BJUI SUPPLEMENTS

BAUS Annual Meeting, 20–23 June 2011, The BT Convention Centre, Liverpool

Poster Sessions

Tuesday 21 June 2011
Poster Session 1
11:00–12:30 Hall 12
LUTS/BLADDER DYSFUNCTION
Chairmen: Mr Simon Harrison & Mr Paul Miller
Posters P1–P10

Poster Session 2
11:00–12:30 Hall 4
FEMALE UROLOGY AND RECONSTRUCTION
Chairmen: Mr Paul Anderson & Mr Laurence Stewart
Poster P11–P22

Poster Session 3
14:00–16:00 Hall 12
SCIENTIFIC DISCOVERY
Chairmen: Professor Noel Clarke & Mr Leyshon Griffiths
Posters P23–P37

Poster Session 4
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PROSTATE CANCER TREATMENT
Chairmen: Mr Justin Vale & Professor Prokar Dasgupta
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Wednesday 22 June 2011
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RENAL CANCER
Chairmen: Professor Killian Mellon & Mr Leyshon Griffiths
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Poster Session 6
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PROSTATE CANCER DIAGNOSIS
Chairmen: Mr Mark Emberton & Mr William Cross
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Poster Session 7
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UPPER TRACT DISORDERS/GENERAL UROLOGY
Chairman: Mr Graeme Urwin & Mr Sam McClinton
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Thursday 23 June 2011
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STONES/IMAGING
Chairmen: Mr Daron Smith & Mrs Sharon Scriven
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Poster Session 9
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SURGICAL TECHNIQUES & INNOVATION
Chairmen: Mr Paul Butterworth & Mr Gurminder Mann
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BJUI SUPPLEMENTS

Tuesday 21 June 2011
Poster Session 1

11:00–12:30 Hall 12
LUTS/BLADDER DYSFUNCTION
Chairmen: Mr Simon Harrison & Mr Paul Miller
Posters P1–P10

P1

Holmium Laser Enucleation of the Prostate (HoLEP) in the octo- and nonagenarian: an evaluation of surgical outcome and quality of life

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Introduction: Co-morbidity in the elderly makes transurethral surgery for obstructive prostatic disease a surgical and anaesthetic challenge. Although morbidity and outcome of HoLEP is well documented, there is need for critical evaluation of surgical and quality of life outcomes in the over 80-year-old undergoing this procedure.
Patients and Methods: A prospective single-centre review of 340 HoLEPs was performed between February 2003 and December 2010. 52 cases were performed in patients over the age of 80 (range 80–93) and compared to 133 cases in patients aged 60–69. Co-morbidities were quantified using the Charlson Co-morbidity Index (CCI), and peri- and post-operative complications recorded. International Prostate Symptom Score (IPSS), urine flowmetry and catheter free survival was evaluated post-operatively.
Results: The CCI for the over 80-year-old was significantly higher than the 60–69 age group. 52% underwent HoLEP for urinary retention in octo- and nonagenarians compared with 31% in those aged 60–69. Despite these adverse factors, there was no statistical difference in complications or length of stay, and no deaths were observed within 30 days of surgery. Significant flow rate and IPSS improvements were observed in both groups. Catheter free survival at 18 months (range 3–48) was 92% in the over 80-year-old and 97% in the 60–69 age group respectively.
Conclusion: HoLEP is feasible, safe and effective in the over 80-year-old. This series demonstrates no difference in objective outcome between this age group and those aged 60–69. Catheter free survival is significant, and patients should not be denied surgery based on age alone.

P2

Photovaporisation of the prostate: is it effective in prostates over 100 cc?

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Background: The clinical effectiveness of photovaporisation of the prostate (PVP) for the treatment of benign prostate hypertrophy in large prostates is uncertain. This study aimed to determine the efficacy of PVP in men with prostates >100 cc.
Methods: All men with BPH over 100 cc requiring surgical intervention over 4 consecutive years (2005–2008) were invited to participate. Patient consent, IPSS scores, ASA, TRUS prostate volumes, flow rates and residual volumes were obtained preoperatively. Clinical follow-up with flow rates, IPSS scores and post-void residual volumes (PVR) were assessed for all men at regular intervals post-operatively for up to four years.
Results: 55 men with a mean age of 75 years participated. Three men died during follow-up from unrelated causes and are excluded from further study. The median (range) prostatic volume was 129 (100–190 cc). 22 (42%) patients had a catheter in-situ pre-operatively. Mean pre-op IPSS was 13.4 (range 2–30). Post-operatively this was 7.8 (2–23), 8.1 (1–26) and 8.3 (0–28) at 3, 12 and 24 months, respectively ($p < 0.05$).
There was no significant difference in the PVR pre and post surgery (mean 139 mls and 101 mls, respectively). 19 (37%) men remained symptomatic requiring further intervention: 16 (31%) had further surgery at a mean interval of 1 year, and 3 (6%) patients required long term catheters.
Conclusion: In men with prostates >100 cc undergoing PVP, one third required further surgery. Overall, however, there was a significant improvement in symptom scores. In general, the effectiveness of PVP in prostates >100 cc is uncertain and this demands careful pre-operative discussion.

P3

Incidence of erectile dysfunction and retrograde ejaculation following Thulium: yttrium-aluminium-garnet laser prostate vaporesection for bladder outlet obstruction: a retrospective study

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Introduction: To determine the incidence of erectile dysfunction and retrograde ejaculation following Thulium: yttrium-aluminium-garnet laser prostate vaporesection (ThuVaRP) for bladder outlet obstruction.
Patients and Methods: Between January 2009 and June 2010 113 consecutive patients underwent ThuVaRP for bladder outflow obstruction performed by a single surgeon. Of these, 54 patients (48%) were included in the study as they were all sexually active prior to undergoing ThuVaRP, had benign pathology and had not undergone a previous bladder neck surgery. The incidence of erectile dysfunction and retrograde ejaculation was reported at 12 months post-operatively.
Results: The mean patient age was 71 years (range: 46–90). The mean follow up period was 12 months (range: 4–21). 11 (20%) patients experienced worsening erectile function with 3 (6%) noticing an improvement. A total of 30 patients (56%) experienced either a reduced or absent ejaculation secondary to retrograde ejaculation. 4 patients (7%) noticed an improvement in their ejaculation, and the remainder of patients noticed no change. Retrograde ejaculation was more common in patients with an indwelling catheter in situ for refractory urinary retention (43% v 17%, P = 0.04) and in diabetic patients (27% v 4%, P = 0.03). There was an increased trend of erectile dysfunction in men aged >70 years, with hypertension and with hypercholesterolaemia but this was not significant.
Conclusion: Our small retrospective study has demonstrated that the overall risk of erectile dysfunction and retrograde ejaculation associated with ThuVaRP is 20% and 56%. These findings require validation in a larger prospective study.

P4

GreenLight HPS laser prostatectomy is safe and gives excellent functional results with medium term follow up – aprospective international multicentre study

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Introduction: We report the results of GreenLight HPS laser prostatectomy with a minimum of one year follow-up in terms of urinary symptoms, energy usage and prostate volume reduction.
Materials and Methods: We prospectively evaluated patients treated with GLL HPS, for LUTS in 7 International centres. Operation, hospitalization and catheterization times were recorded. Functional results, improvement of IPSS, Qmax, and postvoid residual (PVR), as well as Joules delivered were assessed at baseline, 3 months and 12 months.
Results: 257 patients were included. At the time of submission 162 (63%) have completed 12 month minimum follow up. Median age was 66 (range 33–93 yrs). Median operation time was 61.50 min (9–201 min) and median hospitalization was 20 hrs (2 hrs–7 days); median catheterization times of 16 hrs (2 hrs–7 days). No major complications were recorded. Mean prostate volume was 61.8 gr (SD 40.43) and 36.3 gr (22.08 SD)) at 1 year ($p = 0.0001$). Mean PSA fell from 5.7 (SD 13.5 to 3.3 (SD 6.5) at 1 year ($p = 0.01$). IPSS improved from 20.5 (SD 8.8) to 6.5 (SD 5.7) ($p = 0.0001$), and QoL from 4.3 (SD 1.5) to 1.3 (SD 1.3: $p = 0.0001$). Maximum flow rate and PVR improved from 8.2 mL/sec (SD 6.4) and 215.9 (SD 341.2) respectively to 19.7 mL/sec (SD 10.2) and 38.6 mL (SD 78.6: $p < 0.0001$).
Conclusion: Photoselective vaporization with the GreenLight HPS 120-W laser shows excellent results at 1 year follow up, with significant improvement of IPSS, flow rate, PVR, PSA, prostate volume and QoL. Complications are minor and few.

P5

Post-prostatectomy incontinence management: delivery of a specialised service

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Introduction: Post-prostatectomy incontinence (PPI) is a significant cause of morbidity and can have a detrimental effect on quality-of-life (QOL). It persists in 7.7% and 2.2% of patients 12-months after radical prostatectomy and TURP, respectively (Murphy et al. J Urol. 1994). Patient expectation for treatment of this complication has lead to the development of a specialised regional service. The treatment provided to patients referred to this service was thus reviewed.
Method: A retrospective study was performed of 100 consecutive patients referred to the service between April 2004–April 2009. For each patient, demographic details, initial prostatectomy date, referral date, and previous incontinence treatments were documented. In addition, details of treatment initiated by the service and ICIQ-scores, both at initial consultation and after subsequent treatment, were recorded.
Results: The 100 patients seen by the PPI service had a mean age of 65 years (range: 45–81), and were referred on average 33-months (range: 6–132) after prostatectomy (96 radical prostatectomy, 4 TURP). All men underwent urodynamics and subsequent biofeedback in their incontinence management. As a result of attending the service, 27 patients had sub-urethral slings inserted, 14 had AUS inserted, and 8 underwent urethral bulking. To-date, the remainder have being managed conservatively. The mean ICIQ-scores at initial consultation and after subsequent treatment were 16 (range: 11–21) and 7 (range: 0–16), respectively.
Conclusion: As the decrease in ICIQ-scores demonstrates, the provision of a regional service offering specialised surgical procedures for persistent PPI has had a significant impact on patient QOL. It is hoped that the ongoing delivery of this service will lead to earlier referral.

P6

Significance of upper tract abnormalities identified on ultrasound during follow up of neurogenic bladder patients

JR Burki, A Abdul-Rahman, R Hamid, PJR Shah
Royal National Orthopaedic Hospital, London, United Kingdom

Introduction: Patients with spinal cord injury require life long follow up for management of the neurogenic lower urinary tract dysfunction (NLUTD. Generally, ultrasound (USS) imaging of the renal tract is the baseline study which dictates the sequence of further investigations. However, the predictive value of this examination to detect lower urinary tract abnormalities in NLUTD patients is not known. We present our experience with USS identified upper tract abnormalities.
Patient and Methods: We retrospectively analysed the abnormalities identified on routine follow up ultrasound renal tract of patients with NLUTD over a 2 year period. All patients subsequently underwent MAG3 renograms and videourodynamics (VCMG). We evaluated the relationship of upper urinary tract abnormality on USS to the findings of VCMG and MAG3.
Results: We identified 27 patients who had upper urinary tract abnormality on USS. The mean age was 46 years (range 18–82), male to female ratio was 3 : 1. 8 patients had hydronephrosis, 19 had dilatation/fullness of collecting system. Four of 8 50%) had upper urinary tract obstruction proven on MAG 3 scan, while one had vesicoureteric reflux on VCMG. 2/19 (10.5%) with dilatation/fullness had obstruction on MAG3. whilst, 4/19 (21%) had vesicoureteric reflux on VCMG. 5/8 (62%) with hydronephrosis, whilst 6/19 (31%) patient with dilatation/fullness had an abnormality. Overall, 11/27 (41%) had some abnormality of the renal tract.
Conclusions: Abnormal ultrasound of the renal tract in asymptomatic patients with NLUTD is reflective of a renal tract abnormality in almost half the patients and should be followed up with both VCMG and MAG3 scans.

P7

Phase 3 efficacy and safety study of onabotulinumtoxinA in patients with urinary incontinence due to neurogenic detrusor overactivity

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Introduction: We evaluated the efficacy and safety of two doses of onabotulinumtoxinA (onabotA) in an international, double-blind, randomised, placebo-controlled study in multiple sclerosis/spinal cord injury patients with urinary incontinence (UI) due to neurogenic detrusor overactivity (NDO).
Patients and Methods: Patients were treated with 200 U (n = 135) or 300 U (n = 132) intradetrusor onabotA or placebo (n = 149) and followed for up to 64 weeks. Patients could request a retreatment from week 12 onward. Change from baseline (BL) in weekly UI episodes (primary endpoint), maximum cystometric capacity (MCC), maximum detrusor pressure (MDP) during first involuntary detrusor contraction, and the Incontinence Quality of Life (I-QOL) instrument were evaluated. Adverse events (AEs) were also assessed.
Result: At week 6 (primary time point), decreases in UI episodes/week were significantly greater with onabotulinumtoxinA 200 U (–21.0) and 300 U (–22.7) than placebo (–8.8; $P < 0.001$). MCC and I-QOL were significantly increased ($P < 0.001$) and MDP was decreased ($P < 0.001$) in both onabotA groups versus placebo. Median time to patients' retreatment request was 256 days (onabotA 200 U), 254 days (onabotA 300 U), and 92 days (placebo). No efficacy differences were noted between onabotA groups. The most frequently reported AEs were UTI and urinary retention. In patients not catheterising at BL, 7%, 28% and 40% initiated catheterisation in the placebo, 200 U, and 300 U groups, respectively, by 6 weeks.
Conclusion: Improvements in UI, urodynamics, and I-QOL were observed after onabotA 200 U and 300 U, with no clinically relevant difference in efficacy between the 2 doses. Both doses of onabotA were well tolerated.

P8

The effect of suprapubic catheterization on vesico-ureteric reflux in spinal cord injured patients

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Introduction: Suprapubic catheter (SPC) is one of the well established treatments of patients with spinal cord injury (SCI) who are unable to do intermittent catheterization. Vesico-ureteric reflux (VUR) is a potential complication of a neuropathic bladder. We assessed the risk of developing VUR in SCI patients with SPC.
Methods: We performed a retrospective analysis of 61 consecutive SCI patients between 1995–2004 at our SCI centre. All patients had Video-Urodynamics (VCMG) before and after SPC insertion. The incidence of VUR, Maximum detrusor pressure (MDP), Bladder compliance, and time of the reflux from the SPC insertion were recorded.
Results: The mean age was 47.3 years (range 35–82). Levels of injury was cervical = 25; thoracic = 28; lumbar = 6; cerebrovascular accident = 1; sacrectomy = 1. 47/61 (77%) patients developed VUR within 1–9 years (mean 4 years) of SPC insertion., whilst 14 (23%) patients did not develop VUR up to 10 years following SPC insertion. 12 (25%) of the VUR were bilateral. 32/47 (68%) patients with VUR had no increase in the MDP in the VCMG before and after SPC insertion. There were only 9 patients where the VUR was associated with increase in MDP. The remaining 6 patients with VUR had SPC at the time of injury and the first VCMG after 3 months of injury showed VUR.
Conclusions: Our data suggests that although SPC can be an acceptable method of bladder management it can play a significant role in causing VUR and can potentially put the upper tract at risk.

P9

Does suprapubic catheter insertion improve quality of life in neuropathic patients?

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Introduction: A proportion of patients with progressive neurological disease undergo

suprapubic-catheterisation (SPC). We evaluated the indications for insertion and whether patients experience an objective improvement in quality of life (QOL) following SPC insertion. Finally whether subjecting these patients to a potentially morbid procedure is appropriate, in view of the recent BAUS guidelines.
Materials and Methods: We performed a retrospective review of all patients who had SPC insertion from April 2009 to April 2010. Patient demographics along with pre-and post-SPC urinary distress inventory (UDI), incontinence impact questionnaire (IIQ), EQ-5D questionnaires scores, and number of urinary tract infections (UTI) were collated.
Results: Thirty nine patients had a SPC inserted (14 male). Nine were lost to follow up and 5 died. Of the remaining patients (n = 25), the neurological diagnoses included multiple sclerosis (n = 18), traumatic spinal cord injury (n = 2), spinal cord compression (n = 1), cerebrovascular accident (n = 1), idiopathic detrusor-overactivity (n = 1), transverse myelitis (n = 1) and Parkinson's disease (n = 1). Indications for insertion was urinary incontinence (12), incomplete bladder emptying (8) and to facilitate care (5). The groups were comparable for degree of disability assessed by EQ-5D scoring. Mean scores pre-and post-SPC of UDI (8.0–2.2), and IIQ (11.8–7.8) and EQ-5D (10.2–9.2). Mean number of urine tract infections (UTI's)/year pre- and post-SPC were reduced from 5.0 to 1.5, which was statistically significant with paired t-test (0.01).
Conclusions: In neuropathic patients, SPC insertion significantly improves QOL and reduces the frequency of UTI's. This is particularly important in patients with MS, where UTI's can be associated with disease progression. Patients must be carefully selected, with a safe technique adopted as described in the BAUS guidance.

P10

Histological comparison of ketamine associated bladder destruction with bladder pain syndrome/interstitial cystitis

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Introduction: Ketamine is widely and safely used as an anaesthetic and analgesic agent in medical and veterinary practice. Sustained recreational abuse is known to be associated with a severe urological syndrome. A retrospective audit examined tissue specimens from patients known to have abused ketamine and those who had previously suffered with painful bladder syndrome.
Patients and Methods: Histological comparison was made between 6 of the ketamine patients and 5 patients with bladder pain syndrome/interstitial cystitis using biopsy or cystectomy samples taken from these two groups. Haemotoxylin/Eosin and Azure A staining techniques were performed. An average of number of eosinophils and mast cells seen per field under 400× magnification was noted. Immunohistochemistry staining was also performed.
Results: Nine patients were seen over the 2 years. All had haematuria, pain, urinary frequency and small capacity bladders. Three patients required cystectomy to treat intractable urinary symptoms. The ketamine group showed a larger eosinophil count per high field (phf) in both lamina propria and muscularis mucosa (MM) compared to the BPS/IC group (1.6 v. 0.08 phf ($p = 0.022$) and 3.7 v. 0 phf ($p = 0.028$) respectively). The BPS/IC group showed a higher mast cell count in the MM layer (2.6 phf v. 12.4 phf ($p = 0.028$)). T lymphocyte mediated localized immune response was seen in both groups.
Conclusion: This study has demonstrated the significant damage that ketamine abuse inflicts on the urinary tract. It also shows a different in the inflammatory infiltrate seen the ketamine bladder – this may provide further information about the mechanism of damage and potential treatment options.

BJUI SUPPLEMENTS

Tuesday 21 June 2011
Poster Session 2

11:00–12:30 Hall 4
FEMALE UROLOGY AND RECONSTRUCTION
Chairmen: Mr Paul Anderson & Mr Laurence Stewart
Poster P11–P22

P11

Urethroplasty for full length anterior urethral stricture disease secondary to lichen sclerosis (LS): a combined one stage bulbar and two stage penile approach using oral mucosa

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Introduction: LS may be a cause of complex strictures affecting the whole anterior urethra which are often difficult to manage. We present our experience using a combined one and two stage approach for patients with stricture disease due to LS of more than 15 cm in length.

Methods: We prospectively analysed all our cases of LS affecting the entire anterior urethra. We used a one stage dorsal onlay technique for the bulbar urethra and a two stage technique for the penile urethra, using oral mucosa grafts.

Results: Of 25 cases, 14 had a history of previous surgical intervention on the urethra. We have a mean follow-up of 42.5 months with endoscopic follow-up (range 14–154). The mean time between the two stages was 13.5 months (range 5–36). Table 1 shows the complications encountered at each stage and their treatment. Only 32% of patients underwent the planned two stage procedure without further intervention. The majority of interventions were short and only 3 patients required major revision surgery.

Conclusions: LS related full length strictures are difficult to manage. Multiple procedures and adjustments are often required and this specialist surgery requires knowledge and access to all of the available surgical options. However the overall success rate of 84% for this technique, in this complex group of patients, shows this procedure to produce a favourable outcome over a medium term follow up. Moreover, it is a potentially progressive condition which requires careful cystoscopic surveillance in the longer term.

Table 1 for P11

Complication 1st stage – 8/25	Graft contracture 3	Meatal stricture 3	Graft hypertrophy 1	Proximal stricture 1	
Treatment of 1st stage complication – 8/25	Readjustment 5	Re-do 3			
Complications 2nd stage – 12/25	Urethral fistula 3	Re-Stricture 7	Diaphragm 1	Spraying 1	
Treatment of 2nd stage complication – 12/25	Fistula repair 3	ISD 3	Redo both stages 1	Urethrostomy 4	Perineal urethrostomy 1
Final outcomes (from 25)	Voiding freely 21	ISD 3	Urethrostomy 1		

P12

A patient-reported outcome measure for urethral stricture surgery

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Introduction: Aims of this study were: to devise a condition-specific patient-reported outcome measure (PROM) for urethral stricture surgery; and evaluate its psychometric properties to determine whether it was suitable for routine use.
Patients and Methods: Eighty-five men scheduled for urethroplasty at five urology centres across the United Kingdom agreed to self-complete a novel urethral stricture surgery PROM pre-operatively and between four and six months post-operatively. We undertook an in-depth psychometric assessment of the questionnaire's constructs.
Results: Expert opinion, patient feedback and literature review supported the content validity of the PROM. There was excellent correlation between change in voiding symptom score and change in Qmax ($r = 0.75$) with parallel improvements in EQ-5D visual analogue and time trade-off scores demonstrating criterion validity. Test-retest reliability and internal consistency statistics were similarly robust: intra-class correlation coefficients ranged from 0.83 to 0.91 for the individual voiding questions, and 0.93 for the summed construct. Cronbach\'s alpha was 0.80 for the overall score and ranged between 0.76 and 0.80 with any one item deleted; item-total correlations ranged from 0.44 to 0.63. These indices exceeded our predefined reliability thresholds for inclusion. Statistically highly significant improvements in construct scores occurred following urethroplasty, demonstrating responsiveness to change.
Conclusions: The urethral stricture surgery PROM is a practical and robust instrument for assessing voiding symptoms and health-related quality of life following urethral stricture surgery. This tool can be deployed as a condition-specific urethral stricture surgery patient-reported outcome measure in comparative studies evaluating the clinical and cost-effectiveness of treatments for urethral stricture disease.

P13

Non-transecting bulbar anastomotic urethroplasty: 1 year outcome

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University College London Hospital, United Kingdom

Introduction and Objectives: To report our early experience with a novel approach to the excision and end-to-end anastomotic repair of bulbar urethral strictures.
Methods: Twenty patients have undergone excision and end-to-end anastomosis of a proximal bulbar urethral stricture using a technique in which the corpus spongiosum is not transected, in order to maintain its blood supply intact. There were 13 idiopathic strictures, 5 bulbar strictures in patients with distal hypospadias and 2 post-TURP bulbar strictures. Preoperative urethrogram and flow rate study were performed in all patients. All patients had 4 month post-op urethrogram and flow rate and 14 patients have been followed up for one year with post-op urethrogram and flow rate studies.
Results: At 4 month follow-up urethrogram, 17/20 had an excellent urethrographic outcome where it was nearly impossible to identify the site of operation, with normal flow rates (median 42 ml/s, average 38 ml/s). 3/20 patients had a urethral calibre 80–90% of normal and normal flow rates (median 29 ml/s, average 33 ml/s). Of the 14 patients who reached one year of follow-up there was no deterioration of the urethrogram or flow rate. 3 patients had transient erectile dysfunction at 4 months which had normalised at 1 year.
Conclusions: This technique appears to give results that are as good as those of traditional anastomotic urethroplasty with less surgical trauma.

P14

The outcome of re-do perineal urethroplasty

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Introduction and Objectives: To report the outcome of redo transperineal urethroplasty.
Methods: Of 314 patients with bulbar or membranous urethral strictures treated in a single centre over a 5 year period with a minimum follow-up of 1 year (median 42 months, range 13–60 months), 51 patients had had a previous urethroplasty for the same problem.
Results: In patients undergoing redo-anastomotic, augmented anastomotic urethroplasty or patch bulbar urethroplasty with a buccal graft, the success rate (defined as radiological normality) was 100% (21/21 patients). This compared with a success rate of primary surgery of 96.5% (168/174) in our hands.

Revisional bulbo-prostatic anastomotic urethroplasty for pelvic fracture urethral reconstruction was successful in 75% (15/20 patients), compared with a success rate of primary surgery of 90% (36/40) in our hands. Scrotal inlay urethroplasty for salvage bulbar and membranous urethroplasty was successful in only 60% (6/10 patients).
Conclusions: Revising failures of posterior or bulbar urethroplasty by anastomotic or augmented anastomotic repair can be expected to be successful in most patients. Salvage urethroplasty by scrotal skin inlay has a much higher failure rate and should not be used unless there is no alternative.

P15

Repeated botulinum toxin injections for patients with refractory overactive bladder syndrome

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Introduction: Botulinum toxin-A (botn-A) injections are efficacious in treating idiopathic detrusor overactivity (IDO) refractory to anticholinergics, however, little data is available on longer term outcomes. We report our experience with repeated injections of botn-A in this patient population.
Patients and Methods: Refractory IDO patients received 100–300 U botn-A (Botox®) via a flexible cystoscopic technique. Voiding diaries and QoL data were collected before and after injections. Patients were re-injected when they reported a return of symptoms. Data was recorded in a prospective database.
Results: 100 patients underwent 1 injection, 53 had 2, 20 had 3, 13 had 4, 10

had 5, 5 had 6, 2 had 7 and 1 had 8. The majority of patients reported significant improvement in symptoms and QoL which were maintained after each subsequent injection. The rate of intermittent self catheterisation (ISC) was 30%. After the first injection 23% of patients elected not to undergo a second injection. The reasons for this were poor response (9%), disliked ISC (7%), moved out of area (4%) or unknown (3%). The remainder have either already undergone a second injection or subsequent injections at annual intervals. For patients who have received three or more injections (n = 20), only 1 discontinued treatment due to reduced duration of benefit.

Conclusion: Our experience demonstrates that botn-A can provide a long term management strategy for refractory IDO. Approximately a quarter of patients elect not to undergo further injections after the 1st and 2nd injection.

P16

Intravesical botulinum toxin: is it a long-term treatment for DO?

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Introduction: Intravesical botulinum toxin (BT) can be used to treat both idiopathic and neurogenic detrusor over-activity. As its effects are time-dependent, repeated procedures are necessary to administer recurrent doses.

Methods: We reviewed notes and the hospital server to identify patients having had intravesical BT from 1st January 2004 to 31st December 2010 in our institution. Data were collected on patient demographics and procedures to evaluate whether patients persisted with their intravesical BT therapy.

Results: Over the 7 year period, 341 patients had intravesical BT for OAB/DO, of which 74.1% were female. The mean age of the cohort was 58 years. 190 patients were excluded from further analysis (72 patients having had intravesical BT therapy under gynaecological care and 118 patients under urological care but with less than 3 year follow-up). 150 patients had at least 3 year follow-up, of which 64 had at least 5 year follow-up under urological care.

Table for P16

	3 year follow-up (n = 150)	5 year follow-up (n = 64)
Female	103 68.7%)	39 (60.9%)
Mean number of procedures	4.9 (min 1, max 15)	5.4 (min 1, max 15)
Patients with only 1 procedure	33 (22.0%)	12 (18.8%)
Mean time between procedures (months)	7.8 (min 3, max 48)	8.2 (min 4, max 48)
Patients who stopped Botox	94 (62.6%)	44 (68.8%)

Conclusion: Our study shows that most patients were female. Mean number of procedures and intervals between procedures were 5 and 8 months respectively. Although up to 82% of patients had more than one procedure, there was a major drop-out rate (68% at 5 years). Long-term intravesical-botox is not a treatment option for the majority of patients as they opt for alternative therapy owing to poor effectiveness or unhappiness with the regime (repeated cystoscopy, need for CISC).

P17

An initial experience of sacral neuromodulation: indications and outcomes

J Jenks, R Hamid, TJ Greenwell, PJR Shah, JL Ockrim
University College Hospital, London, United Kingdom

Introduction: Sacral neuromodulation is primarily indicated for urge incontinence and voiding dysfunction, but has also been reported for sensory urgency and pelvic pain syndromes. We report the initial 12-month outcomes of sacral neuromodulation at a single institution, according to indication.

Patients and Methods: Prospective data was collected on all patients. All patients had urodynamic study. The primary outcome was assessed using frequency-volume charts, pad testing, ICIQ/EQ5D questionnaires and pain scores. Success was considered as 50% reduction in frequency-urgency-incontinence episodes, pad weights, symptom scores or pain parameters.

Results: Ninety-six patients underwent percutaneous nerve evaluation (PNE) and 45 had sacral nerve stimulators (SNS) implanted. Thirty-five of 71 patients with detrusor overactivity (49%) were converted to SNS. Of those with detrusor overactivity without previous intervention 62% were converted. For dysfunctional voiding 5 of 8 patients (62.5%) responded to PNE. SNS success rates for these indications were 88% and 80% respectively. Four of 11 pain patients (36.4%) were converted to SNS; two responded well and one has incomplete response. One of 5 patients (20%) with sensory urgency was converted. The patient subsequently stated that neither PNE nor SNS were helpful. One SNS was explanted for infection.

Conclusions: Success rates for urge incontinence were significantly higher in patients with primary diagnosis, compared with those with previous interventions. The success rate for voiding dysfunction was similar to published series, whereas the success rates were substantially poorer for patients with pain syndromes and had no benefit for patients with sensory urgency.

P18

The uses and outcome of the Martius fat pad in female urology

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Introduction: It has been suggested that the use of Martius fat pad interposition (MFP) be abandoned in the vaginal repair of vesico-vaginal fistulae (VVF) because of morbidity and lack of effectivity. We have reviewed our experience of Martius fat pad interposition since 22/09/2005 and assessed the short and long term morbidity and its effectivity.

Patients and Methods: The notes of 48 women having MFP for various indications since 22/09/2005 were reviewed and short and long term complications related to the MFP noted. Outcomes were compared with groups not having MFP.

Results: The results are listed in the table. All patients felt that cosmesis was excellent.

Table for P18

Indication	Number	Mean age	Complication MFP	Outcome procedure
Urethral diverticulectomy	24	46	1 labial haematoma	New onset USUI in 2*
Vaginal VVF repair	15	59	None	Cure in 13
Urethral erosion of mid-urethral tape	5	53	None	Cure in 5. Recurrent USUI in 2
Mid-urethral tape wrap for USUI and previous DXT/erosion	3	45	None	Cure in 3. No erosions

*Reported in up to 50% in other series.

Conclusion: MFP is associated with a very low complication rate and excellent cosmesis. It may lower new onset USUI after diverticulectomy and prevent erosion in the 'fragile' urethra. MFP is a versatile addition to the urologists' armamentarium and should not be discounted.

P19

Pelvic organ prolapse: the realm of the urologist

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Introduction: Pelvic organ prolapse (POP) is frequently seen by Urologists with an interest in female urology but traditionally operated on by Gynaecologists. There is a recent shift towards Urologists performing POP surgery. The aim of this study is to determine the outcome of POP surgery in the hands of such urologists.
Patient and Methods: A retrospective case note review of the type and outcome of POP surgery in a tertiary teaching hospital and two district general hospitals was carried out between 2004 to 2009 and 2008 to 2010 respectively. 5 Urologists performed the procedures. Success was taken as resolution of prolapse clinically. Further surgical intervention was recorded.
Results: A total of 120 women were identified to have received POP surgery. 19 patients did not have outcome data available. The median age was 57.5 (range 34–84) with median follow up of 26 months. A total of 115 POP procedures were carried out. Anterior colporrhaphy in 69 women (18 with concomitant SUI procedure, 2 with mesh), 30 with sacrocolpopexy (13 in conjunction with colposuspension), 12 with posterior repairs (7 alone) and 4 sacrospinous fixation (2 alone).

The overall success rate for POP surgery was 93%, with a secondary intervention rate of 7%.
Conclusions: Excellent outcomes were achieved in POP surgery performed by Urologists with an interest in female urology both in the tertiary and secondary care settings.

P20

Distinct urodynamic patterns of female bladder outlet obstruction

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Introduction: Female Bladder Outlet Obstruction (BOO) is relatively rare and remains ill-defined, with a quoted prevalence of 3%. We have noted two definite urodynamic patterns of female BOO and performed a retrospective review to illustrate this further.
Methods: Urodynamic traces from women given a diagnosis of BOO since 2000 were analysed revealing two distinct patterns. The first is a direct ***mechanical*** obstruction (phasic high pressure, low flow pattern). The second type is more of a ***functional*** one (fluctuating pressure trace). Traces were reviewed by an independent expert (blinded to the measurements) and placed into one of the two categories described. Urodynamic data from the two groups were compared using unpaired Student's t-tests.
Results: Thirty-six women were identified with a median age of 53 (25–75) years. Independent review revealed 13 women were functionally obstructed, whereas 23 exhibited mechanical obstruction. All urodynamic measurements were strikingly similar when the two groups were compared apart from maximum detrusor pressure ($p_{det.max}$) which was on average 50 cmH_2O greater in those deemed functionally obstructed. In particular the difference between maximum detrusor pressure and voiding pressure ($p_{det.max} - p_{det.Qmax}$) allowed discrimination between these two types of female BOO. In those functionally obstructed this difference was on average 82 cmH_2O compared to just 6 cmH_2O in the mechanically obstructed group ($p << 0.05$).
Conclusion: Female BOO is under-researched and a general consensus for its diagnosis is lacking. Direct observation of the traces and the difference between $p_{det.max}$ and $p_{det.Qmax}$ may be useful in differentiating between functional and mechanical obstruction.

P21

Re-operation following TVT: indications and outcomes

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Introduction: Tension-free vaginal tape (TVT) and other mid-urethral sling procedures have become the gold standard treatment for stress urinary incontinence (SUI). Long term data have suggested good objective outcomes. However, complications are possible which may necessitate a secondary procedure related to the original TVT. As little data is published on the surgical management of such complications, we report our experience of such cases.
Patients and Methods: Patient records were reviewed in a retrospective fashion, between August 2004 and February 2010, in whom an additional procedure was performed related to their TVT. Patient demographics, indications and outcomes of surgery were assessed.
Results: One hundred and eighty-two patients had a TVT in this time period. Eleven patients required a further procedure related to their TVT surgery. Of these 7 were originally operated on within our department, making our additional procedure rate 0.04%. Mean time to operation was 29 months (range 1 day–80 months). Indications included obstructive voiding/storage symptoms ($n = 5$), recurrent/persistent SUI symptoms ($n = 4$), persistent pelvic pain ($n = 1$) and bowel perforation ($n = 1$). Recurrent/persistent SUI was treated by colposuspension and chronic pelvic pain/storage symptoms/obstructive

voiding by urethrolysis. Resolution or improvement in symptoms was achieved in 64%.

Conclusions: TVT complications requiring further surgery are rare. Symptomatic patients require careful assessment, often with cystoscopy, examination under anaesthetic and video-urodynamics, to decide on further management. Reasonable outcomes in this situation are achievable.

P22

Male sling for post-prostatectomy Stress Urinary Incontinence (SUI) – medium term results in a single UK centre

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Introduction: Stress Urinary Incontinence is a well recognised complication following Prostatectomy. Its negative effect on quality of life has led to the development of various surgical procedures to improve continence including the male sling.

The aim of this study is to assess the medium-term outcomes following insertion of the male sling for post-prostatectomy SUI.

Patients and Methods: 33 patients with post-prostatectomy SUI underwent insertion of the Male Sling. Patients were evaluated prospectively. Video Urodynamic Studies (VUDS), ICIQ-SF questionnaire and pad usage were determined before sling insertion. Following sling insertion patients underwent clinical follow-up including ICIQ-SF, pad usage and residual volume. A successful outcome following sling insertion was defined as 50% or more improvement in pads used per day (ppd).

Results: Pre-operative incontinence severity was mild (1–2 ppd), moderate (3–4 ppd) and severe (>4 ppd) in 7, 17 and 8 patients respectively. Median follow-up was 16 months (2–36). Median pads reduced from 4 (range 1–10) pre-operatively to 0 (range 0–7) post-operatively. Median ICIQ reduced from 16 (range 8–21) pre-operatively to 5 (range 0–21) post-operatively. There were no intra-operative complications. Transient perineal discomfort was common.

23 patients in total were dry or significantly improved. Those patients who failed or only slightly improved (n = 10) tended to be those patients who had moderate or severe incontinence pre-operatively.

Conclusion: The Male Sling seems to be a safe and effective treatment which seems to be most effective in those patients with mild to moderate SUI. However, further objective evaluation and restricted introduction in specialised units is required.

BJUI SUPPLEMENTS

Tuesday 21 June 2011
Poster Session 3

14:00–16:00 Hall 12
SCIENTIFIC DISCOVERY
Chairmen: Professor Noel Clarke & Mr Leyshon Griffiths
Posters P23–P37

P23

Comparison of the performance of the non-invasive cuff test with the gold standard for diagnosing bladder outlet obstruction, pressure flow studies

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Aims: Bladder outlet obstruction (BOO) is the most common urological problem in ageing men, but a conclusive diagnosis cannot be made from symptoms alone. Given the cost and invasive nature of pressure-flow studies (PFS), simple, non-invasive tests have been developed. The diagnostic potential of the non-invasive 'cuff test' (cuff test) has been evaluated at five different centres independently.
Methods: PFS were carried out in each centre in accordance with ICS recommended standards of good practice (W. Schaefer et al, Neurourol Urodyn 21:261–274 2002) The cuff test was also performed in the same cohort of the patients either before or after pressure flow investigations and the results directly compared. BOO was classified in PFS and the cuff-test by dedicated nomograms. Statistical analysis of each of the data sets was performed and simple pooled estimates were made from the information collected.
Results: A summary of the results from the statistical analysis are shown in table 1 below.
Conclusions: The results suggest the 'cuff test' has a very high positive predictive value for diagnosing BOO and could be used within the clinical pathway when evaluating men with voiding symptoms and recommending further intervention, as opposed to an adjunct to PFS as currently used.

Table 1 for P23: Simple statistics for each independent study

Statistic	1	2	3	4	5	Pooled estimate
Investigations	23	33	61	50	49	216
PPV (%)	66.7	90	95.8	88.0	94.4	90.4
NPV (%)	29.4	8.2	45.9	32.0	87.1	55.6
Sensitivity (%)	44.4	81.8	57.5	73.0	38.6	56.0
Specificity (%)	85.7	95.5	95.2	85.0	80.0	90.2

P24

c-Kit receptor is expressed by a distinct cell population in human urothelium

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Introduction: The receptor for stem cell factor (SCF), c-Kit, has been associated with progenitor cell characteristics in a variety of tissues. Activating mutations or overexpression of the c-Kit gene may result in malignancy, with c-Kit overexpression reported in highly aggressive small cell carcinoma of the bladder. This study aimed to characterise c-Kit expression in normal human urothelium and in urothelial carcinoma (UC).
Materials and Methods: Immunolabelling studies were performed using monoclonal antibodies against c-Kit, CK7, CK18, CD45, vimentin and mast cell tryptase. Frozen and paraffin wax-embedded tissue sections were prepared from normal bladder/ureter and UC samples. Flow cytometry was performed using urothelial cells freshly isolated from surgical specimens.
Results: The results revealed a rare and distinct c-Kit^{low} cell population within the human urothelium. Imaging studies suggested that the c-Kit^{low} cells shared a marker expression pattern characteristic of urothelial cells (CK7^{+}, CK18^{+}, CD45^{neg}, vimentin^{neg}, tryptase^{neg}) and distinct from leukocytes (CD45^{+}, cKit^{neg}, CK7^{neg}, CK18^{neg}, vimentin^{+}, tryptase^{neg}) or mast cells (CD45^{low}, c-Kit^{high}, CK7^{neg}, CK18^{neg}, vimentin^{+}, tryptase^{+}). Using flow cytometry, the proportion of c-kit expressing cells in the urothelium was quantified at around 0.25%. Preliminary studies suggested the presence of c-Kit^{low} cells in low grade UC, but their absence from less differentiated tumours.
Conclusions: The results provide presumptive evidence of the presence of a distinct c-Kit expressing urothelial cell population in normal human urothelium and well differentiated UC. These findings may have important implications for the understanding of

urothelial regeneration and/or mechano-sensation.

P25

Mechanisms of development of ketamine-induced cystitis (KIC)

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Introduction: Ketamine is an N-methyl D-aspartate (NMDA) receptor antagonist used as an anaesthetic and analgesic. Recent literature reports have described development of non-bacterial cystitis-like symptoms from recreational abuse and long term prescription use of ketamine. The mechanisms behind development of KIC remain unknown. It has been shown that NMDA antagonist effect of ketamine is responsible for neuronal toxicity in animal cell culture. Our hypothesis is that NMDA receptor antagonist action of ketamine is responsible for urothelial toxicity and the aim of our project was to test this hypothesis in vitro.
Material and Methods: Human urothelium was obtained with patient consent and used to establish normal human urothelial (NHU) cell cultures. Ketamine, NMDA, D-serine and MK-801 were obtained as analytical reagents. Cell viability was assessed by Alamar Blue reduction assay. Reverse-transcribed polymerase chain reaction (RT-PCR) was performed using primer pairs designed to be specific for different NMDA receptor isoforms.
Results: NHU cell cultures exposed to ketamine revealed cytostatic effects at 1 mM and cytotoxic effects at >1 mM. NMDA and D-serine (NMDAR agonists) were unable to block ketamine-induced toxicity and MK-801 (specific NMDA antagonist) showed no NHU cytotoxicity at similar doses to ketamine. By RT-PCR, no NMDA receptor transcripts could be detected in RNA extracted from NHU cell cultures.
Conclusions: Ketamine has a highly promiscuous receptor binding profile but is primarily used in the clinic for its NMDA receptor antagonist properties. It has shown toxicity via this receptor in neuronal cell systems, but our results suggest cystitis is induced by a different route.

P26

The identification, internal validation and external validation of a biomarker panel to distinguish between significant and insignificant Gleason score in prostate cancer

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Introduction: The biopsy Gleason score (GS) is critical in evaluating prostate cancer aggressiveness, significance, and treatment response but is complicated by high rates of non-concordance and score upgrade during surgery, which may have severe implications for patients on active surveillance.
Aim: To identify and validate a panel of biomarkers to distinguish between insignificant (GS6 or lower) and significant (GS7 or higher) prostate cancer in internal and external patient cohorts.
Methods: Using 2D-DIGE and ELISA-based biomarker discovery strategies, we identified IGFBP3, VEGFD, PEDF and ZAG as potential preoperative serum biomarkers to distinguish between insignificant and significant GS. We then developed and optimised a multiplex approach to simultaneously validate these biomarkers in the preoperative serum of 43 Irish and 24 Austrian prostate cancer patients. The panel prediction performance was assessed using 500 times bootstrapping with logistic regression. Receiver operating characteristic curves and area under the curve (AUC) values were generated as an indication of prediction accuracy.
Results: The optimum panel identified on the discovery stage was IGFBP3, ZAG and VEGFD, (AUC 0.752) but internal and external validation studies yielded AUCs of 0.531 and 0.481, respectively. On further analysis, a revised and validated panel comprising of PSA, IGFBP3, PEDF and VEGFD distinguished between GS3+4 and 4+3 disease with AUCs of 0.663 and 0.85.
Conclusion: IGFBP3, VEGFD, PEDF and ZAG cannot distinguish between insignificant and significant GS. However, a revised panel of PSA, IGFBP3, PEDF and VEGFD is promising for determining between 3+4 and 4+3 disease, but more validation studies are required.

P27

Circulating microRNAs: novel biomarkers for prostate cancer in the screening setting

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Aim: Mi(cro)RNAs are small non-coding RNAs whose differential expression in tissue has been implicated in the development and progression of many cancers, including prostate cancer. The discovery of miRNAs in the blood of patients with a variety of malignancies makes them an ideal, novel biomarker for prostate cancer diagnosis. The aim of this study was to investigate the expression of a panel of candidate miRNAs in the circulation of patients with and without prostate cancer.
Methods: RNA was extracted from whole-blood samples from 65 patients, 37 with biopsy proven prostate cancer and 28 biopsy negative samples from patients attending a rapid access prostate clinic. Samples were reverse-transcribed using stem-loop primers and expression levels of 9 candidate miRNAs were determined using real-time quantitative PCR. MiRNA expression levels were then correlated with clinicopathological data.
Results: Circulating miRNAs were detected and quantified in all subjects. The analysis of miRNA mean expression levels revealed that circulating levels of the tumour-suppressor let-7a ($p = 0.01$) along with the oncogenic miR-141 ($p = 0.005$) could differentiate prostate cancer patients from patients with benign disease. The sensitivities of miR-141 and let-7a were 43.2% and 56.8%, the specificities were calculated at 92.9% and 89.3% respectively. Using classification and regression tree analysis of 3 miRNAs the sensitivity was increased to 68% and specificity to 100%.
Conclusion: Our findings identify significant differences in expression levels of oncogenic and tumour-suppressor miRNAs in the bloodstream of prostate cancer patients. This highlights their potential use as novel biomarkers of prostate cancer as an adjunct to PSA.

P28

Biobanking of tissue obtained from robotic-assisted radical prostatectomy can be successfully implemented to provide sufficient prostate tissue for RNA studies

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Introduction: RNA quality is believed to decrease with ischaemia time, and therefore, traditional open radical prostatectomy has benefited from allowing the retrieval of the prostate immediately after its devascularisation. In contrast, prostatectomies which utilise robotic platforms require the completion of several operative steps before the devascularised prostate can be extirpated, casting doubt on the validity of this technique as a source of prostatic tissue for RNA studies.
Patients and Methods: We describe our biobanking process and report the RNA quality of prostate specimens using advanced electrophoretic techniques (RNA Integrity Numbers, RIN). We consider the impact of various clinicopathological correlates on RNA integrity using multivariate regression analysis.
Results: Our biobanking protocol has been used to collect >1700 prostates, and allows us to retain approximately 40% of the prostate specimen. We collected 186 samples from 142 biobanked prostates and generated a mean RNA concentration of 692 ng/μl. We were able to demonstrate a mean RIN of 7.23 (s.d. 1.64) in 139 non-stromal samples, 73% of which had a RIN ≥ 7.
The mean RINs of the tumour, benign and stromal samples were significantly different ($p < 0.001$) at 7.70 (s.d. 1.46), 6.76 (s.d. 1.69) and 4.91 (s.d. 1.67) respectively.
Despite recording a mean warm ischaemia time of 120 min (s.d. 30 min) a relationship with RIN was not observed.
Conclusions: We demonstrate the robustness of our protocol in generating RNA of sufficient concentration and quality, without compromising the histopathological evaluation and diagnosis of patients. The ischaemia time associated with our robotic prostatectomy technique does not negatively impact on tissue biobanking for RNA studies.

P29

Simultaneous profiling of multiple genes in archival diagnostic prostate cancer needle biopsies

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Introduction: Transcriptional profiling of archival formalin fixed paraffin embedded (FFPE) needle biopsies, taken at the point of diagnosis and with known clinical follow-up, would represent a major step in investigating prognostic markers in prostate cancer. Here we report an optimised approach for simultaneous multi-gene expression analysis in archival FFPE needle biopsies.
Methods: Archival (6–12 year old) prostate biopsies linked to known clinical data were identified from pathology archives. An optimised protocol was employed to extract RNA and synthesise cDNA from epithelial tumour glands in 16 microdissected biopsies of varying Gleason grade, with benign tissue samples used for comparison. A pre-amplification step was performed prior to analysis of a multi-gene panel with real-time PCR.
Results: cDNA was initially interrogated against three housekeeping genes for quality control purposes prior to testing against a panel of 29 target genes grouped into 3 categories: negative signalling regulators, steroidogenesis and potential biomarkers. All tumours amplified successfully with known tumour marker PCA3 with no expression in benign epithelial glands, validating the approach ($p = 0.0181$, Mann-Whitney Test). Variations were noted in the expression of particular genes across different tumour grades including a downregulation of Sef, a known inhibitory regulator of fibroblast growth factor signalling, in higher grade tumours ($p = 0.0039$, Kruskal-Wallis Test).
Conclusions: We describe here an optimised method of profiling multiple genes simultaneously in archival FFPE needle biopsies obtained at prostate cancer diagnosis. Current work is aimed at utilising this method to define key gene panels to predict outcome at diagnosis and help select the optimal treatment modality.

P30

Expression analysis of endogenous signalling regulators in archival diagnostic biopsies identifies differential expression of Spred 1 and 2 in prostate cancer

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Introduction: Loss of negative signalling regulators has been implicated in prostate cancer progression. We used a novel method to derive RNA from archival formal fixed paraffin embedded (FFPE) diagnostic prostate biopsies and simultaneously tested expression of a panel of negative regulators.
Methods: Prostate needle cores derived at diagnosis were laser microdissected to isolate grade specific tumour populations and RNA extracted ($n = 6$ each; benign, Grade 3, 4, and 5). Expression of a panel of regulators was tested by RT-PCR. Spred proteins were further studied by immunohistochemistry.
Results: Specificity of the technique was confirmed by distinct expression of tumour, benign and stromal genes in microdissected populations. The expression of the regulators Sef, Sprouty 2, RKIP, DUSP1 and Spred 1 & 2 was investigated. Sef, DUSP1 and RKIP showed a progressive reduction in expression with increasing grade. Sprouty 2 was retained in grade 3 and 4 tumours but reduced in grade 5 tumours. We observed comparable levels of Spred 2 in benign and grade 3 tumours but reduced expression in grade 4 & 5 tumours. In contrast, there was a trend for increased Spred 1 in tumours. This converse trend was confirmed in independent interrogation of 230 tumours from the MSKCC Prostate Oncogenome Project (c-Bio Cancer Genomics portal). We further validated this observation by immunohistochemistry in a TMA of benign and malignant prostate biopsies.
Conclusion: We demonstrate the application of multiple gene analysis in diagnostic FFPE needle biopsies and first data of a putative tumour suppressor function for Spred 2 in prostate cancer.

P31

Secondary circulating prostate cells after radical prostatectomy predict biochemical failure and express P504S

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Introduction: The presence of circulating prostate cells (secondary CPCs) after radical prostatectomy suggests the presence of prostate tissue, those that express the protein P504S are malignant, as benign prostate tissue does not express P504S. It could be that men with secondary CPCs have a higher risk of biochemical failure independent of PSA levels and could be used as an independent biomarker.
Methods and Patients: All men with prostate cancer, diagnosed in 2008 and treated by radical prostatectomy were included, 25 men with biochemical failure (PSA 0.02–1.0 ng/ml) detected in 2008 were used as positive controls; CPCs were obtained by differential centrifugation and detected by double immunocytochemistry using anti-PSA and anti-P504S. Group 1 men with PSA <0.02 ngml, Group 2 PSA 0.02–0.2 ng/ml Group 3 >0.2 ng/ml
Results: 53 men and 25 with biochemical failure participated, mean age 71.5 ± 8.3, the frequency of CPC detected was similar between groups 7/14, 21/39 and 16/25 respectively. 25 of the treated men had follow-up samples, none of the CPC negative men experienced biochemical failure, whereas 11/28 positive men experienced biochemical failure within 2 years ($p = 0.02$). PSA velocity/year was +0.244 ng/ml/year in CPC positive men versus −0.006 ng/ml/year in CPC negative men ($p = 0.02$). All CPCS were P504S positive.
Conclusions: CPC positive men have a higher risk of biochemical failure within 2 years, with a higher PSA velocity than men CPC negative; CPCs express P504S suggesting they are malignant. Secondary CPC detection after radical prostatectomy identifies men with high risk of biochemical failure, independent of PSA level.

P32

Multiphoton microscopy provides virtual histology in human radical prostatectomy specimens

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Introduction: This was a prospective study involving Multiphoton Microscopy (MPM) imaging and histopathologic correlations of human prostate and peri-prostatic tissue. The aim of this study was to assess the potential of MPM to provide virtual histology as a proof of principle for real-time imaging during nerve sparing radical prostatectomy and for MPM guided biopsy.
Methods: We used two types of specimens for imaging: (1) intraoperative margins and biopsies; (2) tissue sections obtained from the excised prostate. The imaging was carried out using intrinsic fluorescence and scattering properties of the tissues without any exogenous dye or contrast agent. A custom-built MPM, consisting of an Olympus BX61WI upright frame and a modified Bio-Rad MRC 1024 scanhead was used. The corresponding tissues were subjected to hematoxylin and eosin staining for histologic confirmation of the structures.
Results: High-resolution images of the periprostatic tissue, nerves, prostate capsule, underlying acini, and individual acinar cells were obtained at varying magnifications. Histologic confirmation and correlation of the periprostatic tissue, prostate gland, fat, blood vessels, and nerves validated the findings of MPM.
Conclusions: We have utilized a novel approach for tissue imaging which appears to provide microscopy level resolution in fresh tissue, without the need for any extrinsic labeling agents. This may allow for more accurate surgical decision making during nerve sparing radical prostatectomy and will also improve the accuracy of prostate biopsy when used to guide tissue sampling, once the technology is clinically translated.

P33

In silico prediction of androgen response elements in metalloproteinase genes

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Introduction: Cancer progression requires degradation of basement membranes and extracellular matrix (ECM) components, and metalloproteinases are known to degrade several ECM proteins. Abnormal androgen receptor (AR) signalling remains active in hormone refractory prostate cancer (CaP) despite androgen deprivation therapy. In this study, proteolytic activity of prostate cancer cells was imaged and the promoter regions of the MMP, ADAM and ADAMTS metalloproteinase genes were screened to identify putative androgen response elements (AREs).
Methods: PC3 CaP multicellular tumour spheroids were grown in 3-dimensional culture in Matrigel containing DQ-Gelatin, and were observed using fluorescence microscopy. The nuclear receptor search tool, NUBIScan, was used to search the 3,000 bp sequence upstream of the human MMP, ADAM and ADAMTS genes. A search matrix was constructed using 9 ARE half-sites that are known to be functional. The search strategy was designed to detect repeats of the half-sites with a minimum score of 80% similarity.
Results: Tumour spheroids emitted fluorescence after 24 hours in culture, indicating proteolytic activity. 17 of 23 MMP, 15 of 22 ADAM, 13 of 19 ADAMTS and 4 natural inhibitor gene promoters had at least one putative ARE, including those with known ECM degrading, pro-angiogenic and anti-angiogenic properties.
Conclusion: CaP cells degrade components of the ECM during disease progression. The number of metalloproteinases identified in this study implies that dysregulation of metalloproteinases by abnormal AR signalling is a possible mechanism of CaP progression. In silico studies such as this could help to streamline high throughput studies to identify the proteases required for disease progression.

P34

C-MYC induction of Hes6 activates a distinct transcriptional network driving androgen insensitive prostate cancer

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Castrate resistant prostate cancer (CRPC) has been shown to exhibit a state of altered differentiation, which may involve acquisition of 'stem-like' properties, or possibly a neuroendocrine phenotype, with expression of notch pathway related basic helix-loop-helix transcription factors (bHLH) in both human tissue and mouse models. c-Myc is a well known oncogene in prostate cancer and induces survival of androgen-dependent LNCaP cells in androgen deprived conditions. In normal tissues, c-Myc induces stem cell differentiation into specific lineages. The lineages of the normal prostate are now characterised and it is becoming clear that CRPC does not display the typical 'luminal phenotype'. We have now shown using quantitative PCR and chromatin immunoprecipitation that expression of bHLH transcription factor, Hes6, is up-regulated in response to activated c-Myc. Furthermore, cell growth assays show that like c-Myc it can deliver androgen-independence in androgen-dependent LNCaP cells, a finding that has been confirmed in vivo. Expression profiling of these androgen-independent LNCaP-Hes6 cells reveals increased levels of transcripts regulating cell-cycle progression such as E2F2, AURKA/B, CDK1, PLK1, MELK, and UBE2C. This signature exquisitely clusters aggressive and poor outcome human disease. Given that normal prostate cancer cells rely on the androgen receptor (AR) promoting G1-S cell cycle transition and progression, identification of these targets suggests that Hes6 acts by 'priming' cell cycle progression, creating a phenotype that is independent of standard AR signalling for continued growth. This raises the possibility that pharmacological inhibition of these Hes6 cell cycle targets could rescue AR dependence and augment standard androgen blockade.

P35

WAVE-3 knock-down results in reduced invasion and motility in prostate cancer cells via reduced MMP-2 expression

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Introduction: WAVE-3 is a member of Wiskott-Aldrich syndrome proteins family, regulating cellular migration through actin related protein complex. Our prior studies have revealed decreased motility and invasion in prostate cancer cells following genetic silencing of WAVE-3 activity. Matrix metalloproteinase-2 (MMP-2) has been implicated in invasion and progression of prostate cancer. This study investigates the possible role of MMP-2 in the changes induced by WAVE-3 knock-down in prostate cancer cells.
Methods: Expression of WAVE-3 was knocked down through a transgene consisting of hammerhead ribozyme and antisense specific to WAVE-3, cloned in to a PEF6 expression factor and transfected in to PC-3 cell line through electroporation. After confirming knock-down, in vitro assays were used to assess cell growth, adhesion, motility and invasion. Expression and functional status of MMP-2 in different cell lines was assessed by PCR, immunoblotting, immunocytochemistry and zymography.
Results: Stably transfected PC3WAVE-3 KD cells exhibited reduced expression of WAVE-3 at both mRNA and protein levels. PC-3 ΔWAVE3 KD cell line showed reduced invasion ($P < 0.01$) and motility ($P < 0.01$). This effect persisted even with addition of stimulation with hepatocyte growth factor. MMP-2 expression was significantly reduced ($P < 0.01$) in PC-3 ΔWAVE3 KD cells on western blotting as compared to PC-3WT & PC-3pEF cells and was confirmed on immunocytochemistry and zymography.
Conclusion: Optimal levels of MMP-2 are reduced following elimination of WAVE-3 in prostate cancer cells and contribute to a reduction in the invasive phenotype of prostate cancer cells.

P36

Identification of the chemotherapy resistant renal cell carcinoma side population: sunitinib sensitisation to paclitaxel treatment via MDR efflux pump pathways

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Metastatic renal cell carcinoma (mRCC) is chemo-resistant (response rates of <6%), partially due to its ability to efflux chemotherapeutic agents via multidrug resistant pumps (MDR). MDR expression has been correlated with a poorer prognosis in RCC. We have shown previously that RCC contain a verapamil-sensitive side population (SP), as defined by their ability to efflux, via MDR, the fluorescent dye Hoechst 33342. Recent reports have suggested that 'targeted' agents (sunitinib, sorafenib and temsirolimus) currently used in mRCC may also affect MDR.
2245R SP and non-SP sub-populations were treated with chemotherapeutic agents. IC50 values were determined by SRB assay and drug efflux confirmed by FACS/microscopy. The effect of temsirolimus, sunitinib and sorafenib on SP profiles and their ability to act as chemosensitisers was determined by FACS and SRB.
An SP was isolated from 5 out of 8 RCC cell lines tested ($6.0 \pm 4.6\%$ in the 2245R cell line). The 2245R SP displayed chemoresistance to docetaxel, paclitaxel, adriamycin and etoposide as compared with non-SP (5.4 vs. 3.3, 42 vs. 13, 90 vs. 48 nM, and 11.6 vs. 8.8 μM respectively). Sunitinib, sorafenib and temsirolimus were able to inhibit the SP at pharmacologically relevant concentrations. In combination studies sunitinib treatment sensitised the SP to paclitaxel.
We have shown that the SP sub-population is responsible for chemoresistance to docetaxel, paclitaxel, adriamycin and etoposide and that the SP sub-population can be sensitised using 'targeted' agents especially sunitinib as novel MDR modulators. Our data indicates that paclitaxel in combination with sunitinib should be considered in future mRCC trial design.

P37

Ki67 expression in penile squamous cell carcinoma

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Introduction: Ki67 is a good prognostic marker in several cancers; however, the utility of Ki67 in penile squamous cell carcinoma (PSCC) is not clear as the rarity of the disease makes it difficult to study. Most reports relate to small number of cases, while studies of bigger cohorts show contradicting results with Ki67 positively as well as inversely correlated with lymph node metastasis (LNM).

Patients and Methods: A series of 148 PSCCs was tissue microarrayed and immunostained for Ki67 protein. Follow up data was available for 134 patients. The median follow up was 24 months. 31 patients had recurrence, 26 died from PSCC and 9 from other causes. The median Ki67 staining of 42% positivity was used as a cut-off for statistical purposes.

Results: Ki67 staining was positive in 57/148 (38.5%) of PSCCs. Different subtypes showed significant differences in Ki67 expression ($p < 0.0001$) with the highest positivity in basaloid (16/17) and a lack of Ki67 positive cases within verrucous tumours (0/15). Ki67 strongly correlated with tumour grade ($p < 0.0001$) but not stage ($p = 0.2193$) or LNM ($p = 0.7366$). Ki67 did not predict cancer specific survival (CSS) or overall survival (OS). High stage, LNM, high grade and age at diagnosis were all independent prognostic factors for CSS and OS.

Conclusion: Ki67 could be a useful marker to distinguish more aggressive basaloid PSCC from non-invasive verrucous tumours. However, it does not show prognostic value for LNM, CSS and OS in PSCC.

BJUI SUPPLEMENTS

Tuesday 21 June 2011
Poster Session 4

14:00–16:00 Hall 4
PROSTATE CANCER TREATMENT
Chairmen: Mr Justin Vale & Professor Prokar Dasgupta
Posters P38–P52

P38

Correlation of National Institute of Health and Clinical Excellence (NICE) 'low-risk' prostate cancer (CaP) in Britain with radical prostatectomy specimens. Is active surveillance in our population realistic?

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Introduction: Most research on active surveillance for prostate cancer (CaP) comes from PSA-screened populations. The current NICE guidelines (Prostate Cancer diagnosis and treatment, Feb 08, National Collaborating Centre for Cancer) recommend 'men with low-risk localised CaP who are considered suitable for radical treatment should first be offered active surveillance'. The limitations of understaging with current diagnostic tools are recognised and we hypothesise this risk in an unscreened population would be high.
Patients and Methods: Analysis of prospectively collected data of 700 consecutive men treated for CaP from 2006–2010 with robotic assisted radical prostatectomy (RRP) was undertaken. Patients satisfying NICE criteria for low risk disease (PSA < 10 and Gleason score ≤ 6 and cT1-2a) had RRP specimens analysed for rates of advanced risk disease, defined as pT3, Gleason sum 8–10 and node positive disease.
Results: Of the 700 patients, 34% (n = 244), qualified as NICE low risk CaP. In this group, the rates for advanced disease were extracapsular extension (27.5%, 67/244), seminal vesicle invasion (4.1%, 10/244), Gleason sum 8–10 (4.8%, 12/244) and node positive disease (0%). The cumulative rate for unfavourable factors was 29.1%.
Conclusion: Using the NICE criteria for low risk CaP, we identified 29.1% with subsequent features of advanced CaP. From our results, we strongly recommend radical therapy be discussed as an alternative option to active surveillance from the outset for this group of patients.

P39

A nomogram can predict upgrading or upstaging in patients that fit conventional active surveillance criteria

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Introduction: Low risk prostate cancer patients clinically eligible for active surveillance can also be managed surgically. We evaluated the pathologic outcomes for this cohort that was treated by radical prostatectomy and devised a nomogram to predict which of this cohort are at risk of upgrading or upstaging that would have then made them ineligible for active surveillance.
Methods: 750 patients treated by radical prostatectomy from Jan 2005-present fulfilled conventional active surveillance criteria (PSA < 10, Gleason sum 6, ≤cT2a) and formed the study cohort. The radical prostatectomy specimens were graded and staged, and any upgrading (Gleason sum >6) and/or upstaging (≥pT2b) was classed as 'worsening prognosis' as these factors would be considered exclusion criteria for active surveillance if known prior to treatment. A multivariate logistic regression model was used to develop the worsening prognosis predictive nomogram.
Results: 297/750 (39.6%) patients were upgraded to ≥ Gleason 7 at final pathology; 569/750 (75.9%) were upstaged to ≥pT2b; overall, 597/750 (79.6%) had either upgrading or upstaging and would have been ineligible for active surveillance if known prior to treatment. The nomogram to predict worsening prognosis was reasonably discriminatory (bootstrap corrected c-index of 0.65).
Conclusions: Four out of five patients deemed eligible for active surveillance based on conventional criteria had worse prognostic factors in terms of histology or tumor bulk when subjected to radical prostatectomy. We suggest the use of a nomogram we have devised to adequately counsel primary prostate cancer patients deemed clinically eligible for active surveillance.

P40

LDR brachytherapy in men <55 yrs is effective and well tolerated

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Introduction: Brachytherapy achieves similar rates of biochemical control to radical prostatectomy in young men with prostate cancer. However, radical prostatectomy continues to be favoured in spite of known toxicity. The outcomes and toxicity for the largest prospective UK series of young men treated by brachytherapy are presented.
Methods: Between 1999 and 2010, 118 out of 1700 patients treated by brachytherapy were <55 years old, Depending on MSKCC risk classification patients were treated with monotherapy (88), or with hormones (25) and/or EBRT (18). The implant technique has evolved with time from a 2-stage Seattle approach to a one-stage, real-time procedure. A bespoke, prospective database was used to collect clinical data.
Results: Overall survival was 100%. 76 patients had >3 years follow up, mean 76 m. Of these 4 showed biochemical failure: 2 in low and 2 in high risk groups. Actuarial 8 year PSA free survival for the whole <55 yrs group was 94% (cf. 84% for all ages). For the entire cohort, the median 5 year IPSS and QoL were 4 and 1.5 respectively. Of the 75% patients potent pre-op, 81% retained potency (IIEF > 11). No secondary malignancies have been reported.
Conclusions: This is the first reported UK series of young men treated with LDR brachytherapy. The mature data demonstrates very effective tumour control and it is well tolerated. When treatment is discussed with this patient group, LDR brachytherapy should be considered where appropriate.

P41

Size doesn't matter; at least not with real time prostate brachytherapy

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Introduction: The introduction of real time brachytherapy to treat prostates >50 ml has gone relatively unnoticed in the UK. We report a 6 year experience in large (LP) and standard (SP) prostates.
Patients and Methods: 272 cases of low (LR) and intermediate risk (IR) prostate cancer (PC) were treated with real time brachytherapy. Patients were accepted with flow rates ≥14 ml/s or IPSS ≤10. Only IR patients received neoadjuvant hormones.
Results: 129 (47%) had IR disease and 51 (19%) LPs. Overall PSA relapse free survival was 97.4%; 93.1% for IR patients. There were no relapses in the LR or LP groups. Median follow up was 24 (3–72) months. 99% of implants achieved the target dose. Urinary retention occurred in 2.2%, urethral strictures 1.1%. Mean IPSS increased from 4 to 11 and 14 at 3 months for SPs and LPs respectively, before settling to 5 and 6 by 12 months.
13 (4.8%) patients reported mild rectal bleeding; 9 (4.1%) SPs and 4 (7.8%) LPs. There were no rectourethral fistulas. Impotence occurred in 12% and 11% at one and two years respectively.
Conclusion: Real time prostate brachytherapy is effective in the treatment of low and intermediate risk PC including large prostates. The treatment is well tolerated providing the flow rate is ≥14 ml/s or the IPSS ≤10.
Urologists can no longer ignore the value of brachytherapy for localised PC. In view of the exceptionally low recurrence rates, surgeons must think twice before subjecting their patients to radical prostatectomy. With such low toxicity, the role of focal therapy remains questionable.

P42

History of TUR(P) does not prevent satisfactory prostate brachytherapy implant

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Purpose: To compare the implant quality and intermediate oncological outcomes between patients with history of bladder outflow surgery and those without, implanted with dynamic-dose feedback prostate brachytherapy.
Methods: Between 2003 and 2009, 364 men with localised prostate cancer were treated. Patients with prior bladder outflow surgery were identified and dosimetric, symptomatic and oncological (minimum two-year follow up) outcomes were compared.
Results: Fifty-one men had prior bladder neck incision (6), TUR(P) (39), laser enucleation (5) or Millin's prostatectomy (1); 31 had their surgery following prostate cancer diagnosis with planned subsequent implant (minimum four months). The mean (±sd) D90 dose was 171 (±10) Gy for the surgical group and 170 (±11) Gy for the non-surgical group ($p = 0.73$). AUA symptom scores peaked at 6 weeks and returned to baseline within a year with no significant differences. Overall retention of urine rate was 2% (none in the surgical group). There have been no urethral strictures, incontinence or fistulae to date. Six-year biochemical freedom from recurrence (PSA nadir + 2 ng/mL) was 92.3% and 95% in the surgery ($n = 22$, median follow up 36 months) and non-surgery ($n = 249$, median follow up 44 months) groups respectively ($p = 0.93$).
Conclusion: History of TUR(P) need not be a contraindication to prostate brachytherapy. Selected men may be treated with planned TUR(P) and subsequent implant.

P43

Robotic prostatectomy delivers excellent outcomes and short hospital stay. Access in the NHS should be expanded not limited due to consumable costs

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Introduction: Robotic-assisted laparoscopic prostatectomy (RALP) is rapidly becoming the favoured approach for the surgical treatment of localised prostate cancer. There are currently attempts to limit accessibility of RALP within the NHS. Here we review the results of a large consecutive series of RALPs in a UK centre.
Methods: We reviewed a prospectively collected database of 510 patients who underwent RARP from January 2007 to December 2010. Outcome measures include perioperative, clinicopathological, functional and biochemical follow-up data.
Results: Of the 510 patients, 78% had T2 disease, and 22% had T3 disease. 16% of patients with T2 disease and 57% of patients with T3 disease had positive margins. Median in-patient stay for NHS

patients was 1 night. At 6 months 65% of patients were pad free, with 30% using 1–2 pads a day. By 18 months 87.4% were pad free. At 2 years, 43% of patients were having erections. The disease free survival rates at 2 years, were 91% for those with T2 disease, and 60% for T3. No patients with Gleason 3+3 disease pT2 with negative margins have recurred to date.
Conclusion: RARP is an effective treatment for localised prostate cancer. The results of this large cohort demonstrate excellent clinical care. With a median 1 night in-patient stay for NHS patients, the economic argument should focus on the overall impact of this procedure and take account of patient choice and satisfaction. Through appropriate centralisation, RALP should be made accessible to all suitable patients.

P44

Comparative oncologic analysis of open versus robotic-assisted radical prostatectomy matched by D'Amico risk category

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Introduction: Differences in outcomes between open (ORP) and robotic (RARP) radical prostatectomy have been attributed to variability in patient selection. In the absence of prospective, randomized trials, we compared oncologic outcomes of RARP vs ORP adjusting for D'Amico risk.
Methods: 13,567 patients with prostate cancer underwent ORP or RARP from January 2005 onwards by 35 surgeons at 12 institutions. Patients were matched by D'Amico category and stratified by surgical technique.
Results: 6265 patients were D'Amico low risk, 4356 were intermediate risk, and 2946 were high risk. ECE, final Gleason sum, and ORP were significant independent predictors of positive margins within each D'Amico risk category. Of D'Amico low risk, 91.3% ORP patients remained free of BCR at 60 m as compared to 97.4% of RARP patients ($p < 0.001$); for intermediate risk, 76.5% ORP patients remained free of BCR at 60 m as compared to 90.3% of RARP patients ($p < 0.001$); and, for high risk, 51.4% ORP patients remained free of BCR at 60 m as compared to 79.8% of RARP patients ($p < 0.001$). LN+, positive surgical margins, ECE, SVI, final Gleason sum, and ORP were significant independently associated with a higher probability of BCR within each D'Amico risk category.
Conclusions: ORP was associated with significantly higher rates of positive surgical margins and BCR in all D'Amico risk categories compared to RARP. While these differences may have been due to risk factors not controlled for, the robotic approach appears at least non-inferior to the open operation in terms of oncologic outcomes.

P45

Hybrid LESS radical prostatectomy: a step closer to pure single port surgery

PCR Grange, P Rouse, AR Rao, C Brown
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Introduction and Objectives: Using fewer and smaller ports is a natural advance in laparoscopy leading to single port surgery. Laparoscopic radical prostatectomy (RP) is an option in prostate cancer management. There are few cases in the literature of pure LaparoEndoscopic Single Site (LESS) RP. We report our experience in Hybrid LESS RP using a 3 or 5 mm additional port, which we consider a safe preliminary step towards pure LESS.
Methods: We used a Tri/Quadport (Olympus™) transumbilical extraperitoneal access device, a flexible tip HD camera (LTF-VP EndoEYE Video Laparoscope™) and a robotic camera holder (Freehand™). Dissection was carried out with HarmonicACE™, standard instruments and a long curved suction device. A left sided 3 or 5 mm ancillary port was used.
Results: Between July 09 and Nov 10, 19 patients underwent this technique, mean age 63 years (48–71), BMI 27 (22–32), PSA 8.4 (1.7–14.0) and TRUS volume 58 cc (26–176). No patient required further additional port. Mean operative time was 233 min (180–310), blood loss 365 ml (50–800). There were no intraoperative complications, two Clavien-Dindo grade IIIb (bladder neck stenosis) and one grade II (symptomatic UTI).
Conclusions: Hybrid LESS RP is safe and feasible with short term oncological and functional outcomes comparable to our 4 port technique.

Table for P45

Histology	Margin	Negative	Positive
	pT2 c	14	0
	pT3a	2	1
	pT3b	1	1
Disease volume		15.5%	(1–30)
Disease mass		8.7 g	(0.5–21)
PSA f-up		All PSA < 0.1 at 9.5 months (1–17)	
Continence (no pad)			
3-months		66%	
6-months		100%	
12-months		100%	

P46

Misrepresentation of functional outcome after radical prostatectomy

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Introduction: Beyond oncological cure the success of radical prostatectomy is judged according to quality of life impact. Mostly ill-defined clinician-derived assessments of continence are available for the pre-operative counselling and decision-making process. We hypothesise that clinicians over-report continence rates and we compare continence rates derived from the treating clinician with patient's self-administered questionnaires.
Methods: Of 132 radical prostatectomy patients 64% had completed at least 3 validated Rand SF36 and UCLA prostate cancer index questionnaires including base line and had follow-up of more than 6 months. Clinician derived pad use was obtained from a prospectively updated data

base. Kendall's and Spearman's rank correlation were used for comparison of paired ordinal data.
Results: We observed a difference of 25% between clinician (94%) and patient (69%) reported total continence rates (pad free but occasional leak – no pad). As a result moderate incontinence (1 to 2 pads) differed by 25% between patient and clinician. Severe incontinence (>2 pads per day) was correctly reported by clinicians and patients alike as 4.7%. This difference approached significance ($p = 0.058$). A clear trend was observed ($p = 0.008$ Cuzick's trend test).
Conclusion: Euphemistic misrepresentation of functional outcomes by treating clinicians is apparent in this case series and may be common place when used for pre-operative patient counselling. Whenever possible patient derived outcome data should be used in the decision-making process for the management of localised prostate cancer.

P47

Comparative oncologic effectiveness of open versus robotic-assisted radical prostatectomy in patients with pT3 disease

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Introduction: Extracapsular extension and seminal vesicle invasion (pT3 disease) are established features of biologically aggressive prostate cancer. We compared the oncologic effectiveness of ORP versus RARP in a large international, multicenter cohort of pT3 patients.
Methods: 13,567 patients with prostate cancer underwent either ORP ($n = 8841$) or RARP ($n = 4726$) from January 2005 onwards in 12 institutions by 35 surgeons. 3,027 (22.3%) patients had ECE and 1,109 (8.2%) had SVI on final pathology. The association of surgical technique with pathologic features and biochemical recurrence (BCR) was assessed.
Results: In the pT3a group, there was no difference in surgical margin positivity and final Gleason sums ≥8 between surgical groups. 70.1% of ORP patients remained free of BCR at 5-years as compared to 85.8% of RARP patients ($p < 0.001$). In multivariable Cox proportional hazard regression analysis LN+, surgical margin positivity, final Gleason sum, and ORP were each independently associated with BCR. In the pT3b group, there was no difference in surgical margin positivity and final Gleason sums >8 between surgical groups. 34.1% ORP patients remained free of BCR at 60 m as compared to 69.7% of RARP patients ($p < 0.001$). In multivariable Cox proportional hazard regression analysis LN+, surgical margin positivity, final Gleason sum, and ORP were each independently associated with BCR.
Conclusions: ORP patients had a higher risk of BCR compared to RARP patients. While these differences may be due to risk factors not controlled for, the robotic approach appears at least non-inferior to the open operation in terms of BCR rates in those with pT3 disease.

P48

Does half-life of PSA clearance post radical prostatectomy improve selection of patients for adjuvant therapy?

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Introduction: Patients who do not reach an undetectable PSA after radical surgery within 6 weeks are very likely to recur and often require adjuvant radiotherapy. Half-life of PSA clearance may improve prediction of recurrence and facilitate patient stratification for adjuvant radiotherapy.
Patients and Methods: Since June 2007, 103 patients who underwent Laparoscopic Radical Prostatectomy had supersensitive PSA measured pre-procedure and post-operatively on day 1, 7 and 28. PSA half-life was calculated, ROC-curve, univariate and multivariate analysis was carried out.
Results: On univariate analysis PSA half-life, tumour-volume, pre-operative PSA, surgical margin status, pathological stage and post-operative Gleason score were all significant predictors of a PSA recurrence. Logistic regression of post-operative parameters identified PSA half-life as the only independent predictor of early PSA recurrence ($p = 0.002$).
The trade-off table illustrates different cut-off values for half-life of PSA clearance and corresponding specificities. At 95% specificity (half-life cut off 4.41) 11 cases were predicted as true early PSA recurrence (and treated with adjuvant radiotherapy) with only 4 false positive cases which might receive unnecessary treatment.
Conclusions: The half-life of PSA clearance calculated with a minimum of 3 PSA tests is a strong predictor of early biochemical relapse. It may be clinically useful parameter to identify men who are highly likely to recur and select such patients for early adjuvant radiotherapy.

Table for P48

Sensitivity %	Specificity %	NPV%	PSA half-life cut off	True positives	False positives
74	73	90	3.66	17	20
60	80	86	3.75	14	14
56	85	86	3.79	13	11
52	90	85	4.03	12	8
48	95	95	4.41	11	4

P49

An update on salvage cryotherapy for recurrent prostate cancer – a prospective case series of 215 patients

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Introduction: Modern prostate cryotherapy has emerged as an alternative option to treat patients with recurrent prostate cancer, with the intention to provide local control and prolong survival. In this study we report our long term experience in salvage cryotherapy. We report on biochemical outcome, complications and quality of life.
Material and Methods: Between May 2000 and March 2010, 215 patients underwent salvage cryoablation of the prostate. All patients had biopsy proven recurrent prostate cancer and no radiological evidence of distant metastasis. Two cryotherapy systems were used, Cryocare n = 45 and Seednet n = 170. Biochemical recurrence free survival (BRFS) was defined using the Phoenix definition of biochemical failure (nadir + 2 ng/ml). Patients were stratified into 3 risk groups according to the following factors: PSA level, Gleason score and clinical stage.
Results: The mean follow-up was 63 months (range 7–125 months). The mean age was 67 years (range 54–81 years). Fifty nine percent of the patients (94/158) received hormonal therapy prior to their cryotherapy. The 10 years actuarial biochemical recurrence free survival was 50% for all groups. Complications included incontinence (10%). Erectile dysfunction (86%), lower urinary tract symptoms (20%), prolonged perineal pain (3.7%), urinary retention (1.8%) and rectovesical fistula (0.5%).
Conclusion: Salvage cryotherapy is a valid treatment option for patients with recurrent prostate cancer. It is safe minimally invasive and can be repeated.

P50

Efficacy of diethylstilboestrol in advanced prostate cancer

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Introduction: Currently there is no universally accepted standard therapeutic pathway for castrate-refractory prostate cancer. The objective of this study was to investigate the efficacy of diethylstilboestrol in patients with advanced prostate cancer refractory to androgen suppression.
Methods: This retrospective study comprises 185 patients with prostate cancer treated with diethylstilboestrol between 1976 and 2008. Study outcome parameters included % PSA change, duration of PSA response, toxicity and survival.
Results: At initiation of oestrogen therapy the mean patient age was 68.8 (range: 48–89) years and the mean PSA was 364.7 (range: 2–9500) ng/ml. The median duration of prior prostate cancer treatment was 30.5 (range: 1–365) months. Diethylstilboestrol was the second-line treatment in 69 patients and the third/fourth line therapy in 116 men. The PSA level decreased by 0–50% in 62 patients, by 50–90% in 47 and by >90% in 37 patients. There was no PSA response in 39 men. PSA response was not related to biopsy Gleason score. 43.2% of men received palliative radiotherapy, 10.8% had Strontium and 12.9% were subsequently treated with chemotherapy. The mean overall survival from the start of oestrogen therapy was 18.2 (range: 1–98 months) months. Forty-seven men are still alive. Toxicity included worsening of gynecomastia, peripheral oedema, lethargy, and deep vein thrombosis and pulmonary embolism. No treatment-related deaths occurred.
Conclusions: In the age of chemotherapy this study highlights the efficacy of oestrogen therapy in castrate-refractory prostate cancer. The optimal point in the therapeutic pathway at which Diethylstilboestrol should be prescribed remains to be established.

P51

Diethylstilboestrol in castrate resistant prostate cancer – is it worth the risk?

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Introduction: Diethylstilboestrol (DES) therapy for patients with castrate resistant prostate cancer (CRPC) is associated with a 8–21% risk of cardiovascular complications including deep vein thrombosis (DVT), pulmonary embolism (PE) and myocardial infarction. This audit aimed to establish the incidence of these complications, and the biochemical response in our cohort of patients.
Patients and Methods: A retrospective audit of all cases of CRPC treated with Diethylstilboestrol 1 mg, once daily, over a 3 year period. Patients were identified from pharmacy prescription records. Clinical and biochemical variables were obtained from the medical notes. All patients had failed anti-androgen therapy, and were started on DES in addition to LHRH agonist. Patients were anticoagulated with aspirin or warfarin.
Results: To date, 48 patients have been identified. At 3 months, 23 patients (48%) had PSA response, whereas continuing deterioration was noted in 14 patients. For the remaining 11 patients, PSA response could not be evaluated as 6 patients had already stopped treatment (3 side effect, 1 unknown reason, 2 chemotherapy) and 5 patients died early.
Thrombotic events occurred in 6 (12.5%) patients (2 PE, 2 DVT, 1 PE and DVT, 1 subclavian thrombosis) 3 of whom died between 1 and 9 months after the event.
Conclusion: DES offers clinical response in less than half of patients but carries a notable risk of thrombosis. Given the poor prognosis in this patient group the benefits and risks should be carefully considered and it may be time to re-evaluate the role of diethylstilboestrol in the treatment of CRPC.

P52

Surgically significant skeletal events in prostate cancer patients treated with androgen deprivation therapy in England

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Introduction: ADT carries significant side effects including deleterious effects on bone health. US publications have shown a link between fracture risk and ADT. There is no current UK data published on this subject.

Materials and Methods: We selected HES records for OPCS V and W operation codes to identify admissions for skeletal procedures in England. We selected all men, all prostate cancer patients (1990-onwards) and all prostate cancer patients on confirmed ADT. The rates of event were calculated as rate of events per 100,000. Denominator for rate is defined by prevalence calculations: based on all cancer registrations whilst the period prevalence for 2004–7 is calculated, by five-year age-band. Background rate denominator is ONS mid-year population estimate.

Results: In general there is an increased requirement of inpatient orthopaedic intervention in ADT patients than in the healthy population. This is statistically significant in age groups 55–9, 65–69, and 85+. Although there is a general increase in intervention in ADT patients than not, this is only statistically significant in two age groups – 55–59 and 65–69.

Conclusion: Shahinian VB (NEJM2005;352:154–64) (SEER database) showed 19.4% of men who received ADT had a fracture compared with 12.6% without and a higher risk is seen in the older age groups. In this study a more limited association is seen but is present. Skeletal related events may be under-recorded as we have not been able to obtain radiotherapy/outpatient treatments for bone events. This initial data suggests prospective comprehensive data collection in this area is essential for ADT patients.

BJUI SUPPLEMENTS

Wednesday 22 June 2011
Poster Session 5

11:00–12:30 Hall 12
RENAL CANCER
Chairmen: Professor Killian Mellon & Mr Leyshon Griffiths
Posters P53–P62

P53

Current management of the T1 renal mass in a UK Cancer Network

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Introduction: The biology of small renal tumours is heterogeneous, and multiple management options are available. The AUA published guidelines for management of T1 lesions in 2009 supporting broader indications for nephron-sparing surgery. The Urology Site-Specific group performed a network-wide audit to capture a snapshot of current management.
Methods: All urology departments within our network performed a retrospective audit of T1 renal masses diagnosed in 2009. Cases were identified from MDT records, surgeons' databases and histopathology.
Results: 150 T1 lesions were identified in 8 units. The mean age was 69 ± 12 years, 61% were male. In 66% of cases the presentation was incidental. The mean tumour size was 45 ± 18 mm.
The most common treatment was laparoscopic radical nephrectomy (LRN, 39%), followed by surveillance (28%) and partial nephrectomy (PN, 23%). Use of PN ranged from 0% to 38% of surgical cases depending on unit.
Mean operating time was 181 min for PN and 164 min for LRN. Length of stay was 2.1 days longer for PN compared to LRN ($p = 0.004$), while preservation of renal function was significantly better for PN (mean change in eGFR 0.9 v 17.2 ml/min, $p < 0.0001$). Complications were recorded in 33% of cases (pneumonia 8%, wound infection 7%, transfusion 2%).
Conclusions: The gold standard treatment options of PN and laparoscopic RN are available throughout the region but there is considerable geographical variation in the use of PN. Renal function is significantly better preserved after PN. The underutilized option of PN should be considered preferable for T1 lesions where technically feasible.

P54

Active surveillance of small renal masses offers short-term oncologic efficacy equivalent to radical and partial nephrectomy

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Churchill Hospital, Oxford, United Kingdom

Introduction: Incidental small renal masses (SRM) comprise more than 50% of newly diagnosed renal tumours. Active surveillance (AS) has been proposed as a safe treatment option in patients deemed unsuitable for surgery. In this study we compared oncologic outcomes from a series of patients with SRM managed with either AS, radical nephrectomy (RN) or partial nephrectomy (PN).
Patients and Methods: Between January 2007 and December 2008, 119 new patients presented to our department with SRM less than 7 cm in size. Where appropriate, patients were offered the choice of a RN, a PN, ablative therapy or AS. Treatment decisions were based upon patient preference, co-morbidities and tumour characteristics.
Results: A total of 129 SRM were identified in 119 patients; 35 were managed with a RN, 46 by PN and 48 with AS. At presentation the AS patients were older and had significantly smaller tumours than the RN or PN groups (age = 71 v 68 v 60; size = 3.0 cm v 4.5 cm v 3.9 cm). Over a median follow up of 23 months the mean growth rate on AS was 0.31 cm/year. 8/43 (19%) patients on AS went on to receive definitive therapy for local tumour progression. Cancer specific survival for the AS group was 100% compared to 89% and 95% for RN and PN.
Conclusion: In the management of the SRM, AS appears to offer oncologic efficacy equivalent to RN and PN in the short-term. Larger multi-centre prospective studies are needed to ascertain the long term safety of AS.

P55

The renaissance of renal biopsy creates a welcome diagnostic tool in our management of renal tumours

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Objective: Needle biopsy (NB) of renal tumours is infrequently used in diagnostic evaluation or to influence treatment options. Concern about diagnostic accuracy has historically given it a poor reputation.

Our large single-centre series aims to determine if this is justified.
Patients and Methods: All NB's for renal masses were extracted from the pathology database. Data collected included biopsy technique, pathology and clinical outcome.
Results: A total of 90 NB's were performed (Guidance – 39% CT, 32% ultrasound, 29% laparoscopic). Mean age was 65 (20–89). Mean tumour mass size 4.7 cm. Median number of cores was 2 (16–20 gauge needle) with mean core length of 9 mm. Overall, 85 (94%) were sufficient for diagnosis and 5 (6%) were inadequate. Sixty three (74%) were malignant (47 RCCs; 8 TCCs; 2 sarcomatoid and 6 other cancers) and 22 (26%) benign (4 normal tissue, 4 inflammatory, 2 cysts, 2 angiomyolipoma, 10 oncocytoma). Immunohistochemical panels were used to subtype RCC into Clear Cell (30), Papillary (13) and Chromophobe (4). 18 patients underwent surgical extirpation and all NB's were confirmed.
In small renal masses (SRM) ≤4 cm (44/90), the diagnostic sufficiency rate was 91%. There were no cases of tumour seeding and only one complication (haematoma), managed conservatively. Patients with oncocytoma were followed up with no tumour progression to date.
Conclusion: Renal biopsy is nowadays accurate and very reliable for small and large tumours. In an era where a high proportion of incidental SRM's are benign, the reliance on biopsy to influence treatment choice should be revisited.

P56
Prevalence of papillary renal cell carcinoma in patients with radiologically complex renal cystic lesions (Bosniak IIF and more): 10 years single centre experience
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Background and Objectives: Relative hypovascularity of papillary cell carcinoma of kidney can be mistaken for renal cyst or on contrary pseudoenhancement of renal cysts can mimic papillary renal cell carcinoma (pRCC). We hypothesised that incidence of pRCC is different in patients with radiologically complex renal cystic masses as compared to the reported incidence of 10–15%.
Patients and Methods: Retrospective electronic records of 434 patients who were reported as 'renal cyst' or 'complex renal cyst' or' Bosniak cyst' between January 2000 and December 2010 by the radiology department were retrieved. Simple cyst reports were excluded from further analysis. The records of 159 patients with complex cystic renal masses (Bosniak category IIF) were further analysed for follow-up imaging, requirement of surgery and incidence of pRCC in the histopathology. The incidence rate was compared with the overall incidence of pRCC from the same centre and the reported from elsewhere.
Results: Thirty three patients (20%; 33/159) underwent surgical excision of complex renal cystic lesions either for Bosniak III and IV (23/84) or progression of Bosniak IIF (10/75) on follow-up imaging during the study period. The final histopathology was benign in five lesions (5/33). Of those with renal cell carcinoma, incidence of pRCC was 28.5% (8/28). This was significantly higher than the overall incidence of pRCC reported from the same institution and in the reported literature.
Conclusion: A higher incidence of pRCC was seen in patients with complex renal cystic masses in this study. Our observation should help in changing the follow-up radiological observation of complex renal cysts particularly with relative hypovascularity of the pRCC.

P57
Cryoablation for small renal masses: a single centre experience 2004–2010
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Introduction: Cryoablation is emerging as a viable alternative to extirpation for treatment of small renal masses. We assessed clinical and oncological outcomes after 5 years starting our programme.
Patients and Methods: Patients with enhancing suspicious renal masses underwent laparoscopic (retro- or transperitoneal) or percutaneous cryotherapy. Intraoperative biopsy was attempted in all patients. Ideal patients were those with imperative nephron-sparing indications; multiple co morbidities; senior age and exophytic tumours ≤4 cm. Follow-up CT/MRI scans were done initially at 3-months and then 6-monthly. All data were collected from a prospective database.
Results: We performed 42 cryoablations (36 laparoscopic, 6 percutaneous) in 39 patients (mean age 69 years, range 32–87). Biopsies were feasible in 39/42 (93%) patients. 29/39 (74%) biopsies revealed RCC. Mean tumour size was 2.5 cm (range 1.2–5.6); mean operative time 155 minutes; mean blood loss 61 ml. Complications occurred in 8/42 (19%) patients (Clavien Grade 1–10%, Grade 2–9%). One open conversion was done for tumour cracking with bleeding requiring partial nephrectomy. Overall mean follow-up was 3.5 years (range 0.3–6.3). There were two radiographic failures; one had tumour persistence immediately post procedure. One patient developed distant metastasis which may have been due to previously treated RCC. GFR was unchanged post procedure.
Conclusions: Cryoablation techniques offer high-risk patients a treatment with low blood loss and complications, equivalent renal function outcome and acceptable oncological control. Our intermediate term results are consistent with published international data. Recurrences occurred in larger tumours (>4 cm) and we now restrict cryotherapy to tumours <4 cm.

P58
Predicting renal function after nephrectomy
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Introduction: When considering management options for renal tumours, it is important to accurately assess renal function and risk of postoperative chronic kidney disease during preoperative counselling. Previously we developed a model to predict GFR after partial nephrectomy. The aim of this study was to measure the renal parenchymal volume (RPV) of the healthy remaining kidney at the point of contralateral total nephrectomy and investigate the relationship between RPV and GFR to develop a predictive model for postoperative GFR.
Methods: RPV was measured on contrast-enhanced CT scans in 102 patients

undergoing unilateral total nephrectomy using the prolate ellipse method. eGFR was calculated using the Modification of Diet in Renal Disease (MDRD) equation and plotted against RPV of the healthy remaining kidney on a scatter plot. Linear regression and the Pearson correlation coefficient were used to illustrate and assess the relationship.
Results: Data was available for 102 patients. 57% were male. The mean age was 66 ± 13 years. The mean RPV of the healthy remaining kidney measured preoperatively was 196 ± 72 cc. Mean eGFR at 6 months post-nephrectomy was 55.2 ± 19.8 ml/min. RPV correlated with eGFR (slope 0.2, Pearson coefficient 0.4, $p < 0.05$). A simple equation was derived to estimate the postoperative eGFR from preoperative renal measurements.
Conclusions: Remaining renal parenchymal volume measured by CT correlates with postoperative eGFR. A tool has been produced to predict the fall in eGFR after total nephrectomy to complement that already designed for partial nephrectomy. Together these tools will allow better preoperative patient counselling for patients with renal tumours.

P59

Tumour recurrence after open partial nephrectomy (OPN) for renal cancer (RCC) – lessons learnt from up to 11 years of follow-up

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Introduction: OPN is now considered an effective treatment of localised RCC in elective and imperative settings. Only long term follow-up will we be able to determine the true incidence of recurrence, and design appropriate follow-up schedules.
Patients and Methods: 137 OPN's performed by a single surgeon for suspected RCC between 1999–2010 were reviewed. OPN was performed for 59 (43%) imperative indications, 70 (51%) elective indications and 8 (6%) for VHL. Median follow-up was 42 months. Tumour recurrence was judged by imaging/biopsy.
Results: In 106/137 the diagnosis was cancer. 78 (74%) were clear cell; 21 (20%) papillary; 6 (5%) chromophobe; 1 (1%) TCC. Median size was 3.8 cm (elective 3.3 cm : imperative 4.0 cm). 23 non-VHL tumours were multifocal at presentation. Histological stage was T1a = 68; T1b = 22; T2 = 3; T3a = 5; and T3b = 8. Positive margins were seen in 7 – all in imperative indications. Recurrence was seen in 8 patients. Local recurrence: 3 ipsilateral kidney (2 in VHL; 1 post excision of 4 tumours from solitary kidney); 2 renal bed post excision of pT3b tumours and 1 in bladder after OPN for solitary kidney TCC. Distant recurrence: 2 in paracaval nodes (1 post T3b in imperative and 1 post excision of 4 tumours from solitary kidney) and 2 distant (1 post T3b in imperative setting and 1 post bilateral tumours). Recurrences were only seen after imperative OPN or VHL. Overall 7 patients developed recurrence after an imperative OPN. 2/8 with pT3b tumours developed a recurrence.
Conclusions: OPN with negative margins for T1 RCC in the elective setting can be considered curative. Follow up for recurrence should be concentrated on patients with multifocal, bilateral, T3 and VHL tumours.

P60

Oncological outcomes from laparoscopic nephrectomy for pT3/4 renal cell cancer

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Introduction: Laparoscopic nephrectomy (LN) is the standard of care for T1–2 RCCs. There is little oncological outcome data following LN for pT3/4 RCC.
Patients and Methods: 103 consecutive patients with pT3 (n = 101) or pT4 (n = 2) RCC treated with transperitoneal LN between 2002–2010 were analysed. Progression free survival (PFS), cancer specific survival (CSS) and overall survival (OS) were estimated using the Kaplan-Meier method.
Result: 18 patients (17.5%) presented with metastases and had cytoreductive LN, as expected these patients had a significantly shorter CSS and OS than those patients without metastases at the time of diagnoses ($P < 0.0005$, log rank test). Of the 85 patients (82.5%) without metastases at the time of surgery, six (7.1%) developed a local recurrence and 16 (18.8%) distant metastases. Predicted survival data are shown in the table.
Conclusion: Concerns over high levels of transcoelomic spread or local recurrence following transperitoneal LN in high stage RCC are unwarranted. Previous open nephrectomy studies describe an incidence of RCC metastasis of 39% for pT3 tumours and median PFS of 17 months (Levy et al, J Urol 1998;159:1163–1167). The results presented here show a superior outcome following LN with a metastasis rate of 21% and median PFS of 48 months.

Table for P60

Factor	Analysis	Mean survival, months	Median survival, months	5 year survival (%)
PFS	No mets at Dx:	49.1	48.4	48.5
CSS	Overall:	70.7	N/A	65.1
	No mets at Dx:	78.9	N/A	74.4
OS	Overall:	56.8	51.6	47.7
	No mets at Dx:	64.6	65.6	70.4

P61

Do neoadjuvant tyrosine-kinase inhibitors affect the surgical outcome in patients undergoing open radical nephrectomy? – A single institution experience

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Introduction: The introduction of anti-angiogenic tyrosine-kinase inhibitors (TKI) has changed the management of metastatic renal cell carcinoma (mRCC). These agents

however, have biological actions which give rise to potential difficulties from both a surgical, and anaesthetic perspective. The aim of this study is to identify peri-operative complications in patients who have undergone cytoreductive open radical nephrectomy (ORN) for mRCC following neo-adjuvant TKI compared to patients who underwent the procedure for non-metastatic renal cell carcinoma (n-m RCC).

Methods: A retrospective review of all ORNs was performed between August 2008 and December 2010.

Results: See the table.

Conclusion: Post neoadjuvant TKI cytoreductive nephrectomy is associated with higher blood loss, longer operating time and a higher post operative complication rate without a significant rise in mortality.

Cytoreductive nephrectomy is therefore both feasible and a safe management option in well-selected patients with mRCC.

Table for P61

		n-m RCC (n = 28)	mRCC Sunitinib (n = 22)	mRCC Pazopanib (n = 5)
Surgical outcome	Blood loss (mls)	320 (50–2220)	775 (90–4700)	786 (30–2000)
	Operating time (mins)	128 (66–390)	195 (70–420)	193 (175–225)
	Hospital stay (days)	5 (3–42)	7 4–36)	8 (4–12)
Intra-operative complications	Bowel-associated	1 enterotomy	1 colectomy 1 duodenal reconstruction	0
	Splenectomy	1	1	1
	Hepatic resection	0	1	0
	Vascular	0	1 (IVC tear)	0
Post-operative complications	Death	0	1	0
	Wound infection	1	1	0
	Delayed wound healing	1	1	1
	Endocrine disorders	0	1 (Addison's)	0
	Lymphocoele	0	1	0

P62

Surgery for loco-regional recurrence after nephrectomy for renal cell carcinoma (RCC): outcomes after initial incomplete resection and implantational recurrences

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Introduction: Re-do surgery has been advocated for loco-regional recurrence of RCC in the absence of metastases elsewhere. We have defined two groups of patients 1) Incomplete Resection (IR) (ipsilateral adrenal gland or lymph node metastases or renal bed recurrence with a positive surgical margin). 2) Implantation (IP) (those with recurrence within the skin, port-site or renal bed with negative surgical margins). We have examined the outcomes of the entire group and the two subgroups.

Patients and Methods: From 1999–2009 55 patients have undergone loco-regional recurrence surgery including adrenalectomy (when present) and ipsilateral lymphadenectomy by Robson's technique. There were 36 in the IR group and 19 in the IP group. The time to recurrence after nephrectomy and survival data was analysed.

Results: 22 (40%) have died of RCC over the 10 year period. The mean time between nephrectomy and recurrence surgery was 43 months in the IR group and 37 months in the IP group. Death from recurrent disease in spite of adjuvant local radiotherapy, systemic immunotherapy or TKI therapy occurred in 12 (33%) of the IR group and 10 (53%) of the IP group. One patient had a colonic perforation requiring urgent resection.

Conclusions: Loco-regional recurrence surgery in the absence of metastatic disease appears worthwhile. IP patients appear to have more aggressive disease with higher mortality than IR cases. We hypothesise that IR patients may have had improved outcomes had they initially had a Robson type radical nephrectomy. This potentially could have avoided 12 deaths.

BJUI SUPPLEMENTS

Wednesday 22 June 2011
Poster Session 6

11:00–12:30 Hall 4
PROSTATE CANCER DIAGNOSIS
Chairmen: Mr Mark Emberton & Mr William Cross
Posters P63–P72

P63

Nurse versus physician-led transrectal ultrasound guided biopsies: outcome analysis of introduction into standard clinical practice

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Introduction: Widespread PSA testing has resulted in increasing demands for transrectal ultrasound guided biopsies of the prostate (TRUSP). Due to high workloads, the provision of nurse specialists to run routine diagnostic services represents an attractive proposition. We conducted a prospective, multi-institutional study investigating outcomes between novice and advanced nurse and experienced Urologist-led TRUSP.
Patients and Methods: The study took place at 2 UK hospitals. 400 consecutive, unselected patients referred to either hospital were sequentially assigned to novice nurse & experienced Urologist at hospital 1 or advanced nurse & experienced Urologist at hospital 2. One-way ANOVA, Kruskal-Wallis, Pearson's chi-square and Fisher's exact tests were employed and $p < 0.05$ was considered significant.
Results: Overall, 60% (60/100) of patients undergoing physician-led and 54% (54/100) undergoing novice nurse-led TRUSP at hospital 1 were diagnosed with prostate cancer ($p = 0.48$) whilst 51% (51/100) and 63% (63/100) were diagnosed with prostate cancer by a physician and advanced nurse respectively at hospital 2 ($p = 0.12$). However, subgroup analysis revealed that the novice nurse had a lower cancer detection rate in the low PSA (PSA < 9.9 ng/ml), T1 group compared to the experienced Urologist at hospital 1 ($p = 0.014$). The difference in cancer detection rate was lost in the novice nurses' subsequent 100 TRUSP cases ($p = 1.171$) suggesting the presence of a learning curve. This difference was not observed between the advanced nurse and the other operators.
Conclusion: Nurse-led TRUSP appears feasible with an equivalent diagnostic standard to experienced Urologists after an initial learning curve. Robust mentoring and regular auditing is of key importance.

P64

Transperineal sector biopsies in clinical practice

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Introduction: We review the histological outcomes and morbidity of transperineal sector biopsies (TPSB) compared to 12-core transrectal biopsies (TRB).
Patients and Methods: 533 patients underwent TPSB as a day-case procedure under local or general anaesthetic. 430 had secondary TPSB following TRB. At TPSB, four cores were taken from the anterior, mid, posterior sectors bilaterally, with further cores basally (if volume more than 50 cm^3) to a maximum of 32 cores preferentially targeting the periphery. Indications were: primary, radiotherapy failure, negative TRB, and characterization of disease prior to management decision or as part of an active surveillance protocol.
Results: Primary TPSB (n = 70, median PSA = 7.2, range 0.7 to 23 ng/mL) demonstrated malignancy in 39 56%), 34 49%) with Gleason ≥ 3+4.
15 of 33 46%) TPSB were positive detecting local radiotherapy failure.
33 of 145 (23%) patients with negative TRB (median PSA = 9.2, range 2.6–54 ng/mL) had malignancy, 16 11%) Gleason ≥ 3+4.
69 of 285 (24%) with known disease TRB were upgraded on TPSB.
41 patients went on to have radical prostatectomy. Using the prostatectomy specimen as the reference, 78% of TRB under-estimated the Gleason score compared to 10% of TPSB ($p < 0.001$, X^2-test).
Three (0.6%) had UTIs requiring oral antibiotics, 8 (1.5%) suffered urinary retention (two with clots), and 2 (0.4%) were readmitted with bleeding.
Conclusion: TRB were significantly more likely to under-estimate the Gleason score than TPSB. TPSB has low morbidity. This has implications for men who have treatment decisions based upon information from transrectal protocols.

P65

Distribution of prostate cancer on template prostate mapping (TPM) biopsies in men with low volume prostate cancer on transrectal ultrasound (TRUS) biopsies

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Objective: To analyse and map cancer distribution on template prostate mapping (TPM) biopsies on a cohort of patients with low volume prostate cancer on TRUS biopsies.
Methods: A total of 110 patients that underwent TPM in an ambulatory care setting, were studied. TPM was conducted to a 5 mm sampling frame referenced to a grid with apical and basal needle deployments to sample the Z-axis. The cores grouped to a modified Barzell scheme of 20 zones.
Results: Mean age was 62 years and mean PSA 7.9 ng/ml. The mean number of biopsy cores taken at TRUS and TPM were 11 and 64, respectively. 22 had no cancer detected at TPM. 88 patients with total of 5431 cores sampled had cancer present in 894 (16%) cores. Mapping these cancer cores to the 20 zones showed 55% of the positive cores in the postero-lateral zones and 45% in the anterior zones. Clinically significant anterior cancers (Gleason >/= 7 or MCL >5 mm) were present in 32/71 patients that had low risk cancers on TRUS. No statistically significant differences were noted in the PSA level, prostate size or the total number of cores between the two cohorts of men with negative (n = 22) and positive (n = 88) biopsies. Additionally, no correlation was seen between the PSA level and number of positive cores at TPM (P = 0.09, Spearman r 0.19).
Conclusions: The role of TPM in accurate detection and localisation of cancer may not only be essential for focal therapy but also prior to embarking on a period of active surveillance.

P66

Restaging transperineal template prostate biopsies significantly alter the proportion of men who continue on active surveillance

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Introduction: Active surveillance (AS) of low risk prostate cancer aims to reduce treatment related morbidity by restricting radical treatment to patients whose cancer progresses. The optimal AS protocol is not fully established. The aim of this study was to examine the role of transperineal template biopsies in AS.
Methods: All patients suitable for AS (age ≤75 yrs, PSA ≤15 ng/ml, Gleason ≤6, clinical stage T1-2a, ≤50% cores positive, ≤10 mm cancer in a single core and fit enough for radical therapy) were followed prospectively.
Results: Between May 2006 and December 2010, 121 men on AS underwent restaging template biopsy after a median interval of 9 months (1–57) from diagnosis. At diagnosis the median age was 67 years (51–75) and median PSA was 6.8 ng/ml (0.9–15). 38 (31%) men had more significant prostate cancer on restaging template biopsy (increase in grade, >50% of all cores positive or >10 mm cancer in single core). 74% of these men stopped AS and had radical treatment. 46 men had template biopsies within 6 months of diagnosis and 15 (33%) had more significant disease identified, suggesting initial disease undersampling. PSA density was significantly higher in men with more significant disease (0.21 ± 0.13 vs. 0.15 ± 0.07 ng/ml/ml; p = 0.01) although there was no association with PSA velocity and doubling time.
Conclusions: Around a third of men had more significant prostate cancer on transperineal template biopsies and went on to have radical treatment. Template biopsies appear to identify men with more significant disease at an earlier stage in their management.

P67

Urological complications and 30 day hospital admission rate of TRUS guided biopsies in men suspected of prostate cancer: population based study

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Objective: Transrectal ultrasound guided prostate biopsy is a common urological procedure with known complications. We determined the urological complication and 30 day hospital admission rate in a population based cohort.
Materials and Methods: A population based study of cohort of 600 men who underwent a transrectal ultrasound guided biopsy in Tayside region of Scotland between April 2007 and September 2010 were identified from two hospital records. Multiple hospital electronic databases (Central vision, Insite, Wisdom, TOPAS) and paper based resources (morbidity and mortality records, case notes where appropriate) were linked to estimate urological complications (urinary tract infection, urinary retention) and rates of hospital admission. Cross validation of information was obtained by searching Drug dispensing information network and microbiology database for infective complications. The hospital admission rate was compared for two different prophylactic antibiotic regimens used during the study period.
Results: Of the 600 men who underwent transrectal ultrasound biopsy 60% (240/600) were diagnosed with prostate cancer and 40% (360/600) did not have prostate cancer. The hospital admission rate for urological complications within 30 days of the procedure for men without cancer was 1.3% (8/600). The 30-day hospital admission rate was not different for different regimens of prophylactic antibiotics. There were 40 (6.6%; 40/600) urine cultures requested to the microbiology department within 30 days of procedures; out of which 16 (2.6%; 16/600) were positive. Six blood cultures obtained within the same period were all negative. Ten patients (1.6%) presented with urinary retention during the same period and required indwelling catheterisation. None of them had any surgical procedure.
Conclusions: There is small risk of 30 day hospital admission which does not seem to

be influenced by antibiotic regimen. The risk of other urological complications including urinary tract infection remains significant following the TRUS guided prostate biopsies.

P68

Single dose versus three-day antimicrobial prophylaxis for TRUS guided prostate biopsy: Risk of sepsis and readmission rates

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Introduction: Trans-rectal ultrasound (TRUS) guided prostatic biopsy is an established procedure for the diagnosis of prostate cancer. Various antibiotics regimes have been used as prophylaxis but emerging bacterial resistance and Clostridium Difficile infections have pressurised urologists for alternative antimicrobial regimes. We prospectively evaluated the incidence of sepsis and readmission rates with a three day versus single dose antibiotic prophylaxis regimen.
Materials and Methods: A total of 617 patients with elevated prostate specific antigen (PSA) and/or abnormal digital rectal examination (DRE) underwent TRUS guided prostate biopsy (April 2009 to November 2010). Group A (10 months) patients had single dose of Ciprofloxacin (500 mg) pre-procedure, followed by 3 days of oral Ciprofloxacin (500 mg BD) and group B (10 months) had a single dose of oral Ciprofloxacin (750 mg) pre-procedure. The primary and secondary endpoints were hospitalisation secondary to sepsis and isolation of bacteria in urine/blood culture respectively.
Results: The mean age (±SD) for group A (276) and group B (341) were 67 ± 8 and 68 ± 8 years respectively. Group A had 12 (4.4%) and group B had 10 (2.9%) readmissions with sepsis. Group A, 6 (2.2%) had proven infection and in group B, 6 (1.8%) had proven infection. Mean hospital stay for group A and group B was 2 and 3 days respectively.
Conclusion: Our prospective study showed equivalent results between these two antibiotic regimes. Thus we feel that single pre-procedure dose of ciprofloxacin should be sufficient as prophylaxis for TRUS guided prostatic biopsy. This might help reduce the bacterial resistance and C difficile infections.

P69

Accuracy of standard MRI in staging prostate cancer

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Objective: Some current guidelines recommend the use of magnetic resonant imaging (MRI) in the pre operative evaluation of prostate cancer. We reviewed the ability to predict pathological stage of standard non-contrast enhanced 1.5-Tesla (1.5 T) MRI without the use of an endo-rectal coil.
Methods: All patients undergoing radical prostatectomy, between 2006–2010, who had a pre-operative MRI were included. All MRIs were double reported prior to the surgery. Prostate final histology was also reviewed by two separate pathologists. Spearman rank correlation and discriminant analysis were used to assess the relationship between pathological stage and MRI findings. We also calculated the sensitivity and specificity by clinical stage.
Results: 350 patients were identified as eligible. Mean age was 61.4 years (39–74). Average PSA was 8.29 (0.5–63). Pre-op clinical stage distributed between T1–61% T2–34.5% and T3–4.5%. MRI predicted pT2 disease in 62% of cases and pT3 disease in 31%.
Comparison with final histology gave a sensitivity of 64% and specificity of 72%. Although there was a trend (sr2 = 0.79) for improved accuracy as the clinical stage increased this did reach statistical significance.
Conclusion: Standard unenhanced MRI has a similar sensitivity and specificity to digital rectal exam. It does not improve pre operative staging. Other techniques such as use of contrast, endorectal coils, diffusion weighted MRI or 3 Tesla Magnets have been shown to be superior to standard MRI. We therefore recommend that standard MRI has no role in the staging of prostate cancer.

P70

Implications of using multi-parametric MRI as a triage test for men with a raised PSA – a real life practice study

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Introduction: The PSA-TRUS biopsy pathway is associated with significant over- and under-detection of prostate cancer. A prebiopsy imaging test could help address each of these errors. We report data from a dedicated clinic where men were offered multi-parametric MRI (MPMRI) prior to the discussion regarding biopsy.
Patients: Men referred with a raised PSA were invited to have MP-MRI prior to their first clinic visit. The MP-MRI was categorised according to risk of significant cancer: low, equivocal, high (likely organ confined disease) or high (locally advanced or metastatic disease). Patients chose between: TRUS biopsy (with targeting of MR lesions if present), template guided biopsies or PSA surveillance alone. Histological outcomes are classified as: benign; insignificant disease (= 3 mm Gleason 3+3), or significant disease (any Gleason pattern 4, or >3 mm Gleason 3+3).
Results: 93 consecutive men were evaluated, with 92 having mpMRI:

Table for P70

MPMRI risk stratification	No biopsy	Negative biopsy	Insignificant disease	Significant disease	Total
Low	11	2	3	0	16
Equivocal	9	18	7	2	36
High (organ confined)	3	5	5	12	25
High (advanced disease)	4	0	0	11	15
Total	27	25	15	25	92

The detection rate in men having biopsy was 42/70 (60%) of whom 25/42 (60%) had significant disease.

Conclusions: Use of mp-MRI prior to the decision to biopsy results in fewer men having biopsies, with more biopsies showing clinically significant disease. A prospective study where all men undergo mpMRI and extensive biopsy will allow a rigorous assessment of this approach.

P71

Multi-parametric MRI for selection of suitability for active surveillance in prostate cancer

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Introduction: MRI is currently the established imaging modality to assist for treatment decisions in prostate cancer patients to characterise tumours already diagnosed by biopsy. Active surveillance protocols will increasingly rely upon the accuracy of 3T-MRI to identify tumours not adequately sampled by prostatic biopsy. The sensitivity of MRI is therefore critical for the safe stratification of prostate cancer patients prior to embarking upon a surveillance protocol.
Method: Prospective data collection of patients undergoing surgical treatment (laparoscopic radical prostatectomy) for localised prostate cancer in high-volume centre. The post-operative histology of patients with pre-operative multi-parametric 3T-MRI and clinical parameters that supported an active surveillance management strategy were reviewed.
Results: 57 men underwent laparoscopic radical prostatectomy (mean-age 64) between November, 2008 and June, 2010. 22 were low-risk, 31 were intermediate-risk and 4 were high-risk. 27 patients were suitable for active surveillance (NICE criteria) but opted for surgical intervention. MRI correlation with post-operative histology revealed that 52 had concordance and 5 patients were upstaged on the radical prostatectomy specimen. Three patients who would have been suitable for active surveillance (≤T2) were upstaged to T3/T4 disease.
Discussion: MRI is becoming an increasingly utilised imaging modality for patients embarking upon an active surveillance protocol. The utilisation of multi-parametric 3T-MRI has achieved a sensitivity approaching 90% that supports the increasing reliance upon MRI for patient treatment stratification. The application of multi-parametric 3T-MRI to assess tumour volume and even tumour grade will further aid the role imaging in determining treatment decisions in patients with prostate cancer.

P72

Influence of social deprivation on referral pattern and rates of radical prostatectomy for early localised prostate cancer in England

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Introduction: Prostate cancer accounts for 25% of new cancers and is the second most common cause of cancer-related death in men in the UK. Referral depends on several factors and generally there is a choice of treatments after the initial diagnosis of organ-confined prostate cancer is made. Scrutiny of referral and treatment in England has been prompted by the changing incidence and socioeconomic profiles.
Materials and Methods: Incident cases and treatment choices were extracted from the Hospital Episode Statistics and the National Cancer Data Repository for 2000–2007 for England and analysed by social deprivation, as defined by the department of Communities and Local Government (http://www.communities.gov.uk/publications/communities/indiciesdeprivation07), and controlled for age-distribution.
Results: There is a statistically significant association between social deprivation and referral pattern and rates of radical prostatectomy. Referral rates for radical treatment are higher in the least deprived areas. For patients with localised disease, those from the most deprived quintile are significantly less likely to undergo radical prostatectomy; a finding which is unchanged from 2000–2007 despite an overall increase in radical prostatectomy rates from 7% to 11% of incident cases.
Conclusion: In England there is a clear difference in referral pattern and prostatectomy rates for organ-confined prostate cancer between areas of different deprivation. This difference is multifactorial and may be influenced by different levels of education, health awareness and even insurance as well as physician attitudes. It is similar to the inverse association noted between cardiac surgery and socioeconomic status. These data are important in guiding national policy development.

BJUI SUPPLEMENTS

Wednesday 22 June 2011
Poster Session 7

14:00–16:00 Hall 12
UPPER TRACT DISORDERS/GENERAL UROLOGY
Chairman: Mr Graeme Urwin & Mr Sam McClinton
Posters P73–P88

P73

Correlating ureteroscopic assessment with final nephroureterectomy histopathology in patients with upper-tract transitional cell carcinoma

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Introduction: To determine the accuracy of ureteroscopy, biopsy and upper-tract cytology in predicting the histopathology of patients undergoing nephroureterectomy for suspected upper-tract transitional cell carcinoma (UTTCC) at two tertiary centres.
Materials and Methods: From 2004–2010, 56 UTTCCs were diagnosed ureteroscopically and underwent nephroureterectomy at two tertiary centres. Indications for diagnostic ureteroscopy were noted. In 46 patients ureteroscopic biopsy was performed and upper-tract urine cytology sent in 30 patients. Ureteroscopic findings, upper-tract cytology and biopsy data were compared with final surgical specimen histopathology.
Result: A filling defect on imaging was the commonest indication for diagnostic ureteroscopy (64%). Upper-tract urine cytology was positive in 19 out of 30 cases (63%), but did not predict grade accurately. Ureteroscopic biopsy grading was not possible in 7 out of 46 cases (15%). The biopsy grade proved to be identical in 25 of the remaining 39 cases (64%). Grade 1 or 2 ureteroscopic biopsy subsequently had low stage tumour (Ta or T1) in 13 of 16 (81%) cases.
Grade 3 ureteroscopic biopsy had high stage tumour (≥T2) in 14 of 20 (70%) cases. One patient with ureteroscopic biopsy suspicious of UTTCC had no tumour identified on nephroureterectomy specimen. When UTTCC was visually diagnosed at ureteroscopy (53/56 cases (95%)), final histopathology confirmed UTTCC in all cases.
Conclusion: In experienced hands, UTTCC can be accurately diagnosed by ureteroscopy. However, a combination of ureteroscopic appearance, upper-tract urine cytology and biopsy are necessary to identify high grade UTTCC which is predictive of higher stage disease, not suitable for conservative therapy.

P74

Diagnosis of upper and lower urinary tract transitional cell carcinoma (TCC) using oral 5-Aminolevulanic acid (5-ALA) and photodynamic diagnosis (PDD): Prospective cohort study

BK Somani, S Ahmed, G Nabi, SG Kata
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Introduction: Upper urinary tract transitional cell carcinoma (UT-TCC) can be difficult to diagnose. We did fluorescence ureteroscopy using oral 5-ALA to diagnose upper and lower tract urothelial tumours.
Material and Methods: Seventeen patients underwent 22 procedures using oral 5-ALA to diagnose upper and lower tract TCC. The mean age was 70.3 years (54–82). Twenty mg/Kg ALA was given and a standard white light flexible ureteroscopy (FURS) was performed using 7.5 Fr (Flex-X for PDD). Biopsies were carried out for all suspicious areas noting if lesions were detected by white or blue light, or both. Biopsies and tumour ablation with a curative intent of suspicious fluorescent lesions was then carried out under white light.
Results: A total of 36 biopsies were done using PDD (18 bladder, 18 ureter/renal pelvis). Of the 18 bladder biopsies, 9 were concurrent in both white and blue light (8 malignant, 1 benign); 9 other biopsies were only seen in blue light (2 dysplasia, 1 CIS, 1 T1G3, 5TaG2). Of the 18 ureteric/renal pelvis biopsies 13 were concurrent in both white and blue light (8 malignant, 5 benign); 5 other biopsies were only seen in blue light (2 dysplasia, 3 TaG2). The subsequent biopsy in one ureteric dysplastic area was confirmed as TaG2 tumour. There were no major complications and minor complications included transient hypotension and facial flushing in 2 and 3 patients respectively.
Conclusion: PDD and subsequent treatment of urothelial tumours using oral 5-ALA is safe and feasible detecting lesions not visualised on conventional white light endoscopy.

P75

Long-term endoscopic management of upper tract TCC (UTTCC): 20-year single centre experience

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Introduction: We have over 20 years' experience in the endoscopic management of UTTCC at our institution. The aim of this study was to report the long-term outcomes of UTTCC patients, treated either ureteroscopically or percutaneously.
Patients and Methods: Our departmental operation records were reviewed to identify patients who underwent endoscopic management of UTTCC as their primary treatment. Outcomes were obtained via retrospective analysis of notes, electronic records and registry data. Overall survival (OS) and TCC-specific survival (CSS) were estimated using Kaplan-Meier methods.
Results: Between January 1991 and November 2010, 72 patients underwent endoscopic management of UTTCC. The mean age at diagnosis was 67.7 years. All patients underwent ureteroscopy and biopsy-confirmation of pathology was obtained in 79% (n = 57). 14% of patients (n = 10) underwent percutaneous resection. Mean follow-up was 56 months. Upper tract recurrence occurred in 67% (n = 48). 19% (n = 14) eventually proceeded to nephroureterectomy. The estimated OS and CSS were 62.3% and 86.3% respectively at 5 years, and 34% and 82.7% respectively at 10 years. The estimated mean and median OS times were 88 months and 100 months respectively. The estimated mean CSS time was 134 months.
Conclusion: This study represents one of the largest reported series of endoscopically managed UTTCC, with high pathological verification and long-term follow-up. Upper-tract recurrence is common, which mandates regular ureteroscopic surveillance. However in selected patients this approach has a favourable CSS, with a relatively low nephroureterectomy rate, and therefore provides oncological control and renal preservation in patients more likely to eventually die from other causes.

P76

Conservative management of pelvi-ureteric junction obstruction (PUJO): is it appropriate and if so how long is follow-up needed?

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Sheffield Teaching Hospitals, United Kingdom

Introduction: Although most PUJO is probably congenital, it often presents later in life. PUJO can be diagnosed during investigation of urological symptoms, or imaging for other reasons. In patients without indication for intervention, it is unclear how long they should be followed up, and how often renography should be performed.
Methods: A retrospective notes review was performed of 175 patients who underwent 2 or more renograms within the period 1998–2009. 127 were excluded due to early intervention or absence of PUJO.
Results: 48 suitable patients were identified, 34 female and 14 male. Mean age was 55.2 years (range 20–83 years). 3 patients were non-attenders; the mean follow up for the remaining 45 patients was 46.4 months (range 5–168 months). The mean number of renograms performed 3.7 (range 2–11). 7 patients deteriorated and required intervention, 6 patients deteriorated renographically and 1 had symptomatic deterioration. Mean time from diagnosis to deterioration was 39.7 months (5, 10, 15, 24, 62, 72, 90 months), all patients were female. 5 patients underwent laparoscopic pyeloplasty, 1 underwent nephrectomy and 1 required nephrectomy but was unfit.
Conclusion: In this cohort 14% of patients deteriorated and required surgical intervention. Mean follow up from diagnosis to deterioration was 39.7 months but was up to 7.5 years in one patient. From this study it is unclear how long patients with asymptomatic PUJO should be followed up, but clearly some patients deteriorate several years later. Larger studies to elucidate this further are required.

P77

Is routine diuresis renography indicated after pyeloplasty?

AS Fernando, KR Ghani, R Issa, S Heenan, PJ Le Roux, CJ Anderson
St Georges Hospital NHS Trust, London, United Kingdom

Introduction: Predicting improvement or failure after pyeloplasty using diuresis renography (MAG3) can be difficult. We assessed the reliability of renography in establishing outcomes after pyeloplasty.
Patients and Methods: We retrospectively reviewed all patients who had a pyeloplasty performed by two surgeons since 2003. All had pre-operative and 3 month post-operative MAG3 scans, and at 12 months if necessary. Comparison was made between pre- and post-operative symptoms and MAG3 renogram results.
Results: 64 patients had pyeloplasty (laparoscopic 52, robotic-assisted 8, open 4). Mean follow up was 22 months. Indications were pain in 60 (94%), remainder were UTI or stone. Pre-operatively, 61 (95%) were unequivocally obstructed on MAG3 renogram.
Post pyeloplasty, 53 (83%) patients were asymptomatic. Of these, 44 (83%) had an improvement in their MAG3. Partial or unequivocal obstruction was detected in 9 (17%) of which 8 were asymptomatic and satisfied with their outcome, did not deteriorate on follow-up MAG3 and were discharged. Only 1 warranted further intervention.
Of 11 (17%) patients that remained symptomatic, 9 had an improved renogram (unobstructed); 2 had an unchanged renogram with only 1 requiring further intervention.

There was no statistical significance between MAG3 outcomes based on presence/absence of symptoms ($p = 0.61$, Fisher Exact Test). MAG3 changed management in only 1 of 53 (2%) asymptomatic patients.
Conclusion: MAG3 renogram is of arguable benefit in asymptomatic patients after pyeloplasty. In those that remain symptomatic the renogram is mainly of benefit in reassuring the clinician and patient. We propose that asymptomatic patients after pyeloplasty might not require routine renography.

P78

Addressing the complexity of managing renal Angiomyolipomata: how effective is embolisation?

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Introduction: Embolisation is the most established minimally invasive treatment option for symptomatic Angiomyolipomata (AML) and its efficacy in elective and emergency settings is evaluated.
Patients and Methods: Indications and outcomes for embolisations were evaluated from a prospective AML database. Elective indications (Group A) were: reducing haemorrhage risk or size reduction for compression symptoms. Emergency indications (Group B) were: spontaneous haemorrhage or significant haematuria.
Results: Of 126 patients, 25 required embolisation. 29 embolisations were carried out (4 repeated). One embolisation, prior to nephrectomy, was excluded. The mean diameter of AML's treated was 10.0 cm (range 4.5–22).
In Group A (n = 20), 12 out of 16 initial procedures (75%) were effective in decreasing AML size or symptoms. Out of 4 failures, 2 underwent successful repeat embolisation.
In Group B (n = 8), 7 out of 8 (88%) successfully controlled the haemorrhage with no immediate complications. In one patient, embolisation failed and was successfully repeated.
Significant complications occurred in 5 (25%) of Elective cases (loin pain 25%; post embolisation syndrome 10%; renal abscess/septicaemia 10%). All but one of these had tuberous sclerosis (TS), which was statistically significant, $p < 0.05$ (Fisher's exact test). Two patients died of TS related complications despite attempts at embolisation.
Conclusion: Emergency embolisation is effective management for acute haemorrhage from AML. Elective embolisation of large tumours has reasonable success but high complication rate. Complications are higher in TS patients prompting need for careful counselling before embolisation. Referral of TS patients when AML's are small is desirable and would likely reduce complication risk.

P79

Incidental diagnoses in CT Urogram – a study of 801 patients

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Wycombe Hospital, United Kingdom

Introduction and Aims: Computerised Tomographic Urogram (CTU) is increasingly replacing IVU as an imaging tool for haematuria. This has led to an increase in incidental diagnoses outwith the urinary tract. We assessed incidence of urinary and extra-urinary diagnoses
Materials and Methods: Data was collected prospectively on all patients undergoing a CT Urogram between June 2008 and February 2010. Patient characteristics, indications, urinary and extraurinary diagnoses were assessed.
Results: A total of 801 patients were studied. The average age was 64 years. Male to female ratio 67 : 33.
A primary urological diagnosis was made in 29% of all patients. Renal or ureteric stones were found in 11%, bladder tumours or suspicious bladder thickening in 8% and hydronephrosis without an obvious cause in 4%. Importantly, upper tract lesions were found in 6% (4% parenchymal and 2% in collecting system). Nearly 65% of all patients had at least one reported extra-urinary incidental finding. Sixteen per cent of patients were found to have a highly significant finding: aortic/iliac aneurysm 6% (largest diameter 7.2 cm), lymphadenopathy/metastases in 6% and incidental tumours in 4%. The latter included adrenal, pancreatic, colonic, ovarian and endometrial lesions. Incidental findings of less significance included degenerative disease of the spine (12%) and colonic diverticular disease (11%).
Conclusion: CTU has a higher sensitivity/specificity at picking up urological abnormalities compared to IVU. Our study shows that CTU, in addition to diagnosing urological abnormalities, is an important tool with a high yield for picking up significant incidental extra-urinary abnormalities in up to 1 in 6 patients.

P80

PVP – 5 year follow-up from a UK DGH

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Introduction: NICE issued new guidelines in May 2010, which do not recommend using laser vaporisation techniques as first line surgical treatment of LUTS. Ours was one of the first units to introduce KTP Laser PVP in UK. We present a minimum 5-year follow-up.
Methods: All patients who underwent KTP laser PVP from November 2004 – October 2005 were included. Of the 131, ninety were contactable. IPSS scores were available for 66 patients of whom 56 attended for residual and flow measurements. Data was collected using the theatre diary, notes, questionnaires and reviewing patients.
Results: 131 patients, age range 50–90 years (mean 71) underwent PVP. ASA grades were available for 82 patients, 61% being ASA 2, and 25% ASA 3 or more. Maximum flow rates at preoperative, 6 months and 5 years were 9.07 (2.9–19), 22.02 (5.1–49.3) and 13.95 (3.5–34.6) mls respectively. Average residual volume was 75.6 mls. 19 (21%) required further surgery and 3 (3.3%) had a permanent catheter. 53%, 38% and 9% patients had mild, moderate or severe symptoms and 76% had a bother score of 0–2 while 8% had a score of 5–6.
Discussion: Although reoperation is frequent compared to TURP, PVP is a useful operation in selected patients with co-morbidities due to its low intra-operative morbidity and short hospital stay. None of our patients required blood transfusion and there are no reports of bulbar stricture. Improvement in flow with mostly mild symptoms at 5 years may justify carrying out this procedure with a higher chance of reoperation in the future.

P81

Testicular torsion: how do you fix yours?

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Introduction: Testicular exploration is an organ-saving procedure carried out by a number of specialities in the UK. Yet there

are no guidelines as to how best a torted testis should be fixed or how the non-torted testis should be managed. We present a national survey of current surgical technique in testicular exploration for suspected torsion in the UK.
Methods: A web-based interactive questionnaire was constructed and e-mailed to Consultants and surgical trainees in Urology, General surgery and Paediatric surgery within the UK.
Results: Response rate was 66.8% (209/313). In testicular torsion, 3-point fixation was favoured amongst all sub-specialities: urologists (79.2%), general surgeons (66.7%) and paediatric surgeons (50.0%). Paediatric surgeons used the Dartos Pouch (16.7%) more frequently than urologists (9.4%) and general surgeons (12.5%).
Urologists preferred non-absorbable sutures (62.0%) compared to General (37.5%) and Paediatric surgeons (45.5%).
In a negative torsion, Urologists (59.3%) and Paediatric Surgeons (72.7%) would fix neither testicle; 50.0% General surgeons would fix the ipsilateral side. Surprisingly, 12.0% Urologists and 12.5% General surgeons would fix both testicles.
More General surgeons (35.4%) advise ultrasound compared to Urologists (16.0%) and Paediatric surgeons (18.2%) in diagnosis of testicular torsion.
Conclusion: This study confirms widespread variation both between and within specialities. General Surgeons are more 'aggressive' in their management than Urologists and Paediatric surgeons – whether such an attitude alters patient discomfort, risk of infertility and re-torsion remains unclear. However, what is clear is that the existing randomised approach needs to be addressed and establishing National Guidelines is crucial to standardise treatment.

P82

Sepsis post transrectal ultrasound guided prostate biopsy with standardised ciprofloxacin prophylaxis: an audit of 3 years, 5 surgeons and just over 1200 patients

MA Holmes, W Wright, G Devcich, J Leyland, P Bary
Waikato Hospital, Hamilton, New Zealand

Introduction and Objectives: Increasing reports of multi drug resistant bacterial sepsis after prostate biopsy and a clinical impression of recent increase in septic events in our own practice prompted a retrospective review of the previous three calendar years. Specifically all patients who underwent a transrectal guided (TRUS) prostate biopsy in 2007,08,09 were reviewed to assess 1) The annual sepsis rate 2) causative organisms and antibiotic sensitivities and 3) An appropriate empirical antibiotic for subsequent events.
Patients and Methods: All hospital admissions for urosepsis, irrespective of origin (public or private) occur at one large regional hospital. All 5 urologists use a standardised ciprofloxacin prophylaxis without an enema, (1 gram ciprofloxacin p.o. 2 hours pre-biopsy and 500 mg b.d p.o for 3 days after) and usually a 12-core biopsy regime.
Results: 1286 patients underwent a TRUS guided prostate biopsy over the three year period. 9 patients were admitted with sepsis (0.7%). There was no significant difference between years. A multi drug resistant E coli was identified in all cases. Resistance to ciprofloxacin, amoxicillin, cotrimoxazole, gentamicin, and augmentin was identified in 7/9, 7/9 6/8, 4/9 and 2/9 cases respectively. 3/9 cases were Gentamicin and ciprofloxacin resistant. No isolates were resistant to meropenem.
Conclusion: Ciprofloxacin prophylaxis remains an appropriate and effective regime prior to prostate biopsy. An empirical antibiotic choice of gentamicin and augmentin would have covered 8/9 isolates and meropenem all isolates, and can both be used as an empirical choice for sepsis post TRUS guided prostate biopsy.

P83

Estimation of clinically relevant prostate volumes by digital rectal examination – a comparative study

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The Adelaide and Meath Hospital, Ireland

Introduction: Digital rectal examination (DRE) is used routinely in clinical practice to estimate prostate volume. Reliable estimation of prostate volume is important to correctly select patients with benign prostatic hyperplasia (BPH). We present results of a prospective study assessing the reliability of DRE in estimating clinical significant prostate volume.
Patients and Methods: Patients requiring TRUS guided prostate biopsy were recruited. DRE was performed twice. TRUS volumes were measured using 2101 Falcon ultrasound machine. Furthermore, a national survey was performed to determine how urologists typically assessed prostate volume.
Results: In total 248 patients were recruited (mean age 64 yrs). Positive correlation (r = 0.86) seen in estimation of prostate volume between first and second DRE. The estimation of prostate volume on DRE was effected by the TRUS measured volume (Table). Presence of malignancy (clinical or pathological) did not affect the volume estimation by DRE.
Conclusions: We have shown that DRE had positive predictive value of 94% in identifying prostate above 30 cc. Hence, when considering treatment with 5ARIs, DRE may be sufficient to identify suitable patients for 5ARIs therapy. However, for prostate volumes between 25–30 cc and above 80 cc, TRUS may be required.

Table for P83: Accuracy of DRE in estimation of clinically relevant prostate volumes

TRUS measured prostate volumes	Correctly estimated on DRE	Underestimated on DRE	Overestimated on DRE
<30 cc (n = 87)	43 (49.5%)	0	44 (50.6%)
30–79.9 cc (n = 145)	137 (94.5%)	8 (5.5%)	0
>80 cc (n = 16)	6 (37.5%)	10 (62.5%)	0

P84

Efficacy of skin stretching and potent topical corticosteroid cream application for phimosis in adult men

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Introduction: To evaluate the mid-term efficacy of topical application of a potent

corticoid cream and skin stretching in the treatment of symptomatic phimosis with or without changes of BXO in adult men.
Patients and Methods: 32 men (median age 38 years, range 18–78) referred with symptomatic foreskin phimosis were prescribed a regimen of very potent topical corticosteroid cream application (Dermovate® 0.05%) together with skin stretching twice daily for 3 months as an alternative to circumcision or preputioplasty. The degree of phimosis was classified as mild (foreskin retractile and no visible BXO changes), moderate (non-retractile or visible BXO changes present), and severe (non-retractile and visible BXO changes present).
Result: At a median follow-up of 19 months (range 6–45), 18 (56%) patients have not required circumcision, 16 of whom have now been discharged. 14 (44%) patients have required circumcision (n = 12) or preputioplasty (n = 2). The overall success rates for mild, moderate and severe phimosis were 82%, 62% and 12% respectively. Only 5 out of 20 (25%) patients with a retractile foreskin failed treatment compared to 9 out of 12 (75%) with a non-retractile foreskin, and only 4 out of 15 (27%) without BXO changes required surgery compared to 10 out of 17 (59%) with BXO changes.
Conclusion: Local application of a potent corticosteroid cream and skin stretching can offer a simple and effective treatment strategy for phimosis in adults, especially for those with less severe forms of the condition. Many adults may prefer this option to circumcision.

P85
Diagnostic flexible cystoscopy in patients under the age of 40: is there an indication?
RR Robinson, C Lowe, M Mokete
Lancashire Teaching Hospitals NHS Foundation Trust, Preston, United Kingdom

Introduction: Flexible cystoscopy (FC) is a routine diagnostic procedure in urology, undertaken for a variety of indications. The procedure is invasive and often less well tolerated by younger patients, in particular young men. The purpose of this study was to examine if FC provides useful diagnostic information in young patients with urinary tract symptoms.
Patients and Methods: All patients under the age of 40 years who underwent a FC with local anaesthesia in a single institution over a 12 month period from April 2009 were identified retrospectively. Electronic records and case notes were then examined. A total of 270 procedures were performed in the study period; 60 were excluded, data was unavailable in 28, leaving 182 available for analysis.
Results: The median age was 31 (range 15–39), of whom 59% were male. Abnormalities were found in 7 (3.8%) patients, 3 strictures and inflammation in 4. In subgroup analysis, excluding 55 with visible or non-visible haematuria, only 2 (1.6%) had abnormalities. Of 61 patients in whom UTI was the sole indication for performing a FC, a single stricture was the only abnormal finding.
Conclusion: This data does not support the routine use of FC in the investigation of lower urinary tract symptoms and UTI in patients under the age of 40.

P86
Flexible cystoscopy: is this investigation of value in patients with urinary tract infection?
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Royal Cornwall Hospital, Truro, United Kingdom

Introduction: Urinary tract infections (UTIs) are a common reason for referral to the urologist. We investigated whether flexible cystoscopy (FC) is necessary to investigate this group.
Patients/Methods: Outpatient FC episodes in the study period were examined. Patients undergoing FC for UTIs were identified. Information regarding patient demographics, imaging, microbiology, antibiotic treatment, need for surgical management and whether FC altered management was recorded.
Results: 2000 consecutive FC examinations were performed in our unit between Jan/2007 and Feb/2008.
213 patients (11%) underwent FC to investigate UTIs (♂:♀ = 2 : 3; Age: 21–92, Average: 63.8 years). Of those, 26 (12%) had persistent microscopic haematuria, 52 (24%) had frank haematuria, 9 (4%) had sterile pyuria, and 4 (2%) had pneumaturia and suspected colo-vesical fistula. The remaining 122 (57%) had no other obvious urinary tract abnormality at the time of referral. Imaging was available for 88% of patients.
149 (70%) patients had normal cystoscopy. Two (0.9%) patients had bladder tumours; both had haematuria. FC confirmed colo-vesical fistula in 6 (2.8%) patients; 4 presented with pneumaturia, while 2 had haematuria only. Other significant lower urinary tract problems (n = 6, 2.8%) were Bladder stone (n = 1), bladder neck stricture n = 1), urethral stricture (n = 2) meatal stenosis (n = 1), and interstitial cystitis (n = 1).
Conclusion: Flexible cystoscopy did not alter management in 95.3% of patients in our study. We recommend that FC is reserved for patients with risk factors such as haematuria or pneumaturia. Other non-invasive investigations (radiology, urine cytology, flow studies) might be more appropriate before considering FC and would provide an indication in other cases.

P87
Management of recurrent urinary tract infection (rUTI) in females: initial findings from a 'one stop' cystitis clinic
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Introduction: Recurrent urinary tract infection (rUTI) causes significant distress for many women. We report the findings and treatment outcomes at a novel, dedicated cystitis clinic.
Patients and Methods: Female patients referred to Urology with rUTI were assessed at a dedicated 'one stop' clinic. Assessment included history, examination, blood tests, urine culture, ultrasound & flexible cystoscopy. Following assessment, advice and treatment were initiated at the clinic and patients offered six monthly review.
Results: 119 women presented from July 2009 to July 2010: 56 pre menopause and 62 peri/post menopause. Median follow-up was 6 months.
In pre-menopausal patients, mean duration of rUTI was 39 months with 19.6% describing a coital association.
Investigations were normal in 64% in patients. Treatment included either prophylactic (32%) or self-initiated (18%) antibiotics. 28 women declined follow-up. Of the remainder, 65% were reassured and discharged following review.

In the peri/post-menopausal cohort, mean duration of rUTI episodes was 59 months. 70% patients had evidence of atrophic vaginitis. Treatment included vaginal oestrogen either as solitary treatment (32%) or in conjunction with treatment for other conditions including calculi or incontinence (26%). 18 women declined follow-up. Of the remainder, 31% were reassured and discharged following review.
Conclusion: Most pre-menopausal women responded well to advice and prophylactic or self-initiated antibiotics and the majority of post-menopausal women benefited from vaginal oestrogen. Significant numbers declined further follow-up suggesting that if appropriate investigation and therapy are initiated at a 'one stop' clinic, rUTI can be effectively managed for the majority of women in a single visit.

P88

UK urologists' management of secondary azoospermia following previous vasectomy

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(4) Sunderland NHS Trust, United Kingdom

Introduction: Vaso-vasostomy is only one option in parenting for men having had previous vasectomy. Contemporary UK practice in managing couples wishing a conception following previous vasectomy is unknown. This sequential audit seeks to identify the management of men presenting for reversal of vasectomy and sets out recommendations regarding best practice for the future.
Patients and Methods: UK urologists were surveyed three times over ten-years regarding their management of men with azoospermia following vasectomy. They were asked about their ability to counsel couples fully about options in parenting, the morbidity and the outcomes from each treatment option as well as techniques of vasal reconstruction in 2001, 2005 and 2010. They were also asked if they kept personalised audited outcomes from reconstruction and had sub-specialist interest in this area.
Results: 776 responses were obtained. 85% of UK urologists are still reversing vasectomies but <50% are conversant with alternative management options, took female factors into account when counselling the couple or were aware of the criteria for, or outcome from, IVF-based procedures. <15% took sperm synchronously with reconstruction and <40% could cite, their individualised outcomes from vaso-vasostomy. UK urologists who do not have an andrological interest perform poorly in this study.
Conclusions: Parenting following previous vasectomy demands counselling of the couple about all management options available. Reversal of vasectomy should no longer be seen as an isolated general urological procedure but one of the options available to a suitably trained sub-specialist with an interest in the management of the infertile male.

BJUI SUPPLEMENTS

Thursday 23 June 2011
Poster Session 8

11:00–12:30 Hall 12
STONES/IMAGING
Chairmen: Mr Daron Smith & Mrs Sharon Scriven
Posters P89–P98

P89

Urinary lysine, arginine and ornithine may be better predictors of cystine stone formation than urinary cystine and urinary cystine crystals

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Introduction: 24 hour urine measurements are expensive, time consuming for patients and frequently processed incorrectly. The aim of this study was to evaluate the predictive value of cystine/lysine/arginine/ornithine and the presence of urinary crystals in routine urine samples to predict stone formation in cystinuric patients.
Patients: A prospective dataset of 46 patients attending a specialist multi-disciplinary cystinuria clinic at our hospital between August 2008 and October 2010 was analysed.
Methods: Urine cystine/lysine/arginine/ornithine (unpaired t test) and the presence of urinary crystals (Fishers exact test) were individually correlated with new stone formation at time of sample, at one and six months after the time of sample.
Results: No significant association between urine cystine and new stone formation at any time point; time of sample ($p = 0.667$), 1 month ($p = 0.439$), 6 months ($p = 0.980$). Ornithine and arginine significantly associated with new stone formation at 1 month ($p = 0.001$, $p < 0.0001$), whereas lysine approached significance ($p = 0.089$). Urinary ornithine, arginine and lysine were all associated with new stone formation at 6 months ($p = 0.0015$, $p = 0.004$, $p = 0.049$). Presence of cystine crystals in the urine not significantly associated with new stone formation at any time point; time of sample ($p = 0.395$), 1 month ($p = 0.440$), 6 months ($p = 0.335$).
Conclusion: Our findings suggest that urinary lysine, arginine and ornithine may be more useful in predicting disease activity in cystinuric patients than cystine. Identification of urinary cystine crystals does not appear to be of use.

P90

Retrograde endoscopic lithotripsy as alternative to PCNL in selected patients with large renal calculi

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Introduction: Percutaneous nephrolithotomy (PCNL) remains the gold standard for management of large renal calculi. Since March 2007 we have been offering retrograde endoscopic treatment as an alternative to PCNL for selected patients with appropriate large upper urinary tract calculi.
Patients and Methods: We prospectively collected data from 29 patients (31 renal units) treated with ureteroscopic laser fragmentation for intrarenal calculi greater than 20 mm in diameter. Outcomes were defined in terms of stone clearance rates, length of hospital stay, complications, and number of additional treatments required.
Result: The total number of renal calculi was 67 with a median of 2 stones per patient (range 1–7). The median stone burden was 38 mm (range 21–80). All patients underwent ureteroscopic laser fragmentation with a median of 1 treatment per renal unit (range 1–6). Median hospital stay was 1 day (range 0–7 days). 52% required only a single treatment to be stone free, and for those with residual stone after 1 treatment the median stone burden was 14 mm (range 8–28). The overall stone-free rate including additional treatment (where necessary) with ESWL and/or repeat ureteroscopy was 84% at a median follow-up of 35 months (range 1–52). Minor complications occurred in 8 of 29 (28%) patients and there was one death within 30 days of surgery from unrelated causes in a patient with multiple co-morbidities.
Conclusion: Patients with large upper urinary tract calculi can be safely and effectively managed using the retrograde endoscopic approach, often with a single treatment alone and quicker recovery than PCNL.

P91

Multi-length ureteric stents are not associated with more symptoms than 24 cm long ureteric stents: a prospective, multicentre randomised controlled trial

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Introduction: It has been suggested that excessive redundant intravesical stent component may contribute to the severity of stent-related symptoms in patients with ureteric stent. We investigate whether a 30 cm multi-length stent causes more symptoms than a 24 cm long stent.
Patients and Methods: 162 patients with upper urinary tract calculi requiring ureteric stent insertion were randomised into group 1 (6 Fr, 24 cm; Contour™) or group 2 (6 Fr, 22–30 cm; Contour VL™). Patients were requested to complete the validated Bristol ureteric stent symptom questionnaire (USSQ) at 1 and 4 weeks post stent insertion and 4 weeks after removal. Adverse events such as stent migration, early removal of stent and failure of stent insertion were recorded.
Results: 153 patients who had successful stent insertion were requested to complete the USSQ. The response rate was 74% (62 in group 1 and 51 in group 2). Demographic data for both groups were comparable (age $p = 0.47$, sex $p = 0.22$). At 1 and 4 weeks with the stent in situ, comparison of the mean scores demonstrated no significant difference in urinary symptoms ($p = 0.42$ and $p = 0.19$), pain ($p = 0.84$ and $p = 0.39$), general health ($p = 0.48$ and $p = 0.98$) and work performance ($p = 0.87$ and $p = 0.78$). Similarly, there was no difference in sexual dysfunction and number of days patients stayed in bed or reduced their routine activities. 3 (2%) patients had their stent removed earlier due to stent-related symptoms and 5 (3%) had failed stent insertion.
Conclusion: This study did not demonstrate any difference in symptoms associated with a 24 cm or a multi-length Contour™ stent.

P92

Has urinary calculus composition altered over the past 16 years: an analysis of over 50000 stones

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Introduction: To identify any changes in urinary stone composition over a 16 year period in the UK.
Materials and Methods: All urinary calculi sent for biochemical analysis between 1993 and 2009 were reviewed. The patients age, sex and stone analysis results were recorded.
Results: 51518 calculi were analysed of which 75% were from males. The male to female ratio of 3 : 1 was generally constant. The number of stones analysed increased year on year (except for 1998), starting at 582 and reaching 5645. Mixed calcium oxalate/phosphate was the most frequent composition, accounting for between 42% and 79%. Between 2002 and 2004, pure oxalate stones fell from an average level of 21% to 1%, with a reciprocal increase in mixed calcium oxalate/phosphate stones.

The mean age of patients was in their late 40s, which remained stable, with females consistently noted to be a year younger than males. Uric acid stones appeared to increase marginally in occurrence ranging from 8% to 11%. These patients had a mean age of 72 years. Calcium phosphate and cysteine stones occurred at low frequency, with no obvious trends. Infective stone frequency was also variable, but showed an increasing association with female patients.
Conclusions: There has been an increase in urinary stone occurrence over the 16 year period, though this may reflect clinicians sending more calculi for analysis. Female rates of stone formation have increased as have the number of uric acid stones. The reduction in oxalate stones between 2002 and 2004 may represent a change in reporting criteria

P93

Treatment of renal colic with papaverine hydrochloride: a prospective double blind randomized study

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Introduction: Phosphodiesterase (PDE) receptor inhibitors in ureteral smooth muscles may be useful in renal colicky pain. We assessed the efficacy of papaverine hydrochloride (nonselective PDE inhibitor) in combination with sodium diclofenac for the treatment of renal colicky pain and compared it with diclofenac sodium suppository alone.
Material and Methods: A prospective, double-blind clinical study was performed. A total of 550 acute renal colic were randomized to 2 groups of A and B. Patients in group A received diclofenac sodium suppository 100 mg plus saline normal 0.9% (placebo) and group B received diclofenac sodium suppository 100 mg plus papaverine hydrochloride 120 mg intravenously. Pain intensity was assessed with the visual analog scale at 0, 20, 40 minutes after treatment. Further analgesia given at patients consisted of 25 mg intramuscular pethidine. All adverse effects were recorded.
Results: Baseline characteristics (sex, age, history of similar pains) were similar in the 2 groups. There were significant differences in pain score at 20 minutes and 40 minutes from baseline in both groups ($P < 0.001$). The study revealed that papaverine hydrochloride plus diclofenac sodium to be effective in the treatment of renal colic in 90.9% of patients compared to the diclofenac sodium of 77.1% ($P < 0.001$).
Conclusions: Papaverine hydrochloride plus diclofenac Na suppository are more effective than diclofenac sodium for relief of acute renal colic pain. We suggest that intravenously papaverine hydrochloride may be a useful supplemental therapy for renal colic especially in combination with NSAIDs.

P94

Home urinary pH monitoring: a cost-effective option?

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Introduction: Testing urinary pH with machine-read 'multistix' is currently the mainstay for guiding urine pH manipulation therapy. This requires outpatient attendance and the accuracy of this technique has been questioned. We aimed to identify a cost-effective, convenient and accurate method for home use.

Methods: Freshly-voided urine samples collected from 46 patients attending urology clinics were tested using the current standard of machine-read 'multistix', manually–read 'multistix', pH comparator strips, universal indicator paper and a calibrated pH meter. A Bland-Altman analysis was used to assess the mean difference ('bias') between each method compared with the gold standard calibrated pH meter.

Results: See the table.

All measurement methods, except the machine-read 'multistix', demonstrated bias. The manually-read 'multistix' overestimated urinary pH by 0.2 ($p < 0.001$). The indicator paper and pH comparator pads underestimated urinary pH by approximately 0.2 pH units (all $p < 0.001$). The pH comparator pads were most favourable in terms of cost; costing approximately 5 pence per strip. The lowest commercially available price found for urine 'multistix' was approximately 22 pence per strip.

Conclusions: Machine-read 'multistix' measured urinary pH accurately, supporting their outpatient clinic use. pH comparator pads are a cost-effective method with sufficient accuracy for home urine pH monitoring by patients. Future work will confirm accuracy in a larger sample and patients' assessment of usability.

Table for P94

	Machine-read multistix	Manual-read multistix	pH 4.0–10.0 comparator pads	pH 5.0–9.0 comparator pads	UI paper
Bias	–0.09	0.20	–0.15	-0.21	–0.25
p value	>0.001	<0.001	<0.001	<0.001	<0.001
Price/year[1]		£69.11	£26.67	£15.96	£8.46

1 Based on testing 6 days/week

P95

Ureteroscopy for acute, symptomatic ureteric stones

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Introduction: Patients presenting acutely with pain from ureteric stones are often treated with ureteroscopy and laser lithotripsy (urs) within the same inpatient episode. The joint AUA/EAU guidelines on the management of ureteric calculi include systematic review of stone free rates in patients treated with urs. We prospectively evaluated patients presenting with acute colic and treated with urs at a district general hospital and compared our results with AUA/EAU.

Patients and Methods: Consecutive patients who presented acutely with ureteric colic and intended for treatment with urs were analysed over a 3 month period. Surgeons were specialist registrars and consultants with or without a specialist interest in endourology.

Result: 35 patients were analysed. The mean stone size was 6.94 mm (3–19 mm). 20 patients were stone free after urs (57%). However, of all 35 patients intended for treatment only 23 patients received treatment for their stones. 4 patients did not have urs and JJ stents inserted instead. 31 patients had semi-rigid urs and 4 patients also had flexible urs. Reasons for not treating stones included tight ureter, probable infection and stone retropulsion. Of all patients treated for stones 19/23 (83%) were stone free after urs.

Conclusion: Patients intended to be treated acutely with urs were treated safely and if stone treatment was possible stone free rates were equivalent to AUA/EAU data (83% versus 87%). We believe our management approach to these patients to be 'real world' practice. AUA/EAU analyses include only patients whom received stone treatment and not all patients intended for treatment.

P96

Flexible ureteroscopy (URS) and laser lithotripsy of renal stones – the method of choice for stones >1 cm?

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Introduction: To explore the effectiveness of ureteroscopy with laser lithotripsy in the management of renal calculi greater than 1 cm. We present our experience of ureteroscopic treatment of renal calculi in patients where PCNL/ESWL were contraindicated/failed or ureteroscopy was preferred by patient or surgeon.

Patients and Method: Data from a total of 65 patients with renal stones ≥1 cm were analysed to see the effectiveness of treatment. The stones were measured at their maximum diameter using pre procedural CT scans, with successful outcome (fragments <2 mm) measured by post operative KUB X-ray. The data was collected from 2 surgeons working in 1 hospital over a 4 year period.

Results: Table 1 stratifies the stone size, and response following single ureteroscopy. Overall complication rate of 12.3% for all procedures, including infection (8), and urinary retention (1). Success rate was dependant upon stone location: renal pelvis 90%, upper pole 88%, mid-pole 67% lower pole 36%, PUJ 43%, staghorn stone 50% and horseshoe kidney 50%.

7 patients (10%) underwent second procedure, of which 5 were successful, increasing the success rates for 1–2 cm stones to 75%.

Conclusion: Where PCNL/ESWL is not favoured for any reason, flexible ureteroscopy with laser lithotripsy is proven to be an effective treatment for stones greater than >1 cm. Stone sizes >3 cm or location within the lower pole calyces are associated with lower success rates, necessitating repeat treatments.

Table 1 for P96: Stone size and response rates

Stone Size	Patients	Fragment < 2 mm	Fragment > 2 mm	Success rates (%)
>1 cm	49	32	17	65%
>2 cm	11	6	5	55%
>3 cm	7	1	6	14%

P97

An evaluation of the indications and outcomes of renal embolisation in different settings

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Introduction: We aimed to increase our understanding of the selection, challenges and efficacy of Renal Artery Embolisation (RAE) in multiple settings.
Patients and Methods: From a prospective database of patients undergoing renal embolisation, indications for and outcomes were recorded.
Results: 49 RAE's were carried out in 42 patients (7 repeated). Of these, 73% (n = 36) were selective RAE'S and 27% (n = 13) were total RAE's. Of the 7 repeat embolisations, 3 were total.
The spectrum of clinical presentation was: n = 23 Angiomyolipoma (AML: 10 sporadic and 13 Tuberous Sclerosis); n = 6 vascular malformations; n = 7 iatrogenic renal haemorrhage; n = 5 renal carcinoma haemorrhage; n = 1 to stop proteinuria from a failed kidney.
Emergency RAE totaled 42% (n = 21) and effectively controlled haemorrhage in 84% of cases (n = 16).
Elective RAE's totaled 30% (n = 15) and were performed to reduce the size of large AML's or prevent renal haemorrhage. This was achieved in 73% (n = 11).
Significant Complications occurred following 10% (n = 5) of embolisations. There were 3 Post-Embolisation Syndrome (1 case due to iatrogenic non functioning kidney caused in selective RAE) and 2 renal abscesses. Minor complications occurred in a further 16% (n = 8) of cases.
Conclusion: RAE is integral to a urology service. It is particularly effective in the emergency setting. Elective RAE, is less predictable with lower success rate. Overall complications were high (21%) with 10% debilitating major complications. This confirms the need for skilled radiologists, appropriate consent, early referral of AML's patients (when lesions are small) and due consideration of other possible treatment options.

P98

The evaluation of CT urography in the haematuria clinic

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Introduction: Within the UK, CT urography (CTU) is used selectively for the investigation of haematuria patients. We set out to evaluate the diagnostic yield of CTU when used as the standard imaging modality.
Patients and Methods: We analysed records of 1000 consecutive patients attending a haematuria clinic between 2008 and 2010. Patients aged over 40 years underwent CTU & cystoscopy unless contraindicated (renal impairment, contrast allergy, very poor performance status).
Results: 560 males and 440 females (median age 62 years; range 17–98) were assessed. 46% had visible haematuria (VH). 880 patients were over 40 years, and 746 of these (82%) underwent CT scanning. The overall malignancy rate in the 880 patients was 15%; 19% for men and 10% for women. There were 92 bladder tumours, 16 renal tumours and 9 upper tract TCC. For the 120 patients under the age of 40, only one was diagnosed with a malignancy; a low grade bladder TCC. One patient aged 40–49 had an upper tract tumour, and they presented with VH.
Conclusion: We have found CTU useful in the haematuria setting as it facilitates a single patient visit (at time of cystoscopy) and has greater diagnostic certainty than IVU/US. Our results allow the development of an evidence-based protocol for the use of CTU in haematuria assessment.

BJUI SUPPLEMENTS

Thursday 23 June 2011
Poster Session 9

11:00–12:30 Hall 4
SURGICAL TECHNIQUES & INNOVATION
Chairmen: Mr Paul Butterworth & Mr Gurminder Mann
Papers P99–P108

P99

Narrow band imaging cystoscopy improves the detection of bladder cancer

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Introduction: Small or flat cancerous lesions in the bladder may be missed during white light imaging (WLI) cystoscopy. Different optical imaging techniques have been developed in an effort to minimize this. We looked at whether narrow band imaging (NBI) improves the detection of bladder cancer compared to WLI cystoscopy alone.
Method: We conducted a prospective within-patient comparison on 72 patients undergoing cystoscopy for haematuria or surveillance of bladder cancer. Patients had both WLI and NBI cystoscopy. Lesions identified were mapped, imaged, and biopsied. The number of tumours detected and negative biopsies for WLI and NBI were calculated. The sensitivity and specificity of both techniques were compared (Fisher Exact Test).
Results: 57 tumours were detected in 31 patients. NBI detected 18 tumours that were not seen with WLI.

Table for P99

	WLI alone	With NBI
Number of lesions biopsied	52	64
Tumours detected	39	56
Sensitivity	68.4%	98.3%[1] ($p < 0.0001$)
Specificity	75%	87.5% ($p = 0.09$)

Notes: [1]56 out of 57 tumours detected by NBI. Single lesion negative on NBI, but detected by WLI.

The negative predictive value of NBI is 97.6%.
Conclusion: NBI cystoscopy improves the detection of primary and recurrent bladder cancer over WLI cystoscopy alone. NBI cystoscopy has a high sensitivity and specificity, and a negative predictive value of 97.6%. NBI cystoscopy offers similar advantages to dye based optical imaging techniques without the additional costs.

P100

Prostate tumour identification using a force-sensitive rolling indentation probe

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Introduction: Dynamic force feedback is integral to surgical practice. Minimally invasive techniques reduce this sense of touch and in the case of robotic-assisted surgery, remove it altogether. We have developed a lightweight probe which provides haptic feedback and have validated it in the ex vivo setting on the human prostate.
Equipment and Methods: The rolling probe consists of a spherical metal roller and an ATI Nano 17 6-axis force/torque sensor (resolution 0.0003N). It is connected to a position sensing device, PHANTOM Omni (SensAble) which provides 6 DOF position sensing. Patients undergoing radical prostatectomy were recruited with full ethical approval. After the prostate was removed, real time data was collected by the passage of a haptic probe over the excised specimen in a standardised manner. The force feedback maps were correlated with pre-operative DRE, prostate biopsies, MRI and final histopathology.
Results: As tumours are stiffer than the surrounding tissue, the tumour areas were indicated as high stiffness, red coloured areas. There was good correlation with clinical data in particular for index lesions.
Conclusion: We present a new method for haptic feedback during robotic assisted radical prostatectomy. This may eventually reduce positive margins and allow more accurate nerve sparing. In vivo testing is planned.

P101

TrUST (transplant ureteric stent trial): early versus Standard removal. A randomised controlled trial – the pilot data

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Introduction: Introduction of transplant ureteric stents (TUS) has significantly reduced the incidence of major urological complications post renal transplant. Optimal time for TUS removal has not been established. We aim to compare current standard of cystoscopic TUS removal at 6 weeks to early removal on day 5 (achieved by attaching the stent to the catheter); to determine stent related complication rates, ureteric complication rates, patient acceptability, procedural costs and resource implications.
Patients and Methods: Adult and paediatric patients (≥2 yrs) listed for either living or deceased donor renal transplant were randomised to either standard TUS removal or early TUS removal.
Results: To date 27 patients screened for eligibility. 14 met the inclusion criteria, consented and were randomised into trial (early arm n = 7, standard arm n = 7). There have been no serious adverse events. There have been no reports of urinary leaks, ureteric obstruction or stent complications reported in either arm. Of those allocated to the early arm, 2 did not receive the allocated intervention due to technical difficulties in attaching the stent to the catheter.
Conclusion: It appears feasible to remove TUS on day 5 after transplant using this novel technique with the potential benefits of better patient acceptability, reduced stent complications, reduced costs and resources. This study will now begin multi-centre recruitment to permit required sample size (n = 88 per group) and determine safety and benefits of early TUS removal.

P102

A comparison of oncologic outcomes from interfascial and intrafascial nerve sparing robotic-assisted radical prostatectomy

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Introduction: We have previously described nerve sparing during robotic-assisted radical prostatectomy (RALP) as a 4-grade approach, based on the plane of surgical dissection. We wanted to investigate the effect this technique had on positive surgical margin rates.
Methods: A total of 1010 patients underwent RALP from January 2009 to September 2010 by a single surgeon at our institution after he formalized the grades of nerve sparing concept (the study cohort); prior to this, 1466 patients were operated on and these form the control group. We also classed grade 1 as 'intrafascial' nerve sparing and grades 2 & 3 as 'interfascial' nerve sparing and compared the PSM rates between these two groups. Further, we classed our grades 1–3 (nerve sparing) patients into low, intermediate, and high risk groups based on D'Amico risk.
Results: The overall PSM rate in the control group was 10.0% and this fell to 6.5% in the study group ($p < 0.001$). 'Intrafascial' and 'interfascial' dissection techniques resulted in similar PSM rates (8.9% versus 6.8%; $p > 0.05$). Most grades 1–3 patients were of D'Amico low risk, and their PSM rates stratified by 'intrafascial' (grade 1) versus 'interfascial' (grades 2–3) approach showed no difference (5.8% versus 4.5%; $p > 0.05$).
Conclusions: The PSM rates improved after the grades of nerve sparing concept was introduced to our operative technique of RALP. This is likely as a result of better appreciation of the periprostatic anatomy this concept encompasses. We found no differences in PSM rates between 'intrafascial' and 'interfascial' dissection techniques.

P103

A meta-analysis of 110,016 patients undergoing open retropubic, laparoscopic, and robotic-assisted radical prostatectomy comparing positive surgical margin and complication rates

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Introduction: There is no clear evidence to support one form of surgical approach over another with regards radical prostatectomy. The aim of this study was to analyze the literature available between 2002 and 2008 and compare positive surgical margin and complication rates for open retropubic, laparoscopic, and robotic radical prostatectomy.
Methods: A total of 110,016 patients formed the basis of this meta-analysis, representing the largest compilation of radical prostatectomy patients in the literature. Summary data were abstracted on year of publication, pre-operative patient characteristics, positive surgical margins, estimated blood loss, blood transfusions, conversions, length of hospital stay, and total intra- and peri-operative complications, with a further 21 individual perioperative complications selected a priori for abstraction and analysis.
Results: The open and laparoscopic surgical groups had similar overall positive surgical margin rates, with the robotic group having lower rates. Estimated blood loss, transfusion rate, length of hospital stay, and total complication rates were highest for the open approach, intermediate for the laparoscopic cohort, and lowest for the robotic group. For the individual complication analysis, the rates for death, readmission, reoperation, ureteral, bladder, and rectal injury, ileus, pneumonia, fistula, and wound infection showed significant differences between groups.
Conclusions: Robotic assisted laparoscopic radical prostatectomy has overall lower perioperative morbidity and improved early oncologic outcomes compared to conventional laparoscopic or open approaches. Further studies comparing longer term oncologic and functional outcomes, as well as cost-benefit comparisons are needed before making recommendations for or against a specific type of surgery.

P104

Pathological outcomes of a 'grades of nerve sparing' concept during robotic-assisted radical prostatectomy

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Introduction: Balancing aggressiveness of potency preservation while ensuring oncologic clearance remains a constant challenge for radical prostatectomists. We report the oncologic outcomes of patients undergoing robotic-assisted radical prostatectomy (RARP) using a risk-stratified approach to nerve sparing.
Methods: 1,110 men underwent RARP using a risk-stratified approach. 4 grades of nerve sparing were adopted as such: Grade 1 – Incision of the Denonvilliers' and prostatic fascia is made just outside the prostatic capsule; Grade 2 – Incision through the Denonvilliers' and lateral pelvic fascia (LPF) is taken just outside the layer of veins of the prostate capsule; Grade 3 – Incision is taken through the outer compartment of LPF removing the prostatic fascia while leaving behind the levator fascia; and Grade 4 – Wide excision of the LPF and Denonvilliers' fascia. Selection into this risk-stratified approach was based on D'Amico risk group where D'Amico low risk received Grade 1 NS, intermediate received Grade 2 NS, and high risk received either Grade 3 or 4 NS. We reviewed radical prostatectomy specimen characteristics on final pathology from these 4 groups.
Results: Surgical margin positivity (PSM) in Grades 1, 2, 3, and 4 were 6.7%, 6.6%, 6.6%, and 11.5% respectively ($p = 0.803$), with overall PSM of 6.7% for the whole cohort. Extracapsular extension occurred in 7.3%, 15.9%, 34.6%, and 46.2% for Grades 1 to 4 respectively ($p < 0.001$).
Conclusions: Our risk-stratified approach to nerve-sparing robotic prostatectomy based on likelihood of ECE minimizes margin positivity while optimizing potency outcomes.

P105

Oncologic outcomes of open versus robotic-assisted radical prostatectomy for high-risk prostate cancer: a multi-institutional study of 13,567 men

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Introduction: The aim of this study is to compare the oncologic outcomes of RARP versus ORP in prostate cancer patients defined as high-risk according to different criteria.
Methods: 13,567 patients underwent either ORP (n = 8841) or RARP (n = 4726) from January 2005 onwards by 35 surgeons at 12 centers. Four definitions of high-risk disease were used (i) Clinical stage T3 (cT3), ii) Biopsy Gleason ≥8, iii) PSA >20 and iv) D'Amico high risk. Pathologic and biochemical outcomes were compared between ORP and RARP in these high risk cohorts.
Results: In BG ≥ 8 and D'Amico high-risk groups, overall positive surgical margin (PSM) rates were higher among patients who underwent ORP compared to those who underwent RARP. In cT3 patients, the overall PSM rate was higher in RARP compared to ORP. In the PSA > 20 group, there was no significant difference in PSM rates between ORP and RARP. In multivariable analysis for BG ≥ 8 and D'Amico high-risk, ORP was significantly associated with PSM. In cT3 and PSA > 20 groups, only ECE and SVI were predictors of PSM. ORP patients showed at least the same BCR rates as RARP patients for all high risk groupings. Multivariable analysis identified ORP as a independent predictor of BCR only in D'Amico high-risk.
Conclusions: In all high-risk definitions, BCR rates were higher in ORP compared to RARP but surgical technique was an independent predictor only in the D'Amico high-risk. These differences might be due to risk factors not controlled for, but RARP appears at least oncologically equivalent to ORP in high-risk patients.

P106

Initial experience with a randomised controlled trial of open, robotic, and laparoscopic (CORAL) radical cystectomy: an interim report

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Introduction: Open radical cystectomy (ORC) is the gold standard for treatment of muscle invasive bladder cancer. Laparoscopic (LRC) and Robot-assisted (RARC) radical cystectomy have now emerged as viable alternatives to ORC. There is limited evidence of the relative benefits of one technique over another. We report our experience in recruitment, and the interim results in terms of the complication rates, peri-operative and short term oncological outcomes.
Methods: We have designed a single-centre prospective randomised controlled trial to include all patients with high-risk bladder cancer, and fit for all approaches to radical cystectomy. 42 patients met the inclusion criteria, and 30 71%) agreed to be randomised. There were 10 patients in each in the ORC, RARC and LRC arms. There were 2 conversions: 1 from RARC to ORC, and 1 from LRC to RARC.
Results: The patients were all matched for age, sex, race, BMI, ASA-Grade.

Table for P106

	ORC	RARC	LRC
Mean operation time (min) ± SD	282 ± 38.6	369 ± 59.0	307 ± 47.9
Mean blood loss (ml) ± SD	755 ± 271.2	510 ± 483.3	460 ± 325.5
Mean hospital stay (days) ± SD	12 ± 2.8	10 ± 5.2	9 ± 2.7
Lymph node yield ± SD	20 ± 8.3	15 ± 8.3	16 ± 6.6
Overall complications (Clavien)	70%	50%	50%

Conclusions: RARC takes longer than ORC and LRC. Both minimally invasive approaches have lower complications, less blood loss and shorter hospital stay than ORC.

P107

Laparoscopic nephrectomy in patients with autosomal dominant polycystic kidney disease

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Introduction: Native nephrectomy is selectively indicated in ADPKD patients with recurrent haematuria, infection, pain, tumour, or concern for space when a renal transplant is being considered. Traditional open nephrectomy carries significant potential morbidity due to the wound size required to remove a large kidney, and the challenges of accessing a vascular pedicle. Recovery can be prolonged, and may delay a renal transplant.

Although laparoscopic nephrectomy (LN) is a well-established surgical approach, the data is deficient in its application in ADPKD. Our institution successfully completed 29 LNs in ADPKD patients. We report our experience.

Patients and Methods: A retrospective analysis of a series of LN in patients with ADPKD was performed.

Results: 29 LNs were performed in ADPKD patients between 2002 and 2010 by a single surgeon operating in two teaching hospitals in NSW, Australia. The median size of kidneys was 21 cm. Indications for the nephrectomy were space creation for future transplant (65.5%), significant pain (44.8%), bleeding/haematuria (37.9%), and renal infection (27.5%). Median LOS was 4 days; excluding one patient requiring prolonged admission to manage a stroke, the median LOS was 3.5 days. Complications included one wound infection needing debridement, one splenic subcapsular haematoma and two port site herniae requiring repair. At median 24 months follow up, one patient had died of unrelated causes. Time from surgery to activation on the transplant waiting list ranged from 15 days to 300 days (median 60 days).

Conclusion: LN is feasible and safe in patients with ADPKD when undertaken for clearly defined indications by an experienced laparoscopist.

P108

Fresh frozen cadaveric training – an overview of modern surgical/laparoscopic training

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Introduction: Laparoscopic training is evolving. The introduction of the European Working Time Directive results in a shorter time period for trainees to develop their surgical skills. To address this we suggest surgical training is delivered using a modular approach – trainees acquiring competencies in a pre-determined order mapped to the ISCP curriculum.

The Cadaveric Training Centre offers a unique learning environment for both trainee and trainer – under the remit of the Human Tissue Authority. We evaluated courses delivered in this centre including laparoscopic and endoscopic procedures for specialties including urology and general surgery. Each course used different teaching modalities. All include significant lab time.

Methods: Following each course participants completed standardised feedback forms which were analysed. Ten areas were evaluated including content, resources and facilities using a Likert 6-point satisfaction scale, 1 equalling poor and 6 excellent.

Results: Since opening in 2007, 199 courses have occurred, approximately 15% of which were in urology. Over 800 health professionals have been trained. Feedback was positive with 94% of all responses scoring 5 and 6. 98% graded resources and facilities >5 and 95% similarly regarding content. Specific comments included the superiority of cadaveric tissue for its realism.

Conclusion: Evaluation to date has shown the cadaveric lab facility to be a useful adjunct to traditional urolaparoscopic training providing a bridge from wet lab to mentored cases. Although this facility is currently used for training in specialised procedures there is a need to evaluate whether this could become an integral component of surgical training.