotripsy was collated with the size of the stone documented.
Results: All patients in this study had plain radiography both pre and post-lithotripsy. Plain radiography successfully identifies a significant proportion of the stones (76%), however even in this cohort of patients 69% required further imaging (Non-Contrast Computed Tomography NCCT: 53%, Ultrasound Scan USS: 16%). Patients who had NCCT did not require any further imaging. Efficacy of the treatment was confirmed with the average reduction in stone diameter of 3.07 mm.
Conclusion: This study demonstrates the vast number of scans preformed for lithotripsy patients. The majority of patients had multiple scan modalities used for the same purpose. If clear imaging protocol is implemented written based on the results of this study a number of benefits would be anticipated. These include a reduction in the number of scans preformed reducing cost and radiology workload. Patient experience would be enhanced due to fewer trips to the hospital and more rapid acquisition of results. Total radiation doses would be reduced, as patients who are identified, as being unlikely to have effective plain films would instead have NCCT, skipping unneeded radiation. Furthermore with a greater proportion of NCCT preformed it is more likely incidental but crucial pathology can be identified and less skilled radiographer needed in comparison to USS.

U1-57 The feasibility and efficacy of the novel image planning technique for Percutaneous nephrolithotomy

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Introduction: To optimize the surgical procedure with the Percutaneous nephrolithotomy (PCNL), we developed the preoperative three-dimensional (3-D) planning method for the access route in PCNL using the 3-D combined computed tomographic urography (3-D cCTU). The aim of this study was to evaluate the feasibility and efficacy of this novel planning technique for PCNL.
Material and methods: We conducted a retrospective study from April 2013 to Dec 2014. A total of 7 patients with complex renal stones (staghorn stone or multiple caliceal stones) planned for PCNL were included in this study. The access route for PCNL was planned by the imaging application before the operation using the patient specific 3-D cCTU. The image of skin, bone, kidney ureter, liver, spleen, and the virtual 3-D puncture line was drawn in 3D virtual field to avoid the organ injury and to access the proper renal calyx for aimed stone from the body surface. At the operation, the puncture of the PCNL was performed under combination of ultrasound and fluoroscopic guidance with image assistance of planned puncture line. The coordinates for the puncture line were drawn on the skin of the patient directly or projected on to the body surface of transparently with image fluoroscopic image as the reference. The feasibility and efficacy of the 3-D planning was evaluated with the operational outcome.
Results: Median stone size was 4.5 cm (3.2–7.0), 5 of the 7 patients (71.4%) had staghorn calculi. In 6 patients out of 7 patients (85.7%), the puncture of access tract for PCNL could be achieved successfully as that was planned preoperatively. Median total operation time was 158 minutes and median time for planning was 62 minutes. In 4 cases (57.1%), PCNL was performed by combined antegrade and retrograde approach. There were no intraoperative or postoperative complications and patients did not require blood transfusion. One patient Powered by TCPDF (www.tcpdf.org) (14%) required secondary PCNL for residual stone. Based on CT examination, the complete stone clearance rate at 3 months was 86%. All patients had stable renal function and unobstructed drainage at 3 months after the operation.
Conclusions: Preoperative planning of complex stone situations with 3D-CT had a significant impact on operative procedure, resulting in a low number of access punctures.

U1-58 The outcomes of retrograde infrarenal surgery in treating renal cystine stones

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Introduction: To evaluate the efficacy and safety of retrograde intrarenal surgery (RIRS) in the treatment of renal cystine stones and present long-term results in this group of patients.
Materials and Methods: From December 2008 to March 2015, 30 patients who were treated with RIRS for renal cystine stones were included in the study. All of the stones were fragmented with laser lithotripsy using dusting technique. The procedure was considered as successful in patients with complete stone disappearance or fragments <4 mm on computed tomography. All patients were followed up under medical treatment to prevent stone recurrence post-operatively.
Results: The study included 30 patients with a mean age of 22.47 ± 14.13 years. The mean stone size was 24.4 ± 14.77 mm. The mean operative time was 61.75 ± 14.14 minutes. The success rates were 70% and 80% after the first and second procedures, respectively. 6 (20%) of the patients had residual calculi <1 cm diameter in the lower-pole and were followed up. Minor complications, classified as Clavien I or II, occurred in 3 patients (10%). No major complications (Clavien III-V) occurred in the study group. In long-term follow up, 12 patients (40%) underwent additional treatment such as percutaneous nephrolithotomy and/or retrograde intrarenal surgery.
Conclusions: RIRS is an effective and safe procedure that can be used to manage renal cystine stones. However, most of these patients required multiple urological procedures in long-term follow-up despite prevention for stone recurrence with medical treatment.

U1-59 Transurethral ureterolithotripsy using Holmium: YAG laser in patients with continuous oral anticoagulation

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Introductions and Objectives: Oral anticoagulation has been considered as a contraindication to transurethral ureterolithotripsy (TUL). Recently, the number of patients with oral anticoagulation is increasing. However, continuous oral anticoagulation for several surgical procedures including TUL is still controversial. As such, we here investigate the safety and efficacy of TUL using Holmium: YAG laser in patients with continuous oral anticoagulation.
Methods: From January 2014 through December 2014, 74 patients with renal and ureteral stones received TUL using Holmium: YAG laser at our institution. Surgical outcomes and complications were evaluated.
Results: Nine patients (12.2%) received TUL under continuous oral anticoagulation. The location of stone was R2 in 5 patients, U2 in 2 patients, and R2 and U1 in 2 patients. Three of 9 patients had staghorn stone. The mean stone size was 23.1 mm. Two patients had deep vein thrombosis, 2 patients had valvular disease, and others had myocardial infarction and cerebral infarction. Warfarin was administered to 3 patients, ticlopidine and/or clopidogrel and/or ethy icosapentate and/or cilostazol were administered to the other patients. TUL under continuous oral anticoagulation was successfully performed in all patients. The mean operative time was 56.1 minutes, and the mean hemoglobin loss after TUL was 0.65 g/dl, with no blood transfusion. One patient developed postoperative pyelonephritis. Stone free rate was 44.4%. Three patients had residual stones, however, there did not increase. Two patients with staghorn stone were considered secondary TUL.
Conclusions: Safety and efficacy of TUL using Holmium: YAG laser in patients with continuous oral anticoagulation were revealed.

U1-60 Safety and feasibility of ureteroscopy and laser stone fragmentation (URSL) for stones in solitary kidney: prospective outcomes from a university hospital

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Introduction: Stones in a solitary kidney poses a treatment challenge. The optimal outcome is to achieve a good stone clearance rate with minimum morbidity, while preserving renal function. We wanted to look at the outcomes of ureteroscopy and laser stone fragmentation (URSL) for stones in solitary kidney treated in our university teaching hospital.
Methods: Between July 2012 and December 2014, 17 patients underwent URSL for stones in a solitary kidney. Data on patient demographics, presentation and operative outcomes were maintained in a prospectively maintained database. Outcomes, renal function, complications and follow-up were recorded and analyzed in an excel spreadsheet.
Results: Seventeen patients underwent URSL for stones in a solitary kidney with a mean age of 53 years (range:12–80 years) and a male:female ratio of 11:6. The stones were in multiple locations in 8(47%) patients with stones in the lower pole in 13(76%) patients. The mean $\pm$ SD stone size and BMI were 13.0 ± 8.9 mm and 31.6 ± 5.8 kg/m^2, respectively. The Stone free rate (SFR) was 82.5% with 16 (94%) discharged within 24 hours. There was one Clavien II complication with a patient needing additional antibiotics for post-operative urinary infection. There were no other major or minor complications.
Conclusion: Ureteroscopy for stone disease in a solitary kidney is safe and feasible with a low complication rate and an overall improvement in renal function.

Table: Intraoperative and postoperative outcomes (n=17)	
Age (year), mean ± SD	52.9 ± 19.9
BMI (kg/m^2), mean ± SD	31.6 ± 5.8
Stone free rate (SFR), n (%)	14 (82.4)
Operative time (min), mean ± SD	62.4 ± 23.1
Use of access sheath, n (%)	10 (58.8)
Preoperative serum creatinine (μmol/L), mean ± SD	125.6 ± 73.9
Postoperative serum creatinine (μmol/L), mean ± SD	102.1 ± 33.8
Complication rate, n (%)	1 (5.9)
Time to discharge, n (%)	
Same day	14 (82.4)
<24 hours	2 (11.8)
>24 hours	1 (5.9)

U1-61 Prospective Long-term Evaluation of the Genuine Impact of Silent Ureteral Stone Treatment on Renal Function

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Introduction: Ureteral stones may be asymptomatic in 0.3–5.3% of patients. The true impact of the disease and its treatment

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on renal function has not been definitively established. The goal of our study was to prospectively evaluate patients treated for silent stones to comprehensively elucidate this matter.
Materials and Methods: A ureteral stone was defined as silent if the patient had no subjective/objective symptoms related to the calculus. After IRB approval, patients with a silent ureteral stone were prospectively enrolled. Patients were evaluated with ^{99m}Tc-DMSA scintigraphy (DMSA), serum creatinine (Cr), Cr clearance (CrCl) and ultrasound pre and post-operatively on months 3 and 12. The primary end-point was ipsilateral renal function (DMSA). Secondary end-points were Cr, CrCl and USG findings. Patients who received treatment elsewhere or with incomplete evaluation were excluded. ANOVA, Chi-square/Fisher test, and regression were used to analyze data. Significance was set at $p < 0.05$.
Results: Between Jan/06-Jan/14, 26 patients with silent ureteral stones met our strict inclusion criteria, comprising 2.1% of all ureteral stones treated at our institution. Half of patients were female, mean age was 59.3 ± 11.3 years-old. Stone diagnosis was related to an urological cause in 14 (53.8%) cases. Mean stone diameter and density were 11.8 ± 2.8 mm and 1201 ± 272 HU, respectively. In 15 (57.7%) cases the stone was in the proximal ureter, and only two patients had no hydronephrosis. Mean renal parenchyma thickness was 10.7 ± 4.1 mm. Mean preoerative Cr, CrCl and DMSA were 1.24 ± 0.87 mg/dL, 72.5 ± 25.2 mL/min and 33.4 ± 16.7%, respectively. Twenty (77%) patients had initial DMSA < 45%. Multiple regression revealed age ($p = 0.041$) and renal parenchyma thickness ($p = 0.001$) to predict initial DMSA. Treatment consisted of laser lithotripsy in most cases (84.6%) and ocurred 8.1 ± 6.7 months after diagnosis. All patients were rendered stone-free, in two cases ureteral stricture ocurred. When compared to preoperative values, Cr ($p = 0.89$), CrCl ($p = 0.48$) and DMSA ($p = 0.19$) were stable 3 and 12 months postoperatively. Hydronephrosis improved from before to 3 months after treatment ($p < 0.01$), but remained unchanged from 3–12 months ($p = 0.06$). No preoperative variable was able to predict a >5% variation on DMSA from pre to postoperative periods, but stone size ($p = 0.12$) and time to treatment ($p = 0.15$) had marginal influence.
Conclusion: Silent ureteral stones are associated with decreased renal function and hydronephrosis already at diagnosis. Age, renal parenchyma thickness and degree of hydronephrosis may predict initial DMSA. Hydronephrosis tends to diminish after stone removal, while renal function remains stable. Stone size and time interval to treatment might impact on DMSA progression.

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U1-62 Minilaparoscopic Ureterolithotomy for the management of large lower ureteric stone in pediatric age

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Introduction: Laparoscopic ureterolithotomy can be an alternative first-line treatment for large impacted stones[1]. There is a lack of evidence in the role of laparoscopy in pediatric patients for the treatment of ureteric lithiasis. In this video, we aim to describe the feasibility of performing a minilaparoscopic approach to remove two large impacted distal ureteral stones.
Materials and Methods: We present a case of a 4-year boy referred to the pediatric urology consultation with 2 stones in the left lower ureter with 20 and 17 mm. The case was discussed in a multidisciplinary group with endourologist specialist, pediatric urology and the parents and was proposed for primary laparoscopic treatment.

The patient was positioned in dorsal decubitus with elevation of the left side. Camera port of 5 mm was placed at the umbilicus with open technique. A dominant port of 5 mm was placed under direct vision in the right iliac fossa and a 3 mm port was placed in the left side of the umbilicus. The left ureter was identified in the crossing of iliac vessels and the parietal peritoneum was opened on this position longitudinally. The ureter was then circumscribed with a vascular loop and then dissected distally staying away from the adventitia till the stone site was reached. To identify the stone position, ureter was pinched gently and after exact location of the stone a scissor was used to incise the ureter over the stone. The stones were retrieved to a collection bag and removed at the end of surgery. At this point a double-J stent was positioned using cystoscopy assistance. The ureter was then sutured with 5–0 vicryl.
Results: The total procedure time was 140 minutes. The total blood loss was approximately 3 mL. The hospital stay was 5 days. Catheter was removed at discharge day.
Conclusion: Minilaparoscopic ureterolithotomy is a minimally invasive treatment and may be considered as a useful first-line management for large impacted ureteric stone particularly, in children. In this case the stone-free and cosmetic result was excellent. More evidence is needed in order to include laparoscopic procedures in the stone treatment guidelines.

U1-63 Treatment of calyceal diverticulum stones with retrograde flexible ureteroscope and laser

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Introduction: Caliceal diverticulum is a rare renal anomalie; associated with stone when urinary stasis inside the diverticulum leads to stone formation, in some cases they could be symptomatic. The treatment options are variable with extracorporeal lithotripsy, open or laparoscopic surgery, percutaneous or ureterorenoscopy (f-URS) surgery. With the new techniques in f-URS and laser fibers supporting high energy, this disease can be treated very effectively.
Materials and methods: Male, 45 years old, no drug allergies. Hypothyroidism after surgery of overactive thyroid nodules with replacement therapy. Ulcerative colitis treated with mezalacina, sleep apnea syndrome treated with CPAP. After a left renal colic, test image were made finding left middle ureteral stones treated with ESWL and a mass urolithiasis in the left kidney inside a diverticulum. Also we found a renal tumor of less than 1 cm. We dediced active surveillance for the tumor and treatment of diverticulum stones with (f-URS) in caliciliar diverticulum.
Results: Under general anesthesia and subsequent placement of the patient in lithotomy position we made an Urethrocystoscopy without abnormalities. We passed the Guide Amplatz until left renal pelvis. Semi-rigid ureteroscopy without evidence of ureteral stones and retrograde urography (urinary tract diverticulum in the upper left group calicilial). We passed the Flexor Paralallel shirt 10–12 fr. Flexible digital ureteroscope scanning was performed without other alterations. We opened the diverticular neck with Holmium laser (fiber 200 microns) 0.8 joules of energy - frequency 30 Hz - Power 24 W, at 6 hours, until a proper opening. We found four stones, each of 0.5 cm. And started

Holmium laser lithotripsy 1.5 joules - frequency 30 Hz - Power 0.8. With subsequent removal of the fragments with nitinol basket. Ureteroscopy semi-rigid under vision without evidence of ureteral litiasis. Straight catheter 8 Fr and urinary catheter were placed for 48 hours. Theo operative time was 180 minutes. The patient was discharged on postoperative 48 hours. Crystallographic study showed lithiasis phosfo composition dependent. X -ray control without ureteral or kidney stones.
Conclusions: F-URS using a holmium laser is a very effective, minimally invasive technique. It could be the best option in managing stone-bearing caliceal diverticula, especially for those patients in whom there was a ESWL failure. The development of the actively deflectable ureteroscope with miniaturization allowed us to obtain a high success rate, low morbidity, and a brief hospital stay.

U1-64 Is RIRS better option for renal stones up to 1.5 cm as compare to miniaturize versions of PCN

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Intoduction: Mini pcnl, Ump, Micro pnl are routinely practiced for the treatment of small to medium size renal stones. Real success of these procedure lies with effective puncture which is a real challenge. Also these proecedures are associted with bleeding which can be a big problem especially in patient on blood thinner, ectopic kidney, solitary kidney, obesity, multiple stones, pregnancy. Use of flexible uretroscopy is on rise, We present our experience of 323 case of renal stone done by Rirs with our innovative technique which is minimally invasive and yield excellent resualts. we feel that Rirs is more patient friendly procedure as compare to Eswl, miniaturised version of pcn like minipcnl, Ump, and micro pcnl.
Material and methods: 322 patients underwent rirs by a single surgeon. Patients were grouped according to the size, nuber and site of renal stones. Urteroscopy with 4.5 fr ureteroscope, preceded flexible scopy which avoided cystourthroscopy.7.5 fr flexible scope was used and 9.5 fr access sheath was used selectively. Intra corporeal laser lithotripsy was done and larger stone fragemnts are retrieved. DJ stent or ureteric catheter were used to drain kidney. Most of the patients were discharged within 48 hoursPost op follow up was done with CT KUB.
Results: Blood transfusion was not needed in any. Stone clearance was achieved in 92%cases with upper and middle pole calculus with stone less then 1.5 cm .83% cases with lower pole calulus had clearance. Analgesic requierment was minimum. Patient satisfaction score was very high.
conclusion: Surgical procedure should be patient and surgeon friendly with minimal invasive nature. Rirs yields better results then mini-micro and Ump in majority of adult small or medium size reanl stones. miniaturised digital flexiscope and high power laser energy can lead to bettr visualisation, reduction in surgical time, dusting of the stone and avoidance of access sheath related problems and better patient compliance.

U1-65 Surgical management of iatrogenic ureteral strictures related to ureteroscopy for nephrolithiasis

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Introduction: Ureteroscopy is increasingly performed to treat nephrolithiasis. A rare but feared complication after ureteroscopy is ureteral stricture, reported to occur in < 1–4% of patients. Ureteral stricture disease is associated with ureteral obstruction, pain, and renal functional loss. Our aim is to describe our experience with the management of complex ureteral strictures in patients who have undergone ureteroscopy for nephrolithiasis.
Patients and Methods: Patient characteristics and operative data were reviewed for consecutive patients referred to a single institution with the diagnosis of a ureteral stricture. Patients were included based on development of a ureteral stricture after ureteroscopy for treatment of upper tract urolithiasis. Strictures were diagnosed based on hydronephrosis with evidence of obstruction on renal scintigraphy.
Result: Among 11 identified eligible patients, mean patient age was 48.5 years, 45% were male, 64% had proximal ureteral strictures, and 73% had left-sided strictures. The mean number of ureteroscopies prior to referral was 3.5 (range 1–10), with initial ureteroscopy between 2006 and 2013. After referral to our center all patients had at least one initial attempt at endoscopic management. Two patients (18%) were managed with endoscopic techniques alone, 5 (45%) required complex laparoscopic reconstruction (ureteroureterostomy, pyeloplasty, or ureteroneocystotomy), and 4 (36%) required laparoscopic nephrectomy. The mean number of procedures after referral and before resolution of obstruction or nephrectomy was 3.9 (range 2–10). In 55% of patients the definitive operation was characterized by high technical complexity.
Conclusion: Ureteral strictures associated with ureteroscopic treatment of stone disease may occur after either initial or repeat ureteroscopy. While a subset of patients can be successfully managed by endoscopic techniques alone, all patients in this series required multiple procedures, and the majority of patients eventually required ureteral reconstruction or nephrectomy with high technical complexity.

U1-66 Hypercalciuria: Evaluation of gender difference and metabolic abnormalities.

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Introduction and Objectives: Several studies reported the relationship between hypercalciuria and metabolic abnormalities. Review of the literature shows an increase in the incidence of nephrolithiasis in females, with a decrease in male predominance. Our aim, to review the correlation of gender differences in metabolic abnormalities comparing stone and dietary risk factors in patients with documented hypercalciuria.
Methods: Patients with known history of nephrolithiasis, treated from 2000 to 2014, were identified from our 24 hour urine database. All complete 24 hour urines were reviewed for abnormality in urinary calcium (> 300 mg/24 hours); exclusion crieria: past history of bariatric surgery, GI disease, and parathyroid abnormalities. Significance calculated by two-sided Fisher's Exact Test at a level of 0.05.
Results: 498 patients were isolated with a total of 1003 24 hour urines for epidemiological comparison. Average population age was 51.9 years, range of 18–80. Male/female ratio was 1.2:1 (556:447). Hypercalciuric men shown to have greater than double odds ratio with respect to stone factors compared women

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in the categories of volume, oxalate, and uric acid(OR 2.48, 2.67, 3.26; p-value 0.0354, <0.001, <0.001 respectively.) Men had higher odds of metabolic abnormalities: sodium (OR 2.76, p-value <0.001), potassium (OR 3.42, p-value <0.001), magnesium (OR 2.90, p-value <0.001), ammonium (OR 1.53, p-value 0.0426), and chloride (OR 2.75, p-value <0.001)
Conclusions: Our studies indicate that hypercalciuric men have greater than double the odds of stone risk, yet our data demonstrates a decline in gender disparity. Further investigation is warranted to elucidate specific variables that play key roles in stone prevention.

U1-67 Randomized Controlled Trial of Two Vitamin D Repletion Protocols to Assess Impact on Calcium Excretion in Stone Formers

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Background: Over-repletion of vitamin D deficiency in known calcium stone formers may be a potential risk factor for recurrent nephrolithiasis. The ideal repletion regimen for these patients remains unknown.
Materials and Methods: Patients with a history of calcium stones and found to have vitamin D insufficiency (<30 ng/ml) were randomized to receive repletion with either 1,000 IU daily or 50,000 IU per week for a total of 6 weeks. All patients completed pre- and post-repletion serum vitamin D levels and 24-hour urine collections to evaluate any changes. Statistical analysis was performed using paired t-tests with unequal variances.
Result: 20 patients completed the study; 8 who received 1,000 IU daily and 12 who received 50,000 IU weekly. Patients receiving 50,000 IU showed significant improvement in serum vitamin D levels with a 134.2% increase ($p < 0.001$), while patients receiving 1,000 IU daily showed a non-significant 67.9% increase ($p = 0.06$). Post-repletion 24-hour urine analysis showed no significant change in urine calcium with mean percentage change of –8.5% in patients receiving 1,000 IU ($p = 0.41$) and 46.2% in those receiving 50,000 IU ($p = 0.80$). Between groups, there was no significant difference in either the super-saturation of CaOx (changes of −3.9% and 18.6%, $p = 0.30$) or the CaP (changes of 76.8% and 149.9%).
Conclusion: Both groups showed an adequate repletion of serum vitamin D levels to over 30 ng/ml, although the 50,000 IU/week dosing showed a more robust response. Neither dosing regimen significantly increased urine calcium or calcium super-saturations suggesting no increased risk for stone formation.

U1-68 Vascular calcification and 24 hour urine parameters

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Introduction: Kidney stone formers are at increased for cardiovascular events, and recent small case series suggest that kidney stone patients may suffer from high degrees of vascular calcification (VC). Few studies have evaluated the relationship between VC and 24 hour urine parameters. Our aim is to correlate the relationship of VC with kidney stone type and urine parameters.
Patients and Methods: Retrospective analysis of 350 surgical stone patients seen between 2004 and 2013 with pre-operative CT imaging and 24 hour urine collection. Abdominal aortic calcification (AAC) measurements were taken by a single radiologist evaluating 4 cross-sectional slices between L1 and L4 vertebras. AAC measurements were translated to a score by multiplying a severity factor with the percentage of aortic circumference calcified in each cross section. Multivariate analysis was used to determine any significance among AAC and urine constituents. Spearman's rho was used to correlate urine constituents and AAC. Chi squared test was done to compare the distribution of stone types by the presence or absence of AAC. Statistical analysis was performed using SPSS v 20.
Results: 51% of patients had VC (average age: 62 years) and 49% of patients had no VC (average age: 49 years). Stone type was significantly correlated with the presence of AAC ($p = 0.021$). 68% of CaP04 stones were in patients without any AAC, and 60% of Uric Acid Stones were found to have AAC present. AAC trended towards a correlation with uric acid stones (1.006, $p = 0.06$). When comparing patients with and without AAC, AAC was inversely related to urinary calcium (−0.205, $p = 0.008$). Multivariate analysis revealed that AAC predicted changes in urinary oxalate (beta = -0.129, $p = 0.034$) and urinary Na (−0.177, $p = 0.002$). The association between AAC and urinary phosphate was found to approach significance ($p = 0.060$). No other urinary constituents were found to have a significant relationship with AAC on multivariate analysis.
Conclusion: 51% of patients had VC. Presence of AAC was correlated with kidney stone type and trended towards a correlation to uric acid stone development. Of the 57 CaP04 stones identified, 68% were found in patients with no VC identified. AAC was found to predict changes in urinary oxalate and urinary sodium and trended towards a significant relationship with urinary phosphate. AAC was inversely correlated to urinary calcium when comparing patients with and without VC. Vascular calcification may share common pathways with urolithiasis. Further investigation is needed to elaborate on these findings.

U1-69 Iatrogenic submucosal tunnel in the ureter:a rare complication during introduction of guide wire

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Objective: We report a rare complication during guide wire placement in patients with ureteral stones. The guide wire penetrates the mucosa just distal to the stone. It proceeds in the submucosa at the level of the stone then penetrates the mucosa once again to resume its normal course in the ureteral lumen. A double J-stent advanced over the misplaced guide wire will follow the same abnormal submucosal course.
Methods: This is a retrospective study that included 432 patients who were divided to 2 groups. In Group I (380 patients), the ureteral stones were removed by ureteroscopy in a single sitting. Group II (52 patients) had a 2-staged procedure starting with double J-stent placement for urine drainage and followed within 3 weeks by ureteroscopic stone removal.
Results: Latrogenic submucosal tunneling (IST) was discovered in 5/432 patients with ureteral stones managed by ureteroscopy (1.2%). IST was detected in Groups I and II in 4/380 patients (1.0%); and 1/52 patients (1.9%), respectively. Diagnosis in Group I was made during ureteroscopy by direct vision of a

vanishing guide wire at the level of the stone. In Group II, IST was suspected after placement of the double J-stent with no relieve of renal pain or of back pressure to the obstructed kidney by ultrasound. Subsequent ureteroscopy confirmed the diagnosis. Fluoroscopy or scout films of the abdomen were inconclusive for the diagnosis of IST.

Conclusion: Forceful advancement of the wire in an inflamed and edematous ureteral segment that harbors a stone is the most probable triggering factor for IST. Diagnosis can only be made by direct vision during ureteroscopy. Awareness of this potential complication and avoidance of forceful advancement of the guide wire can prevent this complication.

U2 – UPPER TRACT, LAPAROSCOPY AND ROBOTICS

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U2-1 An alternative surgical approach to renal vein ligation in laparoscopic cytoreductive nephrectomy for advanced Renal Cell Carcinoma with renal vein thrombosis

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Background: Renal vein ligation in laparoscopic Radical Nephrectomy (RN) is routinely done with Hemolock clips or surgical staples. Vascular extension of Renal Cell Carcinoma (RCC) into the renal vein (RV) or Inferior Vena Cava (IVC), as a thrombus, occurs in 4–10% of patients at time of diagnosis. In such cases, RN and thrombectomy is the mainstay of treatment. Depending on the thrombus level, this is coupled with either proximal and distal vascular control, or with cardiopulmonary bypass (CPB). These techniques have been well described for Levels I-IV thrombi. In our study, we present a patient with a proximal renal vein thrombus who underwent laparoscopic cytoreductive nephrectomy, in which the above methods were not possible.
Materials and Methods: Our patient is a 63 year-old gentleman with previous appendicectomy, who presented with right-sided RCC. Magnetic Resonance Urography showed a mid-lower pole tumor measuring 6.4x6.3x6.6 cm, with a thrombus extending to the junction between the right RV and IVC, with no IVC thrombus. Aortocaval and retrocaval lymphadenopathy were present. CT Thorax showed a suspicious right hilar lymph node, with no pulmonary parenchymal metastases.
Results and discussion: Intraoperatively, following routine mobilisation of the renal vein, a large thrombus corresponding to the MRU was found, and was unable to be milked further into the renal vein. RV diameter and proximity of the thrombus to the IVC precluded the use of staple ligation. There was no proximal and distal IVC control in view of bulky surrounding lymphadenopathy, which could lead to significant surgical morbidity during dissection. Decision was made to clamp the renal vein distal to the thrombus with a laparoscopic vascular clamp, which corresponded to the RV-IVC junction. The cavotomy was closed with running suture following slow and careful transection of the renal vein. Operative time was 195 minutes with minimal blood loss. Intake was escalated to diet on POD3, with bowel movement on POD2. Surgical drain was removed on POD4 with patient clinically well for discharge.
Conclusion: In this study, we described a method of laparoscopic renal vein ligation and thrombectomy without proximal and distal vascular clamping, or vena cava grafting. We avoided the need of converting to open surgery, with the entire procedure being performed laparoscopically. This method would allow faster post-operative recovery, as well as allowing earlier initiation of chemotherapy.

U2-2 Tips on laparoscopic surgery for paraganglioma: Video presentation.

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Introduction and Objectives: Based on accumulated experience of laparoscopic surgery, its indication has now broadened to extraadrenal paraganglioma. The aim of this study was to describes the authors' experience and provide tips and advice for laparoscopic resection on paragangliomasa.
Methods: Between 2000 and 2015, 12 procedures were performed in 11 patients. One patient underwent second surgery due to the recurrence of paraganglioma. Data were collected on the tumor size, tumor location, perioperative outcomes, pathology, and disease status at the last follow-up. We reviewed the operative records or videos to identify tips and advice regarding surgery for this entity.
Results: The median tumor diameter was 3.7 cm (range, 1.5–8.5). The tumor location was suprahilar in 1, hilar in 5, and infrahilar in 6. Regarding the approach, a transperitoneal approach was selected in all cases. The median operative time and blood loss were 245 minutes (range, 79–513) and 15 mL (range, 0–1,020). No patient required blood transfusion or conversion to open surgery. At the last follow-up, 11 patients were free of disease, while one patient developed metastatic recurrence. A review of the records revealed several tips, including taping the vena cava/ renal vein (n = 2) for tumor dissection and that bipolar forceps are helpful for meticulous dissection between the tumor and great vessels. In several cases, 3D-CT was mandatory for preoperative planning.
Conclusions: Laparoscopic resection of paraganglioma is feasible. Surgeons should be familiar with dissection around great vessels. Careful preoperative planning, including 3D-CT, is important.

U2-3 An Unusual Case of Multiple Recurrent Upper Tract Urothelial Cancer in the Lower Moiety of a Complete Duplex Collecting System, treated with Organ Preserving Endourological Management

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Introduction: Transitional cell cancer (TCC) of the upper urinary tract has historically been treated with nephroureterectomy with very straight indication. During passing of the years, indications to a more conservative surgery have been proposed. We

believe that endoscopic management of TCC can be done wherever is surgically possible exactly like we do for non muscle invasive bladder cancer (NMIBC).

Patient: A male patient aged 74 years, with a smoking history of >2 packs/day for 20 years who discontinued smoking 3 years prior to presentation, with NMIBC for 11 years (TURBT×5 from 2004 to 2013 : TCC G2Ta (endovesical Mitomycin C 40 mg).

Past medical history revealed Hypertension, depression, diverticulosis.

Drug history: Tenormin, Seroquel, Trittico, Cardioaspirin, Normix monthly.

Results: 2008 RIRS right kidney: two Urothelial cancers, 3+6 mm renal pelvis and subjuntal ureter: cytology neg, biopsy G2Ta.

2009 RIRS right kidney: upper interpolar calyceal region: Cytology - dysplastic nuclear alterations.

2014 positive urine cytology and CTU, which showed two right renal pelvis filling defects

RIRS right kidney: two urothelial cancers, 1.5 cm each, in lower moiety, renal pelvis and subjuntal ureter in same locations as original tumors, G1Ta+negative cytology wash.

Surveillance cystoscopy and right RIRS 2015: Cytology negative and no visible urothelial recurrence. Patient to continue on regular protocol based endo-surveillance

Conclusions: Patients with a long heavy smoking history are and remain at risk of polychronotropic urothelial cancer and recurrences as demonstrated by this unusual case of recurrent tumors 6 years apart in the lower moiety of a complete right duplex collecting system but without grade or stage progression, especially when there is unstable urothelium as demonstrated by concurrent or previous recurrent bladder tumors. Nevertheless, these tumors can be managed safely and effectively by an endourological natural orifice renal preservation strategy (as shown in the video), incorporating regular surveillance provided they are not of high grade on multiple sampling, or there is no grade or stage progression.

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U2-4 Robotic Proximal Segmental Ureteral Excision and Reconstruction for Obstructing Intraluminal Metastatic Melanoma

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Introduction and Objective: Metastasis of malignant melanoma to the ureter is a rare phenomenon that has been reported fewer than 10 times in the literature. Our patient is a 58 year-old female with a history of choroidal melanoma of the eye status post radiotherapy. She developed liver metastases that were resected. She then underwent immunotherapy with ipilimumab. However, she subsequently developed a soft tissue mass of the left proximal ureter with proximal hydronephrosis. Due to concern for metastatic melanoma obstructing her left ureter, she presented to our clinic for management.

Methods: After discussion with the patient, we opted to pursue robot-assisted laparoscopic proximal segmental ureteral excision and reconstruction of this lesion that likely represented metastatic melanoma. We used the DaVinci SI surgical system (Intuitive Surgical, Inc.; Sunnyvale, CA). The approach was similar to that of a robot-assisted laparoscopic pyeloplasty. We first obtained a retrograde pyelogram and placed an open-ended catheter into the left ureter. The patient was then placed in the right lateral decubitus position, and the robot was docked over the left shoulder. A 12 mm camera port, three 8 mm robotic ports, and a 12 mm assistant port were utilized. The lesion was excised and a proximal ureteroureterostomy was performed over an internal stent.

Results: Total surgery time was 190 minutes. Estimated blood loss was 25 mL. Intraoperative frozen sections showed negative margins. The patient was discharged home on post-operative day #1. Pathology was consistent with metastatic melanoma. The stent was removed 4 weeks after surgery. Follow up renal ultrasound revealed resolution of the left hydronephrosis. Creatinine approximately 3 months after surgery was 0.8. The patient is currently undergoing consolidative chemotherapy but has no evidence of disease.

Conclusions: Robotic segmental excision and reanastomosis is a safe and effective method for resection of melanoma metastatic to the ureteral lumen. For physicians facile with robotic pyeloplasty, this method can easily be applied to many solitary upper tract metastases.

U2-5 Clinical factors affecting the laparoscopic surgery time for primary hyperaldosteronism

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Introduction: Primary hyperaldosteronism is characterized by drug-resistant hypertension and hypokalemia caused by a renin-independent overproduction of aldosterone. It is the most common cause of endocrine hypertension. In patients with proven lateralized forms of primary hyperaldosteronism, resulting from aldosterone producing adenoma or unilateral adrenal hyperplasia, adrenalectomy can cure hyperaldosteronism with high probability and a positive effect on hypertention. The aim of this study was to validate laparoscopic surgery results for primary hyperaldosteronism in our hospital and to identify the clinical factors affecting the laparoscopic surgery time.

Materials and Methods: We retrospectively reviewed the medical records of 68 patients who underwent unilateral laparoscopic adrenalectomy for primary hyperaldosteronism at the Department of Urology of Osaka University Hospital between January 2008 and June 2015. We assessed patients characteristics, operative procedure, operative approach, surgery time, the presence or absence of perioperative complications, postoperative course, and clinical effects.

Results: With regard to gender, males were 39 cases and females were 29 cases. The median BMI was 23.0 (15.7 – 35.1), the median surgery time was 193 minutes (100 – 354) and the median amount of bleeding was 20 ml. With regard to intraoperative complications, other organ injury was recognized in four cases. Postoperative normokalemia was detected in all cases. Patients who underwent conventional surgery (CS) was 48 cases, and patients who underwent reduced port surgery (RPS) was 20 cases. The median surgery time (CS vs RPS) was 196 minutes vs 184 minutes ($p=0.786$). For the surgical procedure, there was no significant difference. With regard to year of surgery in our hospital, we divided into two periods of 2008–2012(period1) and 2013–2015(period2). 44 patients underwent laparoscopic adrenetomy in period 1, and 24 patients in period 2. Among these two groups (period 1 vs period 2), the median surgery time was 213 minutes vs. 164 minutes ($p=0.001$). This data showed that surgery time was shortened significantly in the most recent three

years. Furthermore, according to the multiple regression analysis, only the period of surgery was identified as the factors affecting the laparoscopic surgery time ($p = 0.001$).
Conclusions: Unlike surgical procedures and patients characters, the year of surgery is mostly affecting the surgery time. It was suggested that progress has been made in understanding of the surgical procedure and surgical equipment.

U2-6 Tumor thrombus of inferior vena cava in patients with renal cell carcinoma – perioperative outcome of 6 patients after surgery

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Introduction: To evaluate perioperative outcome in patients with renal cell carcinoma (RCC) and tumor thrombus involving inferior vena cava (IVC) treated with nephrectomy and thrombectomy.
Method: We have identified 7 patients with RCC and IVC thrombus who underwent radical nephrectomy and thrombectomy between 2012 and 2015, we have analysed periopertaive outcome in term of surgical and oncological parameter.
Results: The mean age was 64 years (55–73), the mean tumor size was 8.2 cm (5.6–13), the mean of blood loss was 900 ml (500–2500), the mean operating time 215 minutes (159–300), the mean hospital stay 7.8 days (5–15), two patients had intraoperative bleeding and required blood transfusion, one patient developed postoperative chest infection. Three patients had adjuvant treatment, two had immunotherapyand one was treated with chemo-radiotherapy. The mean follow up was 10 months (3–36 months) with no mortality.
Conclusion: although this is a small cohort, it represents an encouraging experience in managing advanced RCC with IVC extension, our results shows good perioperative outcome, suggesting that aggressive surgical approach is reasonable option for selected cases with advanced RCC.

U2-7 Two cases of reduced port laparoscopic pyeloplasty and nephrolithotripsy performed simultaneously

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Introduction: Recently, the number of cases of reduced port surgery has been growing in the field of urology. This report describes our recent experience of two cases of ureteropelvic junction stenosis complicated with nephrolithiasis for which reduced port laparoscopic pyeloplasty and nephrolithotripsy were performed simultaneously.
Patients and Methods: Case 1 is that of a 12-year-old male who visited a local doctor because of macroscopic haematuria after playing soccer. Because left hydronephrosis and kidney stones were observed, the patient was referred to our department for treatment. Case 2 is that of a 24-year-old male in whom left hydronephrosis and kidney stones were detected during a detailed examination for haematochezia.
Result: Both cases exhibited an obstructive pattern in renography, and were judged as operable also considering the complication with nephrolithiasis. The procedure was started with an umbilical incision, placement of an EZ-Access, and insertion of two 5-mm ports. For Case 1, operation was performed with the intraoperative addition of one 3-mm port and two 2-mm ports. For Case 2, operation was performed with the intraoperative addition of two 3-mm ports. A flexible cystoscope was inserted via the EZ-Access into the renal pelvis; the stones were crushed using a Ho-YAG laser. Then the stone fragments were removed. Subsequently, pyeloplasty was performed using the Anderson–Hynes method. No intra-operative or post-operative complication was observed in either case.
Conclusion: Although only minimally invasive, reduced port surgery produces excellent aesthetic outcomes. The technique is regarded as beneficial especially for young patients.

U2-8 Can adrenal surgery be performed safely by a District General Hospital?

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Introduction: There is an increasing vogue for centralisation of specialist upper tract surgery. In our region, adrenal cases are discussed in both a local adrenal multidisciplinary meeting and a regional specialist meeting. All patients deemed suitable for adrenalectomy undergo assessment by the 'Adrenal Team'. This includes a biochemical workup by our endocrinology team as well as assessment by a dedicated anaesthetist. We have two dedicated surgeons who perform both minimally invasive and open procedures at our district general hospital as part of the adrenal team. The aim of our study was to review outcomes of adrenal surgery at our institution and assess whether we are providing an adequate service.
Methods: We conducted a retrospective cohort study of patients who underwent adrenalectomy between January 2010 and December 2014. The study group included 27 men and 28 women. Intraoperative outcomes including operative time and estimated blood loss were collected. We additionally recorded complications, histology and length of stay.
Results: Median age was 57 (Inter Quartile Range 46–67). 45 (82%) were laparoscopic and 10 were open procedures. The median operative time was 150 (IQR 90 to 180) minutes and the median estimated blood loss was 50 mls. There was one mortality in a patient who underwent laparoscopic adrenalectomy for metastatectomy. There were no other complications above Clavien grade two. Histology revealed: 25% phaeochromocytoma, 25% benign adenoma, 11% aldosterone secreting tumours, 11% metastases from other sites, 6% adrenal cortical tumours and 6% cushings. Median length of stay was three (IQR 2 to 6) days for the laparoscopic cohort and seven (IQR 6 to 8) days for the open cohort.
Conclusions: Our results illustrate the importance of a dedicated adrenal team regardless of setting. Adrenal surgery can be undertaken in a district general hospital by a dedicated adrenal team with acceptable outcomes.

U2-9 A novel method for retrograde ureteric stent insertion during laparoscopic ureterolithotomy without radiological guidance.

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Introduction: Laparoscopic ureterolithotomy (LU) remains an option for patients with hard stone core or large stone not well treated by minimally invasive methods. Laparoscopic insertion of ureteric stent into a small ureteric incision may be technically challenging and prolonged adjustment causes trauma to the incision. Retrograde insertion of ureteric stent reduces transperitoneal adjustment during LU but requires intraoperative radiological support, that adds to the logistical and time requirement. We present a video presentation on a novel method for retrograde placement of ureteric stent during LU without the need for intraoperative radiological guidance.
Materials and Methods: Rigid cystoscopy is first performed and the urethral length from the bladder neck to the glans penis is measured using the cytoscopy shealth. Ureteric catheterisation is performed and advanced to the level of obstruction. The urethral length is marked on the stent pusher. Transperitoneal LU is performed in lateral decubitus position. After stone removal, the ureteric catheter is exchanged for guide wire and the ureteric stent is advanced across the ureteric incision under direct vision to the stent pusher marking.
Result: A review of 4 patients who underwent LU and retrograde ureteric stenting in 2014 was performed. Stent placement was performed with minimal manipulation. All patients had drain output of less than 100 mls on post operative day 1. No additional procedures were required for stent adjustments with no significant (Clavien-Dindo grade 3) complications encountered. All ureteric stent were removed at outpatient cystoscopy.
Conclusion: Retrograde ureteric stent insertion during laparoscopic ureterolithtomy is feasible, reproducible and safe.

U2-10 Our experience in children with robot-assisted laparoscopic surgery: Position and trocar placements

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Introduction: Robot-assisted laparoscopic approachs are gaining popularity among urologists nowadays. Robot-assisted laparoscopic approach has found its place in pediatric urology. In our study, we aimed to share our robot-assisted laparoscopic surgical procedure.
Materials and methods: In June 2014 to the present, a total of 9 children who have made the robot-assisted laparoscopic procedures. We have made a table for cases of diagnosis, age, sex, and the operation names.(Table-1).
Results: In 2 cases, robot-assisted laparoscopic simple left nephroureterectomy (RALSN) who diagnosed atrophic left kidney, in 3 cases, robot-assisted laparoscopic uretheral reimplantation (RALUR) for VUR, RALUR in 1 case for ureterovesical obstruction, in 2 cases transmezocolic robot-assisted laparoscopic pyeloplasty (RALP) and in 1 case for neurogenic bladder robot assisted laparoscopic augmentatiton ileocystoplasty (RALAI) operations have been performed.
Conclusion: The efficacy and safety of robotic surgery are available in the literature for pediatric studies and it was also rapidly accepted in the world. Robotic technology provides additional benefits to surgeons in reconstructive urologic procedures. Similar results were reported in the literature by robotic surgery compared with open surgery.

	Diagnosis	Age	Gender	Surgery
1	Left atrophic kidney	11	F	RALSN
2	Left VUR	5	M	RALUR
3	Left VUR	8	F	RALUR
4	Left UV Obstruction	5	M	RALUR
5	Bilateral VUR	10	F	RALUR
6	Neurogenic bladder	11	M	RALAI
7	Left atrophic kidney	13	F	RALSN
8	Left UP obstruction	5	M	RALP
9	Right UP obstruction	12	F	RALP

U2-11 Robot Asisted Laparascopic Blind Ending Ureterectomy, Partial Nephrectomy to the Dysplastic Part of the Left Kidney and Menagement with Transurethral Incision of Multipl Calculi in a Ureterocele Which Belongs To The Blind Ending Branch of Complete Ureteral Duplication

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Introduction and Objectives: Blind-ending ureteral duplication is an extremely rare congenital disorder of ureteric development, with only a few cases reported in the literature until now. We firstly performed to the patient, referred with long standing left flank pain and intermittent haematuria, transurethral incision for the ureterocele with multiple calculi, which also belongs to the blind ending branch of complete ureteral duplication. Robot asisted laparoscopic blind-ending ureterectomy and partial nephrectomy to the dysplastic part of the left kidney also performed to him as a second stage procedure for his treatment.
Methods: A 21- year-old male patient presented outpatient urology clinic for his long standing left flank pain and intermittent hematuria. Plain radiograph demonstrated multiple calculi in the bladder and distal part of the left ureter. Ultrasound and CT imagings revealed two renal pelvis with bifid ureter, mild ureterohydronephrosis on the right side. Multiple calculi in ureterocele and distal part of the left ureter and mild ureterohydronephrosis on the left side also demonstrated by CT urography. The upper pole of the left kidney, however, was small and dysplastic in the CT urography images. His cystoscopic examination revealed one normally positioned ureteric orifice on the right side but surprisingly there were two ureteric orifices on the left side, one of them was related with ureterocele, which one was draining inferomedially and the other one was on the craniolateral position in the bladder. Then transurethral incision of ureterocele was performed by cold knife and seventy two cube shaped stones were extracted. After that retrograde pyelography on the craniolaterally placed ureter demonstrated a patent ureter with opacification of pelvicalyceal system. However, retrograde pyelography which performed through the other ureteric orifice revealed a long blind ending ureter without any opacification of the pelvicalycea system. Because of, voiding cystouretrography revealed vesicoureteral reflux on the blind ending branch of the complete ureteral duplication at the second months of surgery. We performed robot asisted laparoscopic blind-ending ureterectomy and partial nephrectomy to the dysplastic part of the left kidney also performed to him as a second stage procedure for his treatment.
Results: Total operating time was approximately 270 minutes with estimated blood loss of 300 ml for two surgeries. Histopathological examination was compatible with blind ending ureter and dysplastic kidney. The convalescence was uneventful and the patient discharged 4 days later after robotic surgery. His urethral catheter withdrawn 7th day of surgery.

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Conclusion: Surgeons must be aware of the ureteral variations and their complications. Robot asisted laparoscopic approach for the treatment of blind-ending ureter is a minimal invasive and valid treatment choice to the traditional surgery.

U2-12 Reduced port nephrectomy through a Pfannenstiel incision for ALK-positive renal cell carcinoma of a young woman.

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A 19-year-old woman, she was diagnosed Hodgkin lymphoma of neck and found suffering from a renal tumor it sized 6 cm unexpectedly. After the chemotherapy for Hodgkin lymphoma, taking into account her age, we decided that we select reduced port nephrectomy through a Pfannenstiel incision for renal tumor. We cut on horizontal line it sized 5 cm just above the pubic symphysis and set the Gelpoint®. Then, we set the 12 mm and 10 mm port on this Gelpoint®. Furthermore, we added the 12 mm camera port at her umbilicus and two 3 mm ports. Operative time was 6:36 and bleeding was a little. No complication was caused during the perioperative period, so she left hospital ten days later of the operation. The pathological diagnosis of renal tumor was renal cell carcinoma, unclassified (ALK-positive). It is very rare.

Recently, the utility of Reduced port surgery is reported, because it has merits the ope-scar is small and few. Also in this case, the biggest scar above the pubic symphysis is hidden by her pants, and other scars are unremarkable because they are small. We consider that this operation is very significant and minimally invasive in terms of fine cosmetic results.

U2-13 Laparoscopic extraperitoneal adenomectomy for benign prostatic hyperplasia: the results after one year of follow-up our initial 120 patients.

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Purpose: The report is about our experience with the laparoscopic extraperitoneal adenomectomy.
Materials and Methods: In total, 120 patients were submitted to laparoscopic extraperitoneal adenomectomy with transvesical approach. The average adenoma weight was 90,25 gr, mean operative time was 131 minutes, average amount blood lost during the operation was 80 ml, the presence or absence of pain in postoperative course, the mean time of catheter, the mean recovery period and postoperative results after two months and after one year of follow-up were recorded.
Results: No patients required transfusion or conversion to open surgery. No complication intraoperative and postoperative was reported. The mobilization and supply of patient was the first postoperative day. The continuous bladder irrigation was maintained only the operation's day in the 25 patients (20,83%), in 95 patients (79,16%) continuous bladder irrigation was not positioned. The postoperative pain was absent. The bladder catheter was maintained 7 days for 10 patients (8,3%), 5 days for 50 patients (41,6%) and 3 days for 60 patients (50%). All patients urinated spontaneously after removal of the catheter. Ten patients (8,3%) were discharge from hospital at seventh postoperative day without catheter, 50 patients (77,5%) were discharge at fifth postoperative day without catheter, 20 patients (16,6%) were discharge at fourth postoperative day without catheter, 23 patients (19,16%) were discharge at third postoperative day without catheter, 17 patients (14,16%) were discharge at second postoperative day with bladder catheter. This was removed on fifth postoperative day in clinic office. The uroflussometry and the bladder residual voiding ultrasound, performed 60 and 365 days after procedure, showed for all patients a flow max superior 15 ml/sec and negative bladder residual. Only 34 patients (28,33%) during 4 – 6 postoperative months, had urinary frequency and urgency. These were resolved with anticolinergic therapy. No stress urinary incontinence was reported. No patient presented in the follow-up urethral stenosis and cicatricial stenosis of bladder neck.
Conclusion: our results confirmed results of other studies; enucleation of large BPH can be performed with a laparoscopic approach and patients have all benefits of mini-invasive surgery. The laparoscopic extraperitoneal adenomectomy with transvesical approach is reasonable alternative to open simple prostatectomy. More experience should be gained by other groups, also comparing among laparoscopic extraperitoneal adenomectomy to the other the mini-invasive endoscopic techniques.

U2-14 Laparoscopic radical nephrectomy with inferior vena cava thrombectomy: highlight of key surgical steps

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Objective: Vascular involvement in the form of renal vein (RV) or inferior vena cava (IVC) thrombus can be seen in 4–10% of patients presented with RCC. In patients without presence of metastasis, surgical treatment in the form of radical nephrectomy remains the treatment of choice with 5-year survival rates of 45–70%.
Materials and Methods: In our study, we are reporting a case of patient with RCC and level I IVC thrombus treated with laparoscopy. Our patient is a 72 years old man with underlying comorbidity of hypertension and chronic kidney disease (CKD) presented with right-sided RCC. The CT scan done showed a large right renal upper pole tumor measuring 8.4x5.2 cm with level I IVC thrombus (Figure 1). There were no regional lymphadenopathy and the staging scans were negative.
Results: The operative time was 124 minutes and blood loss was minimal. The patient was progressed to diet on POD 1 with bowel movement on POD 2. There was no significant change in the pre and post-operative glomerular filtration rate (GFR). The surgical drain was removed on POD2. The patient was discharged well on POD 5. There are no perioperative complications. The pathology was pT3bN0M0 Fuhrman grade II clear cell RCC.
Conclusions: As a conclusion, laparoscopic radical nephrectomy and IVC thrombectomy is a complex and technically demanding surgery. With advancement of surgical skills as well as technology, more cases of minimally invasive laparoscopic radical nephrectomy and IVC thrombectomy can performed to improve the outcomes of these patients.

U2-15 Laparoscopic adrenalectomy for contralateral adrenal metastasis of renal cell cancer arising from a horseshoe kidney.

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The anatomical position of the adrenal gland in the horseshoe kidney is definitely different from the normal pattern. Therefore, it is thought to be difficult to perform an adrenalectomy in the such patient. Here, we report an initial case of laparoscopic adrenalectomy for the matastasis of renal cell carcinoma (RCC) arising from a horseshoe kidney. A 71-year-old female patient with a right adrenal mass detected by computed tomography (CT) was referred to our institution. She had undergone a radical heminephrectomy for an 11-cm renal cell carcinoma (RCC) in the left moiety of a horseshoe kidney 33 months prior. The adrenal tumor was sized 3 cm in diameter, and diagnosed the metastasis of RCC. A laparoscopic adrenalectomy was performed for the adrenal metastasis. We have chosen the retroperitoneal approach because it has been supposed that in the manner, the working space does not extend into the peritoneal space to adhesion during the previous surgery. The most difficult point of this operation is that the landmarks in the retroperitoneal space, such as the kidney, vena cava, and gonadal vein could not be accurate located. However, once the adrenal gland was detected, the subsequent procedures to the resection were not complicated. The operative time was 173 minutes with minimal blood loss. There were no complications during the perioperative period. The patient was discharged on the eighth postoperative day. To our knowledge, this is the first report of a laparoscopic adrenalectomy for the treatment of a metastasis of renal cell carcinoma in a horseshoe kidney.

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U2-16 Simultaneous Total Endoscopic Bilateral Nephroureterectomy with Bladder Cuff Excision for Native Kidneys in Renal Transplant Recipients: Initial Experience in A Single-center

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Purpose: We present our single-center initial experience and evaluate the feasibility of total endoscopic bilateral nephroureterectomy (BNU) with bladder cuff (BC) excision for native kidneys in renal transplant (RTx) recipients.
Materials and Methods: From August 2008 to January 2014, nine RTx recipients underwent simultaneous retroperitoneal laparoscopic BNU (RPLBNU) with BC excision for clinically presumed native localized upper urinary tract urothelial carcinoma (UUT-UC) at our institute. There were four female recipients; the mean age was 50.5 (45–58) years and the mean body mass index (BMI) was 24.3 (21.5–28.4) kg/m^2. Perioperative and pathological data and oncological outcomes were collected and analyzed.
Results: All the procedures were completed successfully without open conversion. None recipient experienced complications. The mean estimated blood loss was 112.5 (50–200) mL, and none recipient need blood transfusion. The mean morphine equivalents were 10.0 (0–20) mg. The mean operating room time was 284.3 (257–300) minutes, mean time to ambulation 3.0 (2–4) days, and mean hospital stay 8.8 (7–11) days. All recipients in our series resumed oral intake of the immunosuppressant on postoperative day 1. Pathologic findings confirmed UUT-UC in eight recipients, and atypical hyperplasia in another recipient. With the mean follow-up of 29.4 (12–72) months, none of the recipients developed recurrence and distant metastasis.
Conclusion: In our experience, total endoscopic RPLBNU with BC excision is a technically feasible and safe alternative for native kidneys in RTx recipients. A longer follow-up is required to demonstrate the oncological efficacy of this minimally invasive procedure.

U2-17 Laparoscopic Partial Nephrectomy for multiple tumors

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Background: NEPHRON sparing surgery(NSS) is established as the standard of care for most surgical small renal tumors when technically feasible. While the majority of sporadic renal tumors are solitary, multifocality has been reported in 5.4% to 25% of patients with tumors smaller than 5 cm. We present a video where we approach, through laparoscopy, 4 tumors on the same kidney.
Case study: Male, 58 y, went through an abdominal MRI that pointed a total of 4 nodules on his left kidney. In relation to the classification and size of the tumors: both found in the inferior pole of the left kidney had 5,8 and 5,6 cm at ther largest diameter, being classified 7x and 6a under the RENAL score; the one mesorrenal, measuring 2,8 cm and the other one in the superior pole, measuring 2,0 cm were both classified as 5a. The aspect suggested a papillary cancer due to high cellularity and low vascularization. The patient was subjected to a partial nephrectomy under ischemia to remove the two largest tumors (inferior pole) and a resection without clamping of the other two ipsilateral tumors.
Results: We divided the surgery in 2 stages. In the first one, we approached the 2 tumors located on the inferior pole inducing warm ischemia, whereas in the second stage we resected the 2 remaining tumors using the technique without clamping. The surgery lasted 220 minutes, with 800 mL of blood loss, not requiring blood transfusion. The ischemia time was 35 minutes. The histopathological analysis confirmed that the 4 tumors were papillary cancer, with free margins.
Conclusion: NSS can be performed and should be tried in patients with multiple kidney tumors, no matter if it will be open, by laparoscopy or robot assisted. It can be made either using or not clamping of the hilus, depending on the RENAL score

U2-18 Radical Nephrectomy with Inferior Vena Cava Thrombectomy for T3B Renal Cell Carcinoma: Are there any changes in 2015?

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Introduction: Laparoscopic radical nephrectomy is acknowledged as the gold standard of treatment of renal cell carcinoma. However the majority of leading medical institutions consider a tumor thrombus in IVC to be a contraindication to endoscopic surgery. Is that so in 2015? Here is our view of this problem based on literature review and our own experience in performing laparoscopic radical nephrectomy and thrombectomy from IVC

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in renal cell carcinoma patients with the second stage tumor thrombus.
Materials and methods: Within the period from April 2013 to April 2015 we performed laparoscopic radical nephrectomies with thrombectomy from IVC in six T3b renal cell carcinoma patients with a tumor thrombus in IVC. In 5 patients the tumor affected the right kidney and in one patient – the left. By the time of the surgery two patients had developed distant metastases. In three patients we applied the transperitoneal approach and three other patients underwent retroperitoneal surgery. In all cases the blood flow in the IVC and the left renal vein was controlled by means of plastic tourniquets and Satinsky vascular clamps or hemostatic ''bulldog'' forceps. After thrombectomy we excised the IVC wall and closed the defect with uninterrupted Prolene sutures.
Results: Laparoscopic radical nephrectomy and thrombectomy were successfully performed in all the patients without requiring open surgery. The average EBL was 450 ml. None of the patients have developed significant complications in the early postoperative period. During the follow-up period of 3–24 months four patients have shown no signs of local recurrences or distant metastases. One patient died 11 months after surgery.
Conclusion: Laparoscopic radical nephrectomy with IVC thrombectomy via trans- or retroperitoneal approach in renal cell carcinoma patients with the second stage tumor thrombus is a safe and feasible procedure that can be applied in selected patients. Long-term follow-up and multicenter studies are needed.

U2-19 The application of ''Renal pedicle rotation'' method in retroperitoneal laparoscopic partial nephrectomy for renal ventral tumors

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Objectives: To present preliminary experience of ''renal pedicle rotation'' method in retroperitoneal laparoscopic partial nephrectomy (RLPN) for renal ventral tumors.
Methods: A retrospective analysis of renal surgery database about patients undergoing RLPN was conducted. We identified 14 consecutive cases of all the surgeries from December 2013 to October 2014 with renal ventral tumors. The 14 surgeries were all in the application of ''Renal pedicle rotation'' method, an intraoperative skill in which surgeons rotates the kidney on renal pedicle axis after separating renal artery and vein for a better tumor exposure.
Results: A total of 14 patients underwent RLPN. All surgeries were successful without conversion to radical nephrectomy or open partial nephrectomy. The mean operative time was 171.1 + 47.2 min (range 83 to 246), the mean warm ischemia time was 15.9 + 9.8 min (range 7 to 35) and the mean estimated blood loss (EBL) was 89.3 + 102.2 ml (range 10 to 300). Mean postoperative hospital stay was 6.2 + 1.9 days (range 4 to 10) and mean retroperitoneal drainage was 4.2 + 1.4 days (range 2 to 8). No intraoperative complications occurred. Postoperative complications developed in four patients. All patients had negative margins and pathological examination revealed 10 (71.4%) clear cell carcinomas, 2 (14.2%) epithelial renal angiomyolipoma, 1 (7.1%) papillary carcinoma and 1 (7.1%) nephrotuberculosis. The review of the early oncologic outcomes revealed no local recurrence and distant metastasis.
Conclusion: The ''Renal pedicle rotation'' method might be a feasible and safe procedure to get a better tumor exposure for incision and suture in renal ventral tumors RLPN surgeries with acceptable postoperative outcomes.

U2-20 Initial experiences of complete non-clamping partial nephrectomy under normal blood pressure

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Introduction: We have reported the good perioperative result since we started complete non-clamping partial nephrectomy on 2012. The most controversial issue in this procedure is how to secure the hemostasis. There has been a lot of tips for hemostasis reported after the removal of tumor from renal parenchyma. We will mainly demonstrate our steps against bleeding during complete non-clamping partial nephrectomy.
Subjects and Method: Subjects are 17 cases who underwent complete non-clamping partial nephrectomy under normal blood pressure (mean age 58.2, mean tumor size 22.1 mm). Hemostasis from renal parenchyma was initially controlled using bipolar device, sealing device and/or argon beam coagulator, and then completed using running suture of 2-0 if necessary. The sliding-clip renorraphy technique using Hem-o-lok(®) clips was the step for parenchymal closure. The steps of procedure will be demonstrated mainly focused on hematostatic step.
Results: The exposure of renal hilum was done for the first case, a T1b tumor, all of three retroperitoneal approach cases and a complete endophytic hilar tumor. Hilar preparation was usually not done in recent cases. Hemostatic agent was used for initial 4 cases, but no longer used currently. Except for one complete endophytic hilar tumor, pneumoperitoneum time was 43–127 min (median 75 min) and estimate blood loss was 0–280 ml (median 75 ml). Time for the removal of tumor was 2–30 min (median 8 min) and 5–54 min (median 18) was taken for the renorraphy (time for waiting included due to checking frozen section.). Fibrin glue was used for 5 cases, but no longer used. Drain tube was placed for 8 cases based on the preference. No postoperative complication was recorded.
Discussion: Laparoscopic partial nephrectomy is still one of the challenging procedure for urologist because of preparation, bleeding and renorraphy. Hilar preparation is usually reported in brief because it is not problematic for the skilled surgeon although it is not a simple procedure, Bleeding could be controlled under complete vessel clamp, but it may cause the loss of renal function. Renorraphy is usually pressed for limited ischemia time. Non-clamping partial nephrectomy is supposed to be the most challenging procedure among a lot of variations of partial nephrectomy. However, based on our results, non-clamping partial nephrectomy could be safely done without any compromise.

U2-21 Single tract percutaneous nephrolithotomy combined with flexible ureteroscopy in the treatment of residual kidney calculi

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Abstract Introduction: Percutaneous nephrolithotomy(PCNL) is the main method to remove renal calculi, while some

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complicated renal calculi still present after one PCNL. We performed single tract percutaneous nephrolithotomy(PCNL) combined with flexible ureteroscopy in the treatment of residual kidney calculi in the second stage to deal with the residual calculi.
Method: From Jan 2012 to Jan 2015, a total of 36 residual kidney calculi cases were treated with single tract percutaneous nephrolithotomy combined with flexible ureteroscopy in second stage by the same 2 surgeons. The residual calculi were all beyond sight range through the nephrostomy tract in first PCNL. The secondary surgery was performed 3 to 5 days after the first PCNL. Patients were placed at recumbent position. The percutaneous nephrolithotomy were performed through the previous nephrostomy tract. A fiber or digital flexible ureteroscopy were inserted through ureter to move the residual calculi with graspers, while most of residual calculi were disintegrated and removed with nephrostomy tract.
Results: All procedure were completed successfully without establishing another nephrostomy tract. No noted complication occurred. The overall stone free rate were 94%(34/36). The patients were discharged 2.2 ± 0.48 days after the secondary surgery.
Conclusion: Single tract percutaneous nephrolithotomy combined with flexible ureteroscopy is safe and effective to remove residual kidney calculi.

U2-22 Laparoscopic Nephrectomy for Renal masses more than 10 cm – How safe is it? A single UK Centre Experience

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Introduction: Laparoscopic Radical Nephrectomy (LRN) for large renal tumours can be technically challenging. However with advances in technology higher goals are set to offer these patients a less morbid operation and a speedy recovery. We analyse our experience of the cohort of patients who underwent laparoscopic Nephrectomy for lesions greater than 10 cm.
Methods: Patients undergoing laparoscopic nephrectomy during 2010–2014 were identified from existing database. Prospective data collection was done including patient demographics, operative outcomes, blood loss, transfusion rate, inpatient stay and follow up.
Results: A total of 23 patients underwent laparoscopic nephrectomy for renal mass greater than 10 cm in the study period. Majority of patients (44%) presented with haematuria. Median age of patients was 64.5 years, with 74% of them being male. In 7 patients procedure was cytoreductive due to the presence of coexisting metastatic disease. Mean tumour size was 11.7 cm. Mean operative time was 222 minutes. 6 (26%) patients needed hand assisted laparoscopy. One patient had open conversion which was due to 19 cm mass with IVC thrombus. Only 2 patients needed perioperative transfusions. Our average inpatient stay was 3.2 days (excluding one patient who stayed longer for palliative and social reasons) with majority staying only 2 days. None of the patients had any major post operative complication needing surgical intervention. There was no perioperative mortality.
Conclusion: With an experienced laparoscopic surgeon the LN approach is a safe option for the surgical removal of renal tumours sized at 10 cm or greater. Proven advantages over open approach are less morbidity, shorter hospital stay and early recovery. Our results are comparable to published data.

U2-23 Video-Rate Structured Illumination Microscopy to Diagnose Presence of Kidney Cancer on 18- Gauge Core Needle Renal Biopsy

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Introduction: Point of care assessment of renal biopsies is an invaluable tool, particularly with the growing interest in office-based biopsies of renal tumors. We present a novel imaging technique used for rapid histological diagnosis of renal cell carcinoma using video-rate structured illumination microscopy (VR-SIM).
Materials and Methods: After institutional review board approval, 15 total biopsies were obtained from 8 consecutive patients undergoing either partial or radical nephrectomy from the resected renal tissue after specimen removal. Biopsy specimens were sprayed with a dual topical fluorescent stain and VR-SIM images were obtained using a 4.2 megapixel, high-speed scientific CMOS camera with fast ferroelectric spatial light modulators (Figure 1). Biopsy specimens were subsequently fixed and analyzed using standard hematoxylin and eosin (H&E) histopathologic methods. One blinded pathologist reviewed all VR-SIM images and H&E specimens and the presence of cancer was correlated between the two modalities and final pathology result.
Results: Of the 8 patients, 5 underwent robotic partial nephrectomy for suspicious renal masses and 3 laparoscopic nephrectomies (1 for nonfunctioning kidney and two for suspected malignancy). In total, 15 biopsy specimens were available for review while one specimen was not assessed due to significant fragmentation at time of collection. 7 specimens were determined to be malignant on H&E, while 8 represented benign renal tissue. 6 of the 7 malignant specimens were diagnosed by VR-SIM, with an additional benign specimen being assessed as malignant. The correlation between modalities is shown in table 1, with a sensitivity and specificity of VR-SIM of 85.7% and 87.5% respectively.
Conclusions: VR-SIM is a promising and practical method for point of care renal biopsy assessment. This may translate into the ability to rapidly assess sufficiency of biopsy specimens and enable immediate diagnostic capability to aid in counseling patients regarding management options.

	Pos H&E	Neg H&E
Pos VR-SIM	6	1
Neg VR-SIM	1	7

Table 1: Pos=+cancer, Neg=benign

U2-24 Arterial Clamping Time: Advantage for Retroperitoneal Laparoscopic Nephroureterectomy in Patient with Upper Urinary Tract Urothelial Carcinoma

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Indroduction: We compared the perioperative outcomes of retroperitoneal procedure with those of transperitoneal procedure in patient who underwent laparoscopic nephroureterectomy (NUx)

Material and methods: A total 26 patients with upper urothelial caricinoma underwent transperitoneal (n = 10) or retroperitoneal (n = 16) laparoscopic NUx from November 2013 to May 2015. Initial eight patients and other two patients whose the retroperitoneal space is closely packed with large hydronephrosis were performed by transperitoneal approach. Others were performed by retroperitoneal approach. After laparoscopic nephrectomy, distal ureter dissection and open bladder cuff excision were performed through the muscle sparing modified Gibson incision. All data were retrospectively reviewed.
Results: Operation time was not different between two groups (248.0 ± 45.5 min. vs. 294 ± 53.8 min., p = 0.105). Estimated blood loss was not different, either (780.0 ± 465.0 ml vs. 743 ± 482.0 ml, p = 1.000). However, clamping time of renal artery was much shorter in retroperitoneal procedure (68.4 ± 6.5 min vs. 34.1 ± 8.5 min, p = 0.003). The mean return time to normal activity was 8.8 ± 2.1 days in transperitoneal procedure, 12.5 ± 3.5 days in retroperitoneal procedure (p = 0.055). Interestingly, mean time to oral intake was relatively shorter in retroperitoneal procedure (2.4 ± 0.9 days vs. 1.5 ± 0.8 days, p = 0.057). Post-operative minor complications such as wound dehiscence were managed conservatively. Two major complications in retroperitoneal procedure - one pancreatic tail injury, one chyle leakage - were managed conservatively, too.
Conclusion: Perioperative outcomes were competitive between two procedures. However, arterial clamping time was more shorter at retroperitoneal approach. And patients with retroperitoneal approach were permitted to oral intake more earlier.

U2-25 Management of major vessel injury in laparoscopic urological procedures

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Introduction: One of the most dangerous complications in laparoscopic surgery is injury to major vessels. Conversion to open surgery requires a considerable amount of time and may lead to massive haemorrhage. That is why finding ways to manage these complications laparoscopically may result in increased patient safety and prevent secondary complications.
Materials and methods: We analysed 471 laparoscopic procedures performed within the period from January 2010 to December 2014. Major vessel injury occurred in four cases comprising one case of injury to inferior vena cava, a detachment of a renal artery, a gonadal vein injury and an injury to inferior mesenteric artery.
Results: In all cases the complications were repaired laparoscopically. In one case we used hand assistance for temporary occlusion of the defect in the IVC wall. In the case of accidental clipping of the inferior mesenteric artery the clip was successfully removed. Satisfactory blood flow was proved by intraoperative ultrasound Doppler scanning by means of a laparoscopic probe. The EBL equaled 350 ml (150–850 ml). None of the patients required blood transfusion. The mean hospital stay was 9 days (3–15 days). No further complications occurred in the early or late postoperative period.
Conclusion: Managing of major vessel injury in the course of laparoscopic procedures without conversion to open surgery is possible. Avoiding open approach helps save time, prevent dramatic blood loss and decrease the need for blood transfusion.

U2-26 Can you implement international guidelines recommending biopsy of small renal masses before ablation in the UK?

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Introduction: Prospective biopsy of small renal masses undergoing ablation is recommended in the EAU and AUA guidelines. NICE note that interpretation of data arising from patients undergoing ablation is problematic without prospective biopsy sampling. Many centres performing ablation only offer biopsy at the time of treatment, citing difficulty in patient consent as a reason for not performing this prospectively.
Patients and methods: From 28/4/14, patients with a small renal mass suitable for ablation were offered biopsy at a separate sitting before cryoablation (CYA) in line with international guidelines. A retrospective review of the patients' willingness to consent for prospective biopsy was undertaken.
Results: 22 patients were included and of these, 18 consented to biopsy before ablation; 14 had a malignant diagnosis (10 clear cell, 3 papillary, 1 chromophobe) and 3 benign (oncocytoma), with one nondiagnostic. Four patients chose to have a simultaneous biopsy and treatment. The three patients with oncocytoma did not proceed to CYA. The patient with a nondiagnostic biopsy wished treatment despite no definitive histological diagnosis and consented to treatment fully cognizant of the biopsy result.
Conclusions: In our cohort, 82% of patients were willing to undertake prospective biopsy of their small renal mass before ablation. Lack of patient willingness should not be cited as a reason for not complying with international guidelines regarding prospective biopsy of small renal masses in those suitable for ablation. Awareness of the histological diagnosis allows both patient and clinican to make a better informed choice over the potential treatment options.

U2-27 "Lap. Nephroureterectomy: How to keep Oncological principle intact"

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Introduction: Nephroureterectomy with cuff of urinary bladder is the treatment for upper tract Transitional cell carcinoma. To maintain oncological principle it is important to close lower ureter first. There are so many methods of closing the lower ureter. Among those methods Pneumovesicum approach have superiority to close lower ureter for keeping oncological principle intact. Here we reported initial experiences of Pneumovesicum approach to en-bloc laparoscopic nephroureterectomy with bladder cuff excision for upper tract urothelial in comparison to other method.
Method: From January 2010 to July 2014, 9 patients with upper tract urothelial cancer were underwent Pneumovesicum approach for Laparoscopic Nephroureterectomy with bladder cuff. 9 patients were underwent incision around the ureteric orifice by Collins knife. For Pneumovesicum approach Laparoscopic ports were inserted into the bladder via a suprapubic route, and carbon dioxide Pneumovesicum was induced. First ureteric orifice of dissection site closed by vicryl running suture then Laparoscopic

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dissection of the lower ureter and excision of the bladder cuff were performed. The bladder defect was closed by laparoscopic suturing, and standard Laparoscopic Nephroureterectomy was followed. Those cases where periureteric bladder cup dissected by Collins knife lower ureter pushed outside bladder then conventional laparoscopic Nephroureterectomy performed after clipping lower ureter.
Results: Age range was 50- 75 years. Among the 18 patients 10 had renal pelvic tumor, 6 had upper ureter tumor, 2 had midureter tumor. 14 patients had T1 and 4 patients had T2 diseases. All of the patients had Grade II (GII) diseases. Average operation time was 180 minutes. Average hospital stay was 3 days. Analgesic requirement was single dose of inj. Pethedine as per body weight. One patient develop urinary bladder Tumor in follow up period among those lower ureter dissected by Collins knife. No significant per operative and post operative complication were observed.
Conclusion: Pneumovesicum approach for Laparoscopic Nephroureterectomy with bladder cuff is safe and effective. Pneumovesicum approach strictly maintains the oncological principle. Hospital stay and return to normal activity is faster than open procedure. Study of large number of cases in different institutes are required for further comment.

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U2-28 Laparoscopic ureteroneocystostomy with psoas hitch following distal ureterectomy for ureter cancer

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Introduction: We reviewed the feasibility of laparoscopic ureteroneocystostomy with psoas hitch in ureter cancer. Video abstract will show the laparoscopic procedure step by step.
Materials and Methods: We conducted a retrospective review of 3 laparoscopic procedures of ureteroneocystostomy with psoas hitch following distal ureterectomy. All patients (range, 65 to 77 years) had distal low-grade ureteric malignancies. Two cases occurred in right side, one case occurred in left side. The mean tumor size was 1.5 cm (range, 1 to 2.2 cm). Before laparoscopic surgery, ureteroscopic biopsy and CT examination were done in all cases. The laparoscopic distal ureter segmental resection with bladder cuff resection was done in all patients. The proximal ureteric margin was estimated with simultaneous ureteroscopic examination. After segmental resection of distal ureter, the laparoscopic ureteroneocystostomy was combined with psoas hitch on the affected side.
Results: The laparoscopic ureteral reimplantations with psoas hitch in patients with distal ureteral cancer were successful in all patients. The mean operation time was 156 minutes (range, 127 to 189 minutes). In all patients, short-term recurrence free survivals were confirmed by CT scan and intravenous pyelography conducted 3 months after the operation. The mean follow-up of the entire group was 12 months (range, 4 to 41 months). We noted no major or minor complications over the follow-up period.
Conclusion: The technique of laparoscopic ureteroneocystostomy for malignant ureteral lesion continues to evolve. Simple modifications of laparoscopic ureteroneocystostomy with psoas hitch following distal ureterectomy, and simultaneous ureteroscope will be crucial to the ease of performance and a successful outcome.

U2-29 Laparoscopic excision of the retroperitoneal paraaortic paraganglioma

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Introduction: Retroperitoneal paragangliomas are rare neuroendocrine tumors that originated from neural crest. They are mostly benign tumors, but malignant ones can be aggressive and can lead to metastasis. The main treatment option of paragangliomas is complete resection of retroperitoneal mass. Retroperitoneal paragangliomas usually locates between abdominal aorta and vena cava inferior. They usually does not invase these two vessels. With careful and thoughtful dissection, excision may be possible from these structures. After surgery, follow-up is important in terms of potential malignancy. In this presentation, we aimed to present our experience in the laparoscopic retroperitoneal mass excision to 67 years old female patient who has $\sim 8 \times 7$ cm mass which is located inferior to the left renal pedicle and anterior to the aorta.
Case: On November 2011, in our clinic incomplete TUR-bladder was performed to $\sim$ 5x7 cm mass which was located on the apex of the bladder of patient who had been suffering from particularly post-voiding hypertension episodes. Upon detection of paraganglioma and deep muscle invasion in pathology, partial cystectomy was performed to the apex of her bladder in April 2012. The second pathology specimen was also resulted as paraganglionoma. In May 2015 asymptomatic patient admitted for routine control and left retroperitoneal mass was detected. Preoperative evaluation with MR imaging, vascular with anatomical structures were evaluated in more detail. About 46x65x52 mm (APxCCxTR) sized nodular mass lesion was drawing attention in the para-aortic field at the level of middle part of the left kidney. This lesions was partially displacing up the left renal artery. Patient was consulted to the endocrinology department for perioperative recommendations. When 24-hour urine VMA, dopamine, normetanefrine and methanephrine resulted as normal the mass was considered as nonfunctional paraganglioma and laparoscopic retroperitoneal mass excision was planned. Operation time was 85 minutes and blood loss was calculated as $\sim$300 ml. Intraoperative no complications were observed. 1 unit of erythrocyte suspension were administered in the postoperative period. Patient was discharged on the fourth day of surgery and histopathological diagnosis was reported as paraganglionoma.
Result: With less length of stay and morbidity nearby cosmetic benefits; laparoscopic totally excision is a surgical method which may be preferred for retroperitoneal para-aortic paraganglionomas in experienced centers.

U2-30 Laparoscopic partial nephrectomy for a renal tumour during pregnancy.

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Introduction: The laparoscopic partial nephrectomy is widely used in non-pregnant patients. We found no literature report of laparoscopic partial nephrectomy during pregnancy by the time being.
Objective: Our objective was to evaluate the feasibility of laparoscopic partial nephrectomy in a pregnant patient

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Material and Methods: A 31 year old pregnant patient presented in our service during the first trimester of pregnancy (8 weeks) with a left kidney tumour of 6/6/4 cm, situated on the anterior aspect of the kidney, over 50% exophytic, that was discovered incidentally during the pregnancy scan.

The medical history revealed 3 deliveries at term (2 by cesarean section) and one ectopic pregnancy for which she underwent open salpingectomy.

We presented the patient with her treatment options: active surveillance until term, or organ sparing surgery during her pregnancy. She decided not to wait and expressed her wish for a minimal invasive approach.

The surgical procedure was deferred until the 2nd trimester(16 weeks), when according to the obstetrician's and anesthesiologist's recommendation, the risks of a spontaneous abortion are significantly reduced and the effect of general anaesthesia on the foetus is less hazardous.

We would like to highlight the particularities of this case: pregnant patient, surgical history with possible adhesions and a left sided tumour (the required lateral flank position increasing pressure on the vena cava).

The preoperative ultrasound confirmed a viable foetus with no visible morphological anomalies.

We performed a trans-peritoneal laparoscopic partial nephrectomy, using 3 trocars and a Satinsky clamp introduced directly through the abdominal wall.

Results: The procedure was 102 minutes long, with 21 minutes of warm ischemia and blood loss of 350 ml. The post operative recovery was uneventful. The patient was mobilised 8 hours after surgery.

We discharged the patient on the 4th postoperative day.

The pathology report revealed a chromophobe renal cell carcinoma with eosinophilic cells and negative surgical margins.

The pregnancy was delivered at term - a 2750 g boy, APGAR score 9. The 1 year follow-up CT scan did not reveal any tumour recurrence.

Conclusion: Laparoscopic partial nephrectomy for renal tumour is feasible during pregnancy.

U2-31 Laparoscopic alternative for the surgical management of renal cell carcinoma with venous tumour thrombus

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Introduction: The open surgical management for renal tumours with venous tumour thrombus, is a challenging procedure and it is performed only in high volume centres.

Objective: Our objective was to evaluate the feasibility of the laparoscopic alternative for the surgical management of renal cell carcinoma with venous involvement.

Material & Methods: We performed a laparoscopic radical nephrectomy with cavorraphy for a renal tumour of 10/8/8 cm situated on the anterior aspect of the right kidney, lower pole with no extra capsular extension but with a tumour thrombus in the renal vein which was protruding for approximately 1 cm in the inferior vena cava.

We used a trans peritoneal approach with 3 trocars and a Satinsky clamp directly introduced through the abdominal wall for vena cava control.

Results: The operative time was 107 minutes and a blood loss less than 200 ml. There was no peri operative complications. We discharged the patient in 5th day after the surgery with recommendations for a la longue anticoagulant therapy.

Conclusion: The laparoscopic alternative in renal cell carcinoma with tumour thrombus is feasible, but it should be applied only in high volume centres and very selected cases

U2-32 Laparoscopic Nephroureterectomy for upper tract urothelial carcinoma after Radical Cystectomy and orthotopic diversion

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Purpose: Laparoscopic nephroureterectomy (NU) after radical cystectomy and urinary diversion is a technically demanding procedure due to presence of adhesions and distorted anatomy particularly with use of transperitoneal approach. This requires extensive dissection in a previously operated field to allow for complete removal of the ureter together with a bowel cuff. Our goal is to describe the technique of retroperitoneal laparoscopic NU and pouch cuff excision after radical cystectomy.

Materials & Methods: A 62 year old male patient presented with hematuria following radical cystectomy and ileal w neobladder. Computed tomography showed enhancing soft tissue mass in the left renal pelvis. Panendoscopy confirmed bloody efflux from left ureteric orifice. Laparoscopic NU was done via retroperitoneal approach. After induction of general anesthesia, the patient was placed in the lateral position. A 2-cm transverse horizontal skin incision just below the tip of the 12th rib. The lumbar muscles were dissected through this small incision and the lumbar fascia was opened. Under the guidance of index finger, a homemade balloon dissector was inserted into the retroperitoneal space and inflated to create an adequate extraperitoneal space.

The primary port (12 mm) was placed and fixed at the lumbar incision. A10 mm pot was placed in the midaxillary line 4 fingerbreadth cephalad to the first port. A third port was placed 2 to 3 cm above the iliac crest, between the mid and anterior axillary line. The renal hilum was approached initially and renal pedicle was secured with endo GIA stapler. Following complete dissection of the kidney and upper ureter, dissection of the remaining ureter was performed till the area where it traverses through the mesentry of the sigmoid colon. Additional port was placed to help for retraction of the sigmoid colon and dissection of the ureter till the site of ureteroileal anastomosis. The ureter was excised with a bowel cuff, and the pouch was closed with running sutures.

Results: The whole procedure could be completed laparoscopically. The operative time was 330 minutes. The estimated blood loss was 200 ml. No intraoperative or postoperative complications were encountered. Oral fluids and solid food were started 1 and 2 days after surgery respectively.

Conclusion: Laparoscopic NU after radical cystectomy is technically challenging. Nevertheless, retroperitoneal approach avoids extensive adhesions of previous surgery with satisfactory access for complete excision of the ureter.

U2-33 Laparoscopic removal of a paragangolioma located behind the hepatic segment of the inferior vena cava

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Introduction: Laparoscopic removal of a paraganglioma located behind the hepatic segment of the inferior vena cava is technically challenging due to the limited tumor accessibility.
Case presentation: We treated a 63-year-old woman with hypertension and palpitation. Catecholamine metabolite levels were elevated in the blood and urine. CT revealed a densely stained tumor ($47 \times 34 \times 51$ mm) on the right side of the descending aorta dorsal to the hepatic segment of the inferior vena cava. The tumor was determined to be a paraganglioma and transperitoneal laparoscopic tumorectomy was performed. The patient was placed in the left lateral position. After the colon and duodenum were fully deflected medially, IVC, left renal vein, right renal artery and the part of descending aorta were exposed. From the lateral view the dorsal side of suprarenal IVC was exposed after posterior dissection of the tumor. After taping and retracting of suprarenal IVC the tumor was dissected from IVC. As adhesions between the liver and the tumor were recognized, the part of the liver capsule was removed together. Thereafter, we successfully proceeded with complete dissection of the tumor.
Conclusion: Combination with medial and lateral view was helpful for treating the suprarenal mass behind the hepatic segment of IVC.

U2-34 TAC3D: How a new model of 3D printing improves surgical planning of ultra-selective minimally invasive nephron sparing surgery in high complex T1b renal Cancer

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High complex renal hilar tumors are generally referred to radical nephrectomy, however in the past few years new advances in surgical technique allowed minimally invasive nephron sparing surgery (MINSS) to be done in such cases. The majority of laparoscopic techniques require hilar clamp placement to create a clear operative field, but imposes ischemic injury to the kidney. Zero-ischemia MINSS is based on the concept of anatomic renovascular microdissection and clamping of tertiary or higher-order renal arterial branches that supply the tumor. In this scenario, preoperative knowledge of the vascular anatomy, collecting system and the relationship of these structures with the tumor is mandatory to obtain the best functional and oncological outcomes.
Objective: To present a case of high complex hilar renal tumor submitted a ultra-selective clamped MINSS guided by a new model of digital representation and 3D printed entitled TAC3D (tumor, arterial and collecting system-3D).
Case Description: An incidentally diagnosed 60-year-old female patient had a 4.2 cm right intra-renal hilar tumor on CT-Scan. R.E.N.A.L score was determined to be 11x. Before surgery, 3D digital reconstruction and the printed 3D physical model were done to perform preoperative surgical planning. TAC3D, unlike other 3D printed models, is characterized by a highly detailed intrarenal structures, which allows a precise planning for ultraselective clamping. MINSS with ultra-selective clamping of two tertiary branches that supplied the tumor was performed with neurosurgical clamps. Surgeons accessed TAC3D model several times during the procedure to facilitate the correct identification of the collecting system and the arterial branches that should be clamped. Operative time (OR time) was 170 minutes and estimated blood loss was 230 ml. The patient was discharged within 39 h of hospital stay. The pathology report described a 4.1 cm clear cell carcinoma, Furhman grade II without microvascular invasion or negative perirenal fat invasion and negative surgical margins. Renal function is unaltered comparing to preoperative values after 6 months of follow-up.
Conclusion: TAC3D is a novel tool based on 3D printing and CAD technology to be used in the preoperative surgical planning of MINSS of complex renal tumors. TAC3D successfully improved surgical planning in this case. The technical advance proposed by this tool is the representation of the intrarenal arterial system, collecting system, renal parenchyma and the tumor combined in one model.

U2-35 The use of self-retaining unidirectional barbed suture for laparoscoic retroperitoneal partial nephrectomy

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Purpose: Although continuing innovation has been undertaken in an attempt to reduce warm ischemia time(WIT) in laparoscopic partial nephrectomy (LPN), the reconstructive suturing of transected intrarenal vessels, pelvocalyx and parenchyme is the most time-consuming and technically challenging portion, especiallyretroperitoneal approach. We compared the outcomes of self-retaining barbed suture (SRBS) versus aconventional technique for kidney and collecting system closure during laparoscopic retroperitoneal partialnephrectomy (LRPN).
Patients and Methods: From April 2013 we have been using the SRBS for LPN. Eight consecutive patientsunderwent LPN using V-LocTM 90 SRBS (Covidien, USA) suture, and a nonconsecutive control group of 8 patients, matched according to tumor size and R.E.N.A.L. nephrometry score, underwent LPN using-absorbable polyglactin suture. All 16 cases were performed in a retroperitoneal approach by a single surgeon. Perioperative and postoperative indicators of morbidity, estimated blood loss, and warm ischemia time (WIT)were compared between the groups.
Results: Baseline characteristics including age, body mass index, tumor size, laterality, and R.E.N.A.L. nephrometry score were similar between the groups. On multivariable analysis, there were no significantdifferences between the two groups with regard to operative time, estimated blood loss, transfusion rates, rates of surgical complications, and length of hospital stay. However, mean WIT was significantly shorter inthe SRBS group compared with the control group (24.8 minutes versus 31.5 minutes, $P < 0.05$). Conclusions: The use of SRBS in LRPN could shorten WIT, with good safety and feasibility.

U2-36 Diltiazem effects on function of transplanted kidney and cyclosporine A blood level

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Introduction: For kidney transplanted recipients Better function of transplanted kidney with less immunosuppressive drugs are very important. Diltiazem (calcium channel blocker) is used for some recipients to protect them from hypertension and decreasing the toxicity of cyclosporine A(CSA).

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We evaluated effects of Diltiazem on two groups of kidney transplanted recipients.
Material & Methods: Since June 2009 till October 2014 we evaluated 137 kidney transplanted recipients that they had at least six months stable graft function. They divided into two groups, group A (n = 56)(41%) received daily oral Diltiazem (30–60 mg) with immunosuppressives and group B (n = 81) (59%) received only their routine immunosuppressive drugs for at least six months (all the patients had systolic blood pressure 110 mmHg or more).
Results: We compared Two groups for serum creatinine-CSA blood levels and CSA daily dose. In group A mean creatinine was 1.63 mg/dl and in group B was 1.88 mg/dl ($P < 0.05$).

The daily dose of CSA for group A was about 10% less than group B with approximately the same CSA blood level.
Conclusion: Using daily oral Diltiazem is effective for better function of transplanted kidney and reduces the CSA daily dose with the same bood level.

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U2-37 Comparison of the Clinical Outcomes and Surgical Invasiveness for Living Donor Nephrectomy between Conventional Laparoscopic Surgery and Single-Port Surgery

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Introduction: Single-port surgery (SPS) for living donor nephrectomy (LDN) is challenging. Whether SPS is less invasive compared to conventional laparoscopic surgery (CLS) using several ports is unclear. In this study, we compared the clinical outcome and surgical invasiveness for LDN between CLS and SPS.
Methods: We enrolled 137 donors (the CLS group: 64, the SPS group: 73) who underwent LDN in our hospital. Evaluation of both surgical techniques included comparison of conventional clinical parameters and preoperative, immediate postoperative, and 1-day postoperative levels of the circulating inflammatory cytokines.
Results: Clinical parameters in the SPS group, including the frequency of surgical complications and incidence of delayed graft function, were comparable to those in the CLS group. Immediate and 1-day postoperative mean serum IL-10 levels were significantly higher in the CLS group than in the SPS group (day 0; 12.2 ± 22.1 vs. 2.3 ± 1.4, $p < 0.001$, day 1; 5.3 ± 3.7 vs. 2.6 ± 0.9 pg/dL, $p < 0.001$, respectively). The 1-day postoperative mean serum TNF-alpha (9.5 ± 15.3 vs. 2.6 ± 2.4 pg/dL, $p = 0.02$) and IL-8 (54.6 ± 59.3 vs. 33.3 ± 13.4 pg/dL, $p = 0.01$) levels were also significantly higher in the CLS group than in the SPS group.
Conclusions: Conventional clinical parameters related to surgical invasiveness were not significantly different between both surgical techniques. While the results indicate that both techniques for LDN were similar and equally effective as minimally invasive surgeries, the inflammatory cytokine response suggested that SPS was less invasive than CLS.

U2-38 Intravesical recurrence of urothelial cancer in patients after bilateral laparoscopic nephroureterectomy

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Purpose: This study aimed to survey long-term outcomes of patients with urothelial cancers undergone bilateral laparoscopic nephroureterectomy, and to determine the incidence and risk factors of intravesical recurrence in these patients.
Materials and Methods: We retrospectively reviewed our patients with upper urinary tract urothelial cancer. Only patients who received bilateral laparoscopc nephroureterectomy without urine passing bladder named as ''anephric bladder'' were enrolloed in our study. Patients received subsequent kidney transplantation were excluded. We review the demographic, clinical, surgical, and pathological data to determine what clinical and pathologic variables affected the survival and intravesical recurrence of cancer.
Results: A total of 47 patients were included in our study. Urothelial cancer recurrence in bladder was identified in 24 patients (51.0%). Five patients (20.8%) received cystectomy finally, and only two (8.3%) of these patients had invasive bladder cancer. Others had low stage bladder recurrence and received endoscopic resection only. Most recurrence (85%) occurred in two years after they became anephric status. In patients with delayed recurrence (recurrent time > 24 months), all recurrent tumors were detected due to bloody discharge from urethra. The bladder recurrence rate was lower in patients with poor renal function before anephric status.
Conclusion: Bladder recurrence rate in anephric patients was high, but most of bladder recurrence was early stage and could be treated with endoscopic resection. Most recurrence occurred in two years after becoming anephric status, so regular follow cystoscopy for two years at least is suggested.

U2-39 Long term functional and oncological outcomes for Laparoscopic guided cryotherapy of small renal tumours: Single UK centre experience

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Introduction: Renal cryotherapy is an established minimally invasive treatment option for small renal masses, both laparoscopic and trans-cutaneous routes has been applied to use cryotherapy with several studies confirming possible superiority of the laparoscopic guided Renal Cryotherapy (LRC). In our centre we have used the laparoscopic approach since 2008 and we are reporting our long term results.
Patients and methods: Since June 2008 we have performed 98 LRC, 88 cases have a minimum follow up of 1 year and a maximum of 7 years; average age 69.4 years (range 42–91) with median ASA score of 2. Tumour size range 11–46 mm with mean diameter 26 mm. Biopsies were performed either pre or intra-operatively for solid tumours only.
Results: Mean follow up period was 49.5 months, histology confirming malignant tumours in 62.5% and 14.8% benign while no or inconclusive biopsies in 22.7%. The average PADUA score was 7.8(range 6–12) and median hospital stay was 1 night. Early Post operative complications range 1–5 based on Clavien Dindo classification with median score of 1. 2 patients had metastatic disease at presentation and were treated with LRC and systemic therapy. We had one early post-operative death due to secondary haemorrhage in patient with multiple co-morbidities. There was no significant change in the pre and post operative eGFR. Only 7 cases (8%) had recurrence/

residual tumour on the long term follow up. We can, therefore, report an overall survival 82%, disease specific survival of 100% in the non-cytoreductive setting and disease free survival of 88%.

Conclusion: This long term data from a single centre confirms the effectiveness and durability of laparoscopic guided cryoablation in the treatment of small renal cancers with excellent preservation of premorbid renal function.

U3 - LOWER URINARY TRACT

U3-1 Influence of surgical approach discrepancy on outcome in patients treated with radical cystectomy for bladder cancer: a comparison between open, laparoscopic, and robot-assisted approaches

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Introduction: We evaluated clinical outcomes in patients who underwent radical cystectomy for urothelial carcinoma of the urinary bladder according to three surgical approaches; open radical cystectomy (ORC), laparoscopic radical cystectomy (LRC), and robotic-assisted laparoscopic radical cystectomy (RARC).
Materials and Methods: A retrospective analysis was performed on 230 patients who underwent ORC (n = 150), LRC (n = 22) or RARC (n = 58) between September 2009 and June 2012 at our institution. Clinical characteristics, perioperative data, and pathologic outcomes were compared between three surgical approaches. The impact of surgical approach type on progression free survival (PFS), cancer specific survival (CSS), and overall survival (OS) were analyzed using Kaplan–Meier method, and differences were assessed with the log-rank test. Predictors of PFS, CSS, and OS were also analyzed within Cox regression model.
Results: The median patient age for ORC, LRC, and RARC were 68.0 (interquartile range [IQR]: 60.0–73.0) years, 65.0 (IQR: 62.8–74.0) years, and 61.5 (IQR: 54.8–72.0) years, respectively ($p = 0.017$). The proportions of male to female patients was similar among the three groups ($p = 0.093$). Conduit procedure were performed on 75.8%, 100%, and 41.4% in ORC, LRC, and RARC, respectively ($p < 0.001$). The pathologic stage with ≥pT3 in ORC, LRC, and RARC were 53.3%, 45.5%, and 43.1%, respectively ($p = 0.377$). The median follow-up durations were 27.9 (IQR: 14.7–47.9) months, 28.8 (IQR: 15.7–41.8) months, and 32.0 (IQR: 15.5–45.4) months for ORC, LRC, and RARC, respectively ($p = 0.955$). There was no significant difference in PFS, CSS, and OS according to surgical approach type ($p = 0.253$, $p = 0.431$, and $p = 0.527$, respectively). Subgroup analysis also revealed that PFS, CSS, and OS were not significant different for patients with ≤pT2 or patients with ≥pT3 according to surgical approach type. Pathologic T stage was independently associated with significantly increased risks of postoperative tumor recurrence (HR = 3.01; $p = 0.001$), death from bladder cancer (HR = 5.56; $p < 0.001$), and death from all-cause (HR = 5.06; $p < 0.001$). Lymphovascular invasion (HR = 2.32; $p = 0.011$) and positive surgical margin (HR = 2.88; $p = 0.03$) were independently associated with postoperative tumor recurrence. Body mass index, intraoperative allogenic blood transfusion, histologic tumor grade were significantly associated with death from bladder cancer (HR = 0.87; $p = 0.005$, HR = 2.26; $p = 0.006$, HR = 10.36; $p = 0.022$, respectively) and death from all-cause (HR = 0.87; $p = 0.003$, HR = 2.25; $p = 0.004$, HR = 5.19; $p = 0.024$, respectively). Age was also found to be independent predictive factor for death from all-cause (HR = 1.04; $p = 0.028$).
Conclusions: Our findings indicate that the type of surgical approach is not associated with tumor recurrence, death from bladder cancer or all-cause after radical cystectomy in patients with bladder cancer.

U3-2 Outcome of Robot-assisted laparoscopic radical prostatectomy in a tertiary hospital in the Philippines: First 100 cases

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Objective: The objective of this retrospective observational series was to describe the initial experience of one tertiary institution in performing robot-assisted laparoscopic radical prostatectomy (RALP) for prostate cancer in the Philippines.
Methodology: Medical records of the first 100 cases who were diagnosed with prostate cancer via trans rectal ultrasound guided biopsy and who then underwent RALP in our institution. The cases encompassed the experience of sixteen surgeons with use of the da Vinci Robotic Surgical System. Charts were reviewed for preoperative data (age, PSA and tumor size), intraoperative data (operative time, estimated blood loss and complications), and postoperative data (complications, time to catheter removal, post-operative hospital stay, positive margin rates, and post-operative PSA).
Results: Average operative time was 285 ± 127.12 minutes with an estimated blood loss of 233.78 ± 234.46 mL; the intraoperative complication rate was 2%, which represented two conversions to open prostatectomy due to development of hypercarbia. The overall post-operative complication rate was 31.6%. Most common complications were prolonged catheterization and incontinence. The average postoperative hospital stay was 3.73 ± 1.71 days and Foley catheter was removed after an average of 8.55 ± 3.43 days. There was no biochemical recurrence at a median of three months follow-up (PSA ranging from undetectable to 1.00 ng/mL), and the rate of positive surgical margins was 35.7%.
Conclusions: Initial experience as described suggests that use of Da Vinci Surgical system in performance of RALP in our institution is promising, with comparable complication rates and histopathologic outcomes although with a trend of longer operative times, increased blood loss, and longer hospital stay and catheter times compared to other studies. Continuing assessment is important to establish the learning curve for RALP in our institution.

U3-3 Daycase RALP and patient perception of 'same-day' discharge

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Introduction: Robotically Assisted Laparoscopic Prostatectomy (RALP) is now the most common method of radical prostatectomy, accounting for 70% of procedures in the UK, however the average length of stay remains 2.9 days. We describe a series of patients undergoing daycase RALP, along with patient perception data of 'same-day' discharge
Materials and Methods: 543 patients underwent RALP over a 29-month period, of whom 25 were identified as suitable for daycase surgery. Suitability for daycase surgery included medical and social circumstances and patient choice. Patients were identified pre-operatively by the surgical and anaesthetic teams, and counselled appropriately. All patients followed an enhanced recovery programme. Data was collected on the BAUS complex operation dataset prospectively. Re-admissions were identified retrospectively. Patient perception of daycase surgery was collected prospectively.

100 consecutive patients undergoing 'standard' RALP (with an overnight stay in hospital) were identified and sent a questionnaire retrospectively to evaluate their attitudes towards daycase surgery.
Results: 20 of the 25 patients were successfully discharged on the same day. There was one 30-day re-admission. All patients underwent successful TWOC.

Reasons for not achieving same-day discharge in 5 patients included prolonged operating time, postural hypotension, bladder spasms and post-op vomiting.

Patient factors: mean age 65 (56–71), ASA 1 or 2, home address not more than 1 hour travelling distance to hospital

Operative factors: median operating time 2 – 2.5 h hours, all operations < 300 mls blood loss

There was a 69% response rate to the questionnaire, with 78% suggesting they would prefer to be in their own home post-operatively. 41% reported that they would consider daycase surgery even if they lived alone.

28% of patients were concerned that they could catch an infection whilst in hospital. Other advantages of daycase surgery recognised by patients included a better night's sleep, better use of hospital resources, being more comfortable in their own home, a lower risk of DVT, and easier for family and friends.

Barriers to considering daycase discharge included large travelling distance between the hospital and home, and concerns over how to use the catheter.
Conclusions: The results demonstrate that patients are keen to consider daycase surgery, and that this can be successfully carried out with appropriate pre-operative screening and counselling, and a specific enhanced recovery programme.

U3-4 The impact of preoperative factors on urinary incontinence after robot-assisted radical prostatectomy

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Introduction and Objectives: The aim of this study is to identify the preoperative physical or comorbidity predictors on the urinary incontinence after robot-assisted radical prostatectomy (RARP).
Matierals and Methodology: study was included 123 consecutive patients of localized prostate cancer who underwent RARP at our institution from 2012 to 2014. Patient comorbidity was evaluated using the Charlson comorbidity index. Urinary continence recovery rate at 1, 3, 6, 9, 12-month were evaluated using questionnaire (EPIC) and 1 hour pad test. We used the definition of urinary continence recover to a 0 or safety pad on questionnaire with the leakage of urine is less than 5 g in the 1 hour pad test. Period of urinary continence recover was compared with the Kaplan-Meier method using log-rank test. Furthermore, Cox proportional hazards regression analysis was performed to evaluate the independent effect of age, physical or comorbidity status, surgeon, surgical technique such as nerve-sparing.
Results: Urinary continence recovery rate at 1, 3, 6, 9, 12-month were 32.5, 60.2, 75.6, 85.9, 89.1 percent in our definition. Kaplan-Meier curves of urinary continent recovery rate showed that significant differences were seen between groups in body mass index (BMI; $p = 0.006$), Charlson comorbidity index (CCI; $p = 0.01$) and prostate volume ($p = 0.02$). Considering patients with and without one or two of the risk factors such as BMI ≥ 26 kg/m2, CCI ≥2 point, prostate volume ≥70 ml, the observed difference of urinary continence recovery rate was larger (one risk factor; $p = 0.003$, two risk factors; $p < 0.001$). On multivariable analysis, the physical and comorbidity risk factors were independent predictor for urinary continence recover (one risk factor; $p = 0.03$, two risk factors; $p = 0.004$).
Conclusions: Higher BMI, CCI and large prostate volume were independent predictors for urinary incontinence after RARP.

U3-5 Erectile function after RALP: A comparison between EPIC and IIEF-5 questionnaires

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Introduction: The EPIC (Expanded Prostate Cancer Index Composite) is a validated instrument that measures HRQoL in patients with prostate cancer in 4 domains (urinary, bowel, sexual, and hormonal). Sexual function is assessed by 9 questions, and the scores can range from 0 to 100, with higher scores representing better sexual function. The International Index of Erectile Function (IIEF) was developed in patients with erectile dysfunction due to multiple etiologies. A 5-item short version (IIEF-5) has been used to assess erectile function also after radical prostatectomy. Sum IIEF-5 score are calculated by adding the responses for all 5 questions. Thus, sums could range from 5 to 25, with higher scores representing a higher degree of erectile function. This study assessed the concordance between the gold standard EPIC and IIEF-5.
Matierals and Methodology: Patients operated with robot assisted laparoscopic radical prostatectomy (RALP) who had completed the EPIC and the IIEF-5 questionnaires preoperatively and 12 months postoperatively, were included. The association between EPIC sexual function score and IIEF-5 scores was assessed by Spearman correlation coefficient (rho). Concordance of potency rates by EPIC and IIEF-5 was assessed in cross-tabulations. We calculated a weighted κ statistic to evaluate the overall concordance between EPIC and IIEF-5. An IIEF-

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5 score ≥20 was used as a definition for potency corresponding with an EPIC sexual function score ≥60.
Results: Analyzing 537 questionnaire pairs preoperatively, IIEF-5 and EPIC scores were found to be highly significantly correlated (Spearmen rho 0.74) with concordance of 87.0% and weighted kappa 0.74 (CI: 0.68–0.79). Likewise at 12 months postoperatively, the analysis of 513 questionnaire pairs showed IIEF-5 and EPIC scores to be highly significantly correlated (Spearmen rho 0.68) with concordance of 95.5% and weighted kappa 0.68 (CI: 0.55–0.80).
Conclusions: The overall concordance between IIEF-5 and EPIC sexual function score was good.

U3-6 Targeted MRI/US Fusion Prostate Biopsy: Initial Experience in a Small Private Urology Group Practice

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Introduction: Multi-parametric MRI (mpMRI) and targeted MRI/US fusion prostate biopsy (tMRI/US FPB) have emerged as important tools in the advanced diagnosis of prostate cancer (PCA). We report our initial experience with tMRI/US FPB in small private (two-man) urology group practice.
Materials and Method: Data was prospectively collected from all patients undergoing tMRI/US FPB between September of 2014 and June of 2015 as we began our mpMRI/US fusion biopsy program. All patients initially underwent mpMRI of the prostate, interpreted by a single radiologist using the PI-RADS scoring system. 3D rendering of the Regions of Interest (ROI) was then performed by the radiologist prior to tMRI/US FPB performed in our urology clinic using the Invivo UroNav Fusion Biopsy System. Standard 14-core prostate biopsy was also performed in all cases. Prospectively collected data was analyzed and the pathologic outcomes of tMRI/US FPB and standard biopsy techniques were compared.
Results: Targeted MRI/US fusion prostate biopsy (including concurrent standard 14-core biopsy to follow) was performed in 74 men between September, 2014 and June, 2015. Thirty-five men (47.3%) were diagnosed with prostate cancer using the tMRI/US FPB technique as compared to 29 (39.2%) in the standard biopsy group. In nine men (12.2%), only the targeted fusion biopsy results was positive for prostate cancer, of whom, five (55.6%) had Gleason Score 3+4=7 or higher disease. In 3 cases, only the standard biopsy yielded prostate cancer diagnosis.
Conclusion: Targeted mpMRI/US fusion prostate biopsy is an innovative and important step forward toward more accurate and precise diagnosis of clinically significant prostate cancer. In our study, we show that a successful mpMRI/US fusion program can be initiated in the private practice setting with the coordinated efforts of the urologist and the radiologist together to increase confidence in the accuracy and precision of both positive and negative biopsy results. Further studies and analysis of outcomes and learning curves are ongoing.

number of cases	Positive tMRI/US Fusion Biopsies	Positive Standard Biopsies	Positive tMRI/US Fusion Biopsy with Negative Standard Bopsy	Negative tMRI/US Fusion Biopsy with Positive Standard Biopsy
74	35 (47.3%)	29(39.2%)	9 (12.2%)	3 (4%)

Prostate Cancer Grade (Gleason Score)	Positive tMRI/US Fusion Biopsy with Negative Standard Biopsy	Negative tMRI/US Fusion Biopsy with Positive Standard Biopsy
3+3=6	4 (44.4%)	1 (33.3%)
3+4=7	1 (11.1%)	2 (66.6%)
4+3=7	4 (44.4%)	
Total (out of 74 cases)	9	3

U3-7 The significance of computerized tomography in the detection of bladder rupture

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Aims of study: Computerized tomography(CT) is the method of choice for establishing patients with abdominal and/or pelvic trauma. However, the sensitivity of CT for detecting bladder rupture has been questioned. We investigated the roles of CT as the initial evaluation of abdominal and pelvic trauma in diagnosis of bladder rupture.
Materials & methods: We reviewed the medical records and radiographs of 93 patients with bladder rupture for last 10 years. And among them, all radiographs of 60 patients who underwent both CT and retrograde cystography were evaluated independently by two urologist who had no knowledge of the final diagnosis.
Results: Among 60 patients, all of patients were correctly diagnosed by retrograde cystography, but the CT diagnosis was correct in only 46 patients (76.7%), who were 37 patients(80.4%) with showed the intraperitoneal rupture and 9 patients (19.6%) with extraperitoneal rupture. And of the 14 patients (23.3%) who were negatively by the CT, all showed the sign id inadequate bladder distention.
Conclusions: We suggest that CT, if properly performed with adequate bladder filling, is as sensitive for detection of bladder injuries as conventional cystography. Especially, in trauma patients with hematuria and suspected other organ injury, CT-cystography with bladder filling may be as accurate as conventonal cystography and obviate the need for an additional cystography.

U3-8 Robotic (Da Vinci Xi) ureteral reimplant with Boari flap

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Introduction: Ureteral reimplant is most commonly performed due to trauma and oncologic disease affecting the distal ureter necessitating removal and reconstruction. The most commonly utilized procedures to aid in ureteral reimplant are the psoas hitch and the Boari bladder flap repair (BFR). Both maneuvers allow more proximal lesions to be treated with implantation instead of nephrectomy. Psoas hitch involves mobilizing the contralateral bladder attachments and securing the bladder dome to the psoas tendon of the affected side. BFR, most commonly performed in conjunction with a psoas hitch, involves incising a section of bladder, rotating it toward the affected ureter and tubularizing it for anastomosis with the remaining healthy ureter. With the open BFR first performed on humans in 1947, minimally invasive

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techniques have been described in recent years with similar outcomes. Recent advances in robotic technology may increase the feasibility and safety of robotic assisted laparoscopic BFR in selected patients.
Patients and Methods: We present our experience utilizing the Da Vinci Xi robotic system to perform a robotic assisted BFR on a patient with urothelial carcinoma of the mid and distal ureter.
Results: Our patient is a 64 year-old white male with history of high grade T1 bladder cancer who was found to have blood emanating from the left ureteral orifice on surveillance cystoscopy as well as two filling defects at the junction of the mid and distal ureter on retrograde pyelogram. Due to his baseline history of hypertension, diabetes, and marginal baseline renal function; he elected to undergo robotic left distal ureterectomy with left pelvic lymph node dissection, psoas hitch, BFR and stent placement. Intraoperative cystoscopy and ureteroscopy aided the robotic procedures, and the operation went without complication with an EBL of 200 mL. At follow up visit 2 weeks post-operatively, our patient was recovering well, however, cystogram revealed a small leak. At post-operative week 3, CT-Urogram and repeat cystogram revealed leak resolution, and the foley catheter was removed. Ureteral stent was removed at post-operative week 6.
Conclusion: Robotic Boari bladder flap repair is safe and effective in carefully selected patients. Due to the ability to side dock the robot, the Da Vinci Xi robotic system enabled concurrent intraoperative cystoscopy and ureteroscopy. This allows for more accurate identification of the lesion and precise division of the ureter.

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U3-9 Laparoscopic psoas hitch ureteroneocystostomy for the treatment of an iatrogenic ureteral lesion

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Introduction: Although laparoscopy is considered the preferred technique for many ablative urologic procedures, its role in reconstructive procedures is not so firmly established. The first description of an ureteral iatrogenic lesion repair with a laparoscopic procedure dates back to 1992. One year later, the first laparoscopic psoas hitch ureteroneocystostomy was published. Since then, only small series have been published. The authors present a video of a laparoscopic psoas hitch ureteroneocystostomy repair for an iatrogenic ureteral lesion after a laparoscopic ooforosalpingectomy.
Patient and results: A 50 years-old female patient presented with left renal colic after a left laparoscopic ooforosalpingectomy for a 10 cm ovarian cyst. Imaging with a computed tomography and a retrograde pielography diagnosed a left ureteral iatrogenic grade 5 injury and the patient underwent a left percutaneous nephrostomy.

After 6 months, the patient underwent a laparoscopic ureteroneocystostomy with the psoas hitch technique, by a transperitoneal access. During the procedure, a complete ureteral section of the distal ureter was identified, with a ''bird's beak'' appearance. An ureteroneocystostomy with no anti-refluxive mechanism was performed. No intra or post-operative urological complications were reported during the two years follow-up period.
Conclusion: The use of a laparoscopic approach to perform an ureteral reimplantation is possible, safe and effective. Laparoscopy is becoming the standard approach to urologic procedures, both ablative and reconstructive, even in complex cases.

U3-10 Laparoscopic gastrocystoplasty for genitourinary tuberculosis with contracted bladder

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Introduction: Augmentation cystoplasty is the treatment option for contracted bladder. Ileum is the preferred bowel segment used for augmentation. Dyselectrolytemia is a common adverse effect, which may be life threatening in patients with preexisting renal dysfunction. Gastric mucosa, which is predominantly secretory, is useful in such patients. Though laparoscopic ileocystoplasty is being performed, not uncommonly, laparoscopic gastrocystoplasty is quite rare. We present the case report and literature review of laparoscopic gastrocystoplasty.
Materials and methods: A 49 yr old lady, presented with right solitary functioning kidney, with tuberculous right lower ureteric stricture managed by right psoas hitch ureteric reimplantation. She had progressive increase in creatinine and right hydroureteronephrosis post surgery. Nephrostogram revealed recurrent mid ureteric stricture and thimble bladder with nadir elevated creatinine of 2.8 mg/dl. She was planned for gastrocystoplasty with right ureteric reimplantation. Under General anesthesia, using 5 ports, in reverse trendelenberg position, a right gastro epiploic artery based gastric flap was isolated using staplers. With the patient in trendelenberg position, using two additional ports, right ureter and bladder were dissected. Vertical cystotomy was done and ureter was divided proximal to stricture. Staple line of gastric flap was excised and pyloric end tubularised and sutured with the ureter. Fundal end was used for gastrocystoplasty. Drain and **wide bore** urethral catheter were placed.
Results: Operative time was 420 minutes. Estimated blood loss was 150 ml. Patient was started orally on day 2 and discharged on day 6. At 6 months of follow up, her nadir creatinine was 1.9 mg/dl and functional bladder capacity was 250 ml. She had mild hematuria, which settled with proton pump inhibitors.
Conclusion: Gastrocystoplasty is the preferred option for bladder augmentation in those with azotemia. Laparoscopic approach is feasible and effective in such patients.

U3-11 Transperitoneal Laparoscopic Excision of a Solitary Bladder Diverticulum

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Purpose: To present our technique for laparoscopic excision of a single bladder diveriticula using transperitoneal approach.
Materials and Methods: A 16-year-old boy whose main complaints were stranguria and feeling of incomplete emptying was referred to our center. Urinary ultrasonography and VCUG showed a 5 cm solitary diverticula on the left side of the bladder. Patient underwent laparoscopic transperitoneal excision of diverticula. A double-J ureteral stent was inserted prior to the operation. A 10 mm camera port via umbilicus and two 5 mm ports both on the right side of the abdomen were placed. Diverticula was found with the guidance of the light of a cystoscope. After

excision of the diverticula, bladder was closed in a watertight fashion and a drain was left in situ.
Results: Operation time was 120 minutes. No pre-operative or postoperative complications were observed. Patient was discharged on postoperative day 2 after removal of the drain. Urethral catheter was removed on postoperative day 6. Control ultrasonography showed a bladder with normal countour and wall thickness.
Conclusions: Laparoscopic excision of bladder diverticula offers classical advantages of minimal invasive surgery. Additionally, placing a double-J stent before the operation and using the cystoscope to fascilitate finding the diverticula seems to be beneficial.

U3-12 Initial experience of laparoscopic sacral colpopexy in Tonami General Hospital, Japan

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Introduction: Although pelvic organ prolapse (POP) is not a life-threatening disease, it is associated with a significant drop in women's quality of life (QOL). Therefore, the aim of POP surgery is not only to restore the normal anatomy of the vagina but also to relieve symptoms and restore their QOL. Abdominal sacral colpopexy (ASC) has been recognized as the ''gold standard'' for 50 years. The basis of ASC is to support a prolapsed vagina attached to the sacrum using ''transabdominal mesh''. Strong attachment without vaginal incision contributes to a high QOL as well as low recurrence rate. However, ASC has not been widely popularized not only due to the larger skin incision required but also the wide diffusion of ''transvaginal mesh'' surgery mainly in the 2000s. Meanwhile, especially after the alert on ''transvaginal mesh'' published by the FDA in 2011, ASC has been revived with minimally invasive laparoscopic technique. Under these circumstances, we started laparoscopic sacral colpopexy (LSC) in 2013.
Methods: Between June 2013 and May 2015, LSC was performed in 47 patients with symptomatic stage 2 or higher POP at Tonami General Hospital (TGH). Thirty patients who were observed for more than 6 months after LSC were analyzed. The median age and BMI were 69.0 years and 23.7 respectively. Concurrent procedures were 25 cases of supracervical hysterectomy, 3 of midurethral sling and 2 of posterior colporrhaphy. The evaluated perioperative parameters included estimated blood loss (EBL), operative time (OT) and adverse events (AE) at surgery. Anatomical and functional evaluations were conducted in the sixth month using POP-Q system and validated questionnaires such as P-QOL, ICIQ-SF, CRADI-8 and SF-36.
Results: Surgeries were successfully completed in all patients without any open conversion. Median OT and EBL were 264 minutes and 0 grams respectively. AEs were observed in 2 patients. One was a port site hernia (Clavian-Dindo IIIb) and the other adhesive ileus (Clavian-Dindo II). Anatomical recurrence was noted in only one patient (3%), and has not required any additional surgical procedure. Most of the patients have been appreciative of the postoperative improvement in their general health status, and statistically significant improvements in urinary and prolapse symptoms were achieved on validated questionnaires. There were no significant differences in terms of defecation symptoms.
Conclusion: Even in a low volume and inexperienced institution like TGH, LSC is technically safe and provides both excellent anatomical and functional short-term outcomes.

U3-13 Laparoscopic Intravesical Closure of Rectovesical Fistula – A Hybrid Technique Description and Review of Literature

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Introduction: Rectovesical fistula is a rare complication in patients with rectal cancer received adjuvant radiation therapy. Herein we report a novel technique incorporating endoscopic video guidance and laparoscopic intravesical closure of rectovesical fistula.
Materials and methods: A 57 year-old male presented to our urological clinic with the chief complaint of stool-like material passage while voiding for 3 months. He received adjuvant radiation therapy for the treatment of rectal cancer 2 years before this visit. A rectovesical fistula was confirmed after cystoscopic examination, measuring 2×1 cm in size. Abdominal Computed tomography was performed and no recurrence of rectal cancer could be found. The patient received transurethral resection of the rectovesical fistula and intravesical closure of the fistula via laparoscopic approach was performed.
Results: transurethral fistulectomy and laparoscopic intravesical closure of the fistula was performed smoothly. Total operative time was 55 min. Total intraoperative blood loss was 20 ml. Time required to oral intake was 48 hours and total hospital stay was 6 days. The urethral catheter was removed 28 days after the operation.
Conclusion: Laparoscopic intravesicla closure of rectovesical fistula is a treatment option in selected patients with rectovesical fistula.

U3-14 Laparoscopic YV-plasty in patient with refractory bladder neck contracture and peri-anastomotic migration of hernioplasty mesh

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Introduction: Bladder neck contracture (BNC) in the adult male patient is iatrogenic following radical prostatectomy. There is general agreement on initial treatment comprising endoscopic procedures like balloon dilatation, bladder neck incision. We present a case of a patient with refractory BNC treated with laparoscopic bladder neck YV-plasty (LYV).
Materials and Methods: Male 70 years old patient underwent to a retropubic simple prostatectomy out of our clinic. He had 2 unsuccessful endoscopic treatments like balloon dilatation and bladder neck incision. Previous cistoscopy, cystogram and uroflowmetry test were performed and then we underwent patient to LYV.
Results: Surgical technique of LYV is described in our video. The procedure was performed using a transperitoneal six-port approach with the patient in Trendelenburg position. After removal of the prevesical fat, and prosthesis mesh coming from a simultaneous hernioplasty with RP dislocated in the urethral anastomotic area, bladder neck was identified. Then the Y incision was performed through all layers with cold scissors.

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Thereafter, interrupted sutures are placed in the way that the apex of the V-flap is brought to the base of the Y incision, so that a wide bladder neck is accomplished. There were no intraoperative and postoperative complications. The postoperative hospital stay was 5 days. We performed cystogram and catheter removal after 21 days. Short follow up shows a good uroflowmetry after 30 days.
Conclusions: This is our first report on LYV for refractory BNC. The results was successful and encourage us to continue experience but we look forward to longer follow up.

U3-15 Laparoscopic partial cystectomy for Pheochromocytoma of the urinary bladder

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Introduction: Pheochromocytoma of the urinary bladder is a rare neoplasm of the chromaffin tissue of the sympathetic nervous system that occurs within the layers of the bladder wall. The treatment is surgical resection. We performed laparoscopic partial cystectomy. We will present our procedures.
Patient and method: A 61-year-old man presented with a history of intermittent macrohematuria and palpitation after micturation. He was hemodialysed for 23 years and had a transplanted kidney that had been rejected. Cystscope showed a lobulated 3×2 cm mass on the bladder dome. On biphasic CT, the lesions showed hypervascularity. MIBG scan was done which showed increased activity in the lesion. The level of his serum noradrenaline at an attack was 1600 pg/ml. Pheochromocytoma of urinary bladder was diagnosed.
Operative procedures: The patient was placed in the lithotomy position. A 12 mm port was placed just cephalad the umbilicus via an open laparotomy and employed for endoscope and sample extraction Working ports of 12 mm trocars were placed at the right and left pararectus location avoiding to injure the transplanted kidney. The ports of 5 mm trocars for an assistant were placed 2 cm medial the left anterior superior iliac spine and the midpoint of the left anterior superior iliac spine and camera port. Then the patient was placed at a 25-degree Trendelenburg position. Insert the cystoscope to observe the tumor. And adjusting the light quantity of the cystoscope, shadow of tumor appeared on the bladder wall. Watching the shadow, I marked cutting line by monopolar coagulation on the bladder wall laparoscopically. Observing via the cystoscope and laparoscope, I incised the bladder wall with **LigaSure**™ Blunt Tip along the cutting line. Bladder wall was closed by continuous suture of 3-0 VICRYL®
Results: He had discharged without complications. Blood noradrenaline became normal. Pheochromocytoma was confirmed on histopathology.
Conclusion: Laparoscopic partial cystectomy is minimally invasive, and adequate as a treatment for bladder pheochromocytoma.

U3-16 Robot-assisted Resection of Seminal vesicle Schwannoma

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Introduction: In recent years, indication for robotic surgery has been rapidly expanding. However, there are few case reports of retroperitoneal tumor resection using the robotic surgery systems. We reported a robot-assisted resection of seminal vesicle schwannoma. To our knowledge, this is the first report of robot-assisted resection of seminal vesicle schwannoma.
Case report: A 45 Japanese male presented with an asymptomatic mass in retroperitoneal lesion, which was incidentally detected by abdominal ultrasonography. He underwent robotic surgery using the da Vinci S HD systems in Janurry 2015. The port positions are same as robot assisted radical prostatectomy, and we inserted ureteral stent before the surgery in order to avoid ureter traumas. The patient was discharged in a good condition after 3 days of the surgery. The tumor size was $2.6 \times 4.8 \times 4.2$ cm, and histopathological examination revealed a benign schwannoma. In addition, there was no adverse effect such as sexual dysfunction and hydronephrosis.
Conclusion: Robotic assisted surgery of seminal vesicle tumor provides minimally invasive benefits with good safety to this patients.

U3-17 Laparoscopic vesico-vaginal fistula repair: A tertiary care centre experience

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Introduction: Vesico-vaginal fistula (VVF) is commonly a consequence of obstructed labor and gynecologic procedures. Management includes open transabdominal, trans-vaginal and laparoscopic repair. Advantage of laparoscopic VVF repair is improved outcomes and reduced postoperative complications. We present our 5 year experience of laparoscopic VVF repair.
Material and methods: This is a retrospective study including 66 female patients with either primary or recurrent VVF from 2010 to 2015. Laparoscopic repair was performed with an omental flap interposition in all cases. A suprapubic catheter was placed for 3 weeks postoperatively for bladder decompression. Data were recorded for etiology, prior failed repair, size, number and location of fistula, mean operative time, blood loss, postoperative symptoms and complications.
Results: Laparoscopic repair of 66 supratrigonal vesico-vaginal fistulae (VVF) was performed. Etiology of VVF was obstructed labour (12), transabdominal hysterectomy (24) and lower segment caesarean section (LSCS) (30). Mean VVF size was 16 mm. Mean operative time and blood loss were 136 min and 82 ml. 63 patients were continent following surgery. 3 patients developed recurrence in post operative period after catheter removal. Mean follow-up was of 19 months. None of the patients suffered any major intra or postoperative complications. 1 patient required conversion to open laparotomy due to dense adhesions.
Conclusion: Based upon our experience we believe that laparoscopic repair of VVF gives easy and quick access to the pelvic cavity and laparoscopic VVF repair using an interposition omentum is a safe, effective, minimally invasive technique with excellent cure rates.

U3-18 Concomitant Endoscopic and Surgical Assessment Score for Iatrogenic Ureteric injuries

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Introduction: Ureteric injury or ligation is a well known complication of hysterectomy and other Pelvic surgery and accounts for 1–10 percent of their complications. The management options for these vary from simple ureteric stenting to various endoscopic maneuvers to surgical repair depending on the grade of injury. We propose a novel scoring system to assess the severity of ureteric injuries based on both the ureteroscopic assessment as well as the external appearance of the ureter on surgical exploration to guide the appropriate management.
Methods: All patients underwent NCCT KUB and Retrograde pyelography. The patient underwent open surgical exploration in lithotomy position; ligatures were identified and released followed by semi-rigid ureteroscopy. The various parameters assessed and their scores are as follows.
The JJ stent removal was done postoperatively at 6 weeks. IVP was done at 3 months and 1 year

Parameters (Endoscopic)	Points	Parameters (surgical exploration)	Points
Length of congested mucosa >1cm	1	Absence of Immediate decompression on release of ligature	1
Length of pale unhealthy mucosa >1cm	3	Absence of peristalsis	2
Presence of a stricture	3	Loss of tone of ureteric musculature	3
If total score ≥4	Ureter re-implantation		
If total score <4	JJ stenting		

Results: 7 cases were referred to our department with suspected ureteric injuries following complicated hysterectomies. None of the cases had partial or complete transection. Bilateral ligation with anuria was encountered in one case. In all cases ligature was found at the distal ureter. The time from surgery to presentation varied from immediate to 5 days. The scoring system was applied in 8 ureters. 2 cases had score 4 and above underwent ureteric reimplantation. All other patients had JJ stenting and were followed up for till 1 year. There were no complications or mortality in the study population.
Conclusion: This comprehensive prototype scoring system enables to assess the ureteric injury effectively and can be used to guide further management with predictable outcome. Further multi-centric studies and evaluation is necessary to validate, modify and improve the score in times to follow.

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U3-19 Management of severe iatrogenic ureteral injuries based on ureteral anastomosis technique

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Introduction: Ureteral injuries are not common during abdominal or pelvic surgeries but some times they are severe and even in long time can damage ipsilateral renal function. We compared outcome of 21 patients with severe ureteral injuries that needed open or laparoscopic ureteral repairment and anastomosis with different spatulation diameter.
Material & Methods: For about 7 years (2007–2014) 21 patients with severe iatrogenic ureteral injury that needed end to end anastomisis of ureter to ureter or ureter to bladder flap (boary flap technique) evaluated for outcome of ureteral surgery. Patients divided in two groups based on ureteral anastomosis diameter. Group A (n = 13)(61.9%) had ureteral spatulation 10–14 mm and group B (n = 8) (38.1%) had ureteral spatulation between 6–9 mm. they followed up for 6–12 months after operation double j stent was used for all the patients and 4–6 weeks later removed by cystoureteroscopy.
Results: In group A (n = 13) after six months of Dj removal 2 patients had mild to moderate hydronephrosis with mild degree of pain that gradually subsided medically. In group B (n = 8) 3 patients after Dj removal had moderate to severe hydronephrosis that needed second Dj replacement by ureteroscopy. In this group the pain was moderate to severe and one patients needed nephrectomy for deterioration of kidney function and pain.
Conclusion: We strongly suggest wide ureteral spatulation (10–14 mm) for ureteral anastomosis when needed open or laparoscopic surgery in ueteral injuries.

U3-20 Analysis of factors predicting recovery of erectile function after laparoscopic radical prostatectomy

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Purpose: To report the recovery rate of erectile function (EF) and identify various factors predicting the recovery of EF in men undergoing laparoscopic radical prostatectomy (LRP) in our center.
Materials and Methods: From January 2011 to December 2012, a total of 106 men with localized prostate cancer underwent LRP in our center, and we gathered the preoperative EF condition and perioperative factors of these patients. We followed all the patients, the mean follow-up was 17.9 (8–31) months and collected the data of recovery of EF in these patients after LRP.
Results: A total of 60 patients with preoperative sexual intercourse were included in statistical research group. Recovery of potency was defined as postoperative penile erection. The recovery rate of EF was 46.7% (28/60) without the use of any drugs or devices to assist erection. In our study, the recovery rate of EF in age ≤60 years was 90.0% (9/10), and was better than other two teams (P = 0.001). In patients, whose preoperative IIEF-5 score was 22–25, the recovery rate of EF was 66.7% (8/12), and was better than other patiens (P = 0.006). The recovery rate of EF in patients, who were preserved with neurovascular bundle 53.1% (26/49) and accessory pudendal artery 83.3% (5/6), was better than other patients (P = 0.036 and P = 0.023).
Conclusion: In our study, age and preoperative EF were the significant factors of recovery of potency, and preservation of neurovascular bundle and accessory pudendal artery in LRP were also the predictor factors.

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U3-21 Our clinical managements and outcomes in primary intradiverticular bladder tumours

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Introduction: Bladder cancer is a common malignancy in urology practice. The most important determinant factor for survival is the tumour's stage and grade. Due to lack of muscle layer intradiverticular bladder tumour can be expected to spread outside the bladder easily.
In this study we analyzed our clinical management and outcomes in primary intradiverticular bladder tumours.
Materials and methods: We reviewed our institutinal database between the years 2006–2015. 8 patients had intradiverticular bladder tumour. The diagnosis was confirmed with cystoscopic evaluation. After cystoscopy patients evaluated with CT/MR for possible tumour extension. İf there is no extension standart TUR resection and postoperative early chemotrapy (epirubicine/mitomycine) applied for all the patients. According to the pathology results long term adjuvant intravesical chemotherapy/immunotherapy were given if need.
Findings: Results obtained from patients are summarized in table 1. The most common symptoms were hematuria and voiding complaints due to bladder outlet obstruction. the majority of the tumours were < 3 cm and half of patiens had solitary lesions. All patients prostate lobes was seen as obstructive. In follow up period % 40 of the patients needed additonal prostate surgery. Mostly primary tumour pathology was reported as pTa low grade in % 87.5 of patients. In % 62.5 patients recurrence were detected. İn follow-up period adjuant teratment applied as % 37.5 intravesical chemothrapy, % 25 was immunotherapy. After the first surgery in % 37.5 of patients had no recurrence. In recurrence none of the patients had clinical progression, in one patient grade improvement was detected.
Conclusion: According to the obtained data intradiverticular bladder tumours tend to be small and low grade. However those patients' follow up is important because of the frequent recurrence and lack of muscle layers increases the likelihood of disease progression. Prospective, large patient pariticipant studies needed for more powerful judgments

Table-1: Patient data

Patient	Age at diagnosis	Tumour diameter(cm)	Tumour count	Follow-up period (year)	Primary pathology	İntravesical treatment	Recurrence
1	72	0.5	3	9	pTa- Lg	Mitomycin	6
2	84	1.5	1	8	pT1-Lg	BCG	1
3	73	1	2	3	pTa- Lg	Mitomycin	5
4	72	0.5	1	1	pTa- Lg	-	0
5	72	1.5	2	9	pTa- Lg	Epirubicin	1
6	85	0.5	2	1	pTa- Lg	-	0
7	57	4	1	1	pTa- Lg	BCG	1
8	60	2	1	3	pTa- Lg	-	0

U3-22 Predictive factors and oncological outcome of mild persistent elevation of prostate-specific antigen level in patients after robot assisted radical prostatectomy– A single centre, single surgeon experience

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Introduction & Objectives: The aim of this study was to evaluate which factors are associated with mild persistent elevation of prostate specific antigen (PSA) level less than threshold level for biochemical recurrence after robotic assisted radical prostatectomy (RARP) in our institution.
Material & Methods: The study population (N = 5300) consisted of consecutive patients who underwent RARP for localized prostate cancer by a single surgeon (VRP) from January 2008 through July 2013. A query of our Institutional Review Board approved registry identified 162 men with persistently elevated PSA (group A), defined as PSA level < 0.2 ng/ml at 6 weeks and later after surgery, who were compared with rest of cohort group having undetectable PSA, group B (< 0.1 ng/ml).
Results: On multivariate analysis, only following parameters were significantly associated with persistent PSA after RARP – preoperative [PSA(p = 0.01), Gleason Score(p = 0.001) and clinical stage(p = 0.001)]; postoperative [pathologic stage(p = 0.001), extraprostatic extension (EPE, p = 0.01), lymph node positivity(p = 0.001), positive surgical margin (PSM, p = 0.02), Gleason Score (GS) (p = 0.01), percent of tumor involvement (PTI) (p < 0.001)]. The mean follow- up was 38.1 months. The BCR was significantly higher in group A compared to group B (52.47% vs. 7.9%, respectively; p = 0.01). The mean time to BCR was significantly lesser in group A as compared to group B (8.9 months vs. 21.1 months, respectively; p = 0.01). The BCR- free survival rates at 1 year and 3 years were significantly lower statistically in persistent PSA group in comparison to other group(69.7% vs 97.3% and 48.5% vs 92.1% respectively; p = 0.01). On multivariate logistic regression analysis in patients with mild persistent PSA on follow- up, preoperative PSA > 10 ng/ml, postoperative GS ≥ 8, postoperative stage ≥ pT3, positive pelvic lymph nodes, PSM > 3 mm and post- RARP PSA doubling time (DT) < 10 months (p < 0.001) were significantly associated with BCR.
Conclusions: In patients after RARP, factors associated with aggressive disease (high preoperative PSA, GS ≥ 8, stage ≥ T3, PSM, high PTI and EPE) predicted mild PSA persistence. Vice versa thesepatients with mild persistent PSA level after RARP were more likely to have BCR that occurred earlier than in those patients with undetectable PSA after RARP. However, there was a significant proportion of these patients (47.53%) who remained free of BCR. This subset of patients is associated with these favorable parameters (preoperative PSA < 10 ng/ml, post- RARP PSA DT ≥ 10 months, post-operative GS < 8, pT stage as of < pT3, PSM < 3 mm and no lymph node involvement) and did not require any adjuvant treatment.

U3-23 Transrectal ultrasound guided prostate biopsy in patients with PSA ≥ 20 ng/mL: how many cores should be taken?

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Purpose: To determine the optimal systematic transrectal ultrasound guided prostate biopsy scheme in patients with PSA ≥ 20 ng/ml.
Material & Methods: A retrospective analysis of 200 consecutive male patients with serum PSA levels of ≥ 20 ng/mL who underwent 12-core systematic transrectal ultrasound guided prostate biopsy between January 2007 and December 2014 at our

institution was performed. According to the PSA levels, patients were categorized as group I (range, 20 – 49.99 ng/mL), group II (range, 50 – 99.99 ng/mL), and group III (≥100 ng/mL). Sixteen different hypothetical scenarios of prostate biopsy templates with fewer cores were simulated and compared with 12-core biopsy results.
Results: Prostate cancer detection rates were 55.4%, 80.9%, and 98.1% in groups I (n = 101), II (n = 47), and III (n = 52), respectively. According to the simulated scenarios, sensitivities for prostate cancer detection were as follows: 83.9 – 96.4% in group I with 6-core biopsy, 92.1 – 97.4% in group II with 4-core biopsy, and 96.1 – 100% in group III with 2-core biopsy.
Conclusion: In patients with PSA ≥20 ng/mL, prostate biopsy schemes with less than 12-core can be used to detect prostate cancer with a high sensitivity.

U3-24 Retrospective Analysis of Hemostatic Effect of Flo-Seal in Patients Undergoing RALP

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Introduction: Peri-operative bleeding is a potential complication of RALP and can affect surgical outcome. The role of hemostatic agents in the control of bleeding in RALP has not yet been rated. Therefore, we evaluated the impact of Flo-Seal ® in patients undergoing such surgery.
Methods: We performed a retrospective analysis of 392 consecutive patients suffering of organ confined prostate cancer, who underwent RALP at our Institute between October 2007 and July 2014. Patients were divided into two groups based on whether or not the use of Flo-Seal. Group A included 200 patients in which hemostasis was realized with conventional methods, in turn divided into 4 sub-groups of 50 patients each to analyze the influence of the learning curves. Group B included 192 patients, in which hemostasis was obtained by conventional techniques and perfected by affixing Floseal. We evaluated the difference between the two groups in terms of:

- Transfusion rate,
- Mean hemoglobin value on the first postoperative day (Pod1)
- The lowest hemoglobin level,
- Difference between the hemoglobin level on immediate post-surgery and hemoglobin on the first postoperative day
- Difference between the hemoglobin level on immediate post-surgery and the lowest value of hemoglobin.

Results: The intraoperative use of Flo-Seal reduces the transfusion rate from 8.5% to 2.1%. In group A, 4 patients (2% of the total) required conversion to open surgery for the control of hemostasis, complication never occurred in group B. From the division of group A, it can be seen that 3/50 patients (6%) undergone blood transfusions of the first subgroup, 3/50 (6%) of the second, 6/50 (12%) of the third and 5/50 (10%) in the fourth. Floseal is associated with an improvement in the average hemoglobin at the first postoperative day (12.43 g/dl versus 11.97 g/dl), and the lowest value of hemoglobin (11.98 g/dL versus 11.07 g/dl). A reduction of both the difference between the hemoglobin rate immediately post-surgery and hemoglobin on the first postoperative day (0.94 g/dl versus 0.72 g/dl) and the difference between the hemoglobin rate immediately post-surgery and the lowest value of hemoglobin (1.15 g / dl versus l1.4 g / dl). The use of Flo-Seal is associated with a reduction of costs related to transfusions and to hospital stay.
Conclusion: Compared to conventional methods, FloSeal improves hemostasis in patients with organ-confined prostate cancer undergoing RALP, without increasing costs. Prospective and multicenter studies are needed to confirm these data.

U3-25 NBI Cistoscopy increases the detection rate of Carcinoma in situ; personal experience.

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Background: The aim of this study was to evaluate the capacity of Narrow Banding Imaging (NBI) to increase the detection rate of Carcinoma in situ (CIS)
Design, setting and participants: From June 2010 to April 2012, 797 patients, underwent to WL plus NBI cystoscopy and subsequently to Bipolar TURBt. During cistoscopy, were recorded the topography and characterization of lesions by WL and NBI. All the removed tissue was sent separately for histological evaluation.
Results and limitations: In our experience, the use of NBI significantly increases the ability of WL cystoscopy in identifying lesions ($p < 0.05$). Using NBI during cystoscopy we found out 234 suspicious lesions not visisble to WL, 127 (12,1%) of those after TURBt resulted in bladder neoplasms. About this lesions NBI + WL- 15 was CIS, 12 was a primate lesions and 3 was recurrence. The charatteristics are resume in (tab1)

Comparing sensitivity, specificity, positive predictive value, negative predictive value, of NBI vs WLI Cystoscopy regarding the CIS lesions, we noted that sensitivity and NPV were the only statistically significant values (100%, 95% CI, p < 005, and 80,62%, 95% CI, 100%,95% CI, p < 005, and 78,35%, respectively).

We can conclude that the combination of WL and NBI cystoscopy before TURBt is an economic method to identify bladder tumours and Carcinoma in situ.
Conclusions: In our experience, the use of NBI cystoscopy compared to WL Cystoscopy, was particularly useful in the identification of CIS lesions, showing a sensitivity and a NPV of 100% vs. 80.62% and 100% vs. 78.35%, ($p < 0.05$).

U3-26 Is cardiopulmonary exercise testing in patients undergoing radical cystectomy a useful preoperative tool?

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Introduction: Preoperative assessment for radical cystectomy is complex and multifactorial. Cardiopulmonary exercise testing (CPET) has been suggested as a predictor of perioperative morbidity and mortality. The aim of this study was to evaluate whether CPET and serum lactate testing correlate with post-operative course.
Methods: All patients planned to have radical cystectomy for bladder cancer underwent preoperative CPET testing at our unit between 2009 and 2014. Peri-operative parameters were recorded prospectively including complications and hospital stay. Blood lactate levels were also measured at 4 different time

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points: intraoperatively, immediate post-operatively, 24 and 48 hours post-operatively. A comparative analysis using logistic regression was performed.
Results: A total of 104 patients (25 female, 79 male), with a mean age of 69.6 years (40–90) underwent robotic assisted (n = 55), open (n = 48) or laparoscopic (n = 1) radical cystectomy. The mean anaerobic threshold (AT) was 11.11 ml/kg/min (6.5–22.9), and mean V02 peak of 15.95 ml/kg/min (7.0–35.1). Nine patients did not achieve AT. There was positive correlation between AT and ASA grade ($p < 0.0001$), AT and Charlson score ($p = 0.02$). No significant correlation was found between AT and complication rate at 30 days post-operatively ($p = 0.59$) or length of hospital stay ($p = 0.10$). However, AT correlated significantly with serum lactate level at 48 hours post-operatively ($p = 0.01$).
Conclusion: Our results showed that CPET did not predict postoperative complications or prolonged hospital stay in this group of patients. Larger studies may be required.

U3-27 Vesico-Urethral anastomosis using 'V-Loc 90' barbed suture during Laparoscopic Radical Prostatectomy

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Introduction: A meticulous completion of vesico-urethral anastomosis (VUA) forms a critical step in laparoscopic radical prostatectomy. Watertight anastomosis, in spite of the improved optics and instruments remains a challenge. Sub-optimal anastomosis can lead to urinary leak, ileus, prolonged hospital stay, delay in catheter removal, long-term urinary incontinence and bladder neck scarring. Reconstruction of the posterior aspects of the rhabdosphincter by Rocco stitch also allows the rapid recovery of continence after surgery. This video demonstrates our technique of VUA using V-Loc 90 barbed polyglyconate suture, which because of its distinctive design facilitates the even distribution of the tension on the anastomotic edges during laparoscopic prostatectomy.
Materials and methods: Three 15 cm V-Loc 90 barbed suture are used. Firstly Rocco stitch is placed between rectourethralis and posterior detrusor layers near bladder neck with additional bites from intervening Denonvilliers fascia. Next VUA is performed using two separate sutures with controlled catheter insertion under vision before the anterior completion stitch.
Results: In our practice this technique has shown the improved results compared to our previously used suturing methods.
Conclusion: We feel the use of V-Loc 90 barbed suture for the anastomosis during Laparoscopic Prostatectomy helps maintain suture position resulting in even distribution of tension throughout the reconstruction. This also significantly reduces the operative time and assures the watertight closure. This technique can be seen as an attractive method for the new laparoscopic urologists and can improve the learning curve in terms of suturing.

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U4 - STENTS

U4-1 A standard technique for exchanging double J (DJ) stents in renal transplant patients

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Introduction: Ureteral stricture is the most common urological complication after kidney transplantation. Ureteral stents are often used as a temporary solution and in some high-risk patients as a permanent treatment. Exchanging double- J stents in renal transplant patients may be challenging. The ureterovesical anastomosis is often placed in the dome of the urinary bladder with difficult access. The loss of ureteral access may lead to significant consequences including the need for a nephrostomy tube. We describe a novel technique for a safe and reproducible double-j stent exchange in transplanted kidneys. In all patients the stent exchange was to a DJ stent that is indicated for 1 year.
Methods: A cystoscopy is performed and the ureteral orifice with the protruding double-j stent is identified. A guide wire (GW) is placed alongside the stent into the transplanted renal pelvis. A ureteral catheter (UC) is negotiated over the GW and a retrograde pyelogram is performed. Through the UC a stiff GW is placed and the indwelling stent is withdrawn. An access sheath is passed over the stiff GW. The stiff GW is replaced with a hydrophilic GW, and the new DJ is inserted. With the proximal end of the stent in the kidney the access sheath is removed and the distal part of the ureteral stent is positioned in the bladder under fluoroscopic control.
Results: The cohort consisted of 12 consecutive kidney transplant patients with an indwelling DJ stents. The new technique was used to exchange 22 stents. 10 patients had stricture in the distal ureter and 2 had stricture in the proximal transplant ureter. 6 patients failed prior ureteral dilatation or incision. The procedure was successful in all patients. The mean surgical time was 30.2 minutes. There were no intra or postoperative complications.
Conclusions: By using a standard technique a double-J stent exchange in transplanted kidney patients can be performed safely.

U4-2 Comparison of bladder irritativeness between two kind of ureteral stents: A prospective randomized trial

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Objectives: After performing ureteroscopic surgery (URS) due to ureteral strictures or stones, ureteral stents have usually been installed. However, most ureteral stents are likely to cause substantial deterioration of the patients' quality of life. To improve these discomforts, various types of ureteral stents have been

developed. We conducted a prospective randomized study of two different ureteral stents.

Materials and Methods: 107 patients underwent URS surgery from Oct, 2014 until May, 2015, and 74 patients underwent ureteral stent insertion after surgery. Group 1 (n = 37) were inserted with PolarisTM ultra ureteral stent (Boston Scientific) and Group 2 (n = 37) were inserted with PercuflexR plus ureteral stent (Boston Scientific). Meanwhile, 33 of those patients did not go through stenting because their surgery was relatively simple.

Before URS, all 74 patients marked their IPSS and OABSS. One week after URS, their IPSS, OABSS, and VAS were recorded along with the presence of gross hematuria.

Results:

Table 1.Patients demographic data (Before URS)

	Group1 (n=37)	Group 2 (n=37)	P value
Mean age	50.77 (21-89)	57.19 (31-89)	0.642
Male/ Female	21/16	20/17	0.874
Stone location (upper/mid/lower)	5/10/22	6/10/21	0.796
Mean stone size (mm)	6.36	5.88	0.292
Balloon dilation (%)	16.2	21.6	0.334
IPSS total score	9.2	10.4	0.354
OABSS	3.7	4.1	0.412

Table 2.Post-surgical data of Polaris TM ultra (group 1) and PercuflexR plus ureteral stent (group 2)

	Group1 (n=37)	Group 2 (n=37)	P value
IPSS total score	12.4	15.2	0.057
IPSS obstructive subscore	4.2	4.3	0.354
IPSS irritative subscore	8.2	10.9	0.021
OABSS	5.4	6.2	0.064
VAS	4.7	4.9	0.754
Gross hematuria (%)	75.68	81.08	0.654

Conclusion: We could not find any significant differences in IPSS obstructive subscore, VAS, and the presence of gross hematuria. And there was a positive tendency of PolarisTM ultra ureteral stent in OABSS and IPSS. In addition, there was a significant difference in IPSS irritative subscore (p = 0.021).

We think the usage of PolarisTM ultra ureteral stent is more effective in reducing the patients' irritativeness. Although it wasn't included in our study, the 33 patients without stent insertion had much less post-operative irritative voiding symptoms, pain, and gross hematuria. So, the absence of ureteral stenting is better, but there are those who might need stenting due to severe pain. In our case, 4 patients complained of severe pain and 1 patient got better after ureteral stenting. It seems to be further studies on some criteria to determine the necessity of stenting.

U4-3 Total endourologic approach with thermoexpandable metallic ureteral stent for the treatment of complex iatrogenic ureteral stricture.

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Introduction: Treatment of complex ureteral stenosis of iatrogenic or traumatic origin can often be trully challenging. As an alternative to an invasive surgical treatment there is the possibility of an endourologic minimally invasive treatment. An ureteral JJ stent or an indwelling nephrostomy are not acceptable solutions by most patients, especially if the patient is young. We present the case of a treatment of a long iatrogenic ureteral stenosis in a patient by means of a thermoexpandable metal stent.

Material and Methods: A 60 years old female patient developed an abdominal abscess, necrosis of the anterior rectal wall and sepsis following a colposacropexy by the gynecologists. A surgical exploration, drainage and colostomy were performed. Postoperatively, a urinary fistula of the left pelvic ureter was observed, and a percutaneous nephrostomy and a ureteral JJ stenting were positioned. At 40 days the stent was removed and there was evidence of a 6–8 cm iliac-pelvic ureteral stenosis. Subsequently a metal thermoexpandable stent (Memokath™ 051 - diameter 10.5–22 Ch – length 12 cm) was inserted. The stent expands in its proximal and distal portion after injection of saline solution at 60°C. Postoperative fever has occured but regressed after 3 days. In the postoperative control a month later we observed an important hydronephrosis and the patient had lumbar pain. A second procedure was planned during which the metal stent previously positioned was removed easily by injection of saline at 5°C. In the endoscopic and fluoroscopic view there was evidence of further stenosis in the iliac and lumbar ureter. A 20 cm Memokath™ stent was inserted covering almost the entire ureter, 2 cm from the ureteral orifice and 1 cm from the UPJ.

Results: At 6 months of follow up the patient was asymptomatic and there was no hydronephrosis.

Conclusions: The thermoexpandable metallic stent can be a valid mininvasive therapeutic option also in cases of complex ureteral stenosis. Still, the choice of the right lenght may be difficult to evaluate and the procedure can be challenging. The thermoexpandable material permits an easy removal of the stent if necessary.

U4-4 Tips and tricks in managing challenging cases of retained ureteral stent – a single centre experience

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Introduction: A retained ureteral stent may pose significant management challenges to urologists. We report two complex cases of retained ureteral stent and discuss their management.

Methodology: The first case was 45 year-old lady who presented with lower abdominal pain. An abdominal X-ray incidentally showed a left ureteral double-J stent and a large bladder calculus at its distal end. Ultrasound scan revealed bilateral hydronephrosis due to the bladder calculus obstructing both ureteral orifices. Diuretic renogram confirmed a non-functioning left kidney. The second case was 83-year-old gentleman who presented with right flank discomfort. Computed tomography of the urinary system revealed a retained right ureteral stent with extensive calcified encrustations at the proximal and distal tips of the stent. There was encrustation along the entire length of the stent.

Results: For the first case, right percutaneous nephrostomy was done to relieve the right kidney obstruction. A single-stage laparoscopy surgery proceeded first with left simple nephrectomy. This was followed by laparoscopic vesicolithotomy. For the second case, the surgery proceeded initially with cystolitholapaxy. Following identification of the right ureteral orifice, ureteroscopy and Holmium laser lithotripsy was done to the encrusted stent. The distal portion of the stent was retrieved. The patient was turned prone and percutaneous nephrostomy access was obtained. Rigid nephroscope was used to identify the proximal calculus and lithotripsy was done. The proximal portion of the stent was then retrieved.

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Conclusion: Successful management of retained ureteral stent may involve combination of various minimally-invasive and endourology techniques. Both patients recovered well from the surgery.

U4-5 The beneficial effect of alpha-blockers for ureteral stent-related discomfort: Systematic review and network meta-analysis for alfuzosin versus tamsulosin versus placebo

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Background: This study was carried out a network meta-analysis of evidence from randomized controlled trials (RCTs) to evaluate stent-related discomfort in patients with alfuzosin or tamsulosin versus placebo.
Methods: Relevant RCTs were identified from electronic databases. The proceedings of appropriate meetings were also searched. Seven articles on the basis of RCTs were included in our meta-analysis. Using pairwise and network meta-analyses, comparisons were made by qualitative and quantitative syntheses. Evaluation was performed with the Ureteric Stent Symptoms Questionnaire to assess the urinary symptom score (USS) and body pain score (BPS).
Results: One of the seven RCTs was at moderate risk of bias for all quality criteria; two studies had a high risk of bias. In the network meta-analysis, both alfuzosin (mean difference [MD]; −4.85, 95% confidence interval [CI]; −8.53 – −1.33) and tamsulosin (MD; −8.84, 95% CI; −13.08 – −4.31) showed lower scores compared with placebo; however, the difference in USS for alfuzosin versus tamsulosin was not significant (MD; 3.99, 95% CI; −1.23 – 9.04). Alfuzosin (MD; −5.71, 95% CI; −11.32 – −0.52) and tamsulosin (MD; −7.77, 95% CI; −13.68 – −2.14) showed lower scores for BPS compared with placebo; however, the MD between alfuzosin and tamsulosin was not significant (MD; 2.12, 95% CI; −4.62– 8.72). In the rank-probability test, tamsulosin ranked highest for USS and BPS, and alfuzosin was second.
Conclusion: The alpha-blockers significantly decreased USS and BPS in comparison with placebo. Tamsulosin might be more effective than alfuzosin.

U4-6 A Novel Method for Preventing Proximal Stent Migration When Inserting Two Stents in Parallel

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Introduction: Impacted ureteric stones may lead to stricture formation which can be managed by holmium laser stricturotomy. Strictures should heal over a large calibre stent to attempt reduction in recurrence rate upon healing. Our case demonstrates an easily reproducible technique for parallel retrograde stent insertion to achieve a larger calibre.
Patient: A 28 year old male presented following previously attempted ureteroscopy, lithotripsy and stenting elsewhere. Repeat CT scan showed a persistent stone which necessitated further surgery. Intra operatively we found a stone embedded in the ureteric wall and a proximal stricture. Holmium lasertripsy and stricturotomy was performed and two DJ stents were inserted alongside one another. Stent insertion proved challenging as the first stent kept migrating proximally following attempted insertion of the second stent. A 19Fr cystoscope and a dual lumen Albarrn bridge was used. Using one channel a 6/26 DJ stent was inserted and then the same channel was used to pass a dormia basket and loop the lower end of the inserted stent and keep it on hold. Using the other lumen a 5/26 DJ stent was inserted alongside. This allowed placement of the two stents across the stricture while preventing proximal migration of the first stent.
Discussion: Proximal stent migration can make subsequent stent removal difficult necessitating ureteroscopy and general anaesthesia. Laser uretric stricturotomy is a well recognised minimally invasive technique which has good clinical outcomes (1). Use of wide calibre stents to facilitate stricture healing is a safe and effective technique (1,2). While these larger stents can be inserted in an antegrade fashion, retrograde insertion using a cystoscope limits the stent size which can be used.
Conclusion: We report a case of minimally invasive management of ureteric stricture and an innovative approach to control retrograde stent insertion and afford accurate placement. We describe a technique of parallel insertion of two retrograde stents without the risk of proximal migration.

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U4-7 Identifying Mechanisms that Trigger Discolouration of Indwelling Ureteral Stents

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Background: Ureteral stents are fraught with complications including infection, encrustation and significant patient discomfort. Currently not much is known regarding what causes these issues. Recent studies from Japan have suggested that the discolouration of indwelling stents changes their surface characteristics in a way that promotes stent-associated complications including stent encrustation. Occasional stent discolouration has been observed, however not much is known about how it happens and whether it changes the surface characteristic of stents. The current work aims to study mechanisms that lead to stent discoloration and to characterize changes in stent surface characteristics following discoloration.
Methods: Twenty (20) indwelling Polaris Ultra and 20 indwelling Percuflex Plus stents (made of the same polymer material) with varying degrees of discolouration were collected from patients in both Japan and Canada. Surface characterization was conducted using Scanning Electron Microscopy, Fourier Transmission Infrared Spectroscopy (FTIR), and Energy-dispersive X-ray spectroscopy (EDX). Conditioning film components from each stent were analyzed using Quadrupole Time of Flight Mass Spectrometry. Degrees of encrustation of stents removed from patients and artificially discolored stent pieces

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using sodium sufate are being investigated using an established stent encrustation model.
Results: Stent discolouration was found to be caused by a reaction between sulfur containing compounds in urine and the bismuth subcarbonate in the stents used to make them radiopaque. Furthermore, it was determined that a reducing agent is also required, making this a reaction that involves multiple urinary compounds. Overall, the reaction results in the conversion of bismuth subcarbonate to bismuth sulfide, which is a compound that is naturally dark in color and results in the color change of the stent material. Stent surface analysis showed that the change in color occurs throughout the material itself rather than just on the surface. Furthermore, no significant changes in the bulk material of discolored stents were observed when compared to non-discolored stents. In addition, there was no evidence of unusual crystal deposition on the surface of discolored stents that may be the cause of discoloration.
Conclusions: Ureteral stent discolouration is triggered by a reaction between bismuth subcarbonate within the stent material and sulfur containing urinary components, rather than the deposition of unusual crystals on the surface as has previously been proposed. Furthermore, stent discoloration does not result in significant changes in the bulk material of indwelling stents.

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U4-8 A case report: Renal resistive index is a useful tool for detection of malformation in implanted JJ stent.

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Introduction: Renal resistive index (RRI) is a marker of collecting system obstruction for kidney. Normal RRI value is considered to be 0.60 ± 0.01 (mean $\pm$ SD) by most authors. Here, we report a case with malformed implanted JJ stent caused hydronephrosis (HN) and higher RRI.
Patient: A 23-year-old male patient had left sided pain and ureterovesical (UV) 9 mm stone without HN. Ureterorenoscopic (URS) laser lithotripsy was planned. During the procedure, UV was detected to be narrow and JJ stent implantation for mechanical dilatation was applied. After the procedure, he had more severe left sided pain. A grade 2 HN occurred in 15 days after the operation. RRI was calculated to be 0.67 and, a JJ stent caused obstruction was suspected. On 16. day from the operation, JJ stent removed, and URS laser lithotripsy was applied. His pain resolved after the operation. HN disappeared and RRI normalized to 0.61. Encrusted JJ stent was detected.
Result: Encrusted JJ stent caused grade 2 HN and RRI increase to 0.67. After removal of JJ stent RRI decreased to 0.61.
Conclusions: RRI might be a useful tool for detection of malformation in implanted JJ stents.

U4-9 Safety, patient satisfaction and tolerability of 'stents on a string': A review of literature

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Introduction: With an increase in ureteroscopy (URS) for diagnostic and therapeutic purposes, a simultaneous rise in ureteral stent use has been seen. Ureteric stents have proven physical and psychological effects on patients. Associated morbidity is potentially reduced with an extraction 'string' attached to the stent as this facilitates early removal by the patients themselves without the need for a formal cystoscopy to do so. The decision to use a stent post-operatively and the type of stent used is made by the operating surgeon at the time of surgery and is influenced not only by intra-operative events, but also by previous experiences. There is currently little robust evidence to advise such decision making.
Materials and Methods: A systematic review of the literature was performed using the terms 'ureteric stent', 'ureteric catheter', 'ureteroscopy', 'stone treatment' and 'strings' as keywords from 1990 to May 2015 for all English language articles based on Cochrane and PRISMA guidelines.
Results: Our literature review revealed 8 studies investigating the use of ureteric stents with extraction strings, involving 1904 patients with a male:female ratio of 9:7. Whilst 831 (44%) had stents with extraction strings, the remaining 1073 (56%) did not have strings attached to the stents. Stent dislodgement rates in the string group varied from 0.79–15%, which was noted to be higher in females. In addition, up to 3% of patients were unable to remove the stents with strings themselves at home. While there were no statistical differences between the two groups in urinary symptoms or pain scores whilst stents were indwelling, there was a trend of less pain on removal with the use of strings, with overall earlier removal. Strings were generally well tolerated by most patients and the majority would prefer to have the strings attached again.
Conclusion: The use of stent extraction 'strings' appears to be beneficial for most patients, with improved tolerability and satisfaction over traditional stent removal via cystoscopy. However, stent dislodgement is prevalent in a small number of patients and can be associated with additional morbidity. The decision to use 'strings' has to incorporate balanced clinical judgement and patients should be counselled accordingly.

U4-10 Computational fluids dynamics simulation and in animal model study of the urine flow effects in a stented ureter

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Introduction: There are few studies in computational simulation or animal model about the the performance of the urinary flow and fluid dynamics in intubated JJ ureteral stent. So the aim of this study is to evaluate the fluid and structure dynamics of the urinary tract when it has stented to create a virtual environment where we tested new urological devices.
Materials and Methods: Animal model study. Two pigs with one week of bilaterally JJ stents were used. By ultrasound percutaneous puncture, the intrarrenal pressure and ureteral length and diameter was determined. Intraperitoneal pressure was measure by means a percutaneous puncture. Determining the parameters of pressure and urinary flow rate. Results of the animal study were used in the computational simulation. Mathematical Modeling of Deformations of Hyperelastic Solids. To create the computational environment it is assumed that the urinary tract after a one week of stenting is aperistaltic, the ureter is an hyperelastic tube, the elastic wall has a limited capacity to suffer passive dilatation. Models Ogden and Yeoh are used to assess the dynamics of fluids and elastic deformation models.

Also determining the fluid characteristics of the ureteral wall, and fluid-structure interaction.
Results: Animal model results show intrarrenal Pressure from 9.4 mm Hg and intraperitoneal pressure cavity of 2–3 mmHg. Urinary flow is greater in the computational simulation than in animal in vivo study, likely caused by the appearance of ureteral slow loops in the animal model. The results of the computational model describes the fluid-structure interaction is negligible. Both models show that the advance of the urine occurs only by the gradient intrarrenal-abdominal pressure in ureteral stented patients.
Conclusions: Both models show that the flow of the upper urinary tract depends exclusively to the intrarrenal-abdominal pressure gradient, with decreasing intrarrenal-vesical gradient because the ureterovesical junction inactivity. So a clinical conclusion to this effect is to advise emptying the bladder more frequently in patients with JJ stent, to increase this gradient. This computational environment (Yeoh and Ogden hyperelastic material computational model) likely allow testing of new designs of stents and ureteral devices previously to the animal model.

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U4-11 Experience with Metallic Ureteral Stents for Malignant and Benign Ureteral Obstructions

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Introduction: We present clinical experience of management for malignant and benign ureteral obstruction with metallic ureteral stents.
Materials and Methods: We reviewed the records of all patients underwent Resonance® Metallic Ureteral Stent insertion for ureteral obstruction between 2012 and 2015. We analyzed each patient's sex, age, laterality of involved ureter, cause and site of obstruction, size of stent, follow-up duration, and outcomes.
Result: Metallic ureteral stents were placed in 30 ureters of 23 patients. 26 ureters of 19 patients (82.6%) had malignant and four ureters of four patients (17.4%) had benign etiology. Mean age were 57 (28–75) in malignant patients and 65 (40–88) in benign patients. In malignant patients, 12 (63.2%) had unilateral and seven (36.8%) had bilateral ureteral obstruction. All four patients with benign etiology had unilateral ureteral obstruction. Causes of obstruction in malignant patients were ureter metastasis in 12, compression by metastatic lymph node in four, primary ureter cancer in two, stricture in seven, and retroperitoneal fibrosis in one ureter. In benign patients, ureteral stricture caused obstruction in three ureters, and congenital ureteropelvic junction obstruction in one ureter. All stents were 6 Fr in diameter, however stent length (24, 26, and 28 cm) was chosen based on each patient's height. Mean follow-up duration were 10 (2–28) months in malignant, and 12 (5–26) months in benign patients. In malignant patients, eight (42.1%) were dead, and four (21.1%) were alive with metallic stents. Two patients (10.5%) underwent stent changing to non-metallic stent due to metallic stent malfunction, and five (26.3%) became lost to follow-up. Five patients (26.3%) under went changing metallic stent to new metallic stent at the time of six to 12-month after previous insertion. maIn benign patients, 2 (50.0%) were alive with metallic stents, and 2 (50.0%) underwent stent removal due to bladder irritation symptom.
Conclusion: Resonance® Metallic Ureteral Stent can be remained over several months and has low complication rate. Therefore it is a useful material for pateints with malignant or benign ureteral obstruction.

U4-12 The management of severe ureteric stricture disease with Memokath stents.

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Introduction: We present our data from patients who had Memokath Stents (MKS), who had failed or could not tolerate ureteric stenting and represent the most severe end of the ureteric disease spectrum.
Patients and Methods: A retrospective review of imaging and patient notes was undertaken for patients who had MKS insertion between 2008 and 2015.
Results: 19 MKS were inserted in 15 patients (8 malignant and 11 benign, (Table 1). Three patients had previous balloon dilatation and one had previous laser stricturotomy. Twelve patients required intraoperative balloon dilatation. The mean stricture length was 4.68 cm.

5 out of 6 patients with malignant strictures died after a mean duration of 2 months. In the benign group, 1 out of 11 patients died after an average follow up of 23 months. Only 2 patients reporting stent symptoms. Five MKS had poor drainage intra/perioperatively and were salvaged by inserting a JJ stent into the MKS. Five MKS migrated after a mean of 7.2 months. 7 MKS became obstructed after a mean duration of 14 months (Table 2).
Conclusions: MKS generate minimal symptoms, however they may not provide a lasting solution and a range of strategies are required to manage complications. Even when the MKS had deemed to have failed, the combination of the MKS and balloon dilatation effected a long term benefit on ureteric patency, such that patients become successfully manageable with JJ stents or, in one case, with no stent after the MKS was removed. The survival of patients with active pelvic malignancy and ureteric obstruction is poor and patient selection requires careful consideration of the prognosis.

Table 1

Benign	No of stents	Malignant	No of stents
Post radiotherapy for malignancy	6	Cervical cancer	4
Ureteric Stones	1	Breast Cancer	2
Ischaemia	2	Colonic Cancer	1
Inflammatory Disease	2	Cancer of Appendix	1

Table 2

Complication	No of stents	Management	No of stents
Immediate obstruction	5	JJ stent through Memokath	5
Delayed Obstruction	7	Nephrostomy	3
		Memokath removed and replaced with JJ stent	2
		JJ stent through memokath	1
		No stent or nephrostomy-poorly functioning kidney	1
Migration	5	Replaced by JJ stent JJ stent through memokath	2 1
		No stent or nephrostomy	1
		Proceeded to cystectomy and nephroureterectomy	1

U4-13 Treatment Of Urinary Fistula In Ureteropyelostomy Through Metallic Stents (Memokath051®)

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Introduction: Early or late ureteric stenosis is the most frequent complication of the renal transplant, whose incidence varies from 0,5% to 10%. The anastomosis between the native upper urinary tract and the ureter or renal pelvis of the graft has been described as an effective and definite solution for those cases that can't be handled with endourological techniques.

The Memokath 051 is a thermo-expandable titanium-nickel spiral developed for long-term ureteral stenting and used in renal transplant patients ureteral strictures, but there aren't references about its use after open surgery failure. Our objective is to determine the efficacy and safety of the memokath 051™ ureteral stent for treating urinary fistulae in open ureteropyelostomy after renal transplant.

Materials and Methods: We present two cases of ureteric stenosis in renal grafts who underwent ureteropyelosthomy and in the early postoperatory presented a urinary fistula trough the anastomosis that couldn't be solved inspite of urinary derivation. We decided to treat the fistulae by placing a metallic ureteric stent (Memokath051).

Results: Either the first case, with a follow-up of 12 months; as for the second case, with 6 months of follow-up, both sonographic and blood analysis controls show absence of urinary fistulae or abdominal collections, and an adequate graft function.

Conclusion: The ureteral Memokath051® stent could be a promising, safe, and efficient treatment option for the definitive and minimally invasive management of ureteropyelic anastomosis failure in renal graft, although more cases and a longer follow-up period are necessary to corroborate it.

U4-14 Use of temporary metallic stents for treating iatrogenic lesions of the urether

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Introduction: Lesions of the ureters secondary to treatment of other pathologies are very common and a safe and urologists must be prepared to restore the tract with harmless techniques with best results. The use of metallic stents permits to surpass structural defects in the ureter's wall, and compared with double J stents, the firsts are better tolerated and more resistant to outer compressing forces. We present our experience in the use of metallic selfexpanding stents for solving ureteric strictures or fistulae secondary to medical procedures.

Methods: Fifteen ureters with iatrogenic lesions (11 stenosis and 4 fistulae) in 14 patients (7 male and 7 female) were treated by retrograde placement of a temporary metallic stent (Nitinol with an internal polytetrafluoroethylene -PTFE- cover) a median of 5 months in case of stenosis and 1,5 months for fistulae. Removal of the stent was made by cystoscopy. Posterior follow-up was made with intravenous urography and sonogram, with blood tests for measuring renal function.

Results: Mean age of the patients was 59,33 years, 13 had unilateral affectation and one bilateral. 11 of the lesions were stenosis, of which 4 (36,36%) were secondary to Ureterorrenoscopy (URS), 3 (27,27%) to Transurethral Resection of Bladder Tumors; 3 (27,27%) to Gynecological Surgery, and 1 (9,09%) to pelvic Radiotherapy. Out of the 4 fistulae, 2 were secondary to Gynecological surgery (50%) and 2 to Rectum Surgery (50%). 4 of the stenosis (36,36%), were located on the middle-third of the ureter and a 10 cm stent was placed in these cases; another 4 were located on the distal portion of the ureter in which either 10 cm or 5 cm stents were used, and the last 3 were situated on the ureteral orifice in the bladder, where 5 cm stents were preferred. Migration and extrusion was the most frequently found complication (36% for stenosis and 25% in fistulae), calcification (s:18%/f:25%) and vesicoureteral reflux (s:18%). After removal, 78,6% presented a complete resolution of the problem with normal serum creatinin levels. For stenosis, global success rate was 63,6% with better results in open surgery lesions. All fistulae were solved after removal of the stent (100% success).

Conclusion: Metallic stents are a safe and effective way to treat iatrogenic lesions with minimum and harmless complications, short hospital stay and providing a less invasive and sometimes less expensive alternative in selected patients.

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U5 – MISCELLANEOUS

U5-1 Are Complications after Ureteroscopy with Laser Lithotripsy Associated with Ethnicity?

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Introduction and Objectives: Ethnicity has been a known risk factor for complications in select procedures. Our goal was to determine whether complication rates after ureteroscopy with laser lithotripsy varied on the basis of ethnicity.

Methods: We performed an IRB-approved retrospective chart review of 601 patients who underwent URS with laser lithotripsy for urinary tract stones from 2007–2013, performed by three urologists at an urban safety net hospital. Data collected included ethnic background and emergency readmission. Complications were categorized using the Modified Clavien Classification System.

Results: 601 patients who underwent URS with laser lithotripsy from 2007–2013 were included. Race was extrapolated from self-reported patient registration data. Of the 601 patients, 218 (36.3%) were Caucasian, 184 (30.6%) were Hispanic, 166 (27.6%) were Black or African American, 13 (2.2%) were Asian,

and 20 (3.3%) were of another ethnicity. Whites presented with higher rates of Grade I complications. No other difference in complications was seen (Table 1). Patients identifying as Black or African American, Caucasian, and Hispanic were readmitted from the emergency department at rates of 3.0%, 7.3%, and 6.5% respectively. There was no significant difference in readmission rates between any of the groups (P = 0.25). Overall, 2 patients suffered myocardial infarction, 9 urosepsis, 1 steinstrasse, 1 stent migration, and 12 hydronephrosis.
Conclusions: The rate of Grade I complications was higher in the Caucasian group. For all other grade complications, rates did not vary significantly based on ethnicity. Readmission rates also did not vary significantly with ethnicity.

Table 1: Complication rate by Ethnicity

Grade	Black or African American	Caucasian	Hispanic/Latino	Asian	Other	Total	P value
I	3.6%	10.1%	3.3%	0%	5%	5.8%	0.03
II	0.6%	2.3%	1.6%	0%	5%	1.7%	0.53
IIIa	4.2%	9.6%	7.1%	15.4%	10.0%	7.5%	0.29
IIIb	1.8%	2.8%	2.2%	0%	5.0%	2.3%	0.86
IVa	0%	0.5%	0.5%	0%	0%	0.3%	0.91
IVb	1.2%	2.8%	0.5%	0%	0%	1.5%	0.41
Total	1.8%	3.9%	2.6%	3.8%	3.8%		

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U5-2 Intralesional Injection Therapy for Peyronie's Disease: Verapamil versus Triamcinolone

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Introduction and Objectives: Peyronie's disease is a poorly understood clinical problem described as penile curvature, scar tissue (plaques) and pain. The treatment of this disease is a challenge for the clinician and the goal of that is to improve symptoms and sexual function without adding treatment related morbidity. In this study, we evaluated the effect of Verapamil compared to Triamcinolone in treatment of Peyronie's disease.
Material and Methods: In this cohort study, 60 patients who had Peyronie's disease for an average of 12.35 months (range 6–18 months) were randomly divided into two groups. 30 patients (group A) underwent treatment with intralesional injection of Verapamil (5 mg weekly for up to 6 weeks) and 30 patients (group B) with intralesional injection of Triamcinolne (40 mg weekly for up to 6 weeks). The degree of curvature, plaque size, rate of erectile dysfunction and pain were evaluated before and after treatment.
Results: In patients, who received Verapamil, curvature reduction was 28.6%, plaque size reduction was 34%, the recovery rate of erectile dysfunction was 44.5% and pain reduction was 80.3%. Each of these parameters in patients, who used Triamcinolone, was 18.7%, 25.4%, 28.5% and 65.3%. The treatment was uneventful in group A, but 2 cases had vertigo and faint after injection in group B.
Conclusion: Intralesional injection of verapamil is more effective than Triamcinolone in treatment of Peyronie's disease with minimal complications.

U5-3 Slow release Diclofenac effects on varicocelectomy pain

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Introduction: Varicocelectomy is one of the most operations done by urologists and some patients feel significant pain after surgery. We compared, the effects of slow release Diclofenac on varicocelectomy pain by using pain visual analog scale (VAS) (0–10) all patients had no contraindication for using Diclofenac or other NSAIDS.
Material & Methods: In this study since May 2008-June 2013, 256 patients with inguinal or laparoscopic left varicocelectomy (age 18–27 years) divided in two groups group A (n = 93)(37.5%) received 100 mg slow release (SR) Diclofenac tablet 5–7 hours before varicocelectomy and group B (n = 163) (62.5%) without using SR Diclofenac. Two groups varicocelectomy pain comparied with each other by pain VAS.
Results: In our study two groups pain was significantly different. In group A using SR Diclofenac, the mean pain degree was 3.6 and in group B pain VAS was 6.8 (P < 0.05).
Conclusion: Using 100 mg slow release Diclofenac tablet 5–7 hours before surgery can significantly reduce varicocelectomy pain.
Key words: Diclofenac, varicocelectomy, pain

U5-4 Urological Complications of Endovascular Aortic Aneurysm Repair

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Aims: Endovascular Aneurysm Repair (EVAR) is commonly used in elective and emergency settings. The close proximity of the ureters gives rise to a theoretical risk of obstruction or other urological complications, which may be more likely missed due to the minimally invasive nature of the procedure. This study aims to quantify that risk and the complications which follow.
Methods: A registry of all EVAR procedures performed within a three year period in a major teaching hospital was studied and primary aortic procedures selected to identify any documented urological complications.
Results: 108 non-traumatic cases with adequate follow up were identified. 94 were male, 6 included a thoracic component to the aneurysm, and 18 were emergency repairs. Ages ranged from 55 to 92 (median 75), aneurysm diameter 3–11 cm (median 6 cm), and follow up 3–1275 days (median 415). 13 patients had documented a new diagnosis of urological pathology, 4 of which were incidental and unconnected. Two required open conversion due to bilateral renal artery obstruction by the graft. One suffered complete graft thrombosis including renal infarction and subsequently died. Other complications included unilateral renal infarction, renal artery stenosis, accessory renal artery occlusion and incomplete ureteric obstruction. Only in one case of left ureteric compression by a haematoma was intervention required in the form of a long term ureteric stent.
Conclusions: The rate of isolated urological complications is acceptably low and the rate of ureteric obstruction requiring intervention is below 1%. For those considered high-risk preemptive ureteric stenting or interval ultrasound imaging could be performed. The role of urological investigations in identifying incidental aortic aneurysms is also noted.

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U5-5 Long-term outcomes of a novel therapeutic procedure for persistent and recurrent hemospermia by transurethral seminal vesiculoscopy

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Objectives: To assess the long-term follow-up outcomes of a novel diagnostic and therapeutic procedure for persistent and recurrent hemospermia by transurethral seminal vesiculoscopy.
Methods: 156 patients with persistent and recurrent hemospermia in our single clinic were successfully performed by transurethral seminal vesiculoscopy since July 2008. In our 156 patients, the mean age was 31 years(range 16–69). The course of persistent hemospermia was 6 months to 17 years(mean 24 months). All the patients with persistent or recurrent hemospermia were not cured by medical treatment or any other physical therapy. The definite urogenital malignancy of persistent hemospermia were excluded by physical examination including digital rectal examination, blood PSA and clotting time, and further imaging investigation such as TRUS, CT or MRI. The ejaculatory duct and seminal vesicle were conducted to observe under direct vision through the distal seminal tracts using a 4.5/6.5F rigid ureteroscope.
Results: All the patients with persistent and recurrent hemospermia were confirmed by transurethral seminal vesiculoscopy(71 seminal vesiculitis and 58 seminal stone secondary to them,46 ejaculatory ducts obstruction incompletely,12 Mullerian cyst,8 cysts of seminal vesicle and 9 benign prostatic hyperplasia). The mean operative time was 25 mins(range 8–90 mins). There were no complications including injury of urethra and seminal vesicle and postoperative discomforts in the perineal region. The mean follow-up period was 18 months(range 3–60 months). In those 156 cases, 7 patients were out of follow-up. Hemospermia in 135 cases disappeared and 14 patients respectively recurred in 5 to 48 months after receiving transurethral seminal vesiculoscopy. Of those 14 cases with postoperatively recurrent hemospermia,6 patients were cured by re-transurethral seminal vesiculoscopy.
Conclusions: The aetiologies of persistent and recurrent hemospermia are mostly associated with seminal vesiculitis and seminal stone secondary to vesiculitis or ejaculatory ducts obstruction incompletely. Our long-term follow-up results suggest that transurethral seminal vesiculoscopy enables diagnosis and management of distal seminal tracts disorders.
Keywords: Hemospermia, Seminal vesiculoscopy, Seminal stone, Vesiculitis

U5-6 Rates and predictors of hospital acquired conditions in urologic surgery

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United States

Introduction and Objectives: This study aims to define the rate of the three most common hospital acquired conditions (HACs); surgical site infection (SSI), urinary tract infection (UTI), and venous thromboembolism (VTE) in patients who undergo major urologic surgery. The association between patient factors with HACs was investigated.

Table 1. Multivariate analysis for risk of Hospital Acquired Infections

	OR	95% C.I.for OR		P - Value
		Lower	Upper	
Male Gender	0.886	.782	1.004	0.058
BMI >30 (kg/m2)	1.247	1.109	1.402	**<0.001**
White Race	0.939	.826	1.068	0.339
Current Smoker	1.020	.883	1.179	0.784
History of COPD	1.262	.984	1.619	0.067
History of CHF	1.310	.700	2.452	0.399
Hypertension	0.840	.743	.951	**0.006**
Diabetes	1.266	1.092	1.466	**0.002**
Disseminated Cancer	0.768	.567	1.041	0.089
Steroid Use	1.263	.964	1.654	0.090
Dyspnea at rest	1.292	1.067	1.565	**0.009**
Totally dependent functional status	2.296	1.276	4.128	**0.006**
Chemo within 30 days	1.143	.818	1.596	0.433
Radiotherapy within 30 days	1.448	.704	2.980	0.315
ASA 3-5	1.321	1.161	1.502	**<0.001**
Total Operation Time	1.003	1.003	1.004	**<0.001**
Total Length of Stay	1.048	1.039	1.057	**<0.001**
Open Procedure	2.478	2.201	2.789	**<0.001**

Methods: Using American College of Surgeons National Surgical Quality Improvement Program (NSQIP) data from 2005 to 2012, we determined rates of HAC in patients undergoing major urologic surgery. Rates were stratified by procedure type and approach. Multivariable logistic regression was used to identify predictors of HAC occurring within 30 days of surgery.
Results: A total of 39,257 cases were identified. Overall, 2300 (5.85%) had ≥1HAC. UTI (2.58%) was the most common, followed by SSI (2.47%) and VTE (0.68%). Highest rates of HACs were associated with cystectomy (22.8%), ureteral reconstruction (17.1%), and ureteroneocystostomy (14.7%). Laparoscopic/robotic procedures had lower rates of HACs compared with open cases (3.5% vs. 7.2%, $p < 0.001$). Multivariable regression analysis demonstrated that open surgical approach, totally dependent functional status, dyspnea at rest, ASA score, diabetes, BMI > 30, and length of surgery and stay independently predicted HACs (Table1).
Conclusion: HACs occur at a rate of 5.8% during major urologic surgery. Laparoscopic/robotic surgery appears to have lower rates of HACs than open surgery. Dependent functional status, diabetes, BMI > 30 and length of stay were associated with HACs.

U5-7 Candiduria in hospital patients – Incidence and Antifungal Susceptibility Profile Over 10-Year Period

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Introduction and Objective: Fungal urinary tract infections (UTI) are uncommon and so their susceptibility profile is not well characterized. A retrospective review of hospital records from a single university hospital was conducted identifying urine cultures positive for growth caused by Candida species including albicans, inconspicua, glabrata, lusitaniae, tropicalis, parapsilosis. The susceptibility to anti-fungal therapy is presented. Patient gender, age and catheter usage were assessed as risk factors for candiduria.
Materials and Methods: The computerised laboratory results database was searched for urinary isolates of all Candida species for the period 1 Jan 2005 to 31 October 2014. Patient age, gender and specimen type were recorded in the database. Urine samples received from outside our institution (including community isolates) were excluded from the analysis. Identification and

susceptibility testing was performed using the VITEK® 2 fungal susceptibility card (bioMérieux, Marcy d'Etoile, France).
Results: Our initial database included 44,395 samples which was reduced to 37,538 samples from 28,604 unique patients after exclusion criteria were applied. Of these, 96 isolates of Candida species were identified from 61 individual patients. This is an incidence of 2.5 per 1,000 positive urine cultures. Catheterization was identified as a risk factor for candiduria.

C. albicans was identified as the most common species and was shown to be susceptible to most antifungal agents. Other species such as C. glabrata exhibit resistance to some first line agents such as fluconazole but remain entirely susceptible to amphotericin B.
Conclusion: Fungal UTI and candiduria are uncommon. If antifungal therapy for candiduria is clinically indicated, our results support the use of fluconazole and amphotericin B as first and second line agents respectively.

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U5-8 Extended Spectrum Beta-Lactamase (ESBL) Producing Enterobacteriaceae in Hospital Urinary Tract Infections – Increasing Incidence and Antibiotic Susceptibility Profile Over 10 Years

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Introduction and Objective: Extended spectrum beta-lactamase (ESBL) producing Enterobacteriaceae are an increasing concern in an era of antibiotic resistance as they cause infections ranging from community acquired urinary tract infection (UTI) to life threatening sepsis. We retrospectively reviewed the incidence and antibiotic susceptibility profile of all ESBL producing Enterobacteriaceae at a university hospital. Patient gender, age and catheter specimen were assessed as risk factors.
Materials and Methods: The computerised laboratory results database was searched for urinary isolates for the period 1 Jan 2005 to 31 October 2014. Patient age, gender and specimen type were recorded in the database. Urine samples received from outside our institution (including community isolates) were excluded from the analysis. Urine was processed by calibrated loop sampling on to chromogenic clear media (Oxoid Ltd). A positive culture was defined as $\geq 10^5$ CFU/mL except for samples from children and pregnant women where a cut-off value of $> 10^3$ CFU/mL was used. ESBL screening was performed on samples that were resistant to cefpodoxime and confirmed by double disc diffusion (Oxoid Ltd). Susceptibility testing was performed by BSAC disc diffusion testing and reported for ampicillin, co-amoxiclav, piperacillin-tazobactam, carbapenems (ertapenem, meropenem), nitrofurantoin, trimethoprim, cephalexin, third generation cephalosporins (ceftriaxone, ceftazidime) quinolones (norfloxacin or ciprofloxacin) and aminoglycosides (gentamicin, amikacin).
Results: Our initial database included 44,395 samples which was reduced to 37,538 samples from 28,604 unique patients after exclusion criteria were applied. The incidence of ESBL producing E. coli increased across the study. Antibiotic resistance trends are reported and ESBL production was associated with multi-drug resistance. Patients with cultures positive for ESBL producing uropathogens were more likely to be male, catheterized and aged over 65.
Conclusion: We demonstrate that the incidence of ESBL producing E. coli is increasing and that such organisms are often multi-drug resistant. We have shown ESBL producing uropathogens to be susceptible to broad spectrum antimicrobials such as carbapenems and that nitrofurantoin also may be useful as initial therapy in uncomplicated cases.

U5-9 Vancomycin Resistant Enterococcus species in Hospital Urine Cultures – Incidence and Changes in Antibiogram Over Ten Years

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Introduction and Objective: Vancomycin resistant enterococci (VRE) urinary tract infections (UTI) are uncommon, though they present a challenge for antibiotic treatment as VRE carriage amongst hospital inpatients becomes an increasing issue. We present results from a single university hospital. Patient gender, age and catheter usage were assessed as risk factors for developing a VRE positive urine culture.
Materials and Methods: The computerised laboratory results database was searched for urinary isolates of all Enterococcus species for the period 1 Jan 2005 to 31 October 2014. Patient age, gender and specimen type were recorded in the database. Urine samples received from outside our institution (including community isolates) were excluded from the analysis. Urine was processed by calibrated loop sampling on to chromogenic clear media (Oxoid Ltd). A positive culture was defined as $\geq 10^5$ CFU/mL except for samples from children and pregnant women where a cut-off value of $> 10^3$ CFU/mL was used. Susceptibility testing was performed by BSAC disc diffusion testing and reported for ampicillin, nitrofurantoin, linezolid, synercid and tigecycline.
Results: Our initial database included 44,395 samples which was reduced to 37,538 samples from 28,604 unique patients after exclusion criteria were applied. Of these, 5,528 cultures were positive for enterococcus of which 542 (9.8%) were vancomycin resistant.

The number of VRE urinary isolates did not significantly increase across the study. Antibiotic resistance was demonstrated to have increased compared to previous studies, particularly across first line agents although nitrofurantoin is still 80% susceptible. Broad spectrum agents were demonstrated to be effective. Most E. faecalis isolates are resistant to ampicillin compared to E. faecium. Catheter use was associated with VRE UTI, but only in male patients.
Conclusion: The incidence of VRE amongst positive urine cultures was stable over the last ten years in our institution. Although resistance to nitrofurantoin has increased recently, it still serves as an appropriate first choice in uncomplicated VRE UTI when treatment is indicated. The principles of antibiotic stewardship suggests that broad spectrum agents, such as linezolid and tigecycline, are reserved for more serious infections. For the first time, we reported that tigecycline is effective in treating VRE UTI, both E. faecalis and E. faecium.

U5-10 Effects of fixatives on tissue elastic properties measured by quantitative Optical Coherence Elastography (OCE)

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Introduction: Fixed and preserved tissue/cadavers have been massively used in biomedical research and clinical training, as well as the design of medical instrumentation. Not only the tissue morphology, but also its elastic properties need to be considered in the fixation and preservation procedures. Formalin is a saturated water solution (37% – 40% w/v) of formaldehyde (CH_2O). Aldehydes have the property of crosslinking by creating covalent chemical bonds between proteins. Thiel is one of the new soft-fix embalming methods comprising of a very low concentrations of formaldehyde. Due to the high concentration of salt components, proteins in the tissues are denatured, leading to a homogenization of the tissues. Understanding the effects of storage and preserving conditions on the mechanical properties of soft tissues have both clinical and experimental significance.
Materials and Methods: We aimed to study the effects of tissue preservation on the elastic properties mainly by 10% formalin solution and Thiel fluids. Five different kinds of fresh tissues were from pig and chicken, i.e. fat, liver, muscle, tendon and cartilage. The tissue elasticity was measured intensively and strictly with a controlled timeline of four days by quantitative optical coherence elastography (OCE) system. Briefly, it consists of two main parts: vibration stimulation and phase sensitive optical coherence tomography (PhS-OCT).
Results: The detailed time impact of elasticity change of fat, liver, muscle, cartilage and tendon by formalin fixation and Thiel solution were compared, respectively. Young's modulus of all kinds of tissue increased due to the formalin fixation, however, with different degree, starting time and speed. In between the soft tissues, formalin had the minimum impact to porcine fat, with overall increase by 34.8% from 280.74 ± 30.8 kPa to 378.94 ± 26.36 kPa. On the other hand, the rest kinds of tissues had stronger reaction to formalin fixation. Different from formalin fixation, Young's modulus of all kinds of tissue tend to remain stable during Thiel fluid fixation.
Conclusions: This paper explores the use of quantitative OCE to provide quantitative mechanical property change induced by fixation procedure. It demonstrates a novel technique which can be used to characterise and assess new fixation method. Although there is no one fixative suitable for all the situations, it is potential to use this technique to evaluate the time and concentration of the fixative required for the specific tissue.

U5-11 The Art of Flexible Cystoscopy – a pictorial narrative

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Introduction: Looking into the bladder has come a long way since the ''Lichtleiter'' in 1805. It has undergone numerous developments and refinements resulting in today's modern flexible cystoscope. During the two centuries of transformation, there have been numerous articles, treatise and books written about the art of cystoscopy yet in modern age we are focused on improving the views by technological advancements.
Materials and Methods: We searched the PubMed and the Internet Digitized Archives library (https://archive.org) using the mesh word ''cystoscopy'' for various notations written more than a century ago. We used the descriptions, illustrations and the drawings of cystoscopic findings in those treatises to compare and contrast the cystoscopic pictures of similar lesions we have taken with the modern flexible cystoscopy.
Results: The illustrations, drawings and descriptions made by the pioneers a century ago are strikingly similar to one we have photographed.
Conclusion: It is one of the most common outpatient investigations, which has been made easier with the refinements in technology. It has been an incredible journey from the times when it was just doctor inspection to the present times when a patient is encouraged to watch the cystoscopy on the screen. The art of cystoscopy remains the same though the technology has changed.

U5-12 Suspected acute pyelonephritis: Who refers to Whom? The role of imaging in the diagnosis of pyelonephritis

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Introduction: Acute Pyelonephritis is an inflammation of the kidney tissue, calyces, and renal pelvis. We undertook an audit to determine if the management of acute pyelonephritis is compliant with accepted best practice guidelines (NICE CKS), and assess whether the management of all cases of pyelonephritis by urology is necessary.
Methods: Retrospective data collection from records of 169 adult patients with admitting diagnosis coded as pyelonephritis, from April 2013 to March 2014. Patient demographics, admitting speciality, length of stay, investigations including imaging, microbiology and definitive diagnosis were analysed. We also looked at urological input up to a year on from the period of study.
Results: 169 patients were admitted with suspected pyelonephritis (April 2013-March 2014), total LOS 328 days. Majority were females 88% (149), and males 12% (20).

Most patients were admitted under Medicine: 87% (148), 5.9% (10) General Surgery, and only 6.5% (11) Urology. Documentation of urine cultures was available in 78.7% (133), 58 were positive (43.6%). The most common organisms were E. Coli 79.3% (46), Mixed growth: 12.1% (7), and ESBL: 3.42% (2). Blood cultures were taken in 62.7% patients (106). Of these Positive: 19(11.2%); E.Coli: 78.9% (15) ESBL: 2 (10.5%), Staph Epidermidis: 1 (5.3%), and Proteus: 1 (5.3%).

Imaging was performed in 88.8%(150), majority had abdominal US 83%(125), XR KUB: 2.6%(4), CTKUB: 5.3% (8), CT abdo &pelvis: 8%(12) and CTU: 0.7%(1). Imaging was performed within 24 hours in only 60% (102). Only 10% (15) cases of pyelonephritis was confirmed by different imaging modalities, 53% (90) didn't show any abnormalities, urolithiasis 12.66% (19), and other benign incidental urological findings 22.66% (34). Of the 169 patients 26.6% (45) had overall urology input. Of these 6.5% (11) were primarily admitted under urology, 14.8% (25) were referred for opinion during admission, and 5.3% (9) were referred as outpatients.

Over the duration of this audit 4.1% (7) patients required urological intervention, JJ sent for obstructing PUJ stone, laparoscopic simple nephrectomy for atrophic kidney with recurrent UTI, and 5 patients underwent flexible cystoscopy.
Conclusion: Only 1 out of 169 patients needed acute urological intervention. 88% of patients with suspected pyelonephritis underwent imaging during admission; 60% within 24 hours.
Admitting all suspected pyelonephritis under urology will be counterproductive, and severely affect bed availability for cancer and elective cases. A prospective audit is planned with recommendations to improve the overall management of cases admitted with acute pyelonephritis.

U5-13 Association between Ureteral Jet Dynamics and Nonobstructive Kidney Stones in Children

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Introduction: Ureteral jet dynamics provide information about ureteral physiology and peristaltism. The aim of this study is to investigate the relationship between ureteral jet dynamics and stone formation in pediatric patients.
Methods: Children admitted to Urology and Pediatric Nephrology clinics with flank pain between March-December 2013 and 4–18 years old and asymptomatic age-matched children were prospectively enrolled. Kidney USG and bilateral ureteral jet flow measurements were performed. Patients diagnosed with unilateral nonobstructive lower pole kidney stone formed Group 1 and the control group formed Group 2. These groups were divided into two subgroups, as affected and healthy renal units in Group 1 and right and left healthy renal units in Group 2. Average jet flow rate (JETave) and jet flow pattern (JETpattern) were compared between groups.
Results: JETave in affected renal units in group 1 was found to be significantly lower than healthy renal units in Group 1 and right and left healthy renal units in Group 2 ($p < 0.05$). Considering the JETpattern, continuous jet pattern rate in affected renal units in Group 1 was found to be significantly higher ($p < 0.05$). In ROC analysis the cut-off value of JETave was given as 9.5 cm/s(AUC = 0.700, $p = 0.006$) with 62.5% sensitivity and 62.5% specificity for kidney stone formation. Stone formation risk was found to be 5.6 times more (OR:5.6; $p = 0.018$) in patients with JETave < 9.5 cm/s.
Conclusions: Considering the fact that low JETave is a sign of decreased ureteral peristaltism; children with JETave < 9.5 cm/s and/or continuous JETpattern should undergo close follow-up due to the increased risk of stone formation.

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U6 - LOWER URINARY TRACT

U6-1 Transurethral 2 um laser enucleation of submucosal bladder benign tumor: two cases report with literature review

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Introduction and Objective: To evaluate the safety and efficacy of transurethral 2 um laser enucleation of submucosal bladder benign tumor.
Materials and Methods: Two patients with submucosal bladder benign tumor were retrospectively analyzed with review of the literature. These two patients were all female, and their age was 47 years and 57 years respectively. Both of them were admitted with urinary frequency, urgency and dysuria. CTU and cystoscopy suggested submucosal bladder non-epithelial tumor, benign tumor perhaps. We chose transurethral 2 um laser enucleation of submucosal bladder tumor to treat these patients.
Results: These two surgeries were successful without any complication. We removed the catheter at 3-day postoperatively for two patients, without hematuria. Both cases' pathological diagnosis reviewed bladder leiomyoma. After 24 months and 10 months follow-up respectively, no tumor recurrence and metastasis was found.
Conclusions: Transurethral 2 um laser enucleation of submucosal bladder benign tumor is a feasible and safe surgery.

U6-2 Palliative holmium laser enucleation of the prostate for severe bladder outlet obstruction in patients with advanced prostate cancer

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Introduction: The outcome of patients with advanced prostate cancer undergoing palliative holmium laser enucleation of the prostate (HoLEP) is not well defined in the literature. We evaluated safety and postoperative outcomes of patients with advanced prostate cancer undergoing palliative HoLEP
Materials and Methods: A prospective data of 28 patients with advanced prostate cancer undergoing palliative HoLEP at a academic tertiary hospital between October 2012 and May 2014 was collected. Palliative HoLEP database was assessed including complications, functional outcomes, and quality of life (QoL) preoperatively and at 3 and 12 months postoperatively.
Results: Median age and follow-up (FU) of the entire study cohort was 69.5 years (58–84) and 17.5 months (5–28) (Table 1). 92.9% (26/28) of patients were undergoing androgen deprivation therapy at the time of palliative surgery. Any patient didn't receive radiation therapy for prostate cancer. Preoperatively, 75% of patients (21/28) have experienced acute urinary retention and the urethral catheter was installed in 46.4% of the patients (13/28) due to frank urinary retention at HoLEP. Collapse of surgical plane within the prostate and bladder invasion was founded in 42.9% (12/28) and 64.3% (18/28) of patients, respectively. Medians of functional parameters improved significantly in all patients postoperatively (Table 2). Complications were low and

Table 1. Demographic and operative results for patients undergoing palliative HoLEP

Number of patients	28
ECOG* Performance status	
0, 1	21
2	7
Median PSA (ng/mL)	20.7
Median prostate volume (g)	61.6
Clinical stage (No.)	
T3	16
T4	12
N1	18
M1	12
Median Enucleation weight (g)	18
Median Enucleation speed (g/min)	0.5
Complication	
Grade I (urinary obstruction)	3
Grade III (Urethral stricture)	2

Table 2. Postoperative characteristics after palliative HoLEP

	Preoperative	Postopeprative	
	N=28	3 mos (N=28)	12 mos (N=26)
Median IPSS	32 (28-35)	14.5* (7-27)	16* (8-29)
Median QoL	6 (5-6)	2 *(1-5)	2* (1-5)
Median Qmax (m/s)	6.4 (1.2-11.4)	12.8* (6.2-17.3)	11.7* (6.9-16)
Median PVR (mL)	315 (60-1200)	47.5* (0-180)	62* (0-196)
Number of pads/day			
0	26	25	23
1	0	3	3
≥2	2	0	0
Gleason score	N=28	N=28	
6	2	2	
7	10	2	
≥8	16	20	
No cancer cells within specimen	0	4	

* p<0.001 compared to preoperative results

no patient received blood transfusion postoperatively (Table 1). Catheter and pad free rate was 100% (24/24) and 87.5% (21/24) at last FU, respectively.
Conclusion: Palliative HoLEP represented a safe and effective surgical treatment in patients with advanced prostate cancer.

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U6-3 Trus biopsy and octagenarians-a change in management?

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Introduction & Objectives: An increasing number of octogenarians are being referred with raised PSA, and beyond the realm of clinical trial. The role of TRUS biopsy in these patients is questionable. NICE guidelines specify TRUS biopsy is required in presence of an abnormal clinical examination and PSA, but do not specify an age limit.
Methods: We reviewed the use of TRUS biopsy in the over 80 age group at two tertiary centres from 2011 onwards. Notes and electronic records were examined for clinical stage, gleason grade, overall risk stratification, management (including involvement in clinical trials), patient outcomes, and whether biopsy ultimately changed the management plan.
Results: 114 patients over the age of 80 years underwent TRUS biopsy over the last 3 years. The mean age of octogenarians undergoing TRUS biopsy was 82.8 years (range 80–90 years). Prior to biopsy, 18 cases had a benign feeling DRE (15.8%), the rest (96 cases, 84.2%) were clinically suspicious for malignancy. 34% patients went onto watchful waiting or PSA observation only after biopsy. The 66% of patients had hormone deprivation (21), combined hormone therapy/radiotherapy (20), or brachytherapy (1). 85–90% of these cases had a clinically suspicious DRE predating their biopsy.
Conclusions: The majority of patients over the age of 80 undergoing TRUS biopsy had a suspicious DRE, and a clinical diagnosis of prostate cancer could have been made. Given the significant risks of transrectal biopsy, this study highlights the importance of a considered approach to prostate cancer investigation in the elderly.

U6-4 Clinical factors that predict successful visual internal urethrotomy for urethral stricture recurrence after dorsal onlay graft urethroplasty

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Introduction: To evaluate the clinical factors affecting the surgical outcome of visual internal urethrotomy (VIU) for urethral stricture recurrence (USR) after dorsal onlay graft urethroplasty.
Patients and Methods: We retrospectively reviewed the records of 66 patients who underwent VIU for USR after urethroplasty between October 2005 and November 2012. The dorsal onlay graft urethroplasty for anterior urethral stricture was performed using penile skin or buccal mucosa. Twenty-two of these patients, whose follow-up duration was more than 1 year after VIU, were selected. The USR was confirmed by retrograde urethrogram or cysto-urethroscopy. Success was defined as greater than 15 mL/s of peak urinary flow rate at 1 year after VIU without any clinical evidence of USR. Clinical factors associated with urethroplasty were evaluated as predictors of VIU results.
Result: Among the 22 patients, the overall success rate of VIU was 50.0% and the mean follow-up period was 30.2 ± 14.1 months (range, 12–72 months). Age was significantly higher in patients with failure ($p = 0.034$). There was significant difference between patients with success and failure in a previous history of operation before urethroplasty ($p = 0.004$). Logistic regression analysis revealed that a previous history of operation before urethroplasty was a significant predictor of VIU failure (OR = 22.013, 95% CI = 1.660–292.001, $p = 0.019$).
Conclusion: The previous history of operation before dorsal onlay graft urethroplasty for anterior urethral stricture was a significant predictor of VIU failure for USR.

U6-5 Safety and efficacy of Holmium laser uretherotomy for urethral stricture under local anesthesia

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Introduction: Urethral stricture is common condition and optical internal urethrotomy is prefered as the first treatment option. To evaluate the safety and efficacy of Holmium laser urethrotomy for urethral stricture under local anesthesia.
Materials and Methods: 68 male patients were treated with Holmium laser urethrotomy under local anesthesia. Strictures were at bulbar urethra in 46 patients, membranous urethra in 10 patients, and pendulous urethra in 12 patients. We used a semirigid ureteroscope with an outer diameter of 10F at the tip. Stricture was visualized and incised at 12 o'clock position. Laser energy was set on 1.0 J with a frequency of 10 Hz. A urethral Foley catheter was not placed postoperatively. A visual analog pain scale was used to assess pain postoperatively.
Results: The procedure was successful in 66 patients (97%). The procedure was very well tolerated with an extremely low complication rate. A visual analogue pain scale score was 2.1 ± 2.4. Preoperative average peak urinary flow rate was 5.9 ± 2.2 ml/s. Postoperative average peak urinary flow rate was increased to 16.9 ± 3.5 ml/s.
Conclusions; The Holmium laser uretherotomy under local anesthesia is a safe, comfortable and effective therapeutic modality for urethral stricture.

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U6-6 Clinical Efficacy of PTNS (Posterior Tibial Nerve Stimulation) in the treatment of Non Neurogenic Detrusor Underactivity.

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Casa Di Cura Nuova Villa Claudia
Italy

Introduction: Aim of our study is to evaluate the efficacy and safety of a series of posterior tibial nerve neuromodulation before the dis-obstructive surgical treatment, in patients affected by detrusor non neurogenic underactivity with preserved bladder sensation and capacity.
Materials and Methods: We treated 19 male patients, median age 67 (52 – 78) years old. 9 patients had permanent catheter since a maximum of 3 months and a minimum of 3 weeks, with, at least 2 unsuccessfull removal attempts. 1 patient was under self-intermittent catheterization regime. All non responders to drug therapy.

All, at the urodinamic study, present a Qmax < 10 ml/s and a PDet at Qmax or during urination attempt < = 30 cmH2O with a median of 18 cmH2O (range 10 – 30 cmH2O). They filled out IPSS and Qol before and after the treatment.

All patients underwent a series of at leat 20 PTNS sessions, two or three times a week.

Urodinamic study was repeated at the end of the series, evaluating the Qmax, the pDet at Qmax or during urination attempt, Cistomanometric Capacity and Post Voiding Residual.
Results: IPSS and Qol score of patients without permanent catheter was on the whole better but not statistically significant. In 14 patients the urodynamic study demonstrated median maximum pDet during pression-flow study of 36 cmH2O (range 32 – 44 cmH2O). In 5 patients, we recorded an improvement of detrusorial pressure (however lower than 30 cmH2O).

In all cases after the PTNS series patients underwent a surgical dis-obstruction treatment (endoscopic or open) with good functional outcomes evaluated by IPSS, Qol and uroflowmetry with post-voinding residual. Only the 2 patients with detrusorial pressure lower that 30 cmH2O, after surgical treatment needed a training of self catheterization for pathological post-voiding residual.
Conclusion: The PTNS is a simple procedure, painless, easly to submit to patient. The use of surface electrode could be useful also for domestic treatment. It seems to be able to improve detrusor contractility, with a view to a surgical dis-obstractive treatment, in patients affected by detrusor non neurogenic underactivity.

U6-7 Efficacy of surgical dis-obstructive treatment in male with detrusor non neurogenic underactivity

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Italy

Introduction: The managment of patients with detrusor underactivity is an open challenge. Medical efficacy treatments still not exist and the option of permanent or self intermittent catheterization is not well accepted by men since its influence on the quality of life and its long term possible complications.

	pre	1 month	3 months	6 months
IPSS	27,8+-6,5	9,5+_4,7	8,9+_3,7	8,8+_5,8
Qol	4,79+_0,71	1,2+_0,89	1,5+_0,9	1,5+_0,5
Qmax	5,7+_4,1	17,5+_6,7	16,8+_7,2	17,4+_6,3
PVR	150+/-100	50+_50	30+_70	40+_60

Aim of our study is to evaluate the efficacy of dis-obstructive surgical treatment in patients diagnosed detrusor underactivity at urodinamics study.
Materials and Methods: From September 2012 to July 2014, 52 patients affected by detrusor underactivity (defined as a Qmax < 10 ml/s and a Pdet between 10 and 30 cmH2O) were selected as candidates to a surgical dis-obstructive treatment.
The pre-operative assessments included digital rectal examination (DRE), prostate specific antigen (PSA) testing, transrectal ultrasound of the prostate to establish prostate size and urodinamics study. All patients compiled IPSS and QoL questionnairies.

Patients were followed at one month and every three months for the first year after surgery and than every 6 months. Evaluation included PSA testing, urinocolture and uroflowmetry with postvoiding residual.
Results: Median patients' age was 72 (range 50–82), median PSA 2,2 ng/ml (0,5–3,5 ng/ml), median prostate volume 42 ml (23–85 ml). 48 patients with a prostate volume < 80 ml underwent to endoscopic TURP in saline. 4 had a prostate volume > 80 ml so they were selected for open surgery. Median follow up was 12 months (3–28 months). 12 had permanent catheter from a 2 weeks to 5 months before surgery.

After dis-obstructive patients had a IPSScore and QoL statistically better than before. After one month, all patients had spontaneous urination. In 6 patients, who had catheter before although presented spontenous urination, they had training autocatheterization for pathologic PVR.

Peri and post-operative complications were similar to general popolation, except for the risk of catheterization in the first month after surgery (25%).
Conclusion: Dis-obstructive endoscopic or open surgery, in spite of literature discordant opinions, is in our experience, an efficacy treatment which, since the poor therapeutic options, should be always propose to the patients affected by

U6-8 Transurethral anatomical Enucleation and morcellation of the huge prostate (>200 g) in single center (10 cases report)

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Objective: To introduce the strategy in transurethral anatomical Enucleation and morcellation of the huge prostate.
Methods: 10 BPH patients with huge prostate (> 200 g) underwent transurethral anatomical Enucleation and morcellation of the huge prostate in our department from June 2011 to January 2014. We collected and analyzed the data of the general conditions of preoperation, preoperative and follow-up of these patients.
Results: All the 10 cases of operation were successfully completed. General conditions of preoperation: age (72.1 ± 3.1) years old, prostate volume (254.3 ± 21.7)g. Preoperative and postoperative hemoglobulin and serum sodium were (121.2 ± 14.4 VS 94.1 ± 11.3)g/L, (141.1 ± 3.6 VS 137.1 ± 1.1)mmol/L. Two (20%) of patients required transfusion and all enrolled patients

were free of other complications like TURS, bladder ore rectum injuries, obturator nerve damage and death. Perioperative indications: Operation time (94.6 ± 7.2)min, Enucleation time (47.4 ± 3.6)min, morcellation time (45.3 ± 4.3)min, bladder douche time (14.3 ± 3.1)h, catheterization time (22.5 ± 6.1)h, postoperative hospitalization time (5.3 ± 0.5)days. Comparison of IPSS, QOL, Qmax and PVR preoperation with six months after surgery were (22.3 ± 5.7 VS 5.2 ± 1.1), (4.5 ± 0.6 VS 1.4 ± 0.3), (6.1 ± 1.3 VS 24.5 ± 1.5) ml/s, (73.4 ± 11.4 VS 10.75 ± 2.3) ml. The differences were significant between preoperation and postoperation ($P < 0.05$). No case of urinary retention, incontinence, urethral stricture, or secondary bleeding was observed in six months of follow-up.
Conclusion: Transurethral anatomical Enucleation and morcellation of the prostate is mini-invasive, safe and feasible. This surgery can obviously relieve the symptoms of bladder outlet obstruction. Careful assessment of organ functions and adjustment the best physiology of patients are needed during preoperative period. Meanwhile, the surgeons should be skilled in transurethral anatomical Enucleation and morcellation of the huge prostate and prepare the blood perioperatively and adopt the following strategies intraoperatively: choose the suitable energy platform; resect the median lobe firstly and then resect lateral lobes; hemostasis should be timely and complete; equip with effective morcellators.

U6-9 Initial Experience of HoLEP

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Introduction: Endoscopic management of benign enlargement of Prostate is gold standard. Holmium Laser enucleation is emerging as size independent standard for treatment prostatic adenoma which has been recently introduced in Bangladesh. This study was undertaken to asses the early clinical experiences with this relative new technology.
Method: During July 2014 to December 2014 total 40 cases were underwent HoLEP. All patients preoperatively diagnosed as BEP. Intraoperative and post operative data were analyzed
Result: Age range 55 to 75 years. Average operation time 90 mins, mean enucleated tissue weight 45 gm. Catheter time range from 24 hour to 72 hours. None patient required blood transfusion. Duration of hospital stay 2–4 days. All patient followed up in one month. One patient developed dysuria that was managed conservatively
Conclusion: HoLEP is an effective treatment modality for BEP due to its shorter catheter time, shorter hospital stay, minimal risk of blood transfusion, quick return to full activity. For further comment study on large number of cases in different institute are required.

U6-10 Evaluation of 6-month Results of Bipolar Transurethral Surgery for BPH

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Introduction: Bipolar Transurethral Surgery of Prostate (BTUSP) is growing increasingly popular in the management of BPH-related LUTS. Compared to monopolar TURP, BTUSP has the potential advantages of less toxicity related to irrigation fluid absorption, and better hemostasis. However, there have been reports of BTUSP being associated with increased incidence of urethral stricture disease (USD). We aim at evaluating 6-month results of B-TUSP with special emphasis on USD and continence.
Methods: This is a retrospective study of patients who underwent BTUSP (resection, vaporization and enucleation) for BPH-related LUTS at Cairo University Hospital from January 2012 to December 2013. Perioperative parameters were assessed. Patients were evaluated at 3 and 6 months postoperative to assess IPSS, continence, UTI, uroflowmetry and PVR. For patients with suspicion of USD ($Qmax \leq 15$ ml/s, $PVR \geq 100$ cc, and/or $IPSS \geq 7$), retrograde and voiding CUG and/or cystoscopy were done.
Results: Six-months follow-up was available for 32 patients. Mean age was 66.2 ± 8.2 years. 16/32 patients were catheter dependent due to bladder outlet obstruction. Mean preoperative flowmetry, IPSS and adenoma size was 9.1 ± 3.02 ml/sec, 23.1 ± 2.3 and 60.1 ± 28.1 gm, respectively. 11/32 (34%), 14/32 (44%) and 7/32 (22%) underwent BTU- enucleation, resection and vaporization of prostate, respectively. There was a difference in mean adenoma size for vaporization, enucleation and resection patients (29.57 ± 11.9 gm, 83.36 ± 26.49 gm and 58.71 ± 17.82 gm, respectively) ($p < 0.05$). Mean postoperative catheter time was 2.7 ± 1.3 days. At 3 and 6 months, mean flowmetry and IPSS were 17.67 ± 3.9 ml/s and 4.56 ± 1.62, and 17.94 ± 2.7 ml/s and 4.53 ± 1.29, respectively. This was significantly different from preoperative flowmetry and IPSS ($p < 0.05$). At 3 months, 4/32 (12.5%) had UTI treated with appropriate antibiotics. Eight patients with $Qmax \leq 15$ ml/s (11–15 ml/s) were assessed and found not to have USD. None of our patients reported incontinence. At 6 months, there was no significant difference in mean Qmax for vaporization, resection and enucleation (18 ml/s ± 3.4, 18.71 ml/s ± 2.86, and 16.9 ml/s ± 1.86, respectively) ($p = 0.267$).
Conclusion: BTUSP is a safe and effective modality for surgical management of BPH-related LUTS. Our study demonstrates significant mprovement of flowmetry and IPSS that was maintained at 6 months with vaporization, enucleation and resection techniques. Additionally, there was no evidence of increased incidence of USD or incontinence.

U6-11 The management of acute urinary retention in a busy District Hospital, Cost implication and Length of stay - An Audit

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Introduction: AUR in male patients is a common presentation in district hospitals. It carries significant morbidity and the management requires forward planning and institution of a local pathway to ensure the correct diagnosis and treatement are applied. Some patients require hospital admission, whilst others can go home immediately with further plans put into place.. These had an adverse impact on length of hospital stay, bed occupancy, and unnecessary catheterisation led to reduction in patient Quality of life, and early return to work. The aim of our study is to reduce wrong diagnosis rate, as well as reduce unnecessary in hospital stay.
Materials and Method: The records of 299 patients were looked into in depth. Their details were obtained via the hospital computerised database, and Electronic discharge system. EDM, CRS,

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and Winpath. The records were classified according to admitting department and consultants, length of stay and readmission data were all reviewed and documented. An arbitrary but sensible 5 minimal dataset to guide admission was used as an audit too. Summarily, patients to be admitted included patients over 75 years, all patients with renal impairment, retention over 1 Litre, Clot retention, and urinary sepsis, and other compelling co-morbidities. Average stay was 8 days for catheterised patient. Potential savings: Zero co-morbidity = 74 pts

£250 / night of hospital bed × 576 = £144,000; ¡Unnecessary catheterisations < 350 mls = 53 pts × 15 days × £250 = £198,750,

Results: 74 out of 299 patients had unnecessary admission. Patients with AUR had an average of 8 hospital day admission, (3 to 12 days depending on the department). There was no unified treatment plan, and a large number were planned for TWOC in the hospital who could have gone to the community for the same. There were no uniform instruction to the GP from the emergency department, neither was Tamsulosin rigidly prescribed.

Conclusion: Conclusion: Several recommendations were made on the back of this audit. Including the purchase of 4 bladder scanners for different departments of the hospital, Design of an Acute Retention Pathway including Tamsulosin, and the above criteria, a clearer instruction for discharged patients, a plan for reaudit few years into these recommendations. (Re audit, and audit cycle closure details will be included in the poster, showing a reduction in misdiagnosis, and an improved pathway to discharged patients.) Simple and affordable changes can lead to a better healthcare delivery.

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