

# BJUI BAUS Annual Meeting, 25–28 June 2012, Glasgow, SECC SUPPLEMENTS

## Poster Sessions

**Tuesday 26 June 2012**

Poster Session 1

11:00–12:30 Alsh

PROSTATE CANCER DIAGNOSIS

Chairmen: Mr Rick Popert & Mr Garrett Durkan

Posters P1–P10

Poster Session 2

11:00–12:30 Carron

UPPER TRACT DISORDERS AND IMAGING

Chairmen: Mr Toby Page & Mr Chandra Shekhar Biyani

Posters P11–P20

Poster Session 3

14:00–16:00 Alsh

SCIENTIFIC DISCOVERY

Chairpersons: Mr Rakesh Heer & Mrs Caroline Moore

Posters P21–P34

Poster Session 4

14:00–16:00 Carron

STONES

Chairpersons: Mr Daron Smith & Miss Kay Thomas

Posters P35–P45

**Wednesday 27 June 2012**

Poster Session 5

11:00–12:30 Alsh

BLADDER CANCER

Chairpersons: Ms Jo Cresswell & Mr Rik Bryan

Posters P46–P57

**Poster Session 6**

11:00–12:30 Carron

**TECHNIQUES AND INNOVATION**

Chairmen: Mr Ghulam Nabi &amp; Mr John McGrath

Posters P58–P67

**Poster Session 7**

14:00–16:00 Alsh

**FEMALE UROLOGY AND LUTS**

Chairpersons: Mr Chris Harding &amp; Miss Mary Garthwaite

Posters P68–P82

**Thursday 28 June 2012****Poster Session 8**

11:00–12:30 Alsh

**ANDROLOGY**

Chairmen: Mr Richard Pearcy &amp; Mr Mike Foster

Posters P83–P92

**Poster Session 9**

11:00–12:30 Carron

**RENAL CANCER**

Chairmen: Mr Simon Williams &amp; Mr Neil Barber

Posters P93–P102

# BJUI

Tuesday 26 June 2012  
Poster Session 1

## SUPPLEMENTS

11:00–12:30 Alsh  
**PROSTATE CANCER DIAGNOSIS**  
Chairmen: Mr Rick Popert &  
Mr Garrett Durkan  
Posters P1–P10

P1

**A population based analysis of socioeconomic circumstances and incidence of prostate cancer**  
*K Shafique, R Oliphant, D Morrison*  
*Institute of Health & Wellbeing, University of Glasgow, United Kingdom*

**Background:** It has been suggested that the higher incidence of prostate cancer observed in more affluent men may be explained by greater use of screening. This study describes trends in overall and grade-specific prostate cancer incidence by socio-economic circumstances in the West of Scotland from 1991–2007.

**Methods:** Incident cases of prostate cancer (ICD-10 C61) from the West of Scotland were extracted from the Scottish Cancer Registry from 1991 to 2007. Socioeconomic circumstances were measured using the Carstairs score and disease grade (high versus low) was measured using the Gleason score.

**Results:** In total, 15,519 incident cases of prostate cancer were diagnosed in the West of Scotland between 1991 and 2007. Overall incidence increased by 70% from 44 per 100,000 in 1991 to 75 per 100,000 in 2007, an average annual growth of 3.6%. Incidence was inversely associated with deprivation with the highest rates among the more affluent groups. From 2003–2007, the deprivation gap in incidence was 40.3 per 100,000 ( $P < 0.001$ ; trend), with rates 37% lower among the most deprived

compared with the most affluent. This deprivation gap represents an estimated 1,764 under-diagnosed cases of prostate cancer over this 5-year period. The significant deprivation gap occurred in low grade disease, only.

**Conclusion:** The increase in prostate cancer incidence among most the affluent is mainly due to an increase in the diagnosis of low grade disease. This suggests that differential use of screening, rather than a true difference in risk of disease, explains the observed deprivation gap.

P2

**Can PSA density predict your risk of having prostate cancer?**

*S Fernando, BSI Montgomery, SJ Bott*  
*Frimley Park Hospital NHS Trust, Surrey, United Kingdom*

**Introduction:** Increasingly, patients with a raised PSA are subjected to prostate

biopsies due to uncertainty about their individual risk of having prostate cancer. Biopsies of the prostate are generally safe but can be associated with significant morbidity. We look at whether PSA density can be used to reliably predict the likelihood of having significant prostate cancer.

**Method:** We looked retrospectively at all patients who underwent diagnostic template prostate biopsies from April 2007–November 2011. Demographic data, PSA, prostate volume, number of cores, and histology results (divided into 1) benign 2) clinically insignificant 3) clinically significant) were collated. PSA density was then correlated with histological results.

**Results:** There were 514 patients with a mean age of 68.4 years. PSA density ranged from 0.01 to 1.31.

Table for P2

PSA Density	Benign	Insignificant Cancer	Significant Cancer
0.01–0.05	11 (78.6%)	1 (7.1%)	2 (14.3%)
0.06–0.15	122 (53.3%)	45 (19.7%)	62 (27.0%)
0.16–0.30	105 (50.0%)	24 (11.4%)	81 (38.6%)
0.31–0.45	9 (28.0%)	2 (6.2%)	21 (65.6%)
0.46–0.60	4 (30.8%)	2 (15.4%)	7 (53.8%)
0.61–1.31	0 (0.0%)	0 (0.0%)	6 (100.0%)

The incidence of clinically significant prostate cancer increases with PSA density. At lower PSA densities the likelihood of having benign or clinically insignificant disease is far greater than having significant prostate cancer, but still not negligible.

Of note, no patients with 'clinically insignificant' cancer have required treatment to date.

**Conclusion:** An individual's PSA density can predict their likelihood of having clinically significant prostate cancer. This information should be used when counselling patients about the need for prostatic biopsy. This may avoid unnecessary biopsies and morbidity.

P3

**Can multi-parametric MRI prior to first TRUS biopsy rule out clinically important prostate cancer? A validating cohort study using template prostate mapping as a reference test**

*M Abd Alazeez, HU Ahmed, E Anastasiadis, M Arya, A Kirkham, M Emberton  
University College London Hospital, United Kingdom*

**Introduction:** Gleason grade and maximum cancer core length (MCCL) have been used to risk stratify prostate cancer. We evaluated whether multi-parametric MRI (mp-MRI) could be used to rule-out clinically important disease using different target definitions incorporating grade and MCCL.

**Patients and Methods:** 138 men with elevated PSA and no prior biopsy underwent mp-MRI (index test), (T2-weighted, Dynamic contrast enhanced and Diffusion-weighted imaging), followed by template prostate mapping (TPM) biopsies (reference test). Analysis was at whole-gland level. Four target conditions were used to represent clinically significant prostate cancer;

- 1- Gleason = 4 + 3
- 2- Gleason = 3 + 4
- 3- MCCL = 6 mm
- 4- MCCL = 4 mm

**Results:** 98/138 (71%) of patients had cancer detected by TPM.

The table displays accuracy figures:

Table for P3

	Gleason = 4 + 3	Gleason = 3 + 4	MCCL = 6 mm	MCLL = 4 mm
Target condition present, % (N)	7% (10)	38% (53)	26% (36)	38% (53)
Sensitivity	93	67	81	70
Specificity	63	69	68	71
Positive predictive value	12	40	32	44
Negative predictive value	99	87	95	87
AUC of ROC	0.82	0.71	0.80	0.75

**Conclusion:** Mp-MRI showed high negative predictive value (87–99%) at all thresholds used. It seems to have ideal attributes as a triage test to rule-out clinically important disease so men could defer a prostate biopsy.

P4

**Predictive value of PSA, PSAD and %free PSA for PCa diagnosis, Gleason score (GS) and Cancer Volume (CaV) in men undergoing Transperineal Template Guided Saturation Biopsy (TTSB)**

*KC Ekwueme, H Simpson, HD Zakhour, NJ Parr  
Wirral University Teaching Hospital, United Kingdom*

**Introduction and Objective:** Persistent suspicion of PCa despite negative TRUSB presents a dilemma. TTSB is useful, although expensive and associated with significant morbidity. To improve predictive value of PSA additional serum forms and modifications are reported, but are unreliable in the setting of TRUSB, probably because the technique fails to detect a significant proportion of tumours. We postulated that predictive values should be superior in relationship to TTSB.

**Patients and Methods:** A modified TTSB was performed on 139 patients with persistently elevated PSA despite median of 2 (1–6) negative TRUSB. Prior to TTSB, serum PSA (sPSA), PSAD and %fPSA were documented and evaluated for ability to predict PCa diagnosis, GS and CaV (maximum % core, MPC, aggregate of tumour lengths from positive cores, ATLPC and maximum tumour length, MTL).

**Results:** Median age was 63 (48–85), PSA 10 ng/ml (2–114), prostate volume 44cc (18–90), PSAD 0.21 (0.01–2.99), %fPSA 10

(1–32) and number of cores taken 29 (16–43). 71 were diagnosed with PCa (51%). 343 (17%) of total 2004 cores were positive, Gleason 6 (20%), 7 (60%) and 8–10 (20%). Mean MPC was 51% (1–100), ATLPC 51 mm (1–139) and MTL 5 mm (1–16). PSA, PSAD and %fPSA showed linear correlation ( $r = 0.44, 0.54$  &  $-0.36$  respectively). AUC for PSA (0.81) was superior to sPSA and %fPSA (0.76&0.29). PSAD predicted GS 7–10 ( $p = 0.004$ ), MPC ( $p = 0.001$ ), ATLPC ( $p = 0.002$ ) and MTL ( $p = 0.001$ ). At cut-off of 0.10, PSAD has sensitivity 96%, avoiding unnecessary biopsy in 20%. %fPSA was unreliable predictor of GS ( $p = 0.58$ ) and CaV.

**Conclusions:** PSAD reliably predicts PCa diagnosis, high grade and CaV in men undergoing TTSB. PSAD >0.10 has high sensitivity and value in deciding to offer TPSB.

P5

**What is the optimum antibiotic policy for Transrectal Ultrasound guided Prostate Biopsy?**

*PM Thompson, H Nemade, J Philpott-Howard, S Sheehan, W Wang, S Chandrasekara  
Kings College Hospital, London, United Kingdom*

**Introduction:** The infective risk of Transrectal Ultrasound guided Prostate Biopsy is well recognised. There remains an unacceptable complication rate of septicaemia with no universally accepted antibiotic policy. This study follows the pathway of infection, identifying organisms and antibiotic sensitivities.

**Materials and Methods:** 67 patients were enrolled over 6 months. Patients had pre-biopsy urinalysis and post-biopsy blood

cultures collected at 5 minutes, 1 and 24 hours. Ciprofloxacin and metronidazole were administered as prophylaxis. Each patient had 12 biopsies and needle washings were cultured.

**Results:** Analysis of the needle washing showed the bacteria to which the patients were exposed. There were  $\geq 1$  bacteria cultured in 61/67 patients (91.0%). 51/67 (76.0%) had Gram-positive bacteria including 16 *Enterococcus faecalis*. 23/67 (34.3%) patients had Gram-negative bacteria, of which *Escherichia coli* was most frequently isolated. Ciprofloxacin resistance was 20% amongst Gram-negative organisms. 11/67 (16.4%) had anaerobic bacteria, all of which were sensitive to metronidazole. 6/67 (9.0%) had positive blood cultures, 4/67 (6.0%) having significant bacteraemias: 2 *Enterococcus faecalis*; 1 *Bifidobacterium* spp (plus *Corynebacterium* spp); and 1 *Lactobacillus* spp.

**Conclusion:** The alarming rate of fluoroquinolone resistance in both Gram-negative and Gram-positive organisms identified is consistent with the rising incidence of infective complications reported in the literature. Based on this data, we propose an alternative prophylactic regimen. Agents such as broad-spectrum beta-lactams, glycopeptides, aminoglycosides and metronidazole should be considered. In high risk patients, transperineal prostate biopsies could be considered as a safer alternative.

P6

**Active surveillance with confidence: the place of Transperineal Sector Biopsies (TPSB) to improve risk stratification in localised prostate cancer**

*L Vyas, J Kinsella, M Zhao, C Gilchrist, P Acher, R Chang, H Yamamoto, A Chandra, D Cahill, B Challacombe, R Popert*  
Guys and St Thomas' NHS Foundation Trust, London, United Kingdom

**Introduction:** Patients with low risk prostate cancer on transrectal biopsy (TRB) may be suitable for active surveillance (AS). Understaging and grading at diagnosis can result in delayed treatment and risk poorer oncological outcomes. Most AS series report up to 30% progression rates. AS patients desire reassurance regarding their individual progression risk.

**Patients and Methods:** Since 2007, we have carried out 840 transperineal sector prostate biopsies (TPSB). 384 patients with low to intermediate risk disease considered suitable for AS, following initial TRB histology, underwent TPSB using our standardised 6–8 sector technique with a maximum of 32 cores.

**Results:** Median age was 63 years (38–84 years). Median PSA 7.14 ug/l (0.14–58 ug/l). 135 patients had Gleason 3 + 3, 103 Gleason 3 + 4, 37 Gleason  $>3 + 4$  disease and 109 had PIN, ASAP or benign histology, after TPSB. 150 patients underwent definitive early treatment, 131 (34.1%) due to an upgrade or higher volume; 19 chose definitive treatment rather than AS. Of the remaining 234, 29 were subsequently discharged on watchful waiting and 205 (53.4%) continued on AS. 63 of these had repeat TPSBs, within local protocol, at median follow up of 2 years. In 58/63 (92%) the grade and volume was unchanged. Overall, 5/205, (2.44%) required treatment for progression; 4/205 (1.95%) chose active intervention, despite no progression.

**Conclusions:** TRB may under-estimate Gleason grade or cancer volume. TPSB prior to AS aids risk stratification with a low conversion to treatment rate at 2 years (2.4%); allowing clinicians and patients to accept and embark on active surveillance with confidence.

P7

**Benign secondary transperineal sector biopsy versus MD Anderson prostate biopsies – a multicentred long term follow-up evaluation**

*K Saeb-Parsy, R Chang, L Vyas, F Esperto, S Tang, J Kinsella, V Gnanapragasam, B Challacombe, A Doble, R Popert, C Kastner*  
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**Introduction:** Transperineal sector biopsy (TPSB) and MD Anderson (MDA) biopsy (transrectal sampling of peripheral and transition zones) is often undertaken following initial negative standard transrectal biopsy. We conducted a multicentred study evaluating patient characteristics and long-term outcome of patients whose TPSB or MDA biopsy were benign.

**Methods:** The data was collected from patients in two UK centres with benign

TPSB (183 patients) or MDA biopsy (249 patients) following initial negative transrectal biopsy. Follow up data was available for between 1–5 years.

**Results:** Patient characteristics in the TPSB and MDA group were respectively as follows: Median age 62 years (range 28–78) and 69 years (range 42–84), Median PSA 9 ng/ml (range 0.65–45) and 9.1 ng/ml (range 1.1–54). Median number of biopsy cores taken was 32 (range 12–128) in the TPT group and 16 (range 13–19) in the MDA group.

1 out of the 183 patient with benign TPSB was subsequently diagnosed with prostate cancer (pT1a) compared to 23 (9%) out of 249 men in MDA group ( $P < 0.0001$ ). 48% of patients with subsequent diagnosis of cancer in the MDA group had low risk disease, 33% intermediate risk and 19% high risk disease. Negative predictive value for MDA biopsy and TPSB were 91% and over 99%, respectively.

**Conclusion:** It appears TPSB, is a very reliable investigation to exclude prostate cancer. It has a NPV of over 99% and therefore patients with benign TPSB can be strongly reassured with high degree of certainty that the risk of missed prostate cancer is negligible.

P8

**Primary Transperineal Sector Biopsies (TPSB) of the prostate: evaluation in clinical practice**

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Guy's and St Thomas's NHS Foundation Trust, London, United Kingdom

**Introduction:** Screening studies indicate that in patients undergoing primary transrectal sextant biopsies, 25% are positive. This increases to 44% using extended 12 core biopsy protocols, but may still under sample the anterior peripheral zone.

We have evaluated transperineal sector biopsies (TPSB) as a primary modality within an asymptomatic population undergoing routine PSA testing.

**Patients and Methods:** 185 patients were referred following general health screening assessment with a median age of 59 yrs and a median PSA of 6.10 ng/mL (0.7–182 ng/mL).

A total of 24 to 38 cores were taken using our peripherally directed TPSB approach as a day case procedure without catheterisation. We determined the detection rate, characteristics and location of cancers, clinical progress and complications.

**Results:** 137 patients had abnormal histology and in 116 (62.7%) cancer was found. Of these, Gleason sums of 6, 7 and >7 were seen in 75, 36 and 5 patients respectively. In 48 patients (26%) the histology was benign.

Anterior disease was found in 38 patients (32.8%) and in 17 (15.3%) this was confined to the anterior sectors only.

30 patients are on active surveillance, 39 have had brachytherapy. 30 patients with intermediate to high risk disease had robotic radical prostatectomy, the remaining 17 have had hormones and/or radiotherapy.

4 patients had urinary retention and 3 had haematuria requiring an overnight stay (1.6%). No urosepsis or urinary tract infections requiring additional antibiotics were seen.

**Conclusions:** Primary TPSBs are safe, offer high cancer detection rates and aid treatment stratification.

P9

#### The role of transperineal template guided prostate biopsies in the active surveillance patient

*BS John, S Javed, SRJ Bott, SEM. Langley Royal Surrey County Hospital, Guildford, United Kingdom*

**Introduction:** Transperineal template guided prostate (TTGP) biopsies have gained prominence recently because of the search for better methods of sampling the prostate. This is of particular importance for the patient with prostate cancer who has been placed on active surveillance (AS). It is also well known that a significant number

of patients can harbour cancer in the anterior zone of the prostate and an active surveillance strategy depends entirely on choosing the right follow up strategy.

**Materials and Method:** A retrospective audit of TTGP biopsies performed in two hospitals between 2006 and 2011 was conducted. The parameters recorded included patient demographics, previous biopsy results, TTGP biopsy indications and results, management decisions and complications.

**Results:** 800 men had undergone TTGP biopsies during this period out of whom 223 had been on active surveillance. 70 of these men (31%) were found to have more significant disease on TTGP biopsies and were offered radical treatment. Anterior disease was found in 65 men (30%) in the AS group. In the overall group three patients developed haematuria (0.4%) requiring overnight admission, 65 (8%) patients developed urinary retention, five patients developed sepsis (0.6%) and three patients (0.4%) reported erectile dysfunction.

**Conclusions:** In this large audit TTGP biopsies have shown the potential for being an additional tool available to the urologist looking after AS patients. This data can be used to counsel patients and the complication rate, particularly sepsis with associated morbidity, remains low.

P10

#### Is concurrent technetium-99m bone scintigraphy redundant in the assessment of metastatic disease in prostate cancer patients undergoing magnetic resonance imaging of the prostate?

*P Hughes, R Nair, AK Gupta, T Larner Brighton and Sussex University Hospitals, United Kingdom*

**Introduction:** Current staging protocols for prostate cancer involve Magnetic

Resonance Imaging (MRI) and technetium-99m bone scintigraphy (BS). BS lacks diagnostic specificity, and the increased sensitivity of MRI allows for a superior imaging modality in the detection of bone metastases. With the use of a modified MRI protocol imaging the pelvis and lumbar spine synchronously, we evaluate the distribution characteristics of bone metastases, and review the need for BS as an additional staging investigation.

**Patients/Methods:** A retrospective single-centre review of 859 patients (median age 71, range 44–98) with newly diagnosed prostate cancer was performed between January 2008 and 2011. Patients with positive BS were identified and imaging reviewed to determine distant metastatic spread in the absence of lumbar or pelvic disease. In instances where MRI was performed, lesions were cross-referenced.

**Results:** 313 patients underwent BS as part of their standard sequential investigation for metastases. Of these, 88 were positive for metastatic spread of which 53 cases (60%) confirmed widespread metastases. Of the remaining thirty-five patients, 11 (13%) BS with equivocal areas were shown to be false positives on further imaging. 21 (24%) cases had at least one area of increased tracer uptake within the pelvic-lumbar region. 3 BS (3%) revealed isolated abnormalities outside of the pelvic-lumbar region.

**Conclusion:** Although conventional MRI lacks whole-body coverage, focused imaging of the lumbar spine, pelvis and femoral heads can exclude clinically significant metastatic disease. This potentially lends further credence to the adoption of MRI as the sole imaging modality for local staging.



# BJUI

Tuesday 26 June 2012  
Poster Session 2

## SUPPLEMENTS

11:00–12:30 Carron  
UPPER TRACT DISORDERS AND IMAGING  
Chairmen: Mr Toby Page &  
Mr Chandra Shekhar Biyani  
Posters P11–P20

P11

**Outcomes of the rendezvous procedure for the management of complex ureteric strictures**

*ER Ray, D Allen, J Bycroft, C Allen, RD Smith, S Choong, M Kellett, T Philp*  
University College Hospital, London, United Kingdom

**Introduction:** Impassable ureteric strictures require a combined endourological and radiological approach known as the rendezvous procedure. This avoids early open reconstruction and is valuable in high-risk and palliative patients. We present the outcomes from our series updated from 2002.

**Patients and Methods:** All rendezvous procedures carried out in a tertiary centre (1998–2011) were reviewed. All patients had failed attempts at retrograde or antegrade stenting, or both. Using antegrade access to the ureter, and simultaneous retrograde ureteroscopy, the stricture was balloon dilated to 9Fr and a double-J stent placed.

Follow up comprised regular clinical review, diuretic renography, serum creatinine, estimated GFR, and retrograde ureteroscopy. **Results:** 38 procedures were carried out on 37 patients (one bilateral). 21/37 (57%) patients were male and the mean age was 58.

Aetiology was complication of: stones 13/38 (34%); open surgery 17/38 (45%); neoplasia +/- radiotherapy in 8/38 (21%). Ureteric stricture site was: distal 22/38

(58%); mid 5/38 (13%); proximal 10/38 (26%); proximal and distal 1/38 (3%). Successful placement of double-J stent was achieved in 36/38 (95%) of procedures. At a mean follow-up of 40 months (range 2–96), of patients: 17/37 (46%) are stent-free, unobstructed, with preserved renal function, having required no further intervention; 7/37 (19%) have thermo-expandable metallic stents, with preserved renal function; 3/37 (8%) have long-term double-J stents; 5/37 (13%) died of malignancy with a functioning stent; 4/37 (11%) have been reconstructed; 1/37 (3%) had a nephrectomy for non-function. **Conclusion:** 'Impassable' complex ureteric strictures are passable. Internal drainage was achieved in 95% of cases using the rendezvous procedure. Nearly half of these patients required no subsequent intervention after stent removal.

P12

**A comparison of transperitoneal laparoscopic pyeloplasty versus endopyelotomy after failed treatment for PUJ Obstruction**

*M Vannahme, K Davenport, S Mather, J Philip, AG Timoney, FX Keeley*  
Southmead Hospital, North Bristol Trust, United Kingdom

**Introduction:** Our outcomes for primary transperitoneal laparoscopic pyeloplasty (97%) are superior to primary endopyelotomy (70%). Re-do pyeloplasty, however, was felt to carry a high risk of

conversion and failure, hence we have previously offered patients endopyelotomy. We have recently changed our practice. **Patients and Methods:** We analysed our PUJ obstruction database (282 patients over 17 years) to identify those treated after failed primary procedures. Data was collected prospectively. 51 patients (28F, 23M; median age = 31) were identified. Median follow up was 27 months (range: 3 months–15 years).

**Results:** 36/51 primary operations were pyeloplasties (2 trans-, 10 retro-peritoneal laparoscopic; 24 open). Median time to failure was 9 months (range: 3 months to 12 years). The most common presenting symptom was ongoing loin pain. 33/51 secondary operations were endopyelotomies, 18 were pyeloplasties (4 open, 14 transperitoneal laparoscopic). 10/33 endopyelotomies as a secondary procedure subsequently failed, while only 1/18 pyeloplasties failed. Time to secondary failure ranged from 2 to 70 months. 10 patients subsequently underwent a 3rd operation; one was managed conservatively. 6 patients underwent endopyelotomy, 3 transperitoneal laparoscopic pyeloplasty, and 1 a nephrectomy. No further treatment was necessary in these patients. No conversions were necessary for secondary laparoscopic pyeloplasty. There were no major complications.

**Conclusions:** Conversion and complication rates from secondary transperitoneal laparoscopic pyeloplasty in experienced hands are low and success rates (94%) are

considerably higher than for endopyelotomy (70%). Laparoscopic pyeloplasty is now considered a viable option for PUJ obstruction after failed previous treatment, even open pyeloplasty.

P13

**The role of Laparoscopic Nephrectomy in the management of benign symptomatic poorly functioning renal disease**

*AM Mainwaring, NS Awsare, NJ Fenn  
Morriston Hospital, Swansea, United Kingdom*

**Introduction:** Laparoscopic Nephrectomy (LN) is now widely used to treat RCC. Its use in benign poorly functioning renal disease is reported but little data exists on symptom control in this group of patients.

**Patients/Methods:** Between 2005 and 2011, 49 patients underwent LN for benign disease. The renal unit was the presumed cause of chronic renal pain (n = 20), recurrent urinary tract infection (n = 11), both pain/infection (n = 5) or difficult to control hypertension requiring medication (n = 13). A retrospective review of hospital/general practice records, theatre/pathology databases and patient review was performed. Data collected included operative details, complication rates recorded using the Clavien Classification and symptom control.

**Results:** All procedures were completed laparoscopically with a mean operative time 170 min. There were no open conversions. There was no change in post operative creatinine levels. Complications occurred in 10 (20%) patients with Clavien Classification was; Grade 1:4 patients; Grade 2:4 patients, Grade 3b:1 patient, Grade 4:1 patient. Symptoms responded well to surgery. 22 (88%) reported improvement of loin pain and 14 (87.5%) patients with resolution of their recurrent UTIs. In the hypertension group there was no immediate reduction in post-operative blood pressure however on follow up 2 (15%) were able to stop all antihypertensive medication, 6 (46%) were able to reduce their medication with no change in 5 (39%) patients.

**Conclusions:** These data confirm the operative safety of LN in patients with symptomatic benign renal disease. The excellent success rate in symptom control and reduction in antihypertensive

medication confirm its efficacy and provides useful information when counselling patients preoperatively.

P14

**Correlation between pre-operative ureteral stents, intra-operative renal pelvic pressures, and post-operative pain and sepsis in patients undergoing flexible ureteroscopy and laser lithotripsy**  
*SM Malde, M Bolgeri, N Shrotri, R Krishnan  
Kent and Canterbury Hospital, United Kingdom*

**Introduction:** Ureteric stenting has been advocated prior to ureteroscopy in order to facilitate stone-free rates and reduce complications. However, its effect on post-operative pain is unknown. Increased renal-pelvic pressure is considered to be a significant cause of post-operative pain in patients undergoing flexible ureteroscopy and laser lithotripsy. However, clinical data on the topic are few.

**Purpose:** This study aims to analyse the correlation between presence of pre-operative ureteral stents, renal pelvic pressures, post-operative pain-scores and rates of sepsis in patients undergoing flexible ureteroscopy for renal calculi.

**Methods:** We prospectively collected data on 42 patients undergoing flexible ureteroscopy and Holmium:YAG laser lithotripsy for renal stones. Intra-renal pressure was measured with transducers at the beginning and end of the procedure. Post-operative pain was assessed using a visual-analogue scale (0–10). Correlation coefficients were calculated between the presence of pre-operative ureteric stent, intra-renal pressure, energy used and post-operative pain.

**Results:** 28 patients had a pre-operative stent with a mean initial pelvic pressure of 16.4cm H<sub>2</sub>O (4–44). Fourteen patients did not have a ureteric stent pre-operatively, although the mean initial pelvic pressure was similar at 17.3cm H<sub>2</sub>O (4–40). There was no correlation between the presence of a pre-operative ureteric stent ( $r = -0.08$ ), intra-operative initial ( $r = -0.03$ ) or final pelvic pressure ( $r = 0.004$ ) and post-operative pain score or incidence of post-operative sepsis.

**Conclusion:** Routine placement of ureteric stents prior to ureteroscopy does not affect post-operative pain or sepsis rates. The explanation may be the absence of

correlation between presence of stent and intra-operative renal pelvic pressure.

P15

**Flexible ureteroscopy and laser under local anaesthesia with intra-ureteric bupivacaine**

*M Mikhail, N Wilson, A Young  
Southend University Hospital, United Kingdom*

**Introduction:** Flexible ureterorenoscopy and laser (FURS) is usually performed under general or spinal anaesthesia. In some patients in whom these forms of anaesthesia are contraindicated or high risk, the procedure can be performed under local anaesthesia with intravenous sedation and analgesia. We report the first series of patients given intra-ureteric bupivacaine as the primary form of anaesthesia.

**Patients and Methods:** A retrospective analysis was made of all patients who underwent FURS for calculi or carcinoma under local anaesthetic, with the use of intra-ureteric bupivacaine (0.5%, 20 ml). Bupivacaine was infused via a ureteric catheter prior to introducing the ureteroscope and commencing laser ablation.

**Results:** Ten patients had a total of 28 procedures under local anaesthesia. Forty-three per cent of these did not require any sedation or intravenous analgesia as an adjunct to the bupivacaine. No procedures were abandoned due to pain and there were no conversions to general anaesthesia and no complications secondary to local anaesthetic.

**Conclusion:** FURS can be safely performed under local anaesthesia with intra-ureteric bupivacaine. It is well tolerated and avoids the risks associated with general and spinal anaesthetic. We advocate the use of this technique in a carefully selected cohort of patients but larger prospective studies are needed to investigate pain levels, success rates and specific criteria for the use of local anaesthetic.



P16

**Leak test decreases damage to flexible ureteroscopes**

*F Khan, F Anjum, H Marsh, S Madaan, IK Dickinson, S Sriprasad*  
Darent Valley Hospital, Dartford, United Kingdom

**Introduction and Objectives:**

Advancements have lead to fine calibre flexible ureterorenoscopes (FURS) with dexterity at the expense of fragility, leading to damage by surgical handling and high repair costs. Damage is due to fluid entry into the FURS. Some FURS have an inbuilt mechanism for testing leaks. The purpose of this study was to examine the outcome of the pressure leak test on the condition of FURS after every use and analysing the damage and costs of maintenance.

**Methods:** Consecutive 95 (n = 95) procedures of FURS and laser fragmentation performed with ACMI DUR 8 (Group 1) were compared with prospective 98 procedures (n = 98) performed using Storz Flex X2 Ureteroscopes (Group 2). The Flex X2 ureteroscope has an in-built leak test facility but the Gyros ACMI does not. All scopes in Group 2 were tested for pressure leak after every procedure. The outcome of the tests were recorded.

**Results:** The groups 1 and 2 were comparable for grade of surgeon; stone location, size & number; access sheath usage; size of laser fibre and duration of laser. In Group 1 there were 7 scope damages resulting in repairs/replacement amounting to costs £29575 (7.1% damage). In Group 2, three scopes revealed a positive, pressure leak tests implying damage with repair costs of £6362 (3.1% damage) ( $p < 0.05$ ). Significant cost savings and reduction in downtime were made in Group 2.

**Conclusions:** Pressure leak testing following FURS helped to significantly control costs of maintenance and repair. Newer scopes should have a leak testing mechanism.

P17

**Is a KUB x-ray necessary as part of Haematuria evaluation?**

*M Moazzam, I Abraham, A Rajesh, MA Khan*  
Leicester General Hospital, United Kingdom

**Purpose:** A KUB x-ray along with an ultrasound (USS) is routinely performed as part of the work-up in the one-stop Haematuria clinic. However; it has recently been suggested that a KUB x-ray is not needed as an USS is adequate. We, therefore, determined the value of KUB x-ray in our Haematuria clinic.

**Materials and Methods:** We retrospectively reviewed the records of 533 consecutive patients who attended the Haematuria clinic between September 2005 and March 2006. All patients underwent a KUB x-ray, USS and flexible cystoscopy. IVP, CT or MRI scan was subsequently performed where indicated.

**Results:** A total of 371 (70%) male and 162 (30%) female patients with a mean age of 53 years (range: 20–86 years) were included. Out of 533 patients 37 (7%) had an abnormal KUB x-ray. USS confirmed urolithiasis in only 10 (27%) of these 37 patients. However; subsequent IVU or CT demonstrated urolithiasis in 9 patients (24%) with normal USS. Furthermore, 10 patients (27%) with abnormal KUB x-ray and a normal USS did not reveal any abnormalities on either an IVU or CT. In addition, 8 patients (22%) with abnormal KUB x-ray and a normal USS did not have any follow-up radiological studies and all had radio-opacities less than 4 mm in size. An USS alone would have missed 9 out of 19 (47%) confirmed cases of urolithiasis.

**Conclusion:** Our study indicates that a KUB x-ray should be included as part of haematuria evaluation in order to avoid missing urolithiasis.

P18

**Radiation dosage in management of patients with urolithiasis**

*I Omar, M Wynn, W Finch, L Lee, R Balakomar, O Wiseman*  
Cambridge University Hospital, Addenbrooke's Hospital, United Kingdom

**Introduction/Purpose:** There is increased concern about the amount of radiation patients with urolithiasis receive during their management. Adherence to the ALARA

principle is imperative. Here we review radiation dosage for new urolithiasis patients, referred electively, for a one year period following their diagnosis.

**Methods:** A retrospective study of treatment-naïve patients referred electively to the stone clinic over a five month period from Jan 2010 was undertaken. The analysis included all imaging modalities related to stone disease performed within 1 year of the initial presentation. A standard radiation dose used for X rays, in addition to individual doses of other investigations and treatments per patient was calculated to establish the total dose of radiation administered.

**Results:** A total of 45 patients were identified. They underwent an average of 5.6 radiologic investigations during the year. Studies performed included a mean of 2.9 X-ray KUBs (range 0 to 9), 1.2 CT KUBs (range 0 to 3), 0.9 ESWL (range 0 to 7), and 0.5 screening episodes (range 0 to 3). The median total effective radiation dose was 12 mSV, with maximum dose recorded was 34.4 mSV. None of the patients exceeded the annual maximal dose recommended by ICRP of 50 mSV.

**Conclusion:** Management of patients with renal stones can be effectively achieved with acceptable radiation dose exposure. It is important to adhere to the ALARA principle to minimise risk to the patient.

P19

**The patient care benefit of CT KUB over IVU as primary imaging for acute renal colic**

*A Abroaf, A Rogers, W Robson, S McClinton, D Thomas, R Pickard*  
Freeman Hospital, Newcastle Upon Tyne, United Kingdom

**Introduction:** Non-contrast CT (CT KUB) has superior diagnostic accuracy for renal colic but its availability remains restricted in some areas of the UK. The aim of this study was to determine whether use of CT KUB improved patient care.

**Material & Methods:** We prospectively identified patients suffering acute renal colic for the SUSPEND trial from January to April 2011. The study population comprised 50 patients who had undergone CT KUB as primary diagnostic imaging; principally at the referral unit, and 50 who had undergone IVU; principally at neighboring units without a urology emergency service.

Data on length of stay, time to diagnosis and time to stone free were abstracted from clinical records. All radiology was reviewed.

**Results:** The cohorts were well-matched for gender and age. Length of stay [Median (IQ range)] was 33 (10–57) hours in the CT KUB cohort and 41 (26–65) hours in the IVU cohort ( $p = 0.23$ ). Four patients in the CT KUB cohort required further imaging compared to 42 (including 10 CT KUB) in the IVU cohort, with a median (IQ range) time to definitive diagnosis of 2.5 (1.75–3.8) hours and 13.5 (9.2–27) hours respectively ( $p < 0.0001$ ). Time to stone free was similar for both groups ( $p = 0.97$ ).

**Conclusion:** Although findings from this prospective cohort study should be cautiously interpreted, they suggest that use of IVU results in a delay to definitive diagnosis, leading to a longer hospital stay. The routine use of CT KUB is therefore supported from a patient care perspective.

P20

#### Ultrasound in Pyelonephritis – is there a role? a single centre experience

*M Heetun, J Nariculum, P Le-Roux  
Epsom and St Helier Hospital, United Kingdom*

**Introduction:** Pyelonephritis, defined as a bacterial or fungal infection of the renal parenchyma and collecting system, forms a significant component of the emergency urological caseload. On admission, most patients will undergo ultrasound imaging to exclude complications or precipitating factors. Presently, there is a paucity of advice regarding whether ultrasound imaging is indicated and if so, which patients should be imaged. This study reviewed the cases of patients admitted with pyelonephritis over a 2 year period.

**Methods:** Selection criteria (raised white cell count/C-reactive protein and a positive urine culture) was applied to a prospective database of 300 patients admitted with a diagnosis of pyelonephritis. This identified

74 patients. Case notes were reviewed to determine patient demographics, duration of admission and radiological findings.

**Result:** 70 patients were female (94%) and 4 male (6%). Median age was 34 years (range 16–91). Average admission duration was 3 days. 63 (85%) patients had normal ultrasound imaging and 11 (15%) patients had abnormal findings. In this latter group, 8 patients demonstrated kidneys with increased echogenicity, 4 with thickened urothelium and 1 with pyelonephrosis. Of these 11 patients, 5 patients were diabetic and 4 had a previous history of pyelonephritis.

**Conclusion:** Ultrasound is not indicated in the majority of patients admitted with pyelonephritis. Imaging should be reserved for patients with precipitating factors such as diabetes, immunosuppression or a previous history of pyelonephritis. Such practice can help reduce in-patient stay, avoid unnecessary imaging and reduce costs.

# BJUI

Tuesday 26 June 2012  
Poster Session 3

## SUPPLEMENTS

14:00–16:00 Alsh  
SCIENTIFIC DISCOVERY  
Chairpersons: Mr Rakesh Heer &  
Mrs Caroline Moore  
Posters P21–P34

P21

### Pathways analysis in kidney cancer using proteomics approach

*Mr Zakikhani, Mr Atrih, Dr Lamont, Mr Goodman, Prof Fleming, Mr Nabi Ninewells Hospital, University of Dundee, United Kingdom*

**Background:** Renal cell carcinoma (RCC) is responsible for approximately 4,000 deaths per year in the UK. We describe a comprehensive proteomic analysis and subsequently a pathway and network approach to identify biological processes involved in clear cell RCC (ccRCC). The objective being to investigate novel biomarkers of RCC which could be used for early diagnosis and predict response to treatment.

**Methods:** Kidney tumour tissues paired with normal renal tissue were obtained at the time of radical nephrectomy or nephron sparing surgery. Samples were stored at –80 and processed using validated FASP method for proteomic analysis. Each sample was analysed in triplicate. The LC/MS analysis was carried on Dionex ultimate 3000 (trap column: acclaim Pep-Map nano-trap (75 µm id × 2 cm, separation column: acclaim Pep-Map RSLC 100 µm, 15 cm) coupled to LTQ Orbitrap Velos. The LTQ Orbitrap Velos was operated in CID top 10 mode at a resolution of 60,000. A gradient of 98% buffer A (0.1% formic

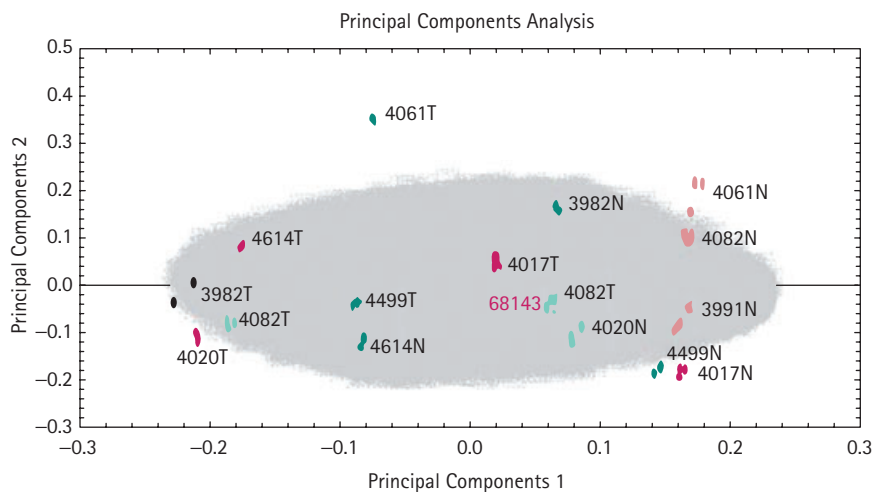
acid) to 45% buffer B (90% acetonitrile, 0.08% formic acid) was run over 87 min to separate peptides. Progenesis LC-MS v4.0 was used to identify differences between normal and tumor samples. The software relies on good retention time reproducibility between runs and can confidently detect and quantify the same feature across all samples. The proteins identification was carried out using: Uniprot\_Swall; FDR less than 1%; Peptide Mass Tolerance: ± 5 ppm and Fragment Mass Tolerance: ± 0.6 Da Max Missed Cleavages: 2.

**Results:** Twenty samples (normal and cancer) were analysed from 10 patients. A total of 1,900 proteins were identified from all 48 LC-MS runs (minimum 2 unique peptide/protein). 477 proteins showed between 2 and 20 fold difference in normal and cancer samples (minimum 2 unique peptide/protein-Figure 1). 152 proteins were up-regulated in cancer patients and 324 proteins were down-regulated in cancer patients. When evaluated by several pathway and biological process analysis programs, these proteins are demonstrated to be involved with a high degree of confidence (p values < 2.0 E-05) in glycolysis (Phosphoglycerate kinase, Glycogen debranching enzyme, Glyceraldehyde-3-phosphate dehydrogenase, Pyruvate kinase isozymes...), lipid metabolism (Adipocyte

plasma membrane-associated protein, Adipocyte enhancer-binding protein 1, fatty acid binding protein 5, lysophosphatidylcholine acyltransferase , Monoacylglycerol lipase isoform 2), protein modification and degradation (Proteasome subunit beta type-8, SUMO-activating enzyme subunit 1, Ubiquitin-like modifier-activating enzyme 6, Protein disulfide-isomerase A5) and stress response (Peroxiredoxin-4, Superoxide dismutase, Cytochrome b-245 heavy chain).

**Conclusion:** A comprehensive pathway and network analysis using proteomics analysis has discovered highly significant pathways from a set of clear cell RCC samples. This key information of pathways activation will lead to development of novel assays for early diagnosis and prognosis of renal cancer.

Figure 1 for P21: PCA analysis demonstrates clear differences between normal and cancer samples



**P22**  
**Development and Characterisation of a Bladder Cancer Model**  
*R Williams, B Shorning, S Datta, HG Kynaston, AR Clarke*  
*Cardiff University Health Board, United Kingdom*

**Introduction:** Mouse models of cancer can improve understanding of the biology of cancer and development of novel therapeutic agents. The aim of this project was to develop and characterize a bladder cancer model which is relevant to human bladder cancer. In human bladder cancer the PTEN gene is frequently altered in combination with genes downstream of LKB1 in the AMPK pathway.

We report on our further investigation and development of this mouse model. Our goal is to produce an effective model of invasive bladder cancer, which can be used to identify and evaluate future molecular therapies.

**Materials:** Mice with an outbred genetic background were generated to have copies of the LKB1 and PTEN genes flanked with a LoxP site. Using the AhCreER recombinase promoter transgene both LKB1 and PTEN were deleted from the urothelium.

**Methods:** The wnt, AMPK, mTOR and PI3K molecular pathways were assessed using q-PCR. Immunohistochemistry/immunofluorescence and western blotting were used to confirm up/down-regulation

in these pathways. All mice were genotyped via PCR.

**Results:** At day 100 post induction of the Cre-Lox system 100% of mice which were homozygous for LKB1 and PTEN floxed genes developed urothelial cell carcinoma. Mice homozygous for either gene in isolation did not develop bladder cancer. Integrin linked kinase (ILK) was up-regulated in the bladder and ILK inhibitors may have some potential in bladder cancer treatment. The carcinomas showed massive mTOR/PI3K up-regulation. This up-regulation was completely reversed by rapamycin (an mTOR inhibitor) and the phenotype reverted to that of a normal mouse bladder.

**P23**  
**Hypoxia regulated miRNAs in bladder cancer**

*C Blick, A Ramachandran, D Cranston, J Catto, AL Harris*  
*The Weatherall Institute of Molecular Medicine, John Radcliffe Hospital, University of Oxford, United Kingdom*

**Introduction:** Hypoxia is a state of low oxygen and a feature of most tumours. The mechanisms which allow cancer cells to survive and continue to grow in hypoxia are co-ordinated by the transcription factor HIF. One class of genes regulated by HIF are micro RNAs. MicroRNAs are short stranded RNA that primarily inhibit protein expression from target mRNA. The aim of

this study was to identify hypoxia regulated miRNAs (HRmiRNAs) and assess their functional importance.

**Methods:** We cultured 6 cell lines in normoxia and 0.1% hypoxia. miRNA expression was quantified using Real time QPCR. HIF regulation was assessed and putative hypoxia response elements were confirmed using chromatin immunoprecipitation. Functional work was analysed using western blot and flow cytometry.

**Results:** We identified 6 miRNAs consistently upregulated in hypoxia across cell lines and a number of cell line specific HRmiRNAs. miR-145 was upregulated 45-fold by hypoxia in RT4 cells. miR-145 is a target of p53 and is known to induce caspase dependent and independent apoptosis in other tumour types. We found miR-145 was regulated by hypoxia in a HIF1 dependent manner and confirmed the presence of 2 hypoxia response elements. Overexpression of miR-145 induced apoptosis and treatment of cells with antimir-145 inhibited apoptosis in RT4 cells.

**Conclusion:** We have identified a number of hypoxia regulated miRNAs in bladder cancer. The upregulation of miR-145 in hypoxia leads to apoptosis and may regulate cell/tumour growth via a HIF/p53 dependent pathway. miR-145 may have a potential role in the management of bladder cancer.

**P24**  
**Evaluation of molecular markers for predicting risk of progression in high grade non-muscle invasive bladder cancer (HGNMIBC) using automated quantitative analysis**

*GD Stewart, A Pipili, FC O'Mahony, A Laird, RM Gailer, L McLornan, KM Grigor, G Smith, DJ Harrison, P Mariappan*  
*Western General Hospital, Edinburgh, United Kingdom*

**Introduction:** There is a need for biomarkers to help identify aggressive HGNMIBC. In this study, we evaluated several putative prognostic protein markers using in situ automated quantitative analysis immunofluorescence (AQUA).

**Materials & Methods:** From a prospectively recorded dataset of 784 bladder cancer patients presenting 1991–1996 with clinical outcomes, 132

HGNMIBCs were identified. Recurrent disease or progression was managed with BCG, radical radiotherapy or cystectomy. Patients were stratified by clinical end-points: (A) stable disease, (B) progression to muscle invasive disease but successful curative therapy, and (C) bladder cancer metastasis/death. A tissue microarray (TMA) of HGNMIBC was created from archival tissue. Using AQUA, cytoplasmic/nuclear expression and differential expression across clinical outcomes of the following proteins, previously investigated in bladder cancer, were determined: p53, p21, E-cadherin, N-cadherin, B-catenin, Aurora-A, VEGFR-1, HIF-1 $\alpha$  and caspase-3. **Results:** Adequate archival pathology material was available from 100 HGNMIBC patients to create the TMA (G3pTa = 15 patients, G3pTb = 57 patients and G3pTc = 28 patients). Significant increase in expression was found between clinical outcome groups B and C for the following proteins: cleaved caspase-3 (nuclear  $P = 0.012$  [Mann-Whitney test]; cytoplasmic  $P = 0.016$ ), cytoplasmic p53 ( $P = 0.036$ ) and cytoplasmic HIF-1  $\alpha$  ( $P = 0.042$ ). **Conclusions:** This is the first study using next generation AQUA immunofluorescence in bladder cancer. Expression levels of cleaved caspase-3, p53 and HIF-1  $\alpha$  differentiated HGNMIBC patients who developed curable muscle invasive disease from those developing incurable disease. Further validation of these and other proteins, in a prospective series, may aid identification of patients with aggressive HGNMIBC who would potentially benefit from early cystectomy to improve their outcome.

P25

**Selective activation of feline pudendal nerve with a Transdermal Amplitude-Modulated Signal (TAMS) using skin surface electrodes to inhibit bladder activity**

*C Tai, B Shen, J Wang, H Liu, J Subbarayan, J Roppolo, W de Groat  
University of Pittsburgh, Department of Urology, United States*

**Introduction:** Previous preclinical studies have shown that bladder activity can be inhibited using a transdermal amplitude modulated signal (TAMS) applied to skin surface electrodes by modulating pudendal nerve activity. However, the mechanism of

action (MOA) of TAMS has not been studied.

**Materials/Methods:** TAMS was used to activate the pudendal-to-bladder inhibitory reflex non-invasively in 12 normal female cats under  $\alpha$ -chloralose anesthesia. The bladder was infused with saline, and 5 Hz transcutaneous stimulation at different intensities was applied. The effect of different stimulation pulses was tested during filling cystometrograms, and anal sphincter EMG and tibial nerve activity was recorded at increasing stimulation intensities.

**Results:** TAMS inhibited isovolumetric bladder contractions when stimulation intensity was above 2 times the threshold (T) for inducing anal sphincter twitching. The stimulation also significantly increased bladder capacity during CMG when the stimulation intensity was above 2T.

**Conclusions:** This study demonstrates that TAMS can inhibit bladder contractions and increase bladder capacity by selectively modulating pudendal nerve through skin surface electrodes in a feline model without activation of the tibial nerve. The results indicate the potential utility of this transdermal neuromodulation method in the clinical treatment of overactive bladder symptoms.

P26

**Use of the isolated perfused whole pig bladder for investigating spontaneous contractions**

*BA Parsons, B Vahabi, MJ Drake  
Bristol Urological Institute, United Kingdom*

**Introduction:** Afferent discharge is the main factor causing the switch from urine storage to voiding. Urothelium may modulate afferent nerves by releasing signaling molecules that act in autocrine/paracrine fashion. Indeed, raised ATP and prostaglandin levels have been detected in urine from overactive bladder sufferers. Afferent discharge has been linked to spontaneous contractions (SC) exhibited during bladder filling, so aim was to study effects of intravesical volume and drugs on SCs of an isolated large animal bladder.

**Materials and Methods:** Isolated pig bladder viability was maintained by pump-perfusion. Bladders were filled with Krebs buffer and intravesical pressure, SC frequency and amplitude were measured at different volumes. Effect of intravesical

1  $\mu$ M A317491 (ATP receptor antagonist) and 100  $\mu$ M indomethacin (COX-inhibitor) on SCs was assessed at low (150 mls) and high (450 mls) bladder volumes. Statistical analysis using repeated-measure ANOVA and Dunnett's post-hoc test.

**Results:** There was no significant correlation between bladder volume and basal intravesical pressure or SC frequency. Amplitude of SCs increased with rising bladder volume and reduced significantly when bladders were emptied and refilled with 150 mls of fresh Krebs. SC amplitude remained elevated when bladders were filled and drained down to 150 mls. Intravesical A317491 or indomethacin had no effect on SCs.

**Conclusions:** Perfused isolated pig bladders can be used to study SCs. Amplitude of SCs may be a means of communicating the state of bladder fullness to the CNS. Urothelium-derived factors could be involved in driving SCs, but the lack of an intravesical drug effect points to the importance of adluminal mediator release.

P27

**The effect of botulinum toxin type A on synaptosomal-associated protein 25 and neuropeptide Y immunoreactivity**  
*SN Datta, A Pullen, R Popat, TP Rosenbaum, S Elneil, P Dasgupta, CJ Fowler, A Apostolidis  
National Hospital for Neurology and Neurosurgery, London, United Kingdom*

**Materials and Methods:** Bladder biopsies from 32 patients with DO were obtained before and at 4 and 16 weeks after treatment with intradetrusor BoNT/A via flexible cystoscopy. Patients with NDO were injected with 300 units of Allergan BoNT/A, whereas patients with IDO with 200 units. Control biopsies were taken from 9 patients during investigation for asymptomatic microscopic haematuria.

Immunohistochemical expression was studied using commercial antibodies to SNAP-25 and NPY, and quantified by image analysis.

**Results:** SNAP-25 immunoreactivity was noted in the suburothelium and the adjacent detrusor muscle layer, with no differences found between controls and DO patients. Suburothelial immunoreactivity was increased compared to the muscle and remained unchanged following successful treatment with BoNT/A. NPY immunoreactivity was observed in



suburothelial fibre-like structures and increased in DO patients compared to controls. Post-BoNT/A decreases in NPY immunoreactivity were progressive but did not reach statistical significance.

**Conclusions:** SNAP-25, the substrate for BoNT/A action, is no differently expressed in overactive bladders when compared to controls, but is more densely found in the suburothelium compared to the adjacent detrusor muscle layer. By contrast, the sympathetic marker NPY is increased in the suburothelium of DO bladders. Treatment with BoNT/A does not affect SNAP25 immunohistochemical expression, as expected, but tends to reduce the levels of NPY towards normalisation.

P28

**Urinary ERG immunocytochemistry can identify prostate cancer patients prior to prostate biopsy**

*P Pal, EJ Hollox, R Hew, L Cresswell, JH Pringle, JG Barwell, JK Mellon, RC Kockelbergh*

*Leicester General Hospital, United Kingdom*

**Introduction and Objectives:** Urinary TMPRSS2:ERG transcript detection has been used to identify prostate cancer patients. Immunocytochemical detection of fusion positive cells has recently been made feasible following the availability of highly specific ERG antibodies. We evaluated ERG immunocytochemistry on exfoliated urinary cells as a diagnostic tool for prostate cancer.

**Materials and Methods:** Patients with an elevated age-specific PSA and/or abnormal DRE were selected for prostate biopsy. 30 mls of post-DRE urine was collected prior to prostate biopsy. Exfoliated urine cells were isolated, then underwent immunocytochemical assessment using an anti-ERG antibody and evaluation of TMPRSS2:ERG status using transcript and FISH based urinary assays. Corresponding biopsy tissue samples were studied using FISH and immunohistochemistry to determine TMPRSS2:ERG status and ERG immunoreactivity.

**Results:** 102 samples were processed for immunocytochemical analysis of which 94 were scorable. 10/46 (20%) patients with adenocarcinoma had positive ERG urine immunocytochemistry. The remaining patients with HGPIN, ASAP and benign histology were negative ( $P = 0.003$ ). There

was a significant association between ERG immunopositivity with higher Gleason score ( $P = 0.04$ ), and also advanced tumour stage ( $P = 0.03$ ). 7/10 samples positive for ERG immunocytochemistry had positive TMPRSS2:ERG status confirmed using FISH or transcript urinary assays. Corresponding biopsy tissue analysis confirmed the presence of TMPRSS2:ERG positive cells in all cases which were positive using the above urinary assays.

**Conclusion:** Urinary ERG immunocytochemistry can identify prostate cancer patients prior to biopsy and appears to identify patients with more aggressive disease. Protein based gene fusion detection may identify more cancer patients than currently described transcript based urinary assays.

P29

**Towards derivation of a distinct signature permitting personalised treatment in prostate cancer**

*AD Lamb, NL Sharma, R Russell, A Ramos-Montoya, H Whittaker, H Ross-Adams, G Shaw, K Wadhwa, S Hori, A Warren, DE Neal*  
*Cambridge Research Institute/Addenbrooke's Hospital, Cambridge, United Kingdom*

A significant proportion of men with prostate cancer (CaP) have clinically insignificant disease and many of those who go on to have radical treatment could well have been managed in an expectant manner. In addition, a proportion of those men with seemingly low or intermediate risk CaP progress rapidly and defy the statistics that suggest CaP to be an indolent disease. It would be useful to be able to target these men at an earlier stage for adjuvant therapy. We obtained prostate tissue from 13 men undergoing HoLEP as benign controls; 88 men undergoing RALP as a primary CaP group with matched benign controls; and 12 men with CRPC undergoing channel TURP. We extracted RNA and profiled each sample on the Illumina expression array platform. This data underwent rigorous bioinformatic quality control and was then interrogated to produce a list of biologically relevant factors that differentiate aggressive disease from primary CaP and benign tissue. These included CDC20, AURKA, AURKB, PLK1, E2F2, MELK, RAD17, Cyclin E, AMACR, GDF15 and MSMB. These genes were able

to differentiate those men undergoing RALP who demonstrated early biochemical relapse from those that did not. Furthermore correlation with an independent clinical data set provided evidence that high levels of CDC2, MELK, AURKA and RAD17 at RALP predicted those men with poor survival outcomes ( $p < 0.001$ ). With the ready availability of affordable transcript testing this data could be used to identify specifically those men who should be targeted for adjuvant treatment. The era of personalised medicine is close

P30

**Tyrosinase single nucleotide polymorphisms affect susceptibility to and outcome to prostate cancer**

*DK-C Mak, C Luscombe, N Rukin, S Ramachandran, RC Strange*  
*University Hospital of North Staffordshire, Stoke on Trent, United Kingdom*

**Introduction:** UV radiation in natural sunlight is an essential factor in vitamin D metabolism. Increased sun exposure and vitamin D levels have been reported to reduce the prostate cancer risk and influence outcomes. The effect of UV exposure may be influenced by skin pigmentation. Polymorphisms in genes involved in this process have been shown to be associated with prostate cancer risk.

Tyrosinase is an enzyme involved in melanin production. Animal model studies suggest a protective effect of tyrosinase inhibition in prostate cancer. To evaluate the relevance of tyrosinase in prostate cancer susceptibility, we investigated tyrosinase gene (TYR) single nucleotide polymorphisms (SNPs) prostate cancer risk and outcomes.

**Patients and Methods:** Prostate cancer cases and controls with BPH were recruited to investigate the association of prostate cancer risk with TYR polymorphism. Nineteen SNPs in TYR were selected. We investigated the association of these SNPs with grade of cancer at diagnosis and survival after starting androgen ablation therapy.

**Results:** The cohort consisted of 553 cancer cases and 370 BPH controls. Logistic regression models demonstrated significant associations between SNPs at TYR exon 2 ( $p = 0.043$ , OR = 1.55) and rs118206 ( $p = 0.05$ , OR = 1.86) with prostate cancer risk. Using Cox regression analysis, SNPs at



rs501301 were significantly associated with disease specific survival ( $p = 0.037$ , HR 0.570).

**Conclusions:** We highlight the effects of tyrosinase SNPs on prostate cancer susceptibility and outcomes. This study supports the involvement of tyrosinase the interaction between sunlight exposure and prostate cancer risk, and the potential use of genetic markers in determining prostate cancer risk.

P31

**SPRY2 loss enhances ErbB trafficking and PI3K/AKT signalling to drive human and mouse prostate carcinogenesis**

*I Ahmad, M Gao, R Patel, HY Leung  
The Beatson Institute for Cancer Research,  
Glasgow, United Kingdom*

**Introduction:** Loss of SPRY2 and activation of receptor tyrosine kinases are common events in prostate cancer (PC). However, the molecular basis of their interaction and clinical impact remains to be fully examined. SPRY2 loss may functionally synergise with aberrant cellular signalling to drive PC and to promote treatment resistant disease.

**Methods:** Here, we report evidence for positive feedback regulation of the ErbB-PI3K/AKT cascade by SPRY2 loss using a variety of in vitro, pre-clinical in vivo models and clinical PC tissue microarrays.

**Results:** Reduction in SPRY2 expression resulted in hyper-activation of PI3K/AKT signaling to drive proliferation and invasion by enhanced internalisation of EGFR/HER2 and their sustained signalling at the early endosome in a PTEN-dependent manner. This involved p38 MAPK activation by PI3K to facilitate clathrin-mediated ErbB receptor endocytosis. Finally, in vitro and in vivo inhibition of PI3K suppressed proliferation and invasion, supporting PI3K/AKT as a target for therapy particularly in patients with PTEN-haploinsufficient, low SPRY2 and ErbB expressing tumours.

**Conclusion:** SPRY2 is an important tumour suppressor in PC; its loss drives the PI3K/AKT pathway via functional interaction with the ErbB system.

P32

**Circulating miR-141 as a diagnostic biomarker for prostate cancer and for monitoring response to treatment**

*BD Kelly, N Miller, KJ Sweeney, GC Durkan,  
E Rogers, K Walsh, MJ Kerin  
National University of Ireland, Galway*

**Introduction:** Mi(cro)RNAs are small non-coding RNAs whose differential expression in tissue has been implicated in the development and progression of prostate cancer. The discovery of miRNAs in the blood of patients with a variety of malignancies makes them an ideal biomarker for prostate cancer diagnosis. The aim of this study was to determine if a panel of circulating miRNAs can distinguish patients with prostate cancer from those with benign disease attending a rapid access prostate assessment clinic.

**Methods:** RNA was extracted from whole-blood samples from 102 patients (75 with biopsy proven cancer and 27 benign samples) attending a prostate assessment clinic. Samples were reverse-transcribed using stem-loop primers and expression levels of each of 14 candidate miRNAs were determined using real-time quantitative PCR. miRNA expression levels were then correlated with clinicopathological data and subsequently analysed using qBasePlus software and Minitab.

**Results:** Circulating miRNAs were detected and quantified in all subjects. The analysis of miRNA mean expression levels revealed that 4 miRNAs were significantly dysregulated, including the tumour suppressor let-7a ( $p = 0.005$ ), along with the oncogenic miR-141 ( $p = 0.01$ ). In 20 patients undergoing a radical retropubic-prostatectomy, the expression levels of miR-141 returned to normal at day 10 post-operatively. Using regression analysis a panel of 4 miRNAs could be used in combination to detect prostate cancer with an AUC of 0.78 and a PPV of 80%.

**Conclusion:** Our findings identify a unique expression profile of miRNA detectable in the blood of prostate cancer patients. This identifies their use as a diagnostic biomarker for prostate cancer.

P33

**Upregulated FGFR1 expression is associated with the transition of hormone-naïve to castrate-resistant prostate cancer**

*I Ahmad, K Armstrong, J Edwards,  
CN Robson, HY Leung  
The Beatson Institute for Cancer Research,  
Glasgow, United Kingdom*

**Introduction:** Prostate cancer (PC) represents a global health issue. Treatment for locally advanced and metastatic PC remains unsatisfactory. The androgen receptor (AR) has been validated in having a key role in both naïve and castrate-resistant PC (CRPC). However, the significance of other signalling pathways in CRPC is less well validated.

**Methods:** To gain a better insight into the molecular signalling cascades involved in clinical CRPC, we performed gene expression profiling using the Illumina DASL assay and studied matched hormone-naïve (HN) and CR prostate tumours ( $n = 10$  pairs). Ingenuity Pathways Analysis (IPA) was used to identify potential networks involved, and further validation was performed in in vitro cell models and clinical tumours.

**Results:** Expression of 50 genes was significantly different between HN and CRPC. IPA revealed two networks of particular interest, including AR and FGFR1, respectively. FGFR1 expression was confirmed to be significantly upregulated in CRPC ( $P \leq 0.005$ ), and abnormal FGFR1 expression was associated with shorter time to biochemical relapse in HNPC ( $P = 0.006$ ) and less favourable disease-specific survival in CRPC ( $P = 0.018$ ).

**Conclusion:** For the first time, our gene expression profiling experiment on archival tumour materials has identified upregulated FGFR1 expression to be associated with PC progression to the CR state.

P34

**Comparative genomics and phylogenetic foot-printing of androgen response elements in human, murine and canine degradome genes**

*CN Molokwu  
Royal Hallamshire Hospital, Sheffield, United Kingdom*

**Introduction:** Extracellular matrix (ECM) degradation and remodelling is required for

tumour progression and metastasis. Prostate cancer (CaP) progression is dependent on androgen receptor (AR) signalling even in the castration-resistant state. Mice are widely used as in vivo models of human disease, and dogs are the only non-human mammal that frequently develops CaP in nature. Comparative genomics and phylogenetic foot-printing enables comparative analysis of genes between species for conserved regulatory regions containing androgen response elements (AREs), which could identify the proteases that are evolutionally programmed to effect AR regulated ECM degradation.

**Methods:** The 3000 bp sequence up-stream of the human, murine and canine metalloproteinase genes were obtained from the Ensembl genome browser and screened for conserved AREs using NUBIScan. Human metalloprotease gene promoters containing putative AREs were aligned with the murine and canine homologs and the ARE sequences analysed.

**Results:** 17 of 23 MMP, 15 of 22 ADAM, 13 of 19 ADAMTS and 4 natural inhibitor gene promoters had at least one putative ARE. Several of these were conserved across the human, murine and canine genomes. These included genes for

metalloproteases with ECM degrading, pro-angiogenic and anti-angiogenic properties, as well as those with unknown functions.

**Conclusions:** Several metalloprotease genes show conservation of AREs in the promoter regions between human, murine and canine homologs. This provides further evidence that dysregulation of metalloproteinases by abnormal AR signalling may be contributing to the mechanism of CaP progression. The development of specific metalloprotease inhibitors is required to clarify the role of individual metalloproteases in CaP progression.

# BJUI Tuesday 26 June 2012 Poster Session 4 SUPPLEMENTS

14:00–16:00 Carron  
STONES

Chairpersons: Mr Daron Smith &  
Miss Kay Thomas  
Posters P35–P45

P35

**Composition of urinary tract calculi: analysis of 6 year data at a UK referral centre**

*DP Patel, R Samra, C Nayar, P Mohammed, J Berg, R Devarajan  
Sandwell and West Birmingham Hospitals  
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United Kingdom*

**Introduction:** Analysis of renal stones has been used for many years to identify risk factors for renal stone disease. Current published data shows a male to female ratio less than previous publications of 3:1 with calcium oxalate stones being the most common. We reviewed stones analysed at our biochemistry laboratory which receives stones from 60 hospitals across the UK to look at whether this has changed.

**Method:** Stones analysed over a 6 year period were reviewed. Data collected included age, sex and stone constituents categorised as: Pure (100%) stones, mixed (>50%), and mixed (1–49%).

**Results:** 5774 patients had stone analysis over 6 years. 4204 were male (73%) and 1570 were female (27%). In men the most common stones were calcium oxalate (63%) followed by carbonate apatite (12%). In women calcium oxalate stones were again the most frequent (44%) followed by carbonate apatite (28%). Magnesium ammonium phosphate stones were more common in women (7%) than men (2%). In both sexes the proportion of

pure stones was equal (males 13% and females 12%).

**Discussion:** Men are three times more likely to have clinically significant renal stones than women which is consistent with historical published data. Interestingly nearly two thirds of stones in men are mixed calcium oxalate whereas in women these are just under half.

P36

**Stone biochemical composition but without a stone to analyse**

*ER Ray, M Goldstraw, S Longhorn, S Choong, T Philp, G Rumsby, RD Smith  
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**Introduction:** Knowledge of stone biochemistry is important for the assessment of recurrent stone formers. However, stone basketing during ureteroscopy is not always feasible or routinely practiced. In this pilot study we aimed to assess whether stone composition can be determined from stone dust obtained during laser treatment. **Patients and Methods:** Urine/irrigant containing dust was aspirated through the ureteroscope during/after stone laser, and a stone fragment was also retrieved, in 32 patients. Biochemical analysis of stone and dried, powdered material was carried out by Fourier transform infrared spectroscopy.

**Results:** The dust specimen was sufficient for biochemical analysis in 17/33 (52%) of

procedures. Of these, the predominant biochemical constituent was consistent with the definitive stone biochemistry in 82% of cases (14/17 of analyzable dust specimens). Two of the three 'mismatched' cases were mixed calcium oxalate/calcium phosphate stones, and differed only in the relative proportions of each constituent. The only case that gave a misleading result was 'pure' calcium phosphate stone in which the stone dust had also revealed 39% calcium oxalate.

**Conclusion:** It was possible to accurately determine biochemical stone composition from dust obtained at laser of stone in more than 80% of cases (provided an adequate specimen could be obtained), representing 42% of procedures overall. Although work is required to standardise a reliable technique for specimen collection, this demonstrates a successful 'proof of principle', and may offer a useful option when a stone specimen cannot be retrieved ureteroscopically for any reason.

P37

**Diabetes in asian and caucasian patients with nephrolithiasis**

*HS Fernando, A Gupta, R Devarajan  
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**Introduction:** Population-based studies support a genetic component to nephrolithiasis (Thorleifsson, 2009). Evidence linking obesity and insulin resistance with low urine pH and uric acid stones (Maalouf, 2004) as well as an

association between hyperinsulinemia and hypercalciuria (Nowicki, 1998) have been reported.

We aimed to identify whether diabetes was more prevalent in the asian stone formers compared to the caucasians. Further, the 24 hour urinary excretion levels were compared within the diabetic cohort.

**Methods:** The race and the diabetic status of 121 patients who underwent a stone retrieval procedure were identified for this case series. The 24 hour urine biochemical analyse of these patients were analysed to identify any significant associations between race and the diabetic status. SPSS v16 software was used for the statistical analysis.

**Results:** The mean age of patients 49.7 years, of which 97 (80.2%) were males. Forty (33%) patients were of Asian origin. Thirteen of the 40 asians were diabetic while 10 out of 81 caucasians were diabetic ( $p = 0.009$ ). There was no significant difference between the two races in the diabetic cohort for the urinary calcium ( $p = 0.09$ ), uric acid ( $p = 0.4$ ), oxalate ( $p = 0.25$ ), phosphate ( $p = 0.08$ ) and citrate ( $p = 0.18$ ).

Table for P38

Patients (n)	42	8
Mean stone size	7.2 mm	
Urinalysis	Haematuria only	Nitrite positive
Urine culture	Negative	5-Coliforms
		2-Streptococcus
		1-Candida
Mean WCC	11.5 (4–22.1)	10.5 (7.7–16.5),
Mean neutrophil count	8.75 (2.3–18.6)	8.4 (4.9–15.2)
Mean C-reactive protein	15.9 (1–192)	40.7 (3–86)
Sepsis	No	Pyrexia 1 patient
Antibiotic on admission (n)	34	8

**Conclusion:** The incidence of diabetes is higher in asian stone formers when compared to the caucasian cohort. The fact that there is no significant difference in the urinary excretion levels suggests that there may be other metabolic factors involved in the increased incidence in diabetic Asians. This is the first report in the literature describing an association of increased stone formation in the diabetic asians.

**P38**  
**Significance of white cell count in ureteric colic?**

*AIA Alleemudder, A Alleemudder, XY Tai, A Goyal, J Pati*  
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There is usually a raised white cell count (WCC) in ureteric colic with a tendency to commence antibiotics when there are no culture results or features to suggest infection. Information is lacking regarding the use of antibiotics in this setting. Our aims were to correlate the haematological findings with microbiology results and to justify the use of antibiotics.

**Methods:** We retrospectively analysed the data of 50 patients (28 male, 22 female) presenting acutely with a solitary ureteric stone.

**Results:**

**Conclusion:** The data shows a raised WCC is usually present in ureteric colic despite urine cultures being negative in 84%. Antibiotics were started on admission in 81% based solely on the raised WCC, causing an unjustified use of antibiotics when drug resistance is a growing concern. The significance and cause for the WCC rise is unknown but could be due to production of colony stimulating factor resulting from inflammation caused by the stone rather than infection. Interestingly, WCC is thought to be a more significant predictor for stone passage than size<sup>1</sup>. Based on this evidence, we conclude antibiotics are generally not required in ureteric colic

regardless of the WCC, unless there is sepsis or urinalysis suggestive of an infection.

1. Sfoungaristos S, Kavouras A, Perimenis P. Predictors for spontaneous stone passage in patients with renal colic secondary to ureteral calculi. *Int Urol Nephrol*. 2011 May 5. [Epub ahead of print]

**P39**

**A multicentre UK-wide snapshot of current practice of stenting after ureteroscopy for stone disease**

*MF Bultitude, T Thompson, J Masood, RD Smith, S Irving, C McIlhenny, R DasGupta, OJ Wiseman*  
*Guy's and St. Thomas' Hospital NHS Foundation Trust, London, United Kingdom*

The use of JJ stenting after ureteroscopy is controversial. We set out to determine the incidence and reasons for stent placement after ureteroscopy for stone disease.

Seven stone units across the UK collected prospective data for a six week period from October 31st 2011. All patients underwent rigid and/or flexible ureteroscopy for stone disease by a specialised stone surgeon. Data was collected on standardised stone and operation related variables.

221 ureteroscopic procedures were performed (64 rigid, 129 flexible, 28 a combination), of which 203 were elective operations. These were most commonly for lower pole stones ( $n = 66$ ) followed by lower ( $n = 41$ ) and upper ( $n = 32$ ) ureteric stones. The mean diameter of the largest stone treated was 8 mm (range 2–24 mm). 68 (31%) had been pre-stented. 163 (74%) had stents left in situ (27 with strings attached) and 9 (4.1%) a ureteric catheter. There was no difference in post-operative stent rate between patients pre-stented (66%) versus those not (77%) ( $p = 0.10$ , Fisher's exact test).

The main reason, in 119/156 (76%), for placing a stent was due to concerns over oedema or fragment passage post-operatively. In 28 patients a stent was left as a repeat procedure was planned. Planned duration of stenting after a successful procedure varied from 1–42 days (median: 14 days). This multi-centre prospective study indicates that stents are often placed after ureteroscopy for stones, whether the patient is pre-stented or not. The main reason for stent placement was due to concern over ureteric oedema or passage of fragments.

P40

**Single-center analysis of complications of Holmium: YAG laser lithotripsy for upper tract calculi in 600 consecutive procedures**

*F Khan, F Anjum, H Marsh, IK Dickinson, S Sriprasad  
Darent Valley Hospital, Dartford, United Kingdom*

**Introduction:** Ureterorenoscopy and holmium laser fragmentation is the current standard of management of ureteric and small renal stones. The aim of this study was to analyse the intra-operative and post-operative complications after holmium laser lithotripsy in the treatment of Urinary tract calculi.

**Materials and Methods:** A review of all consecutive patients who underwent ureterorenoscopy and laser lithotripsy between 17/11/2005 to 28/11/2011 as undertaken from a designated database. Six hundred procedures were performed in 464 patients.

**Results:** 464 patients with 907 urinary tract stones were treated with laser lithotripsy in 600 procedures. Mean age was 52.4 years (range 19–86) and mean size of stone burden measured at 10.6 mm (4–30 mm). 624 kidney stones (106 upper calyx, 138 middle calyx, 274 lower calyx, 29 within calyceal diverticulum, 77 renal pelvis) and 283 ureteric stones (104 upper ureter, 63 mid-ureter, 116 lower ureter) were treated. 45 minor complications (7.5%) from 600 procedures were identified: 3 regarding Sepsis (0.5%), 9 for urinary tract infection (1.5%), 24 stent symptoms and/or pain/colic (4%), 9 for ureteric perforation. (1.5%). There were 6 patients with damage to guide wire and broken laser tip which were removed. There was silent obstruction with renal loss after 12 months (1 major complication).

**Conclusion:** On the basis of these results we determine that urinary tract stone ablation using the holmium: YAG laser is both safe and reliable. Given the low complication rate, follow-up imaging to detect procedure-specific complications would not be routinely indicated.

P41

**Strategies to reduce emergency admission after extracorporeal shockwave lithotripsy**  
*M Bolgeri, HM Alnajjar, E Eversden, SJ Gordon, NA Watkin  
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**Introduction:** Haematuria and renal colic after extracorporeal shockwave lithotripsy (ESWL) for urolithiasis can lead to emergency consultations and admission to hospital.

In a previous audit we reported that 5.6% of treatments resulted in attendance to the emergency department and 3.2% in readmission, despite only 1.2% requiring intervention.

We prospectively re-audited emergency attendance and readmissions after implementation of a flowchart with advice for patients to follow after their treatment.

**Methods:** Between September 2010 and February 2011, patients were handed an information sheet with a flowchart on how to manage pain/colic, haematuria and systemic illness post-ESWL. Complication and admission rates were recorded prospectively. Results were compared with the previous retrospective audit using a two sample z-test for proportions.

**Results:** 214 ESWL treatment episodes in 158 patients were included in the prospective audit. In 82.7% of cases, patients developed at least one symptom, most commonly haematuria (68%) and renal/ureteric pain (47%). Emergency attendance (3.6% vs 5.6%,  $p = 0.2$ ) and admission rates (2.7% vs 3.2%,  $p = 0.6$ ) did not change significantly, however more patients who used the flowchart asked for medical advice ( $p < 0.001$ ).

No stented patient sought advice in either audit.

**Conclusions:** Implementation of a flowchart for patients and improving post-treatment advice may not reduce re-attendance and admission rates post-ESWL.

There may be a finite rate of re-attendance (around 5%) that cannot be avoided in non-stented outpatient-delivered ESWL. This evidence should be used in consent and post-treatment advice for patients. It may also have relevance in health care systems where readmission results in a financial penalty.

P42

**The use of entonox analgesia during Extracorporeal Shockwave Lithotripsy (ESWL) using a Dornier Delta II Lithotripter**

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**Introduction:** Despite the prevalence of ESWL there is limited data within the literature regarding optimum analgesic regimes. Entonox was recently introduced to ESWL in our unit due to side effects of strong opiates and inability of some patients to complete treatment due to pain. Our aim was to prospectively analyse this treatment.

**Methods:** Data was collected prospectively on 183 patients receiving ESWL between November 2010 and August 2011. 139 patients received our standard analgesic regime and 44 patients received entonox (introduced at various time-points) +/- reduced standard analgesia. Pain was recorded using a visual analogue scale. Unpaired and paired student T-tests were used for analysis.

**Results:** Groups were matched with regards to sex, weight, stone size, location, number of shocks and treatment duration. Mean pain score was reduced in patients receiving entonox (2.4 vs 3.8,  $p = 0.0006$ ). 13 patients would have stopped treatment due to pain if entonox had not been introduced and 6 patients who declined entonox failed to complete treatment due to pain. In patients who had 2 sessions of ESWL, where entonox was only used in the second session, pain scores were reduced (6.6 vs 1.2  $p = 0.003$ ) and numbers of patients completing treatment increased (4 vs 6) with entonox.

**Conclusion:** This is the first time that entonox use in ESWL has been reported in the European literature. Entonox proved to be an effective, safe adjunct to the standard analgesic regime and allowed reduction of strong opiates. Entonox was straightforward to implement, with valuable assistance from 'pain team' nurses.



P43  
**Is PCNL safe in solitary kidneys?**  
*A Sahai, K Wong, A Patel, M Bultitude, K Thomas, J Glass*  
*Guy's Hospital and MRC Centre for Transplantation, KCL, London, United Kingdom*

**Introduction:** Stones requiring percutaneous nephrolithotomy (PCNL) in patients with solitary kidneys can pose significant anxiety to the urologist. We set out to review our experience in this setting.

**Patients & Methods:** A comprehensive retrospective review of patient's medical records was performed who underwent PCNL and had either a solitary kidney or a single functioning renal unit. Data was collected on patient demographics, stone burden, outcomes and complications.

**Results:** Out of a total of 378 PCNL's performed between January 2003 and September 2011, twenty-two were performed in 17 patients in patients with a single functioning kidney. Three patients had PCNL performed in a transplanted kidney. In those with a solitary calculus, the longest mean length and stone surface area was 37 mm and 825 mm<sup>2</sup>, respectively. Stone free rate was 57%. Auxillary procedures were required in 6 cases, resulting in a stone free rate of 86%. Median inpatient stay was 4 days. Serum creatinine values improved from 144 to 126 umol/l pre- and post-procedure and mean eGFR improved similarly from 51 to 59 mls/min respectively. Blood transfusion was required in 1 patient, sepsis developed in 3 and 2 patients required a stent for obstruction.

**Conclusions:** PCNL in solitary kidneys is safe with an acceptable complication rate. Outcomes are good, although auxillary procedures may be necessary. Renal function remains stable or improves post procedure.

P44  
**Minimally invasive techniques for stone clearance in anomalous kidneys and in patients with musculoskeletal abnormalities**  
*AS Srivastava, J Kumar, A Yadav, MS Ansari, A Mandhani, R Kapoor*  
*Sanjay Gandhi Post Graduate Institute Of Medical Sciences, Lucknow, India*

**Objectives:** To study feasibility, safety and results of minimally invasive surgeries for stone clearance in anomalous renal moieties.

**Methods:** This is a retrospective study (January 2001 to December 2011) of 72 anomalous renal moieties. Procedures performed were percutaneous nephrolithotomy (PCNL), laproscopically assisted PCNL (LA-PCNL), laproscopic pyelolithotomy, extracorporeal shock wave lithotripsy (ESWL) and stented ESWL (S-ESWL). Operative technique, complications, stone clearance and ancillary procedures were analysed.

**Results:** Mean age was 33.4 years (17–58). Mean stone size 24.9 mm (7–33 mm). Anomalies studied were horseshoe kidney (HSK), pelvic and thoracic ectopic kidney (PEK), duplex kidney and patients with musculoskeletal abnormality (PMA). Number of patients in each group was 35, 24, 3 and 10 respectively. In HSK, PCNL, laparoscopic pyelolithotomy, ESWL and S-ESWL done in 21, 4, 8 and 2 patients respectively. Stone clearance was more than 85% in PCNL group while the other modalities had 100% clearance. In PCNL blood transfusion was needed in 11.5%. In PEK-PCNL, LA-PCNL, laparoscopic pyelolithotomy and ESWL in 1, 3, 7 and 9 patients respectively. Stone clearance was 100% in PCNL and ESWL group, while in LA-PCNL, laparoscopic pyelolithotomy clearance was noted in 88% and 66% respectively. No complication was noted in any of patients. In Duplex kidneys, PCNL was done the 3 patients stone clearance was 100%. In PMA-PCNL done in 8 patients and ESWL in 2 patients. Stone clearance was 100%.

**Conclusions:** Minimally invasive surgery is feasible with good stone clearance and acceptable complication rates in anomalous kidneys and PMA.

P45  
**Changing the gold standard in the management of large renal calculi – the cost based argument**  
*H Sur, M Wills, A Blacker*  
*University Hospital Coventry and Warwickshire, United Kingdom*

**Introduction:** Adopting new surgical techniques requires assessment of potential increased costs being justified by improvement in patient care.

At our institution it is regular practice to manage large renal calculi (>2 cm) with ureterorenoscopy and laser fragmentation rather than PCNL. We decided to perform a cost based analysis to determine if there is any economic benefit of selecting one method over the other.

**Methods:** Costs were obtained of equipment routinely used during a ureteroscopic procedure versus a PCNL procedure. Average length of stay was approximately 3 days following a PCNL and 1.5 days following a ureterorenoscopy. **Results:** The average cost of equipment used during a ureteroscopic procedure was calculated to be £702 versus £586 for a PCNL. The average cost per day of a surgical bed was determined as £400 per day based on figures from the NHS Institute for Innovation and Improvement. Based on these figures the average cost was £1386 for a PCNL, and £1302 for a ureteroscopic removal of a large renal calculus.

**Conclusion:** The average cost for the two procedures is similar. Reduced bed occupancy following ureterorenoscopy enables further revenue to be generated by increasing bed availability for additional procedures. Furthermore, when given the choice, patients preferred to opt for a ureteroscopic approach making this the procedure of choice.



# BJUI

Wednesday 27 June 2012  
Poster Session 5

## SUPPLEMENTS

11:00–12:30 Alsh

### BLADDER CANCER

Chairpersons: Ms Jo Cresswell &

Mr Rik Bryan

Posters P46–P57

P46

#### Snapshot of transurethral resection in the UK audit (STUKA)

*A Patel, S Fowler, D Rosario, J Catto, T O'Brien*

*Guy's and St Thomas' NHS Foundation Trust, London, United Kingdom*

**Introduction:** Despite transurethral resection of a bladder tumour (TURBT) being the standard management of bladder cancer (BC) there has been no national audit. A methodology, akin to NCEPOD, i.e. a snapshot, was tested as a means of determining the quality of TURBT across the country.

**Methods:** Retrospective review of the first case of newly presenting BC undergoing TURBT after midnight on 31st January 2010 from every urologist in BAUS. 192 patients were registered from June–August 2011.

**Results:** 149 males, 43 females, median age 73 years (27–94). 81% visible haematuria. 29% current smokers, 37% ex-smokers, 34% non smokers.

**Diagnostic and surgical quality:** Median time to presentation 11 days. Median time to TURBT 27 days. 6% photodynamic diagnosis (PDD). 72% received single-shot mitomycin-C. 0.5% returned to theatre. 16% no muscle in the specimen.

**Planned Management:** Non-muscle invasive BC (NMIBC) : low risk (n = 65); Intermediate risk (n = 35); High risk (n = 48). In high risk, initial management: 48% re-resected, of which none were upstaged; 29% BCG; 10% FC at 3 months, 4% cystectomy 9% other.

Muscle invasive BC (MIBC) (n = 29): 34% radiotherapy, 34% cystectomy, 32% other. Low, intermediate and high risk NMIBC 3 month recurrence: 16%, 21% and 21% respectively. 12 month mortality MIBC 34%; low/intermediate risk NMIBC 0% and high risk NMIBC 2%.

**Conclusions:** Snapshot methodology has proved a success. The quality of initial TURBT in the UK is high. Of note; Delays to TURBT are considerable; PDD is rarely employed; Re-resection of high risk NMIBC did not lead to upstaging. Short term mortality of MIBC remains very high.

P47

#### Hexaminolevulinat (HEXVIX) Photodynamic Diagnosis Assisted transurethral bladder cancer surgery – multicentre experience of the UK PDD Users Group

*P Mariappan, C Bunce, J Cresswell, A Shamsuddin, M Crundwell, R Donat, A Zachou, S Stewart, LJ Hartley, RA Hurlle, H Mostafid*  
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**Introduction:** By improving tumour detection and clearance, PDD assisted TURBT (PDD-TURBT) has been shown to reduce recurrence. As part of a series of analyses from a multicentre collaboration of centres performing Hexvix PDD assisted bladder cancer surgery, we describe the group's experience, particularly, early recurrence (RRFFC), residual disease at early

re-TURBT in high grade non-muscle invasive bladder cancer (HG-NMIBC) and recurrence at 1 year (RR-1y).

**Patients and Methods:** Collaboration was initiated between centres performing Hexaminolevulinat PDD assisted bladder tumour surgery to combine prospectively maintained and retrospective data. A standard proforma based on bladder mapping and tumour features was used to collect specific fields including tumour size, number, appearance, completeness of resection, grade & stage, presence/absence of detrusor muscle in the resection specimen and surgeon experience. Patients underwent first check cystoscopy at 3 months, with early re-TURBT performed within 6 weeks of initial resection in HG-NMIBC. Recurrence/residual disease was defined as histologically proven cancer. Logistic regression analysis was carried out.

**Results:** A total of 929 patients were recruited. The overall RRFFC was 9.6%, with RRFFC being 2.7% and 4.4% for low and intermediate risk tumours, respectively. Residual disease was detected at early re-TURBT in 16.9% of HG-NMIBC with macroscopically complete resection. The overall RR-1y was 28.2%. Detection of cis was significantly higher with PDD when compared with white light cystoscopy. **Conclusion:** In this large multicentre series, Hexvix PDD assisted bladder cancer surgery was associated with low risk of early recurrence, residual disease in HG-NMIBC and recurrence at 1 year.

P48

The impact of early re-resection in patients with high grade non-muscle invasive bladder cancer – an analysis of 490 consecutive patients

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**Aim:** To evaluate the impact of early re-resection on the incidence of tumour recurrence and progression in patients with High Grade-Non Muscle Invasive Bladder Cancer (HG-NMIBC).

**Patients and Methods:** From 1998 to 2008, 490 consecutive patients were diagnosed with HG-NMIBC. Retrospective data was collected which included patient demographics, histological parameters including the presence of detrusor muscle at initial TUR and at re-resection, adjuvant intravesical therapy and recurrence and progression rates. Early re-resection was performed within 8 weeks of initial TUR. Patients comprised those who underwent an early re-resection (Group-A, n = 172) and those who did not (Group-B, n = 318). **Results:** At initial TUR detrusor muscle was present in 61% (n = 105) of patients in group A and 76% (n = 244) of patients in group B. At early re-resection detrusor muscle was present in 77.9% of cases. Residual tumour was present in 54.6% of re-resected cases. Tumour upstaging occurred in n patients (12.7%). The overall incidence of tumour recurrence was 35% in group A and 42% in group B. During follow-up there was a significantly higher rate of tumour stage progression in patients who did not undergo early re-resection (Group B 14.4% vs Group A 3.3%, p < 0.05).

**Conclusions:** Early re-resection facilitates accurate staging and clearance of residual disease. Subsequent rates of tumour stage progression are significantly improved. We advocate early re-resection for all patients with HG-NMIBC.

P49

Early re-resection of high grade non-muscle-invasive urothelial carcinoma of the bladder (NMIBC): a 5 year experience (2007–2011) of safety and quality

*RJ Bryant, H Sandhu, A Birnie, J Bhatt, J Crew  
Oxford Radcliffe Hospitals NHS Trust, Churchill Hospital, United Kingdom*

**Introduction & Objectives:** EAU guidelines recommend patients with newly diagnosed high grade NMIBC should undergo a second resection (TUR) within 2–6 weeks due to risks of tumour understaging and residual tumour presence. We investigated the safety of early re-resection along with an analysis of up-staging in a contemporary patient cohort.

**Material & Methods:** We performed retrospective analysis of all early re-resections performed over a 5-year period and investigated the associated surgical complications. We also quantified the rate of upstaging at early re-resection.

**Results:** 179 consecutive patients underwent early re-resection for high grade NMIBC. Complication data was available in 141 cases. Most patients were male (n = 145) and elderly (mean age 72 years, range 39–92 years). 159 patients underwent re-resection following a new diagnosis of urothelial carcinoma whilst 20 patients had a previous history of recurrent NMIBC.

Muscularis propria was obtained in 88.8% of re-resections compared with 67% of primary resections. Upstaging to muscle-invasive bladder cancer was seen in 10 patients (5.6%), all of whom had G3pT1 disease at initial resection, and 5 had muscle included in the primary specimen. Only 6.8% of re-resections were performed within 6 weeks (mean time to re-resection 80 days). 15 complications (11 Clavien-Dindo grade I, 3 grade II, 1 grade III) occurred including 6 bladder perforations (5 extra-peritoneal and 1 intra-peritoneal).

**Conclusions:** This study indicates that early re-resection in patients with high grade NMIBC identifies and upstages a significant number of patients and suggests the benefits of early re-resection outweigh the risks associated with this procedure.

P50

Initial experience with sequential BCG/ Electro-motive drug administration (EMDA) Mitomycin-C (MMC) as the standard intravesical regimen for high risk non-muscle invasive bladder cancer (NMIBC)

*S Amery, K Chatterton, G Zisengwe, A Mukwahuri, F Dickinson, S Khan, K Thomas, T O'Brien  
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**Introduction:** Whilst both MMC and BCG are effective treatments for NMIBC they are rarely used in combination. Trials suggest they may be synergistic and that MMC is more effective if delivered by EMDA.

In June 2009 we introduced sequential BCG/EMDA MMC as our standard induction regimen in high risk NMIBC.

**Patients and Methods:** 62 patients. Mean age 70 (range 42–85) (56 males/6 females). 46/62 (74%) new diagnosis TCC. TNM: high grade/pTa n = 21; high grade/pT1 n = 24; pTis n = 12; secondary CIS n = 15; other n = 5.

Sequential BCG/EMDA MMC treatment administered over 9 weeks in 3 weekly cycles repeated 3 times. Each cycle comprised 2 weeks BCG with single EMDA/ MMC in the third week. Outcomes: tolerability, response rate, and recurrence. Check cystoscopies performed under general anaesthesia 8 weeks post-induction. Complete responders offered maintenance BCG.

**Results:** January 2012, 12 patients still undergo induction, leaving 50 for assessment. 40/50 (80%) completed full 9 weeks; reasons for discontinuing – 4 LUTS/pain; 2 BCGosis; 1 pancreatitis; 1 unrelated illness, 1 rash and 1 refused.

One awaits 1st check and one defaulted. 38 have completed 1st check; 31/38 (82%) had a complete response of whom 20 have completed check at 12 months. 17/21 remain clear.

Treatment of non responders; 4 cystectomy, 4 maintenance BCG, 1 surveillance, 1 Synergo. One death unrelated to bladder cancer or treatment; no mets; no progression.

**Conclusion:** Sequential BCG/EMDA MMC appears well tolerated and effective in the management of high risk NMIBC.

P51

**BCG resistant high risk non muscle invasive bladder cancer treated with thermochemotherapy – two year follow-up data from a single institution**  
*B Ayres, MJ Perry, R Issa, MJ Bailey, S Mukhtar*  
*St George's Hospital, London, United Kingdom*

**Introduction:** Management of high risk, non-muscle invasive bladder cancer (HRNMIBC) presents a challenge for urologists and their patients. The risk of disease progression with bladder sparing must be weighed against the morbidity from cystectomy which may represent overtreatment for some patients.

Patients failing to respond to BCG have little option but to undergo cystectomy. Thermochemotherapy may provide an alternative bladder sparing therapy.  
**Patients and Methods:** We have treated 61 patients with BCG resistant HRNMIBC with mitomycin thermochemotherapy (Synergo therapy) at our institution since 2006. Patients have been followed up with regular cystoscopies and VUC. Treatment was given weekly for 6 weeks with 6 weekly maintenance thereafter. Those patients with >2 year follow up are presented here.

**Results:** 34 patients have >2 year follow up (mean 36, range 24–66 months). 21 remain disease free. Three patients had a partial response and continue on treatment. Seven patients had a cystectomy for persistent HRNMIBC and one for T2 disease. One has had radiotherapy for T2 disease. One patient progressed to prostatic stromal disease, but died from other causes. One patient developed urethral tumours, but died of other causes. Two patients have died from metastatic bladder cancer (one with only CIS in the bladder). 73% of patients treated are alive, with NED and an intact bladder.

**Conclusion:** Mitomycin thermochemotherapy may provide an alternative to cystectomy for patients with HRNMIBC unresponsive to BCG. Progression during this treatment has been low, so the option of curative treatment with cystectomy is not lost.

P52

**Can presence of granuloma act as a marker of response to intravesical BCG in non-muscle invasive bladder cancer?**  
*S Jallad, P Hughes, A Gupta, S Goubet, A Symes, T Lerner, P Thomas*  
*Brighton and Sussex University Hospitals, Royal Sussex County Hospital, United Kingdom*

**Introduction:** The mechanism by which intravesical Bacillus Calmette-Guerin (BCG) exhibits its anti-tumour activity remains poorly understood. Markers for response have been evaluated, but until now no specific markers for response to intravesical BCG have been identified. There is conflicting evidence suggesting that the presence of granulomata in histology samples can act as a marker of response.

**Materials and Methods:** 194 patients with non-muscle invasive bladder cancer (NMIBC) treated with intravesical BCG over a 5 year period were identified. The presence of granulomata and/or inflammation on histopathology review was correlated with disease recurrence and progression, with survival analysis performed using the Kaplan-Meier method.  
**Results:** Granulomata were identified in 50 patients and inflammation in 111. 14 patients had no evidence of either, and tissue was unavailable in 19 patients, who were subsequently excluded.

The median recurrence free survival was significantly higher in the granuloma group, 60.2 months (95% CI: 54.3–66.1), than in the inflammation group (46.8 months, 95% CI: 40.9–52.6.  $P = 0.003$ ) and the normal histology group (20.2 months, 95% CI 6.7–33.6.  $P < 0.0001$ ).

The progression free survival was higher in the granuloma group (65.5 months, 95% CI: 62.2–68.8.  $P < 0.0001$ ) and inflammation group (64 months, 95% CI: 60.1–67.9.  $P < 0.0001$ ) in comparison with the normal histology (24.1 months, 95% CI: 9.9–38.2).

**Conclusion:** The presence of inflammation and specifically granuloma in histology samples following intravesical BCG for NMIBC could act as a marker of response. In the absence of inflammation or granuloma, the risk of recurrence and progression seems higher, perhaps necessitating a closer surveillance policy.

P53

**Prostatic urethral biopsy before cystectomy: a service evaluation**  
*AW Nelson, AY Warren, AJ Colquhoun, WH Turner*  
*Cambridge University Hospitals NHS Foundation Trust, United Kingdom*

**Introduction:** Prostatic urethral involvement has been reported in up to 43% of patients with urothelial carcinoma of bladder. The risk of urethral relapse increases with prostatic urethral disease. We biopsy the prostatic urethra before cystectomy to determine the need for urethrectomy, rather than using intraoperative frozen section, as others advocate.

**Materials and methods:** A retrospective service evaluation was conducted of prostatic urethral biopsies (PUB) performed between February 2008 and December 2011. Patients were identified from electronic hospital records. PUB pathology was correlated with final cystectomy pathology.

**Result:** One hundred and fifty five patients with a median age of 69 years (range 37–84 years) underwent PUB. Thirty four (22%) patients had positive PUB and 121 (78%) were negative. Sixty seven patients subsequently underwent cystectomy, and 19 others underwent cystourethrectomy. In seven patients final pathology results are pending. In the 79 patients with pathology results available, when the entire prostatic urethra was sectioned, 16 (20%) had cancer. Cancer was found in 14 (78%) of 18 patients with positive PUB and in two (3%) of 61 with negative PUB. In all 79 patients, the prostatic apical margin was negative.

**Conclusion:** Disease in the prostatic urethra was common in our patient group and prostatic urethral apical margins were all negative. Intraoperative frozen section would have missed cancer in the 16 patients with prostatic urethral cancer, whereas our biopsies identified 14 (88%) of the 16 patients with cancer in the prostatic urethra. This dataset validates the role of PUB before cystectomy in our patient population.

P54

UK Radical Cystectomy Audit 2011–2012  
On behalf of BAUS Section of Oncology  
*L Patrick, JE McCabe, S Fowler*  
*St Helens & Knowsley NHS Trust, Whiston Hospital, Prescot, United Kingdom*

**Background:** UK Urologists have been able to submit radical cystectomy data to the BAUS complex operations database since 2004. In 2011 the datasets were overhauled and a web based system launched. We present an analysis of this newly submitted data. It is hoped that by collecting this data we can gain a more meaningful perspective on the operations we do and therefore make positive changes to patient management in the future.

**Methods:** The data has been collected via the web based system and an ongoing analysis of all submitted data between April 2011 until March 2012 undertaken. Data was interrogated using Tableau software. Patients undergoing open and laparoscopic (including robotic) procedures have been included in the data collection.

**Results:** Up to October 2011, 193 cystectomies were entered onto the database. These were performed in 31 centres. Mean patient age was 68 years and mean length of stay was 15.6 days. The majority of patients underwent open transperitoneal procedure 139 (72%). Post operative complication rate for all procedures was 15%.

Lymph node metastases were detected in only 23 (11%) of patients.

**Discussion:** This interim analysis suggests that there is a low yield of positive lymph nodes for each given pathological T stage as compared to current literature. This may be the result of inadequate pelvic lymph node dissection. However, we need more data entries to analyse this accurately. Of note, the pathological data is more complete than in the 2010 data, this is an early positive outcome of the re-launched datasets.

P55

Serum beta human chorionic gonadotrophin; does it have a role as a marker of disease recurrence after radical cystectomy for bladder cancer?  
*T Drake, J Douglas*  
*Southampton General Hospital, United Kingdom*

**Introduction:** Bladder cancer is the 9th most common cancer diagnosis worldwide and like several other non-trophoblastic tumours, has been associated with ectopic production of beta human chorionic gonadotrophin ( $\beta$ HCG). Previous studies have found an association between pre-treatment serum  $\beta$ HCG levels and bladder tumour stage and grade, but as yet little has been documented regarding  $\beta$ HCG's role as a marker for disease recurrence following radical cystectomy performed with curative intent.

**Patients & Methods:** We identified a study population of 96 patients treated surgically for recurrent or invasive bladder cancer at a single institution between 2000 and 2011. Data was obtained from a previously created database containing patient outcome measures for all radical cystectomies performed at the institution during this time period. Data was analysed for correlations between serum  $\beta$ HCG post-radical cystectomy and the presence of recurrent disease.

**Results:** Disease recurrence occurred in 54% of the study population. Serum concentrations of  $\beta$ HCG were elevated in 51% of patients following radical cystectomy. Of these 84% had evidence of recurrent disease. The sensitivity of  $\beta$ HCG as a marker of recurrent disease post-cystectomy was 83%.

**Conclusions:** An elevated  $\beta$ HCG post-cystectomy is a specific and sensitive marker for disease recurrence. Regular measurement of serum  $\beta$ HCG levels post-radical cystectomy may be a useful adjunct to current surveillance programmes. Further studies are needed to investigate how serum  $\beta$ HCG levels correlate with immuno-histochemical expression on matched tissue samples, and to see if this could allow personalised chemotherapy with anti- $\beta$ HCG drugs.

P56

A comparison of survey results from 514 pelvic surgeons – trends in robot-assisted surgery  
*K Ahmed, AP Stegemann, NC duPont, R Chandrasekhar, A Hussain, GE Wilding, KA Guru*  
*Rosswell Park Centre, US*  
*Guy's Hospital, London, United Kingdom*

**Introduction:** Institutional surgical volume has been widely embraced as a surrogate measure for surgical outcomes. Studies on the broad relationship between institution volume and outcomes after robot-assisted radical cystectomy (RARC) have been lacking. We aim to determine the relationship between caseload and patient selection as well as perioperative outcomes with RARC.

**Methods:** Using the International Robotic Cystectomy Consortium (IRCC) database, 1118 patients who underwent RARC for bladder-cancer at 18 institutions from 2003–2010 were evaluated. The institutions were divided into 2-groups according to their number of RARCs performed (cut-off: 100 RARCs).

**Results:** 534 patients (48%) had their surgery performed at institutions that had a caseload <100 RARCs and 584 (52%) had their surgery performed at institutions with a caseload of >100 RARCs. No significant-difference was seen between groups for gender, previous-surgery, estimated blood-loss, pathologic-stage, soft tissue surgical-margin positivity, lymph-node metastasis and neo-adjuvant chemotherapy-administration. Institutions with >100 caseload operated on older-patients (>75 years: 30% vs. 21%,  $p = 0.001$ ) with higher body mass index ( $p < 0.001$ ) and higher ASA score ( $ASA \geq 3$ : 7% vs. 41%  $p < 0.001$ ). The institutions with >100 caseload were also more likely to perform an extended-lymphadenectomy (89% vs. 56%,  $p < 0.001$ ), had a higher mean number of lymph-nodes removed (21 vs. 15,  $p < 0.001$ ) and were more likely to perform continent-diversions (37% vs. 29%,  $p < 0.001$ ). The patients at the >100 caseload institutions had shorter overall operative-time (mean-difference of 52 minutes,  $p < 0.001$ ) and shorter length of hospital stay (median 7 vs. 10 days,  $p < 0.001$ ).

**Conclusions:** Higher-volume institutions perform a more thorough lymphadenectomy

and have shorter operating-time and hospital stay despite operating on sicker and older patients. Further follow-up is needed to assess the impact of these differences on morbidity and survival.

P57

**A comparison of open and laparoscopic cystectomy**

*GW Yardy, ETS Ho, V Kumar, RD Mills, MA Rochester*

*Norfolk and Norwich University Hospital  
NHS Foundation Trust, United Kingdom*

**Introduction:** We prospectively compared perioperative and pathological outcomes in a consecutive series of patients undergoing radical cystectomy (RC) by the open (ORC) or laparoscopic (LRC) approach.

**Methods:** From January 2010 to October 2011, 70 consecutive patients underwent RC. Two surgeons performed ORC (n = 36), while two introduced LRC (n = 34). Patient demographics, operative and postoperative variables, and pathological outcomes were collected prospectively.

**Results:** The mean age was  $69.9 \pm 8.7$  years for LRC and  $67.8 \pm 9.3$  years for ORC ( $p = 0.33$ ). 79% in the LRC group were male compared with 83% of ORC. Three orthotopic bladder substitutes were performed in each group (8.5%) – the remaining diversions were ileal conduits. The stage distribution was similar in each group (final stage 22% T0, 28% Tis-T1, 49% T2–4 for LRC and 28% T0, 20% Tis-T1 and 51% T2–4 for ORC).

LRC had significantly decreased blood loss (597 vs 992 mL,  $p = 0.0009$ ) and transfusion rate (14% vs 25%,  $p = 0.007$ ), but increased operative duration ( $297 \pm 41$  vs  $265 \pm 51$  min,  $p = 0.006$ ). Hospital stay (7 vs 10 days,  $p = 0.03$ ) was shorter for LRC. The complication rate was lower for LRC (29% vs, 56%). One patient died in each arm (2.8%).

The median number of lymph nodes removed was similar in the open and laparoscopic cohorts (13 vs 14,  $p = 0.4$ ) with no positive margins.

**Conclusion:** LRC was safely introduced in this department. The operating time was prolonged, but there was decreased blood loss, transfusion rate, complications and length of hospital stay for LRC.



11:00–12:30 Carron  
**TECHNIQUES AND INNOVATION**  
 Chairmen: Mr Ghulam Nabi &  
 Mr John McGrath  
 Posters P58–P67

P58

**Outcomes of emergency renal embolisation – 7 year single centre analysis**

*RK Narahari, A Abroaf, S Patel, P Haslam, A O’Riordan, ST Hasan, TJ Dorkin  
 Freeman Hospital, Newcastle upon Tyne, United Kingdom*

**Introduction:** Acute renal haemorrhage is a potentially life threatening condition. Surgical exploration is technically challenging with low nephron salvage rates even in specialist centres and consequent long-term compromise of renal function. We present our data on all cause emergency selective renal arterial angio-embolisation (SAE) over the last 7 years. This represents one of the largest series of embolisations performed in a single UK centre.

**Methods:** All SAE performed on urological patients between January 2004 and June 2011 were identified from the electronic radiology database followed by a comprehensive case note analysis.

**Results:** A total of 61 patients (M:F = 2:1) were identified with mean age 58 years. Overall successful embolisation was carried out in 93% of patients. 3 renal tumour patients required radiotherapy and an AML patient eventually required a nephrectomy for ongoing pain in a poorly functioning kidney.

Table for P58

Indication/n	Transfusion Rate %	Av units transfused	Hosp stay Median days	Post SAE creatinine change (µmol/l)
Overall n = 61	67	2	8	+6
Post partial nephrectomy = 12	83	3.7	13	+4
Post PCNL = 13	69	1.8	13	+21
Post renal biopsy for tumour = 4	50	1.75	7.5	+50
Post blunt loin/abdominal trauma = 8	62	3.2	13	-4
Bleeding renal tumours = 24 (13 RCC/TCC, 11 AML).	50	1.6	7	+2

**Conclusions:** Emergency renal SAE is an effective and reliable way of arresting renal haemorrhage obviating the need for exploratory surgery whilst also preserving renal function. Our results compare favourably to those published worldwide.

P59

**Robotic assisted laparoscopic partial nephrectomy: a prospective analysis of feasibility, operative and perioperative outcomes**

*A Hughes-Hallett, P Patki, M Nuttall, R Thilagarajah, M Sullivan  
 Broomfield Hospital, Chelmsford, United Kingdom*

**Introduction:** Partial nephrectomy (PN) is the new standard of care for suitable renal

tumours. The technique has evolved from open to laparoscopic to robotic assisted partial nephrectomy (RPN). We present a prospective analysis of operative, perioperative and oncological outcomes of a series of RPN.

**Methods:** Data was prospectively collected across two institutes in 36 consecutive RPN's. RPN was performed using transperitoneal approach and 3 arm, 4 port technique. Patient demographics, tumour characteristics, intra and post-operative data, margin status and complications were recorded.

**Results:** Average age of patients was 60.7 years (range 42–87 years). Median tumour size was 2.8 cm (1–7.2 cm). Mean operative time for RPN was 188.3 min. Overall mean warm ischaemia time (WIT) was 17.2 min.



Average blood loss was 518 ml. Surgical difficulties (3) and equipment failure (1) lead to RPN conversion to open. Mean inpatient stay was 4.8 days (2–13 days). Margin was positive in one with no recurrences at a mean follow up of 15.3 months (6–28). One urinoma and one infective complication required additional procedures.

**Conclusion:** RPN is feasible, safe and has comparable operative, perioperative and oncological outcomes to open and laparoscopic series in literature. Outcomes were similar amongst renal cancer surgeons across two institutes suggesting the universally applicable nature of the technique. However in select cases conversion to open may be required reflecting the learning curve.

P60

**Is laparoscopic radical cystectomy safe? – results from a high volume UK centre**  
*F Khan, M Jackson, GC Durkan, R Heer, NA Soomro, MI Johnson*  
*Freeman Hospital, Newcastle, United Kingdom*

**Introduction:** Radical cystectomy is recognised as a morbid procedure. We report the surgical and pathological outcomes from a large series of patients undergoing laparoscopic radical cystectomy (LRC) for bladder cancer.

**Methods:** We prospectively collected data between May 2005 and August 2011 from patients undergoing LRC for muscle invasive or high risk superficial bladder cancer. The complications were recorded using the Clavien Dindo classification.

**Results:** 68 procedures were performed with no open conversions. The mean operating time was 420 mins and mean blood loss was 600 ml. 19 (25%) patients were transfused. Pelvic node dissection was performed in 61 patients – mean count – 11 (4–21). Male to female ratio – 4:1, Mean BMI – 27 (18–39). 2 (3%) patients had positive surgical margins. 44 patients (65%) sustained one or more complications within 30 days, as listed in Table 1.

Table 1 for P60: Complications of LRC

Clavien Grade	No of Patients	%
0	24	35
I	6	8
II	25	37
III	10	15
IV	2	3
V	1	1.4

**Conclusion:** LRC appears to be a safe procedure with outcomes that are at least comparable to open cystectomy, as assessed by the Clavien–Dindo classification with satisfactory pathological results. Blood loss and transfusion rates may be better in patients undergoing LRC. We support the continuing recruitment into the BOLERO trial of open versus minimally invasive radical cystectomy, which should eliminate selection and reporting bias and give a true indication of the benefits or indeed risks of these differing methods of radical cystectomy.

P61

**Transluminal Surgery (TLS) A series of vesicoscopic procedures in women**  
*F Lynch, P Grange, S Wali, M Vella, J Bidmead, D Robinson, N Marcus, L Cardozo*  
*King's College Hospital, London, United Kingdom*

**Introduction:** The transvesical approach or vesicoscopy is an emerging technique in transluminal surgery. Employing standard laparoscopic surgical instruments and techniques direct access into the bladder can be achieved in order to perform a variety of Urogynaecological procedures. We report our initial prospective experience of the technique in 9 women with various pathologies.

**Patients and Methods:** Following insufflation of the bladder with carbon dioxide through a urethral catheter three 5 mm laparoscopic ports are inserted suprapubically and secured with stay sutures using an Endoclose device. A robotic camera holder, Freehand, can be used to facilitate the technique. All patients were prospectively followed up in order to ensure accurate outcome data collection.  
**Results:** To date 9 women have undergone vesicoscopic surgery (three ureteric reimplantations, three complex

vesicovaginal fistulae, two foreign body removals and one endometriosis of the bladder). Mean age was 43 years (14–83), operative time 193 minutes (80–560), no conversions to open surgery were necessary, mean hospital stay five days (2–8), all patients had normal bladder function without urinary incontinence at six weeks and six months follow up. No recurrence of pathology, symptoms or post operative complications were identified at final review.

**Conclusions:** In our early experience of nine women undergoing vesicoscopic surgery this novel techniques offers excellent visualisation and appears to be a safe and reliable technique with minimal morbidity and post operative pain enabling a short recovery time and hospital stay. Structural and functional outcomes appear equivalent to the established open approaches with superior recovery and patient satisfaction.

P62

**Rectus sheath catheters – a novel peri-operative pain control technique for open pelvic uro-oncology surgery**  
*T Dutton, M Daugherty, K Allman, RD Pocock, R Mason, MC Crundwell, JS McGrath*  
*Royal Devon and Exeter NHS Trust, United Kingdom*

**Introduction:** Epidural (EA) or spinal anaesthesia (SA) has been the mainstay of post-operative analgesia in major open uro-oncology surgery (open radical cystectomy (ORC) and prostatectomy (ORP)). Rectus sheath catheters (RSCs) may offer an alternative, less invasive method with potential for earlier mobilisation.

**Patients & Methods:** 200 patients undergoing ORC and ORP (April 2008–August 2011) had RSCs placed (94 ORC: 106 ORP; 174 male: 26 female; mean age 65 years (range 37–83)). Catheters were placed under ultrasound guidance at induction of anaesthesia between rectus abdomini and posterior rectus sheath. Local anaesthetic boluses were given 6-hourly with 'rescue' analgesia as required.  
**Results:** All RSCs were successfully placed and used for a mean of 2.8 days (range 1–7). Post-operative pain scores per 12-hour period were consistently low (1.64, 1.52, 1.29, 1.53, 1.26, and 0.91 respectively). Problems with RSCs requiring clinical review occurred in only 9% of

cases. RSCs usage was terminated early in 5.5%. Mean time to mobilisation was post-operative day 1 (POD) for ORP and POD 2 for ORC. PCAS was used for the initial 24 hours in 84 patients though this decreased with experience.

**Conclusions:** RSCs offer a safe and effective alternative to EA with low rates of complications. They avoid the rare but catastrophic complications of EA and allow early mobilisation. Additional analgesia may be required to treat visceral pain in the first post-operative 24 hours. RSCs may facilitate the aims of enhanced recovery programmes and could therefore have an increasing role.

P63

#### Transperineal sector prostate biopsy technique and morbidity

*L Vyas, R Popert, J Kinsella, H Yamamoto, P Acher, J Smith, S Duasko, A Chandra, D Cahill, B Challacombe*  
Guys and St Thomas' NHS Foundation Trust, London, United Kingdom

**Introduction:** We describe our transperineal sector biopsy (TPSB) experience and complication rates.

**Material & Methods:** The protocol developed from our dynamic brachytherapy technique, with preferential peripheral loading. A total of 24–32 cores are taken (4/5 per sector). The prostate is divided into 8 sectors; anterior, mid gland and posterior sectors bilaterally with additional basal sectors in glands larger than 30cc. Geographical 3D distribution within each sector, if required, can be determined by placing individual cores on to sponges laid from medial to lateral (a, b, c, d, e). The most medial core (a) is inked and fixed at the basal end, allowing the pathologist to report on the medial to lateral and apical to basal distribution of the tumour within each sector.

**Results:** 836 patients with known or suspected prostate cancer have undergone TPSB. 205 have entered our AS program, 288 have required active intervention (108 prostatectomy, 102 Brachytherapy, 16 radiotherapy with a brachytherapy boost, 37 radiotherapy with hormones and 23 hormonal therapy. The remainder were benign and have been discharged to their primary physician. Complications include retention in 2% and haematuria requiring admission in 1%. Uro sepsis requiring

admission has not occurred although in 1% urine infections occurred, associated with bladder outflow obstruction

**Conclusions:** Transperineal sector biopsies (TPSB) are safe. It allows stratification of patients, for Active Surveillance or active intervention. The 3D geographical information obtained may be used to plan nerve sparing in radical prostatectomy, deliver preferential loading in brachytherapy and potentially targeted treatments in focal therapies.

P64

#### Consultant-delivered care – is it worth it?

*A Russell, J Webster, V Izebu, G Hellowell*  
The North West London Hospitals NHS Trust, Northwick Park Hospital, London, United Kingdom

**Introduction:** Reduction in trainee service activity via the EWTD and hospital financial pressures to reduce length of stay (LOS) has led to a transition from consultant-led to consultant-delivered care. Reduced elective activity and consequential income loss are cited as barriers to implementation of a consultant-delivered emergency service. We reviewed LOS for acute admissions before and after the adoption of this service in order to quantify potential savings.

**Methods:** Data was recorded prospectively for average LOS for urology inpatients before and after the adoption of a consultant-delivered acute service. Prior to September 2009 the daily care was middle grade led, thereafter the consultant of the week undertook daily ward rounds of all urology inpatients.

**Results:** In the 12 months prior to September, 2009 the LOS for emergency admissions was 3.1 days. The LOS in the subsequent 12 months was 1.69 days. Dr Foster data for the consultant-delivered care period indicated an overall LOS that was 50% of the national average. UK figures estimate 650 emergency urology admissions per annum for an average district general hospital. Extrapolation of inpatient daily costs of £300 results in annual savings of £273,000 due to LOS reduction.

**Discussion:** The transition to a consultant-delivered model of care resulted in dramatic LOS reduction that translates into measurable financial savings. In addition the 48-hour readmission rate dropped to zero. Service commitments may require reduction but planned staff redeployment

can minimize service disruption. We have found a measurable financial and clinical benefit to implementing a consultant-delivered emergency service.

P65

#### Development and validation of an iPad based laparoscopic trainer

*AN Bahsoun, MM Malik, O Elhage, K Ahmed, P Dasgupta*  
Guy's Hospital, United Kingdom

**Introduction:** Access to facilities that allow one to develop their laparoscopic skills is very limited in the hospital environment and courses can be very expensive. We set out to build a cheap yet effective trainer to allow laparoscopic skill acquisition in the home or classroom environment based on using a tablet as a replacement for the laparoscopic stack and camera.

**Methods:** The cavity to train in was made from a cardboard box and we left the sides and back open to allow for natural light to fill the cavity. An iPad 2 (Apple inc.) was placed over the box to act as our camera and monitor. We provided ten experienced laparoscopic surgeons with a task of passing a suture needle through 3 hoops and they filled in a questionnaire to assess Face (training capacity) and Content (performance) validity.

**Results:** On a 5 point Likert scale the tablet based laparoscopic trainer scored a mean 4.2 for training capacity (hand eye co-ordination, development and maintenance of lap skills) the trainer and for performance (graphics, video and lighting quality) it scored a mean 4.1.

**Conclusion:** The iPad 2 based laparoscopic trainer was successfully validated for training. It allows students and trainees to practice at their own pace and on the go. For the price of a laparoscopic stack and camera we can buy around 150 iPad 2s for inexpensive training. Future 'app' based skills are planned

P66

#### Which resources do medical undergraduates currently utilise in their studies?

*G Coleman, C May, AM Sinclair, I Pearce*  
Manchester University Medical School, United Kingdom

**Introduction:** Over the past 20 years, due to advances in technology, those in medical

education are no-longer confined to solely using the traditional textbook for their learning. We aimed to assess how popular the medical textbook still is to what extent these new technologies are being used, and in what form.

**Materials and Methods:** 124 final year medical students in one university attending a urology revision day were asked to complete an anonymous questionnaire regarding the learning resources they currently use. 109 forms were returned, of which, 4 were excluded as a result of being filled in incorrectly.

**Result:** Students rated text books followed by a web search engine as their most preferable resources, with 59% and 32% preferring them above all else respectively. On average, 84% and 68% of students had used the internet to assist in their studies within the last 48 and 24 hours respectively. 86% of the students had accessed a medical text book within the last two days, the most popular being the Oxford Handbook of Medicine. The most popular device to own and use for study was the laptop, followed by an iPhone or other smart phones.

**Conclusion:** Whilst the medical textbook is still the resource of choice for most medical students, web-based resources are used as

frequently. The vast majority of medical students use and own a laptop to access information for medical studies, and many use a smart-phone.

P67

**Can the productive operating theatre (Tpot) programme increase efficiency in urology operating theatres?**

*K Ahmed, N Khan, D Anderson, J Watkiss, MS Khan, P Dasgupta, D Cahill  
Guy's Hospital NHS Foundation Trust, London, United Kingdom*

**Background:** The productive operating theatre (TPOT) is a module based programme designed by the National Health Service to improve value/efficiency, teamwork, patient experience, staff well-being and the safety and reliability of care in operating theatres.

**Aim:** To evaluate the effectiveness of introducing TPOT in urology operating theatres and to identify obstacles to running an ideal operating list.

**Method:** TPOT was introduced in two urology operating theatres in September 2010. Multidisciplinary team discussions took place to identify obstacles to running an ideal operating list and implement

solutions. A brief/debrief system was introduced as part of the 'team-working' module and efforts to organise the work environment were introduced as part of the 'well organised theatre' module. 'Measures workshops' were conducted to monitor efficiency and audit start/overrun times and patient experience.

**Results:** Start Times: Measured from Sep'10 to Jun'11 involving 1365 cases – there was a 39–41% increase in the percentage of operating lists starting on time in Jun'11 compared to Sep'10.

**Overrun Measures:** Cost of monthly overrun was reduced by £3,030.00 in theatre 1 and £510.00 in theatre 2 between Sep'10 and Jun'11.

**Patient experience:** 54 urology patients returning for follow-up were surveyed. High degree of satisfaction regarding level of care (77%), staff hygiene (71%) and information provided (72%). Negative comments regarding staff shortages and environment/facilities.

**Conclusion:** Introducing TPOT has shown improvements in efficiency measures such as start and overrun times with high patient satisfaction. Further work will involve introducing new modules and implementing the programme in other specialties.

# BJUI

## Wednesday 27 June 2012

### Poster Session 7

# SUPPLEMENTS

## 14:00–16:00 Alsh

### FEMALE UROLOGY AND LUTS

#### Chairpersons: Mr Chris Harding & Miss Mary Garthwaite

#### Posters P68–P82

**P68**  
**Urological injury secondary to urogynaecology tape/mesh procedures**  
*L Kerr, J Wilkens, K Guerrero, P Granitsiotis*  
*Southern General Hospital, Glasgow, United Kingdom*

**Introduction:** Female incontinence surgery has been revolutionised by mid-urethral tapes. Mesh repair of pelvic organ prolapse is increasingly popular. Most recent mid-urethral tape procedures do not include cystoscopy. This retrospective review of urological injury, presenting to urogynaecology/urology tertiary referral centre aims to determine if cystoscopy should be part of the procedure protocol. **Method:** Number of transvaginal tape (TVT, TVT-O and TOT) procedures and anterior mesh repair of pelvic organ prolapse were determined from theatre audit data over the period 2007–2011. Urological injuries requiring surgical repair were determined by theatre logbook and casenote review. **Results:** Between 2007–2011, 2104 transvaginal tape procedures and 319 anterior repair of pelvic organ prolapse using mesh were performed. Five urological injuries following transvaginal tapes were referred (<0.2%). These required single surgical procedure to repair. Two of five required further management of stress incontinence. Twelve anterior mesh related urological injuries requiring surgery were referred. Three of 12 required more than one surgical procedure to remove eroded mesh. Injuries were not identified during initial procedure.

**Conclusion:** NICE guideline IPG267 quotes 2–7% risk of organ injury during anterior mesh repair, producing symptoms with higher impact on quality of life than initial stress incontinence. The number of urological injuries secondary to anterior repairs with mesh is higher than transvaginal tape, causing significant comorbidity to patients. Due to risk of further surgery required, this study concludes cystoscopy should be part of protocol for anterior repairs but is not required for transvaginal tapes due to lower risk of urological injury.

**P69**  
**The effect of Urethral Diverticulae on female voiding dynamics**  
*G Rogers, C Harding, S Fulford*  
*James Cook University Hospital, South Tees Hospitals NHS Foundation Trust, Middlesbrough, United Kingdom*

**Introduction:** Urethral diverticulae in females are often misdiagnosed and there are few case series in the literature. Urodynamic characteristics are particularly poorly defined. Therefore our aim was to review our 3 year experience in the management of these patients, focusing on voiding dynamics.

**Methods:** A retrospective case note review was undertaken for 12 consecutive patients with urethral diverticulae treated by a single surgeon between 2008–2011. Median age was 39 (range 21–50) with mean follow up of 8.6 months. Surgical treatment consisted of; cystoscopy, excision of

diverticulum, repair of urethral defect and placement of a Martius fat pad. **Results:** Presenting symptoms were variable. Voiding symptoms (58%), storage symptoms (58%) and a swelling (58%) predominated. A third were initially misdiagnosed. Magnetic resonance imaging and video Urodynamics (vUD) were highly sensitive for identifying diverticulae. 6 patients had vUD performed and using Blaivas–Groutz nomograms, outflow obstruction was confirmed in all (3 mild, 3 moderate). Post repair, 60% had resolution of symptoms and no complications. 10% of storage lower urinary tract symptoms persisted. There was no evidence of dysplasia or malignancy in excised diverticulae. **Conclusion:** No patients in our study presented with the 'classical triad' of dyspareunia, dysuria and dribble. To the best of our knowledge this is the first study to clearly demonstrate the obstructive nature of urethral diverticulae on voiding dynamics. Our operative results are in keeping with the small number of studies to date, suggesting that where there is already expertise in female and reconstructive surgery, the learning curve for urethral diverticulectomy is acceptable.

P70

The effect of urethral diverticulum MRI configuration on the incidence of new onset urodynamic stress urinary incontinence following excision

R Kavia, I Rudd, J Jenks, R Hamid, J Ockrim, J Shah, T Greenwell  
UCLH, London, United Kingdom

**Introduction:** Excision of urethral diverticulum in females has been reported to be associated with new onset urodynamic stress urinary incontinence (USUI) in up to 65%. We have assessed the incidence of new onset USUI in all patients having urethral diverticulum excision with Martius fat pad interposition under the care of a single surgeon between 1/5/2007 and 1/12/2011. The incidence of new onset USUI has been correlated with the pre-operative MRI appearance of the urethral diverticulum.

**Patents and Methods:** All 33 patients (mean age 42) having urethral diverticulum with Martius fat pad interposition had prospective data tabulated on: demographics, pre-operative MRI appearance and pre and post-operative VCMG.

**Results:** Of the 33 patients 10 (30%) had pre-operative USUI and have been excluded from this study. Other pre-operative urodynamic findings included IDO in 10 (30%) and BOO in 5 (16%).

The details regarding the incidence of new onset USUI in the remaining 23 patients are as tabulated:

Table for P70

MRI Configuration of Diverticulum	Number (%)	New Onset USUI (%)
Simple	2 (10)	0 (0)
Saddle	16 (73)	1 (6)
Circumferential	5 (17)	1 (20)

**Conclusions:** New onset USUI occurs in 9% of patients having excision of urethral diverticulum with Martius fat pad interposition. The incidence appears to increase with increasing complexity of urethral diverticulum on pre-operative MRI – rising from 0% following simple urethral diverticulum excision to 20% following circumferential diverticulum excision.

P71

The efficacy and safety of intravesical sodium hyaluronate solution (cystistat®) installation in preventing recurrent Cystitis/Urinary Tract Infection in women

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Queen Elizabeth Hospital, Woolwich, London SE184QH, London, United Kingdom

**Objectives:** Damage to the glycosaminoglycan lining of the bladder may increase the possibility of bacterial adherence and infection. The aim of this retrospective study is to assess the efficacy and tolerability of intra-vesical administration of (cystistat)®, a bladder coating therapy, in female patients with a history of recurrent UTI.

**Method:** A retrospective analysis of the clinical data of 21 female patients who failed previous management of recurrent UTI were treated with 40 mg/50 ml intravesical Cystistat. All 21 patients (100%) previously received fluid management, lifestyle adjustment advice and residual volume assessment. 14 (66.7%) had cystoscopy and urethral dilatation for high post-void residual volume. 18 patients (86%) had prophylactic antibiotics for at least 3 months without any significant improvement of recurrent UTI. Follow up was every 3 months with urine examination and symptom assessment for up to one year.

**Results:** 21 female patients aged 17–72 years (average 51.9) completed a full course of intravesical cystistat. Over a period of one year post Cystistat installation, patients (33%) had a recurrent UTI within 1 year, 14 (67%) were UTI recurrence-free for one year post Cystistat installation. Side effects were experienced by 4 patients who reported minimal bladder irritation and 1 case of right loin pain.

**Conclusion:** Intravesical Cystistat installation for recurrent UTI is effective, as the majority (67%) of our female patients showed an improvement in symptoms and remained UTI free up to 1-year post course completion. Cystistat is well tolerated without significant side effects.

P72

Reduced innate beta-defensin-2 response in the bladder and vaginal epithelia increases susceptibility to flagellated *E. coli* infection

ASM Ali, M Lanz, CL Townes, C Varley, B Suarez M-Falero, WA Robson, J Southgate, K Brown, P Hilton, J Hall, RS Pickard  
Newcastle University, United Kingdom

**Introduction:** Recurrent urinary-tract-infection (rUTI) affects 5% of women. Antimicrobial peptide (AMP) secretion following Toll-Like-Receptor (TLR) activation is a key innate defence mechanism. A common heterozygous dominant stopcodon singlenucleotide-polymorphism in TLR5 (TLR5<sup>392STOP</sup>) increases risk of rUTI. We investigated AMP responses to flagellated *E. coli* *in vitro* and in clinical samples from women with rUTI.

**Methods:** *In vitro*, urothelial and vaginal cell-lines plus finite cultured normal human urothelium from primary tissue were challenged with *E. coli* and its flagellin. AMP expression, secretion and function were assayed by RTqPCR, ELISA and time-kill assays respectively. Clinically, 57 women with rUTI and 37 controls were recruited. Volunteers provided blood samples, urine, vaginal-washings, bladder and vaginal biopsies.

**Results:** *In vitro*, flagellin challenge significantly increased Beta-Defensin-2 AMP (BD2) expression and secretion by 8-hours and 24-hours respectively and this was inhibited by antiTLR5 antibody. Media from challenged cells reduced cultured *E. coli* growth by 48%.

**Clinically**, TLR5<sup>392STOP</sup> was found in 9 (16%) of rUTI patients but in no controls. 12-patients had infection at time of biopsy (3 with TLR5<sup>392STOP</sup>). Infected women with TLR5<sup>392STOP</sup> showed significantly lower mean BD2 peptides levels in urine (35.6 ± 16 pg/mL vs 87.4 ± 21 pg/mL; P < 0.05) and vaginal-washings (11.9 ± 4.0 pg/mL vs 35.9 ± 7.6 pg/mL; P < 0.01).

**Conclusion:** We demonstrate that *in vitro*, TLR5 inhibition eliminates the BD2 response *clinically*, the heterozygous stopcodon TLR5<sup>392STOP</sup> SNP significantly reduces it. BD2 is a potent component of defence against flagellated *E. coli*. Reduced responses may be pivotal for increased risk of rUTI amongst this common genotype. Future therapies inducing or supplementing vaginal/bladder BD2 may reduce this risk.



**P73**  
**A novel, patient-managed neuromodulation system (PMNS) that uses a noninvasive sacral patch for treatment of overactive bladder (OAB): effect on urgency incontinence in a prospective, multi-center, randomized trial**  
*AK Monga, R Dmochowski, D Miller*  
*Princess Anne Hospital, Southampton, United Kingdom*

**Introduction:** A novel PMNS has been developed that transmits a transdermal amplitude-modulated signal (TAMS) through a patch applied to the skin. The primary objective of this clinical trial was to evaluate the PMNS for safety and efficacy in reducing urgency incontinence. Differences in effectiveness depending on whether the patch was applied by the investigator (Investigator Placement Group, IPG) or the subject (Subject Placement Group, SPG) were also evaluated.  
**Methods:** Male and female subjects with documented symptoms of OAB for 6 months or longer were recruited. All subjects had failed conservative treatment as well as treatment with at least one anti-cholinergic drug. Subjects were randomized to the IPG or SPG. Patches were replaced every 7 days, with the new patch placed on the contra-lateral side.  
**Results:** After 4 weeks of PMNS treatment, the number of urgency incontinence episodes was significantly reduced by an average of nearly 50%, with no difference between the IPG and the SPG. Symptoms improved by at least 50% in 62.5% of all subjects (95% CI (50.6%, 74.4%). The majority of adverse events were mild (90.6%), and no severe adverse events occurred.

Table 1 for P73: Change in urgency incontinence episodes after 4 weeks of PMNS treatment

	N	Baseline <sup>a</sup>	Week 4	Change	% Change	P value
Total	64	4.9 (3.2)	2.2 (2.5)	-2.7 (3.1)	-47.8 (60.6)	<0.0001

Baseline<sup>a</sup> and Week 4 values are the mean (SD) over a 24-hr period.

**Conclusions:** A 4-week course of treatment with PMNS significantly reduced the frequency of urgency incontinence episodes in OAB subjects.

**P74**  
**Mixed growth of doubtful significance is on the contrary wholly significant in patients with LUTS**  
*O Pal, M Ghei, BH Maraj, J Malone-Lee*  
*Whittington Hospital, London, United Kingdom*

**Introduction:** UTI, diagnosed by MSU culture depends on the 1957 Kass criteria of 10<sup>5</sup> cfu ml<sup>-1</sup> of a single species of a known urinary pathogen. The validation of this threshold was not rigorous and recent times have seen much criticism of its accuracy. This criterion dismisses 'mixed growth of doubtful significance'. There is no evidence to exonerate mixed colonies and so this study tested the hypothesis.  
**Methods:** Normal controls, and patients with non-acute LUTS had symptoms measured and an MSU cultured. Fresh urine specimen was examined microscopically to count pyuria. Four groups were compared, normal controls, LUTS no growth, LUTS mixed growth and LUTS positive culture.  
**Results:** 43 control specimens (M = 10, F = 33, Mean age 41 sd = 15) and 7517 LUTS patients (M = 719 F = 6798, Mean age 56, sd = 17) provided data. 58% had storage symptoms; 16% had stress incontinence; 20% had voiding dysfunction and 28% had non-dysuric pain symptoms. Urinary pyuria was markedly different in those with mixed growth compared to 'controls' and 'LUTS no growth', on one side and 'LUTS significant growth' on the other (F = 30, p < 0.0001, df = 1). Similar patterns of difference were identified in measures of incontinence, urgency and dysaesthesia. In all analyses the mixed growth group differed markedly from the normal controls.

**Conclusion:** Independent markers of inflammation, storage symptoms and incontinence make it clear that 'Mixed growth of doubtful significance' has considerable clinical significance.

**P75**  
**Patient treatment preferences for symptomatic refractory urodynamic idiopathic detrusor overactivity (IDO)**  
*I Rudd, R Kavia, J Jenks, R Hamid, J Ockrim, J Shah, T Greenwell*  
*UCLH, London, United Kingdom*

**Introduction:** There is a multiplicity of treatments currently available patients with symptomatic refractory urodynamic IDO (SRU IDO). We have assessed patient treatment preferences and their outcomes over a 12-month period between 1/1/2009 and 31/12/2009.  
**Patients and Methods:** A prospective database of all patients with SRU IDO was reviewed for patient demographics, treatment preference and outcome. All patients attending for treatment in the time period were offered treatment choices of; repeat bladder training +/- anticholinergic (BT +/- Ach), acupuncture, intravesical botulinum toxin injection, sacral neuromodulation (SNS) and clam cystoplasty +/- Mitrofanoff channel formation.  
**Results:** 217 patients (73 men) of whom 210 were new referrals with SRU IDO underwent primary treatment in this time period. Their treatment choices and outcomes are as tabulated:

Table for P75

Treatment	N (%)	Patient Defined Success N (%)
Repeat BT +/- Ach	10 (3.5)	5 (50)
Acupuncture	24 (8.5)	14 (56)
Intravesical Botulinum Toxin	70 (25)	49 (70)
Sacral Neuromodulation PNE	71 (25)	35 (49)
Sacral Neuromodulation definitive	35 (13%)	24 (68)
Clam Cystoplasty +/- Mitrofanoff Channel	7 (2.5%)	6 (86)

**Conclusions:** The majority of patients opted for minimally invasive surgical treatment with botulinum toxin and SNS with equivalent success rates in those patients having a successful PNE. A smaller number opted for non-surgical treatments with moderate success. The minority opted open surgery with clam cystoplasty +/- Mitrofanoff - but appeared to have the most successful outcomes.

P76

**Comparison study of OnabotulinumtoxinA 300U and 200U in patients with detrusor overactivity**

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 Royal Hallamshire Hospital, Sheffield, United Kingdom

**Introduction:** OnabotulinumtoxinA (Botox) remains off-licence for treating patients with detrusor overactivity (DO) in the UK. Regulatory approval is anticipated in many countries for 200U in patients with neurogenic detrusor overactivity (NDO). The optimum dose for patients with idiopathic detrusor overactivity (IDO) is still undergoing evaluation.

**Methods and materials:** An earlier study was performed in our urology unit of all the patients that had received 300U onabotulinumtoxinA until June 2008 (n = 79). Thereafter since July 2008 we began to inject Botox 200U in all patients with DO. We reviewed the case notes of patients that had received both 200u and 300u to assess differences in outcomes.

**Results:** Forty four patients (36 female and 8 male) had received both 300 and 200U onabotulinumtoxinA, 28 for IDO and 16 for NDO. Of these; 37 patients reported continued improvement with 200U onabotulinumtoxinA, 4 received no benefit and 3 had worsening in their symptoms. Percentage improvement in urgency and urgency incontinence episodes per day were 82% and 72% in patients who were receiving 200U. Table 1 shows a comparison of outcomes for onabotulinumtoxinA 300 and 200U in the same group of patients. Of the 44 patients 39 continued to receive 200U, 4 went back to 300U (decreased effect) and 1 did not attend after the 1st treatment. After switching to 200u three patients were commenced on CISC for de novo voiding difficulty.

**Conclusion:** 80% of patients were happy with their symptoms after switching from 300 to 200U onabotulinumtoxinA. Only 9% of patients (all with NDO) went back to receiving 300U. This is the first study to compare 200U and 300U onabotulinumtoxinA in the same patients and our results show similar efficacy and longevity in the majority of patients (90%) using 200U in both NDO and IDO. However some patients may require the higher dose of 300U especially with NDO.

Table 1 for P76: Outcomes of injecting OnabotulinumtoxinA 300U and 200U in patients with NDO and IDO

Parameter	NDO 300u	NDO 200u	IDO 300u	IDO 200u
% patients with subjective efficacy	83.3%	93.7%	81.6%	78.5%
Median longevity	4–5 months	4–5 months	6–7 months	6–7 months
Need for catheter	93%	93%	42.9%	53.5%
UTI	23%	37.5%	26.5%	32.1%
Other complications	10%	6.2%	6.1%	7.1%

P77

**Can laser vapoenucleation and morcellation be the gold standard for surgical treatment of symptomatic prostatic obstruction? – initial UK experience using thulium laser**

*CL Chintea, J O'Dair, NJ Rukin, O Kenney, H Krasnowski, A Chakravarti*  
 The Dudley Group NHS Foundation Trust, United Kingdom

**Introduction:** Laser enucleation of the prostate is an established technique for the treatment of symptomatic prostatic obstruction. Pulsed Holmium:Yttrium-Aluminium-Garnet (YAG) lasers (2100 nm) have traditionally been the laser of choice. The thulium:YAG laser (RevoLix®, 2000 nm) emits a continuous wave mode which evaporates tissue without generating pressure waves, enabling continuous cutting, improved tissue penetration and potentially shorter operative times. We report our experience with Thulium Laser Vapoenucleation of the Prostate (ThuVEP).

**Material and Methods:** Over a 3-year period, 287 consecutive patients who underwent ThuVEP were evaluated retrospectively. Data was collected via electronic records and notes review including demographics, perioperative findings, complications and follow-up data.

**Results:** Mean patient age was 71.7 years (range 39–96), with an ASA of 2. Median total operative time was 81 minutes (range 13–220) with mean enucleated tissue weight of 29.6 g (range 3–118). Mean post-operative stay was 2 days with 10% of cases performed as a day case. There were no significant changes in mean haemoglobin (13.9 g/dl to 12.9 g/dl) or sodium levels. Substantial improvement in maximum urinary flow rates of 162.5% and reduction in post-void residuals of 59%

were seen. Occult prostate cancer incidence was 12.5%. Complication included UTI 2.8%, urethral stricture 1.7%, urge incontinence 1.4%, haematuria 1% and incomplete morcellation 1%.

**Conclusion:** We report a favourable initial experience with ThuVEP. The procedure is safe, reproducible, efficacious and demonstrates reduced length of stay with minimal complications. ThuVEP is an attractive alternative option for vapoenucleation in the management of symptomatic prostatic obstruction.

P78

**DAY-CASE GYRUS TURP – is it feasible?**

*IJ Raymond, SM Lloyd, SN Lloyd*  
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**Introduction/Aim:** TURP impacts significantly on our over-stretched hospital services. This patient group is usually non-cancer and invariably moves to the back of the queue. Lasers prostatectomy and saline-TURP systems are recent innovations that have helped to reduce hospital stay and improve care quality. This study evaluates the feasibility of day-case TURP.

**Patients/Method:** We prospectively collected data on Day Case TURP from 2001. Data was similarly collected on all inpatient TURP between 2003–2005 to assess its impact on our inpatient facility. Hospital stay and cost implications for both groups were compared.

**Results:** Total of 1253 patients (766 elective and 487 emergency) underwent inpatient TURP. The average hospital stay (days) was significantly more for emergency (9.58 total; 5.5 pre-op) than elective (5.23 total; 1.75 pre-op) cases. This difference is attributable to delays in theatre availability and medical reasons.

171 patients underwent day-case gyrus-TURP by one operator over 11 yrs (157 under GA; 4 spinal; 33% ASA 3). 77% (n = 132) were discharged within 23 hrs; 90% (n = 153) had successful TWOC within 2 days. 7% (n = 12) were re-admitted with sepsis (n = 4) and bleeding (n = 8). **Conclusion:** Day-case gyrus TURP is feasible and safe in our hands with significant advantages for patients and provider. The electrodes cost £100 more, but savings in fluid use and hospital stay outweigh this. Our experience with more ASA 3 patients means we have increased our pool of suitable cases including retentions. The good practice incentive of £300 for day-case TURP in 2011/12 should make us all consider day-surgery irrespective of which technology is used.

P79

**A prospective, randomized comparison between the bipolar plasma enucleation of the prostate versus open prostatectomy in cases of prostates over 80 ml**  
*B Geavlete, R Multescu, C Moldoveanu, D Georgescu, F Stanescu, M Jecu, P Geavlete*  
*Saint John Emergency Clinical Hospital, Bucharest, Romania*

**Introduction:** This prospective, randomized trial evaluated the viability of the bipolar plasma enucleation of the prostate (BPEP) by comparison to open transvesical prostatectomy (OP) in cases of large prostates (over 80 ml).

**Patients and Methods:** A total of 130 benign prostatic hyperplasia (BPH) patients with prostate volume over 80 ml, maximum flow rate (Qmax) <10 ml/s and International Prostate Symptom Score (IPSS) >19 were randomized in the 2 study arms. All cases were evaluated preoperatively and at 1, 3, 6 and 12 months after surgery by IPSS, Qmax, quality of life score (QoL) and post-voiding residual urinary volume (RV).

**Results:** The BPEP and OP series emphasized similar preoperative prostate volume (135.8 versus 133.2 ml). Similar operating times were determined for BPEP and OP (89.8 versus 87.6 minutes), while the mean hemoglobin drop (2.0 versus 3.3 g/dl), postoperative hematuria (3.1% versus 15.4%) and blood transfusion (1.5% versus 10.8%) rates were significantly improved for BPEP. Also, the mean catheterization period (35.4 versus 98.3

hours) and hospital stay (2.4 versus 5.2 days) were significantly lower in the BPEP group. At 1, 3, 6 and 12 months, no statistically significant difference was determined in terms of IPSS, Qmax, QoL and RV between the 2 study arms. At 6 and 12 months, equivalent prostate volume decrease was established (88.3–88.9% versus 87.3–87.7%).

**Conclusion:** BPEP represents a promising endoscopic approach in large BPH cases, characterized by good surgical efficiency, significantly reduced complications, faster postoperative recovery and satisfactory follow-up results when compared to OP.

P80

**Holmium laser enucleation of the prostate in men with urinary retention – 5 year results**

*WJG Finch, S Tang, T Aho*  
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**Results:**

Table for P80

HoLEP perioperative outcomes			
	Retention group	LUTS group	p value
Mean Age at Surgery (yrs)	72.3	69.6	0.001
Fresh specimen weight enucleated (g)	66.5	51.5	0.0003
Mean enucleation time (mins)	60.3	53.4	0.006
Mean morcellation time (mins)	16.4	12.8	0.004
All complications within 30 days (%)	11.8	7.4	0.205*
Successful initial trial without catheter (%)	76.0	86.0	0.007*
Overall successful trial without catheter (%)	98.4	99.5	0.389*
* Fishers exact test			
HoLEP for retention long-term outcomes ? mean follow-up 61.3 months			
Mean score			
IPSS score out of 35	3.5		
Quality of Life score out of 6	0.8		
Percentage			
Haematuria	7.60%		
Bladder neck Stenosis	0.9%		
Urethral stricture	3.8%		
Acute Urinary Retention	2.9%		
Reoperation due to recurrent BPH	0.9%		
Remain catheter free	98.1%		

**Conclusion:** HoLEP is a safe and highly successful technique for relieving urinary retention despite these men being older and with a larger prostate size. Our 5 year data demonstrates HoLEP for retention is durable (98.1% of men remaining catheter free at 5 years mean follow-up), with a low complication rate and is well accepted by patients. HoLEP may be the ideal surgical treatment for men with urinary retention.

P81

**Voiding parameters in the elderly male: the CHAMP study**

*RC Esler, T Lobo, LW Chan, VW Tse, M Litchfield, V Naganathan, R Cumming  
Concord Hospital, Department of Urology, Sydney, Australia*

**Introduction:** To assess both symptom scores and voiding parameters in a group of community-dwelling elderly men and to determine whether there was any change in either at two years.

**Patients and Methods:** 1705 men aged over 70 years were enrolled to participate in the Concord Health and Ageing in Men Project (CHAMP), a population based study of men living in a defined geographical area in Sydney, Australia. Men completed a survey including International Prostate Symptom Score (IPSS) and medical, medication and urological history, then attended clinical assessment including uroflowmetry and post void residual volume measurement. Subjects are re-assessed at two and five years. We report results at baseline and two year follow-up.

**Results:** 1705 men aged between 70 and 97 years underwent initial evaluation. 1367 men presented for follow-up. Baseline median IPSS was 4, this was unchanged at two years. Median peak flow rate at baseline was 13.7 ml/sec, declining to 10.5 ml/sec at two years. Peak flow rate was lower in the older men (>90 years) within the cohort compared to younger men (70–74 years) at baseline and two year review ( $p \leq 0.001$ ). Median post void residual volume was 35 ml at baseline and 45 ml at two years, with a clinically significant difference only in the >90 years group. Increased total IPSS correlated with reduced peak flow and increased post void residual, but not age. 63 (4.6%) men had surgery for LUTS between baseline and two year review.

**Conclusion:** Urinary symptom scores and voiding parameters remain stable over two years in elderly men.

P82

**Prevalence & natural history of urinary symptoms in recreational ketamine users**

*M Cottrell, A Winstock, L Mitcheson, D Gillatt  
Bristol Urological Institute, Southmead Hospital, United Kingdom*

**Introduction:** Ketamine is an anaesthetic agent increasing in popularity as an illicit drug (Winstock et al. *Eur Add Res* 2007 31 (1) 57–64). Case series have shown that recreational use can lead to severe urinary symptoms (Shahani et al. *Urology* 2007 69 (5) 810–2, Chu et al. *BJU* 2008 102 (11)

1616–22). Little is known about the prevalence and natural history of such symptoms in ketamine users.

**Patients and Methods:** A purposeful sampling technique was used. Participants completed an on-line questionnaire promoted by a national dance-music magazine. Data regarding demographics and illicit drug-use were collected. Amongst respondents reporting recent ketamine use, additional information detailing urinary symptoms and use of healthcare services was obtained.

**Results:** 3806 surveys were completed. 1285 (33.8%) participants reported ketamine use within the last year. 26.6% (340) of recent ketamine users reported urinary symptoms, significantly related to both dose of ketamine used and frequency of ketamine use. Of 251 users reporting their experience of symptoms over time, 51% reported improvement in urinary symptoms upon cessation of use with only 8 (3.8%) reporting deterioration stopping use.

**Conclusion:** Urinary tract symptoms are reported in over a quarter of regular ketamine users. A dose and frequency response-relationship has been demonstrated between ketamine use and urinary symptoms. Users and primary care providers need to be educated about urinary symptoms that may arise. A multi-disciplinary approach promoting harm reduction, cessation and early referral is needed to manage ketamine associated urinary tract symptoms to avoid progression to severe and irreversible urological pathologies.

# BJUI

Thursday 28 June 2012  
Poster Session 8

## SUPPLEMENTS

11:00–12:30 Alsh

### ANDROLOGY

Chairmen: Mr Richard Pearcy &

Mr Mike Foster

Posters P83–P92

**P83**  
Erectile dysfunction treatment by  
Schedule 2: the setup at a NHS trust  
*AR Mohee, L Bretszajn, A Storey, I Eardley*  
*St James University Hospital NHS Trust,*  
*Leeds, United Kingdom*

**Introduction:** Erectile dysfunction (ED) is a difficult condition to treat owing to the stigma attached to the diagnosis. This study aims to describe the setup for the management of ED in a large teaching hospital.

**Patients and Methods:** Basic demographics and data on ED management for patients treated from January 2000 to April 2011 were obtained from the ED-PMS database, which records patients who receive medication under the 'severe distress'

category from our institution. Patients could obtain prescriptions both from the trust and community pharmacies.

**Results:** 2159 patients referred to the andrology clinic, qualified under the 'severe distress criteria'. 226 patients were excluded from further analysis owing to missing data. Patients were followed up on a yearly basis.

The mean age was 60.2 years (min 23, max 90) and mean follow up was 50.8 months (min 1, max 127). 25.0% of patients were not compliant with the setup, and 18.0% patients initially started on the scheme stopped. 12.3% patients switched treatment. Table 1 shows the different drugs used, how patients switched between treatment regime and the reasons for dropout from the scheme.

**Conclusion:** Though RCTs have shown PDE5-I to be equally effective [1] our real-life observational study shows that most patients use tadalafil (50.4%), owing to both patient choice and surgeons' preference. Medication switching is uncommon (12.3%), with most patients switching to Tadalafil. 82% of patients remain on the scheme long-term being compliant with their yearly appointment, showing good patient satisfaction. Our data shows a successful ED scheme in practice.

[1] Moore RA, Derry S, McQuay HJ. Indirect comparison of interventions using published randomised trials: systematic review of PDE-5 inhibitors for erectile dysfunction. *BMC Urol.* 2005; 5:18

Table 1 for P83: Set up of the ED scheme

Number of patients		n = 1933		
Number of patients started on treatment (n = 1933)	Sildenafil	Change from Sildenafil	Tadalafil	56
	696 (36.0%)	77 (11.1%)	Vardenafil	15
			Alprostadil	6
	Tadalafil	Change from Tadalafil	Sildenafil	50
990 (51.2%)	94 (9.5%)	Vardenafil	34	
		Alprostadil	10	
Vardenafil	Change from Vardenafil	Tadalafil	17	
163 (8.4%)	32 (19.6%)	Sildenafil	11	
		Alprostadil	4	
Alprostadil	Change from Alprostadil to tablets			6
	84 (4.3%)	(7.1%)		
Patients who stopped n = 347 (18.0%)		Deceased		25
		DNA'd once		170
		DNA'd more than once		35
		Takeover by GP		38
		Moved from area		18
		Treatment ended		57
	Unspecified			4

**P84**  
The first 20 months of a national audit of urethroplasty practice in the UK  
*SR Payne, D Andrich, AR Mundy*  
*Manchester Royal Infirmary, United Kingdom*

**Introduction:** Urethroplasty has become an increasingly early consideration in the management of men with urethral stricture disease. The symptomology, pre-op evaluation, operative management and outcome from men presenting for, and undergoing, reconstructive urethral surgery has never previously been evaluated nationally.

**Materials:** This study reports the first 20 months of national audit data using a two-part database for men who progressed with reconstructive urethral surgery. Data entrants chose from 228 and 55 potential



variables in the new/operative and follow-up databases housed within the BAUS Nuvola online system, embedded in 40 and 13 questions respectively. Data were analysed to determine modes of presentation, preliminary management, operative technique and post-operative outcome.

**Results:** 812 and 601 patients were entered into the new and follow-up database; 88.4% had stricture disease. 13.8% presented in retention; 42% had previous reconstructive surgery and 63% previous DIVU or dilatation. The aetiology of the stricture is shown in the table.

Table for P84

Aetiology	Incidence
Idiopathic	29.7%
Previous hypospadiac surgery	16.1%
Lichen Sclerosus	15%
Post urological intervention	14.8%
Pelvic fracture	4.3%
Fall astride	2.2%
Infection	2.2%

55.7% had bulbar strictures, and 26.3% penile strictures, for which 25.3% underwent anastomotic urethroplasty, 46.2%, 24.7% and 4% augmentation urethroplasty, staged reconstruction and perineal urethrostomy respectively. 75% had no post-op problems but post micturition dribbling and spraying were the commonest voiding issues with <10% having new sexual difficulties.

**Conclusion:** This audit shows that previous hypospadias surgery is a surprisingly large contributor to a urethral reconstructor's workload and that the majority of reconstructive urethral surgery demands graft insertion.

P85

**The role of the Artificial Urinary Sphincter (AUS) for Incontinence after radiotherapy for prostate cancer**  
*E Zacharakis, S Bugeja, DE Andrich, AR Mundy*  
 University College Hospitals, London, United Kingdom

**Introduction and Objectives:** The AUS is well established as the gold standard for significant sphincter weakness incontinence

(SWI) following radical retropubic prostatectomy for prostate cancer. It's role after radiotherapy for prostate cancer is less clear.

Our objective was to assess this role.

**Patients:** P131 patients who were implanted with an AUS for SWI after treatment of their prostate cancer were reviewed with a mean follow-up of 16 months. Group 1: 97 patients had been treated by radical retropubic prostatectomy. Group 2: 34 patients had been treated with external beam radiotherapy.

**Results:** In Group 1: 88% of patients were dry and 12% were incontinent using 1-2 pads per day. 4% developed malfunction during follow-up and 4% had device erosion/infection.

There were no device infections (ie infection without erosion).

In Group 2: 87% of patients were dry and 13% were incontinent using 1-6 pads a day. 6% developed malfunction during follow-up and 12% had device erosion/infection.

6% of patients had an infection of the device (ie infection without erosion).

Table for P86

	Mean Age	Mean ISS	Tile B1	Tile B2	Complicating Factors
Conservative (n = 13)	39.7	32	62%	15%	23%
Surgical Repair (n = 8)	40.0	35	63%	38%	38%

**Conclusions:** An AUS can indeed be successful for the treatment of SWI after radiotherapy but whereas the significant complication rate of infection or erosion of the device is 4% in the post-surgical group it is 18% in the post-irradiation group.

P86

**The management of extraperitoneal bladder rupture in blunt pelvic trauma**  
*JJ Durrant, G Heron, M Perry, D Sharma, A Day, N Watkin*  
 St. George's Healthcare NHS Trust, London, United Kingdom

**Introduction:** Traditional management of extraperitoneal bladder rupture (EBR) is

conservative with catheter drainage. In our pelvic trauma centre there is a practice of early orthopaedic pelvic stabilisation. This gives the potential opportunity for early surgical repair of the bladder. We reviewed the outcome of early repair versus conservative management.

**Patients and Methods:** Patient episodes were captured from a prospective trauma database over 5 years. We identified all patients with EBR in the presence of pelvic fracture.

We compared management plan with Injury Severity Score (ISS), nature of the pelvic fracture (Tile classification) and presence of complicating factors such as other pelvic visceral injury. The outcomes of primary repair and conservative management were determined.

**Results:** 21 patients were identified with EBR. The patients in each group (conservative/surgical repair) were similar with respect to age, ISS, pelvic fracture and complicating factors.

In the conservatively managed group, 1 perforation failed to heal requiring late repair, no clear cause for this was identified.

In the group undergoing repair, 1 repair failed to heal. 1 developed osteomyelitis of the pubis. 1 patient developed a vesicovaginal fistula.

**Conclusion:** We have shown that conservative management of EBR is associated with high success. There is no clear need for early repair if patients are undergoing pelvic stabilization unless there are specific indications, such as bones spikes or bladder neck injury.

P87

**Does Clean Intermittent Self Catheterisation (CISC) pose a risk of infection/erosion of an Artificial Urinary Sphincter (AUS) in patients with neuropathic bladder**

*S Bugeja, E Zacharakis, DE Andrich, AR Mundy*

*University College Hospitals, London United Kingdom*

**Introduction and Objectives:** To assess the long term results of an AUS ± augmentation cystoplasty and ± CISC to provide bladder emptying – for the treatment of neuropathic bladder dysfunction.

**Patients:** 192 patients were reviewed in two groups with a mean follow-up of 14 years. Group 1 – 150 with an AUS and augmentation cystoplasty. Group 2 – 42 patients with an AUS alone.

**Results:** 180 patients (94%) were continent at a mean follow-up of 14 years. There were 20 erosions and 9 device infections all of which occurred in patients with a cystoplasty who were using CISC. 35 of the 115 patients (30%) using CISC, whether or not they had a cystoplasty, had infection or erosion.

None of the 43 patients with a cystoplasty who were not performing CISC developed infection or erosion and none of the patients who were not performing CISC, whether or not they had a cystoplasty, developed infection or erosion.

In other words, it was the use of CISC that was the risk factor for infection or erosion of the AUS, not the presence of a cystoplasty.

**Conclusions:** Long term CISC carries a significant risk of AUS infection or erosion. This raises the possibility that a sphincterotomy might be better than CISC to provide bladder emptying when an AUS is to be implanted for neuropathic bladder dysfunction ± cystoplasty.

P88

**Bladder exstrophy in adults: a 20 year follow up**

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**Introduction:** This study reports 20 year outcomes following reconstruction for bladder exstrophy (BE).

**Methods:** 65 patients with BE were identified. A retrospective chart review was performed – data on renal function, imaging, urinary continence was collected. **Results:** Mean creatinine levels at 20 years were 89 µmol/L (36 to 149), none required renal replacement. Abnormal renal ultrasounds were reported in 33%. 39 patients had available data, 26 had urinary diversions and 13 emptied per urethra. 53.8% with, and 15.4% without diversions had abnormal renal ultrasounds.

Of the 65 patients, 35 had urinary diversions, 15 drained the bladder per urethra (incomplete data for 15). Mean age at diversion was 11.2 years (1.5 to 18). 84% required bladder augmentations. 44 patients required CISC of which 29 (66%) used a continent catheterizable stoma (CCS), 15 (34%) catheterized the urethra. One patient achieved complete urinary continence with urethral voiding. 5 patients remained incontinent.

42 patients had data available on number of bladder closures, ISC status and site, and of these 33 had one closure and 9 had >1 closure. Of those that had one closure only one patient did not use ISC to empty, and of the remaining 32; 12 emptied per urethra and 20 used a CCS. Of patients with >1 closure 2 catheterized through the urethra and 7 by CCS.

**Conclusions:** At 20 years renal function is preserved, 1/3 have abnormal renal ultrasounds. Urinary diversion increases the risk of this. 85% of patients are continent – all but one require CISC drainage.

P89

**Genital lichen sclerosis in men with penile carcinoma – a critical analysis**  
*OJ Kayes, P Phillipou, H Goosen, R Nigam, A Muneer, P Malone, D Ralph, S Minhas*  
*University College Hospital London, United Kingdom*

**Introduction:** This study aims to assess the incidence of Lichen Sclerosus (LS) in patients with penile carcinoma (PeSc). It also reports the phenomenon of LS involving non-genital skin grafts in patients who underwent organ-sparing surgery and split-skin graft (SSG) reconstruction.

**Patients and Methods:** Between 2002 and 2010, 223 men underwent surgical treatment for PeSc. A group of 52 patients with histologically-confirmed synchronous

LS was identified (Group A, 23.3%) and compared with a group of patients without synchronous LS (Group B, n = 171, 76.7%). A subgroup of patients who underwent SSG reconstruction was also identified. The histology reports of graft biopsies obtained during follow-up were reviewed and the incidence of LS involving the graft was recorded.

**Result:** Mean age at diagnosis and mean duration of follow-up were comparable between the two groups. No statistically significant differences were noted between the two groups with respect to: tumour grade (p = 0.091), stage (p = 0.697) and presence of lymphovascular invasion (p = 0.333). In the subgroup of SSG reconstruction (188 patients), 41 patients (21.8%) had histologically-confirmed synchronous LS. In this subgroup, 26 patients (13.8%) underwent graft biopsy during follow-up. LS involving the graft was identified in 7 specimens. None of these cases was associated with recurrence of PeSc.

**Conclusion:** The presence of histologically-confirmed synchronous LS in patients diagnosed with PeSc is relatively high but not associated with increased rates of adverse pathological features. LS can develop in extra-genital skin grafts and its association with the long-term risk for recurrent PeSc needs to be determined.

P90

**Long-term oncological outcome following conservative surgery for squamous cell carcinoma of the penis**  
*OJ Kayes, P Phillipou, H Goosen, R Nigam, A Muneer, P Malone, D Ralph, S Minhas*  
*University College Hospital London, United Kingdom*

**Introduction:** Organ-sparing surgery for penile carcinoma (PeSc) has been advocated as an alternative to penile amputation. This study aims to assess the long-term oncological outcome of penile-conserving surgery and identify parameters predicting local recurrence. **Patients and Methods:** A total of 179 patients treated by organ-sparing surgery between 2002 and 2010 fulfilled the study criteria. Local, regional or distant recurrence rates, time to recurrence and survival rates were calculated. Logistic regression analysis was used to identify predictors of local recurrence, including distance between

tumour edge and nearest excision margin ( $\leq 5$  mm versus  $> 5$  mm).

**Results:** Mean follow-up was 42.8 months (4–107). 16 (8.9%), 19 (10.6%) and 9 (5.0%) patients developed local, regional and metastatic recurrence. Mean time to recurrence was 26.1, 26.8 and 11.7 months for local, regional and metastatic disease respectively. The 5-year disease-specific survival after recurrence was 54.7% (95% CI, 46.1%–63.3%). For patients with local recurrence, the 5-year disease-specific survival was 91.7%, compared to 31.6% for regional recurrence. The overall 5-year local recurrence-free rate was 86.3% (95% CI: 82.6%–90.4%). Tumour grade ( $p = 0.003$ ), stage ( $p = 0.021$ ) and lymphovascular invasion ( $p = 0.014$ ) were identified as predictors of local recurrence on multivariate regression analysis. A resection margin of  $< 5$  mm did not jeopardise primary oncological control.

**Conclusion:** Penile conserving surgery is oncologically safe and a surgical excision margin of  $< 5$  mm is adequate. Higher rates of local recurrence are associated with lymphovascular invasion and higher tumour stage and grade. Local recurrence has no negative impact on long term survival.

P91

**Dynamic sentinel lymph node biopsy in patients with invasive squamous cell carcinoma of the penis: a prospective study of the outcome of 500 inguinal basins assessed in a single institution**  
*PWL Lam, HM Alnajjar, S La-Touche, MJA Perry, C Corbishley, J Pilcher, S Heenan, N Watkin*  
*St George's Hospital, London, United Kingdom*

**Introduction:** Dynamic sentinel node biopsy (DSNB) in combination with ultrasound scan (USS) has been the technique of choice at our centre since 2004 for the assessment of non-palpable inguinal lymph nodes in patients with squamous cell carcinoma of the penis (SCCp). Sensitivity/false-negative rates may vary depending on whether results are reported per patient or per node basin and with and without USS. The purpose of this study was to determine the long-term outcome of DSNB and ultrasound-guided

fine needle aspiration cytology (FNAC) in our cohort of newly diagnosed patients and to analyse any variation in sensitivity of the procedure.

**Patients and Methods:** Prospective cohort study over 6 years (2004 to 2010). Inclusion criteria: New diagnosis SCCp, T1G2 or greater definitive histology, non-palpable nodes in inguinal basin. Exclusion: patient with persistent/untreated local disease. Sensitivity of the procedure was calculated, per node basin, per patient, DSNB alone, USS/DSNB combined. Minimum follow up 12 months.

**Results:** 500 inguinal basins in 264 patients underwent USS +/- FNAC and DSNB. 70 (14%) positive inguinal basins in 57 (22%) patients were identified. 9 (2%) inguinal basins had no tracer uptake. 2 inguinal basins were confirmed false negative at 8 and 12 months. 2 inguinal basins had positive USS + FNAC and negative DSNB. Overall sensitivity of the technique is reported in the table.

Table for P91

	USS +/- FNAC + DSNB	DSNB alone
Technical (per inguinal basin)	97%	95%
Clinical (per patient)	97%	93%

**Conclusion:** DSNB in combination with USS has excellent performance characteristics to stage patients with clinically node-negative penile cancer with a 3% false negative rate. USS improves performance by 4% over DSNB alone. There is no difference in performance of the combined technique if it is reported per node basin or per patient.

P92

**Optimal follow-up arrangements for invasive squamous carcinoma of the penis**  
*HM Alnajjar, MJA Perry, RW Rees, CM Corbishley, NA Watkin*  
*St George's Healthcare NHS Trust, London, United Kingdom*

**Introduction:** Follow-up arrangements for squamous cell carcinoma of the penis (SCCp) are generally based on small

retrospective studies. EAU guidelines recommend follow-up for 5-years in all patients. We aimed to provide more stratified follow-up arrangements based on risk of recurrence in a single supra-network centre.

**Patients and Methods:** Prospective review of all newly diagnosed primary SCCp treated surgically from 2000–2011. Tumour recurrence was defined as local, regional, distant at least 3 months after definitive primary surgery. Inclusion criteria: all patients regardless of tumour grade who had penile surgery leaving no residual glanular epithelium, clear local margins, fully staged regional nodes and pathological N stage pN0/pN1.

**Results:** 228 of 420 (54%) newly diagnosed SCCp patients met the inclusion criteria. All were fully staged and confirmed to have N0/N1 nodal status. In the first 12 months surveillance there were 5 local, 2 regional and 2 distant recurrences (3.9%). 2/228 developed late local recurrence (17 and 29 months). Both had G1T1 lesions locally excised. No patient developed recurrence after 12 months. The remainder of the patients remained disease free at a mean of 44 months follow-up.

**Conclusion:** For patients who have penile surgery which removes all glanular epithelium and have been staged N0 or N1, there are few recurrences overall, and the majority occur within 12 months of primary treatment. We recommend maximum follow-up of one disease-free year for this sub-group who represent 54% of all patients with invasive cancer. This will reduce the burden of unproductive surveillance. All other patients should continue to be followed up for 5-years.

# BJUI

Thursday 28 June 2012  
Poster Session 9

## SUPPLEMENTS

11:00–12:30 Carron

### RENAL CANCER

Chairmen: Mr Simon Williams &

Mr Neil Barber

Posters P93–P102

P93

**Evaluating the role of contrast enhanced ultrasound in the assessment of complex renal lesions**

*P Hughes, R Nair, S Jallad, E Simpson, T Larner*

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**Introduction:** Although contrast enhanced computed tomography (CECT) remains the standard imaging modality for renal lesion characterisation, occasionally diagnostic uncertainty remains. Contrast enhanced ultrasound (CEUS) is safe, affordable and non-ionising which can add diagnostic value in the assessment of difficult cases. We describe a UK centre case series experience of this emerging radiological technique.

**Material/Methods:** Between November 2010–August 2011 patients in whom there was diagnostic uncertainty about equivocal renal lesions or complex cystic lesions underwent CEUS using sonovue microbubbles. We evaluate how the presence of enhancement influenced clinical management, along with histological correlation where surgery was performed.

**Results:** 21 patients had CEUS with a median age of 68 years (range 35–89 years) following conventional US and or CT imaging, in who diagnostic uncertainty existed. Six were complex cystic lesions, of which 3 demonstrated concerning enhancement. Thirteen cases had equivocal

solid lesions; 9 were suggestive of renal cell carcinoma (RCC) of whom 5 underwent Nephrectomy. Three showed no enhancement and were reassured they were benign. Only in one case was the lesion still felt to be equivocal necessitating further imaging. Two cases were post cryo-therapy ablation, of which one showed recurrence not accessible on CECT. CEUS aided clinical decision making in 90% (19/21) of cases.

**Conclusion:** CEUS is an important adjunct to conventional imaging in delineating the nature of complex solid and cystic renal lesions, particularly in those in whom nephrotoxic and iodine based contrast agents are contra-indicated. These results are comparable with recent studies in other international centres.

P94

**Can pre-operative CT accurately predict IVC wall invasion in cases with locally advanced renal cell carcinoma?**

*N Vasdev, E Todd, A Ali, D Manas, D Thomas Freeman Hospital, Newcastle upon Tyne, United Kingdom*

**Introduction:** The Surgical management of renal cell carcinoma (RCC) involving the inferior vena cava (IVC) remains a technical challenge. Whereas CT and MR can identify the level of thrombus it can be more difficult to predict caval wall invasion. In cases with IVC wall invasion, caval resection and patching may be required which requires planning and preparation.

We retrospectively reviewed the details of 50 patients and correlated pre-operative CT scan imaging with final pathology at nephrectomy for predicting IVC wall invasion.

**Patients and Methods:** Fifty patients with RCC and IVC invasion underwent surgery at our institution (mean age: 59 years). Pre-operative IVC involvement was evaluated with triple phase CT. Renal Tumour thrombus was infrahepatic/level-I&II :N = 24, intrahepatic/level-III :N = 14, or suprahepatic/level IV:-N = 12. Patients were classified into those who required a caval resection with equine pericardium patch (Group 1) (n = 10) versus those who underwent a nephrectomy and caval thrombectomy without caval resection (Group 2) (n = 40).

**Results:** Final histology was T3b = 34, T3c = 10 and T4 = 6. Preoperative CT scan reported IVC wall involvement in 40% (n = 4) [True positives] of patients in group 1. All patients in group 1 had evidence of IVC wall involvement on final histology. The incidence of reported IVC wall invasion in patients in group 2 was 30% (n = 12) [False positives] on the pre-operative CT Scan.

**Conclusion:** In this series CT did not reliably predict IVC wall invasion (sensitivity-30% and specificity-60%) in patients with RCC and IVC tumour thrombus. There remains the possibility of unpredicted caval resection and patching and cases must be worked up with this in mind.

P95

**Factors predicting oncological outcome in T3 renal cell carcinoma**

*BE Ayres, S Jeyabaladevan, Y Khan, R Issa, C Corbishley, CJ Anderson  
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**Introduction:** TNM classification of T3 renal carcinoma changed in 2009. Renal vein invasion was downstaged to T3a and adrenal invasion upstaged to T4. We analysed whether these and other pathological factors in T3 disease are associated with prognosis.

**Patients and Methods:** Data on 611 renal cell cancers was recorded prospectively in a database at our centre since 2000. We analysed tumour type, size, grade, renal vein invasion, IVC invasion, adrenal gland invasion, sinus fat invasion, capsular breach, tumour necrosis, microvascular invasion and lymph node involvement in all T3 patients and correlated with survival using Cox proportional hazard statistics.

**Results:** 109 patients had stage T3 renal cancer. 7 of these had metastatic disease and had cytoreductive nephrectomies and were excluded. 82 were male and median age was 65 years (range 30–83 years). 24 patients died of their disease with a median survival of 392 days. Adrenal gland invasion was significantly associated with poorer survival ( $p = 0.04$ ). Capsular invasion ( $p = 0.1$ ), sinus fat invasion ( $p = 0.9$ ) and renal vein invasion ( $p = 0.3$ ) (all T3a characteristics) were not associated with survival outcome. Additional pathological factors also did not correlate with death. 14 patients had partial nephrectomies and, if excluded from the analysis, adrenal gland invasion ( $p = 0.04$ ) and tumour size ( $p = 0.04$ ) were both associated with poorer survival.

**Conclusion:** Our findings concur with the new TNM classification showing a poorer prognosis with adrenal gland invasion but not with renal vein invasion. Tumour size also correlates with poorer survival for patients undergoing radical nephrectomies for T3 renal cancer.

P96

**BAUS renal cancer surgical audit 2011: on behalf of BAUS section of oncology**

*A Patel, S Fowler  
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**Introduction:** National audit of surgical management of renal cancer in the UK has been limited. The launch of the updated BAUS cancer registry complex operations audit, brings a timely opportunity to capture current surgical management of renal cancer in the UK.

**Methods:** Data was obtained from BAUS cancer registry from April–November 2011. Analysis was performed on patient demographics and presentation, national distribution, surgical characteristics and outcomes.

**Results:** 657 patients (378 Male, 272 female) with a median age 60 (20–90). 50 institutions entered data with case numbers ranging from 1–56.

Indication for surgery was malignancy in 81%. 29% presented with haematuria. 32% were incidental findings.

67% of procedures laparoscopic assisted. 18% of laparoscopic nephrectomies (LN) performed for tumours less than 4 cm. 30% of partial nephrectomies (PN) performed laparoscopically.

Median length of stay for open (ON) and LN procedures were 6 and 4 days respectively. Intraoperative complication rates for ON, LN and cytoreductive (CN) were 7%, 4% and 14% respectively. There was only 1/325 perioperative death recorded following an LN.

Median warm ischaemic time (WIT) during PN in the open and laparoscopic setting was 19 and 21 minutes respectively. Although WIT exceeded 30 minutes in 15% of laparoscopic and 0% of open PN. In the context of CN 17% had pre-operative TKi's.

**Conclusions:** Laparoscopy has been widely and safely introduced in the UK, but length of stay gains are not perhaps yet as great as anticipated. There may be underutilization of partial nephrectomy for the small renal mass. The goal remains for routine registration of all surgical cases.

P97

**A Cancer Network Audit on partial nephrectomy for tumours <5 cm**

*MC Ciuffreda, M Lau, VAC Ramani  
University Hospital of South Manchester, United Kingdom*

**Introduction:** Incidence of RCC is increasing, with approximately 60% of patients diagnosed with cT1 disease. After radical nephrectomy RN there is an increased risk of cardiovascular death. Partial nephrectomy PN is now considered the gold standard, including patients with a normal contralateral kidney. We wanted to investigate the rate of PN and RN (laparoscopic and open) for all RCCs, with particular emphasis to tumours <5 cm.

**Materials and Methods:** From 01/2009 to 12/2010, 454 patients underwent extirpative kidney surgery in a major Cancer Network (8 centres). All data from the Pathology Department of each Trust were analysed, and proformas with all the details were completed by surgeons. Attention was focused on tumours <5 cm, and reasons for choice between treatments.

**Results:** 441 patients with renal masses were treated with PN (191) and RN (250). Tumour size was less than 5 cm in 191 pts: 44% of them had a PN, with the most common reason for RN being the central location (47%), followed by surgeon opinion/unsure if suitable (27%). patients declining PN (10%) and a normal contralateral kidney.

**Conclusion:** In our cancer network 44% of patients with tumours <5 cm underwent PN. Although comparable to literature from other centres, this is still a low rate. Central location/surgeon opinion were the commonest reasons, and it may be appropriate to restrict PN to one cancer centre per network.

P98

**Predicting oncological outcomes following partial nephrectomy**

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**Introduction:** The stage migration of renal cancer has resulted in increased use of nephron sparing surgery. We wanted to determine whether there are any prognostic indicators of oncological outcome following



partial nephrectomy, such as positive margins, tumour characteristics or indications for surgery.

**Patients and Methods:** We analysed our prospective renal cancer database assessing whether positive margins, tumour size, type, grade and stage, necrosis and imperative or elective indications for surgery were associated with recurrence, metastasis or death following partial nephrectomy. Statistical analysis used Fisher's exact test and multiple regression analysis.

**Results:** 211 partial nephrectomies have been performed, 172 for cancer of which 157 had greater than 6 months follow-up and were analysed. 54 were for imperative indications and 48 were for T1b, T2 or T3 tumours. 4 VHL patients recurred. An additional 3 patients suffered local recurrence and a further 3 developed metastases. In total, 14 patients died – 1 with aspiration pneumonia following completion nephrectomy for recurrence, 11 due to non-renal cancer causes and 2 unknown. In particular, pT3 tumours, papillary subtype and positive margins did not correlate with outcome. Tumour size was the only variable associated with all cause mortality ( $p = 0.01$ ) in a multiple regression model. None of the variables correlated with recurrence once VHL patients were excluded.

**Conclusion:** In our series, partial nephrectomy is associated with a good oncological outcome. Tumour grade, stage and type are not associated with outcome, nor are positive margins. Patients with VHL recur. However, larger tumours are associated with poorer overall survival.

P99

**Aiming for zero ischemia partial nephrectomy (PN) – why clamp the hilar vessels?**

Z Cheema, A Goyal, J Corr  
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Foundation Trust, United Kingdom

**Introduction:** Partial nephrectomy (PN) remains the preferred treatment for localised exophytic masses. The conventional operative technique involves clamping of hilar-vessels resulting in variable ischemic time. The safe duration of warm ischemia remains controversial. We present our PN series performed without hilar-vascular clamping to maximize preservation of renal function.

**Methods:** A retrospective analysis of the effect of PN without hilar-vessel clamping on renal function and associated blood loss, urinary leak and oncological outcomes. Intra-operative haemostasis was by regional soft clamp compression to isolate and excise the tumour.

**Results:** 82 open PN were performed in 79 patients (median age 65; range 16 to 85) between 2001–2011. 72 patients had an elective indication for PN and imperative in 7 cases. The median tumour size was 3.8 cm. Blood loss was 50 to 1840 ml and 14 patients required a blood transfusion. No patient developed ARF requiring RRT in the immediate post-operative period. Median percentage decrease in eGFR at one year was 9.1%, comparable to other studies. However, paired t-test for pre-operative and long-term creatinine was not significant ( $P > 0.05$ ). Three patients (3.6%) needed invasive intervention for post-operative complications. Four patients had positive surgical margins but none has had recurrence at follow-up of 2–6 years. Overall recurrence and mortality rate is 2.5% and 1.2% respectively.

**Conclusion:** PN can be safely performed without clamping the renal hilar-vessels thereby minimizing risk of ischemic renal injury. Our oncological outcomes and complication rates are low and comparable to other regional and international series where hilar vessels are routinely clamped.

P100

**Signed approach to robotic assisted laparoscopic partial nephrectomy based on tumour anatomy**

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RG Hindley, NJ Barber  
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**Introduction & Objective:** Partial nephrectomy is the established treatment of choice for small renal tumours (<4 cm) with even higher demand on those with functional or anatomical single renal units or bilateral pathology. The laparoscopic approach is technically challenging and as a result use of the DaVinci Robot has become more widely spread worldwide. **Materials and Methods:** Since October 2010 we have treated 30 patients using this technique, in most of the cases (26/30) an extraperitoneal approach was used; uniquely, the approach being dictated by tumour anatomy rather than surgeon's

preference. Intra-operative, post-operative and oncological outcomes were prospectively collected and reported.

**Results:** Mean patient age was 60 years: tumour size (mean  $\pm$  SD) was 29.94  $\pm$  2.481 all cT1a-b stage; mean operative time 165 min; mean blood loss was 71.90 ml; the average warm ischemia time was 25 min. Median hospital stay was 1 night in the extraperitoneal group versus 2 nights in the transperitoneal approach. 9.5% of patients had limited intra-operative bleeding; all cases managed conservatively, 2 patients were converted to total nephrectomy for bleeding during early dissection. As yet, there is no evidence of local recurrence nor perioperative morbidity or mortality.

**Conclusion:** RALPN is an emerging approach in treating small renal tumours apparently solving some of the technical difficulties that were previously encountered with the pure laparoscopy. It is possible to tailor the route of surgery to the anatomy of the tumour; however, the extraperitoneal approach is possible in most cases and is associated with a more rapid discharge from hospital.

P101

**Zero ischaemia laparoscopic partial nephrectomy**

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**Introduction:** Minimally invasive surgical approaches for small renal masses are considered valid alternatives to open partial nephrectomy (PN). Renal ischaemia during laparoscopic PN (LPN) is associated with reduced post operative GFR. We report our prospective series of zero ischaemia LPN. **Patients and Methods:** All patients had pre-operative excision margin planning and CT vascular reconstruction of the renal hilum, where possible. A transperitoneal approach with intraoperative hilar dissection was utilised to expose renal arterial branches supplying the target area that were suture ligated if identified. Intra operative laparoscopic ultrasound guided PN was performed using the Harmonic ACE™. Methylene blue via a ureteric catheter identified collecting system breaches. The kidney was sutured to control haemorrhage and urine leaks.

**Results:** 67 LPNs have been performed with a mean age of 57 yr (20–85) and tumour size of 39 mm (9–100). 46 were malignant tumours, all had clear margins. Mean operative time was 307 s (145–540) and blood loss 522 mls (0–2500) with hospital stay of 6.1 days (2–22). Warm ischaemia time was zero for all but 8 cases with a mean of 17.9 mins (8–40). 8 cases had a segmental artery identified and ligated. 5 cases were stented intraoperatively, 5 delayed stents for urine leaks and 4 Clavien III post operative complications. Mean pre-operative GFR was 68 and GFR at 6 months was 64 ( $p = 0.4$ ). **Conclusion:** LPN with zero ischaemia time is a reproducible and safe surgical approach to PN with the benefits of minimally invasive surgery whilst reducing the global ischaemic insult to the kidney.

P102

**Percutaneous and laparoscopic cryotherapy for small renal tumours**  
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*Kings College Hospital, London, United Kingdom*

**Introduction:** We report our 4-year experience with laparoscopic and

percutaneous cryotherapy for the management of small renal tumours.

**Material and Methods:** Prospective data were collected on consecutive patients undergoing renal cryotherapy between December 2007 and November 2011. The procedure was performed using 1 to 4 cryoprobes and involved standard double freeze/thaw cycles. Patients without pre-operative tumour biopsy had immediate pre-cryotherapy biopsy.

**Results:** A total of 60 tumours in 50 patients were treated in 57 sessions; 47 laparoscopically with laparoscopic ultrasound guidance and 10 percutaneously (3 ultrasound and 7 CT guided). Two patients were successfully treated with repeat cryotherapy. The mean tumour size was 26 mm (9–52 mm) and operative time was 203 min (60–420 min). The median hospital stay was 2 days (1–13 days) and no patient required blood transfusion. Thirty six patients had renal cell carcinoma (65%), 11 benign (20%) and 8 equivocal (15%). At a mean follow-up of 19.4 months, there was one recurrence in a patient with prior partial nephrectomy. He was treated successfully with radical nephrectomy. There were four Clavien III (7%) complications including two vascular

complications which were managed successfully with selective embolization, one incisional hernia and one urinary leak. One patient (2%) had papillary necrosis (Clavien IV).

**Conclusions:** Our data suggest that cryotherapy is a safe and efficient minimally invasive treatment option for patients with small renal tumours at the short- to intermediate-term follow-up.