BJUI

BAUS Annual Meeting, 15–18 June 2015

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Tuesday 16 June ePoster Session 1 1030–1200 Charter 2 STONES & IMAGING Chairs: Dr Percy Chibber & Andrew Dickinson ePosters P1–P15

P1

Trends in upper tract stone disease in England: Evidence from the Hospital Episodes Statistics (HES) database

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Introduction: With an increasing expenditure on stone-related management, the current trends in stone-related treatment need to be defined. We examined the hospital episode statistics (HES) database to define current trends in stone-related admissions and treatments.
Materials and Methods: We examined the HES dataset from 2006 to 2013. We captured and analyzed trends in stone-related admissions and intervention by shock wave lithotripsy (SWL), ureteroscopy (URS), percutaneous stone surgery (PCNL) and open surgery.
Results: Total number of full consultant episodes for 'Urolithiasis' increased by 14% from 77 868 (2006/7) to 89 035 (2012/13). In 2012/13, 40 178 stone related procedures were performed: 22 468 (56%) SWL procedures, 15 653 (39%) URS, 1875 (5%) PCNL and 182 (0.5%) open procedures.
During this 7-year period the total number of SWL procedures increased by 20%, mainly due to a 26% rise in renal SWL and 7% fall in ureteric SWL. URS increased by 75%; with a 105% rise in kidney and a 63% rise in ureteric procedures. Reassuringly open stone surgery continues to fall (45% fall), while there was a 177% rise in PCNL procedures. The median length of stay for PCNL decreased (5 days to 4 days). Day case ureteroscope rates have increased by 347%.
Conclusion: This data demonstrates the continuing rise in stone-related procedure, particularly for ureteroscopy and PCNL. Reassuringly, the length of stay continues to fall with dramatic increases in day case surgery. These changes may reflect changes in stone incidence or may result from increased expertise in the management of previously conservatively treated stones.

P2

Multicentre validation of the guy's stone score – Inter-observer reliability and correlation with stone clearance

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Introduction: We report the most extensive validation of the Guy's Stone Score to date, assessing both inter-observer reliability and association with stone clearance from PCNL.
Patients and Methods: To assess inter-observer reliability, 103 urologists were invited to review 25 anonymised pre-operative CT KUB series. Inter-observer reliability was calculated, using Kappa coefficients.
To assess association with stone clearance, BAUS PCNL registry data were retrieved from 1st March 2011 to 31st September 2014. Multivariable logistic regression was performed, incorporating age, sex, volume and trainee/consultant operating.
Results: 25 urologists rated the CT KUB series between December 2013 and September 2014. Multi-rater kappa coefficients were 0.45 for GSS I, 0.2279 for GSS II, 0.27 for GSSIII, 0.68 for GSSIV and 0.36 for all scores combined ($P < 0.005$).
2, 223 procedures, at 77 hospitals were identified from the BAUS registry. 594 (27%) were reported as GSS I, 648 (29.5%) as GSS II, 638 (29%) as GSS III and 320 (14.6%) as GSS IV (23 unclassified).
Overall stone clearance was 71.5%, clearance for GSS: I = 91.0%, II = 77.3%, III = 63.8% and IV = 40.3%. Using GSS I as reference, odd ratios for stone clearance were: GSS II = 0.34 ($P < 0.05$);GSS III = 0.18 ($P < 0.05$); GSS IV = 0.07 ($P < 0.05$).
Conclusions: Reliability is fair overall, but substantially better for GSS IV (complete staghorn/spina bifida/spinal injury). There is a strong inverse association between GSS and stone clearance; again, the effect of GSS IV is particularly striking.
This study confirms the Guy's Stone Score's suitability for risk adjustment in measuring PCNL outcomes and suggests the potential for GSS IV to be used as a criterion for tertiary referral.

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P3

Primary care surveillance of asymptomatic small renal calculi

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Introduction: There is debate as to whether asymptomatic renal calyceal stones (ACS) should be treated or observed by means of interval imaging. Based on EAU guidelines, patients at our institution with radio-opaque ACS (<6 mm) are discharged to primary care with instructions for 12 & 24 month XR KUB. Criteria for re-referral include an increase in stone size, new stone formation or symptomatic progression.
Patients and Methods: All patients satisfying the above criteria discharged between October 2009 and June 2011 were reviewed for protocol compliance. They were also assessed for intervention outside the protocol, namely interval imaging, urological outpatient appointment or inpatient stay during the two year follow up period.
Result: 147 patients were identified in this period. Out of 128 patients eligible for their 1st XR, and 111 patients eligible for their 2nd XR, only 46% and 29% respectively were performed. 15% of patients who missed XRs required further intervention, compared to 20% of patients who had both XRs performed. Overall, 31% of all patients had some form of further intervention outside the surveillance protocol (and two-thirds of these occurred before the 1st XR was due). The majority were treated conservatively with 7% having ESWL and 5% surgery. Overall, no patients were treated solely on the basis of XR changes.
Conclusion: Audit of this protocol shows that less than 50% of all suggested imaging has been organised by primary care. Despite this, findings suggest that patients with ACS would be better managed with symptomatic imaging and re-referral rather than periodic and unnecessary radiological evaluation.

P4

The management of urinary stones in the octogenarians

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Introduction: With increased life expectancy renal stones are becoming more common in the elderly. Patients with stones in this cohort can present diagnostic difficulties. The aim of this study was to evaluate the presentation and management of renal stones in the octogenarians.
Method: At our institution all stone patients are registered prospectively into a database. A review of octogenarians with stones from this database between 2009 and 2014 was undertaken. Demographics, presentation, comorbidities, stone size, type of intervention, post operative complications, length of stay and stone free rates were studied.
Results: There were 42 patients aged 80 and above who needed treatment. The mean age was 84 (80–93). The male to female ratios was 2:1. The mean stone size was 11.5 mm (5–35 mm). The presentation was varied. Only 15 patients had renal colic or loin pain (35.5%) Ten of them had urosepsis and obstructed kidney and majority presented to physicians and had comorbidities. Five patients needed PCNL, 17 and 13 patients underwent rigid and flexible ureteroscopy and laser fragmentation respectively. Seven had stent placement only. After procedures, 29 were stone free (83%). Mean hospital stay was 4 days (1–25). Complications included 1 death due to pneumonia, urinary retentions ($n = 4$) and urinary sepsis ($n = 9$).
Conclusion: This study has shown that presentation in this group is atypical. High degree of suspicion is mandatory to avoid delay. These patients can be safely managed by endourological methods. The most common complication remains urinary sepsis and urologists must ensure appropriate antibiotic therapy in conjunction with microbiologists.

P5

Extracorporeal shockwave lithotripsy – A multicentre UK snapshot study

R Doherty, K Manley, M Bultitude, S Gordon, S Irving, S Kumar, J Masood, J Philip, OJ Wiseman
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Introduction: ESWL is a widely utilised treatment modality for stone disease. Despite the existence of good-quality guidelines advising on management of renal tract calculi, wide variation still exists in clinical practice. This 'snap-shot' study investigates variability in ESWL practice and patient outcomes in seven UK centres.
Methods: Seven UK stone units undertook data collection. Recruitment was via the BAUS section of endourology. Inclusion criteria included unilateral stones with ESWL as the primary treatment option for each patient. Patient demographics, stone site/size, post-treatment complications and stone-free rate (SFR) were recorded.
Results: Data from 195 patients across 7 centres were analysed. 2/3 of patients ($n = 130$) underwent ESWL for renal calculi, just under half of these were lower pole calculi ($n = 60$). 1/3 ($n = 65$) underwent ESWL for ureteric calculi, most commonly in the upper ureter ($n = 40$). 2 units routinely used dipstick urinalysis prior to ESWL, testing in remaining centres varied between 20–64%. Antibiotics were routinely used in one unit. Overall cumulative SRF was 53% (range 43–70%). ESWL was more effective for ureteric stones (SFR 58%) than renal calculi (SFR 38%). Following ESWL 25 patients (13%) required follow-up of residual fragments. 18% were managed with endoscopic stone fragmentation. 2 patients required emergency stenting for Steinstrasse and 2 patients were admitted with loin pain. 1 haematoma was recorded and 1 patient developed ESWL-related sepsis.
Conclusions: This study demonstrates considerable variability of practice between centres despite the existence of good-quality guidelines. Overall SFR's were disappointing, though better for ureteric than renal calculi. ESWL was found to be safe, with few complications.

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P6

Do solitary renal stones that fail ESWL require treatment?

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Introduction: The tolerability of ESWL has led to an increase in the treatment of renal calculi. However, there is little evidence on the natural history of these calculi if this fails. We looked at the effectiveness of ESWL and whether conservative management after failed ESWL is a suitable management option.
Materials and Methods: We reviewed our prospective ESWL database of patients undergoing a first treatment for a solitary stone in the renal calyces. Outcomes after ESWL were categorised as:
• Success • Subsequent intervention • Conservative management
The medical records of patients managed conservatively were reviewed to determine whether further intervention was required and why.
Results: 313 patients fitted the inclusion criteria. Of these, 144 were treated successfully. Of the 170 patients with a residual stone, 51 went on to flexible ureteroscopy directly at their next clinical review for a variety of reasons. Of the remaining patients where follow up data was available, 79 were managed conservatively, 63 (80%) of them successfully so with no recurrence of symptoms over the follow-up period (mean 2 yrs 4 m/range 1–3 yrs 8 m). 20% required intervention. The chance of intervention for residual upper pole stones was very high (87%), whereas for lower and interpolar stones it was only 5%.
Conclusion: Conservative management of renal stones after failed ESWL is a suitable option for asymptomatic patients with stones in the interpolar or upper pole calyces. For patients with upper pole stones, early intervention is warranted due to the high risk of subsequent intervention.

P7

Prospective outcomes of ultra-mini percutaneous nephrolithotomy (UMP): A consecutive single centre cohort study of 98 patients

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Introduction: Ultra mini PCNL (UMP) is a modification of PCNL for the treatment of 10–20 mm calculi. A 11–13F sheath with a 3.5F telescope and an innovative irrigation system is used to reduce surgical morbidity.
The objective of this study was to prospectively evaluate the outcomes of UMP.
Methods: This was a single surgeon prospective concurrent cohort study of UMP. Effectiveness was assessed by stone-free rates, operative time, complications, length of stay and analgesic requirements.
Results: Data was collected on 98 consecutive patients who underwent UMP. Mean calculi size (±SD) was 15.85 ± 4.53 mm and Hounsfield unit was 1105 ± 165 HU. Access was from the upper pole (8), interpolar (36) and lower pole (55). Mean operating time was 54 min (range 28–120). Mean change in haemoglobin was –0.81 g/dL and creatinine was 0.05 mg/dL. No incidences of transfusion or acute renal injury.
Five Clavien-Dindo complications (Grade I ×4, IIIb ×1) occurred with the most serious being a perinephric collection.
91% managed with oral analgesia alone. Median length of stay was 30 h (IQR 10 h). 13 patients required nephrostomy. 8 patients required a stent for one week. 98% of patients were stone free on fluoroscopy, 76% on day 1 post op ultrasound and 83% on CT at 1 month.
Conclusion: UMP for 10–20 mm stones appears to be effective and safe with few complications and a short length of stay. UMP appears best suited to patients who want a single minimally invasive procedure and avoid a double J stent.

P8

Successful treatment of lower pole renal calculi (10–20 mm) using a trimodal approach based on primary lithotripsy: Large single institution study

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Introduction: Lower pole (LP) renal calculi remain challenging to treat despite advances in ESWL, flexible ureteroscopy (FURS) and percutaneous nephrolithotomy (PCNL). We employ a 'trimodal' protocol for the treatment of solitary LP stones between 10–20 mm. ESWL is used as first line treatment in all cases, with FURS and PCNL reserved as second and third line treatments respectively, except when ESWL is contraindicated, or through patient choice. The objective was to determine the outcome of our trimodal approach.
Patients and Methods: All patients treated for solitary LP calculi sized 10–20 mm, between 2008–12, were selected from our prospectively maintained database. Treatment modality was determined at a multidisciplinary meeting based on our trimodal protocol. ESWL was performed on an outpatient basis (Sonolith Vision or i-Sys lithotripters). Outcome was assessed by KUB X-ray, or USS for lucent stones. Treatment success was defined as stone free or presence of clinically insignificant fragments (≤3 mm) at one-month follow-up.
Results: A total of 249 patients were included (median age 54.7 years, median stone size 12 mm). The overall treatment success rate was 93.5%. There were 203 (81.5%), 33 (13.2%), and 13 (5.2%) patients who underwent ESWL, FURS and PCNL as first-line treatment respectively. The success rates were 89.2%, 69.7% and 92.3% respectively. Only 22 patients failed ESWL: 17 underwent FURS (success 77%), 5 underwent PCNL (success 80%).
Conclusion: Using this protocol, the vast majority of patients are treated successfully with ESWL alone on an outpatient basis. The more invasive FURS and PCNL can be reserved for more complex cases where ESWL fails or is contraindicated.

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P9

The prevalence of altered calcium metabolism amongst stone formers

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Introduction: Vitamin D insufficiency has a UK incidence of approximately 80% and associated secondary hyperparathyroidism has been reported in up to 25% of stone formers. However, the direct influence of secondary hyperparathyroidism on nephrolithiasis is poorly understood. The aim of this study was to review the experience of a multidisciplinary metabolic stone clinic, to determine whether secondary hyperparathyroidism is associated with altered urinary biochemistry in stone formers.
Patients (or Materials) and Methods: From a retrospective review of 250 patients undergoing ureteroscopy or lithotripsy, from 2011 to 2014, patients who had 2 or more of: stone analysis, vitamin D and PTH levels or 24 h urine collection were included.
Results: Out of 108 patients (mean age of 50, range 21 to 89), 90 (83%) had Vitamin D insufficiency (<75 nmol/L) and 41 (38%) had Vitamin D deficiency (<40 nmol/L). The number of patients with elevated PTH >6.9 pmol/L was 46 (43%). Patients with high PTH had significantly lower Vitamin D levels than those with normal PTH (45.1 v 56.5 nmol/L, $P = 0.04$), otherwise there was no difference in urinary biochemistry, serum Ca and phosphate between the two groups. Patients who had stone analysis were categorised according to having primarily calcium (>50% Calcium Oxalate or Calcium Phosphate, $n = 83$) and having primarily non-Calcium stones ($n = 27$). There was no significant difference in Vitamin D, PTH and urinary biochemistry between these two groups.
Conclusion: Vitamin D deficiency and secondary hyperparathyroidism is common amongst patients with nephrolithiasis but their influence on stone formation is not straightforward and warrants further evaluation.

P10

Prevalence and treatment response of recurrent renal stone formers with hypercalciuria and distal renal tubular acidosis

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Introduction: Distal renal tubular acidosis (dRTA) is characterised by impaired urine acidification. Undiagnosed chronic acidosis causes hypercalciuria and hypocitraturia increasing the risk of renal stones. The furosemide acidification test is an equally effective, more palatable alternative to the ammonium chloride test; the gold standard dRTA diagnostic test. Treatment involves potassium citrate (PC) for hypocitraturia, dietary manipulation and pharmacotherapy for hypercalciuria. Our objective was to compare 24 h urine biochemistry response to hypercalciuria treatments in idiopathic hypercalciuric renal stone formers with and without dRTA.
Patients and Methods: Twenty-six patients with recurrent renal stones and hypercalciuria underwent furosemide acidification test. Seventeen (65%) were negative for dRTA and nine (35%) were positive. 8/9 patients with dRTA received PC. 8/17 patients without dRTA received PC. 24 h urine biochemistry was assessed at baseline and following treatment. Mean follow-up was 27 months for dRTA patients ($n = 9$) and 19 months for non-dRTA patients ($n = 17$).
Results: Baseline 24 h urine collections showed no difference between the groups. Following treatment in those with dRTA urinary calcium fell (10.2 to 9.8 mmol/24 h, $P > 0.1$) and citrate increased (2.9 to 4.1 mmol/24 h, $P < 0.05$). In non-dRTA patients urinary calcium levels fell (10.3 to 7.9 mmol/24 h, $P < 0.001$) with similar change in urine uric acid (4.5 to 3.7 mmol/24 h, $P < 0.05$). The urinary calcium reduction seen in the non-dRTA group was significantly more than the dRTA group ($P < 0.05$).
Conclusion: Distal renal tubular acidosis is found in more than a third of recurrent renal stone formers with idiopathic hypercalciuria. Hypercalciuria in dRTA appears less responsive to hypercalciuria treatment than in those without dRTA.

(P10)

	Mean Value	
	dRTA on testing	No dRTA on testing
Follow-up time (months)	27	19
Urine Volume (mls)		
Baseline	2488	2169
After Treatment	2483	2211
Urine Calcium (mmol/24 h)		
Baseline	10.2	10.3
After Treatment	9.8	7.9†‡
Urine Sodium (mmol/24 h)		
Baseline	174	180
After Treatment	191	163
Urine Phosphate (mmol/24 h)		
Baseline	36.2	37.5
After Treatment	37.9	32.6
Urine Uric Acid (mmol/24 h)		
Baseline	4.03	4.51
After Treatment	3.78	3.7*
Urine Oxalate (mmol/24 h)		
Baseline	0.43	0.46
After Treatment	0.40	0.37
Urine Citrate (mmol/24 h)		
Baseline	2.9	3.1
After Treatment	4.1*	3.9

*$P < 0.05$ from baseline †$P < 0.001$ from baseline ‡$P < 0.05$ between groups.

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P11

Renal angiomyolipomas >4 cm do not always need treatment: A study of their natural history

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Introduction: The natural history of renal angiomyolipoma (AML) is unknown. Treatment recommendations are based on smaller case series with selection bias towards symptomatic patients. We aim to evaluate the true natural history of renal AML and determine growth rates, size, clinical presentation and outcomes.
Materials/Methods: A unique information record crawler system (Montage TM) was used to retrospectively review radiology database in our institution between2002–2013 for all reported renal AMLs in patients having abdominal imaging. Of 2741 patients with AML, detailed analysis done in 447 patients (582 lesions) with ≥3 images. Treatments received, growth rates of untreated AMLs were recorded. A linear mixed effects model was used to determine difference in growth rate over time.
Results: The majority of untreated AMLs did not grow (average growth rate 0.02 cm/year) at median follow-up of 3.6 years. There was no difference in growth rates between AMLs <4 cm or larger ($P = 0.63$). Most were female (80.1%) and asymptomatic (91%). TSC was confirmed in 3.8% and presented earlier (median age 29 years) compared to 58 years for whole cohort. Median size was 1 cm but significantly larger for TSC at 5.5 cm ($P < 0.001$). Growers (>0.25 cm/year) had more symptoms than non-growers; 70% of growers were asymptomatic. Limitations include retrospective design and possible measurement variability.
Conclusions: This largest single-institution series on AMLs confirms that a size over 4 cm does not equate to need for intervention. The vast majority are sporadic, asymptomatic and harmless with negligible growth rate, making a strong case for surveillance of AMLs as an initial strategy.

P12

Exploring the potential of Fluorine-18 fluorodeoxyglucose positron emission tomography (18F-FDG PET) to improve clinical decision making in patients with Retroperitoneal fibrosis (RPF)

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Guy's and St Thomas' NHS Trust

Introduction: Clinical decisions in RPF are often difficult. Is the RPF malignant? Might the RPF be part of a systemic process? When should steroids be started/stopped? Who should have ureterolysis? How can patients be safely monitored? The degree of metabolic activity/inflammation within the RPF has the potential to influence these decisions and led us to explore the value of CTPET in managing RPF.
Methods: Prospective study of 73 patients evaluated by a multi-disciplinary RPF team since February 2012. 35 of these underwent PET in addition to CT and blood tests.
Results: 2/2 patients with malignant RPF had marked avidity on CTPET in non-typical areas for RPF
Biopsy of FDG-positive lung mass led to diagnosis of ANCA-positive vasculitis
23/35 (66%) positive PET
• 17/23 (74%) raised markers*
• 6/23 (26%) normal markers*
12/35 (34%) negative PET
• 5/12 (42%) raised markers*
• 7/12 (58%) normal markers*
8/23 (35%) patients with positive PET and 2/12 (17%) with negative PET showed a response to steroids with shrinkage of the retroperitoneal mass
10/23 (43%) with positive PET had pain compared to 2/12 (17%) with negative PET
*CRP and ESR
Conclusion:
1. PET may help diagnose malignancy in patients thought to have idiopathic RPF
2. PET may detect metabolic activity in RPF when inflammatory markers are normal
3. Where inflammatory markers are raised but the PET is negative, alternative causes should be sought
4. Patients with positive PET are twice as likely as those with a negative PET to respond to steroids
The use of PET in RPF remains investigational but has the potential to enhance clinical decision-making and is worthy of further study.

P14

10 year experience of robot assisted laparoscopic pyeloplasty

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Introduction: We present our 10 year experience of robot assisted laparoscopic pyeloplasty (RALP).
Patients and Methods: Between April 2005 and December 2014 80 patients underwent RALP for pelvi-ureteric junction obstruction (PUJO). Diagnosis was made on clinical assessment, renal scintigraphy and CT intravenous urogram. An Anderson-Hynes dismembered pyeloplasty was performed in all cases. Follow-up comprised repeat renal scintigraphy and clinical review. Demographic, pre-operative, operative and postoperative outcome measures were recorded. Success was determined as an unobstructed renogram and/or symptomatic improvement.
Results: Mean age ± standard deviation was 38.8 ± 13.1 years. Complicating factors included 10 patients with concurrent stone disease, two horseshoe kidneys, one duplex collecting system and two patients with a single functioning kidney. Mean Charlson comorbidity score was 1 ± 1.6. Mean operative time and blood loss was 149.4 min ± 42.7 min and 35.7 mL ± 51.4 mL respectively. One case was converted to open (1.25%) and four patients (5%) had Clavien III complications. Average inpatient stay was 2.8 days ± 1.5 days. 93% ($n = 65$) of cases demonstrated radiological success with improved drainage and no residual obstruction. Two patients required further surgery (open pyeloplasty and endopyelotomy) and one patient required subsequent nephrectomy.
Conclusion: Our results support RALP as an effective technique for treating PUJO. It can be safely offered to patients at centres where robotic technology is available.

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P15

10 year experience of total laparoscopic donor nephrectomy in a tertiary UK urology and transplant centre

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Introduction and Aims: Total laparoscopic donor nephrectomy (LDN) is a challenging procedure. Preservation of donor safety is paramount whilst undamaged renal parenchyma and length of vessels is required for optimal recipient outcomes. Our aim was to review outcomes with a focus on donor safety.
Methods: A prospectively maintained database of 455 consecutive patients (2003–2014), was analysed. LDN is performed totally laparoscopically with kidney removal through a non-muscle cutting pfannensteil incision. Weck hem-o-lock clips were used for artery ligation until 2013, when stapling has been used. Patient review at 3 months.
Results: Patients had multiple arteries in 29.7% of cases and 98.4% were left sided. There were no conversions to open or returns to theatre pre-discharge. Median blood loss was 50 mLs (0–2000) and median operative time 150 min (105–290). Median warm ischaemia time and length of stay was 4 min (2–10) and 3 days (1–16) respectively. Transfusion rate was 0.9% with mean reduction in haemoglobin of 1.7 g/dL. Clavien III-IV complication rate was 0.9% (no clavien IV) with overall complications in 17%. 1 splenectomy and 1 diaphragm injury were repaired laparoscopically. One patient required splenectomy at 4 weeks.
Conclusions: Results in this largest UK series of total LDN compare extremely favourably with series in the literature with no conversions, small transfusion rate and preserved donor safety. LDN in our institution is performed by urological surgeons with significant experience in upper tract laparoscopy and an interest in renal transplantation. We believe that total LDN undertaken by such a team represents the gold standard for donor nephrectomy.

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Tuesday 16 June ePoster Session 2 1030–1200 Charter 3 PROSTATE CANCER TREATMENT Chairs: Dr Inderbir Gill & Professor Alan McNeill ePosters P16–P30

P16

Achieving quality assurance of prostate cancer surgery during reorganisation of cancer services in London

P Cathcart, A Sridhara, S Nathan, T Briggs, J Kelly
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Introduction: To report to what extent the initiation of a Quality Assurance Programme (QAP) can improve quality of prostate cancer surgical care during reorganisation of cancer services in London.
Patients & Methods: The QAP comprised of weekly image-based surgical planning of cancer surgeryin addition tomonthly peer review of surgeons outcomes incorporating assessment of edited surgical video clips. Over the study period, 731 men underwent robotic radical prostate cancer surgery, 396 prior to the introduction of the QAP and 336 thereafter.
Results: Demographics of patients undergoing surgery did not change following reorganisation of cancer services. Patients reported 3-month urinary continence improved following the initiation of the QAP, both in terms of requirement for incontinence pads (57% continent vs 67% continent, OR 2.19, 95% CI 1.08–4.46, $P = 0.02$) and ICIQ score (5.6 vs 4.2, OR 0.82, 95% CI 0.70–0.95, $P = 0.009$). Concurrently, use of nerve-sparing surgery increased significantly (OR 2.99, 95% CI 2.14–4.20, $P < 0.001$) while margin status remained static. Potency at 12 months increased significantly from 21% to 61% in those patients undergoing bilateral nerve-sparing surgery (HR 3.58, CI 1.29–9.87, $P = 0.04$). Interaction was noted between surgeon and 3-month urinary continence. On regression analysis, incontinence scores improved significantly for all surgeons.
Conclusion: The implementation of a quality assurance programme improved quality of care in terms of consistency of patient selection and outcomes of surgery during a period of major reorganisation of cancer services in London. The QAP framework presented here could be adopted by other organisations providing complex surgical care across a large network of referring hospitals.

P17

Radical prostatectomy outcome data: Which parameters are representative and reliable to publish?

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Introduction: We aimed to document the learning curve for the laparoscopic radical prostatectomy (LRP) procedure and determine the most reliable outcomes for reporting surgeon performance.
Materials and Methods: Using prospectively collected data from the first series of patients to undergo LRP by two different surgeons in the same institution, linear and logistic regression analyses were carried out to graphically represent the surgical learning curve for operative time, blood loss, complications, length of stay (LOS) and positive margins. Surgeon A carried out 275 operations between 2003–2009; Surgeon B carried out 225 between 2008–2012. Comparison by groups of 25 consecutive patients was carried out with multivariate analysis and estimation of predicted probabilities.
Results: Learning curves showing continuous improvement of operative time, blood loss, complications, LOS and T2 positive margins were demonstrated for both cohorts. For surgeon A, a plateau was observed for length of stay and T2 positive margins after 100 and 150 surgeries respectively. No such plateau was observed for surgeon B. The predicted probability of a T2 positive margin decreased from >25% at the start of surgeon B's cohort to <10% after 75 operations, whilst for surgeon A, predicted probability decreased from around 50% at 100 cases to <10% after 250 cases.
Conclusion: Here we showed that the most informative outcome measure, with the least potential observer bias, was T2 positive margins. In the era of individual surgeon reported outcomes, this highlights the potential for use of a single objective

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outcome measure representative of improvement in surgeon skill over time.

P18

Robotic-assisted laparoscopic radical prostatectomy (RALP) in the north of England: A multicentre study focussing on perioperative and early oncological results

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Introduction: RALP is the standard treatment for localised prostate cancer. The outcomes of contemporary practise across England have not been widely reported
Patients: Data for all consecutive patients undergoing RALP in the NERUS group (North of England Robotic Urological Surgeons -Bradford, Liverpool, Manchester, Newcastle, Sheffield & Wirral) was analysed.
Results: 1600 patients underwent RALP, by 13 surgeons, at these 6 centres (Range 131 to 427 patients). The mean age of patients was 63 years with a mean PSA of 8.9 ng/mL. 27.2% of patients had D'Amico low risk disease and 51% and 21.7% had intermediate and high-risk disease respectively. The mean estimated blood loss was 390 mL with an average console time of 170 min. Nodal dissection was carried out in 20% of patients. Complications included 2 perioperative deaths, 1 rectal, 1 ureteric injury and 7 patients returned to theatre for bleeding and 10 patients had blood transfusions. Overall 4 patients had an open conversion. The pathology showed pT2, pT2+, pT3a, pT3b and N+ disease in 62.6%, 2.1%, 29.2%, 4.9% and 1.6% respectively. Positive margins were seen in 14.1% of pT2, 96.8% of pT2+, 32.5% of pT3a, 53.4% of pT3b and 66.7% of N+ disease. Of 675 evaluable patients for continence 78.8% required no pad, 12.2% requiring 1 pad with 9% needing >1 pad at 3 months.
Conclusions: 70% of patients undergoing RALP have intermediate or high-risk disease. The procedures have a uniformly low serious complication rate and acceptable margin positive rates. These results compare favourably with the reported literature.

P19

Open versus robotic surgery – A single centre comparison of 1000 consective radical prostatectomies

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Introduction: Robotic prostatectomy has become widespread internationally. We present the UK's first single centre comparison of open vs robotic surgery in 1000 consecutive patients.
Patients: 558 consecutive patients underwent open prostatectomy (ORP) by single surgeon between March 1997 and April 2011. Following introduction of robotic surgery in May 2011, 442 patients, in a fellowship trained single surgeon series, underwent robotic assisted laparoscopic prostatectomies (RALP) from May 2011 to date.
Methods: A comprehensive electronic database was used by both surgeons to prospectively collect data at point of care. We reviewed patient demographics, surgical, oncological and functional outcomes.
Results: The mean age was 61 vs 63.9 years and patients were matched for pre-operative PSA (10 vs 8.8) in the ORP and RALP group respectively. The operative time was similar at 163 vs 168 min. The estimated blood loss was 1597 mLs vs 262 mLs reflecting a higher transfusion rate of 14% in the ORP group vs 1.5% in the RALP group ($P \leq 0.0001$). The overall positive margin rate was 34% vs 24% (ORP vsRALP) ($P \leq 0.0001$). The overall complication rate was 13.1% vs 6.3%($P \leq 0.0001$), T2 margin rate of 20% vs 12% and mean hospital stay was 3.8 vs 1.1 days in ORP and RALP respectively. Earlier recovery of continence was seen in the RALP group.
Conclusion: This is the first UK comparative study between ORP and RALP. We have shown how safe implementation of robotic surgery has led to a shorter hospital stay, lower blood loss, transfusion rates and complication rates and improved functional outcomes.

P20

Robot assisted laparoscopic prostatectomy is associated with superior oncological outcome in larger prostates

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Patients and Methods: Data was collected prospectively on 514 patients undergoing Robot assisted laparoscopic prostatectomy (RALP) at a single UK centre between Nov 2008 and June 2014. Preoperative parameters, operative parameters, oncological and functional outcomes were compared between two groups (Group 1:prostate weight <75 g, $n = 427$, Group 2: prostate weight 75–150 g $n = 87$).
Result: No difference was seen in pre-operative tumour characteristics between the two groups. Larger prostate size (>75 g) was associated with lower grade in the prostatectomy specimens (26.4% vs 41.7% Gleason 6, $P = 0.004$). RALP for larger prostates can be technically difficult, is associated with longer operation time (255 vs 221 min, $P = 0.002$) greater blood loss (348 vs 219 mLs, $P = 0.0002$) and need for blood transfusion (0.011 vs 0.13 units per patient, $P = 0.006$). Clavien 1–2 complications occurred more frequently in larger glands (14.5% vs 6.7% $P = 0.07$), but no difference was seen in Clavien 3–4 complications.
Over a follow up period of 2.02 years biochemical recurrence (BCR, PSA>0.2 ng/mL) occurred in 24 patients. BCR developed in 23 (5.3%) <75 g glands compared with 1 (1.15%) >75 g gland ($P < 0.0001$). Using multivariate modelling we find that PSA density is a better predictor of oncological outcome following RALP than serum PSA. No difference was observed in functional outcome for RALP in larger prostates compared with smaller glands.
Conclusion: RALP for prostate cancer in larger prostates is safe and is associated with lower rates of BCR when compared with smaller glands.

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P21

Pentafecta outcomes following robot assisted radical prostatectomy

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Introduction: Pentafecta outcomes (continence, potency, cancer control, no postoperative complications and negative surgical margins) describe a set of desirable results following robot assisted radical prostatectomy. We report pentafecta outcomes in 2646 consecutive patients of RARP, stratified by D'Amico risk and age, from a single high volume center.

Methods: The study included 2646 consecutive patients, from January 2008 through March 2011, undergoing RARP. The patients included had a minimum of 2 years follow up. Patients receiving prior radiation, focal therapy for prostate cancer, androgen deprivation therapy or classified as salvage were excluded. Remaining patients were stratified according to D'Amico risk classification into low, intermediate and high risk groups. Age stratification placed patients in one of four groups: <50 years; 50–59 years; 60–69 years and ≥70 years. Patients with pentafecta outcomes were analyzed statistically. A multivariate logistic regression analysis was performed to find predictors for pentafecta outcomes.

Results: Pentafecta outcomes were achieved significantly less in the high risk group (32.9%) compared to intermediate (45.0%) and low risk patients (58.3%), ($P < 0.001$). Pentafecta outcomes were significantly higher in <50 years group compared to 50–59, 60–69 and ≥70 years groups (Table 1). On multivariate analysis, age and D'Amico risk classification were independent predictors for pentafecta outcomes ($P = 0.01$).

Conclusions: Pentafecta outcomes were more likely in D'Amico low risk and younger patients after RARP as compared to intermediate-high risk and older patients. These predictors might be used for comprehensive preoperative counselling of patients with prostate cancer.

Table 1 (P21) Proportion of patients achieving pentafecta outcomes stratified by D'Amico Risk categy and age.

D'Amico Risk category	Proportion of patients achieving pentafecta outcomes				
	Age <50	Age 50–59	Age 60–69	Age ≥70	*P* value
Low risk	72.4%	25.3%	22.7%	3.3%	<0.001
Intermediate risk	38.5%	20.5%	18.0%	2.4%	<0.001
High risk	17.2%	11.2%	2.4%	2.1%	<0.001

P22

Evolution of a contemporary robotic prostatectomy service in the UK

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Introduction: Contemporary management of prostate cancer is in evolution. There is increasing recognition of the problems of over and under-treatment. Here we investigated the referral trends over an 9 year period from a large tertiary centre since inception of radical prostatectomy (RALP).

Patients and Methods: 1362 consecutive patients underwent RALP between 2005–2014. Prospective data was collected on demographic parameters at presentation and surgical outcomes and compared over time.

Results: The mean age of the patients throughout the period was 61.6 years. The proportion of patients aged <55 however rose from 15% in 2006 to 19.8% in 2013. The percentage of pre-operative high-grade cases (Gleason sum 8–10) rose from 4.23% in 2006 to 18.46% in 2013. In this same period the proportion of clinical Stage T3 cases operated on rose from 3.12% to 11.69%. Median PSA at diagnosis however did not alter much (6.95 ug/L to 7.55 ug/L). Overall 9.6% of men referred in 2006 were classified as high-risk by NICE criteria compared to 33% of referrals in 2013. The corresponding figures for low-risk cases were 53.4% and 18.8% respectively. Surgical pathology analysis demonstrated an increase in proportion of pT3 cases from 29.4% to 44.9%. Despite this, positive margin rates fell over the period and across all pathological stages (pT2: 16.7% to 9.6%, pT3a 44% to 31%, pT3b 67.7% to 52.6%).

Conclusion: This study suggests that the referral base for RP in our unit is changing with increasing cases of younger men and higher-risk diseases. Surgical outcomes however continue to improve.

P23

Meeting the challenge of higher risk prostate cancer: a single surgeon's experience of the benefit of robotic over laparoscopic surgery

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Introduction: RALP is being replaced by laparoscopy (LRP). Reports suggest superior results with RALP. We evaluate perioperative, pathological outcomes, and short-term complications of a single surgeon's series of LRP transitioning to RALP.

Patients and Methods: Data on 200 LRP and 250 RALP consecutive patients of a single surgeon between 2008 and 2014 was retrospectively analysed in cohorts of 50.

Results: Mean age, preoperative PSA and operative times were similar in LRP and RALP groups.

(P23)

	LRP	RALP
Age (years)	63.8	62.8
Preoperative PSA (ng/ml)	9.11	8.83
Operative Time (minutes)	201	207

Lower estimated blood loss (EBL) occurred in RALP patients (642 vs 343 mL, $P = 0.001$). Complication rate was lower with RALP.

(P23)

	Open Conversion	Rectal Injury	Clavien III	Bladder Neck Stenosis
LRP	3%	2%	3.5%	6%
RALP	0%	0%	1.2%	0.8%

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Pathological T-stages were similar. Lymphadenectomy was increasingly performed in RALP patients.

(P23)

	T2	T3
LRP	39.5%	59.5%
RALP	43%	56%

There was a persistently rising proportion of Gleason 7 disease through the series with a larger proportion in RALP patients (49% vs 69%). In the first 50 patient cohort, 42% had Gleason 7 disease vs 76% in the final cohort. Despite higher grade disease and better nerve sparing surgery, there was no difference in PSM rates ($P = 0.9$). Lower PSM rates in pT3/4 disease were achieved with RALP (35.8% vs 25.3%, $P = 0.06$). PSA nadir ≤0.01 ng/mL was similar (74.6% LRP vs 77.3% RALP, $P = 0.51$). Functional and oncological outcomes analysis is ongoing.
Conclusion: Despite higher risk patient selection, RALP offers superior results compared to LRP.

P24

Early continence rates vary by surgical technique for urethrovesical anastomosis during robotic assisted radical prostatectomy

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Introduction and Objectives: This study assesses the modification of Robotic Assisted Radical Prostatectomy (RARP) using popularised techniques, with the intention of improving urinary continence (UC), and demonstrating continuous process control.
Materials and Methods: Between 2012 and 2014, 301 consecutive men were treated with RARP by a single team. Patients were categorised according to surgical technique: Group A = incorporated Rocco ($n = 53$), Group B = separate Rocco ($n = 148$), Group C = separate Rocco with anterior reconstruction ($n = 44$) and Group D = separate Rocco with no anterior reconstruction ($n = 56$).
Post-operative continence was assessed immediately, at 8 weeks, 3, 6, 9 and 12 months. Primary outcome measure was no pads used. UC was assessed during follow-up clinics or telephone. We used descriptive statistics (ANOVA and Chi-square test) to compare surgical variables across the four groups.
Results: Patient characteristics were comparable between all four groups. Immediate UC was significantly better in Groups A 14/53 (26%), B 35/148 (24%) and D 15/56 (27%), with Group C achieving only 3/44 (7%) immediate continence. At 8 weeks complete continence was 19/53 (35%) in Group A, 72/148 (49%) Group B and 35/56 (63%) Group D compared to 8/44 (18%) of Group C. 3 month UC was best observed in group A, 29/53 (54%), Group B, 98/148 (67%) and Group D, 52/56 (93%), ($P <$ 0.0001) while only 15/44 (34%) of Group C demonstrated complete continence. By 12 months the continence rates were comparable and excellent across all 4 groups.

Table 1 (P24) Patient characteristics by group.

	Group A ($n = 53$)	Group B ($n = 148$)	Group C ($n = 44$)	Group D ($n = 56$)	*P*-value
Mean Age, years (SD)	60 (5)	59 (7)	63 (6)	62 (6)	
Mean PSA, ng/mL (SD)	10.7 (7)	9.57 (7)	10.2 (8)	9.8 (11)	
DRE (%)					<0.001
Benign	6 (11)	0	0	0	
T1	4 (8)	51 (34)	16 (36)	19 (37)	
T2	30 (57)	88 (59)	22 (50)	26 (51)	
T3	6 (11)	8 (5)	4 (9)	6 (12)	
Not documented	7 (13)	2 (2)	3 (5)	0	
MRI (%)					0.0106
Benign T1	1 (2)	5 (3)	0	2 (4)	
T2a	8 (15)	18 (12)	4 (9)	18 (35)	
T2b	17 (32)	71 (48)	17 (38)	16 (31)	
T2c	10 (19)	26 (17)	5 (11)	4 (8)	
T3a	15 (28)	25 (17)	14 (32)	9 (18)	
T3b	1 (2)	2 (1)	3 (7)	2 (4)	
No MRI done	1 (2)	1 (1)	1 (2)	0	
Gleason Grade (%)					0.3187
3 + 3	5 (10)	30 (21)	9 (20)	6 (12)	
3 + 4	33 (65)	73 (50)	18 (41)	25 (49)	
3 + 5	0	0	1 (2)	0	
4 + 3	8 (16)	35 (24)	11 (25)	15 (29)	
4 + 4	2 (4)	5 (3)	3 (7)	2 (4)	
4 + 5	3 (6)	2 (1)	2 (5)	2 (4)	
5 + 5	0	1 (1)	0	1 (2)	
Blood Loss (SD)	275 (161)	252 (212)	192 (135)	212 (143)	
Operating Time (SD)	125 (36.3)	135 (53.9)	141 (94)	140 (47)	
Continence (%)					<0.001
Immediate	14 (26)	35 (24)	3 (7)	15 (27)	
8 weeks	19 (35)	72 (49)	8 (18)	35 (63)	
3 months	29 (54)	98 (67)	15 (34)	52 (93)	
6 months	34 (63)	127 (87)	26 (59)	55 (98)	
9 months	37 (69)	127 (87)	30 (68)	55 (98)	
12 months	39 (73)	135 (92)	44 (99)	56 (100)	
>12 months	53 (26)	148 (9)	44 (0)	56 (0)	

Conclusion: This study demonstrates that anterior reconstruction during RARP significantly worsens early return of urinary continence and that continuous surgical audit of techniques is essential for process improvement.

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P25

Dehydrated human amniotic membrane allograft nerve wrap around the prostatic neurovascular bundle accelerates early return to continence and potency following radical robot assisted radical prostatectomy (RARP): A propensity score matched analysis

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Introduction: Allografts of dehydrated human amniotic membrane (dHAM) have cytokines and growth factors that have been shown to reduce the inflammatory response during tissue healing and promote nerve regeneration. We evaluate the early quality of life outcomes after placement of dehydrated human amniotic membrane on the neurovascular bundle (NVB) during nerve sparing robot assisted radical prostatectomy (RARP).
Methods: From March 2013 to July 2014, 58 pre-operatively potent [Sexual Health Inventory for Men (SHIM) score >19] and continent patients underwent full nerve sparing RARP, followed by intra-operative dHAM placement at our institution. In each patient, dHAM was wrapped around the NVB following the RARP procedure. We performed propensity matching using our prospective database in matched, non-grafted patients from the same time period. Outcomes were analyzed between patient groups including time to return to continence, potency, and biochemical recurrence.
Results: The use of dHAM was not associated with increased operative time, blood loss or negative oncologic outcomes ($P > 0.500$). The mean follow up was 4 months. Continence at 8 weeks returned in 79.3% of patients the dHAM group and 72.4% of the group not receiving dHAM ($P = 0.373$). The mean time to continence and potency was significantly lower in dHAM group as compared to the matched non-dHAM group (1.21 months vs 1.83 months, $P = 0.033$) and (1.34 months vs 3.39 months, $P = 0.007$). Potency at 8 weeks returned in 63.8% ($n = 39$) patients receiving dHAM patients and 51.7% patients in the no-dHAM group ($P = 0.132$). There were no adverse effects related to the graft. Due to the retrospective element of this work a randomized controlled trial is required to confirm the efficacy of dHAM in improving post-operative functional outcomes following RARP.
Conclusions: The use of dehydrated human amniotic membrane allograft appears to hasten the early return of continence and potency in patients following RARP.

P26

Robot-assisted radical prostatectomy for radiorecurrent prostate cancer

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Introduction: To report short-term cancer control, functional and perioperative outcomes in salvage robot-assisted radical prostatectomy (sRARP).
Methods: We retrospectively reviewed the records of 88 consecutive men who underwent sRARP, from July 2007 and June 2014. Failed primary therapy was: EBRT (49%); brachytherapy (35%); HIFU (5%); cryoablation (9%) and others (2%). The endpoints were biochemical failure (BF; PSA>0.2 ng/mL), positive surgical margins (PSM), 30-day post-operative complications (POC), urinary continence (UC; 0 pads) and erectile function (EF; SHIM score > 21).
Results: Mean (SD) patients' age and PSA were 66 (7.5) years and 6.7 (7.8) ng/ml. Biopsy Gleason score was ≤6 (25%), 7 (39%), and ≥8 (36%). Clinical stage was cT1 (63%), cT2 (34%) and cT3 (4%). Low grade (I-II) POC occurred in 7 (8%), high grade (III-IV) POC in 4 (4%) and leak on cystogram in 8 (9%) patients. PSM occurred in 17 (20%) patients. Pathology showed Gleason ≥8 in 52%, stage pT3 in 51% and pN1 in 14% of the patients. BF occurred in 25 (28%) patients. BF free-survival was 71%, 63% and 59% in years 1, 2 and 3 respectively. Mortality was 0%. Pre-operative PSA, biopsy and pathology Gleason, cT and pT stage, and pN1 were significant predictors for BF. UC was achieved in 63%, 74% and 83% of the patients in 1, 2 and 3 years, respectively. EF was achieved in 34% within 1-year follow up.
Conclusions: sRARP is a feasible treatment option for radiorecurrent prostate cancer.

P27

Robotic versus open salvage radical prostatectomies: A two centre study

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Introduction: Salvage Robotic-Assisted Laparoscopic Prostatectomy is a treatment option for biochemical recurrence in prostate cancer. We report the results of salvage robotic vs open radical prostatectomy and compare the outcomes of the two techniques.
Methods: We conducted a retrospective analysis of 41 salvage robotic or open prostatectomies performed at two tertiary centres between 2007–2014. Patient records were examined to collate: primary therapy, oncological outcomes, survival outcomes, biochemical free survival and side effects of therapy (Table 1)

Table 1 (P27) Stage, positive margins and outcomes from open and robotic salvage procedures.

Stage	Positive margins	Open	Robotic
T2 (19 patients)	2	1/13 (7.6%)	1/6 (16.6%)
T3a (13 patients)	3	2/7 (28.7%)	1/6 (16.6%)
T3b (9 patients)	9	5/5 (100%)	4/10 (40%)

Results: Of the 41 procedures, 17 (41.4%) were conducted as open, 24 were robotic (58.6%). 32 patients had prior hormones and radiotherapy, six patients had brachytherapy, two patients had brachytherapy in conjunction with radiotherapy, and one had HIFU. The biochemical relapse free rate within the robotic group was 66.6% compared to 40.0% in the open group. Post open prostatectomy three had bladder neck stenosis and one needed an artificial urinary sphincter (29.4%). Overall continence rate was 70.6% for open procedures. Robotic complications were: one male sling (3.7%), one bladder neck stenosis (3.7%), and one artificial urinary sphincter (3.7%). Overall continence rate for robotic procedures was 87.6%.
All patients were alive at a median follow-up of 4.5 years. 6 have detectable PSA and have gone on to require hormone deprivation (4 were open procedures).

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Conclusions: Within the limitations of a retrospective analysis, salvage robotic assisted radical prostatectomy is technically feasible with acceptable outcomes as compared to open surgery.

P28

Is long-term urinary morbidity after prostate brachytherapy under-reported?

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Introduction: Acute exacerbation of lower urinary tract symptoms (LUTS) following brachytherapy for localised prostate cancer is a well-known phenomenon. In the majority of patients, symptom scores rise in the first few months after treatment and return to baseline in 12–18 months. Symptoms persisting beyond this initial period have not been analysed as extensively as the acute exacerbation. The purpose of this study is to report the long term urinary morbidity associated with prostate brachytherapy.
Methods: A database of men having received low dose rate brachytherapy with I125 for localised prostate cancer between 2008 and 2012 was retrospectively analysed to obtain data on patient-reported new LUTS persisting beyond 2 years and requiring medical or surgical intervention.
Results: The study included 107 suitable men with median age 66.8 years (range 45–78 years). The median follow-up was 54.6 months (range 25–73 months). At the time of their last follow-up, 55 men (51%) were either on long term pharmacological treatment (alpha-blocker +/– 5-alpha reductase inhibitor +/– antimuscarinic) and/or had received surgical intervention(s). The number of men requiring surgical intervention(s) was 13 (12%) and the causes included urethral stricture (7), urinary incontinence with or without bladder outflow obstruction (6) and prostatic urethral stone (1).
Conclusion: Men contemplating brachytherapy for prostate cancer should be counseled for a 1 in 2 risk of requiring long term medical treatment and a 1 in 10 risk of surgery for LUTS.

P29

Educational seminars increase confidence and decreases dropout from active surveillance

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Introduction: NICE guidelines recommend active surveillance (AS) over radical treatment for men with low risk prostate cancer. Despite radical treatment causing side-effects, up to 50% of men opt out of AS and into radical treatment within 12 months when not clinically indicated. Lack of support and education combined with anxiety of cancer progression are thought to drive this.
We aimed to reduce dropout by introducing educational peer group seminars for men on AS. This study evaluates the impact of seminars on the number of men dropping out of AS.
Methods: We compared two groups of consecutive patients diagnosed with low risk prostate cancer as defined by the D'amico classification system. Group A (n = 127) were offered standard care (access to a nurse specialist and written information). Group B (n = 117) were offered standard care plus an educational seminar delivered by the prostate cancer team. The seminar included information on imaging, biopsy, historical AS co-horts, diet and lifestyle advice.
We compared patient characteristics, pathology and outcome at 12 months using descriptive statistics (i.e. t-test, chi-square test, and fisher's exact test).
Results: The addition of a seminar significantly decreased the total number of men dropping out of AS, from 25% in group A to 11% of group B.
Although there were more patients with 3 + 4 disease in group A of which 18 (20%) dropped out, an equivalent number of patients with 3 + 3 disease also dropped out –14 (36%).
Conclusion: Educational seminars improve confidence in active surveillance and significantly reduce the drop out rate.

(P29)

	Group A (n = 127)	Group B (n = 117)	P-value
Mean Age, years (SD)	62 (7)	63 (7)	0.405
Mean PSA, ng/mL (SD)	9.52 (7.05)	8.46 (5.24)	0.190
DRE			
Benign	44 (35)	45 (38)	0.513
T2	72 (57)	66 (56)	
T3	11 (9)	6 (5)	
Biopsy Gleason Grade			<0.001
3 + 3	39 (31)	109 (93)	
3 + 4	88 (69)	8 (7)	
Patients dropping out of Active surveillance			
3 + 3	14/39 (36)	13/109 (12)	0.001
3 + 4	18/88 (20)	0/8 (0)	0.345

P30

Can PSA density identify prostate cancer progression in men on imaging guided active surveillance?

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Introduction: PSA and TRUS biopsy are the main methods used to assess for progression in men on Active Surveillance. There is interest in the use of imaging and new biomarkers to assess progression in order to avoid the morbidity associated with repeat TRUS biopsies. PSA density is used in risk classification of men prior to Active Surveillance but its usefulness as a marker of progression has not yet been evaluated.
Methods: Men with low/intermediate risk disease and 2+ mpMRI scans without intervening treatment were identified. PSAD was calculated at each MRI scan. Progression was defined as appearance of new lesions or increase in volume/

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conspicuity of the baseline MRI lesion. Specificities and sensitivities at various cutoffs for percentage increase (any, 10%, 20%, 30%, 50%) in PSA density were calculated.

Results: We identified 275 men with a total of 1347 patient years (4.9 years/ patient). 208 men had enough data to calculate repeat PSA densities and were included in the analysis. The findings for the different groups are summarised below:

(P30)

PSA Density percentage change	Sensitivity	Specificity	PPV	NPV
Any	72%	56%	36%	85%
10% or higher	66%	61%	36%	84%
20% or higher	49%	70%	36%	80%
30% or higher	43%	80%	43%	81%
50% or higher	28%	91%	52%	79%

Conclusions: We demonstrate that PSA density shows promise in being a useful detector of radiological progression, with a higher percentage increase causing more alarm. Comparison with PSA alone and other biomarkers currently in use is needed to further assess its usefulness.

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BJUI

Tuesday 16 June
ePoster Session 3
1400–1600 Charter 2
HISTORY OF UROLOGY
Chairs: Mr Jonathan Goddard & Mr Ed Jefferies
ePosters P31–P42

P31

The evolution of urinary diversion and the orthotopic neobladder

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The earliest recorded attempt to divert urine from ureter to intestine was performed at St Thomas' Hospital by John Simon (1851). A 13-year old with bladder exstrophy underwent bilateral **ureterosigmoidostomy** but died later from renal failure. Subsequent attempts at ureterointestinal diversion were invariably complicated by overwhelming postoperative sepsis (Johnson 1852) or uraemia secondary to anastomotic stenosis (Smith 1878). The development of obstruction was reduced with anastomosis of ureteric orifice (Tuffier 1890) or trigone (Maydl 1892) directly onto intestine. Submucosal tunnelling (Coffey-Mayo operation 1912) and ureteric spatulation with mucosa-mucosa anastomosis (Nesbit 1948) further lowered the stricture rate. With increased survival, the inevitable development of hyperchloremic metabolic acidosis became apparent and the procedure lost favour (Ferris&Odel 1950). After canine experiments (Gluck&Zeller 1881), Agnew performed the first **cutaneous ureterostomy** for ureteric injury. Rydygier (1892) undertook the first bilateral procedure and Papin (1925) demonstrated from his series of cystectomy patients that mortality from cutaneous ureterostomy (28.7%) was much lower than from ureterosigmoidostomy (59.2%). However, poor methods of anastomosis remained the primary cause of long-term morbidity.

Although first described by Zaayer (1911), it was not until Bricker published his series (1950; mortality rate 3.4%) that **ileal conduit** became established. With a lower infection rate and lack of metabolic shortcomings it rapidly became the gold standard. Despite better outcomes in animal experiments, **colonic conduit** (Übelhör 1952) failed to supercede it.

After cystectomy continent urinary diversion is the ideal objective. In suitable patients this may be achieved by creating a continent urinary reservoir or **neobladder**. Tizzoni&Poggi (1888) constructed the first reported neobladder in a dog using a two-stage technique. Ileum was looped and then anastomosed to the ureters and bladder neck.

Lemoine (1912) created the first human neobladder by reimplanting the ureters and urethra into displaced rectum. The patient died postoperatively of sepsis. Couvelaire (1951) reported the first human ileal neobladder with anastomosis to the urethra and exteriorisation to the abdominal wall (high-pressure safety valve to prevent reflux nephropathy). Camey (1959) popularised ileal neobladders using a 'U'-shaped loop. To increase capacity and decrease intraluminal pressure Kock (1969) devised a pouch fashioned from detubularised ileum. 'Nipple valves' were then created from intussuscepted afferent and efferent portions to prevent reflux and achieve continence. Introduction of clean intermittent catheterisation (Lapides 1971) further increased interest in the field.

After animal experiments (1984), Studer introduced an ileal pouch with afferent loop (chimney). This rapidly became the most widely used neobladder. Hautmann (1987) then described a 'W' or 'M'-shaped detubularized neobladder which gained popularity with female patients. **Ileocaecal neobladders** have also been constructed with the Orthotopic Mainz pouch (1983) and ileocolonic 'Le Bag' pouch (Light&Scardino 1986) most described.

Neobladder development has not been achieved purely through surgical advances but also through an increased appreciation of the physiology involved. As bowel specific problems persist (metabolic imbalance, mucus secretion, etc.), the development of autologous tissue-engineered bladders is now being explored.

P32

Adam's lost rib

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Introduction: In numerous monotheistic scriptures, Eve, the first human female, was made from Adam's 'rib'. Both sexes, however, possess an identical configuration of 12 pairs of ribs. Anatomically, in comparison to primates, the only bone

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which Adam could have lost, in order to create Eve, is the baculum (penile bone).
Methods: A search was done in Google, Google Scholar and PubMed using the search terms, 'baculum', 'penis bone', 'os penis', 'penis ossification' and 'comparative study of baculum'. Identified articles were reviewed manually.
Results: The Hebrew word 'tzela' could generally mean any 'supportive structure', not specifically a 'rib'. Comparative studies suggest varied functions of the baculum in initiating and prolonging the duration of intercourse and aiding sperm delivery in a competitive mating environment. The decrease in competitive mating in humans could have resulted in evolutionary loss of function of the baculum. Physiologically, human penile rigidity is achieved haemodynamically prior to penetration, whereas in other mammals and primates, rigidity for penetration can be provided by the baculum, with haemodynamic erection occurring after. Human penile ossification has been reported in literature as being spontaneous, post-traumatic or secondary to Peyronie's disease.
Conclusion: With the limited evidence available, we were unable to ascertain if, when, how and why the human male lost his baculum and whether the human female has benefitted from this loss. However, with the increasing prevalence of erectile dysfunction and use of penile implants, it is clear that some human males would have benefited from the presence of a baculum.

P33
The history of vasectomy

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The vasectomy procedure is a common method of male contraception used today however historically the procedure has been performed for other indications.
The clinical use of vasectomy dates back to the 1880s and early indications were to achieve prostatic atrophy and thereby improve obstructive urinary symptoms as an alternative to castration. The procedure was popular for a period because of minimal harm and perceived efficacy but soon after it was realised that vasectomy did not produce prostatic atrophy.
A later indication for vasectomy was as prophylaxis against epididymitis following prostatectomy, as this was a frequent complication of the procedure. A number of notable surgeons at the beginning of the twentieth century certainly recommended vasectomy at the time of prostatectomy. However as surgical techniques improved and effective antibiotics were developed the incidence of epididymitis fell.
Eugen Steinach later popularised the procedure as a method of 'rejuvenation' and the procedure became known as the Steinach operation. It was adopted worldwide and even Sigmund Freud underwent the procedure although he was dubious about its effect. By the late 1940s the procedure fell out of fashion.
In the 1890s, the American surgeon Ochsner recommended vasectomy for eugenic purposes. Several states in United States passed laws authorising vasectomy for various conditions and crimes, but this later stopped by the 1960s.
Clearly the history of vasectomy is an interesting and colourful one particularly since its voluntary use for family planning only came about in the mid 1900s. Now there are several techniques described to improve outcomes.

P34
Stones of great Britons

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Introduction: Over the course of history, renal stones, has affected many famous personalities. The biographies of many historic British greats have account of their stones and suffering This review explores some of them.
Methods: A search for pertinent primary and secondary sources was undertaken using internet and library sources.
Results: James VI King of Great Britain had kidney stones. He suffered from haematuria and colic. Similar problems affected King George IV and Oliver Cromwell, whose physician at the time advised him to consume fluid and move his body violently, a primitive form of expulsive therapy! Samuel Pepys (1633–1703) the Member of Parliament wrote that he had a successful operation for a bladder stone and encouraged others although it carried significant mortality. Robert Walpole the first prime minister of Great Britain, and his family suffered with kidney stones. William Harvey was a recurrent stone former with gout. John Wilkins (1614–1672) the bishop of Chester and founder of the royal society went through a very painful episode during passing a kidney stone and retention. His death is attributed to opioids toxicity. Sir Isaac Newton suffered from urinary incontinence due to bladder stones and had attacks of gout!
Thomas Sydenham known as the English *Hippocrates* described his own kidney stone pain, a classic urinary colic description.
Conclusion: Even in yesteryears celebrity medical problem gave publicity to the disease and the branch of medicine.

P35
Willard E Goodwin a urologist who one day made a mistake but it was a good one!

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Introduction: In 1955 Willard.E.Goodwin during an arteriography attempt in a patient with hydronephrosis inadvertently placed a needle in the renal collecting system. In addition to the first nephrostomy tube Goodwin also performed the first antegrade nephrostogram.
Material and Methods: A systematic search of urological literature, historical sources, online and published material was performed on the subject.
Results: In 1955 with William Casey he went on to describe the first 18 attempts performed in 16 patients. Including an honest discussion on failed attempts and complications that did and can occur. Their patients ranged form children with PUJ obstruction to adults needing reconstruction. Their indications were to allow temporary drainage to see if renal function improved or to allow temporary urinary diversion in order to preform reconstruction surgery in the future.
In their discussion of complications and dangers their list of possible problems that can arise is so relevant and complete that it could have been written last year rather than 60 years ago with no benefit of cross-sectional imaging.
Conclusions: Throughout his career Goodwin was known as a pioneer and innovator. During a sabbatical in renal transplantation he reported the first

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effective use of steroids for allograft rejection. At UCLA, he helped develop the division of urology to world class status, and handed over the reigns early so he could continue to turn his interest to academic matters. He rejoiced in his trainees being appointed to important posts within the Urological community.

P36

The lost urologist: Edward Canny Ryall

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Introduction and Objectives: Edward Canny Ryall was a pioneering early 20th century urologist. He was a great philanthropist, dedicating his life to relieving the suffering of urology patients while enhancing knowledge in the specialty.
Material and Methods: Archives and records of All Saints Hospital from the Wellcome Institute and the London Metropolitan Archives.
Results: Canny Ryall (1865–1934) was born in Limerick and studied medicine at the Royal College of Surgeons in Dublin. He trained as a General Surgeon but focused his interest in urology; a growing specialty at the time. In 1911, unhappy with the care given to urology patients elsewhere, he established All Saints Hospital, a specialist urological centre. It was an institution sustained by his dedication and charitable donations. He was supported in his cause by the then Prime Minister Arthur Balfour. At its height, All Saints Urology Hospital had 55 inpatient beds and treated 600 inpatients and 1500 outpatient a year. This included neonatal urology, enuresis clinics, renal stones, elderly urology, cancer and tuberculosis. He promoted urology in the UK through his beautifully illustrated 1925 book 'Operative Cystoscopy', which was hailed as a landmark in surgical publications. All Saints was the first institution in Britain to promote TURP over open prostatectomy and one of his protégés was Terrence Millin.
Conclusion: Canny Ryall died in his home in Harley Street, London on the 11th February 1934 at the age of 69. He was a seminal urologist who changed the course of the specialty.

P37

History of cryotherapy for prostate cancer

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Introduction: Cryotherapy describes the process of targeted tissue destruction by applying freezing temperatures. The origins of cryotherapy date back to the 19th Century when James Arnott first applied ice mixtures to breast and skin cancers. Since this era, the development of cryotherapy has been significant and it is now considered a treatment option for localised prostate cancer.
Methods: A systematic literary search was performed looking at the history of cryotherapy and the advancements in cryotherapy technology for prostate cancer.
Results: Developments in physics during the 20th century improved freezing techniques. The crude ice-mixtures used by James Arnott were replaced by liquid gases in the early 20th century. The invention of cryoprobes, devices inserted into the tissue to deliver the freezing temperatures, further helped in precisely targeting cancerous tissue. The most recent generation of devices uses pressurised gasses, allowing thinner cryoprobes which minimise damage to surrounding tissue. For use in prostate cancer, technologies such as urethral warming catheters and TRUS imaging further helped reduce adjacent tissue damage. Since PSA testing began, there has been a stage and grade migration of prostate cancer with a fall in mortality. Less radical treatment options are becoming more attractive, and therefore recent developments in cryotherapy are focusing upon focal rather than whole-gland therapy.
Conclusion: Since the introduction of cryotherapy, the technology and delivery methods have improved significantly. These advances have improved oncological and morbidity outcomes which has allowed cryotherapy to become a viable treatment for prostate cancer.

P38

The history of pelvic organ prolapse from antiquity to present day

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Introduction: Pelvic organ prolapse (POP) was described in 1500 B.C. POP remains a common and debilitating female pelvic floor disorder. POP management evolved from rudimentary pessaries and herbal medicines into modern robotic repair procedures.
Patients and Methods: A non-systematic review of medical texts and current literature identified by pubmed pertaining to history and development of POP surgery was performed.
Results: Recommendations 'to correct a displaced womb' were described in the Ebers Papyrus. Hippocrates described pomegranate pessaries to reduce POP and succussion. Leonardo Da Vinci (1452–1519) contributed to texts following extensive cadaveric pelvic dissection. Vesalius described the female genital tract. In the 16th century, pessaries evolved from lint balls to brass, cork, wood or metal, then to rubber in 1844. The first vaginal hysterectomy for POP was reported by Choppin, of New Orleans, in 1861. Le Fort developed partial colpocleisis in 1877, a technique still used today. In 1898, Watkins, not believing in removal of the non-diseased uterus, described interposition surgery. Donald and Fothergill developed the Manchester operation. In 1971, Randall and Nichols reported surgical outcomes of transvaginal sacrospinous fixation for vault prolapse. Two major shifts have occurred in POP surgery: introduction of vaginal mesh and advanced endoscopic surgery. Abdominal sacrocolpopexy, is now achievable via laparoscopic or robotic approaches.
Conclusions: POP was described thousands of years ago, since which time there has been evolution surgical treatment options. Early anatomists hastened progress in understanding anatomy. More recently advances in technology have been key to progress in surgical techniques.

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P39

Post-transurethral prostatectomy suprapubic pressure test: A tribute to the life and accomplishments of William Wardill (1894–1960)

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Introduction: Concluding a transurethral prostatectomy (TURP), an assessment of the success of resection by applied suprapubic pressure with an expressed flow rate (the Wardill test) is common practice. The test has been handed down by word of mouth with no description in any journals published till today. The Wardill test is attributed to William Wardill, a surgeon in Newcastle-Upon-Tyne and a pioneer of surgery in his day. We observe his teachings and notable achievements.
Materials and Methods: Archives at the Royal Society of Medicine and Wellcome History of Medicine libraries were searched for publications and records relating to the life and surgical achievements of W.E.M Wardill.
Results: Born in Gateshead, where his father was a Mayor, he was educated at Newcastle Royal Grammer and Millhill School. Having persuaded his parents, he studied at Newcastle medical school and graduated in 1918. During the First World War, he served as a surgeon probationer in the R.N.V.R and then, after graduation as a temporary surgeon. He returned to Newcastle in 1920 and, having completed his F.R.C.S., he became house surgeon to Grey-Turner and Rutherford Morrison. Early in his career, he undertook extensive work on cleft palate surgery and pharyngeal musculature. In a Hunterian lecture in 1927, he showed that in patients with cleft palate the pharynx was abnormally wide and that the problem was how to narrow it. Furthermore, in his Hunterian lecture in 1932, he described further developments in his technique and suggested a classification of speech defects still used today. In spite of his involvement in plastic surgery, he remained a general surgeon, and, following a visit to the Mayo Clinic in 1937 with T J Lane of Dublin; he started a department of urology, largely devoted to the Mayo Clinic technique of punch prostatectomy, at the Newcastle General Hospital. In 1948, he left the National Health Service and emigrated to South Africa where he farmed the Cape Province for two years prior to returning as chair of surgery from 1952 to 1958 at the royal medical college in Baghdad. He then returned to reside in the UK. He died at his home in Newcastle-Upon-Tyne on 24 December 1960, aged 66.
Conclusion: William Wardill contributed abundance to many fields of surgery. Amongst the advances of modern surgery, the Wardill test remains a fundamental principle and outcome measure of resection in transurethral prostatectomy.

P40

Mitomycin-C: Historical aspects of the discovery of most commonly used chemotherapy agent in urology

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Introduction and Objectives: Although urology is primarily a surgical speciality, evolution of pharmacotherapy over time has revolutionised the treatment of certain disorders. Endoscopic resection was the only treatment that was available for superficial bladder tumours, till the development of intravesical instillation of chemotherapeutic agents. The discovery and introduction of mitomycin C into urological field is researched in this presentation.
Methods: Material per taining to early treatment of bladder cancer was reviewed. Correspondences with Japanese companies where the discovery was made also contributed immensely to the research.
Results: The mitomycins are a family of aziridine-containing products isolated from Streptomyces species. After discovery of penicillin by Fleming, there was an interest in isolating substances from microorganisms that were capable of killing other bacteria. Japan, after its defeat in the WWII, was keen to be a frontrunner in development of newer antibiotics. Dr. Kitasato founder of Kitasato Institute laid the foundation of early development of microbiology and pharmacology. Dr Toju Hata (1908–2004), after serving in the army during the War, joined Kitasato Institute to pursue his interest in microbiology. His hard work paid results as in 1953, he discovered the antibiotic Leucomycin. In 1956, Hata isolated mitomycin-A & mitomycin-B from Steptomyces caespitosus that had antibiotic & antitumour activities. Dr Hata along with Dr Shigetoshi Wakagi from Kyowa Hakko Kogyo company later reported the isolation of mitomycin-C from the same fermentation broth at a higher pH and that this compound had much higher antitumour activity. After the success of intravesical therapy using Thiotepa in 1961 by Jones and Swinney, Dr Shida and his colleagues reported in a Japanese journal the use of mitomycin C. Because of lesser side-effects and its efficacy, mitomycin-C became the most popular agent for intravesical therapy for superficial bladder cancer.
Conclusions: The discovery of mitomycin C is interesting as it was being isolated as an antibiotic but found to have antineoplastic properties. Its success in reducing the recurrence had made it the most commonly used chemotherapeutic agent in urology.

P41

The evolution of testicular prostheses: greater patient satisfaction or are we still dropping the ball?

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Introduction: The development of testicular prostheses has been influenced both by greater appreciation of psychosexual consequences of testicular absence and developments in material science.
Patients & Methods: Medline, google and google scholar searches were performed.
Results: In 1941, the first synthetic prosthesis ('vitallium') was used to treat a soldier with depression following orchidectomy. Subsequently polymethylmethacrylate, glass spheres, polyvinyl alcohol sponge, dacron and gelfoam were all trialled, with the hope that they would produce a more natural feeling alternative. The greatest advance was the development of silicone elastomers by the chemical industry. The first silicone testis was produced as early as 1964. The most significant improvement was a silicone gel filled, silicone rubber prosthesis which was described by Lattimer et al (1973), which was used widely until 1988 when a firmer, silicone-coated product became the standard. There was a voluntary withdrawal of silicone-gel filled

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prostheses in the US in 1995 following concerns about the risks of silicone migration into surrounding tissues. A new saline filled, silicone shelled prosthesis was then introduced, which continues in use today. Also available are semi-solid silicone elastomer prostheses. Modern prostheses have been criticised for their dimensions, sometimes resulting in dissatisfaction related to size, shape and weight.
Conclusions: The implants currently used are safe, inert and have the physical properties of weight and texture that mirror as much as possible the testis they replace. Nevertheless, they remain imperfect and perhaps their acceptability and the expectations and satisfaction of the patient could be improved by more pre-operative involvement.

P42

The history of penile enhancement – to cut a short story long

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Introduction: Throughout history the penis has been a sign of masculinity characterised by its length, shape and performance. Insecurity regarding penile dimensions and methods of penis enlargement are well reported. We present the various methods of penile enhancement from ancient times to modern day era.
Methods: A literature search was conducted describing penis size and methods for penile enhancement throughout history. We reviewed the evolution of these techniques and present our findings.
Results: Procedures employed for male enhancement date back to ancient rituals, such as the African custom of hanging weights from genitals and the Topinama tribesmen (Brazil) practice of increasing penile size by allowing a snake to bite the penis. Approaches to penis enlargement have since evolved, with more sophisticated methods currently employed. A vacuum device utilising a compression ring was first patented in 1917. The first recorded penile augmentation procedure was performed in 1971 for the treatment of microphallus in bladder exstrophy children. Over the years, division of the suspensory ligament in cosmetic surgery has become established. Other initiatives include penile rings, penile extenders/ traction devices, and jelqing. The mainstay of girth enhancement is fat injection into the penis, described in 2006. These methods have various degrees of success as well as associated morbidity.
Conclusion: Penile enhancement is an interesting and controversial subject. It is clear that since ancient times across cultural divides, penile dimensions have been topical. The evolution of the techniques currently available to enhance penile size is ongoing fuelled by intrigue and demand.

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BJUI Tuesday 16 June ePoster Session 4 1400–1600 Charter 3 GENERAL UROLOGY AND INFECTIONS Chairs: Mr Andrew Doble & Mr John McKnight ePosters P43–P57

P43

An observational study of erectile dysfunction, infertility, and prostate cancer in regular cyclists: Cycling for health UK study

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Introduction: Cycling is a popular sport among men. Despite its health benefits, fears have been raised regarding its effects on erectile dysfunction (ED), fertility, and on serum prostate-specific antigen levels. This study aimed to examine associations between regular cycling and urogenital abnormalities in men.
Methods: A cross-sectional population study of 5282 male cyclists was conducted in 2012–2013 as part of the Cycling for Health UK study. The data were analyzed for risk of self-reported ED, physician-diagnosed infertility, and prostate cancer in relation to weekly cycling time, categorized as <3.75, 3.75–5.75, 5.76–8.5, and >8.5 h/week.
Results: There was no association between cycling time and ED or infertility, disputing the existence of a simple causal relationship. However, a graded increase (p-trend = 0.025) in the risk of prostate cancer in men aged over 50 years (odds ratios: 2.94, 2.89, and 6.14) was found in relation to cycling 3.75–5.75, 5.76–8.5, and >8.5 h/week, respectively, compared to cycling <3.75 h/week.
Conclusions: These null associations refute the existence of a simple causal relationship between cycling volume, ED, and infertility. The positive association between prostate cancer and increasing cycling time provides a novel perspective on the etiology of prostate cancer and warrants further investigation.

P44

Vasectomy, pain, sexual dysfunction & relationship breakdown – Large cohort study

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Introduction: Does vasectomy (a means for permanent contraception offered to couples in a stable relationship) trigger marital breakdown? There are no publications on the subject. A significant number of men request reversal of vasectomy shortly (within 2 years) after the procedure.
Patients and Methods: 1832 men had vasectomy between 1996 and 2008 in Aberdeen Royal Infirmary. All were invited by letter to complete a questionnaire validated using the test re-test method. The questions addressed overall outcome, regrets by the man or his partner, wound infection, pain, vasectomy reversal, sexual performance, partnership status changes/ relationship breakdown. Thirteen men who attended for vasectomy reversal were interviewed at length.
Result: 721 men responded. 231 were untraceable and 217 had moved. Nine could not reply (severely ill) and 3 had died. 660 (91.5%) were satisfied. 232 reported short or long-term pain, 37 men and 45 partners had regrets.
Most importantly 147 (20.4%) reported relationship breakdown (separation, divorce or re-marriage), most of whom had moved address. More crucially 49 (33%) of these blamed the vasectomy for the relationship breakdown. Lack of sexual performance was strongly associated. Circumstantial evidence suggests a significant number of the untraceable 231 and the 217 who moved had relationship breakdown.
Of 13 who attended for vasectomy reversal, 7 (54%), indicated that the vasectomy was related to their relationship breakdown.
Conclusion: This is the first study ever to link vasectomy to relationship breakdown. The catalyst may be the vasectomy or the perceived associated sexual dysfunction following the vasectomy.

P45

Optimal timing of semen analysis following vasectomy

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Introduction: Guidelines on post-vasectomy semen analysis (PVSA) are highly variable. EAU recommend a single

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PVSA at 12 weeks, AUA recommend a single PVSA from 8–16 weeks whereas the British Andrology Society recommends two PVSAs at 16 and 18–20 weeks.
We aimed to evaluate the optimal PVSA timing and the utility of repeating PVSA in patients undergoing bilateral vasectomy. We also aimed to identify risk factors for failure to obtain azoospermia.
Methods: Data for all patients undergoing vasectomy between Jan 2007-May 2013 at a single institution were identified from electronic records. Patients were typically asked to provide two semen samples at 12 and 16 weeks. Agreement between samples in failure to obtain azoospermia was established. Univariate and multivariate analysis to identify risk factors for failure to obtain azoospermia at 16–18 weeks were identified.
Results: 190 men submitted PVSAs at both 12–14 weeks and 16–18 weeks. In these men first and second samples agreed in 148/190 (78%) of cases. The PVSA at 12–14 weeks failed to show azoospermia in 67/190 (35%) whereas at 16–18 weeks, 49/190 (26%) failed to show azoospermia. This difference of 9% (95% CI 2–17%) was statistically significant ($P = 0.008$). Surgical occlusion technique ($P = 0.995$), primary surgeon seniority ($P = 0.995$), presence of an assistant ($P = 0.9$) or anaesthetic type ($P = 0.878$) did not influence failure to obtain azoospermia at 16 weeks on multivariate analysis. A single sample PVSA at 16–18 weeks would have saved £12367.
Conclusion: 12–14 weeks may not be the optimal time for a PVSA and may be too early. A single 16–18 week sample would allow clearance of a greater proportion of men, would have important cost saving implications and may alleviate anxiety and increase patient compliance.

P46
Islam and the urinary tract – A contemporary theological and surgical dilemma

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Introduction: Islam represent the second largest religious group in the U.K. Urologists may encounter a dilemma when faced with a Muslim patient requiring a cystectomy. Such patients will often consider an incontinent diversion as invalidating their '*wudhu*' (state of ritual purity required for prayer). Passing urine is a mechanism of losing this clean state.
In some cases, their belief may conflict with what is clinically indicated. We sought to address this theological dilemma by assessing the views of Islamic religious leaders (Imams).
Materials and Methods: A questionnaire (Table 1) was distributed to all U.K mosques addressed to the Imam ($n = 804$).
Results: A total of 134 Imams responded (Table 1).

Table 1 (P46) A summary of results from questionnaire.

Question	Yes	No	Unsure
Can you make and keep wudhu with a urinary stoma?	94%	3.7%	2.3%
Can you enter a mosque with a urinary stoma?	92.5%	6%	1.5%
Can you pray with a urinary stoma?	97%	2.3%	0.7%
Is it preferable to refuse necessary surgery on the grounds that a stoma would not maintain wudhu?	3%	86.6%	10.4%

Discussion: The majority of Imams agree that Muslims with a urinary stoma are able to maintain their ablution allowing them conduct their daily prayers and this form of surgery should not be refused on religious grounds.
Muslim patients who require urinary diversion should be advised to seek appropriate religious counselling. This study suggests that the consensus view is that a urinary stoma is not contra-indicated with regards to the practice of Islamic prayer rituals.

P47
The role of anticoagulation in emergency haematuria admissions

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Introduction: Haematuria accounts for a significant number of urological emergency admissions. A number of patients are anticoagulated, either without or following urological intervention. We audited emergency admissions with heamaturia in our department over a 9 month period to determine how many could be attributed to anticoagulation.
Methods: Using our electronic medical records systems, Diadem and E-record, we retrospectively reviewed admissions through our Emergency Unit with haematuria between January and October 2014. Those with known TCC were excluded.
Results: 138 admission episodes were recorded, from 106 patients. 60 patients (57%) were on anticoagulant therapy. The mean length of stay was 4 days, ranging from 1–19 days in total. The average number of admissions per patient was 1.3, ranging from 1–6. In total anticoagulants accounted for 531 days in hospital. 89 patients required 3-way catheters and irrigation, and 11 underwent emergency procedures. The anticoagulant responsible for the majority of admissions was aspirin – 97 days. Others included warfarin 70 days, clopidogrel 41 and rivaroxaban 28 days. 19 admissions were following operative procedures, 10 of whom had postoperative anticoagulation.
Conclusions: Haematuria accounts for a significant number of emergency admissions to urology. This can be down to anticoagulation in many cases, which may be down in part to inappropriate prescribing. The AHA showed up to 1/3 aspirin prescriptions are inappropriate. Admission to hospital costs £400 a day (http://www.reducinglengthofstay.org.uk). Using judicious prescribing we could potentially save >£32 000 a year on unnecessary hospital admissions. We are currently investigating the risks associated with newer anticoagulants.

P48
Is scrotal ultrasound scan necessary in patients with clinically suspected benign testis pathology?

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Introduction: Testes lesions are a common occurrence with the vast majority being of benign pathology. Scrotal Ultrasound scans (SUSS) are routinely

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performed to exclude an underlying malignant pathology. However, to determine whether this is necessary in the absence of clinical suspicion, we performed a retrospective study examining SUSS reports at our Institution.
Patients & Methods: Between January 2012 and December 2013 a total of 3298 men with a median age of 37 years (range: 16–60 years) underwent a SUSS performed by a mixture of radiographers and radiologists. Of these, 1552/3298 (47%) with a median age of 36 years (range: 16–60 years) were included in our study. 1746 (53%) were excluded, as they were thought to have an infective, malignant or traumatic testis.
Results: 27/1552 (1.7%) had a sinister SUSS and were referred to Urology MDT. Of these, 18/27 (67%) with a median age of 32 years (range: 19–59 years) were still regarded as having a malignant pathology and underwent an orchidectomy. Histology revealed a malignant pathology in 15/18 (83%). Overall, 18/1552 (1.2%) had an unexpected suspicious SUSS supported at MDT with 15/1552 (1%) having a confirmed malignant pathology.
Conclusion: Our large retrospective study has demonstrated that 1% of men with clinically benign testis lesion will actually have an underlying unsuspected malignant pathology. Therefore, SUSS should be considered in all men presenting with a testis lesion.

P49

CT urography as the first line investigation for haematuria: Is it truly indicated? A single centre analysis of the use of CT urography in the haematuria clinic

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Introduction: CT Urography is gaining popularity as the first line investigation for haematuria. It can be used to produce a 'true' one-stop clinical assessment. However, a large number of investigations can be negative, exposing patients to a number of risks.
Objective: We set out to evaluate the use of CT Urography in our one-stop haematuria clinic, to see if it supported the utilisation of CTU as a triage investigation for haematuria.
Methods: Retrospective analysis of all CT Urograms performed (508) in our trust in 2013 took place. CTU's requested from the haematuria clinic were identified and analysed further.
Results: 1086 patients attended the haematuria clinic in 2013. 168 males and 78 females (median age 64, range 25 to 90) went on to have further CTU investigation after ultrasonography (USS) and cystoscopy. Visible haematuria (VH) was reported in 95% of cases. All 9 confirmed cases of upper tract TCC lesions presented with VH (age > 50). 8 out of 9 had reported hydronephrosis on USS. The overall negative predictive CTU rate was 96%.
Conclusion: Our results show a large number of CTU's are negative. The use of risk stratification, with particular emphasis on the ultrasonography result, gives adequate guidance on the cases that require further CTU investigation. Our results do not support the use of CTU as a first line or triage investigation for haematuria.

P50

Use of percutaneous nephrostomies in the management of obstructive uropathy due to malignancy

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Introduction: The development of obstructive uropathy due to advanced malignancy is recognized as being a poor prognostic sign. Given improvements in cancer management and the availability of a wider range of oncological treatments, this study aimed to assess the success rates, morbidity and survival times following percutaneous nephrostomy insertion.
Methods: A five year single centre retrospective cohort study of patients undergoing nephrostomies for malignant ureteric obstruction. Primary outcome measures were the procedure success rates and survival time following nephrostomy insertion. Secondary outcome measures included the effect on renal function and procedure-related complications.
Results: 141 patients (52 female, 89 male) with a mean age of 71 years (range 21–90) underwent nephrostomies. 193 nephrostomies (bilateral in 52 patients) were performed with a failure rate of 1%. Dislodgement of the nephrostomy tube was the commonest complication. Urological cancers were the most common causative malignancy followed by cervical, breast and colorectal cancer. Overall median survival time was 98 days, but patients with an unknown primary had a median survival time of 20 days. Renal function failed to improve in 25% of the patients and antegrade stenting was unsuccessful in 19%.
Conclusions: The overall survival of patients with malignant ureteric obstruction remains poor. Patients in whom prognosis is particularly poor should be considered for a single rather than bilateral nephrostomies to reduce the potential morbidity and detrimental effect on quality of life. It is hoped that the findings of this study will help inform the way patients are counselled about the procedure.

P51

Long-term nephrostomy kidney drainage – A hidden challenge for urology services

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Introduction: Long-term renal drainage by nephrostomy is increasingly common. The complications and the subsequent costs of nephrostomy related problems are poorly described. Our objective was to analyse the causes and the management of acute nephrostomy related complications.
Methods: Patients with long-term nephrostomies were identified from the radiology department records. A retrospective review of unplanned nephrostomy-related admissions was undertaken. Data was collected on reason for admission and subsequent management.
Results: Forty-one patients with long-term nephrostomies were identified (23 male, 18 female). Twenty-eight (68%) had at least 1 emergency admission (range 1–8). Eighty-four unplanned admissions equated to 323 bed days (mean 4.04, range 1–29) (5 HDU bed days) with an estimated cost of at least £94 000. Seven patients had had their nephrostomies inserted at other hospitals. Tubes not draining (47 admissions) and sepsis (12) accounted for most admissions. Eight admissions were to urology but were diagnosed with non-

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urological problems. On acute admission, the nephrostomy tubes had been in situ for an average of 82.7 days (1–365). Of the 47 blockages, 17 (36%) resolved with bedside flushing, 17 (36%) required a change and the remainder drained spontaneously or with rehydration. Forty-one (48.8%) radiological interventions were required with a mean time between admission and intervention of 67.5 h.
Conclusion: Complications related to long-term nephrostomy tubes result in serious morbidity for patients and significant cost to the health service. Alternatives to nephrostomy drainage should always be considered. Quick access to interventional radiology may reduce patient stays and morbidity.

P52

Targeted antimicrobial prophylaxis for trans-rectal prostate biopsy: Does it reduce septic complications?

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Introduction and Objectives: The rise in infective risk of Transrectal Ultrasound guided Prostate Biopsy (TRPB) is being well recognised in recent years. There remains an unacceptable complication rate of septicaemia with no universally accepted antibiotic policy. Targeted antibiotic prophylaxis policy based on rectal flora has been suggested in the recent past. We report the first prospective UK study to our knowledge to assess the resistance of rectal flora to fluoroquinolones and complication rate after TRPB.
Methods: A total of 100 patients underwent TRPB at a secondary referral centre in the UK over a 3 month period, were assessed for pre biopsy MSU, risk factors (international travel and antibiotic use 6 months prior to TRPB) and prospectively followed for complications till 4 weeks. Of these,60 patients had rectal swab at time of biopsy for culture and antibiotic sensitivities. Oral Ciprofloxacin 500 mg bd 3 days + Metronidazole 1 gm were administered as prophylaxis.
Results: Analysis of the rectal swab showed the bacteria to which the patients were exposed. On culture of rectal swab, 56/60 patients (93%) had mixed flora, 3/60 (5%) Gram-negative bacteria (Escherichia coli)&1/60 patients (1.67%) Gram-positive bacteria (Beta-haemolytic Streptococcus group C). No Fluoroquinolone resistant microbial strains were isolated. Mean age 66, Mean PSA 71, Adenocarcinoma Prostate 36%. International travel 23% and previous antibiotic use 0%. Infective complications: 3/98 (3%) with urinary tract infection (E Coli sensitive to Fluoroquinolone) 1/100 (1%) was hospitalized for acute urinary retention and 1/100 (1%) admitted for sepsis (Blood culture: E Coli–sensitive to fluoroquinolone). None of the patients with infective complications had prior antibiotic/international travel <6 months. Non-infective complications: 16/100 (16%) reported persistent haematuria for >48 h postbiopsy without hospitalization while 8/100 (8%) reported persistent haematospermia (4 wks)
Conclusions: The alarming rate of fluoroquinoloneresistance in both Gram-ve& Gram + ve organisms identified in recently published studies is inconsistent with our study. Our data also raises questions about the routine use of targeted prophylaxis based on rectal flora. In high risk patients (multiple UTI, indwelling catheters), targeted prophylaxis or transperineal prostate biopsies could be considered as a safer alternative. Our study shows that antibiotic policy for TRPB should be based on local antibiotic resistance patterns & robust audit process should be in place for identifying it.

P53

Gentamicin significantly reduces infection related hospital admissions post transrectal ultrasound guided biopsy of the prostate

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Introduction: Sepsis following transrectal ultrasound (TRUS) guided biopsy of the prostate is a urological emergency that is associated with significant morbidity. In our organisation, TRUS biopsies are performed by Urologists and Radiologists, with differing antibiotic protocols. In addition to routine Ciprofloxacin and Metronidazole prophylaxis used by both groups, the Urologists use 160 mg Gentamicin.
The aim of the study was to review our rate of post TRUS infection per different antibiotic regime.
Patients & Methods: Analysis of all TRUS biopsies performed between January 2011 and December 2013. All patients admitted within 30 days of procedure with positive blood culture and pyrexia (TRUS sepsis), positive urine culture and pyrexia (febrile UTI) and raised inflammatory markers and pyrexia with no other identifiable source of sepsis (febrile UTI) were included.
Results: 1445 TRUS guided Prostate biopsies were performed. Median age was 69 years (range 47–92). Overall complication rate was 4.0%. 589 patients received the additional Gentamicin prophylaxis and 856 received only Ciprofloxacin and Metronidazole. The TRUS sepsis rate was 0.5% in the group that received Gentamicin vs 0.8% in the group that did not ($P = 0.74$). The overall infection rate requiring hospital admission was 0.7% in the group that received Gentamicin vs 2.3% in the group that did not ($P = 0.0196$).
E coli was the organism most prevalent in positive blood (90%) and urine cultures (67%).
Conclusion: The addition of Gentamicin as an additional prophylactic antibiotic prior to TRUS biopsy of the prostate significantly reduces infection related hospital admission.

P54

Variation in gentamicin prophylaxis for urological procedures: evidence based or traditional practice?

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Introduction: Gentamicin is commonly used in the UK for prophylaxis prior to urological procedures. While EAU and BAUS give no specific guidance on the prophylactic dose, AUA advocate 5 mg/kg body-weight. Appropriate dosing of gentamicin ensures adequate serum and tissue concentrations which is likely to impart maximum benefit while reducing the risk of resistance. We present the current practice across the UK based on local guidelines published on the 'Microguide' app available on Apple iOS and Android platforms.
Methods: We examined the antibiotic guidelines for 43 UK trusts using the 'Microguide' app. Data on antibiotic choice,

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dose, and regimen were collected from trusts that give guidance on transurethral resection (TUR) and prostate biopsy.
Results: Twenty-eight of 43 (65%) trusts have guidance published for TUR prophylaxis. Of these, 25 (89%) recommend Gentamicin on induction for TUR at 7 different doses. Ten (36%) recommend 160 mg which is the most commonly recommended dose. The AUA recommendation of 5 mg/kg is practised by only 4 trusts (14%).
Twenty-six of 43 trusts (60%) have guidance published for prostate biopsy prophylaxis. Of these, 12 (46%) recommend Gentamicin as prophylaxis at 6 different doses, the commonest being 160 mg practised by 6 (23%). The 5 mg/kg dose is used by only 1 trust (2%).
Conclusion: Choice of prophylactic Gentamicin dose varies significantly across the UK. Our survey shows gross discrepancy between the prevalent UK practice and the only available guideline.

P55

Antibiotic prophylaxis for urological procedures across the UK: Why such variations in practice?

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Introduction: Antibiotic prophylaxis is commonly used in Urology. We interrogated the 'Microguide' app for antibiotic policies for 3 index procedures – prostate biopsy, transurethral resection of the prostate (TURP) and change/removal of urethral catheter.
Methods: We examined the antibiotic guidelines for 43 UK NHS trusts. Data on antibiotic choice and regimen were collected for the procedures above.
Results: Sixty-five percent (28/43) of Trusts have guidance published for TURP prophylaxis. Of these, 25/28 (89%) recommended gentamicin, 1/28 (3.5%) recommended ciprofloxacin, 1/28 (3.5%) recommended cefuroxime and 1/28 (3.5%) recommended a combination of amoxicillin and gentamicin. Seven different doses of gentamicin were found.
Sixty percent (26/43) of Trusts have guidance published for prostate biopsy prophylaxis leading to 13 different prophylaxis regimens. Varying combinations of ciprofloxacin, gentamicin and metronidazole were used. Route of administration of metronidazole varied with oral, rectal and intravenous routes all in use. Forty-six percent (12/26) advocated continuing ciprofloxacin 24–72 h post-procedure. 6 different doses of Gentamicin are in use.
For catheter change/removal there was guidance from 23/43 (46%) Trusts. Ninety-five percent (22/23) recommended gentamicin with 8 different doses identified.
Conclusion: While choice of antibiotic for urological prophylaxis may vary with local sensitivities, the dose, route of administration and regimen show huge variations which are hard to explain solely by regional susceptibility differences. This likely reflects the dearth of evidence on which to base antibiotic policies, and studies are urgently needed to address this.

P56

A multi-centre analysis of antibiotic susceptability of urinary tract isolates in patients with ureteric stents and associated UTI

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Introduction: Indwelling ureteric stents can act as a nidus for infection and as such are associated with an increased incidence of urinary tract infection (UTI).
In a previous study at a single centre we demonstrated a significant difference in the bacterial isolates in patients with ureteric stent associated UTI compared to the epidemiological data collected by Health Protection Scotland (HPS). Furthermore a significant difference in the antibiotic susceptibility of comparable urinary tract isolates was noted.
This study aims to expand upon the last by reviewing patients across all seven hospitals within the NHS Greater Glasgow & Clyde (NHS GG&C) health board.
Patients and Methods: We performed a retrospective analysis of a 3 month period across all hospitals in our health board. Patients were identified using our electronic based records system (Opera/Clinical Portal). Any patient with a microbiologically proven UTI associated with a ureteric stent was included.
Results: A statistically significant difference in the distribution of urinary tract isolates in our study population was demonstrated when compared to epidemiological data from HPS. Antimicrobial susceptibility of urinary tract isolates in our population was also compared to HPS resistance data, with a statistically significant increase in resistance towards several antibiotics being demonstrated in Escherichia coli & Klebsiella pneumoniae.
Conclusion: Our study shows that urinary isolates associated with ureteric stents were more resistant to antibiotics commonly used as empirical therapy in NHS GG&C and as peri-operative prophylaxis. We believe empirical antibiotic guidance for such patients should be reviewed and re-evaluated.

P57

Is Fournier's gangrene still a death sentence?

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Introduction: Fournier's gangrene is the most pressing urological emergency with a mortality of 40–70% in published studies. Almost all of the literature is based on small numbers of patients and the lack of a specific data code in the UK has made data collection problematic. Several severity scores have been proposed as prognostic indicators, although there is disagreement within the literature as to their validity.
Methods: Data were collected over 10 years from a combination of hospital admission coding and ITU databases at our institution. A total of 23 patients were identified with a diagnosis of Fournier's gangrene. The Fournier's Gangrene Severity Index (FGSI) and Laboratory Risk Indicator for Necrotising Fasciitis (LRINEC) Scores were calculated where possible.
Results: 8/23 (35%) patients died of sepsis with a further 5/23 (21%) dying within 5 years. Neither LRINEC nor FGSI scores were significantly associated with an increased risk of mortality.
Discussion: Advances in anti-microbial therapy and a better understanding of the early management of sepsis has allowed some headway to be achieved in decreasing mortality rates. The introduction of a separate HES code in the UK in 2014 should allow better national data capture and an improvement in prognostic calculators.

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BJUI

Wednesday 17 June ePoster Session 5 1030–1200 Charter 2 FEMALE UROLOGY AND BALDDER DYSFUNCTION Chairs: Mrs Mahreen Pakzad & Mr Mike Palmer ePosters P58–P68

P58

The association between the ICIQ-LUTS& the ICIQ-bladder diary in assessing LUTS

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Introduction: The bladder diary (BD) provides an objective non-invasive method of investigating lower urinary tract symptoms (LUTS) while symptom questionnaires, such as the ICIQ-MLUTS and ICIQ-FLUTS for males and females respectively, provide a subjective assessment. The association between objective and subjective assessments has not been well established for the ICIQ.
Materials & Methods: Retrospective analysis of data collected from a urodynamics' database was conducted. Only patients who completed both the ICIQ-MLUTS/FLUTS and the ICIQ-BD were included. Assessment of the relationship between the ICIQ-BD and the ICIQ-MLUTS/FLUTS with regards to day time frequency and nocturia episodes was conducted using descriptive statistics to determine how well they correlate.
Results: 3054 patients were on the database with only 529 patients fully completing both the ICIQ-BD and ICIQ-MLUTS/FLUTS from February 2012 until November 2014. Criterion testing showed fair agreement between the nocturia question on the ICIQ-MLUTS/FLUTS and the ICIQ-BD (Kappa = 0.339; $P < 0.001$; 48.5%). Whereas diary recordings of day time voiding frequency showed less agreement with questionnaire responses (Kappa = 0.254; $P < 0.001$; 42.7%). The degree of agreement was higher at lower frequencies. Females had a slightly higher agreement than males during the day time (43.2% vs 41.6%) and night time (49.3% vs 47%).
Conclusion: The ICIQ-BD is a simple, cheap, valid and reliable objective method to assess LUTS. However, an agreement between the ICIQ-BD and the ICIQ-MLUTS/FLUTS with regards to daytime frequency and nocturia episode is weak and therefore both are needed in the assessment of patients with LUTS.

P59

Female bladder outflow obstruction: An increasing but under diagnosed phenomena

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Introduction: Bladder outflow obstruction is diagnosed in up to 29% of women having videourodynamics (VUDS) in specialist centres but rarely in general urological practise. We have evaluated the incidence of BOO in 535 consecutive women attending for VUDS for refractory LUTS+/-UI and correlated the diagnosis and degree of BOO with its aetiology and presenting symptoms.
Methods: Using our prospective database we identified 120 women (22.4%) of median age 51 years (range 18–88) with BOO identified radiologically on voiding cystourethrography. BOO was validated using the Solomon-Greenwell nomogram (pDet Qmax>2xQmax). Diagnosis was confirmed by Cystoscopy, MUCP and MRI as clinically indicated.

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Results (P59):

BOO Aetiology	*n* (%)	Symptoms					
		Urethral Pain	Reduced Flow	Freq Day	Freq Night	UUI	UTI
Urethral Stricture	32 (27)	5	21	24	23	18	15
Functional (HTNRS*)	40 (33)	4	9	31	30	26	6
Urethral Diverticulum	7 (6)	2	3	5	5	6	1
Paraurethral Cyst	1 (1)	0	0	0	0	0	1
Obstructing Cystocoele**	16 (13)	2	9	8	6	8	2
Post USUI Surgery	24 (20)	3	12	21	20	15	4
Total	120	16	54	89	84	73	29

*HTNRS = High Tone None Relaxing Sphincter.
**16/74 (22%) of cystocoele on VUDS caused BOO.

Conclusion: BOO was diagnosed in 22.4% of women having VUDS to investigate refractory LUTS +/– UI. Functional obstruction secondary to HTNRS was the commonest cause of BOO followed by urethral stricture. The commonest presenting symptom was daytime urinary frequency. BOO in commoner than expected in women and should be suspected in all women with refractory LUTS especially those presenting with urinary frequency.

P60
Persistence with mirabegron therapy for overactive bladder: A real-life experience

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Introduction: Long-term persistence rates with anticholinergic therapy for overactive bladder (OAB) are generally low, most commonly as a result of poor efficacy or side-effects. The β-3 agonist, mirabegron, has been reported in randomised placebo-controlled trials (RCT's) to have good tolerability and overall efficacy. Whether this translates into improved persistence rates remains to be determined. This study aims to assess persistence with mirabegron therapy for OAB in a real-life clinical setting.
Methods: Hospital prescription data was analysed in order to identify all patients who had been prescribed mirabegron in our institution. Data was collected by retrospective case note review and overall satisfaction with treatment was assessed using the OAB Satisfaction with Treatment Questionnaire (OAB-SAT-q).
Results: 210 patients (39% male, 61% female, mean age of 56.8 years, range 8–88) were prescribed mirabegron. 78% had previously discontinued anticholinergic therapy, 16% had received intravesical botulinum toxin A, and 18% were prescribed mirabegron as first-line treatment. At 3 months, 58% were still on treatment, and this fell to 33% by 6 months. The commonest reason for discontinuation was dissatisfaction due to being ineffective, followed by side effects. 39% of patients preferred mirabegron over their previous treatment for OAB, and overall 45% were satisfied, very satisfied, or extremely satisfied with mirabegron therapy based on the OAB-SAT-q.
Conclusion: Persistence with mirabegron in a real-life setting is similar to that reported for anticholinergics, and only 45% of patients report satisfaction with treatment. The commonest reasons for discontinuation are lack of efficacy and side-effects.

P61
OnabotulinumtoxinA reduces urinary incontinence and urgency and improves quality of life in patients with overactive bladder regardless of incontinence severity at baseline

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Introduction: We evaluated the effect of onabotulinumtoxinA on overactive bladder (OAB) symptoms and quality of life (QOL) by severity of urinary incontinence (UI) at baseline.
Patients and Methods: A post-hoc analysis of pooled data from two phase 3 studies of onabotulinumtoxinA 100 U vs placebo was performed by baseline UI severity: <2 (n = 188), 2–5 (n = 435), and >5 (n = 482) UI episodes/day. Assessments included mean change from baseline in UI and urgency episodes/day and Incontinence-QOL (I-QOL) total score, % change in UI, proportion of patients with 100% reduction in UI episodes, and AEs.
Result: At baseline, mean UI episodes/day were 1.5, 3.6, and 8.9, and mean urgency episodes were 7.7, 7.5 and 10.4 in the onabotulinumtoxinA <2, 2–5, and >5 UI groups, respectively. Although mean reduction in UI episodes/day with onabotulinumtoxinA increased with increasing baseline UI severity (–0.7 vs +0.1, –1.9 vs –0.7, and –4.5 vs –1.5 episodes/day vs placebo in <2, 2–5, and >5 UI groups), the % UI reduction was similar (43.8–52.1%) in all onabotulinumtoxinA groups. Higher proportions of onabotulinumtoxinA patients achieved 100% UI reduction vs placebo (41.4 vs 20.2%; 31.2 vs 9.2%; and 17.5 vs 3.3%). Greater urgency reductions were observed with onabotulinumtoxinA vs placebo in all subgroups (–2.7 vs –1.2, –3.0 vs –1.1, and –3.8 vs –1.4 episodes/day). I-QOL improvements with onabotulinumtoxinA were clinically meaningful and greater than placebo in all subgroups. UTI and dysuria were the most common AEs across all groups.
Conclusion: OnabotulinumtoxinA provided substantial improvements in OAB symptoms and QOL regardless of baseline UI severity

P62
The success of sacral neuromodulation in treating patients with acontractile voiding dysfunction

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Introduction: Sacral neuromodulation (SNM) is the only recognised therapy for patients with high tone non-relaxing sphincter (HTNRS) causing (acute) urinary retention (Fowlers syndrome). The role of SNM in patients who present with chronic voiding dysfunction and

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acontractility on urodynamic testing is poorly documented. We looked at SNM outcomes for patients with acontractile bladders with and without elevated maximal urethral closure pressure (MUCP).

Material & Methods: Patients referred with bladder failure and catheter dependency underwent urodynamic studies with urethral pressure profilometry (UPP). A successful SNM test was considered if spontaneous voiding was restored such that catheter dependency was reduced by at least 50%.

Result: 13 patients (3 men; 10 women) mean age 43 years (range 24–79) with acontractile bladders and catheter dependency were assessed over a 12-month period. 9 patients (69.2%) had a successful outcome following the SNM test. These patients went on to permanent SNM implant. Of these, 6 still demonstrated significantly reduced catheter dependency at 12 months follow-up, including 2 who were catheter free. The average MUCP for the successful and failure outcome groups at SNM testing was 71 and 85 cm water respectively.

(P62)

Patient	Age	Sex	MUCP (cm water)	Expected MUCP (cm water)	Outcome – tined lead testing	Outcome – 12 months
1	49	M	90	70	Success	Success
2	56	F	47	36	Success	Success
3	54	F	–	–	Failure	–
4	38	M	–	–	Success	Failure
5	44	F	112	48	Success	Failure
6	33	F	–	–	Success	Success
7	24	F	101	68	Failure	Success
8	32	F	–	–	Success	Failure
9	33	F	71	59	Success	Success
10	41	F	–	–	Success	Success
11	79	M	73	70	Failure	–
12	46	F	70	46	Failure	–
13	31	F	50	61	Success	Success

Conclusion: In patients with acontractile bladders, SNM was successful in reducing catheter dependency in 69.2%, and negating catheter use in 15.4%. Acontractile bladder may be a consequence of a high tone failure of sphincter relaxation in some patients. Owing to the small sample size, it is unclear if MUCP holds predictive value. Long term follow up of these patients is necessary to assess whether SNM provides a lasting solution and whether MUCP can predict success in this patient group.

P63

Does bilateral sacral nerve stimulation confer significant improvement in urological symptoms compared with unilateral stimulation?

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Introduction: Sacral nerve stimulation (SNS) is an established treatment for refractory overactive bladder symptoms and non-obstructive voiding problems. Electrodes with independent stimulators are placed in an S3 or S4 foramen and a trial period assesses whether stimulation is successful. This study aimed to ascertain whether bilateral SNS was more likely to result in positive improvement in symptoms and if there were any difference between left and right unilateral stimulation.

Materials and Methods: All patients receiving an SNS implant between August 2009 and September 2013 in a teaching hospital were identified from theatre records. Data were gathered from electronic patient records and analysed in SPSS. Temporary and permanent implants were included; > 50% improvement in symptoms was considered a successful response.

Results: 164 cases were identified: 24 were excluded from analysis due to missing data. The cohort contained 71% female and 29% male patients; median age was 48 years. 69 (49%) patients had bilateral electrodes and 71 unilateral (left = 35, right = 36). 70% bilateral electrodes were successful, whilst 76% unilateral electrodes were successful: not statistically significant $P = 0.307$ (chi squared). 83% left electrodes were successful, compared with 69% of right electrodes: not statistically significant $P = 0.185$ (chi squared).

Conclusion: Electrodes placed at the sacral foramen with the best intra-operative response show no statistical difference in success between bilateral and unilateral stimulation. If unilateral stimulation is sufficient for symptom improvement then this has cost advantages and could have reduced complications due to shorter operating time and less implanted material.

P64

Single centre randomised pilot study of two regimens (30 mins daily or 30 mins weekly for 12 weeks) of transcutaneous tibial nerve stimulation for the treatment of patients with overactive bladder (OAB) syndrome

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Aims: The aim of this study was to evaluate the clinical efficacy of a novel transcutaneous device for the treatment of patients with either multiple sclerosis or idiopathic OAB. The geko^{TM} is a discrete, self-contained and portable, CE marked device that sticks to the skin.

Study Design: A randomized, single centre, phase II pilot study, which enrolled 48 patients (24 with MS and 24 with idiopathic OAB), suffering from OAB. Patients were randomized into either daily or weekly treatment arms. Both arms involved 30 min of stimulation for 12 weeks. Objective outcome measures were used to evaluate symptoms at baseline, week 4, 8, and 12. This included the ICIQ-OAB, ICIQLUTS-QoL, and bladder diary scores.

Results: Forty-eight patients were recruited into the study, with 35 five patients completing (20 with MS and 15 idiopathic OAB). Multi level regression analysis shows significant improvements in

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the ICIQOAB by −10.2 (−13.5 to −6.9) (P = 0.001) and ICIQLUTS-QOL by − 40.8 (−57.4 to −24.3) (P = 0.000) scores for both patient groups by week 12. Weekly treatment seemed equivalent to daily, There were no significant adverse effects. Likert scales showed that patients rated the treatment as easy to use, comfortable, and were very satisfied with this as a treatment modality.
Conclusion: This randomised pilot study shows that transcutaneous tibial nerve stimulation, using the geko™ device, appears to be an effective, safe and convenient method of management for patients with severe OAB symptoms. Additional work is required to demonstrate the long-term efficacy of this treatment.

P65
Withstanding the test of time; Urethral bulking injections (Deflux) for urinary stress incontinence

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This study group has previously looked at short term outcomes of NASHA/Dx Gel (Deflux) urethral injection to treat urinary stress incontinence (Blick et al. Curr Urol 2008;2:194–199). There is scarce data available reporting long term outcomes. We have followed 142 patients for up to 13 years (mean 8.8 years) following Deflux treatment making this the largest and longest spanning study on the subject. 90/142 (63%) of first treatments were successful (dry or only minor residual incontinence) and lasted on average 4.7 (median 3.5) years if dry at first treatment. 51/142 (36%) repeated treatment resulting in 209 treatments recorded to June 2014. Repeat treatment was successful in 15/16 (94%) of those who were dry at first treatment, in 17/24 (71%) of those who had minor residual incontinence and in 2/11 (18%) of those who gained no benefit from first treatment. 60/142 (42%) went on to have surgery for incontinence with no complications reported relating to injection treatment.
12/209 (6%) treatments resulted in urinary retention requiring catheterisation but all patients were voiding within two weeks. 3/142 (2%) developed a pseudocyst after first treatment. Pseudocysts were significantly more likely to develop in those who had repeat treatment (Z test $P < 0.05$). All pseudocysts were treated successfully with incision and drainage. We have shown that urethral bulking injections can successfully treat urinary stress incontinence. Although treatment isn't permanent it can last longer than previously believed and should be offered to women looking for a minimally invasive treatment with few side effects and proven efficacy.

P66
The role of bladder stretching in maintaining bladder health: Plasma cytokine levels in catheterised patients using valves or on free drainage

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Introduction: Long-term urinary bladder catheterisation is a common procedure associated with frequent complications deriving from bladder inflammation and infection. Catheters can be managed by free drainage or cyclical bladder filling and emptying using a catheter valve. The aim of the study is to compare levels of inflammatory markers in matched patients with indwelling catheters, managed by both regimens.
Patients & Methods: In total 75 subjects were recruited: 25 healthy volunteers (*Normal*), 25 patients with indwelling urinary catheters managed by continuous drainage (*Bag*) and 25 using intermittent drainage (*Valve*). Peripheral blood plasma samples were aliquotted and banked. Plasma levels of IL-6, TNF-α and INF-γ and tissue factor (TF) have been assayed by ELISA technologies.
Results: Plasma IL-6 was significantly raised ($P < 0.01$) in the *Bag* but not the *Valve* group compared with normal values. Interferon results were all extremely low. Trends observed with TNF-α and TF failed to reach statistical significance.
Conclusions: These findings suggest that the most widely used pro-inflammatory mediator in bladder inflammation/infection (IL-6) is raised in the plasma of catheterised patients managed by free drainage, but not when a valve is used. This result is suggestive that valves may confer an advantage where long-term urinary catheterisation is undertaken.

P67
Intractable long-term catheter problems managed by intradetrusor botulinum toxin-A (BTxA)

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Introduction: Intractable problems related to long-term catheters present a considerable management challenge. Complaints of catheters blocking, bypassing and associated pain due to spasms results in regular catheter changes by healthcare professionals. This is both distressing for patients and carers, and poses a significant financial burden.
Method: 25 patients referred with intractable catheter related problems were managed by intradetrusor BTxA. 15 had neurogenic bladder dysfunction (8 multiple sclerosis, 4 Parkinson's disease, 2 cerebral palsy, 1 cerebro-vascular disease). 17 patients had suprapubic and 8 urethral catheters. Data on the frequency of catheter changes was collected along with symptoms pre and post BTxA treatment.
Results: Median patient age was 62, ranging from 31 to 94. Patients received a total of 92 BTxA treatments (median 3 (range 1–8)). Median treatment interval was 9 months (range 5–28). 21 patients regularly receive 300 units BTxA; 4 have 200 units BTxA (Botox® Allergan). Before intradetrusor BTxA, frequency of catheter changes ranged from 1–12 weeks (median 6 weeks). Following treatment, frequency of catheter changes ranged 6–12 weeks (median 9 weeks). 13 of 15 patients whose predominant complaint was painful 'bladder spasms' found symptoms significantly improved. 13 of 14 patients who complained of bypassing were 'continent' following treatment. There were no serious complications following treatment.
Conclusions: Intradetrusor BTxA is effective in relieving some of the distressing problems related to long-term catheters. The beneficial effect of BTxA is maintained with repeat treatments. Intradetrusor BTxA should be considered in patients with long-term catheters having problems with bypassing, bladder 'spasms' and frequent 'blockages'.

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P68

Management and outcomes of urinary tract fistula repair at a single institution

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Introduction: In the developed world, the majority of fistulae are iatrogenic. Repair of this debilitating condition poses significant challenges, with emphasis on approach, timing and technique of surgery. We describe the outcomes of patients undergoing urinary tract fistula repair at our institution.

Patients and Methods: 67 consecutive patients undergoing urinary tract fistula repair in a single-centre by two surgeons over a ten-year period were reviewed. 73% were secondary to gynaecological/ colorectal surgery, 16% from urological surgery, 11% from radiotherapy, with trauma and obstetric conditions representing the rest.

Results: Mean age was 48.8 (range 21–82) with tertiary referrals accounting for 63% of patients. 11% were redo-procedures. 68% of patients underwent trans-abdominal repair for: Vesico-vaginal fistula (44 patients), vesico-uterine fistula (1 patient) or uretero-vaginal fistula (1 patient). The remainder underwent a trans-vaginal approach, including 18 cases of urethro-vaginal fistula (UVF) and 3 neobladder-vaginal fistula. Omental or Martius flap interpositioning was used for trans-abdominal and trans-vaginal repair respectively, where available.

In total, there were no cases of fistula recurrence. 83% of patients following a trans-vaginal repair described stress urinary incontinence (SUI) and 66% underwent successful pubovaginal sling insertion using autologous fascia. There was one case of post-operative death (myocardial infarction), one haematoma (managed conservatively) and no significant infections.

Conclusion: Successful fistula repair can be achieved in the majority of cases using well-vascularised interposition flaps. SUI is common following UVF repair and patients are counselled accordingly. Repairs should be performed in high-volume centres by experienced surgeons to ensure the best outcomes for patients.

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BJUI Wednesday 17 June ePoster Session 6 1030–1200 Charter 3 KIDNEY CANCER Chairs: Assistant Professor Alessandro Volpe & Mr Michael Aitchison ePosters P69–P82

P69

Renal tumor biopsy for small renal masses: A large single-centre 13-year experience

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Introduction: Renal tumor biopsy (RTB) for the characterization of small renal masses (SRMs) has not been widely adopted despite reported safety and accuracy. Without pretreatment biopsy, patients with benign tumors frequently undergo unnecessary treatment. The objective of this study was to assess the diagnostic rate of RTB, identify factors associated with a diagnostic biopsy, determine their correlation with final pathology and assess their impact on clinical management.
Materials/Methods: This is a single-institution retrospective study of 529 biopsied SRMs. Biopsied lesions were solid and ≤4 cm in diameter. RTB had to be performed with the goal to aid in clinical management. Factors that contributed to a diagnostic biopsy were identified using a multivariable logistic regression. Cohen's kappa coefficients were used to obtain the agreement rates between RTB and final pathology.
Results: A diagnostic biopsy was achieved in 90.0% ($n = 476$) of cases. Of the 53 non-diagnostic biopsies, 24 (45.3%) underwent a rebiopsy of which 20 were diagnostic (83.3%). Therefore, the overall diagnostic rate was 93.8% ($n = 496$). Following RTB, treatment could have been avoided in at least 26.4% ($n = 131$) of cases because the lesion was found to be benign. Tumor size and exophytic location were significantly associated with biopsy outcome. RTB histology and nuclear grade were highly correlated with final pathology.
Conclusions: RTB of SRMs provided a histological diagnosis in 93.8% of cases, of which 26.4% were benign. Routine RTB for SRMs informs treatment decisions and diminishes unnecessary intervention. Our results support its systematic use for SRMs and suggest a change in clinical paradigm should be considered.

P70

Surveillance of Bosniak (2F) renal cysts: Rationalising follow up

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Introduction: A move towards CT imaging of the upper tracts has lead to the increased diagnosis of Bosniak 2F renal cysts. The absence of an explicit guideline regarding follow-up of these cysts mandates repeated imaging resulting in considerable expense, effort and anxiety for the patient. Our current practice is to discharge patients after 2 years of stable surveillance with 6 monthly renal USS or CT as appropriate.
The aim of this study is to ascertain if our current practices are compliant with our standard and assess the proportion of patients who required further treatment.
Methods: The records of 198 consecutive patients who had been followed up following diagnosis of a Bosniak 2F cyst were assessed. Patient demographics, duration, frequency and modality of surveillance were reviewed. Changes in the size, appearance or characteristics of the cyst(s) were recorded and subsequent further intervention noted.

Results (P70):

Follow up period	0–12 months	12–18 months	18–24 months	24–36 months	36–48 months	>48 months
No. of patients	60	42	18	33	19	26
No. of patients progressed to Bosniak 3 or greater	2	1	1	0	0	0
Histology	1. Multilocular cystic RCC, 2. Benign	Benign	Benign	–	–	–

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The majority of 2F cysts were incidental (86.5%), 71%, 22% and 7% were CT, USS and MRI diagnosed respectively. Mean follow- up was 27 months. 56% cysts were >3 cm at diagnosis. 98% cysts were unchanged in appearance, whilst 66% did not change in size. Four patients (2%) underwent partial nephrectomy secondary to progression in cyst complexity.
Conclusion: Radiological progression of Bosniak 2F cysts is low but may occur up to 24 months after diagnosis. Our data suggests that it is safe to discharge patients with stable cysts after 2 years of surveillance. Adhering to follow-up protocols can alleviate pressure on radiology and urology services.

P71

Multilocular cystic renal cell carcinoma has an excellent prognosis regardless of size or pathologic T-stage: Results of a large population-level study

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Introduction: Renal cell carcinoma (RCC) makes up 3–5% of all cancers, with cystic-RCCs in 3–14%, detected as complex enhancing renal cysts on imaging. Since 2004, pathological reclassification led to description of multilocular-cystic-RCC (mcRCC) and tubulocystic-RCC.
Aims: To study histologic patterns, survival outcomes of cystic RCCs using a province-wide cancer-registry-database.
Material and Methods: Retrospective review of all histologically-proven cases of cystic-RCC treated by partial or radical nephrectomy (PN/RN) between 1995–2008 identified from Ontario Cancer Registry. Patient demographics, surgery type, histologic features, survival outcomes evaluated. Cystic necrosis excluded.
Results: 168 cases of cystic RCCs identified. Mean age 54.5 yrs, males 58%. RN performed in 58% with adrenalectomy in 25%. Mean lesion size 4.1cm (1–18 cm). Vast majority cystic-clear-cell or multilocular-cystic-RCC (mcRCC), 1 tubulocystic RCC. Ninety-eight% low grade 1–2. No adrenal involvement where removed. All cases were margin-negative. Median post-operative follow up of 9.75 years. Thirty deaths occurred but only 3/168 reported from cancer (cancer-specific survival 98%). No difference in survival outcome based on T-stage or tumour size noted.
Conclusion: Largest series of cystic RCCs to date confirms an excellent prognosis of mcRCC, making a strong case for nephron-sparing, adrenal-saving approach for cystic renal masses suspicious of being RCCs. Magnitude is underrepresented as only proven cancerous cysts reported. We also confirm that size of the cystic renal cancer makes no difference to outcomes. We opine that labelling a 10 cm mcRCC as T2 is erroneous as tumour burden is much less than similar sized solid RCCs. We therefore propose that true cystic RCCs should not be pT-staged.

P72

The role of pre-operative histology in nephroureterectomy: The UK experience

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Introduction: There is on-going debate about the role of pre-operative histological diagnosis of TCC prior to nephroureterectomy. Some Urologists would favour this option. Others would be happy to proceed with nephroureterectomy on the basis of pre-operative imaging. A single study has underlined the importance of obtaining a pre-operative histological diagnosis. This study reviews the UK experience in the surgical management of upper tract TCC, and evaluates the significance of pre-operative histological diagnosis.
Materials and Methods: The BAUS' nephroureterectomy database (years 2012 & 2013) was reviewed. 2018 nephroureterctomies were recorded in BAUS database. Post-operative histology was not recorded in 82 cases. Nephroureterectomy for benign reasons was performed in 40 cases. Both subgroups were excluded of the study (*n* = 1896 patients).
Result: Pre-operative histological diagnosis and/or abnormal urine cytology were obtained in 358 patients before undergoing nephroureterectomy (Group-1). Interestingly, 8 out of the 358 patients had benign final histology despite a pre-operative histological diagnosis of TCC (4 patients) and abnormal urine cytology in the other four. Patients in group-2 (1538 patients) underwent nephroureterectomy based on pre-operative imaging only. 12 (0.8%) patients had benign post-operative histology. 84% of patients had TCC in their surgical specimen (Table 1). 54 (4%) patients had G1 disease. Eighteen (1%) of the 54 patients had less than 2 cm tumour.
Conclusion: Surgical management of upper tract TCC varies in the UK. Majority of cases are performed with no pre-operative histological diagnosis (81%). The incidence of benign histology is extremely low in these patients whether or not they had biopsy.

Table 1 (P72).

Post-operative histology	Group 1	Group 2
TCC	341 (95.3%)	1291 (84%)
RCC	1 (0.3%)	95 (6.2%)
Papillary	4 (1.1%)	43 (3%)
Other cancer	4 (1.1%)	40 (3%)
Benign	8 (2.2%)	12 (0.8%)
Incomplete histology	0	47 (3%)

P73

Achievement of trifecta with early unclamping technique during robotic partial nephrectomy

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Introduction: Trifecta is defined as a combination of negative surgical margin, warm ischemia time (WIT) ≤25 min and no peri-operative complication. Early un-clamping (EU) has shown to reduce warm ischemia time which can lead to improved renal function. Our study aims to investigate trifecta achievement with EU.
Material & Methods: The data of 680 patients who underwent Robotic partial nephrectomy between 2009–2014 using EU technique was reviewed in our multi-centre prospectively maintained database. EU was defined as early removal of arterial clamp after one or two running sutures on tumour bed before parenchymal suturing. All these patients had EU and none required re-clamping.
Results: The median tumor size was 3.1 cm (range 0.5–10.5 cm), median RENAL nephrometry score was 7 (range

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4–12), median age was 58 years (range 26–88) and median ASA grade was 2. In 634/680 patients (93%) cases WIT was ≤25 min (median: 13 min), 46/680 (7%) cases WIT was > 25 min (median: 34 min), 36/680 patients had a positive margin (5.3%), Clavian grade II or more complication were observed in 117/680 (17.2%) patients. 199/680 patients failed to achieve trifecta as a result of the above factors, therefore, the overall trifecta rate in this study was 70.73% (range: 59–75% amongst the five centers). Inclusion of Grade III-V grade Clavien complications only, resulted in trifecta rate of 81.6% (Table 1).

Table 1 (P73).

	Hospital A	Hospital B	Hospital C	Hospital D	Hospital E	Total
Total	111	67	141	81	305	705
no clamp	2	4	6	11	2	25
Total eligible for Trifecta	109	63	135	70	303	680
WIT<25 min	101	52	131	68	282	634
WIT>25 min (n1)	8	11	4	2	21	46
Benign in WIT< 25 min	15	6	31	9	61	122
Benign in WIT>25 min	2	2	1	0	2	7
Clavien complication Grade II or more*(n2)	23	13	26	18	37	117
positive margin (n3)	6	2	6	5	17	36
Trifecta not achieved*(n1 + n2 + n3)	37/109	26/63	36/135	25/70	75/303	199/680
Trifecta percentage*	66.00%	59%	73%	64%	75.24%	70.73%
Clavien complication grade III or more**(n4)	4	7	16	11	5	43
Trifecta not achieved**(n1 + n3 + n4)	18/109	20/63	26/135	18/70	43/303	125/680
Trifecta percentage**	83.50%	68.25%	80.74%	74.28%	86%	81.61%
*Clavien Grade II–V						
**Clavien Grade III–V						

Conclusions: Early unclamping during Robotic partial nephrectomy can achieve Trifecta similar to standard clamping. Trifecta achievement should though be more standardized in relation to tumour size, location and patient related co-morbidities to give a more accurate picture of complexity.

P74

A cut above? Retrospective review of a dual-centre experience – Inferior vena cava resection in renal and adrenal cancer surgery with curative intention

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Introduction: Intracaval extension presents surgical challenges for RCC resection. Tumours may be adherent and en-bloc excision of the affected portion of the inferior vena cava (IVC) is more likely to result in complete resection. With established caval obstruction, resection of the involved segment without reconstitution of caval continuity avoids synthetic graft use with associated risks of graft occlusion and proximal embolisation of thrombus. Previous studies have not evaluated this alternative option.

Materials and Methods: BAUS Data and Audit System records were retrospectively reviewed for two operating surgeons, each at separate specialist Urological Cancer centres. We reviewed case notes of patients who had undergone IVC resection without reconstruction as part of an adrenal/RCC operation, assessing operative parameters, length of stay, complications and follow-up status.

Result: Eleven patients (ten right-sided tumours, one left-sided) underwent IVC resection without reconstruction in May 2010-December 2014. No perioperative or early deaths occurred. Our assessed parameters were comparable to patients who did not undergo caval resection. Six patients had complications: sepsis, congestive cardiac failure, acute kidney injury, symptomatic peripheral deep venous thrombosis. At median follow-up of 7 months (range 1–53) all patients are alive without symptomatic lower limb oedema or progression to metastatic disease.

Conclusion: This small case series illustrates our experience of IVC resection as an acceptably safe procedure. Our postoperative complications were neither specific to, nor worsened by, resection without reconstruction. This needs to be considered as an alternative to the more widely advocated approach of graft replacement in this clinical scenario.

P75

Surgeon volume and outcome for nephrectomy surgery using the British Association of Urological Surgeons (BAUS) nephrectomy database

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Introduction: There are few studies demonstrating the relationship of surgeon volume and outcomes for renal surgery. There are no evidence-based guidelines recommending minimum numbers of cases per surgeon. We used the BAUS nephrectomy dataset for 2013 to evaluate this further.

Materials and Methods: This was a retrospective analysis of data from the surgeon BAUS nephrectomy database. It included all types of nephrectomy cases submitted in 2013. Surgeon volume was

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divided into <10, 10–19, 20–29, 30–49, 50–100, and >100 cases per year.
Results: There were a total 7559 renal surgical procedures. 30-day mortality rates were low across all groups (0.3–0.6%). Overall complication rates were lower in the >100 group at 15.9% compared to 20.7% in the <10 group. There were no observed trends for Clavien II and above complication rates across the groups. Open conversion rates decreased with increasing volume (8.3%, 4.7%, 4.9%, 4.9%, 3.8% and 2.9% respectively). Transfusion rates were highest in those performing <10 cases (10.8%) and lowest in those performing >100 cases (5.9%). Operative time was over 3 h in 39% performing <10 cases and 23% performing >100 cases. Median length of stay was 5 days for groups <10 and 10–19 with a median of 4 days for the remaining groups.
Conclusion: Laparoscopic renal surgery has a low 30 day mortality rate across all centres regardless of surgeon volume. However volume was related to many of the outcome measures collected, in particular conversion to open surgery and transfusion rates.

P76

Consultant outcome publication for partial nephrectomy: Is the 'Trifecta' being achieved?

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Introduction: Consultant Outcome Publication has the stated aim of improving patient outcomes through increased transparency. Partial nephrectomy outcomes are commonly reported by reference to the 'trifecta', the combination of warm ischaemia time (WIT) less than 25 min, negative surgical margins, and no complications. The trifecta has been reported to range from 35% to 75% in high-volume centres in the literature. Outcomes vary according to nephrometry scoring.
Methods: The BAUS database was interrogated. An assessment of patients undergoing partial nephrectomy in 2012 and 2013 was carried out regarding WIT, surgical margins, and complications. Confounding factors were analysed, including age, gender, size and stage of tumour, and surgical approach.
Results: During 2012 and 2013 a total of 2295 entries into the database were recorded. Only 909 (40%) have all three fields in the 'trifecta' completed. Gender was recorded in 833 (91%) of cases, 607 were male and 226 were female. Age was recorded in 74% of cases. BMI was poorly recorded (14%). 2/3 of patients had a minimally invasive procedure. Overall, trifecta outcome occurred in 75% of patients. A total of 73% and 78% were trifecta positive in the minimally invasive and open approach respectively. BAUS database is incomplete, not validated and it lacks the nephrometry score.
Conclusions: Outcomes following partial nephrectomy appear to be acceptable, but the limitations of the BAUS dataset do not allow for confident reporting of trifecta as an outcome measure. We propose the addition of nephrometry scoring as well as increasing the minimum data entry requirements.

P77

Oncological outcomes following radical nephrectomy with deep hypothermic circulatory arrest (DHCA) in patients with supra-diaphragmatic thrombus extension

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Introduction: Radical nephrectomy with DHCA for T3c RCC involves complex, multi-disciplinary surgery with significant associated morbidity and mortality. We report oncological outcomes for a patient cohort undergoing this procedure at a single centre UK teaching Hospital.
Patients and Methods: 17 patients undergoing radical nephrectomy with DHCA during 2004–2014 were identified from a prospectively-acquired departmental database. A review of medical, radiology and pathology records was performed and relevant data extracted. Kaplan Meier (KM) plots were used for survival analyses.
Results: The mean patient age was 59 yrs (48–79 yrs). Pre-operative ECOG statuses were: 1 (35%), 2 (41%) and 3 (24%). 5 patients (29%) had radiologically-confirmed lung metastases at presentation. Mean DHCA time was 23 min (14–39 min), with all-but-one patient cooled to 18°C. Mean tumour size was 13.8 cm (range 11.0–26.0 cm), Fuhrman grades reported: 2 (*n* = 1), 3 (*n* = 13) and 4 (*n* = 3), with histology showing clear cell (*n* = 16) and papillary (*n* = 1) carcinoma. There was one perioperative death within 30 days – from multi-organ failure related to sepsis. 35% of patients suffered major (>Grade III) complications according to Clavien-Dindo classification.

(P77)

Clavien-Dindo classification: Grade of complication	Complications	Number of patients
I	Delirium	3
	Ileus	2
	AF	6
IIIb	Cardiac Tamponade	1
IVa	Dialysis	3
	Period of prolonged ventilation	4
V	Death	1

Overall survival for our cohort was 59%, with 3-yr disease specific survival 68% and 5-yr disease specific survival 43%. The KM estimated median survival was 49 ± 12 months. Eight patients (47%) developed new/progressive post-operative metastases: Lung (*n* = 5), Bone (*n* = 3), Liver (*n* = 2), Adrenal/Bone/Local recurrence (*n* = 1 each). Additional therapy included Tyrosine Kinase Inhibitors (*n* = 8) and palliative radiotherapy (*n* = 5).
Conclusions: Disease-specific survival outcomes appear comparable with published literature. Although surgery is associated with considerable morbidity, our cohort demonstrates good medium term outcomes for selected patients in a specialist centre.

P78

Cardiovascular outcomes in kidney cancer patients

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Introduction: Previous evidence suggests that patients who have undergone radical nephrectomy (RN), compared with partial nephrectomy (PN), have an increased risk of subsequent cardiac-related events. This

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study explored differences in cardiac-related events, using linked registry data for patients undergoing RN or PN for T1 tumours.

Methods: The national cancer data repository (NCDR) was searched to identify T1 renal cancer diagnoses (1999–2012) and hospital episode statistics (HES) used to identify those that had undergone RN or PN (1999–2013). Data was collected on cardiac-related admissions and deaths. Equivalent data was collected for the general population for age standardised comparison. Charlson score was calculated from HES admissions, plus cancer registry data for independent primaries, as a proxy for pre-operative co-morbidity.

Results: RN/PN patients had a greater risk of cardiac-related admissions compared with the general population (RR 3.32, 95% CI 3.24–3.40), but with no increase in cardiac-related deaths (RR 0.84, 95% CI 0.70–1.01). There was no difference in the admission risk, or death, comparing RN or PN for T1 renal tumours (RR 1.02, 95% CI 0.88–1.17) using 'time to event' analysis. There was no difference in the comorbidity index between RN and PN patients.

Conclusion: The higher incidence of cardiac-related admissions seen for RN/PN patients may be explained by a higher proportion of patients with medical illnesses including cardiovascular risk factors (hypertension, diabetes) undergoing renal imaging. The absence of a difference between the RN and PN groups supports the phenomenon of surgically-induced CKD, which may not have the same morbidity implications as medically-induced CKD.

P79

Establishing a benchmark for long term functional and oncological outcomes following nephron-sparing surgery in single kidneys

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Introduction: Innovative ways of performing nephron sparing surgery (NSS) are being described. The functional and oncological outcomes achieved after open partial nephrectomy (PN) in solitary kidneys with cooling should provide a benchmark against which newer approaches could be measured.

Methods: Retrospective analysis of NSS in solitary kidneys performed in our unit since 2002. Open PN with clamping and surface cooling with ice slush.

Results: 66 patients underwent 67 PNs. M = 45 F = 21. Median pre-operative GFR 74 mLs/min/1.73 m^2 (28–>90). Median tumour size 52 mm (16–102). Median cold ischaemia time 35 min (10–118). Positive margins 8/66 (12%). 1/66 (1.5%) died peri-operatively. Median follow up 78 months (3–152 months).

Functional Follow Up: 9/66 (13.6%) required peri-operative dialysis with 1/9 (11%) becoming dialysis-dependent. At last follow-up 62/66 (94%) are free from dialysis.

(P79)

Short term (3 months) *n* = 65					
Stable	Transition 1 CKD group	Transition >1 CKD group	Dialysis	Median GFR	Median CKD
35 (53%)	16 (25%)	13 (20%)	1 (2%)	58	3a

Long term (> 12 months; median 78 months) *n* = 60					
Stable	Transition by 1 CKD group	Transition by > 1 CKD group	Dialysis	Median GFR	Median CKD
47 (78%)	8 (13%) (6/8 medical RFs)	1 (2%) (1/1 medica RFs)	4 (7%)	52	3a

Oncological Follow Up: At median follow up of 78 months 57/66 (86.4%) are cancer free. 9/66 (13.6%) metastatic disease. 4/66 (6%) local recurrence; 1/4 positive surgical margin. Overall survival 57/66 (86.4%). Cancer specific survival 63/66 (95.4%)

Conclusion: In patients with solitary kidneys, PN with clamping and cooling delivers excellent long-term functional and oncological outcomes with a 94% dialysis free rate and a 95% cancer specific survival. These outcomes provide a benchmark against which novel approaches to NSS can be evaluated.

P80

Outcomes of radical nephrectomy for renal masses in patients with end stage renal disease

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Introduction & Objectives: End stage renal disease (ESRD) is a risk factor for development of renal tumors. Conventionally, renal masses in patients with ESRD are treated with radical nephrectomy prior to transplantation. The objective of this study was to investigate the demographics, pathology and outcomes of patients with ESRD who underwent radical nephrectomy for such tumors.

Material & Methods: We analysed the prospectively maintained database of all renal surgery performed at our institution from May 2006 to July 2014. Over this period, 63 radical nephrectomies were performed in 51 patients with ESRD. The database contained information on demographics, pathology and outcomes of these patients.

Results: Mean age was 54.4y and 78% (40/51) were male. Mean BMI was 28.1 kg/m^2. The majority of patients had surgery via a minimally invasive approach with a mean length of stay of 2.7 days. Overall, 51/63 (80.9%) of nephrectomies had a malignant histology. The most frequent malignant histologies were: papillary (33.3%), clear cell (21.6%), clear cell papillary (19.6%) and acquired renal cystic

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disease related RCC (9.8%). Four patients (7.8%) had multiple histologies in their tumors. Twelve (24%) of patients had bilateral staged nephrectomies, 10 of whom were male (83%). Of these 12, 7 had bilateral malignant tumors, 4 had unilateral malignant tumors and 1 had bilateral benign masses. Major complications (Clavien 3 or above) were seen in 3.2% (2/63) nephrectomies. This included one death from an MI after return to operation room for bowel injury. Only 13/51 (25.4%) of patients have proceeded to receive a renal transplant to date, with a further 9/51 (17.6%) currently being worked up for a transplant. The mean time from nephrectomy to transplant was 16.5 months (1–46 months).
Conclusions: In this series, nephrectomy performed for renal masses in patients with ESRD shows malignancy in 80.9%. However, the majority of these renal masses have low metastatic potential. Additionally, the majority of these patients do not proceed to renal transplant. This suggests that the role of nephrectomy should be re-evaluated in these patients.

P81

Pushing the boundaries of robotic partial nephrectomy: A multi-centre comparison of the peri-operative, functional and oncological outcomes for T1a and T1b tumours

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Introduction: Partial nephrectomy remains the gold standard treatment of T1a renal tumours with Robotic partial nephrectomy (RPN) gaining popularity. We assessed whether outcomes achieved using RPN in T1a tumours could be successfully reproduced in T1b tumours.
Patients and Methods: Using a prospective database of 242 elective cases from Guy's Hospital (London) and Peter-MacCallum Cancer Centre (Melbourne), the peri-operative, oncological and functional outcomes of 187 T1a tumours were compared with 55 T1b tumours.
Results: Mean age was 57.1years (T1a) and 54.8 years (T1b), tumour size 2.6 cm vs 4.7 cm, ASA 1.9 vs 1.7, BMI 29.1 vs 27.6 and PADUA scores 7.6 vs 8.3. Despite increased warm ischaemic times 17.4 min (T1a) vs 20.7 min (T1b) ($P < 0.05$) and estimated blood loss (132 mLs vs 265 mLs) ($P < 0.05$), there were no significant changes in subsequent creatinine (4.9 mol/L vs 9.7 mmol/L), haemoglobin (1.48 vs 1.70 g/dL), operative times (163 min vs 175 min) or hospital stay (3.1 days vs 3.3 days). There were 4 positive margins in T1a group and 1 in T1b group but no radiological recurrences. Both groups had 1 conversion to radical nephrectomy and transfusion with an open conversion in the T1b group. The T1a group had three Clavien IIIa (angio-embolisation), two IIIb (ureteric-stent) and one Clavien IV (NSTEMI). The T1b group had two Clavien IIIa (Angio-embolisation) and two IIIb (Ureteric-stent). 146/187 T1a's and 44/55 T1b's were performed for malignancy.
Conclusions: We report the largest RPN series in the UK and Australia and show in the elective setting RPN can be performed safely on carefully selected T1b tumours achieving equivalent oncological and functional results to T1a's, extending indications. Advantages offered by the robot may overcome the limitations previously posed.

P82

Catheter and drain free (Tubeless) radical & partial nephrectomy – The future

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Introduction: We present our initial experience with tubeless Partial & Radical Laparoscopic Nephrectomy as part of the on-going development of an established Enhanced Recovery Programme (ERP).
Method: We prospectively collected data for 51 consecutive patients undergoing laparoscopic upper tract surgery from May to Sept 2014. All patients were told about ERP in clinic, recovery expectations set and reinforced on admission. The routine placement of abdominal wound drains, stents and urethral catheters was avoided.
Results: 51 patients were operated on by a single surgeon in the trial period. 33 Laparoscopic Radical Nephrectomy.
15 Laparoscopic Partial Nephrectomy. 1 Laparoscopic Pyeloplasty. 1 Laparoscopic Nephro-Ureterectomy. 1 Adrenal Metastatectomy. Mean Age 59 (22–85) M : F 31:20. Median Stay 2 days (1–12). Discharge Day 1–73% Partial Nephrectomy, 37% Radical, 47% Overall. 11 Catheters in total (21%): Pre-op 2 (Haematuria BWO), Peri-op 4 (2 Conversion, 2 Critical Care) Post-op 5 (3 CISC, 1 failed TWOC (known BPE)).
6 Wound Drain in total (12%) (2 Conversion, 1 Pyeloplasty). Complications 17%: CD <3–7; CD >3–2 (1 death, 1 ileus).
Conclusion: By adopting a tubeless philosophy for all Laparoscopic Renal Surgery 79% of patients avoided a catheter, 88% a drain, 70% both; with no increase in complication rate. 50% of this unselected group went home Day 1 (10% prior to tubeless concept) with the maximum benefit seen in PN group. Tubeless surgery is now integral to our Enhanced Recovery Programme.

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BJUI

Wednesday 17 June ePoster Session 7 1330–1430 Charter 1 MANAGEMENT & TRAINING Chairs: Miss Esther McLarty & Mr Vaibhav Modgil ePosters P83–P92

P83

A culture of open reporting and assessment of harms results in improved quality of bladder tumour resections and biopsies: A closed loop audit of a district general hospital

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Introduction: Cystoscopic transurethral resection of bladder tumour (TURBT) provides initial diagnostic information. The presence of detrusor muscle is essential for accurate staging. Since 2010, our institution has annually audited the quality of tumour resections and has adopted an 'open culture' whereby all inadequate resections are openly reported to individual surgeons. Here we present the findings of our closed loop audit from 2010–2014.
Patients/Materials and Methods: We examined all bladder tumour resection/bladder biopsy specimens for the presence of muscle between the months of October-December each year from 2010–2014. We compared the yearly results to determine whether highlighting inadequate resections would improve the quality of specimens. *P*-values were calculated using the z-test for independent proportions ($P < 0.05$ considered significant).
Result: Over the last 5 years for the selected 3 month period, a total of 244 cases were performed by 5 consultants in a single hospital. In 2010, 37% (11/30) of cases were without muscle, 24% (9/38) in 2011, 8% (4/52) in 2012, 14% (6/42) in 2013 and 15% (12/82) in 2014. The reduction in samples without muscle from 2010–2014 is statistically significant ($P = 0.01$).
Conclusion: The percentage of muscle negative cases have decreased from 2010–2014. An 'open culture' whereby mistakes are openly reported for everyone to learn is often advocated as an important step in improving the quality and safety of care. Our audit proves that this system has improved the quality of resections over the years and has reduced the number of patients requiring re-resections.

P84

Chaperone use in urology – A study examining the current opinions and practices of UK urological surgeons

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Introduction: The GMC document 'Intimate examinations and chaperones' forms part of the Good Medical Practice guide. Urologists routinely perform intimate examinations during clinical practice. This study focuses on the opinions and the use of chaperones by members of the British Association of Urological Surgeons (BAUS).
Methods: An online questionnaire of 12 questions on the use of chaperones in clinical practice was sent to all full, trainee, and speciality doctor members of BAUS.
Results: The email was sent to 1269 BAUS members with a 26% response rate ($n = 331$). Consultant urological surgeons were the major respondents comprising 78.8% ($n = 261$), with a wide variance of years in practice. 38.9% of participants were not aware of the GMC guidance on chaperone usage. 72.5% of respondents always use a chaperone, but 22.9% never use a chaperone with patients of the same sex. Chaperones are most commonly used during intimate examinations (64.6%), and those involving members of the opposite sex (77.3%), although 58.9% do not document the use of a chaperone in the clinical notes. Whilst the majority felt chaperones protect both the patient (77.3%), and the doctor (96.6%), 42.5% did not feel that chaperones assist the doctor's examination and some (17.2%) participants stated that the use of chaperones is unnecessary.
Conclusion: This study shows a considerable variability in the use of chaperones amongst UK urologists. A significant proportion of respondents are not aware of the GMC guidelines and many do not use a chaperone during an intimate examination. Further study into this is suggested.

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P85

Can an operative coding sticker improve remuneration for upper tract stone-related procedures?

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Introduction: Rigid ureteroscopy (URS), flexible URS and ureteric stenting are commonly performed procedures. Operative clinical coding and remuneration varies depending on the procedures undertaken. We determined if loss of remuneration, through poor operative coding, could be improved with an operative coding sticker.
Patients and Methods: We performed a retrospective review of 133 random stone-related procedures (rigid/flexible URS and ureteric stenting). Using the OPCS codes and base HRG tariffs, we compared actual operative coding and urological surgeon coding and the resulting loss in remuneration. We then introduced an operative coding sticker and prospectively re-audited 45 cases, to determine if coding accuracy had improved.
Results: Flexible URS were initially miscoded in 29/53 cases (55%), with a loss of remuneration of £1014 per case. Rigid URS were correctly coded in 99% of cases, but ureteric stenting was only correctly coded in 82%. This resulted in lost revenue of £31 754 for these cases, and the department therefore receiving only 85% of the expected remuneration. The introduction of the coding sticker resulted in improved coding accuracy, with accurate coding rates of 100% for rigid URS, 95% flexible URS and 100% for ureteric stenting. Overall, the coding accuracy improved from 54% to 99%. We estimate, based on 2013–14 operative numbers, this coding sticker will improve our departmental remuneration by at least £67 938 per year.
Conclusion: Rigid, flexible URS and ureteric stenting were initially poorly coded. The introduction of a simple operative coding sticker improved coding compliance to 99% and increased operative remuneration.

P86

'WhatsApp Doc?' Evaluating a novel modality of communication amongst urology team members to promote patient safety

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Introduction: Innovations in social media have not translated into formal use within UK healthcare. The pager system is outdated, time-consuming, and associated with adverse patient safety events. We evaluated the feasibility, benefits and limitations of instant group messaging (WhatsApp) within a busy, acute and elective urology service.
Methods: A prospective, mixed-methods study was undertaken in a district hospital over four weeks. The WhatsApp group comprised all senior and junior trainees from two urology teams. All members were able to add and receive instant communications on a password protected, single shared view. Hospital bleeps and internal telephones were used if required. Dialogue analysis identified communication parameters and origin. Usage patterns were evaluated quantitatively. A focus group explored perceptions of this technology.
Results: 1051 group messages were sent in 29 days. 42% ($n = 444$) were patient related. 20% ($n = 206$) of messages related to administrative or logistical issues regarding patients or the hospital. 15% ($n = 163$) regarded patient handover. The remainder were relevant to education and training. The group universally valued the WhatsApp 'open forum'. Junior members felt better supported and more inclined to ask for advice using WhatsApp than via bleep. Senior colleagues regarded it as less disruptive to daytime commitments and appreciated the timely dissemination of information via WhatsApp, allowing for safe patient cross-cover.
Conclusion: WhatsApp is an innovative technology that breaks down traditional communication barriers and has potential to improve patient safety. We support its potential for quality improvement on a larger, multi-disciplinary scale.

P87

Validation of the BAUS human cadaver training programme

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Introduction: The aim of this study is to assess the validity of the Urology Human Cadaver Training Programme, developed by the British Association of Urological Surgeons (BAUS).
Materials & Methods: This prospective, observational comparative study recruited urology trainees, with different levels of experience, in two 3-day modular cadaveric operative urology teaching days. Two participants were allocated to one fresh frozen cadaver and were supervised by consultant urological surgeons to complete various procedures. At the end of each module, all trainees and faculty were invited to complete an evaluation survey.
Results: A total of 102 evaluation surveys were received from the trainees and faculty; a response rate of 94%. All procedures scored a mean of 3/5 for face validity, which is above the acceptability range. As regards to content validity, participants and faculty rated all aspects ≥3/5. Respondents held a positive view of the cadaver sessions and believed them to be useful for learning anatomy and steps of an operation (mean: 4.54/5) and as a confidence booster for performing a procedure (mean: 4.33/5). Furthermore, it was thought that the training programme significantly improved skills (mean: 4.11/5), gave transferrable skills for the operating room (mean: 4.21/5) and was feasible to be incorporated into training programmes (mean: 4.29/5).
Conclusions: The BAUS fresh cadaveric urology training programme demonstrated face and content validity. It also showed feasibility, acceptability, a high value for educational impact and cost effectiveness for cadaveric simulation.

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P88

The use of fresh frozen cadavers for the teaching of Holmium laser enucleation of prostate, Thulium prostate resection and high power KTP laser vapourisation

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Introduction: Laser technology is rapidly becoming more common for the treatment of benign prostatic enlargement (BPE). Teaching new technologies is challenging and computerised simulators have been developed however the next step in training is either on animal models or human cadaveric tissue. No good animal models of BPE exsist however the use of fresh cadaveric tissue has an increasing role in surgical training. The effect of different lasers on cadaveric tissues is not published nor is it known if specific procedures such Holmium laser enucleation of prostate (HOLEP), thulium vapouresection (THUVARP) or high power KTP laser vapourisation (KTP) are reproducible on cadavers. The aim was to study HOLEP, THUVARP and KTP procedures on fresh cadaveric prostate to assess feasibility for teaching.
Methods: Different cadaveric models (whole body, pelvis and disected specimen were trialled with all three lasers at a variety of laser powers. Following this, a course for senior trainees and consultants was delivered over 2 days to assess the use of cadaveric tissue in laser prostate surgery and to calculate the cost of this training technique.
Results: All 3 lasers worked well at a variety of power settings on all the model types. Delegate satisfaction was assessed with questionaires which showed a high satisfaction rate with this model of training but with a preference to training on whole body and pelvis specimens rather than dissected specimens.
Conclusion: The use of fresh cadaveric tissue in laser prostate training is safe, effective and associated with high levels of trainee satisfaction.

P89

Development of training pathway for robot assisted prostatectomy and evaluation of learning curve using observational methodology

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Introduction: Robot assisted surgical training and assessments are critical in optimising outcomes. This study aims to: (1) develop and validate a checklist-based training and assessment score; (2) Evaluate learning curve (LC) of the RARP using RARP score.
Methods: This multi-institutional, observational study used HFMEA (Healthcare Failure Mode & Effect Analysis) to identify high-risk steps. A specialist focus group was consulted for development and content validation. 15 trainees performed RARP and were assessed using this tool. Results were analysed to examine LCs for each step and multivariable analysis of predictors was conducted. Plateau above 'Score 4' indicated competence.
Results: 5 surgeons were observed for 42 h. HFMEA identified 84 failure modes and 46 potential causes with 'Hazard score' ≥8. Content validation (US, UK, Europe) created the RARP Assessment Score (17 stages, 41 steps). This demonstrated acceptability, feasibility and educational impact. 15 trainees were assessed for 8 months in 426 RARP cases (Range 4–79) with all steps attempted. Most cases were T stage 2 (40.3%), N stage 0 (59.9%) and 'Intermediate' D'Amico risk (36.1%). Learning curves demonstrated several findings. Case number acted as an independent predictor of score. There were plateaus for Anterior Bladder Neck Transection (16 cases), Posterior Bladder Neck Transection (18 cases), Posterior Dissection (9 cases), Dissection of Prostatic Pedicle and Seminal Vesicles (15 cases) and Anastomosis (17 cases). For other steps the LC did not plateau during data collection (e.g. Expose Prostatic Apex and Endopelvic Fascia; 31 cases, Stitching and Division of Dorsal Venous Plexus; 32 cases).
Conclusions: RARP Assessment Score identified critical hazardous steps specific to RARP and assessed and evaluated surgeons. LCs demonstrate the experience necessary for competence in essential technical skills to protect patients.

P90

'Registrar of the week' and a bespoke ward round checklist optimise the quality of urology in-patient care

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Introduction: Clinicians aim to provide the highest quality patient care. A 'quality' service ensures safety, provides excellent clinical outcomes, improves productivity/efficiency and maximises the experience of patients and staff. Increasingly, obstacles exist to the provision of quality in-patient care, particularly given the economy and the changes to the traditional 'firm' structure. Following the success of the WHO surgical checklist, evidence of improved outcomes have been reported with ward round checklists.
Methods: 'Registrar of the Week' and a bespoke ward round checklist (iUROWARD) were introduced in November 2013 and various performance indicators for the year pre- and post-introduction analysed. Statistical analysis utilised an unpaired (2-tailed) T-test.
Results: Mortality was reduced, HSMR by 18.5% ($P = 0.51$) and SHMI by 42.1% ($P = 0.076$). Formal complaints fell by 76.9% ($P = 0.047$) and prescribing errors by 73.3%. VTE compliance improved. Length of stay for emergency cases improved by 13.3% (0.52 days, $P = 0.06$). 28-day readmission rates decreased by 25.1% ($P = 0.025$). Based on a conservative tariff of £250/in-patient/day, cost savings were estimated at £221K/annum. Respondents to the in-patient survey who were 'Extremely Likely' or 'Likely' to recommend the service to friends and family increased from 42.8% to 100%. Ward clinical staff felt overall quality had significantly improved ($P = 0.002$) as had their ability to undertake educational, research and governance activities ($P < 0.05$).
Conclusion: Despite the challenges of a modern NHS, this study provides practical solutions to enhance the quality of Urology in-patient care delivery.

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P91

'The hidden workload' – What is the true extent and clinical outcomes of the inpatient urology consultation?

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Introduction: Little is known about epidemiology of inpatient urology consultations. As such, we investigated the extent, profile and outcome of urology inpatient consultations in a district hospital, exploring salient clinical aspects and subsequent clinical outcomes.
Patients and Methods: Medical records of cases requiring an inpatient urology consultation, between September 2012 and August 2013, were reviewed. Emergency referrals requiring immediate intervention were excluded. Data collection included demographics, clinical indication for consultation and outcome of urology review – including details of any further radiological investigations requested, further urological procedures and treatments needed, and referrals leading to new urological cancer diagnosis.
Results: In total, 361 referrals were received (median age 77; range 1–98). The majority of referrals (Table 1) were from medical specialties (73%). The indications for referral are summarised in Table 2. 173 (47.9%) patients had subsequent inpatient radiological investigation – majority for USS (89; 24.7%) and CT (61; 16.9%). Of the total population, 125 (34.6%) had an out-patient urological procedure, 19 (5.3%) required in-patient intervention and 123 (34.1%) needed outpatient follow-up. Overall, new urological cancer diagnosis was made in 43 (11.9%) patients.
Conclusions: This study has shown that the number of inpatient urology consultations, and the workload generated by them, is quite considerable. We believe, that in future urological plans, staffing and resources should be strongly considered to allow dedicated review of such patients and to maintain the quality of care of 'The Hidden Workload'.

Table 1 (P91) The source of referrals, by specialty.

Specialty	Number; Percentage
Medicine	266; 73.7%
General Surgery	60; 16.7%
Trauma and Orthopaedics	14; 3.9%
Obstetrics and Gynaecology	9; 2.5%
Psychiatry	7; 1.9%
Critical Care	2; 0.5%
Paediatrics	2; 0.5%
ENT	1; 0.3%

Table 2 (P91) The indications for referrals.

Indication	Number; percentage
Urinary retention	80; 2.2%
Haematuria	50; 13.9%
Urinary infection/Sepsis	48; 13.3%
Suspected renal colic	28; 7.8%
Hydronephrosis	25; 6.9%
Abnormal DRE/PSA test	25; 6.9%
Incidental scan findings	25; 6.9%
Urinary symptoms	24; 6.6%
Scrotal swelling/Lump	16; 4.4%
Catheter/SPC – related problem(s)	15; 4.2%
Post-operative query	13; 3.6%
Penile lesion	10; 2.8%
Suspected spinal cord compression	2; 0.5%

P92

The one-stop clinic: A snap-shot of current practice

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Introduction: The one-stop clinic (OSC) was devised to provide consultation, investigation, diagnosis and treatment plan all in the same clinic appointment to improve patient care and avoid unnecessary attendances. We investigated the efficiency of the OSC through an audit of 450 patients attending clinic.
Methods: Data was analysed for 450 consecutive attendances at the OSC at a single centre over 4 months. Demographic information and clinic outcomes were recorded.
Results: Male : female ratio of attendees was 2.4:1, a median age of 63 years (17–96). Mean number of patients per clinic 40.9. 29.1% were referred via the 2-week-wait pathway.
Presenting complaints are outlined in the table below:

(P92)

Primary Presenting Complaint	*n* (%)
LUTS	125 (27.8%)
Scrotal/Penile condition	98 (21.8%)
Non-visible haematuria	36 (8%)
Raised PSA	29 (6.4%)
Recurrent UTI	45 (10%)
Visible haematuria	49 (10.8%)
Incontinence	14 (3.1%)
Erectile dysfunction	4 (0.8%)
Loin pain	11 (2.4%)
Known urological malignancy	17 (3.7%)
Renal tract calculi	9 (2%)

52.6% of patients underwent at least one investigation (flexible cystoscopy, USS or flow rate). 62.7% ($n = 282$) were diagnosed and discharged or added to waiting list for surgery.
When comparing those patients who were discharged/listed for surgery vs those who required further appointments, there was no significant difference between groups when looking at mean age ($P = 0.86$) and gender ($P = 0.15$).
Conclusion: Our data supports the view that the OSC approach is feasible and efficient, these results compare favourably with published studies. By providing rapid access for GP referrals the OSC can help to counter problems resulting from the selective prioritisation referral system. In addition, it confers significant benefits for cost-effectiveness and improved patient satisfaction.

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BJUI

Wednesday 17 June ePoster Session 8 1330–1530 Charter 2 ANDROLOGY, PENILE CANCER AND RECONSTRUCTION Chairs: Mr Rowland Rees & Mr Oliver Kayes ePosters P93–P109

P93

Micro-dissection TeSE vs conventional TeSE for non-obstructive azoospermia

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Introduction: Surgical sperm retrieval (SSR) in non-obstructive azoospermia (NOA) is usually undertaken in fertility units by testicular sperm aspiration or open biopsy (TeSA/TeSE). Retrieval with micro-dissection (micro-TeSE) has a greater reported success rate but is used less often. We report our institutions experience of conventional TeSE vs micro-TeSE in NOA.
Patients and Methods: Data was collected prospectively in all men undergoing SSR for NOA from April 2013. Both procedures were completed with embryology support in theatre. Micro-TeSE's were performed using an operative microscope (×20 magnification). Patient demographics, pre-operative hormone levels (FSH/LH/Testosterone), and histological subtype were compared between the groups. Results were statistically analysed using Fisher's exact test. P values <0.05 were considered significant.
Results: 48 patients had SSR (26 conventional TeSE, and 22 microTeSE). There were no differences in age, FSH or testosterone levels between the groups. SSR rate was 50% for micro-TeSE, and 35% for conventional TeSE ($P = 0.045$) and was superior for microTeSE irrespective of the histological subtype [80% vs 0% for maturational arrest ($P = 0.0001$), 100% vs 80% for hypospermatogenesis ($P = 0.0001$) and 29% vs 22% for sertoli cell only ($P = 0.33$)]. Micro-TeSE was successful after failed conventional TeSE in 80% ($n = 5$). There were no differences in ICSI fertilisation rates between the groups.
Conclusion: Micro-TeSE is a reproducible SSR technique for NOA in both the primary and redo setting. Our SSR rates are comparable to larger published series. By developing close collaboration between assited conception and andrologists there has been a paradigm shift for NOA at our Institution supported by the superior SSR in microTeSE.

P94

Cytogenetic abnormalities in men with subfertility. Analysis of the frequency of abnormalities and determination of a threshold sperm concentration for genetic testing

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Aim: To determine the frequency of Chromosomal and Y deletion abnormalities in infertile men and to determine a threshold sperm concentration at which genetic evaluation should be undertaken.
Material & Methods: Over a 9 year period, 982 infertile patients underwent fertility evaluation including genetic testing. The frequency and type of genetic abnormalities were determined. Statistical analysis was performed to determine cut-off values for sperm concentration in detecting genetic abnormalities.
Results: 71 (7%) patients were found to have an abnormal karyotype. The commonest abnormality was 47 XXY ($n = 48$, 5%), followed by Robertsonian translocations in 13, 45 XO in 6 patients, 46 XX in 2 patients, and 47XYY in 2 patients. 33 (3%) patients had Y microdeletions. The majority ($n = 29$, 81%) of microdeletions were AZFc deletions with 1 and 3 patients having AZFa and AZFb microdeletions respectively. A combination of b and c microdeletions occurred in three patients and one patient had a, b and c deletion.
A threshold of <1 M sperm/mL was as sensitive but much more specific for detecting Y microdeletions than the current level of 5 M/mL advocated by the EAU guidelines. Karyotype anomalies are nearly all detected with a cut off of <10 M/mL.
Conclusions: In this cohort of patients the frequency of abnormal karyotypes and Y microdeletions is much lower than that reported in the literature. A threshold of <1 M sperm/mL was more accurate in detecting Y chromosome microdeletions.

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P95

The clinical value of assessing sperm chromosomal aneuploidy in couples undergoing failed intracytoplasmic sperm injection (ICSI) and its correlation with semen parameters

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Introduction: Whilst, sperm aneuploidy may be the cause failure of ICSI treatment, there are no clinical guidelines on assessing sperm aneuploidy rate (AR) in couples undergoing ART. The aims of this study were to determine the incidence of sperm AR in couples undergoing failed ICSI and whether sperm concentration and morphology correlated with AR.
Materials and Methods: AR was determined in 116 couples failing at least one ICSI cycle (failures; fertilisations $n = 2$, implantations $n = 109$, miscarriages $n = 5$). AR of chromosomes 13, 18, 21, X/Y was assessed using FISH. Semen parameters were correlated with AR, and threshold values for measuring AR determined.
Results: Mean age of patients was 39.4 years in males (27–73) and 36.2 years (26–47) in females. Mean number of analysed spermatozoa was 2023 (1392–2227). 37.1% of patients had a raised aneuploidy rate (> 7%) and 15% had abnormal X/Y ratio (>1.1). The mean total AR was 6.71% (1–28.2), with mean individual chromosomal AR of 2.38% Chr 13, 0.87% Chr 18, 1.1% Chr 21, 2.9% Chr X and Y and 0.84% diploid spermatozoa. The mean X/Y ratio was 1.04 (0.6–2.0). Total AR was significantly associated with male age and sperm concentration ($P < 0.001$) but not morphology ($P = 0.09$). The total AR was significantly ($P < 0.05$) associated with AR in chromosomes 13, 21, X & Y.
Conclusion: A significant number of patients failing ICSI have a raised AR, with male age and sperm concentration predictive of patients with raised AR. These findings are of prognostic value in counselling patients undergoing ICSI treatment.

P96

Management and outcomes of patients with peno-scrotal extramammary pagets disease

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Introduction: Isolated Paget's disease of the peno-scrotal area is extremely rare and usually requires surgical excision of the skin. Approximately 12% of cases develop an invasive malignancy. We reviewed the management of patient's diagnosed with Extra-Mammary Paget's (EMP) disease of the peno-scrotal area.
Patients & Methods: Patients diagnosed with EMP were identified and the surgical management and outcomes recorded.
Result: A total of ten patients (mean age 76.8, range 66 to 93) were treated for EMP over a 7 year period. All patients were screened negative for synchronous gastrointestinal adenocarcinomas but one patient was earlier treated for oesophageal cancer (10%). Nine patients underwent excision of the skin where there was macroscopic involvement, with additional biopsies of the adjacent skin. Histological analysis showed that despite macroscopic clearance in 50% of patients, residual disease was always present at the margins which required adjuvant topical immunotherapy using Imiquimod. One patient with superficial scattered lesions was treated successfully with immunotherapy and Laser therapy. Two patients (20%) were found to have invasive carcinoma affecting the lesion with metastatic spread. One has deceased and the other is currently on Paclitaxel chemotherapy.
Conclusion: Reported recurrence rates of EMP are high and additional adjacent mapped biopsies in these series showed that 50% of our patients required additional local treatment with Imiquimod. Additionally 20% of our cohort had invasive carcinoma and poor outcomes. Adjuvant treatment with immunotherapy or laser therapy is often required.

P97

Does the preoperative neutrophil to lymphocyte ratio have any prognostic value in advanced penile cancer?

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Introduction: The neutrophil to lymphocyte ratio (NLR) is a marker of systemic inflammation and has been reported as a prognostic indicator in many tumours, including head & neck, vuval and anal. This study assessed whether there is an association with metastasis and/or death in men with advanced squamous cell carcinoma of the penis.
Patients and Methods: A retrospective review of a prospectively recorded database at a specialist penile cancer centre was performed. All men with advanced penile cancer (nodal stage N2 and N3) were identified from December 2002 until April 2014. NLR was calculated from the full blood count measured prior to the initial penile surgery.
Results: 165 men were analysed. 101 developed distant metastases and/or died. The median NLR for the whole cohort was 3.53. Those with a higher than median NLR were 2.65 times more likely to develop distant metastases and/or die compared to those with a lower than median NLR (95% confidence interval 1.69–4.16; $P < 0.0001$ Fisher's Exact test).
Conclusion: Preoperative NLR is simple to calculate and a higher value is associated with a poorer prognosis in advanced penile cancer. Assessing NLR after treatment may further refine the prognostic potential of this simple test.

P98

The management of sentinel node non-visualisation in penile squamous cell carcinoma – Is it worth repeating the procedure?

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Introduction & Objectives: In patients with penile squamous cell carcinoma (SCC) and clinically impalpable inguinal nodes (cN0), patients are offered dynamic sentinel lymph node biopsy (DSNB), However, lymphoscintigraphy may only

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demonstrate the sentinel lymph node unilaterally despite penile SCC draining bilaterally. This study reviewed the management, outcomes and risk factors predisposing to non-visualisation of sentinel lymph nodes.
Material & Methods: Patients with penile SCC and cN0 disease underwent DSNB. In cases of non-visualisation, either a further 99m Tc dose was administered or the patient underwent unilateral exploration of the visualised site with on-table assessment of the non-visualised site for gamma probe activity. Where no exploration took place, patients were offered either DSNB with a back-up superficial modified lymphadenectomy (SML) at a later date or clinical surveillance depending on the tumour characteristics.
Results: From a total of 134 patients, 19 (14%) had unilateral non-visualisation, 15 (79%) had a high BMI (overweight or obese). Within this group 8 opted for repeat DSNB, 7 having successful visualisation; one proceeded to SML due non visualisation. 8 patients underwent SML with frozen section evaluation which showed no metastatic disease. Three patients underwent clinical surveillance and remained disease-free after a mean follow up of 11 months.
Conclusions: Patients undergoing DSNB should ideally have bilateral inguinal visualisation. Repeat DSNB was successful in localising the lymph nodes in 86% of cases, suggesting that patients should initially be offered a repeat DSNB at a later date.

P99

Patient reported outcomes of glans resurfacing for penile lichen sclerosis and malignancy

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Introduction: Glans resurfacing has been traditionally used for treatment of benign disease including lichen sclerosis. In pre-malignant carcinoma in situ (CIS) and selected cases of malignant penile lesions it has been shown to maintain a functional penis without compromising oncological control.
The aim of the study was to evaluate the qualitative outcomes for patients following a glans resurfacing procedure at a specialist unit with a view to developing a standardised/validated patient reported outcome measure tool.
Methods: The trial questionnaire was developed using a previous urological validated QOL questionnaire and added key procedure related questions generated from patient interviews. With prior consent the questionnaire was sent and independently completed to minimise bias.
Results: 77 patients agreed to participate and 61 responders (79%) completed the study. There was strong content validity in the sample. The mean age was 67 years (22–89 years). The histology showed 11 benign, 16 pre-malignant and 34 invasive Squamous cell carcinoma cases.
Findings: Overall 90% of patients were very satisfied/satisfied with their treatment. 77% of patients never or almost never experienced soreness. 56% were almost always or mostly satisfied with sensation in the penis. 72% sprayed urine in less than 50% of voids. 66% were almost always or mostly satisfied with the appearance of their penis.
Conclusion: Overall patient satisfaction is high with this procedure in treatment of both benign and malignant disease. We have quantified issues of patient concern which will help with pre-operative counselling. This study provides a framework for development of a validated PROM.

P100

Is wide local excision feasible for the management of small volume tumours of the glans penis?

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Introduction: The management of SCC of the glans penis with Wide Local Excision (WLE) remains controversial with reported recurrence rates as high as 50%. In this study, we reviewed clinical outcomes, disease recurrence rates and final treatment of patients managed with WLE.
Patients & Methods: Patients diagnosed with solitary glans lesion and underwent WLE were identified and case notes reviewed.
Result: Sixteen patients underwent WLE for solitary glans lesion over a 4 year period. The lesion was excised and separate deep biopsies taken. Two patients had low grade lesion ($G_{1,1\text{-}2}pT_1$) and ten patients had Grade 2 (62.5%) disease with two patients staged as T_2 (eight cases were T_1). Four patients had Grade 3 SCC completely excised (25%) and two cases were staged as T_2. Only one patient had N_1 disease with no recurrence on surveillance.
Nine patients had adjacent carcinoma in situ (CIS,56%) with two requiring additional topical 5-FU and one treated with Cryotherapy. Three patients (all with CIS and initial G_2pT_1 in two patients, one with G_3pT_1 disease) had SCC recurrence and underwent glansectomy. Seven patients who did not have evidence of CIS remained disease-free on surveillance. One patient died of an unrelated illness after 3 years of surveillance.
Conclusion: SCC recurrence in this cohort was 18.7% and was linked to patients with concomitant CIS. Close post-operative surveillance is imperative in all cases treated with WLE particularly in the presence of adjacent CIS.

P101

Safety and effectiveness of collagenase clostridium histolyticum (CCH) treatment in EU Patients with Peyronie's disease: A comparison of EU enrolled subjects versus all subjects enrolled in a phase 3 open-label study

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Introduction: CCH (Xiapex®, Sobi AB (publ)) is an intralesional treatment for Peyronie's disease (PD) pending approval by EMA and approved by the FDA. The safety and effectiveness of CCH in the treatment of PD in European patients was compared to all patients participating in a phase 3, open-label study in the United States, New Zealand, and Europe.
Patients and Methods: 347 subjects, including 191 EU subjects, participated. The co-primary efficacy endpoints were percent improvement in curvature deformity and change in Bother domain of the Peyronie's Disease Questionnaire at week 36.
Results: Mean (SD) penile curvature deformity was 53.0° (14.82) vs 55.7° (15.37) in all and EU subjects respectively

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and mean PD symptom bother (0–16) was 7.4 (3.53) vs 6.8 (3.54) at baseline. Both co-primary endpoints improved significantly. The mean percent improvement of penile curvature was 34.4% (95% CI 31.2–37.6%) in the overall population and 34.7% (30.8–38.6%) in EU subjects, and a mean improvement of 3.3 (95% CI 3.7–2.8) and 2.8 (3.4–2.3) points in subject-reported PD symptom bother was observed among all subjects and EU subjects, respectively. The majority of treatment emergent adverse events were transient, non-serious, mild or moderate in intensity, and local to the penis.
Conclusions: Significant and clinically meaningful improvements in penile curvature deformity and PD symptom bother scores were observed in European patients, with similar magnitude as in the overall population. CCH was generally well tolerated. In conjunction with previous studies, the results of this open-label study support the use of CCH in the treatment of PD.

P102

Penile implants act as a tissue expander and may lead to an increase in penile length and girth

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Introduction: Patients are counselled before penile implant surgery regarding length loss. This study aims to demonstrate that penile implants act as a tissue expander and lead to an increase in penile length and/or girth.
Patients and Methods: A retrospective analysis of penile implant revision surgeries conducted in our institution over the past 5 years. Fifty elective revisions involving exchange of cylinders for mechanical failure or change of prosthesis type were included. Revisions for complications were excluded.
Results: The mean duration between the first and revision surgery was 4.14 (0.3–14) years. Thirty nine patients (78%) had an increase in corporal length measurement observed in the revision surgery, mean 1.7 (0.5–4) cm and an increase in cylinder length, mean 1.6 (0.5–4) cm. There was a weak positive correlation between the time interval between the 2 surgeries and the length gain. Neither the type or make of the first implant had an effect on the length gain. Patients with penile fibrosis due to Peyronie's disease or late insertion post priapism achieved less length gain compared to other patient groups with a mean length gain of 0.8 vs 1.6 cm. As for girth change, 10 patients with a malleable implant had an exchange to a wider malleable. Two patients had an exchange of a 9.5 mm malleable to a standard inflatable prosthesis and 1 patient had exchange of a narrow base inflatable prosthesis to a standard one.
Conclusion: Penile implants act as a tissue expander and may lead to an increase in penile length and girth.

P103

Tunical plication for the treatment of penile curvature – Factors predicting residual and recurrent curvature

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Introduction: The surgical management of penile curvature has traditionally been the Nesbitt's tunical excision procedure. Corrective surgery without disruption of the tunica, such as the Lue '16 dot' plication, is used ostensibly to minimise complications. We investigated the effectiveness of '16 dot' plication in correcting penile curvature, and early failure from recurrent curvature.
Methods: Data on patient age, erectile function, aetiology, pre-operative curvature, type of corrective procedure, curvature at end of procedure and first follow up were recorded prospectively on the BAUS National Audit Database from August 2010. Patient notes were scrutinized for evidence of residual curvature (>10°) or recurrence. Multiple regression analyses were used to determine any correlation between the variable and outcome factors.
Results: 170 patients underwent corrective surgery for penile curvature, of whom 63 had '16 dot' plication and complete data records. Rate of residual curvature 6.3%, and recurrent curvature 7.9% (all had successful revision surgery). Multiple regression analysis showed residual curvature at the end procedure was significantly correlated with pre-operative lateral curvature independent of severity (not dorsal or ventral) ($P = 0.0086$). No other factors showed significant correlation. Recurrent curvature was also statistically significantly associated with pre-op lateral curvature but not severity of pre-op curvature, age or erectile function status. ($P = 0.0354$).
Conclusion: Pre-operative lateral curvature is the strongest predictor of residual and recurrent curvature with plication surgery, possibly due to less robust lateral tunica. The '16 dot' technique is effective at correcting dorso-ventral curvature but should be used with caution for correcting predominantly lateral deformities.

P104

The effect of varicocele embolisation in the treatment of orchalgia

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Introduction: Between 2–10% of men with varicoceles complain of pain and in up to 14% of men with chronic scrotal pain, the cause is due to varicoceles. However the association between varicoceles and orchalgia has not widely been investigated. The aim of this study is to evaluate the affect of varicocele embolisation in the treatment of orchalgia.
Patient and Method: A prospectively collected database of all patients undergoing varicocele embolisation for pain over a 10-year period was investigated. Only males aged 16 yrs or older were included. Case notes were reviewed retrospectively. Questionnaires were sent to patients with pain scores, analgesia requirements and quality of life data.
Results: 96 cases were identified. Postoperative pain scores reduced significantly ($P < 0.001$). An overall cure rate of 30% was found with an improvement of pain of 44%. 24% had no change in symptoms and 1% had worsened pain. Patient with mild or moderate pain had a cure rate of 36% and 38% respectively; with an improvement of pain of 43%. Those with severe pain had a cure rate of 15%, with an improvement of pain to moderate or mild of 64%.

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Conclusion: Our data suggests that those moderate or severe pain are more likely to have a reduction of pain following embolisation than those with mild pain. However those with mild pain have the greatest cure rate. The classification of patients into those with mild, moderate or severe symptoms should be done so that more accurate prognosis and robust consenting can be performed.

P105

Management of urethral stricture disease: 7-year experience of two-stage urethroplasty in a high volume UK centre

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Introduction: Two-stage urethroplasty is performed for hypospadias repair; hypospadias salvage surgery, and for the definitive treatment of complex penile urethral strictures. Previously published literature on two-stage urethroplasty report high revision rates of up to 30% requiring three-stage urethroplasty. The authors present the 7-year experience of two-stage urethroplasty performed in a high volume urethral reconstruction centre in the UK.
Patients and Methods: An electronic database of a 111 patients who underwent two-stage urethroplasty performed by a single surgeon, was collected and analysed between November 2007 and April 2014.
Results: Complete data was collected on 107 male patients, with a mean age of 44.2 years (range 16–74). Balanitis Xerotica Obliterans (BXO) accounted for 69% of strictures. The mean stricture length was 5.35 cm (1.5–14 cm). Buccal mucosa graft (BMUG) was used in 93% of patients. Only 3.6% of patients required an intermediate revision (third stage). Graft augmentation was performed in 16.2% of patients during the second stage procedure ($n = 18$). $n = 3$ (2.8%) patients re-strictured, requiring further surgery. $n = 1$ (hypospadias) patient underwent fistula repair. For BXO strictures, the fistula rate was 0%. 98.5% of patients were entirely symptom free at 1 year, 97.9% at 2 years and 81.8% at 5 years. Operative intervention following second stage procedure was required in only 5.4% of patients.
Conclusion: This large study reveals a considerably lower revision rate for two-stage urethroplasty, and conversion to a three-stage procedure, than previously published. The fistula rate following two-stage BXO urethroplasty in this high volume centre remains 0%.

P106

Do replacement artificial urinary sphincters last as long as the first implanted?

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Introduction: Patients with an artificial urinary sphincter (AUS) may go on to have one or more revisions/replacements over the course of their life. We carried out a retrospective study to evaluate how long each subsequent device lasts before it needs to be revised. Patients and
Methods: 469 patients (380 males), age range 4–84 years, underwent AUS implantation in a single unit. Those who went on to have more than one AUS were identified.
Results: Of 469 patients, 211 (45%) had the AUS explanted after a mean of 5.62 years (range 23 days–30.5 years). The devices were removed due to malfunction in 47.9% at a mean of 7 years (116 days–30.5 years), erosion in 44.1% at a mean of 4.7 years (29 days–26.4 years), and infection in 6.6% at a mean of 1.3 years (23 days–5.3 years). 149 patients (71%) went on to have a second device implanted. 46 (30.1%) had it removed after a mean of 4.01 years (42 days–17 years). In these, erosion was the commonest cause, occurring on average 4.1 years after implantation. 25 patients had a third sphincter inserted. Of these, 7 (28%) were explanted, most commonly due to malfunction (57%). In this group the mean time to explantation was 2.8 years. 6 patients had a fourth device, of which 2 (33%) were explanted after 0.6 years and 3.2 years for malfunction and erosion respectively.
Conclusion: The complication rate associated with successive AUS implantations is more or less similar, ranging between 28 and 33%. However, when complications do arise, they will occur earlier with each subsequent sphincter. This is important when counselling patients who have had multiple previous failed artificial sphincters and are being considered for even further revision surgery.

P107

Does radiotherapy affect outcome following bulbar artificial urinary sphincter implantation for sphincter weakness incontinence resulting from prostate cancer treatment?

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Introduction: This study evaluates the impact of radiotherapy on the functional outcome and explantation rate of the bulbar artificial urinary sphincter (AUS) in the management of sphincter weakness incontinence (SWI) following prostate cancer treatment.
Patients and Methods: 188 men previously treated for prostate cancer underwent AUS implantation between 2006–2013. These were analysed in 2 groups : GroupA, post–radical prostatectomy (RP), $n = 116$;GroupB, post-radiotherapy, $n = 72$. 151 were primary implantations. 37 were replacement or revision procedures. Mean follow-up was 19.2 months (3.5–92.8 months). Functional outcome was assessed only in patients with follow-up of at least 1 year (mean 27.6 months; range 12.0–92.8 months).
Results: Early explantation rate for infection (within 90 days) was 1.7% in unirradiated patients compared to 4.2% in the radiotherapy group. Delayed explantation for erosion was commoner in those having had radiotherapy; 11.1% vs 7.8% and occurred significantly earlier (mean 13 vs 24.7 months). There was no difference in continence rates between unirradiated and irradiated patients (79.5% vs 80.6%) This may be related to the fact that more patients in group A underwent a non-primary procedure (23.8% vs 15.9%). Of the 13 incontinent in Group A, 5 had at least one previous AUS (38.5%) compared to 1 out of 9 in Group B (11.1%). Detrusor overactivity was a commoner cause of recurrent incontinence in unirradiated patients (46% vs 22.2%).
Conclusion: Radiotherapy is associated with an increased incidence of AUS infection and erosion which occurs much earlier following implantation.

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Nonetheless, in carefully selected and appropriately councelled patients, a functional outcome comparable to unirradiated patients is achievable.

P108
Surgical repair of uro-rectal and perineal fistulae

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Introduction: This study presents a series of 66 cases of uro-rectal or uro-perineal fistulation managed by a transperineal repair with additional abdominal exposure as necessary.
Patients and Methods: Between 2006–2013, 43 transperineal (17 with gracilis flap) and 23 abdomino-perineal fistula repairs were performed in 58 men. 13 were redo-procedures. 31 patients had undergone radiotherapy, HIFU, cryotherapy, brachytherapy or a combination of these.
Results: 79.1% of primary transperineal repairs were successful. Abdomino-perineal approach was successful in 83% of cases, 74% of them having been irradiated. All recurrences occured in irradiated patients, on a background of Crohn's disease or in non-primary procedures. Following salvage surgery, 92% of patients (53 of 58) were eventually reconstructed. 14 perineal wound infections were documented, 13 in patients having a perineal drain, 10 of whom developed recurrence (71%). In 8 of the 9 (88.9%) failed fistula repairs, recurrence occured from the urinary side of the fistula. In 20 of the 52 successful cases (38.5%), urethrogram at 4 weeks demonstrated a leak into a contained cavity or blind-ending track and was managed conservatively. The catheter was eventually removed on average 84.8 days after surgery. 18 patients remained asymptomatic. In 2, this cavity became infected and ruptured, requiring salvage surgery.
Conclusions: Recurrence after fistula repair is usually from the urinary tract. This most often presents as a recurrent track, not into the rectum, but onto the perineum to the drain site. Radiological leaks from the urinary system into a blind ending track or cavity are common and usually can be managed conservatively without compromising outcome.

P109
Can filling phase urodynamic parameters predict the success of artificial urinary sphincter in treating post-prostatectomy incontinence?

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Objective: To evaluate whether filling phase urodynamic parameters can predict the success of artificial urinary sphincter (AUS) in treating post-prostatectomy incontinence.
Methods: We reviewed the pre-AUS urodynamics of patients with stress urinary incontinence post-prostatectomy +/– radiotherapy (PPI). We defined success as dry or one safety pad per day. All other patients were classified as failures even if they considered their procedure a success. Statistical analysis was performed using Mann-Whitney U test and Fisher's Exact test.
Results: 46 patients with mean age 71 yrs (range 60 to 87) were reviewed. The filling phase parameters at typical follow-up period of six months are given in the table below. 31 patients (67.4%) had a study-defined successful outcome. Of the 15 patients that required more than one pad/day, 10 had had radiotherapy (66%) whilst only 16.1% in the 'success' group had received radiotherapy.

(P109)

Outcome	*n*	Mean age (range) Yrs	DO (*n*)	Mean compliance (sd) (mls/cm H_2O)	Mean capacity (sd)/ml	Radiotherapy (*n*)
Success	31	72 (61–81)	5*	94 (+ 129.7)*	419 (+106.8)	5*
Failure	15**	70 (60–87)	7*	24 (+ 26.2)*	356 (+133.9)	10*
	46					

Statistically significant.
** Includes 3 significantly improved patients.

Conclusion: AUSs were successful in treating PPI in 67.4% patients. Reduced bladder wall compliance and DO significantly compromise the likelihood of a good outcome. The 'failure' group had a significantly higher ratio of patients that had received radiotherapy than the 'success' group suggesting that the compromised filling phase bladder function may be attributed to radiotherapy.

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BJUI

Thursday 18 June ePoster Session 9 0830–0930 Charter 2 PROSTATE CANCER DIAGNOSIS Chairs: Professor Martin Sanda & Mr Simon Bott ePosters P110–P121

P110

Men with locally advanced prostate cancer excluded from the ProtecT Trial: early detection produces better outcomes

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Introduction: We investigate the impact of early detection through PSA testing on survival in two UK populations with locally advanced and high risk prostate cancer (PCa).
Patients and Methods: The cases were 532 men detected through PSA testing in the ProtecT trial between 1999–2009, aged 50–72 years. Controls consisted of 3978 clinically-detected men from the Anglia Cancer Network (ACN), aged 50–72 years, between 2000 and 2010. Groups were matched on age, year of diagnosis, PSA, Gleason score and clinical stage. PCa specific and all-cause deaths were compared using Kaplan Meier survival analysis.
Results: The Protect cases had a lower risk of death from PCa (HR 0.28, 95%CI 0.38–0.53, $P < 0.0001$) and all-causes (HR 0.55, 95%CI 0.48–0.63, $P < 0.0001$) compared to the unmatched ACN controls with a median follow-up of 7.4 and 5 years, respectively. The unmatched controls had more high-risk features at baseline. After matching, we observed a 45% reduction in the risk of death from PCa (HR 0.55, CI95% 0.38–0.83, $P = 0.0037$) and a non-significant impact (17%) on all-cause deaths (HR 0.83, 95%CI 0.63–1.1, $P = 0.19$) in the ProtecT cases at median follow-up of 7.4 years in each group.
Conclusion: Early detection of prostate cancer through PSA testing improves survival from prostate cancer in men with locally advanced and high risk disease.

P111

Prostate biopsy: It's not NICE for UK urologists

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Introduction: In the diagnosis of prostate cancer the NICE guidelines (Jan 2014) stipulate that men with a raised PSA should first undergo a 10–12 core transrectal biopsy and that a multiparametric MRI (mpMRI) scan should be performed only after a negative Trus biopsy. Template biopsies (TB) are not discussed despite having been first described over 10 years ago and their widespread use. The use of pre-biopsy mpMRI and TB potentially offer advantages in terms of diagnostic accuracy and reduced incidence of sepsis. We therefore asked UK urologists what diagnostic pathway they would follow for themselves or a close friend/relative.
Method: A Survey Monkey questionnaire was emailed to all UK members of BAUS.
Results: 554 survey responses were received – 88% male, 12% female. Of men, 68% would have a PSA test whereas 44% of females would recommend a friend/relative have a PSA test. If a raised PSA of 7.5 ng/mL was found with a normal DRE and prostate volume of 40 mLs: 61% would have a mpMRI +/-targeted TB, 25% a Trus biopsy (10–12 cores), 7% would observe the PSA, 4% a saturation TB, 2% extensive Trus biopsy and 1% would do nothing at all.
Conclusions: Urologists are encouraged to follow NICE guidelines for our patients, however in the presence of a raised PSA nearly two thirds of urologists would not wish to follow the guidelines for themselves or a close friend/family member. Surely the time has come for NICE to recommend to patients what most of us would choose for ourselves!

P112

The use of dynamic micromechanical markers in the detection of prostate cancer: Results of an in-vivo and ex-vivo study

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Introduction: There is a need for novel biomarkers for prostate cancer in order to

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improve both the detection and differentiation of significant from insignificant disease. Elasticity, which describes the stiffness of an object, has been used in prostates to detect prostate cancer for hundreds of years with digital rectal examination (DRE). This, however, is a test with low diagnostic accuracy because of the limits in the resolution of the human finger (macromechanical).
Aim: To assess the efficacy of a panel of dynamic micromechanical biomarkers for the detection of prostate cancer in prostates ex vivo and in vivo in patients undergoing radical prostatectomy, using a direct elasticity assessment probe (E-finger).
Patients & Methods: Patients were enrolled into a prospective study assessing 3 different micromechanical markers amplitude ratio [AR], phase lag [PL] and mean ratio [MR]. Inclusion criteria: any patient undergoing LRP for prostate cancer. Exclusion criteria: Previous radiotherapy, 5ARI or hormonal treatment. 29 ex-vivo prostates were systematically assessed at over 30 different measurement locations per prostate to ensure a systematic assessment and 22 patients were assessed in vivo. Measurement points were marked and noted on final pathology to allow correlation with final histology. Each prostate section was analysed with Image Pro Premier (Image analysis software) to allow correlation of micromechanical marker data with histopathological data. Classification and regression tree analysis (CART) was used to create a model of the micromechanical markers and regression analysis used to identify which histopathological parameters predict these markers. Ethical and management approvals were obtained.
Results: 29 patients were recruited into the study to date, mean age was 64 (55–73), median PSA 7.5 (5.5–10), over 50% were cT1c, median weight 51 g (44–68) and 50% were pT3 on final pathology. CART analysis revealed the micromechanical biomarkers' sensitivity was 89%, specificity 87%, PPV 86%, NPV 88% for cancer detection in-vivo. That for the ex-vivo tests were Sen 71%, Spec 81%, PPV 80%, NPV 72%. For prediction of clinically significant areas sensitivity and specificity were 81% and 75% respectively. There was a significant correlation of the combination of CART model markers with underlying tumour volume at each location ($R^2 = 0.75$), individually AR is correlated with tumour volume, PL with the elastic (stromal) component and MR with the viscous (epithelial) component.
Conclusion: These results show the promise of micromechanical biomarkers in the detection of prostate cancer and in the differentiation of significant from insignificant disease. This study shows that these markers maintain their accuracy from the ex-vivo into the in-vivo environment. The dynamic rather than static nature of these markers enables greater accuracy in the detection of cancer and also enables further markers to be identified from the resultant signal which is dependent on the underlying histology.

P113
Concordance of transperineal, transrectal and transperineal sector-based template approaches with 305 radical prostatectomies: A multicentre study

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Objectives: Our objective was to investigate the accuracy of systematic transperineal sector mapping biopsy (TPSMB) in predicting pathological grade at radical prostatectomy (RP); to compare the concordance with subsequent RP specimens of the TPSMB with standard transrectal ultrasound-guided biopsies (TRUS) and transperineal freehand biopsy (TPF); to establish the clinical impact of discordances between biopsies and RP on patient management.
Material and Methods: This retrospective multi-institutional study included 305 patients who underwent RP between 2008 and 2013 after assessment with one of three different prostate biopsy techniques: TPSMB (Group 1, $n = 204$), TRUS (Group 2, $n = 51$) and TPF (Group 3, $n = 50$). Cases with previous TURP, previous radiotherapy, previous hormonal treatment or RP performed more than 6 months after the biopsy were excluded. All discrepancies between biopsies and RP were assessed for significance by three consultant urologists using the Delphi method. The accuracy of the biopsy technique in the three groups was evaluated with the Cohen's Kappa coefficient and percentages of concordance.
Results: Concordance between biopsy and RP specimen was 75.5% in the TPSMB group, 70% in the TPF group and 64.70% in the TRUS group. Cohen's Kappa coefficient was 0.42, 0.34 and 0.68 respectively. Use of the Delphi method yielded lower clinical impact of discrepancies for Group 1 (TPSMB) with 7.8% of patients having significant changes, compared to Group 2 (TRUS, 13.7%) and 3 (TPF, 10%).
Conclusions: TPSMB was the most accurate in predicting the predominant grade at RP and showed higher pathological concordance with RP specimen compared with standard TRUS and TPF biopsy techniques. TPSMB is an effective tool for systematic prostate biopsy to evaluate prostate cancer and stratify patients to active or conservative treatment modalities.

P114
Transperineal targeted prostate biopsy in the outpatients setting

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Introduction: Targeted transperineal (TP) prostate biopsies directed to an MRI lesion have high rates of detection for clinically significant disease. Our institution introduced a novel local anaesthetic (LA), TP targeted prostate biopsy programme. Here we present our first year results.
Patients and Methods: Men with a mpMRI visible target and clinical indication for biopsy were offered an LA TP targeted biopsy. This was performed in a procedure room by urologists experienced in TP biopsy.
Results: Between Sept 2013 and Aug 2014 134 men underwent LA TP targeted biopsy. 88 men who had no previous treatment were further assessed for detection of cancer. 15 men completed pain scores with a median score of 1.8 (range 0.1–7). 17 scored PIRADS 3/5 for likelihood of disease. 35 scored 4/5 and 36 scored 5/5. Median target size was 0.85 mL (range 0.05–69). Median PSA was 9.32 ng/mL (range 1.07–5865). Mean no. of cores was 7 (1–24).
66/88 men (75.0%) were detected with any cancer. 59/88 (67.0%) were diagnosed with Gleason 3 + 4 or higher. 4/17 scans

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(23.5%) scored PIRADS-3 detected cancer. Those scoring 4 or 5 had a 27/35 (77.1%) and 35/36 (97.2%) detection rate for cancer; the presence of Gl 3 + 4 or greater was 22/35 (62.8%) and 34/36 (94.4%).
Conclusions: LA TP targeted biopsy is deliverable in an outpatient/procedure room setting and has high rates of detection for clinically significant cancer. mp MRI allows men who have visible disease to undergo targeted sampling.

P115

Prostate specific membrane antigen (PSMA) CT PET imaging in prostate cancer: A revolution in patient care

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Introduction: The accurate staging of patients with prostate cancer is vital for determining the correct treatment choice. Furthermore when there is biochemical failure following radical treatment it is imperative that accurate scans are performed so that one can determine whether the failure is due to failed local treatment or previously missed metastases. Existing imaging modalities often miss small volume recurrence or metastatic disease. PSMA-CT-PET scans are a novel way to locate and accurately detect PSMA, which is an integral cell bound protein expressed on prostate cells.
Patients and Methods: A prospectively collected database of all patients undergoing a PSMA-CT-PET scan over a two year period was analysed. The patients were classified into pre-diagnosis, pre-treatment, post radical prostatectomy and post radical radiotherapy groups.
Results: 28 patients were identified, which from our literature search represents the largest case series in the UK. Pre-diagnosis (n = 1), Pre-treatment PSMA-CT-PET scans revealed positive lymph node disease (n = 4). PSMA-CT-PET imaging for those with biochemical failure post-surgery (n = 18) revealed positive lymph nodes in 11 patents who would have otherwise had unnecessary salvage radiotherapy to the prostate bed. Benefit to patients post radiotherapy (n = 5) was also demonstrated, with lymph node metastases identified.
Conclusion: We believe there is obvious benefit in using PSMA-CT-PET imaging, most markedly for patients with biochemical failure following failed radical treatment. We envisage a certain future for the use of PSMA-CT-PET imaging in the management of prostate cancer.

P116

MRI invisible prostate cancer – Can we discharge patients with Pi-RADS score 1 or 2 without a prostate biopsy?

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Introduction: Multi-parametric magnetic resonance imaging (mpMRI) is an evolving imaging technique to enhance prostate cancer (PC) diagnosis. The Pi-RADS system has been developed as a structured PC risk stratification method to assess mpMRI. This study aimed to determine the ability of mpMRI to correctly identify patients with benign prostate disease or insignificant PC.
Patients and Methods: A retrospective analysis was carried out from a prospectively kept database in consecutive patients who had mpMRI prior to a 24–36 core transperineal prostate biopsy (TPB) between 2013 and 2014 at a single centre. Inclusion criteria: patients who had (1) mpMRI with Pi-RADS score 1 and 2 (low PC risk); (2) TPB as definitive histological diagnosis. Exclusion criteria: patients with known PC on active surveillance. Specificity and negative predictive value (NPV) were calculated.
Results: A total of 178 patients had mpMRI and TPB. 41 patients were eligible for the study. 18 (43.9%) had benign histology and 8 (19.5%) had Gleason 3 + 3 PC. The remaining 15 (36.6%) had intermediate risk PC. No high-risk PC was identified. Pi-RADS scores 1 and 2 on mpMRI had a sensitivity of 63.4% for benign histology and insignificant cancer, a specificity of 24% and a NPV of 63.4%. 36.6% of intermediate risk PC were missed by mpMRI.
Conclusion: In our series, a large proportion of patients with 'normal' mpMRI (Pi-RADS scores 1 or 2) still have significant PC. MRI should not be used to exclude patients from diagnostic biopsies if clinically indicated.

P117

DCE-MRI then ultrasound fusion biopsy (UFB) protocols will fail to identify significant intermediate and some high-grade tumour when compared to transperineal saturation biopsy (TPSB)

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Introduction: DCE-MRI then UFB is increasingly advocated for investigation of PCa. DCE-MRI is reported to have sensitivity of around 85%, with missed tumors being clinically insignificant. Nevertheless, studies have failed to correlation the site of tumour identified on imaging with tumour site on final histology. We, therefore, investigated relationships between tumour side(s) reported from DCE-MRI and that obtained from TPSB.
Methods: 1.5T DCE-MRI was performed on 146 patients with suspicion of PCa despite ≥1 previous negative TRUSB. A Uroradiologist reported whether tumor was unlikely or at least suspicious in left lobe, right lobe or bilaterally. At TPSB sites of each biopsy core were diagrammatically recorded, a Histopathologist reporting each core separately. Crude overall analysis was performed and compared to that from each lobe.
Results: Median age was 63 yrs, PSA 7 (1–26) ng/mL, time from last -ve TRUSB to MRI 16 months. MRI suggested possible tumor on left, right and bilaterally in 22.37 and 24 cases (overall 58%). TPSB identified tumor in 13.25 and 19 (39%). Of 63 patients with -ve MRI none exhibited high,14 (22%) intermediate and 8 (13%) low grade PCa. If only unilateral UFB had been performed in unilateral MRI positives, 5 high (45%),17 intermediate (57%) and 9 low grade tumors (56%) would have been missed.

(P117)

	Sensitivity (%)	Specificity (%)	PPV (%)	NPV (%)
Crude	72	61	69	65
Left Lobe	48	82	70	66
Right lobe	59	76	72	64

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Conclusions: Performance of MRI when correlated for side of tumor identified on TPSB is more disappointing than from crude analyses, supporting caution in adopting UFB, particularly in -ve TRUSB cases.

P118

The diagnostic value of MRI-based PSA density to predict the outcome of primary transperineal sector-guided prostate biopsy

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Prior analyses may have undervalued the diagnostic capability of PSA density (PSAD) since volume was determined on transrectal ultrasound and transrectal biopsy may underestimate disease. The purpose of this study was to determine the diagnostic value of PSAD with MRI as the index test (MR-PSAD) and transperineal sector-guided biopsy (TPSB) as the reference standard.
Consecutive biopsy-naive men presenting for primary TPSBx between 2007 and 2014 were considered. Systematic biopsy protocol preferentially targeted the peripheral zone with 24 to 40 cores depending on prostate size. MRI-derived ellipsoid approximation calculated prostate volume. Histological outcomes were assessed for the presence of any cancer or significant cancer, defined as the presence of either Gleason 4 or ≥4 mm tumour core length (G4) or presence of Gleason 4 or ≥6 mm tumour core length (G6). Receiver operated characteristics were created and areas under the curve (AUC) with 95% confidence intervals were compared for total PSA and MR-PSAD.
659 men were evaluated with mean (±SD) age 63 (±9) years, PSA 8.2 (±5.6) mcg/L, prostate volume 48 (±27) cc and MR-PSAD 0.2 (±0.18) mcg/L/cc. The AUC (95% CI) was significantly better for MR-PSAD than PSA for all cancer definitions ($P \leq 0.001$): 0.73 (0.69–0.77) vs 0.61 (0.56–0.65) for any cancer; 0.75 (0.71–0.79) vs 0.66 (0.61–0.70) for G4; 0.77 (0.73–0.81) vs 0.68 (0.63–0.72) for G6. The sensitivities for MR-PSAD <0.1 mcg/L/cc were 85%, 92% and 91% respectively.
MR-PSAD is a significantly better predictor of biopsy outcome than total PSA. This may be used when considering whether to biopsy.

P119

MRI-US fusion targeted biopsy: Optimising the combination of biopsy cores

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Introduction: Suspicious lesions identified on multi-parametric MRI (mpMRI) may be targeted with a range of MRI-guided prostate biopsy techniques. The optimal strategy for targeting an MRI identified lesion has not been defined. We evaluated the diagnostic yield of different biopsy protocols for targeting an MRI identified lesion.
Patients and Methods: A prospective study of 193 consecutive patients who underwent MRI-US fusion targeted biopsy using Varian brachytherapy software with an additional image fusion licence. Four biopsy schemes were compared which included:
Protocol A: Single core through the middle of the lesion,
Protocol B: Four cores of the lesion,
Protocol C: Additional cores surrounding the lesion,
Protocol D: Additional systematic biopsy of the whole prostate.
Cancer detection rates between protocols were compared using McNemar's Test.
Results: The cancer detection rates for each biopsy scheme are shown in the table below

(P119)

	Individual Detection Rates	Cumulative Detection Rates
Lesion (single core)	38.8%	38.8%
Lesion (4 cores)	51.1%	55.9%
Quadrant of lesion	37.3%	60.1%
Remaining prostate	39.9%	67.9%

The middle of the lesion biopsy detected the highest proportions of clinically significant disease (83.5%). The addition of biopsies outside the lesion increased cancer detection rates by 12% and upgraded Gleason score in 14%.
Conclusion: The highest cancer detection rate is achieved by combining targeted biopsy with systematic transperineal sector mapping biopsy. An additional biopsy core targeting the middle of the lesion increased cancer detection rates and Gleason Grade without significant morbidity. Targeted biopsy alone missed a proportion of clinically significant disease so systematic biopsy of the remaining prostate is required to comprehensively evaluate disease burden and plan treatment appropriately.

P120

Transperineal MRI-targeted biopsy versus transperineal template prostate mapping biopsy in the detection of localised radio-recurrent prostate cancer

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Introduction: Local salvage therapy following biochemical failure after radiotherapy requires accurate detection of radiorecurrent cancer within the prostate. We aimed to compare whole-gland Transperineal Prostate Mapping (TPM) Biopsies with cognitive/visually-directed, MRI-targeted biopsies (MRI-TB) in the detection of clinically significant prostate cancer in this group of men.
Methods: Our academic registry of transperineal biopsies identified 147 men referred for consideration of salvage therapy (2007–2014). 81 underwent multi-parametric-MRI, TPM biopsy and MRI-TB. Accuracy to detect clinically significant disease was evaluated using UCL definitions of clinically significant cancer: UCL1 (Gleason >/=4 + 3 and/or cancer core length >/=6 mm) and UCL2 (Gleason >/=3 + 4 and/or cancer core length >/=4 mm).
Results: Mean age was 70.0 years (STD ± 8.0) and median PSA prior to biopsy was 3.98 ng/mL (range 0.54–20). A total of 4960 TPM cores were taken and mean 34 per patient. Total of 302 MRI-TB

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cores were taken and mean 4 per patient. 17% (867/4960) of TPM cores were positive for any cancer compared with 54% (164/302) of MRI-TB. Detection rates of UCL2 disease was 81% (70/81) for TPM and 69% (56/81) for MRI-TB; sensitivity of MRI-TB 80%. For UCL1 disease, detection was 72% (58/81) for TPM and 62% (50/81) for MRI-TB; sensitivity of MRI-TB 86%. The sensitivity of MRI-TB for any Gleason pattern 4 was 80% (56/70).
Conclusion: MRI-Targeted Biopsies have a high detection rate of clinically significant cancer and requiring one-tenth of the number of cores compared to TPM.

P121

Accuracy of preoperative magnetic resonance imaging and D'Amico risk classification in detecting extracapsular extension of prostate cancer

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Introduction: Radical prostatectomy (RP) is an important treatment for localised and locally advanced prostate cancer. Ability to detect extracapsular extension (ECE) pre-operatively is important for the surgeon to balance adequate tumour resection with preservation of functional outcomes. Multiparametric MRI (MP-MRI) is often used in conjunction with D'Amico risk classification pre-operatively to assess for ECE in patients suitable for RP. We assessed the accuracy of MRI and high D'Amico risk (HDR) in detecting ECE.
Patients & Methods: Prospective data collection of all patients undergoing prostatectomy in a 2 yr period was undertaken. Patients had pre-operative risk assessment according to D'Amico classification and MP-MRI (1.5T) with discussion at a specialist multidisciplinary team meeting. Following prostatectomy ECE was ascertained on pathological examination and accuracy of MP-MRI and HDR in predicting ECE was ascertained.
Results: 301 patients underwent prostatectomy. Preoperative risk stratification showed 23% HDR. Pathological analysis revealed 31% pT3 tumours. MRI sensitivity and specificity for detecting ECE was 24% and 81% respectively with PPV 37% and NPV 70%. Overall MRI correctly staged 63%. High risk D'Amico had sensitivity and specificity for detecting ECE of 32% and 81% with PPV 43% and NPV 73%; there was no statistically significant difference between the two. Combining both modalities improves specificity to 94% ($P < 0.001$).
Conclusion: In our practice 1.5T MP-MRI shows no difference in detecting ECE compared with HDR. As such we recommend MRI results should be used in conjunction with D'Amico risk pre-operatively in deciding extent of tumour resection.

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Thursday 18 June ePoster Session 10 0830–0930 Charter 3 LUTS/BPH MANAGEMENT Chairs: Mr Gordon Muir & Mr Chris Harding ePosters P122–P131

P122

The safety and efficacy of performing day-case holmium laser enucleation of the prostate (HoLEP)

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Introduction: Day-case HoLEP has been described as a safe and efficacious management for small-volume prostates. HoLEP as a day-case confers significant benefits for patient satisfaction and reduced length of stay (LOS). This study investigates the feasibility of performing day-case HoLEP at a single centre where all patients under 90 years old with no anaesthetic contraindications, regardless of prostate size were listed as day-cases.
Methods: Data from all patients undergoing HoLEP over the first 26 months of a new day-case service at a single centre was included. LOS, specimen weight, failed discharges and 3-month post-operative IPSS scores were recorded.
Results: 267 HoLEPs were performed, 77.1% (n = 206) were intended as day-cases. Median age was 70 years (44–89), mean specimen weight: 32.83 g (1–190 g), and mean surgical time: 55.92 min.
Of intended day-case patients, 81.1% (n = 167) were successfully discharged the same day. For unsuccessful day-cases, reasons for delayed discharge included: intraoperative factors: 15.4% (n = 6); need for irrigation: 23.1% (n = 9); recovery on non-urological ward: 5.1% (n = 2); late finish time: 5.12% (n = 2); medical/anaesthetic complications: 17.9% (n = 7) and social factors: 28.2% (n = 11). Readmission rate for successful day-cases was 3.5%. Mean IPSS score demonstrated a satisfactory reduction at 3 months post-surgery vs pre-operative scores.
Conclusion: Day-case HoLEP is a feasible, safe and effective treatment regardless of age or prostate size. Our readmission rates and complications compare favourably with those in the published literature. As day-case HoLEP attracts an enhanced tariff plus savings from reduced LOS, developing a day-case pathway for HoLEPs is also financially appealing. Ensuring adequate home-care post-discharge could improve day-case rates.

P123

Is power everything in HoLEP surgery? The first reported 50W HoLEP series

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Introduction: We present the first reported series of 50 Watt (W) HoLEPs undertaken in a single institution. The aim was to report outcomes during the learning curve of two surgeons to see if 50 W HoLEP surgery is a viable option, both clinically and financially.
Materials & Methods: Two surgeons completed 105 HoLEPs over 14 months using a 50 W Holmium laser (Auriga XL, StarMedTec GmbH, a Boston Scientific Company). Pre and post operative data including flow rates (Qmax), residual volume (RV), international prostate symptom scores (IPSS), quality of life scores (QoL), total surgical times, hospital stay, histology, haemoglobin (Hb), creatinine (Cr) and catheter times were accurately recorded.
Results: Wilcoxon non-parametric rank testing using SAS statistical software version 9.3. Median patient age 70 years, mean prostate volume 56cc with a mean enucleation weight of 40 g. Mean hospital stay 1.03 days, 11 completed as day-cases. Mean operating time 104.4 min. Qmax mean increase of 10.6 mLs/s (P = 000.1), IPSS mean reduction of 11.4 points (P = 0.0001) and QoL scores by 2.3 (P = 0.0001) were seen. A small decrease in Hb of 1.51 g/dL (P = 0.0001) was noted, but no transfusions took place. Return of the capital investment was achieved by the 16th month, mainly by bed days saved (176.5), well ahead of the projected plan of 3.25 years.
Conclusion: Excellent patient outcomes from 50 W HoLEP surgery are achievable. This can enable a high quality HoLEP service at much reduced financial cost to hospitals wishing to offer this service compared to the current cost of 100 W and 120 W Holmium laser systems on the market.

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P124

Holmium laser enucleation versus transurethral resection of the prostate for urinary retention – Peri-operative and longterm outcomes from a single centre experience

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Introduction and Objectives: Both holmium laser enucleation (HoLEP) and transurethral resection of the prostate (TURP) are established, safe and effective treatments for bladder outlet obstruction due to BPH. There is no published long-term evidence comparing the efficacy of both procedures for urinary retention. We compare peri-operative and long-term outcomes from a single centre.
Methods: We compared data from a prospectively collected database of patients undergoing HoLEP, to a retrospective chart review of monopolar TURP treatments, for men in pre-operative urinary retention. This included patients with acute, chronic, and high pressure chronic urinary retention. We extracted peri-operative data to compare weight of tissue retrieved, changes in serum hemoglobin and sodium, and length of stay. Long-term follow up data was collected during telephone conversation with the patients assessing IPSS scores, need for catheter, subsequent urethral or re-do prostatic surgery and any episodes of haematuria after the initial post-operative period.
Results: 50 patients from each group were contacted and completed the telephone questionnaire. In the HoLEP group median (range) follow up was 66 months (49–81) compared to 67 months (56–76) in the TURP group. There was no difference in median sodium change (−1 vs −1 mEq/L), but there was less of a decrease in hemoglobin after TURP (median −0.55 vs −0.95 gm/dL, $P < 0.001$). The HoLEP group had a shorter hospital stay (median 1.45 vs 3.1 days, $P < 0.001$), and had significantly more tissue removed (median 52 g vs 17 g, $P < 0.001$). At long term follow-up, catheter or intermittent self catheterization was required in 10 (20%) patients after TURP for persistent retention vs 1 (0.5%) after HoLEP. Median (range) postoperative IPSS and QOL was 4 (0–23) and 0 (0–5) following TURP compared to 4 (0–14) and 1 (0–3) in HoLEP groups. One patient in each group had repeat bladder outlet surgery (0.5%). Interval visible haematuria and urethral stricture disease requiring intervention occurred in 4 (8%) and 3 (6%) vs 2 (4%) and 3 (6%) of TURP and HoLEP patients respectively.
Conclusions: Contrary to published HoLEP vs TURP randomized trial data for non-retention patients, we noted a slightly higher hemoglobin drop following HoLEP. This is probably due to the fact that significantly more tissue was retrieved in the HoLEP group. Despite this, hospital stay was significantly shorter for HoLEP and long-term outcomes including relief of urinary retention and interval haematuria were better for HoLEP.

P125

Routine post-operative blood tests following Holmium Laser Enucleation of the Prostate (HoLEP): Are they clinically useful?

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Introduction: HoLEP is becoming a more widely utilised method of bladder outlet surgery in patients suffering from bladder outflow obstruction. Routine blood tests following Trans-Urethral Resection of Prostate (TURP) are indicated for establishing post-operative Haemoglobin and electrolyte levels, which may become deranged during the procedure. As HoLEP has demonstrated shorter operative times and significantly less intra-operative blood loss, we postulate that post-operative blood tests have no clinical value, and prolong inpatient stays unnecessarily.
Patients and Methods: All patients undergoing HoLEP during a four year study period at a UK teaching hospital had their pre-operative and post-operative blood results evaluated. Haemoglobin, Sodium and Creatinine levels were compared, to see whether there were any significant abnormalities detected post-operatively that would require correction prior to discharge.
Results: 235 patients underwent HoLEP between 2010–2014. 117 (50%) patients had post-operative blood tests performed. From these patients: 1 patient (0.09%) experienced a Haemoglobin drop from a normal pre-operative level to <10 g/dL, 9 patients (7.9%) experienced a change in Sodium outside the limits of normal blood concentration levels (134–145 mEq/L), and 4 patients (3.4%) experienced a rise in Creatinine from normal pre-operative levels to above the upper limit of normal blood concentration. No abnormality required intervention or inpatient correction.
Conclusion: We believe that there is no value in performing routine post-operative blood tests following HoLEP. We have adopted this into our practice (as seen by the 118 patients who didn't receive post-operative blood tests), and are now discharging patients home 3 h post-procedure with no adverse effects on patient recovery or unplanned re-admission rates.

P126

24-month functional results of a prospective randomized controlled study comparing GreenLight XPS to TURP for durability, efficacy and safety (GOLIATH)

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Introduction: Recently published six and twelve-month results from Goliath have demonstrated non-inferiority of GL-XPS by IPSS at 6-months and durability of results at 12-months. We now report 24-month outcomes demonstrating long-term durability for the treatment of LUTS/BPO.
Methods: 291 patients were enrolled at 29 sites in 9 European countries. Patients were randomized 1:1 to undergo GL-XPS or TURP. The trial was powered and designed to assess non-inferiority of GL-XPS compared to TURP. Patients were evaluated at 6, 12 and 24-months. Several objective and subjective parameters were assessed at 24-months (IPSS, IPSS-Qol, Qmax, PVR, prostate volume and PSA).
Results: After one year, 92.6% of the 269 treated patients remained in the trial (128 GL- XPS and 121 TURP). The endpoints of IPSS, Qmax, IPSS-Qol, PVR, prostate volume and PSA were not statistically different between treatment arms overall. The proportion of patients who were complication free was 83.6% in GL-XPS and 78.9% in TURP. Measures of safety, efficacy and quality of life (IIEF-5, IPSS-Qol, PVR, prostate volume and PSA)

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were not statistically different between treatment arms.
Conclusions: GL-XPS and TURP show comparable safety, efficacy and quality of life results after 24-month follow-up. GL-XPS remains non-inferior to TURP in terms of IPSS, Qmax and complication free rate. GOLIATH data demonstrates a similar level of durability for GL-XPS and TURP.

P127

Prostate artery embolisation – Initial experience of treatment of benign prostatic enlargement for large volume prostates (mean volume 135cc) at a single institution

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Introduction: Prostate artery embolisation (PAE) is a recently developed treatment for benign prostatic enlargement (BPE)-related LUTS. We present our initial experience of PAE as a treatment in a cohort with a significantly larger prostatic mean volume than documented in current literature.
Methods: Data was prospectively collected between January 2014 to December 2014 at a single tertiary urology centre. Inclusion criteria: patients with moderate to severe BPE-related LUTS or urinary retention refractory to medical therapy. Exclusion criteria: high-risk prostate malignancy. A standardised PAE technique via a femoral approach was used. Prospectively measured outcomes were collected.
Results: 21 patients (median age 67, range 48–86) were recruited. Indications: BPE-related LUTS with or without low-risk prostate cancer (17), urinary retention with persistent haematuria (1) and acute urinary retention (3). Technical success, defined as bilateral arterial embolisation, was 90%. At three months, mean IPSS decreased from 22.5 to 9.0, QoL score improved from 5.0 to 1.8. Mean prostate volume reduced by 40% (134.8 mLs to 81.1 mLs), mean PSA reduced from 10.7 to 5.8 ng/mL. Mean Q-Max increased from 14.2 to 19.8 mL/s. Only 1 out of the 3 patients with urinary retention had a successful outcome. Only 2 patients had a Clavien 2 complication.
Conclusion: Our initial results demonstrated superior improvements in clinical parameters compared to large published series of PAE. Patients with very large prostates may benefit from PAE, which is a safe, minimally invasive treatment for BPE-related LUTS. However patients with acute retention appear to have less favourable outcomes. PAE is not a contraindication for HoLEP.

P128

Early clinical experience in Melbourne of a novel treatment for BPH: aquablation – Image guided robotic waterjet ablation of the prostate

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Introduction: To report the early clinical experience in Melbourne of 9 males suffering from LUTS due to BPH undergoing ablation of the prostatic adenoma using a personalized image-guided waterjet tissue ablation modality called Aquablation.
Patients and Methods: The PROCEPT Aquablation System delivers a high-velocity saline stream (the AquaBeam®) under precise electromechanical control and live ultrasound guidance to ablate prostatic glandular tissue without the production of heat. Using the real-time transrectal ultrasound image and an integrated planning station, the target region for excision is registered within the prostate and the target tissue contour and depth are programmed by the surgeon. The surgeon guided AquaBeam ablates the prostatic tissue accurately following a preprogrammed routine, and the ablated prostatic tissue is simultaneously collected for post-procedure analysis. To obtain hemostasis if necessary, standard electrocautery is used.
Results: 9 males with symptomatic BPH were enrolled and treated with Aquablation under general anesthesia. Monitored data are available on all 9 males treated. The mean age was 66.7 years (SD = 4.4, 62–75) and baseline prostate size was 61 g (SD = 26.4, 30–102). Median lobe was present in 7 of the 9 subjects treated. All procedures were technically successful with a mean total operative time of 32 min (SD = 6.3, 23–43) and mean anesthesia time of 54 min (SD = 7.6, 43–65). Mean Aquablation treatment time was 5.0 min (SD = 2.9, 2–7) and mean time for focal cautery instrumentation was 4.6 min (SD = 1.1, 3–7). All 9 subjects were catheterized post-procedure and discharged from the hospital next day. Median catheterization time was 1 day. There were no bleeding complications, no clot retention nor blood transfusions. Post-operative dysuria was minimal and there were no cases of retrograde ejaculation, urinary incontinence or erectile dysfunction related to the procedure. At 3 month review mean IPSS scores decreased from 23.1 to 5.0 and mean Qmax increased from 8.3 mL/s to 17.9 mL/s.
Conclusions: Preliminary results from this early clinical experience show promise for this treatment as a potential ablative treatment option for BPH. Further patient data will be required to validate this clinical experience.

P129

Predicting outcome from bladder outlet surgery using volume-corrected flow rate

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Introduction: The decision to perform surgery for BOO is often based upon clinic uroflowmetry. However, clinical utility of maximum flow rate (Qmax) is limited by its dependence upon bladder volume. We investigated the predictive value of a 'volume-corrected Qmax' calculated on an individual patient level from home uroflowmetry data.
Patients and Methods: 30 men used a home flowmeter for one week before, and at four months after, surgery, with completion of an IPSS questionnaire. A logarithmic equation was fitted to multiple Qmax/Vvoid readings obtained pre-surgery from each man. This allowed prediction of Qmax for any given Vvoid in the range 0 to 500 mL in 50 mL intervals. The resulting 'volume-corrected Qmax' values were then correlated (Spearman's rank) with symptom outcome, defined as the percentage reduction in total IPSS score, and objective outcome, defined as the increase in mean Qmax.
Result: All sets of volume-corrected pre-surgery Qmax values for volumes >85 mL correlated significantly with

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symptom outcome. The best performing volume was 285 mL (r = –0.44, $P = 0.013$). All sets of volume-corrected Qmax values for volumes above 190 mL correlated significantly with objective outcome. The best performing volume was 370 mL (r = –0.49, $P = 0.007$).
Conclusion: Defining the relationship between Qmax and Vvoid obtained from home uroflowmetry within an individual may be useful in predicting their outcome from disobstructive surgery. Volume-corrected Qmax should be evaluated in a larger cohort and its predictive performance compared to conventional uroflowmetry and pressure-flow studies.

P130

Community management of male patients with lower urinary tract symptoms (LUTS) in the UK

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Introduction and Objectives: Providing a cost-effective and patient-centered service has been a highlighting feature in the UK National Health System. Simple interventions can significantly improve management and reduce unnecessary costs. The cost of treatment for benign prostatic hyperplasia (BPH), the most common cause of LUTS, is more than £180 million each year of which 60% is incurred in secondary care. This study looked into inappropriate referrals and management of LUTS in the community & devised a LUTS care Pathway.
Methods: A Study was conducted using an integrated questionnaire for LUTS & erectile dysfunction management in primary care using closed questions and a nominal scale to answer.
Results: Completed questionnaires (GP, $n = 18$/Patient, $n = 100$) were analysed. The main areas of improvement were in the initial assessment (History-100%, DRE-100% from 86%, IPSS-98% from 39%) This IPSS is used in the NICE guidelines to identify the correct pathway for treatment of male LUTS so is a vital tool to use in the community setting. Also there is an improvement in offering the patients to record a urinary frequency volume chart (3% from 14%). This tool can be helpful when readily available for the specialist assessment, however its value depends on patient compliance. There is also improvement in PSA counselling (GP – 100%/Patient- 98%) & life style advise (GP-100%/Patient-94%)being given to patients. There has been improvement (83% from 79%) in GP's starting patients on Medical therapy including combination therapy as advocated by NICE based on IPSS score. It is also evident that time frame for follow-up has also shown significant improvement, majority 67% were followed up at 4–6 weeks and then 6–12 months as recommended by NICE. It is evident from both the questionnaires that the indications & time frame for specialist referrals for suspect cancer (26% – 2 week wait) & complications of LUTS were appropriate.
Conclusions: Overall the completed questionnaires from GP's & patients showed significant improvement across all domains in adherence to NICE guidelines for Lower Urinary Tract Symptoms in male patients facilitated by the LUTS pathway circulated after the initial study in this random population. The launch of the local LUTS pathway has been used as an educational tool for fellow GPs, which encourages communication and alignment between primary and secondary care in effective management of LUTS.

P131

Changing trends of minimally invasive benign prostate hyperplasia (BPH) intervention in England: Evidence from hospital episodes statistics (HES) database

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Introduction: We wanted to look at the trends in minimally invasive BPH intervention to help us plan our services, train juniors and in ongoing and new research.
Methods: To capture the trends in BPH intervention by Endoscopic prostate resection (TURP), laser prostate resection and prostate vaporization, we analyzed data for the last 6 years from 2007–2013. While we looked at the overall trend, we compared annual data from 2007–2008 (period-1) to 2012–2013 (period-2).
Results: During a 6-year period (2007–2013) a total of 111 542 BPH procedures were done in England, including 92 059 (82.5%) TURP procedures, 14 692 (13%) laser prostate resection and 4791 (4.5%) prostate vaporization procedures. Although the overall annual number of minimally invasive benign prostate procedures was approximately between 18 000–19 000/year, there was a 4% decrease in period-2. The trend for BPH surgery for various age groups was consistent over these 6 years. The mean hospital stay in period-2 for TURP, laser prostate resection and prostate vaporization were 3.3 days, 1.8 days and 2.5 days respectively with day-case rates of 1%, 14.6% and 3% respectively.
Conclusions: Although the overall annual number of BPH related procedures marginally decreased, there has been a gradual trend of rise in laser prostate resection and vaporization techniques thereby leading to a reduction in hospital stay. Based on the available data, the day case rates for these techniques were lower than those reported in the literature.

(P131)

Annual figure	TURP	Laser resection	Prostate vaporisation	Total
2012–2013	14674	2282	917	17873
2007–2008	16044	2251	305	18600
% change	–9.5%	1.5%	200%	–4%
Total (6-years)	92059	14692	4791	111542

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Thursday 18 June ePoster Session 11 1200–1300 Charter 2 BASIC SCIENCE Chairs: Professor Noel Clarke & Mr Alex Laird ePosters P132–P139

P132

Altered expression of markers of epithelial-to-mesenchymal transition at the extraprostatic extension component of locally invasive prostate cancers

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Introduction: Epithelial to mesenchymal transition (EMT) describes the loss of epithelial cell properties such as cell polarity and cell-cell adhesion, and the gain of migratory and invasive behaviours normally seen in mesenchymal cells. EMT has been described in many adenocarcinomas including prostate cancer however it is unclear whether EMT occurs in specific areas of primary prostate cancers such as the extraprostatic extension component of pT3 disease. We tested the hypothesis that proteins previously described as regulators of EMT may have altered expression and/or sub-cellular localisation at the extraprostatic extension component of prostate capsule-invading pT3 tumour samples. We also investigated the possibility that *in vitro* prostate cancer cell organotypical cultures might demonstrate changes in EMT-related protein expression at the 'leading edge' of cellular invasion.

Material and Methods: Whole mount sections of 27 cases of pT3a prostate cancer treated by radical prostatectomy were chosen so as to include the focus of invasion of the pro-static capsule. Sections were stained for eleven candidate EMT-related proteins (E-Cadherin, Twist, Snail, Fibronectin, N-Cadherin, α smooth muscle actin, Vimentin, β-catenin, SHH, Gli-2 and NFκB p65). PC3, DU145 and LNCaP prostate cancer cells were grown for 10 days as *in vitro* organotypical cultures on gel plugs containing 1:1 collagen/Matrigel (C) and normal human fibroblasts, before being fixed in formalin, processed and sectioned for histology. The nuclear, cytoplasmic and membranous expression of each protein in extraprostatic extension tumour, intra-prostatic tumour, and histologically benign cells in pT3 sections was quantified by a uropathologist. A similar semi-quantitative expression analysis was performed for cells at the invasive 'leading edge' of the *in vitro* organotypical cultures compared with the upper non-invasive edge.

Results: The expression profiles of five markers of EMT (E-Cadherin – reduced membranous, increased cytoplasmic; Twist – increased nuclear and cytoplasmic; Snail – reduced membranous; α smooth muscle actin – increased cytoplasmic; and NFκB p65 – increased nuclear and cytoplasmic) were significantly different in the extraprostatic extension component of pT3 prostate cancer compared with the intra-prostatic tumour ($P < 0.05$ for each). No significant differences were observed for Fibronectin, N-Cadherin, Vimentin, SHH, Gli2 and β-catenin. Three of these significantly altered EMT-related proteins (increased cytoplasmic α–smooth muscle actin, decreased membranous E-cadherin, and increased cytoplasmic Twist) exhibited the same significantly altered expression pattern in PC3 cells grown in organotypical culture.

Conclusions: Taken together these results suggest that EMT-like changes in protein expression can be observed within the extraprostatic extension component of locally invasive prostate cancers. Moreover, the biological significance of at least some of these observed changes in protein expression may be studied in *in vitro* cell culture models.

P133

Global metabolite profiling of the peripheral and transition zones of the prostate

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Introduction: In prostate cancer, cells exhibit distinct metabolic activity to enable rapid growth and proliferation. It is unclear whether some of the changes in the metabolic environment lead to cancerous transformation or vice versa. Furthermore, limited data exist on the metabolic variations between anatomical zones of the prostate. In this study, we compared global metabolite profiles of benign tissue obtained from the peripheral and transition zones of the prostate in men

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undergoing radical prostatectomy for low/intermediate-risk prostate cancer.
Materials and Methods: Tissue samples were collected from radical prostatectomy specimens immediately after extraction. Metabolites were extracted in solvent while maintaining tissue integrity to enable histological analyses. Measurement of metabolites was carried out by Metabolon® using high performance liquid chromatography as well as gas chromatography with tandem mass spectroscopy.
Results: Thirty-two samples were analysed from eight men. The average (SD) age was 62 years (±4) with an average PSA of 7.6 ng/L (±2.4). Final histopathological results of tumour areas were identical in all cases (Gleason pattern 3 + 4 = 7). A total of 265 metabolites were successfully detected from each single tissue sample. The peripheral zone had statistically higher levels of a number of compunds including serotonin and acetylcholine that are known to promote tumour growth, whereas the transition zone exhibited higher levels of metabolites associated with the purine salvage pathway.
Conclusion: There are distinct metabolic differences between the peripheral and transition zones of the prostate that may be associated with the relative risks of carcinogenesis and hyperplasia observed in these two zones.

P134

Defining the role of plexin-B1 in the progression of prostate cancer

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Introduction: Plexin-B1 is a Semaphorin4D cell-surface receptor that was first described as a neural guidance cue in developing nervous systems. It has been described to influence cell motility, invasivion and progression in several epithelial malignancies. High rates of Plexin-B1 mutation in both primary (~45%) and metastatic (~90%) prostate cancer (PCa) are described. We explore Plexin-B1's influence on the progression of PCa in a murine model.
Materials and Methods: Cohorts of mice harbouring the deletion of Plexin-B1 were developed alone and combined with other commonly mutated tumour-suppressor genes, PTEN and p53. Deletion of PTEN and p53 results in an aggressive murine PCa phenotype with features similar to that of metastatic human disease. Survival curves were generated and tissue analysed using immunohistochemistry, qPCR and western blot. A microarray was performed on pre-malignant tissue to assess levels of gene transcription.
Results: Plexin-B1 deletion alone does not affect mouse development or survival. In our cancer model, the additional deletion of Plexin-B1 results in smaller lesions with significantly lower proliferation. In addition, key cancer cell signalling pathways such as PI3K/mTOR and markers of epithelial-mesenchymal transition (an important process in cancer progression) are suppressed. Our microarray data demonstrates down-regulation of genes associated with the actin cytoskeleton, fundamental in cell motility and integrity.
Conclusions: Taken together our results demonstrate that Plexin-B1 deletion has a potential protective role in PCa. We postulate its presence is important in the development of metastatic disease. Plexin-B1 could thus be used in patient risk-stratification or in the development of targeted therapies.

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Patient-derived first generation xenografts of prostate cancers: promising tools for predicting drug responses for personalised chemotherapy

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Introduction: The treatment of advanced prostate cancer remains disappointing and is hindered by the lack of relevant preclinical models. These limitations are increasingly cited as a key cause of the low success rate of oncological drug development. Early passages of freshly generated xenografts are possibly better predictors of response and may better represent the prostate cancer heterogeneity than either cell lines or murine allografts.
Objectives: To determine if primary xenografts represent the clinical heterogeneity of prostate cancer. Their ability to predict clinical outcome and sensitivity to standard of care therapy.
Materials and Methods: Tumour fragments from patients undergoing curative surgery or channel TURP were implanted into immunodeficient mice within 24 h of surgery. Once serially transplanstable xenografts were achieved, tumour pieces were engrafted into flanks of mice. Mice were randomised and treated with (a) docetaxel (20 mg/kg) or vehicle control weekly, (b) flutamide, placebo or androgen-loaded diet.
Results: Tumour outgrowth was observed from 38 of 121 implanted prostate cancers, with 19 stable lines generated. The ability to engraft correlated with advanced disease ($r = 0.22$; $P < 0.05$). Patients who had undergone androgen ablation therapy were significantly more likely to engraft compared with no-xenograft patients. 2 out of the 3 patient derived xenografts tested, were sensitive to docetaxel, which is consistent with clinical data. Preliminary data suggests that these xenografts were refractory to flutamide.
Conclusion: Patient derived xenografts may serve as important preclinical models. They represented better the actual tumour and hence provides more credible results. Engrafted tumours were more aggressive and might be more representative of cancer with a higher propensity to relapse.

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CD8 T cells inhibit the IL-15 induced expansion of effector cells and the cytotoxic activity of NK cells toward tumour cells in the prostate cancer microenvironment

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Introduction: The prostate cancer microenvironment is highly immunosuppressive and immune effector cells entering this environment are rendered anergic and unable to effect the viability of the tumour cells. We have shown, however that IL-15, unlike IL-2, IL-12 or IL-21, can greatly enhance the expansion of NK cells in a prostate cancer – lymphocyte coculture model and can induce killing of tumour cells within the cocultures. In this study, we investigated the effects of depleting CD56 positive cells and CD8 positive cells on the effector cell

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induced PCa cell killing, and the expansion of CD8 and CD56 cells respectively within the lymphocyte –Pca cocultures.
Methods: Non-adherent lymphocytes were isolated from whole blood, and depleted of either CD56 or CD8 T cells and were then cultured with PCa cell lines LNCaP or PC3 for 7 days. Effector cell expansion and PCa cell killing were then examined using antibody markers for CD3, CD56 and CD8 T cells, and annexin and propidium iodide staining respectively.
Results: IL-15 was able to expand NK cells by upto 255% and CD8 T cells by 33% in PCa- lymphocyte cocultures. However, NK cell expansion was not affected by depleting CD8 T cells and CD8 T cell expansion was not affected by depleting CD56+ cells in the lymphocytes. Tumour cells were killed by upto 64% by lymphocytes in the presence of IL-15: Little or no PCa tumour cell cytotoxicity occurred with IL-15 when CD56+ cells were depleted from the lymphocyte population. However, when CD8 T cells were depleted, LNCaP and PC3 cell killing was enhanced by 26% and 27% respectively ($n = 5$ $P < 0.05$).
Conclusions: IL-15 mediates NK and CD8 T cell expansion in PCa-lymphocyte cocultures. Depletion of CD8 T cells from the lymphocytes do not influence NK cell expansion in the cocultures. However, this depletion enhances the NK cell mediated cytotoxicity toward PCa tumour cells. This is an important observation indicating that competing populations of effector cells may hinder the efficacy of tumour cell killing in the context of anti-cancer immunotherapy.

P137

Electrical stimulation of the spinal dorsal root inhibits reflex bladder contraction and external urethra sphincter activity: Is this how sacral neuromodulation works?

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Introduction: We aimed to confirm the inhibitory effect of sacral neuromodulation (SNM) by dorsal spinal root (DR) stimulation using SNM parameters in rat model, and test if bilateral stimulation is more effective than unilateral stimulation. External urethral sphincter (EUS) electromyography (EMG) is also recorded with cystometrogram (CMG).
Materials and Methods. 18 Female Sprague-Dawley rats were tested following urethane anesthesia. Via urethral catheterization, the bladder was infused with normal saline evoked rhythmic bladder reflex contraction (BRC). EUS EMG was recorded using bipolar fine needle electrodes. L6 spinal nerves were dissected and stimulated using SNM parameters.
Results: L6 stimulation was effective in inhibiting BRC. L6 unilateral DR stimulation: 200 uA (10 Hz, 0.1 ms) was used as the initial intensity and effectively inhibited the BRC in five rats. L6 unilateral ventral root (VR) stimulation caused bladder contraction in three rats. L6 bilateral DR stimulation: 50% intensity was required to cause inhibition as compared to unilateral stimulation. There was a strong association between EUS EMG activities and bladder contraction (98.7%, 74 in 75 contractions). When the bladder contraction was inhibited effectively by L6 DR stimulation, a considerable reduction of the EUS EMG activities was also found.
Conclusion: L6 DR stimulation using SNM parameters that are used in human clinical practice abolished BRC. Bilateral L6 DR stimulation allowed a 50% reduction in stimulation intensity. Abolishing BRC also appeared to result in a reduction in EUS EMG. We postulate that SNM abolishes DO by acting on the DR but the association of simultaneous reduced EUS activity remains unclear.

P138

Mechanical, histological and biochemical analysis of benign hyperplastic prostate tissue

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Benign Prostatic Hyperplasia (BPH) affects aging men, resulting in prostate enlargement and bladder outlet obstruction. We assessed if the mechanical properties of prostate tissue related to patient symptoms.
Patients scheduled for transurethral resection of the prostate (TURP) for symptomatic BPH were included. International Prostate Symptom Scores (IPSS) were collected. Prostate samples retrieved at surgery were immediately subjected to uniaxial tensile testing; cauchy stress and engineering strain, and subsequently elastic modului (EM), were calculated at a number of points along the stress-strain curve for each sample. The percentage of epithelial tissue (%ET) per sample was determined. Further biochemical assessment with Fourier-Transform Infrared Spectroscopy (FTIR) was performed.
In total, 37 samples from 22 patients were analysed. There was a weak correlation ($R^2 = 0.1$) between increasing IPSS and increasing EM. Analysis of stress-strain curves at the toe regions demonstrated 2 groups of patients, soft and stiff samples, which had significant differences in their mean IPSS scores and IPSS-voiding sub-scores ($P = 0.046$ and $P = 0.025$ respectively). 10 patients' samples underwent histological and spectroscopy analysis. There is a correlation between increasing %ET and decreasing EM in the linear regions of the sample curves ($R^2 = 0.3$). FTIR analysis demonstrated consistent biochemical differences between stiff and soft samples.
Our data is the first to assess mechanical properties of prostate tissue in a symptomatic population and correlate these findings to histological and biochemical findings. Our evidence demonstrates that there is a relationship between tissue stiffness and symptoms and that there is a biochemical difference in the prostate likely contributing to this phenomenon

P139

A study of the effects of hydrogen sulphide and cyclosporine in renal reperfusion injury

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Introduction: Reperfusion injury damages kidneys during partial nephrectomy and renal transplantation. Novel therapeutic agents such as hydrogen sulphide (H_2S) may reduce these harmful effects, cyclosporine (CsA) exacerbates them. This study investigated the effects of H_2S and CsA in renal reperfusion injury.
Materials and Methods: Porcine kidneys were subjected to 15 min of warm

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ischaemia and 2 h of static cold storage. They were reperfused for 3 h with oxygenated normothermic autologous whole blood on an isolated organ reperfusion apparatus. Kidneys were treated with cyclosporine during reperfusion ($n = 6$) or cyclosporine and 0.25 millimoles/litre of hydrogen sulphide (CsA + H_2S) infused 10 min before and 20 min after reperfusion ($n = 6$). These were compared with untreated controls ($n = 7$).

Results: Cyclosporine caused a significant reduction in renal blood flow (RBF) during reperfusion which was reversed by H_2S [Area under the curve (AUC) RBF CsA 257 ± 93 vs Control 477 ± 206 vs CsA + H_2S 478 ± 271 mL/min/100 g.h; $P = 0.024$]. Urine output was higher after 2 h of reperfusion in the CsA + H_2S group (CsA + H_2S 305 ± 218 vs CsA 78 ± 180 vs control 210 ± 45 mL; $P = 0.034$). Cyclosporine treatment was associated with an increase in tubular injury which not reversed by H_2S (AUC Fractional excretion of sodium, control 77 ± 53 vs CsA 100 ± 61 vs CsA + H_2S 111 ± 57%.h; $P = 0.003$]. Histological evaluation showed significant vacuolation and glomerular shrinkage the in CsA group. These were significantly reduced by H_2S ($P = 0.005$, 0.002).

Conclusions: H_2S reversed the vasoconstriction and ischaemic changes associated with cyclosporine treatment during reperfusion. H_2S has promise as a therapy to mitigate some of the deleterious effects of renal reperfusion injury.

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BJUI

Thursday 18 June ePoster Session 12 1200–1300 Charter 3 BLADDER CANCER Chairs: Mr Pardeep Kumar & Mr Mark Johnson ePosters P140–P149

P140

The 'be clear on bladder cancer campaign' significant increase in referrals with no change in urological cancers diagnosed

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Introduction & Objectives: As part of the National 'Be Clear on Cancer' campaign the 'Blood in your pee' campaign launched in October 2013. Using media the public were advised to see their GP if they had noticed blood in their urine. We aimed to evaluate the impact of this campaign on two-week wait referrals and the resulting diagnosis of urological malignancy at two NHS trusts; Derby Hospitals Trust and Sherwood Forest Hospitals Trust. Secondly, to evaluate the socio-economic background of patients referred.
Material & Methods: Suspected cancer patients in the three months pre-campaign (June–Aug 13) and post-campaign (Nov 13–Jan 14), were included. Demographics, investigations, and diagnosis were recorded. Postcodes were cross referenced with Index of Multiple Deprivation 2010 scores. Nominal Data was tested for significance using a Chi-square test and continuous data using the Students t-test using Microsoft Excel 2013. Significance was considered at $P < 0.05$.
Results: The number of Urology 2ww referrals increased by 37% from 723 to 988. Significantly fewer patients referred after the campaign were diagnosed with a urological malignancy: 13% vs 22% $P < 0.001$. The mean Index of Multiple Deprivation score of referrals did not significantly change after the campaign: 20.3 vs 20.2 $P = 0.42$ and was not significantly different from the East Midlands average: 20.2 vs 19.94 $P = 0.2$.
Conclusions: This campaign has significantly increased referrals without increasing the number of malignancies diagnosed. There is little evidence as to the efficacy of current untargeted cancer awareness campaigns and further work is needed in order to improve their pick up of undiagnosed malignancies.

P141

Reducing the economic burden and morbidity of low-grade TCC bladder; an outcomes analysis to inform future guidelines

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Introduction: G1pTa bladder cancer has a significant economic burden in the first year, requiring intravesical chemotherapy (MMC) post-resection and cystoscopic surveillance at 3 and 12 months. Photodynamic diagnosis (PDD) may improve outcomes but at additional cost. We reviewed practice and outcomes to determine whether costs and morbidity of the current cystoscopic surveillance protocol could be safely modified in G1Ta disease.
Methods: A retrospective cohort analysis was performed on all new diagnosis G1pTa bladder cancers between 2009–2012 to determine process and outcomes in the first year following diagnosis. Recurrent disease and squamous cell cancers were excluded.
Results: Of the 552 bladder cancer cases reviewed at MDT, 69 new diagnosis G1pTa tumours were eligible. At initial diagnosis, 51% underwent PDD cystoscopy and 78% received MMC post resection. At three months, 8 suspected recurrences were seen, but only half confirmed histologically; 4 patients underwent further endourological procedures for calculi or BOO. Therefore, 61 patients underwent unnecessary flexible cystoscopy (£441 unit cost; total £26901). At 12 months, one further recurrence and one progression to G2pTa were identified. All recurrences had initial EORTC scores of 0 or 3.
Conclusion: Our data supports the safe omission of the three month check flexible cystoscopy in patients with low-volume, single site G1pTa disease (EORTC risk score 0) undergoing PDD resection and early MMC post-operatively. This approach should reduce the morbidity and economic burden of the disease. Analysis of larger cohorts will enable a more accurate cost-benefit measure to inform future guidelines.

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Out-patient transurethral laser ablation (TULA) of urothelial tumours using the 1470 nm diode laser

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Introduction and Objectives: Recurrent low-grade TCC often necessitates multiple procedures in an increasingly elderly and multi-morbid group. Additionally the incidence of bladder cancer is increasing, placing additional demands on in-patient (IP) resources and theatres. We report our experience of establishing an outpatient TULA service to address these challenges using the 1470 nm Diode laser.
Methods: A Service improvement initiative to perform OPA was established following Institutional new technology, ethics and laser safety board review. Patients inclusion criteria: recurrent low-grade TCC; high risk for general/ regional anaesthesia; patients who had declined intravesical therapy or cystectomy for high-risk disease. TULA performed using the Biolitec DIODE laser (1470 nm), under local anaesthetic (LA) using Instillagel (2% lidocaine). A prospective database, including bladder map, procedure times, laser usage, recurrences and patient reported satisfaction scores was maintained.
Results: Between November 2011 to December 2014, 130 patients, median age 74.7 (range 39–97) underwent 245 ablations. 170 multifocal, 75 uni-focal disease. 22 procedures on warfarin. Mean procedure time- 9.21 min, mean energy – 737.6kj and actual ablation time 131 s. Number of ablative episodes: 1–73, 2–26, 3–11, >3–18. 193/245 ablations experienced no discomfort. No patients required admission. 6–8 ablations performed per session reducing demand on theatre and inpatient capacity.
Conclusions: TULA using the 1470 nm Diode laser, provides a safe and effective alternative to IP procedures, with high satisfaction levels. Recurrence and complication rates appear equivalent to those reported with the Holmium and Thulium Lasers. The tissue ablative properties and ability to perform procedures on anticoagulants may make the diode 1470 nm the ideal 'Urothelial Laser'.

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Day case TURBT: the new UK gold standard?

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Introduction: TURBT is a common urological procedure with almost 25 000 cases performed in England in 2012/13. With improvements in technology, technique and community support, the procedure could be regularly and safely performed as a day case. The NHS Institute for Innovation and Improvement proposed that performing some elective operations as day cases would release 500 000 impatient beds, crucial with the current pressures on the NHS. The Healthcare Commission has proposed that TURBT would qualify for this, with an aim to increase day rates from 19.1% to 40%. Our centre has developed a culture that starts at the point of tumour diagnosis to filter patients into a day case pathway. This is augmented by a community service supporting patients. We investigated what effects this had on length of stay and readmissions.
Patients and Methods: A retrospective audit was carried out of 330 elective TURBT cases performed in one centre over 2011 and 2014 (36 excluded for lack of data/emergency status). Data was gathered regarding length of stay, causes of delayed discharge and readmissions.
Result: In 2011, 11% were performed as day cases and 66% had an overnight stay. After introduction of the TURBT pathway, by 2014, 68% patients went home the same day and 21% had an overnight stay. The 30 day re-admission rate in 2011 was 7% (mostly following overnight stays) whereas 6% were readmitted in 2014.
Conclusion: Our experience suggests that day case TURBT can be widely implemented without compromising quality or patient safety.

P144

BCG efficacy differs according to the strain used – Implications in an era of BCG shortages

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Introduction: BCG immunotherapy significantly reduces recurrence and progression of high risk non muscle invasive bladder cancer (NMIBC). There is gathering evidence that the treatment efficacy differs according to the BCG strain used. During a recent shortage of Connaught strain BCG (Immucyst) we switched to Tice strain BCG (OncoTICE). The induction regime for both was six instillations, followed by cystoscopy. We reviewed outcomes to determine differences in efficacy between Connaught and TICE BCG.
Methods: A retrospective cohort analysis was performed on all cases of NMIBC undergoing BCG induction between 2006 and 2014. Immucyst was given between 2006–2012 and OncoTICE from 2012–2014. Data from 2012 was excluded to avoid any uncertainty regarding the BCG strain used. Exclusion criteria: previous BCG treatment, no repeat cystoscopy, or failure to complete induction therapy. Statistical significance was conferred using the A Chi-squared test.
Results: Between 2006–2011 and 2013–2014, 132 BCG-naive patients completed induction BCG and repeat cystoscopy; 89 patients received Immucyst and 43 received OncoTICE. The grade and stage makeup was similar in both groups. Significantly less recurrence was identified on re-biopsy with Immucyst (11%) compared to oncotice (26%) ($P < 0.05$). No cases progressed to muscle-invasive disease.
Conclusions: Our data supports the view that BCG strains are not equally efficacious. Further, long-term prospective studies are required to confirm differences in the efficacy of BCG strains (including maintenance BCG) in reducing the recurrence and progression of high risk NMIBC. Given recurrent BCG shortages, significant differences in treatment efficacy between BCG strains will have profound clinical implications.

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Visceral adipose tissue on preoperative CT scan for urothelial bladder cancer and correlating outcomes after radical cystectomy

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Introduction: Urothelial cancer of bladder (UCB) among most lethal of urological cancers. Obesity, BMI>30 has associated increased all-cancer mortality. Recent metabolic studies describe measuring visceral adipose tissue (VAT) using CT. We sought to apply this technique in UCB patients undergoing radical cystectomy (RC) and correlate outcomes.
Methods: For all RC patients with preop CT, VAT and subcutaneous adipose tissue (SAT) were measured from single- axial CT images at the umbilicus, using validated technique and correlated with BMI. Non-obese and obese groups were defined using cut-off values at either VAT 150 cm^2, 200 cm^2, or BMI 30. Length of stay (LOS) compared between groups using Student's t-test. Overall survival and cancer-specific survival analysed using Kaplan-Meier curves, compared between groups using Cox proportional hazards model.
Results: 203 cases evaluated, mean age 69 years, male: female 3:1. VAT + SAT strongly correlated with BMI (Pearson r = 0.85). No difference in LOS between non-obese and obese groups. No significant difference in overall mortality/cancer-specific mortality at 5 years when comparing VAT </> 150 cm^2 (P = 0.94 and 0.72), </>200 cm^2 (P = 0.54 and 0.93), BMI </>30 (P = 0.16 and 0.66)
Conclusions: This is the first time VAT used for assessing outcomes in UCB treated by RC. Two other studies showed opposite outcomes; one showed worse outcomes with obesity, while no difference in other. Both used BMI which has its inherent limitations. We show no difference in oncological outcomes/LOS using VAT on preoperative CT. This novel tool also has a role to play in predicting perioperative complication outcomes following RC, and survival outcomes in other oncological treatments.

P146

The effects of centralization and surgical volume on radical cystectomy for high risk non-muscle-invasive bladder cancer in the UK: An analysis of trends over 10 years from the BAUS section of oncology radical cystectomy database

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Introduction: The role of radical cystectomy (RC) for high risk non-muscle invasive bladder cancer (HR NMIBC) is controversial. Although the decision to operate is critical, it is subjective and greatly influenced by the surgeon and departmental 'ethos'. We analysed data from the BAUS RC database from 2004–14 to determine trends in RC for HR NMIBC, particularly whether these may be influenced by factors such as centralization of RC over that time and increasing surgical volume.
Methods: The BAUS Section of Oncology RC database for 2004–14, when centralization of pelvic surgery occurred, was analyzed. The cut-off between low and high volume centres was defined as 15 RCs/yr. The percentage of RCs carried out for HR NMIBC disease was calculated for each centre. Regression analysis was carried out to determine trends over time as centralization occured and increasing surgical volume.
Results: A total of 8696 RC were included from 50 centres. There was a rise in RCs from 590 in 2004 to 1258 in 2013 whilst the percentage of patients undergoing RC with HR NMIBC increased from 19% to 28% and T2 disease decreased from 43% to 35%. Regression analysis showed when controlling for volume, the yearly increase approached significance (P = 0.0652) but not for the lowest volume centres (P = 0.5856)
Conclusions: RC for HR NMIBC has increased over the past decade but only in higher volume centres and probably reflects the benefits of centralization and sMDT review. Reassuringly, lower volume centres have not 'padded out' their numbers with HR NMIBC cases.

P147

Long-term oncological outcomes of patients undergoing neoadjuvant chemotherapy and cystectomy for muscle invasive bladder cancer

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Introduction: Neo-adjuvant chemotherapy has been shown to confer a survival advantage compared to primary cystectomy (PC) alone for muscle invasive bladder cancer (MIBC). We report long-term survival outcomes of patient undergoing neo-adjuvant chemotherapy followed by cystectomy for MIBC.
Methods: All patients undergoing radical cystectomy at a tertiary referral centre for MIBC (T2-T4, N0-2, M0) of the bladder in the period 01/01/04 to 31/12/11 were identified from a departmental database. Patient who had prior neo-adjuvant chemotherapy (NAC group) were identified by cross–checking with oncology records. Retrospective review of records was undertaken to capture demographic details, pathological findings on cystectomy specimen and disease specific survival.
Results: 284 patients with complete follow-up data were included (72 NAC and 212 PC). The male to female ratio was 1.5:1 and overall median follow-up was 94 months. The median time between completion of chemotherapy to cystectomy was 50 days. There was an 11% incidence of severe chemotoxicity (neutopenic sepsis, renal failure) in the NAC group. On final pathology comparing NAC and PC groups the proportion of patients with pT0N0 was (32%v2%), pT2 (14%v14%), pT3 (26%v35%), pT4 (6%v10%) and pN+ (28%v27%). On Kaplan Meier analysis, between NAC and PC groups, 5-year disease specific survival was 62.1% and 52.7% respectively whilst the 10-year disease specific survival was 55.8% and 45.8% respectively (P = 0.12).
Conclusions: NAC leads to a larger proportion of patients achieving pT0N0 status at cystectomy. On long-term follow-up, there was a 10% survival advantage for patients undergoing NAC compared to primary cystectomy.

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Introduction of robotic cystectomy confers additional reduction in length of stay (LOS) in an established enhanced recovery programme (ERP)

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Introduction & Objectives: To describe impact on LOS following implementation of a robotic programme for patients undergoing robotically-assisted radical cystectomy (RARC).
Material & Methods: 62 patients (82.3% male) underwent RARC between October 2013 and December 2014 [ileal conduit *n* = 49 (79%) and orthotopic neobladder *n* = 13 (21%)]. All patients were managed on an ERP (regardless of age and stage of disease) in a unit where embedded ER practice was already established. Data was collected prospectively on the BAUS complex operation dataset for cystectomy.
Results: Indications for RARC included: MIBC TCC (67.7%), SCC (9.7%), NMIBC refractory to intravesical treatment (12.9%) and other (9.7%). Higher grade complications were seen in 5 patients [4 patients (6.5%) Clavian Dindo grade III and 1 patient (1.6%) grade IV]. 30-d and 90-d mortality rate was 1.6% (out-of-hospital intracerebral haemorrhage unrelated to surgery). 30-d readmission rate was 22% (*n* = 14), with 2 patients requiring surgical intervention and 1 radiological intervention. Mean LOS was 8.3 days with a median of 6.5 days (excluding outliers 1SD, range 4–80).
Conclusions:
1. ERPs can be safely applied to all patients undergoing RARC.
2. LOS compares favourably to our previously published series of open radical cystectomy (mean 9.2 days *n* = 162). (Dutton et al. BJUI 2014; 113: 719–25).
3. The addition of minimally-invasive surgery to an established ERP confers further modest improvements in LOS for cystectomy in the current series.

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Laparoscopic cystectomy outcomes for a single centre

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Introduction: Bladder cancer is the most common cancer of the urinary tract and the ninth most common cancer worldwide. Radical cystectomy is the standard of treatment for localised muscle invasive tumours and non-muscle invasive tumours at high risk of progression or refractory to intra-vesical therapy. Laparoscopy is increasingly being used for cystectomy. Our aim was to audit the outcomes of laparoscopic cystectomy in a single centre.
Method: All laparoscopic cystectomies performed between 2010 and 2014 were included. Case notes and electronic records were retrospectively reviewed. Parameters recorded included demographics, histology, complications, length of stay and mortality.
Results: A total of 139 radical cystectomies were performed during this time period, 99 of which were performed laparoscopically between two consultant urologists. The median age was 69 years and 74% were male. 6% of patients had intra-operative complications and 90% of post-operative complications were Clavien grade 1–2. Median operating time was 5–6 h and median length of stay was 10 days. Follow up ranged from 5 months to 4 years. There was no peri-operative mortality or 30 day mortality. Overall survival was 88.8%.
Conclusion: We present data from a single centre that performs a high volume of laparoscopic cystectomies. Although laparoscopic cystectomy is a technically challenging procedure with a long learning curve, this data shows that it is an acceptable technique with good outcomes and acceptable operative time comparable to open cystectomy. Additional long term functional and outcome data is needed to further evaluate this technique.

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