Podium Poster Presentations

BPH/Male LUTS

Aquablation of the prostate for symptomatic benign prostatic hyperplasia: two-year results
C. MACRAE*, P. GILLING*, P. ANDERSON† and A. TAN
*Tauranga Hospital, BOPDHB, Tauranga, New Zealand; †Royal Melbourne Hospital, Melbourne, Australia; ‡Perth Urology Clinic, Perth, Australia

Introduction & Objectives: Lower urinary tract symptoms (LUTS) due to benign prostatic hyperplasia (BPH) continue to present a significant disease burden. The morbidity associated with traditional transurethral resection of the prostate (TURP) has led to the development of alternative energy sources, in an attempt to overcome some of these. Early reports of aquablation (water jet-based prostate resection) for lower urinary tract symptoms due to benign prostatic hyperplasia suggest efficacy similar to that of TURP. We present the two-year results of an ongoing trial.

Methods: A prospective single-arm trial at three centres in Australia and New Zealand with 2-year follow-up. Participants were men aged 50–80 years with moderate-to-severe LUTS as determined by urodynamics. All patients underwent aquablation under image guidance. Outcomes for this study include safety (determined by adverse event reporting), IPSS, Qmax, and PVR.

Results: Twenty-one men underwent aquablation, with a mean age of 69.7 (range 62–78) years, and prostate volume of 57.2 (30–102) mL. Two-year follow-up was available at 2 sites (N = 17 treated, 14 with visits at 2 years). Mean IPSS score improved from 23.4 at baseline to 7.1 at 12 months and 6.6 at 24 months. Qmax improved from 8.4 cc/sec at baseline to 15.3 sec at 24 months. PVR decreased from 144 cc at baseline to 43 cc at follow-up. There were no Clavien-Dindo grade 3–4 adverse events.

Conclusions: Aquablation is a new method of prostate ablation showing functional improvement which compares favourably to other BPH technologies. This phase II study provides early evidence to support the long-term safety and effectiveness of aquablation for symptomatic BPH.

Can the outcome of trial of void be predicted by patient’s first void?
E. BELL, R. SMITH, G. EVANS, S. ANTONIOU, P. SMITH and S. PRIDGEON
Department of Urology, Calms Hospital, Cairns, Australia

Introduction & Objectives: Trial of voids (TOVs) consume a significant amount of healthcare time and resources. It is common practice to ask a patient to perform a series of voids following removal of a urinary catheter. This information is used to determine whether a TOV has been deemed successful. We aimed to develop a simple nomogram that can be used to predict the outcome of TOV using voided volume (VVol) and post-void residual (RVol) of the patient’s first void.

Methods: We retrospectively examined the results of all TOVs between May 2015 and June 2016 in a nurse lead urology outpatient TOV clinic. We recorded reason for catheterization, patient demographics, number of voids and VVol and RVol for all recorded voids.

Results: A total of 186 patients with completed data were included in this study. Reasons for catheterisation included acute urinary retention (n = 73), post urethral dilatation (n = 20), post radical prostatectomy (n = 30), other urological surgery (n = 35) and post transurethral resection of prostate with catheter on discharge (n = 28). A total of 12 females and 174 males were included in this study. We identified 7 patients that represented to our hospital within 7 days requiring re-catheterisation. Voided volume was plotted against residual volume (Figure 1). Data was analysed to determine graph equations to predict 100% fail and pass rates. We have devised a simple nomogram that could be used clinically. Plotting values using the formula VVol – RVol outcome of TOV can be predicted as pass (>100 mL), equivocal (~300 mL to 100 mL) and fail (<300 mL).

Conclusions: Streamlining of the TOV clinical pathway may be possible by examining first void data. We will be testing the above nomogram on prospectively collected data to validate our data. A clinical trial where patients that are predicted to pass and discharged after a single void is proposed. Those patients that are equivocal or predicted to fail are to continue a standard multi-void TOV. This simple nomogram could potentially decrease the burden of TOVs on healthcare systems.

Figure 1. Plot of voided volume versus residual volume
Incidental prostate cancer diagnosed at holmium laser enucleation of prostate – review of patient outcomes

N. YORK, T. LARGE, M. BOROFSKY, C. DAW, J. LINGEMAN and R. BORIS
Indiana University School of Medicine, Indianapolis, USA

Introduction & Objectives: We reviewed the initial oncologic outcomes of prostate cancer incidentally diagnosed at the time of holmium laser enucleation of prostate (HoLEP).

Methods: Institutional prospectively maintained HoLEP database was searched. All patient records with incidental prostate cancer at HoLEP were reviewed. Demographics and early oncological data were collected.

Results: 1367 patients underwent HoLEP from 1999 – 2015. 136 (7.2%) patients had incidental prostate cancer diagnosed at HoLEP. Median preoperative PSA of prostate cancer patients was 4.5 ng/ml. 32 patients (24%) underwent prior prostate biopsy of which 1 was ASAP (0.7%) and the rest were negative. On HoLEP histology analysis 107 (79%) of patients had low-grade Gleason ≤ 6, 17 (12%) had intermediate Gleason 7, and 12 (9%) had high-grade Gleason 8–10 disease.

Management data was available for 49 (36%) patients. Treatment included surveillance in 31 patients (63%), radical prostatectomy in 8 (16%), radiation therapy in 8 (16%), and immediate androgen deprivation (ADT) in 2 patients (4%). Initial outcomes are detailed in Table 1.

Median follow up of the entire cohort was 55 months (range 1–176 months). Biochemical recurrence free rate in the radical prostatectomy group was 88% at last follow-up. For the radiotherapy group, 25% failed treatment per Phoenix criteria although none have progressed clinically. Overall prostate cancer specific mortality for the entire cohort was 1.5% (2 patients).

Conclusions: Prostate cancer is infrequently detected at HoLEP with predominantly low grade disease. Observation appears to be an acceptable management option, at least initially. Radical prostatectomy and radiotherapy for selected patients demonstrate encouraging early oncological outcomes with limited follow up.

Endo-urology/Stones

Prone vs modified supine percutaneous nephrolithotomy (PCNL): which is more cost effective in a tertiary teaching hospital in Victoria, Australia?

L. CHU*, W. RANASINGHE†, M.N. JONES* and P. McCAHY‡
*Monash University, Clayton, Australia; †Box Hill Hospital, Eastern Health, Box Hill, Australia; ‡Department of Surgery, Monash University, Clayton, Australia; †Casey Hospital, Monash Health, Berwick, Australia

Introduction & Objectives: Percutaneous nephrolithotomy (PCNL) is the recommended treatment for large renal stones. There has been debate about the various positions PCNL can be performed but little detail about costings. We aimed to compare the cost effectiveness of a modified supine position with traditional prone PCNL in Victoria, Australia.

Methods: A group of 205 renal units (198 patients) were followed prospectively from two Victorian tertiary hospitals, with 76 operations performed in the prone position and 129 performed in the modified supine position. Data collected included time in theatre, time in recovery, length of stay in hospital, disposable costs and complications. Costing was calculated using a previously authenticated "bottom-up", all-inclusive framework that generated per-hour theatre, recovery unit and ward costs from base and maintenance costs, including staff wages. PCNL-specific equipment used for each procedure was added to generate costing data. Chi-squared and T-tests were used for statistical analysis.

Results: Significant difference in overall costing was documented. Modified supine group had lower total cost ($6424.29) compared to prone ($7494.79) (p = 0.007). This was largely attributed to lower operative costs ($4250.93 vs $5084.29, p = 0.002), itself a reflection of shorter operating time, and lower ward costs ($533.55 vs $1130.20, p < 0.001), representing a shorter hospital stay.

Conclusions: This prospective study using comprehensive bottom-up cost-analysis methods found that modified supine has significantly lower costs compared to prone PCNL. With current literature divided on comparative treatment outcomes of prone vs modified supine PCNL, this data may make the modified supine approach more attractive to both hospital managers and clinicians.

Intravesical botulinum toxin for idiopathic overactive bladder in regional NSW

S. FITZPATRICK and B. INDRAJIT
Dubbo Base Hospital, Dubbo, Australia

Introduction & Objectives: Previous studies have demonstrated the efficacy of intravesical botulinum toxin (IVBT) injection in women with idiopathic overactive bladder (IOAB) who have failed lifestyle and antimuscarinic therapies. This pilot-study...
Introduction: Flexible ureteroscopy is one of the greatest inventions in the field of endourologic urology. It enables examination and treatment of the upper urinary tract. However, it requires frequent and costly repairs that prevent many health care providers from introducing this technology. The single-use device is the way to overcome that problem.

Objective: Is the single-use flexible ureteroscope performing as well as standard of care reusable instrument?

Methods: The single-use ureteroscope (Lithovue®, Boston Scientific) and two reusable scopes (URF-V®, Olympus and Flex-Xc®, Karl Storz) were assessed. Angulation and irrigation fluid flow were examined first with an empty working channel and then with various instruments engaged:

- hydrophilic guide wire
- hydrophilic tip wire
- laser fiber (200 μm)
- basket (1.9Fr)
- biopsy forceps (3Fr)

Results: Instruments decreased the angulation range and fluid flow. However it was still possible to bend tested devices to almost 180 degrees in every case, which should be enough to reach all kidney calyces. Furthermore there were only slight differences in fluid flow in used scopes

Conclusions: This version of a single use disposable flexible ureteroscope offers similar technical specifics to multiple use flexible ureteroscopes in regard to range of flexion and extension, and also in regard to fluid flow rates. It is likely to find utility in aspects of endourologic practice depending upon pricing issues

Urolithiasis treatment in Australia: the age of ureteroscopic intervention

M. PERERA*, N. PAPA*, N. KININEAR*, D. WETHERELL*, N. LAWRENTSCHUK†, D. WEBB* and D. BOLTON*

Department of Urology, Austin Health, Heidelberg, Australia; †Olivia Newton-John Cancer Research Institute, Heidelberg, Australia; ‡Department of Surgical Oncology, Peter MacCallum Cancer Centre, Melbourne, Australia

Introduction & Objectives: The incidence of urolithiasis is increasing in the Western population. Significant advances in ureteroscopy and stone fragmentation energy sources has resulted in a paradigm shift in urolithiasis management. We aimed to assess the current state of urolithiasis management in Australia over the last 15 years using population-based data.
Introduction and Objectives: Genitourinary tract surgery has been evolving in the past years particularly the introduction of minimally invasive surgery such as laparoscopy as one of the options that can be offered to the patient. In the Philippines, retroperitoneoscopic approach has been less popular because of “smaller and limited working space”, the urologist’s unfamiliarity with the operative technique and steeper associated learning curve compared to transperitoneal approach.

In this study, we evaluate and analyze the indications, perioperative and postoperative complications of different retroperitoneoscopic laparoscopic urologic surgery at East Avenue Medical Center.

Methods: This is a descriptive, retrospective study of patients who underwent retroperitoneoscopic urologic surgery done at East Avenue Medical Center from July 2008 to July 2016.

Results: There were 45 retroperitoneoscopic urologic surgeries performed from July 2008 to July 2016 at East Avenue Medical Center with a median age of 50 years ± 13 (SD). Majority was male (56%). Most common diagnosis was renal cyst (26%). Most patients underwent laparoscopic marsupialization (27%).

The operating time, intraoperative blood loss and blood transfusion were dependent on the procedural difficulty. The mean operating time was 253 min (75–495 min) with highest average operating time of 350 min (270–460 min) during laparoscopic radical nephrectomy.

Average estimated blood loss was 100 cc (50–2500) while actual blood loss was 1112 cc (10–2990) although it varied from each procedure from less than 50 ml for most marsupialization of renal cyst to 2500 for adrenalectomy of a 14 x 12 cm adrenal tumor.

Patients stayed for 4 days (1 to 9 days). The longest average length of hospital stay was 5 days for patients who underwent radical nephrectomy (3 to 8 days), partial nephrectomy (4 to 6 days) and adrenalectomy (3 to 6 days).

5 cases had conversion to open: laparoscopic simple nephrectomy (2), adrenalectomy (1), partial nephrectomy (1), and ureterolithotomy (1). A conversion was required, due to poor camera quality, dense adhesions and a large size of the mass (14 x 12 cm mass at the superior aspect of the left kidney).

Complications were observed in 13 cases (29%). One patient who underwent retroperitoneoscopic ureterolithotomy had Emergency DJ stent insertion on the 2nd post-operative day due to increase urine output per JP drain. Post-operative blood transfusion was necessary in 2 patients: radical nephrectomy (1) and the nephroureterectomy (1). Other complications were fever, cough, and numbness of both lower extremities and swelling of left hip.

Conclusions: Despite lesser number of retroperitoneoscopic urologic surgery cases compared internationally, this study on laparoscopic retroperitoneal surgery for urologic conditions in our institution showed it to be safe, reproducible and an effective procedure for most types of upper urinary tract surgery. Compared to other studies, the length of hospital stay was comparable but the operative time was longer. Complications of retroperitoneoscopic urologic surgeries were few and predominantly minor and can be managed easily.

Validation of a renal papillary grading system for patients with nephrolithiasis
M. BOROFSKY*, N. YORK*, C. DAUW*, J. WILLIAMS† and J. LÓPEZ-RAMÍREZ†
*Indiana University Methodist Hospital, Indianapolis, USA; †Department of Anatomy and Cell Biology, Indiana University, Indianapolis, USA

Introduction and Objectives: The endoscopic appearance of renal papillae in patients with nephrolithiasis varies widely. We recently introduced a papillary grading system designed to standardize and simplify description of the papillae. Papillary appearance may be able to help predict metabolic stone risk profile, risk of stone recurrence and need for subsequent treatment. In this study, blinded assessors graded papillae to validate the papillary grading system and its ability to differentiate various stone phenotypes.

Methods: Four blinded investigators (3 experienced urologists and a basic scientist) graded 108 randomized papillae of patients with stone disease. Half of the patients had apatite stones on analysis and the rest had calcium oxalate stones. The grading system assessed four recurring abnormal papillary features: plugging, pitting, loss of contour and amount of Randall’s plaque. Each papilla received a numerical grade from 0 to 2 reflecting the severity of disease for each measured domain. Grading scores from the four domains were added up to a sum total (range 0–8). Weighted kappa statistics were used to determine intra and inter-observer reliability between assessors.

Results: Intra-observer reliability was extremely good across all four domains...
with Cohen’s kappa ($\kappa$) ranging from 0.75 to 0.99. Inter-observer reliability was excellent for plugging ($\kappa=0.84$) and Randall’s plaque ($\kappa=0.68$), less good for pitting ($\kappa=0.56$) and poorest for loss of contour ($\kappa=0.40$), although $\kappa$ of 0.40 still indicated moderate agreement between assessors. Highly significant score differences were observed between apatite stone formers and idiopathic (Randall’s plaque-type) calcium oxalate stone formers (Figure 1). Apatite stone formers had higher plugging, pitting and loss of contour scores while calcium oxalate stone formers had higher Randall’s plaque scores.

**Conclusions:** Our proposed papillary grading system demonstrated good to excellent inter- and intra-observer reliability. Endoscopic papillary grading scores were significantly different between apatite and calcium oxalate stone formers. The endoscopic appearance of the renal papillae as measured by the papillary grading system used in this study may have implications in stratifying and managing renal stone patients.

---

**Female/Neuro-urology**

**Does a fully automated bladder diary increase patient compliance and data accuracy? Updated feasibility report and current research**

D. CHRISTIDIS*, M. PERERA†, S. MCGRATH†, T. MANNING†, N. LAWRENSTCHUK†,§ and D. BOLTON*†

*Austin Health, Heidelberg, Australia; †Young Urology Researchers Organisation (YURO), Melbourne, Australia; ‡Department of Surgery, Peter MacCallum Hospital, Melbourne, Australia; §Olivia Newton John Cancer Research Institute, Melbourne, Australia

**Introduction & Objectives:** This pilot study compared data values on participant preference, compliance and ease of use of a fully automated bladder diary and traditional paper diary to assess the utility of this new technology. This presentation updates and validates previous findings and informs of current research.

**Methods:** Healthy volunteers (>18 years) completed two voiding chart types over separate 24-hour periods. These included the electronic fully automated (iUFlow device) diary and a traditional paper diary. Patients were instructed to complete data entry contemporaneously and to add any missed urination or intake events retrospectively. Online surveys of preference and demographics were performed at commencement of study and after each diary type use.

**Results:** 15 participants were included in the study, age range 22–59 years (mean 35 years). 93% of patients preferred the automated diary to the paper diary after use. Mean reported number of missed urination events was significantly lower with use of the automated diary (1.1 automated diary vs. 2.5 paper diary, $p=0.048$, paired t-test) displaying higher patient compliance. Differences in missed oral intake recordings existed but did not reach statistical significance ($p=0.315$, paired t-test). Participants took an average time of 13.7 mins to perform the automated diary and 25.5 minutes for the paper diary, which was significantly greater ($p=0.005$, paired t-test).

**Conclusions:** The use of a fully automated bladder diary such as the iUFlow has the potential to increase patient compliance, data quality and decrease burden on patients and was preferred over traditional paper diaries in this cohort. Further studies are currently underway addressing the limitations of the feasibility study with new devices that are able to measure flow in a patient population.

---

Figure 1. Mean papillary grading scores for apatite and Randall’s plaque-type calcium oxalate stone formers.
Quantifying pelvic muscle tone with functional studies to improve the diagnostic accuracy of Overactive Pelvic Floor Muscles (OPFM)

H.C. AW*, D. CHUNG*, W. RANASINGHE†, H.M. TAN* and H.E. O’CONNELL *
Western Health, Footscray, Australia; †Eastern Health, Box Hill, Australia

Introduction & Objectives: To review the current terminology and diagnostic criteria of overactive pelvic floor muscles (OPFM), and identify its functional correlation with cystoscopic and fluoroscopic urodynamic studies (FUDS) including urethral pressure measurements.

Methods: Patients refractory to conservative therapy including bladder retraining, medications and pelvic muscle exercises for a variety of gamut of storage and voiding disorders were evaluated. Prospective data for 201 patients across both genders who underwent flexible cystoscopy and urodynamics for LUTS refractory to conservative management between 1 Jan 2014- 1 Jan 2016 was collected.

Factors studied included history of lower urinary tract symptoms, voiding patterns, physical examination, cystoscopic findings and functional studies, which maximum urethral closing pressure (MUCP).

Results: 201 were patients recruited. 85 were diagnosed with OPFM based on clinical presentation and presence of pelvic floor tenderness on examination. Significant differences were noted on functional studies with FUDS and urethral pressure measurement. Subjects with pelvic floor tenderness were found to have a higher (MUCP) at 93.1 cmH20 compared to 80.6 cmH20 (p = 0.015).

Conclusions: There are distinct characteristics of OPFM on clinical examination and functional studies, in particular MUCP. In patients refractory to conservative treatments, specific urodynamics tests are useful in sub-categorising patients. When OPFM is diagnosed, the impact on patient management is significant, and targeted intervention with pelvic floor physiotherapy is central in the multimodal approach of this complex condition.

Onabotulinumtoxina intradetrusor injection single centre audit

S. PILLY, A. WILSON EDWARDS and K. SANTORO
Con'tinence Matters, North Adelaide, Australia

Introduction & Objectives: OnabotulinumtoxinA intradetrusor injections are standard third line therapy for detrusor overactivity failing medical therapy. The aim of this study is to report prospective Australian data for patients undergoing this therapy at a single centre by two surgeons from August 2015 to August 2016.

Methods: Prospective data collected included age, gender, treatment number in patients having prior injections, dose, anaesthetic type, complications including infection requiring antibiotics or retention requiring catheterisation, and reasons for discontinuation. Patients overdue for repeat injection were contacted through a recall system to document the reason if discontinuing therapy.

Results: 151 patients received a total of 192 treatments in a twelve month period. 31% were performed under local anaesthesia, 63% with sedation and 6% with general anaesthesia. The treatment number ranged from; 48 patients having their first treatment, to one patient having their fifteenth treatment. 100 units were used in 154 procedures and 200 units in 34 procedures, (4 with other doses). 84% of patients had idiopathic detrusor overactivity and 16% had neurogenic detrusor overactivity. 13 patients developed a urine infection requiring antibiotics in the post-operative period. 9 patients commenced intermittent self-catheterisation following the procedure for symptomatic urinary retention, two of whom was the intended outcome. 36 patients were already performing intermittent self-catheterisation prior to botulinum toxin therapy. 6 patients chose not to have repeat injection when due.

Conclusions: The risks of symptomatic urine infection or retention requiring catheterisation are low. Ongoing follow up of patients is required to determine when to schedule their next treatment. The repetitive nature of onabotulinumtoxinA intradetrusor injection is a unique treatment where repeat therapy is one indicator of success. By establishing this audit, data collected over time will indicate patients discontinuing therapy.

Other

Predictors of poor renal function outcomes after surgery for T1a renal cell carcinoma (RCC): a population-based study from Queensland

T. AHN*, A. JOSHI†, S. WOOD‡ and S. JORDAN§
†Princess Alexandra Hospital, Woolloongabba, Australia; ‡QIMR Berghofer Medical Research Institute, Brisbane, Australia; §Centre for Kidney Disease Research, Brisbane, Australia; §The School of Public Health, The University of Queensland, Brisbane, Australia

Introduction & Objectives: Renal cell carcinoma (RCC) is often detected incidentally and early. Surgical intervention is the established standard of care in those with localized T1a RCC. The goal of surgery is curative with the preservation of renal function but the risk of chronic kidney disease (CKD) increases after surgery. The aim of this study was to investigate pre- and post-surgery factors in a large, local and comprehensive population based cohort associated with poor renal function outcome in patients with T1a RCC.

Methods: All patients with a new diagnosis of RCC in Queensland over a
Incidence and manifestations of nutcracker syndrome on CT imaging of 2070 consecutive patients

S. DEMKOV*, A. LAVOPIERRE* and K. AUSTIN†
* Austin Health, Heidelberg, Australia; † MDI Radiology Malvern, Malvern, Australia

Introduction & Objectives: Compression of the left renal vein between the aorta and the superior mesenteric artery is termed Nutcracker Syndrome. The phenomenon results in left renal venous hypertension, leading to left renal, gonadal and pelvic varices. While there is a wide range of clinical presentations, the literature to date reports macroscopic intermittent haematuria as the most common presenting symptom. The disorder is often missed during routine diagnostics and its incidence is likely underestimated.

Methods: A total of 2070 abdominopelvic CT scans were performed on patients between September 2009 and September 2014. Inclusion criteria were all CTAP and CTIVP performed over this period, regardless of the clinical history or indication, with images analysed and formally reported by a single radiologist. Reports were analysed sequentially.

Results: There was a total of 54 patients (54/2070, 2.61%) with evidence of nutcracker syndrome, with equal numbers of urological (27/54) and non-urological (27/54) referrals.

Conclusions: Nutcracker Syndrome is likely to be underestimated in practice, with our results reflecting a relatively high incidence in a population of scanned patients of 1 in 38. Half of all patients with CT scans positive for the phenomenon initially presented with abdominal pain, with a much smaller percentage presenting with haematuria for investigation. This is in contrast to current literature citing haematuria often as the chief presenting complaint. It remains important however to suspect Nutcracker Syndrome in cases of persistent haematuria in the absence of a medical or surgical cause. Similarly, Nutcracker Syndrome needs to be assessed in cases of pelvic varices and left sided varicocele.

Table 1 Characteristics of nutcracker positive CT scans, n = 54/2070.

<table>
<thead>
<tr>
<th>Clinical history:</th>
<th>n (%)</th>
<th>Severity:</th>
<th>n (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Abdominal pain</td>
<td>27 (50)</td>
<td>Mild</td>
<td>38 (70)</td>
</tr>
<tr>
<td>Haematuria</td>
<td>8 (15)</td>
<td>Moderate</td>
<td>15 (28)</td>
</tr>
<tr>
<td>Renal lesion on US</td>
<td>7 (13)</td>
<td>Severe</td>
<td>1 (1.9)</td>
</tr>
<tr>
<td>Change in bowel habit</td>
<td>3 (5.5)</td>
<td>Presence of:</td>
<td>n (%)</td>
</tr>
<tr>
<td>Weight loss</td>
<td>2 (3.7)</td>
<td>Refluxing gonadal vein</td>
<td>38 (70)</td>
</tr>
<tr>
<td>Prostate cancer surveillance</td>
<td>2 (3.7)</td>
<td>Pelvic varices</td>
<td>29 (54)</td>
</tr>
<tr>
<td>LUTS</td>
<td>1 (1.9)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Groin mass</td>
<td>1 (1.9)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bilateral varicoles</td>
<td>1 (1.9)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Partial nephrectomy surveillance</td>
<td>1 (1.9)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nausea</td>
<td>1 (1.9)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>54 (100)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

---

Table 1 Multivariate analysis of predictors of new onset eGFR <60

<table>
<thead>
<tr>
<th>Multivariate</th>
<th>Odds ratio (OR)</th>
<th>95% Confidence interval (CI)</th>
<th>P-value new onset eGFR &lt;60</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age per 5 yr increase</td>
<td>1.43</td>
<td>1.19–1.73</td>
<td>&lt;0.01</td>
</tr>
<tr>
<td>Increasing pre-op eGFR per 1 mL/minute/1.73 m²</td>
<td>0.91</td>
<td>0.88–0.95</td>
<td>&lt;0.01</td>
</tr>
<tr>
<td>Pre-existing hypertension</td>
<td>2.05</td>
<td>0.95–4.42</td>
<td>0.07</td>
</tr>
<tr>
<td>Male</td>
<td>1.57</td>
<td>0.73–3.36</td>
<td>0.25</td>
</tr>
<tr>
<td>ACE–27 co-morbidity score 3</td>
<td>2.26</td>
<td>0.73–7.02</td>
<td>0.16</td>
</tr>
<tr>
<td>Current Smoker</td>
<td>1.07</td>
<td>0.43–2.67</td>
<td>0.88</td>
</tr>
</tbody>
</table>

24 month period between 2012 and 2013 were ascertained through the Queensland Cancer Registry (QCR). A research nurse abstracted data from the clinical records of these patients and returned their de-identified information to the research team. The current analyses were restricted to patients with T1a RCC who underwent radical or partial nephrectomy and who had a pre-surgery estimated glomerular filtration rate (eGFR) ≥ 60 mL/minute/1.73 m². The patients who had a pre-operative eGFR of ≥60 mL/min/1.73 m². A total of 340 T1a RCC patients were included in the analysis. There were 340 T1a RCC patients who had a post-operative eGFR of ≥ 60 mL/min/1.73 m². At 3–12 months post-surgery, 108/340 (32%) developed significant, medical and surgical factors were regression, to assess which socio-demographic, medical and surgical factors were significantly associated with the decline in renal function to eGFR <60 mL/minute/1.73 m² measured at 12 months post-surgery.

Results: There were 340 T1a RCC patients who had a pre-operative eGFR of ≥ 60 mL/min/1.73 m². At 3–12 months post-surgery, 108/340 (32%) developed new-onset eGFR of <60 mL/min/1.73 m². On multivariable analysis, greater age (p < 0.001), radical nephrectomy (p < 0.001) and decreasing pre-surgery eGFR were significantly related to this. Pre-existing hypertension (p = 0.07) also had higher odds of developing post-surgery renal dysfunction but this association did not reach statistical significance.

Conclusions: A substantial proportion of patients who underwent surgery for T1a RCC developed new onset CKD. Greater age, radical nephrectomy and decreasing pre-surgery eGFR were the factors significantly associated with greatest risk in the Queensland cohort.
Outcomes of a conservative approach to renal trauma: a ten year audit of renal trauma at a level 1 trauma centre

S. HEYWOOD*, A. MARE†, S. MCCREDIE* and A. FITZGERALD* ‡
Department of General Surgery, The Canberra Hospital, Garran, Australia; ‡Department of Urology, The Canberra Hospital, Garran, Australia

Introduction & Objectives: Current guidelines in the management of renal trauma recommend that most haemodynamically stable patients should have conservative management. This recommendation lacks basis in high level evidence. Given this, it is important for centres managing renal trauma to review their practices, and ensure that their approach to management result in outcomes consistent with guidelines. Our objective here is to review the ten year experience in managing renal trauma at a level 1 trauma centre that has adopted a conservative approach to management.

Methods: A retrospective review of all patients who presented to the Canberra Hospital with traumatic renal injuries between July 2006 to June 2016 was conducted. Only patients who had radiographically or surgically confirmed traumatic renal injuries were included in the review. Data on age, gender, the American Association for the Surgery of Trauma renal injury grade, mechanism of injury, other injuries, management, complications, and length of stay were all collected. Successful conservative management was defined as any renal trauma that didn’t require surgical intervention or angioembolisation.

Results:

- 178 patients presented to our institution with traumatic renal injuries. Males consisted of 83.7% (n = 149) of the patients. Median age of all patients was 25 years old, with the highest incidence being in the 16–19 year old group (30.7%).
- 93.3% (n = 166) of patients were successfully managed conservatively. 2.8% (n = 5) patients required angioembolisation for complications of conservative management. 1.7% (n = 3) of patients had angiography without intervention. 9% (n = 16) patients required an emergency laparotomy for management of their trauma, of which 11 did not have operative management of their renal injury and were considered to have successful conservative management. This included one patient with a grade 5 vascular injury. 1.7% (n = 3) of patients required a nephrectomy, these patients all had grade 5 injuries. A further 1.1% (n = 2) of patients had repair of their renal injury without nephrectomy. 2 patients died as a result of their trauma prior to any intervention.
- The most common mechanism of injuries were motorbike and motor vehicle accidents accounting for 22.5% (n = 40) and 21.9% (n = 39) of all injuries respectively.
- The distribution of injury grade was 18% grade 1 (n = 32), 19.7% grade 2 (n = 35), 23% grade 3 (n = 41), 34.3% grade 4 (n = 61), 5% grade 5 (n = 9).

There were 22 complications related to conservative management. 12 Clavien-Dindo grade I-II complications, and 10 Clavien-Dindo grade III-IV complications. These consisted of UTI and sepsis, bleeding, and urinoma or pseudoaneurysm formation.

Conclusions: The conservative management of renal trauma results in acceptable complication rates and very low nephrectomy rates in our institution.

Are current Australian treatment guidelines for epididymo-orchitis out of date: a five year review of epididymo-orchitis at a tertiary referral hospital

S. HEYWOOD, L. SUND, A. MARE and S. MCCREDIE
Department of Urology, The Canberra Hospital, Garran, Australia

Introduction & Objectives: Australian therapeutic guidelines currently recommend that all patients with epididymo-orchitis between the ages of 16 to 35 years old should be empirically treated for sexually acquired epididymo-orchitis. These recommendations are based on population studies that are more than 20 years old. The aim of this project is to review the cause and treatment of epididymo-orchitis in a modern Australian population and to ensure that the current guidelines are appropriate.

Methods: We conducted a retrospective review of all patients above the age of 16 years presenting to our institution between 2010 to 2015 with a clinical diagnosis of epididymo-orchitis. We recorded patient demographics, investigations performed, antibiotic regimen used for management, and length of hospital stay.

Results: A total 282 patients presented with a clinical diagnosis of epididymo-orchitis. 40% (n = 112) of patients were in the younger age group (16–35 years old). 54% (n = 61) of these patients had a urine PCR test performed, of which 13% (n = 8) of the tests were positive for Chlamydia
Introduction & Objectives: The incidence of primary kidney cancer (PKC) has been increasing over the last three decades across industrialized nations. Patients are being diagnosed at an earlier stage, and among localized tumors, there is a shift towards smaller tumor size at diagnosis. This has largely been attributed to the liberal use of radiological examinations for unrelated indications. The aim of this study was to investigate the survival trends of PKC in South Australia.

Methods: This study was reviewed and approved by the Southern Adelaide Clinical Health and Research Ethics Committee. Data for this study was provided through the South Australian Cancer Registry comprising of pathology lab point and hospital admission notifications data captured between 1977 - 2013. Basic demographics at diagnosis, tumor grade, and overall survival (OS) were available for analysis. Cox proportional hazards model was used for survival analysis.

Results: During 1977 – 2013 there were 5529 cases of PKC diagnosed in South Australia, with the majority (65.4%) amongst males. Mean (SD) number of overall survival months for the cohort is 70.6 (80.2). The age adjusted incidence of PKC has increased more than any other urological cancer (prostate not included) from 5/100,000 to 12.7/100,000 with no sign of plateau (fig 1). Time effect: However, in step-wise fashion, OS has significantly improved at each decade of diagnosis since 1977 p < 0.001 (fig 2).

Conclusions: Since 1977 the incidence of kidney cancer has nearly tripled in South Australia with step-wise improvement in OS at each decade of diagnosis.

Laparoscopic lens fogging: a contemporary and comprehensive review

T. MANNING†, M. PERERA‡, D. CHRISTIDIS‡, R. KINNEAR§, S. MCGRATH‡, J. O’BRIEN*, P. ZOTOV*, R. O’BEIRNE†, D. BOLTON† and N. LAWRENTSCHUK‡

†Austin Health, Department Of Surgery (Urology), Melbourne, Australia; ‡Young Urology Researchers Organisation (YURO), Melbourne, Australia; §Department of Engineering (Chemical), University of Melbourne, Melbourne, Australia; 

Introduction & Objectives: The maintenance of optimal vision during laparoscopic and robotic surgery is crucial to preserving operative awareness and as a result operative efficiency and safety. Loss of vision is commonly caused by laparoscopic lens fogging (LLF) which has prompted the development of various techniques to prevent it and remove it once it has occurred. However, limited comparative evidence exists in contemporary literature and there still remains no consensus as to the singular superiority of the vast array of methods.

Methods: A formal Preferred Reporting Items for Systematic Reviews and Meta-Analysis (PRISMA) was performed incorporating PubMed, Embase, Web of Science and Google Scholar. We applied no limit to publication year, article type or journal. Reference lists from publications were cross checked to ensure no articles were missed via our search criteria. Despite this limited original research and heterogenous outcome measures precluded meta-analytical assessment. Subsequently, all articles identified were included in the final review, critiqued by the authors and subsequently summarized. In addition, we performed a detailed investigation into the basic science behind the etiology of LLF.

Results: Vision loss has a vast list of plausible causes which can be adequately elucidated by current scientific theory, however no authors to date have completely characterized the complexity of the problem in its entirety. There still remains a lack of consensus in superior methods, and comparative evidence still remains significantly limited. Robotic LLF has been particularly poorly addressed in current literature.

Basic science principles relate to dew point temperature, misting and convection loss of temperature via insufflators. The key to management given the dearth of evidence lies within addressing these three particulars.

Conclusions: Obscured vision during minimally invasive surgery is a dangerous phenomenon, typically caused by LLF. The etiology of LLF despite the application of viable scientific theory has yet to be definitively proven in the in vivo environment. Common methods in the management of LLF have little evidence-based data to support their use. A multi-arm comparative in-vivo analysis is required to formally assess these commonly used techniques in both standard and robotic laparoscopes to address this problem, for the benefit of increased patient safety and increased operative efficiency.

Face shield fogging: novel techniques to reduce visual occlusion

T. MANNING†, Z. MANNING‡, D. CHRISTIDIS‡, S. MCGRATH‡, M. PERERA‡, J. O’BRIEN*, D. BOLTON† and N. LAWRENTSCHUK‡

†Austin Health, Department Of Surgery (Urology), Heidelberg, Australia; ‡Young Urology Researchers Organisation (YURO), Melbourne, Australia; ¶Department of Emergency (Nursing), Royal Melbourne Hospital, Melbourne, Australia; 

Introduction: Face shield fogging and obscuration during laparoscopic surgery hinders visualization and is a significant issue for laparoscopic surgeons. Observations from surgeons in the first author’s unit indicated that fogging is worse with robotic compared to laparoscopic surgery. We postulated that the robotic system is the reason for this increased fogging, as it is more complex and thus has multiple components that are not present in laparoscopy. This may also be due to the use of the larger pneumatic insufflation compared to conventional laparoscopy.

Methods: We performed a multi-centre study involving 3 centres (2 laparoscopic, 1 robotic). We measured the fogging during laparoscopic surgery (laparoscopic and robotic) and robotic surgery. We also measured the fogging in the first author’s unit using a face shield with pre-made holes for the camera and instruments, and compared this with the standard face shield.

Results: The average fogging score was significantly higher in laparoscopic surgery compared to robotic surgery in all 3 centres. The fogging score in the first author’s unit was significantly lower with the pre-made holes compared to the standard face shield.

Conclusions: The results of this study suggest that the increased fogging during robotic surgery may be due to the use of the larger pneumatic insufflation compared to laparoscopy. This may also be due to the use of the larger pneumatic insufflation compared to laparoscopy. The face shield with pre-made holes significantly reduced fogging in the first author’s unit, suggesting that this is a potential solution to the problem.
**Introduction & Objectives:** It is widely accepted that impeded optical clarity during operative intervention increases inadvertent patient injury, encumbers operative efficiency and increases patient morbidity. Several recent studies have reviewed management of vision loss in lenses of laparoscopic and robotic cameras, but none have extrapolated this to simpler measures including minimizing fogging of operative face shields. Numerous techniques in minimization of face shield fogging (FSF) exist including looser lower securement ties, tape applied to the bridge of the nose and modifications to the structure of the mask itself, but these remain operator dependent, are not reported in the literature and are often cumbersome. We aim to examine the underlying cause of FSF and to identify an easy solution to this common surgical problem.

**Methods:** A PRISMA review of contemporary literature was undertaken utilizing EMBASE, Web of Science and PubMed to analyse current literature. A simplistic experiment was then devised.

A single investigator who was prone to FSF was utilised for testing and applied a standard face shield (PRIMAGARD® Surgical, Sentry Medical, NSW, Australia) in each separate test. Firstly, no intervention was applied to the face shield and visual acuity was determined via standard Snellen chart in which visual cues were altered for each subsequent test (to remove repetition bias) and recorded at 5 minute intervals to a maximum of 20 minutes. Each 20-minute test was repeated 5 times. Snellen visual acuity of the investigator was rated prior to all testing and was measured as 6/5.

The same testing regime was applied to several other techniques including: Mask modification: the standard face shield was torn away from the underlying mask 2 mm each side and folded in the middle. Looser strap ties such that 5 cm gap at base of mask was created instead of tightly tied setup. Transpose™ tape (3M, California, USA) 10 cm in length applied across bridge of investigators nose with 50% applied to mask and 50% applied to investigators nose. FRED™ (Covidien, Dublin, Ireland) applied to the *internal* surface of the face shield via moistened gauze. FRED™ applied to the *external* surface of the face shield via moistened gauze. Resoclear™ (Resorba, Nurnberg, Germany) applied to the *internal* surface of the face shield via the packaged wipe. Resoclear™ applied to the *external* surface of the face shield via the packaged wipe. Results were then statistically analysed.

**Results:** Transpose™ tape as well as FRED™ and Resoclear™ wipes on the *internal* surface of the face shield were successful in preventing FSF. A looser tied bottom tie was successful at preventing loss of vision initially but with extended time resulted in inferior vision. The control group, mask modification and external face shield applications of surfactant all had similarly inferior results than other methods.

**Conclusions:** Viable options in the reduction of FSF include Transpose™ tape applied to the bridge of the nose, FRED™ and Resoclear™ applied to the internal surface of the face shield. Other techniques including mask modification and looser ties are less effective and result in eventual vision loss. Current theory regarding FSF is similar to those applied to lenses and involves fogging of a surface via increased humidity and temperature. In this specialised instance the source is from the oral and nasal cavities.

**YURO: The Young Urology Researchers Organisation – a new initiative birthed from the USANZ ASM**


*Department Of Surgery (Urology), Austin Health, Heidelberg, Australia; †Department Of Surgery, Alfred Health, Melbourne, Australia; ‡Department of Surgery, Eastern Health, Melbourne, Australia; §Department of Surgery, St Vincent’s Health, Melbourne, Australia; ¶Department of Urology, Monash University, Melbourne, Australia; ¶¶Department of Urology, Monash University, Melbourne, Australia; ¶¶¶Department of Urology, Monash University, Melbourne, Australia; ¶¶¶¶Department of Urology, Monash University, Melbourne, Australia.

**Introduction & Objectives:** Scientific academia is critically important for improving patient safety, standardizing medical care and solidifying evidence based best practice. In the continuously evolving area of Urology, academic work is paramount, however findings may be limited to single institution data. Traditionally younger researchers have found it difficult to develop the requisite skills for quality work, with few avenues available for advice and support.

**Methods:** An innovative organization, developed by younger researchers interested in contributing to the wider academic audience was legitimised in 2016 with its first annual assembly at the USANZ ASM. Supported by senior medical staff, but run by its members, the organisation aims to increase the statistical power and influence of research efforts though collaboration and broad access to institutional data at members’ varied locations. This has been achieved via several avenues including the creation of a formal committee, a website, project sheets available to all members online and a formalized email account which answers questions, collates ideas for collaboration projects and ensures members are contemporaneously updated regarding opportunities and subsequent successes.

**Results:** Since its inception several collaboration projects have been published in internationally acclaimed journals including The Journal of Urology, Prostate International and Current Opinion in Urology. YURO has been present at over 5 domestic and international conferences providing regular updates for members who are unable to attend and further increasing their access to the latest scientific developments with ease via social media. Currently, representatives from over 9 clinical sites including rural Victoria and New Zealand are involved with plans to expand into other states.

YURO’s membership base has significantly grown and with the aid of senior members has welcomed multiple medical students who have utilised the organization to begin their first research project with the guidance and support of more experienced researchers.

The organization has made a concerted effort to incorporate social media and technology into its standard practice and is currently followed by an array of international and local stakeholders some of who have significant reputations in academic urology. This has also allowed members to effortlessly increase their ability to network.

**Conclusions:** YURO is a new and innovative organization increasing collaboration between engaged and motivated individuals. It has to date provided a support network for younger researchers to improve overall quality of work, ease of access, and...
Introduction & Objectives: Intravesical Bacillus Calmette-Guérin (BCG) has been used as treatment for non-muscle invasive bladder cancer (NMIBC) since the late 70s. Recently there has been an international shortage of BCG therapy which has affected clinical practice patterns in Australia. We are aiming to review the national trends of BCG therapy in Australia over the past 10 years in light of this shortage.

Methods: Between April 2006 and April 2016, monthly data regarding BCG prescriptions were extracted from the Pharmaceutical Benefits Australia website. The following codes were utilized: Pharmaceutical Benefit Schedule (PBS) codes 1140B (CIS of urinary bladder), 5901N (CIS of urinary bladder), 1131M (Primary urothelial carcinoma of the bladder) and 5902P (Relapsing superficial urothelial carcinoma of the bladder).

Results: Two breakpoints in the number of prescriptions were identified: a sudden, global drop in October/November 2014 and a precipitous fall for the CIS indication in June/July 2012. Thus we defined three intervals within the study period: a) April 2006 to June 2012, b) July 2012 to October 2014 and c) November 2014 to March 2016. There was strong evidence against the hypothesis that the series of prescriptions for primary and relapsing TCC contained a unit root (p < 0.001). That is, they are likely to be stationary series and thus revert to a previous trend or mean following external shocks. There was a lack of evidence that the series for CIS did not contain a unit root (p = 0.12) and hence shocks have a permanent effect on the mean of the series.

Conclusions: The global shortage of BCG intuitively resulted in a reduction of BCG prescriptions from October 2014. Following resumption, BCG was prescribed for primary and relapsing TCC in a manner prescribed prior to the global shortage. While BCG prescriptions for CIS remain low, the precise cause of this is unclear from the current data.
binomial regression for count outcomes and chi-square test for categorical outcomes.

Results: Over the study period, 308 eligible cases (228 males, 80 females) were identified. 196 (64%) patients were referred from the general practice setting. Patients waited a median of 38 days from GP referral to urology consultation and 28 days from urology consultation to cystoscopy. The median time to urology consultation was 65 days for women and 33.5 days for men ($p = 0.015$). However, the observed difference between males and females was no longer statistically significant on multivariable regression and the only independent predictors of a shorter interval were macroscopic haematuria and suspicious imaging findings. No significant differences in recent investigations between genders were observed.

Conclusions: Gender is not a significant predictor of delayed haematuria assessment or receipt of recent investigations. Patients with macroscopic haematuria are more likely to experience prompter review by urology. Younger patients and those not on anticoagulation received fewer recent investigations. More education is required to ensure that all patients, particularly younger ones without an obvious cause for haematuria, are evaluated appropriately.

The incidence of post transrectal ultrasound (TRUS) biopsy infections at a regional Australian tertiary health facility: antibiotic resistance is to blame
S. Smith and K. Lockhart
Townsville Hospital, Douglas, Australia

Introduction & Objectives: Transrectal ultrasound (TRUS) biopsy remains a relatively common technique used in the diagnosis of prostate cancer. It is especially common within regional Australian facilities where operating theatre availability may be limited. Infection remains one of the most common complications post TRUS biopsy. A prophylactic course of antibiotics taken pre and post procedure is used to minimize this risk. With the emergence of multi resistant bacteria, the incidence of post TRUS infections is increasing. Multi-resistant Escherichia coli remains the most common bacteria responsible for TRUS related infections. This study was done to review the incidence of post TRUS infections at an Australian regional tertiary facility and examine the percentage of these infections caused by multidrug resistant bacteria.

Methods: A retrospective analysis was performed including three hundred patients who had undergone a TRUS biopsy at the Townsville Hospital between 2009-2015. Patients charts were reviewed to assess if they had represented to the emergency department post TRUS biopsy with an associated infection. In patients with proven post TRUS infections, pathology was reviewed to determine the infection type (UTI and/or sepsis) as well as the responsible bacteria and any demonstrated antibiotic resistance.

Results: Three hundred patients who underwent TRUS biopsy at the Townsville Hospital were included in the study. Of these, seven patients represented to the emergency department with a post procedure infection (2.3%). Of these, five patients had a confirmed UTI (1.6%) while two had sepsis confirmed by blood cultures (0.7%). Escherichia coli was the most common bacteria responsible for infections (4 out of 7 patients), followed by Enterococcus faecalis (2 out of 7 patients) and Extended spectrum beta lactamase producing bacteria (1 out of 7 patients). All responsible bacteria demonstrated multidrug resistance.

Conclusions: Overall the incidence of infection post TRUS biopsy was seven out of three hundred (2.3%). Escherichia coli was the bacteria most associated with these infections. All bacteria responsible for post TRUS infections demonstrated multidrug resistance. Hence, despite efforts with prophylactic antibiotics, individuals with multidrug resistant bacteria are still at risk of post procedure infection. Given this, one should consider prescribing broad spectrum empirical antibiotics in individuals presenting with post TRUS infections until cultures and sensitivities are available to guide appropriate antibiotic management.

Hospital episode costs: a practical framework in a Victorian public hospital
L. Wang*, W. Ranasinghe*, A. Curtis* and P. McCaugh†
*Eastern Health, Fitzroy, Australia; †School of Public Health and Preventive Medicine, Monash University, Australia; ‡Casey Hospital, Monash Health, Australia

Introduction & Objectives: Multiple models have been applied for cost analysis in the health care sector. Many lack reliability and have little supporting evidence. We have produced a novel costing model and used this to produce costs for cystoscopy, a common minor urological procedure that can be performed either in a day unit or operating theatre.

Methods: We created a ‘bottom-up’ costing model to calculate the cost efficiency of elective cystoscopy (flexible cystoscopy vs. rigid cystoscopy). In the model we included theatre and recovery time, day-case cost, in-patient ward costs, detailed staff cost, building costs, utility costs, equipment costs and case specific costs.

Results: Generic theatre costs were estimated at A$773.63/hour, recovery costs at A$274.27/hour, ward costs at A$405.98/day and day unit costs at A$353.46/session. The majority of the total cost occurred from staffing salaries: 91.69% in theatre, 80.59% in recovery, 88.22% on the ward and 87.01% on the day unit.

Flexible cystoscopy performed in main theatre vs an outpatient procedure results in a doubling of the cost (A$725.57 vs A$340.69) and performing a general anaesthetic cystoscopy is three times the cost (A$1059.52) of a day unit flexible cystoscopy.

Conclusions: The ‘bottom up’ model can be used as a reliable framework for calculating actual costs associated with public hospital procedures accounting for different local infra-structural costs and wage costs to calculate an hourly rate of procedural costs. Using this model, flexible cystoscopy in the outpatient setting is shown to be an economical procedure in comparison to cystoscopy performed in theatre.

Quality evaluation of educational content on YouTube videos regarding vasectomy procedure
A. Wood*, J. Jong*, N. Papa*, M. Perera* and N. Lawrence*†
*Department of Surgery, Austin Health, University Of Melbourne, Melbourne, Australia; †Department of Surgical Oncology, Peter MacCallum Hospital, Melbourne, Australia; ‡Olivia Newton-John Cancer Research Institute, Austin Hospital, Melbourne, Australia

© 2017 The Authors
BJU International © 2017 BJU International | 119, Supplement 2, 4-42

15
Introduction & Objectives: Increasingly medical trainees are using novel ways to educate themselves in conjunction with hands-on teaching. YouTube is one resource used, however does not undergo any peer-reviewing process and so the quality of the content cannot always be assumed to be accurate. We aimed to determine the educational quality of YouTube vasectomy videos as teaching resource for urology trainees.

Methods: YouTube was searched using search terms; “Vasectomy surgical procedure”, “No scalpel vasectomy”, “How to perform a vasectomy”, “Vasectomy for doctors”. The first 10 pages of videos for each search were screened by 2 assessors. We excluded videos that were animations, wrong topics, non-English and duplicates. Included videos were assessed for usefulness by devising a scoring system with a maximum score of 19. To assess content, we created an objective five-point major scoring criteria derived from AUA and EAU guidelines for a vasectomy procedure. Nine minor criteria relating to the aesthetic of the video were also devised. Videos were deemed useful if they met all five major criteria and a total score of 14 or more.

Results: A total of 800 videos were screened, 30 unique videos met the inclusion criteria. The mean score was 13.1 (SD 2.3) and no videos scored full marks. 11 (37%) videos were deemed useful by our criteria, 19 (63%) were not useful. The useful videos had more views per day (64 vs 40), more likes per 100 views (9.8 vs. 8.6) and were longer (10.2 vs. 7.2 minutes) though no difference reached conventional significance (p > 0.05).

Conclusions: YouTube is a vast resource for free online medical education, but only a small number of videos on vasectomy demonstrated an educational quality that would benefit a urology trainee. YouTube should be used as an adjunct educational aid, not a standalone resource.

Reconstructive Urology/Transplant

Renal transplant outcomes: a 5 year retrospective review

A. DAT, H. SAEED, N. SOORIYAKUMARAN, C. ELLIS, S. MENAHEM, G. COX and C. MILNE
Alfred Hospital, Melbourne, Australia

Introduction & Objectives: Surgical factors including the timing of surgery and ischaemic time have been noted to influence renal transplantation. Surgical expertise is increasingly seen as an important factor due to advanced immunosuppressive regimens decreasing non-surgery graft losses and poor availability of donor kidneys. Recent emphasis on systems-based approaches to patient safety has led to several studies demonstrating worse outcomes associated with surgery at night. Contributing factors to explain such outcomes include provider fatigue and lack of full available resources. The aim of this study was to determine whether renal transplant graft outcomes are influenced by surgical timing, donor organ features and ischaemic time at a large metropolitan hospital in Melbourne.

Methods: A retrospective chart review of all cadaveric renal transplants at the Alfred Hospital, Melbourne was conducted between 2010 and 2015. Living donor transplants and combined renal / heart or renal / lung transplants were excluded. The primary outcomes were short term complications (within 30 days), long term complications (30 days to 1 year) and overall graft survival. Surgical factors analysed included patient demographics, donor kidney characteristics (number of arteries and veins, side of kidney, need for additional repair), cold ischaemic time, duration of surgery and timing of surgery (afterhours or inhours). Data was analysed on SPSS Version 22.

Results: There were 101 cadaveric renal transplants at the Alfred between 2010 and 2015. The median cold ischaemic time was 12 hours. Median anastomosis time was 1 hour. 65% of patients were operated on afterhours (defined as between 7 pm to 6am). The median length of stay was 8 days. 26% of patients had a long term surgical complication with the majority of these between ureteric strictures, lymphocele and rejection. Afterhours operating was associated with a higher risk of long term complications (OR 4.092, 95%CI 1.283 to 13.045, p-value 0.02). There was no statistically significant association between cold ischaemic time and complication rate.

Conclusions: Afterhours operating is associated with long term surgical complications. Delaying transplantation until the daytime may be worthwhile at the expense of increasing cold ischaemic time.

Is confirmation of distal JJ stent placement in laparoscopic pyeloplasty necessary?

D. HENNESSEY*, R.M. EVANS*, N. KINNEAR†, C. HAGAN*, N.R. THIAGARAJAN* and A. THWAINE†
*Department of Urology, Belfast City Hospital, Belfast, UK; †Department of Urology, Austin Hospital, Heidelberg, Australia; ‡Wirral University Teaching Hospital NHS Foundation Trust, Liverpool, UK

Introduction & Objectives: Placement of an antegrade double J (JJ) ureteric stent is an integral part of pyeloplasty. Correct placement of distal stent in the bladder is essential for ease of removal. We examined two different methods for confirming JJ stent position.

Methods: An analysis was performed of all laparoscopic pyeloplasty procedures with antegrade JJ stent placement at our institution between 2007 to 2015 inclusive. Intra-operative stent position verification by flexible cystoscopy or artificial bladder filling was compared to no confirmation.

Results: 75 patients underwent pyeloplasty. Correct position of the distal stent was not confirmed in 29 (38.7%) of patients. Conversely, 46 (61.3%) patients had the stent position confirmed. This was by cystoscopy in 27 (36.0%) and by artificial bladder filling in 19 (25.3%). When ‘best judgement’ was used 1 patient (3.4%) of patients had a malpositioned JJ stent. Cystoscopy found 100% of malpositioned JJ stents. Amongst those who underwent artificial bladder filling, vesico-ureteric reflux was confirmed intra-operatively in 18 (94.5%). In the single patient where reflux was absent, the JJ stent was repositioned until reflux was observed. Additionally, one (5.3%) patient who underwent artificial bladder filling had intra-ureteric stent malposition identified at the time of stent removal.

Conclusions: Malposition of JJ ureteric stent is uncommon, and omitting intra-operative position verification appears reasonable in select cases. If confirmation is required, cystoscopy detects 100% of malpositioned JJ stents. Alternatively, artificial bladder filling can help in detecting malpositioned JJ stents without repositioning the patient for cystoscopy.
Introduction & Objectives: Urethral stricture disease is the narrowing of the urethra due to fibrosis. It poses a significant impact on the economy. Urethral strictures cause obstructive symptoms ad can be caused by a variety of aetiologies. The management of urethral strictures is a challenge. The treatment options available have high failure rates and many post operative complications. Our objectives were to determine the success and complication rates of BMG urethroplasties at Rockingham General Hospital.

Methods: 17 patients who underwent single stage, ventral onlay BMG urethroplasty performed by one surgeon between 2013 and 2016 at Rockingham General Hospital (RGH), Western Australia were prospectively analysed. 13 patients had primary BMG urethroplasties, while 4 had redo BMG urethroplasties. All patients had previous failed dilatations. These patients had follow-up flexible cystoscopies at 3 months and 12 months post-surgery. Analysis included age, length of stricture, procedure time, post-op admission duration, complication and recurrence rates over the follow-up period of 12 months.

Results: Mean age was 52 years. Mean stricture length was 2.62 cm. Mean procedure time was 136.7 min. 100% of the patients attended the 3-month follow-up while only 52.9% attended the 12-month follow-up. Success rates were 88.2% being recurrence free at 3-month follow-up cystoscopy while 88.9% were recurrence free at the 12-month period. Stricture recurrence was noted in 11.8% of patients at the 3-month follow-up while 11.1% were noted to have stricture recurrence at the 12-month follow-up. 24% had early complications (within 3 months) while none had ongoing complication at the 12-month follow-up.

Conclusions: BMG urethroplasty is a safe procedure with good outcomes. Our success rates of 88.9% are comparable to success rates achieved in other studies. Minor early complications were noted in 24% of the patients while none had ongoing issues with complications 1 year post-op.

Uro-Oncology / Robotics

Impact of body mass index on robotic radical cystectomy with intra-corporeal urinary diversion

N. Ahmad
USC Institute of Urology, Los Angeles, USA

Introduction & Objectives: Major surgery in the obese is associated with inferior oncological outcomes and greater peri-operative risks, such as higher operative time, blood loss and complications. We determined the impact of body mass index (BMI) on peri-operative and oncological outcomes in patients undergoing robotic radical cystectomy (RRC) with intra-corporeal urinary diversion.

Methods: A total of 216 patients undergoing RRC with extended lymphadenectomy (07/2010-12/2015) were categorized into four BMI groups according to the 2004 World Health Organization (WHO) classification of obesity: <25 kg/m² (normal), 25–29.9 kg/m² (pre-obese), 30–34.9 kg/m² (obese class I), ≥35 kg/m² (obese class II). Pre-, intra- and post-operative parameters, oncological outcomes, and 90-day complications were compared using SAS statistical software. Log-rank tests were performed for recurrence free survival (RFS) and overall survival (OS).

Results: Of the 216 patients, 68 (32%) underwent orthotopic neobladder and all patients underwent intra-corporeal diversion. Demographics were similar between all four BMI groups with regards to median age (71.8; 35–95); gender (80.6% male); CCI (66.2% 0–1); pathological stage (Cis-T2: 119 (55.1%), T3-T4/N0: 40 (18.5%), Tx/N+: 57 (26.4%)); median node count: 41 (IQR: 28, 53); and positive soft tissue margin rate: 9 (4.2%). There were no significant differences in pathological stage, lymphovascular invasion and positive soft tissue positive margin. Older groups had lower lymph node count (p < 0.01), were less likely to receive neoadjuvant chemotherapy (p = 0.01) or have orthotopic neobladder for urinary diversion (p < 0.01). Elderly had shorter operative time (P < 0.1) but longer length of stay (p = 0.04). There were no differences in operative blood loss, transfusion rate, readmission or complication rates (high or low grade). At median follow-up of 13 months (Range 15 days- 4.8 years), recurrence-free survival (p = 0.46) and overall survival (p = 0.08) were similar between the age groups.

Conclusions: RRC with intracorporeal diversion is safe and feasible in the elderly. Postoperative readmission and 90-day
complication rates remain similar. Despite lower rates of neoadjuvant chemotherapy and lymph node count, the oncological outcomes remain similar in the elderly.

Oncological outcomes of concomitant carcinoma in situ of bladder in radical cystectomy patients who underwent neoadjuvant chemotherapy

N. AHMADI, T. CUFFORD, C. HUGEN, S. BAZARGAN, S. DANESHMAND and H. DJALADAT
USC Institute of Urology, Los Angeles, USA

Introduction & Objectives: The prognostic value of concomitant carcinoma in situ (CIS) in radical cystectomy (RC) cohorts for both muscle invasive bladder cancer (MIBC) and non–MIBC has been extensively studied. However its oncological impact remains poorly determined in the neoadjuvant chemotherapy (NACHT) era. Herein we examine the survival outcomes of RC patients post NACHT who had concomitant CIS in their final pathology.

Methods: We reviewed our prospectively collected database, identifying 182 patients who underwent RC following NACHT from 1985 – 2011. Final pathology was reviewed for presence of concomitant CIS. Multivariate analysis, log rank tests and Kaplan-Meier curves were generated using statistical software SAS. Recurrence free survival (RFS) and overall survival (OS) were compared in MIBC and non–MIBC groups based on presence or absence of CIS.

Results: Of the 182 patients, 105 (57.7%) had concomitant CIS on final pathology. Median age was 65 (IQR: 57,73) years and the median follow up was 9.3 years. The pathological staging distribution showed, 87 (47.8%) T0–2N0, 50 (27.5%) T3–4N0, 50 (24.7%) T4N+. The NACHT regimen included: 56(31%) MVAC, 63(35%) Gemcitabine/Cisplatin, and 63(35%) had other forms of chemotherapy. There were no significant differences based on sex, race, comorbidities or stage. Higher tumor grade (p < 0.001), lymphovascular invasion (p = 0.047) and multifocality of tumors (p < 0.001) were associated with significantly higher rates of concomitant CIS. Presence of CIS had no significant effect on RFS or OS in MIBC (p = 0.73, p = 0.45) or non–MIBC (p = 0.32, 0.45) using Log–Rank tests.

Conclusions: Higher grade, lymphovascular invasion and multifocality of primary tumor are associated with higher risk of concomitant CIS at radical cystectomy after neoadjuvant chemotherapy; however it does not influence oncologic outcomes.

Management of high risk non-muscle invasive bladder cancer: is re-resection always essential?

H. BANGASH*, M. LOZINSKIY* and D. HAYNE†
Fiona Stanley Hospital, Murdoch, Australia;†Rockingham General Hospital, Rockingham, Australia;§School of Surgery, The University of Western Australia, Crawley, Australia

Introduction & Objectives: Several international guidelines recommend repeat transurethral resection of bladder tumour (TURBT) for patients diagnosed with high risk non-muscle invasive bladder cancer (Ta and T1 high grade tumours). These recommendations are based on the risk of under staging bladder tumour (BT) on the initial TURBT. However despite re-resection offering a potential for more accurate staging of disease, repeat procedures do expose patients to risk of peri-operative morbidity and complications as well as place additional costs on the health care system. Since its inception in 2008 at Fremantle hospital and its subsequent transition to Fiona Stanley hospital in 2015, there have been over 2000 patients reviewed in the one stop haematuria clinic (OSHC). We retrospectively reviewed patients diagnosed with high risk NMIBC in the OSHC between 2009 to June 2015. Our primary aim was to review the histopathology results from re-resection of patients who were initially diagnosed with high risk NMIBC to evaluate for early recurrence or residual disease. The secondary aim was to compare the post induction and maintenance Bacillus Calmette–Guérin (BCG) therapy outcomes for patients who underwent re-resection to those who did not undergo re-resection.

Methods: A retrospective review of all patients diagnosed with high risk NMIBC in the OSHC was performed between Jan 2009 to June 2015 using prospectively collected data from the OSHC database. Patients’ case records were interrogated to identify their demographic details, the stage and grade of tumour on the initial TURBT and whether re resection was performed. For those patients that proceeded to having a course of BCG therapy their histopathology results from post induction and maintenance BCG treatment were also recorded.

Where possible reasons for not performing re-resection were recorded. Patient who did not complete course of maintenance BCG were excluded from comparative analysis.

Results: A total of 178 patients were diagnosed with Bladder cancer of which 57 patients, 50 (87.7%) male and 7 (13.3%) female, had high risk NMIBC between the periods of 2009 to 2015. 21 patients had Ta high grade bladder cancer of which 10 (47.6%) patients underwent re-resection with no upstaging of disease found. 2 out of these 10 patients however did have residual/recurrent bladder tumour. 36 patients had T1 high grade bladder tumour of which 25 (69.4%) patients underwent re-resection with no upstaging of disease. 12 out of the 25 patients did however have residual/recurrent disease at the time of their re-resection.

33 out of the 36 patients with T1 high grade disease proceeded to BCG therapy. 1 patient had Ta high grade disease post completion of BCG therapy. All high risk NMIBC patients that did not undergo re-resection and completed BCG treatment did not have any evidence of recurrence on their bladder biopsy following completion of BCG therapy.

Conclusions: In our series, patients who underwent re-resection TURBT for high grade NMIBC did not have any upstaging of disease. There was no difference in rates of recurrence of BT in patients who underwent re-resection when compared to those who did not undergo re-resection following a complete course of BCG therapy.

Cribiform pattern prostate cancer predicts for PSMA visible nodal metastatic disease

D. BOLTON*, N. LAWRENTSCHUK†, D. CHRISTIDES*, D. CLOUSTON†, T. MANNING*, M. PERERA* and N. PAPA*
†University of Melbourne Austin Health, Heidelberg, Australia; †Tissupath, Mt Waverley, Australia

Introduction & Objectives: GA68 PSMA PET is a novel technology utilized in the imaging of prostate cancer. This study is of particular interest in regard to its ability to potentially image nodal and distant metastatic disease in the setting of biochemical failure after radical prostatectomy. It is well recognized however that not all patients with detectable PSA readings after radical prostatectomy will have lesions visible on GA68 PSMA
PET. We sought to identify the histologic features common to those metastatic deposits visible on PSMA PET scanning.

**Methods:** We conducted a review of a prospectively collected database of the cases of three urologists who had undertaken cases of extended pelvic lymph node dissection in order to excise GA68 PSMA PET avid lesions noted on scanning. In each instance imaging had been performed in order to potentially identify metastatic deposits in the setting of a rising PSA level after earlier radical prostatectomy. 10 patients were identified (mean age 62 years range 55–76 years). Histologic specimens taken at surgery were reviewed by a single uropathologist.

**Results:** Metastatic adenocarcinoma was identified in 9 of 10 specimens taken at extended pelvic lymph node dissection, where the surgical template was based upon the results of the GA68 PSMA PET scan. In all 9 of these patients with metastatic disease there was evidence of metastatic cribriform growth type prostatic adenocarcinoma, often associated with ductal adenocarcinoma (noted in 7 of 9 patients with metastatic disease).

**Conclusions:** Although not all patients with biochemical failure after radical prostatectomy will have lesions visible on GA68 PSMA PET scans, when this study does show evidence of pelvic lymph nodal disease this is likely to correlate with the presence of metastatic cribriform growth type prostatic adenocarcinoma and often also with ductal adenocarcinoma of the prostate in these areas. Consideration should be given to treatment by surgical, radiation or androgen deprivation therapies in this instance.

**Assessment with multiparametric MRI prior to transperineal biopsy: a consecutive single surgeon series**

D. CHRISTIDIS*, T. MANNING*, D. BOLTON† and S. SENGUPTA†

*Austin Health, Heidelberg, Australia; †YURO, Melbourne, Australia; ‡Olivia Newton-John Cancer Research Centre, Heidelberg, Australia

**Introduction & Objectives:** The re-introduction of multiparametric MRI (mpMRI) into the care process of men with prostate cancer has led to the need for the definition of its utility and limitations in clinical practice. The variation in uptake of this modality between clinicians has created various patient cohorts. We present a consecutive series of patients who underwent mpMRI of the prostate prior to trans-perineal biopsy.

**Methods:** Consecutive patients reviewed in the outpatient setting were reviewed with MRI prior to prostate biopsy. All biopsies were by the transperineal approach. All procedures involved grid directed biopsies according to Victorian Transperineal Biopsy Collaboration template. Patients who were reported to have an index lesion on mpMRI also underwent MRI fusion targeted biopsies of the abnormality. Histopathology was reviewed and analyzed for longest core length involving cancer, highest Gleason grade cancer location and in cases of targeted biopsy, whether this site matched either of these two criteria. Biopsy results were also analyzed for average number of cores and for correlation between PIRADS grade and cancer presence.

**Results:** 44 consecutive patients met inclusion criteria. 21 patients had an index lesion on mpMRI that were targeted on biopsy. Of these, less than 50% of patients displayed the target site as the largest core of prostate cancer, but more than 75% of target lesions biopsied were revealed as the location for the highest Gleason grade pathology. 2 patients that underwent targeted biopsy did not reveal cancer in any sites. Of the patients that underwent standard template biopsies, prostate cancer (Gleason 6) was revealed in 50% of patients with only one patient displaying higher-grade carcinoma (Gleason 4 + 3). Average numbers of cores taken were 25 and 24 for template and targeted biopsies respectively.

**Conclusions:** mpMRI has displayed its value in the identification of suspicious lesions of the prostate and can help to guide biopsy to increase diagnostic yield, however, mpMRI is not sufficient to rule out all areas of clinically significant prostate cancer. Targeted biopsies of MRI index lesions alone would fail to reveal prostate cancer in other areas of the prostate and would not have been sufficient for adequate clinical decision-making in our cohort.
Australian Public Teaching Hospital. As experience in RALP increases, operating efficiency and oncological outcomes improve with comparable results to those in the international literature. RALP in this setting also allows registrar exposure and skill development without compromising efficiency or oncological outcomes. Further analysis will focus on complications and functional outcomes following RALP in an Australian Public Teaching Hospital.

The outcome of a peer reviewed open radical prostatectomy audit

S. ENGLISH
Christchurch Public Hospital, Christchurch, New Zealand

Introduction & Objectives: Surgical audit and peer review are an important requirement for maintaining clinical standards. An audit allows for a critical review of a surgeon’s performance and helps maintain professional standards. The audit cycle is completed with the results are reviewed and feedback is offered to redress any identified problems. An audit of open radical prostatectomy surgery was chosen as it was a relatively complex surgery being performed by half the consultants within the department.

Methods: We prospectively collected data from radical prostatectomies performed by four consultants in a large teaching hospital between January 2010 and February 2015. The results were presented at an audit meeting after three years. Techniques were discussed and peer teaching undertaken including observing other surgeons operating. The audit has continued for a further three years. The outcome measures presented in this paper are length of operation, blood loss and pad usage at one year. Results were analysed using the Fisher’s exact test.

Results: 428 men underwent radical prostatectomy at Christchurch Public Hospital during this time. Age ranged from 41–76 year with a median of 65 years. 351 (82%) completed the pad usage surveys at one year. The trainee performed some or all of the surgery in 27% of the patients and 73% (257 patients) were performed completely by the consultants. Median operating time was 105 minutes (range 42–257 patients) were performed completely by the consultants. Median operating time was 105 minutes (range 42–184 mins).

Median blood loss was 500mls (range 100–3000mls). During the first three years of data collection 128 men had surgery and 62.5% wore no pads at one year. After audit review 129 men underwent surgery and 71% wore no pads at one year (p = 0.1461). When looking at individual surgeons there was a large variability in continence rate with one consultant’s results showing only 35% wearing no pads and 12% needing 3 or more pads. However after review these figures improved to 64% and 0% respectively.

Conclusions: This study has shown the value of a peer reviewed audit within a urology department. Though the results did not show a statistical significance there was a clinical benefit in outcome to the patients.

Increased infection rates following new antibiotic recommendations for TRUS guided biopsy of the prostate

M. FARAG, S. RIDDELL and L.-M. WONG
St Vincent’s Hospital Melbourne, Melbourne, Australia

Introduction & Objectives: To examine the incidence of infective complications post transrectal ultrasound guided prostate biopsy (TRUSPB), after transition to pre-operative administration of single dose oral fluoroquinolone (750 mg Ciprofloxacin).

Methods: A retrospective study of patients undergoing TRUS guided biopsy at St Vincent’s Hospital Melbourne (2002–2016) was performed. In total 766 patients had TRUSPB; antibiotic prophylaxis between 2002–2014 consisted of 3 days of peri-operative oral fluoroquinolone and intravenous 3rd generation cephalosporin or gentamicin (Group A). From November 2014 patients routinely received only a single dose of oral ciprofloxacin pre-biopsy, as per the current AUA (American Urological Association) recommendation (Group B). Patients were followed up for all post-operative complications requiring treatment and/or readmission.

Results: In Group A, 10 of the 688 patients (1.5%) were readmitted with a
Post-operative infection. In Group B, 4 of 78 patients (5.1%) required readmission with post-operative infection. The difference between groups was statistically significant (1.5% versus 5.1%, p = 0.045). Of Group B, 3 patients (3.85%) required treatment of blood sepsis with Escherichia coli, of which two were ciprofloxacin sensitive strains. The 4 infectious re-admissions in Group B were patients with no additional identifiable risk factors.

Conclusions: Our study suggests antibiotic prophylaxis using single dose Ciprofloxacin at a regional centre in NSW: a 14 year review.

Outcomes of radical cystectomy at a regional centre in NSW: a 14 year review
R. GENDY*, H. NICHOLSON† and N. AWAD*‡
*Port Macquarie Base Hospital, Port Macquarie, Australia; †University of New South Wales, Port Macquarie, Australia; ‡Concord Repatriation Hospital, Concord, Sydney, Australia

Introduction & Objectives: Radical cystectomy with urinary diversion is the definitive surgical treatment for muscle-invasive and high-risk non-muscle-invasive bladder cancer that is refractory to BCG. It carries significant short-term perioperative risks of morbidity and mortality, however, provides these patients with the best chance of cure from their disease. In this study, we review the short term perioperative outcomes and the pathological and oncological outcomes of radical cystectomy performed at a regional centre.

Methods: We retrospectively reviewed the records of all patients undergoing radical cystectomy for definitive treatment of primary carcinoma of the bladder between 2002 and 2016 at a regional centre in NSW.

Results: A total of 80 patients underwent radical cystectomy and urinary diversion during the study period. Seventy-four patients underwent radical cystectomy as definitive treatment for bladder cancer. Excluded from the analysis were 2 salvage cystectomies, 3 palliative cystectomies to relieve symptoms related to bladder cancer and 1 performed for debilitating dysfunction. Voiding post radical retropubic prostatectomy. Eight partial cystectomies were performed and excluded from the analysis. The mean age was 66 years. Eighty-four percent were male and 16% were female. Fifty-eight patients (78.4%) had an ileal conduit diversion, 15 (20.2%) patients neobladder and 1 patient jejunal diversion. Following cystectomy, 8% of patients had pT0, 13% pTis, 15% pT1, 24% pT2, 24% pT3 and 15% pT4 tumours. The mean number of lymph nodes removed was 22. Mean number of lymph nodes positive for tumour was 0.8. Thirteen (17.6%) received neoadjuvant chemotherapy. Median length of hospital stay was 12 days (range 6–66 days). Four patients died within 30 days of surgery. Median follow up was 38 months (0–150). Recurrence-free and overall survival Kaplan-Meier curves will be presented.

Conclusions: In experienced hands at a regional centre in NSW, the outcomes of radical cystectomy are comparable to those previously described in the international literature. The importance of establishing a state and/or national bladder cancer database to continue to monitor outcomes is emphasised.

A rapid access testicular cancer service at a teaching tertiary hospital
M. GILFILLAN*, V. MODGIL*, K. MCDERMOTT*, P. VISWAMBARAM*, I. THYER† and D. HAYNE*‡
*Fiona Stanley Hospital, Murdoch, Australia; †University of Western Australia, Nedlands, Australia; ‡Concord Repatriation Hospital, Concord, Sydney, Australia

Introduction & Objectives: Testicular cancer demands the most expeditious treatment of all urological cancers due to its high mitotic rate and rapid stage progression. Increasing demands on the public outpatient clinic and operative wait list can make expeditious treatment logistically challenging. Guidelines advocate prompt clinical examination, radiological staging, tumour markers, counselling and where appropriate sperm banking, and timely radical orchidectomy. All patients referred to our centre with a suspected testicular cancer are managed through a Rapid Access Testicular Cancer Service model including judicious use of the emergency operating list.

Methods: A retrospective analysis of all patients presenting with a suspected testicular cancer to a tertiary referral hospital over an 18 month period was completed. Data on patient demographics, source of referral, time to urological assessment, diagnosis, staging investigations, definitive surgery, and MDT discussion were collected.

Results: There were 35 patients included in the study of median age 32 years (range 18–83 years). Of patients with a clinically suspicious testicular mass GP’s referred 23 patients (65.7%) with the others being referred by the emergency department and other medical specialties. All these patients had been imaged prior to referral to our service. 62.8% (22/35) had orchidectomy on the emergency surgical list. The median time from referral to urological hospital consultation was 4 days. Median time from referral to radical orchidectomy was 8 days (range 2–67 days). All patients were staged using CT and serum tumour markers. 1 patient had a PET scan prior to orchidectomy due to abnormal findings on CT. Sperm banking was discussed and offered to 68.5% of patients. It was not offered due to age/previous sperm banking in 5 patients and in 6 cases discussion of sperm banking was not documented. All patients were discussed at the Uro-oncological MDT following their surgery to determine follow up schedule and adjuvant treatment.

Conclusions: Testis cancer can be successfully managed using a flexible rapid access model utilising the emergency operating list. Adopting such a model allows all testis cancer patients to be appropriately counselled, staged and treated in a timely manner.

Robotic MRI-ultrasound fusion transperineal biopsy using the iSR’obot Mona Lisa: technique, safety and accuracy
J. GRUMMET†*, A. RYAN‡ and R. O’SULLIVAN
†Australian Urology Associates, Malvern, Australia; ‡Epworth Healthcare, Richmond, Australia; §Monash University, Clayton, Australia; ¶Tissupath, Mount Waverley, Australia; ‡Healthcare Imaging, Richmond, Australia

Introduction & Objectives: Transperineal biopsy continues to gain acceptance as a preferred approach to prostate biopsy. As more multiparametric MRI is performed pre-biopsy, MRI-ultrasound (US) fusion platforms are being explored in the transperineal setting. This study aimed to assess the initial Australian experience using a novel robotic device – the iSR’obot Mona Lisa – to perform MRI-US fusion transperineal biopsy.

Methods: Institutional ethics committee approval was obtained for a prospective...
In line with other series, taking both many significant signs safely and with high accuracy.

Conclusions: These results reflect a change in clinical attitude to an increase in active surveillance for low grade low volume Prostate cancer, and a more aggressive approach to high grade high volume cancer. They may also reflect a reduction in and delay of PSA testing resulting in more high grade high stage disease at presentation. The results may also indicate an increase in biological aggressiveness of Prostate Cancer as the PSA has not changed, but there has been an increase in Gleason score, pT3 disease and total tumour volume.

The one stop prostate clinic notification of prostate biopsy results by telephone call – a survey of attitudes and preferences

Introduction & Objectives: The One Stop Prostate Clinic (OSPC) is a rapid access prostate cancer assessment and diagnostic service. A unique feature is a phone call from the Clinical Nurse (CN) advising men of their biopsy results. We report the results of the first 50 respondents to a survey assessing attitudes and preferences of men who are notified of their biopsy results in this manner.

Methods: This prospective study was developed following a peer review process by the Australian & New Zealand Urological and Prostate Cancer Trials Group, Sydney, Australia; *School of Psychology, University of Sydney, Sydney, Australia; †Psycho-oncology Co-operative Research Group, Sydney, Australia; §School of Surgery, University of Western Australia, Nedlands, Australia; ¶West Australian Urologic Research Organisation, Nedlands, Australia

Results: Median age of the 50 respondents was 65 (50-87), 19 (38%) were from rural/
remote Western Australia and 31 (62%) from Perth. 30 of the cancer respondents received a new diagnosis and 3 were on Active Surveillance.

- Survey response rate - 50%
- Acceptance rate for telephonic notification - 100%
- Satisfaction with the OSPC - 96%

**Conclusions:** Overall satisfaction levels with the OSPC were extremely high and only 2 men (both with cancer) with hindsight would choose not to receive notification of biopsy results via a phone call. Perceived advantages of prompt notification of diagnosis and awareness of follow up arrangements were highly rated.

<table>
<thead>
<tr>
<th>Tranche Years</th>
<th>No.</th>
<th>Median Age</th>
<th>Median PSA</th>
<th>Clinical D’Amico</th>
<th>Path</th>
<th>Grade</th>
<th>Median Total Tumour Vol.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overall</td>
<td>2005–2016</td>
<td>795</td>
<td>62</td>
<td>5.80</td>
<td>Low</td>
<td>28.3%</td>
<td>pT2</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Inter</td>
<td>55.7%</td>
<td>pT3</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>High</td>
<td>16.0%</td>
<td>pT2</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>pT3</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1–100</td>
<td>2005–2007</td>
<td>100</td>
<td>61</td>
<td>5.80</td>
<td>Low</td>
<td>49.0%</td>
<td>pT2</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Inter</td>
<td>45.0%</td>
<td>pT3</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>High</td>
<td>6.0%</td>
<td>pT2</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>pT3</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>101–200</td>
<td>2007–2008</td>
<td>100</td>
<td>61</td>
<td>6.30</td>
<td>Low</td>
<td>41.0%</td>
<td>pT2</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Inter</td>
<td>43.0%</td>
<td>pT3</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>High</td>
<td>16.0%</td>
<td>pT2</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>pT3</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>201–300</td>
<td>2008–2009</td>
<td>100</td>
<td>61.5</td>
<td>5.55</td>
<td>Low</td>
<td>39.0%</td>
<td>pT2</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Inter</td>
<td>44.0%</td>
<td>pT3</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>High</td>
<td>17.0%</td>
<td>pT2</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>pT3</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>301–400</td>
<td>2009–2010</td>
<td>100</td>
<td>61</td>
<td>5.45</td>
<td>Low</td>
<td>32.0%</td>
<td>pT2</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Inter</td>
<td>58.0%</td>
<td>pT3</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>High</td>
<td>10.0%</td>
<td>pT2</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>pT3</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>401–500</td>
<td>2010–2011</td>
<td>100</td>
<td>60</td>
<td>5.15</td>
<td>Low</td>
<td>32.0%</td>
<td>pT2</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Inter</td>
<td>45.0%</td>
<td>pT3</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>High</td>
<td>23.0%</td>
<td>pT2</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>pT3</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>501–600</td>
<td>2011–2013</td>
<td>100</td>
<td>61</td>
<td>6.10</td>
<td>Low</td>
<td>20.0%</td>
<td>pT2</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Inter</td>
<td>60.0%</td>
<td>pT3</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>High</td>
<td>20.0%</td>
<td>pT2</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>pT3</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>601–700</td>
<td>2013–2014</td>
<td>100</td>
<td>64</td>
<td>6.10</td>
<td>Low</td>
<td>7.0%</td>
<td>pT2</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Inter</td>
<td>73.0%</td>
<td>pT3</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>High</td>
<td>20.0%</td>
<td>pT2</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>pT3</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>701–795</td>
<td>2014–2016</td>
<td>95</td>
<td>65</td>
<td>6.00</td>
<td>Low</td>
<td>5.3%</td>
<td>pT2</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Inter</td>
<td>78.9%</td>
<td>pT3</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>High</td>
<td>15.8%</td>
<td>pT2</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>pT3</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Receiving a cancer diagnosis prior to follow-up appointment may allow for improved dialogue and understanding of treatment options in the specialist consultation.

Localised very high risk prostate cancer
R. HOFFMANN, A. KAHOKEHR, M. O’CALLAGHAN and D. FOREMAN
Repatriation General Hospital, Daw Park, Australia

Introduction & Objectives: Recent evidence in prostate cancer behaviour points to a distinct subset of localised very high risk (LVHR) disease sub-stratification. It is estimated that approximately 15–30% of men within the high risk (HR) prostate cancer category meet the requirements for classification of LVHR prostate cancer. The unexplained heterogenous outcomes seen in men classified as having HR prostate cancer in Australia may be explained by LVHR prostate cancer patients experiencing poorer outcomes than men with high risk prostate cancer. We aimed to identify a group of high risk prostate cancer patients and compare three published strata systems for the prediction of survival and recurrence in men with LVHR cancer in the South Australian population.

Methods: Men were identified from the South Australian Prostate Cancer Clinical Outcomes Collaborative (SA-PCCOC) database who were diagnosed after 1st of January 1998 with prostate cancer and had undergone radical prostatectomy. Men were initially classified as low, medium, or high risk based on the D’Amico classification. Men were classified as very high risk if they met the criteria established by the three published strata (NCCN, Jo et al, Joniau et al) systems. Men were excluded if they had metastatic disease at diagnosis.

Results: A total of 3969 men were identified from the database who had undergone radical prostatectomy. Of those with sufficient data, after applying the D’Amico classification, 66 (2.7%) of men were low risk patients, 1825 (75.3%) of men were intermediate risk, and 533 (22.0%) of men were high risk. The database currently does not capture the number of cores with Gleason 8–10. After applying Jo et al’s criteria, 137 patients (5.7%) met the “unfavourable” criteria, and Joniau et al had 359 (14.8%) of men fulfilling the “poor” criteria. Time to biochemical recurrence (BCR) was significantly different between the three D’Amico groups. The application of additional stratification as proposed by Jo et al and Joniau et al showed better discrimination between the LVHR groups, particularly when assessing for BCR. See Table 1.

Conclusions: We found that South Australian men diagnosed with prostate cancer classified as high risk, further sub-stratification provided more accurate estimates of survival and recurrence. Predictions appeared to be most accurate for biochemical recurrence and using stratification criteria described by Jo et al.

Table 1

<table>
<thead>
<tr>
<th>Snapshot of Key Survey Responses</th>
<th>Cancer n = 33 (66%)</th>
<th>Benign n = 17 (34%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>OSPEC satisfaction levels: 5 point Likert Scale</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Very satisfied</td>
<td>18 (36%)</td>
<td>16 (32%)</td>
</tr>
<tr>
<td>Satisfied</td>
<td>12 (24%)</td>
<td>2 (4%)</td>
</tr>
<tr>
<td>Neither satisfied or dissatisfied</td>
<td>1 (2%)</td>
<td>-</td>
</tr>
<tr>
<td>Dissatisfied</td>
<td>1 (2%)</td>
<td>-</td>
</tr>
<tr>
<td>Very dissatisfied</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Choose to receive prostate biopsy results via phone call again:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>28 (56%)</td>
<td>18 (36%)</td>
</tr>
<tr>
<td>No</td>
<td>3 (6%)</td>
<td>-</td>
</tr>
<tr>
<td>Unsure</td>
<td>1 (2%)</td>
<td>-</td>
</tr>
<tr>
<td>Perceived advantages of phone call:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Aware of biopsy results promptly</td>
<td>30</td>
<td>17</td>
</tr>
<tr>
<td>Aware of follow up arrangements</td>
<td>29</td>
<td>12</td>
</tr>
<tr>
<td>Aware of resources about prostate cancer</td>
<td>23</td>
<td>3</td>
</tr>
<tr>
<td>Aware of diagnosis prior to specialist appt. improved discussion</td>
<td>21</td>
<td>-</td>
</tr>
<tr>
<td>Perceived disadvantages of phone call:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Receiving news of a cancer diagnosis by telephone call by a nurse</td>
<td>5</td>
<td>-</td>
</tr>
<tr>
<td>Lack of detailed information led to anxiety/uncertainty</td>
<td>6</td>
<td>1</td>
</tr>
<tr>
<td>Difficulty relating information about prostate cancer</td>
<td>3</td>
<td>-</td>
</tr>
</tbody>
</table>

Analysis of timing to cystectomy: a single institution experience
C. JP, P. TAN and L.-M. WONG
St. Vincent’s Hospital Melbourne, Fitzroy, Australia

Introduction & Objectives: To analyse the cystectomy experience at St. Vincent’s Hospital Melbourne and to identify potential factors for delay from diagnosis to cystectomy.

Methods: A retrospective analysis of all cystectomies performed in a 6-year period between January 2010 to August 2016 at St. Vincent’s Hospital Melbourne. Demographic data, Referral base (Metropolitan vs. Regional/Rural), Charlson Index, Interval time from last transurethral resection of bladder tumour (TURBT) to cystectomy, neoadjuvant chemotherapy (NAC),

Table 1

<table>
<thead>
<tr>
<th>C Index</th>
<th>Standard Error of C Index</th>
</tr>
</thead>
<tbody>
<tr>
<td>D’Amico Survival</td>
<td>0.569</td>
</tr>
<tr>
<td>D’Amico BCR</td>
<td>0.587</td>
</tr>
<tr>
<td>Jo et al Survival</td>
<td>0.576</td>
</tr>
<tr>
<td>Jo et al BCR</td>
<td>0.593</td>
</tr>
<tr>
<td>Joniau et al Survival</td>
<td>0.569</td>
</tr>
<tr>
<td>Joniau et al BCR</td>
<td>0.591</td>
</tr>
</tbody>
</table>
Table 1 Patient demographics

<table>
<thead>
<tr>
<th>Total number</th>
<th>Males</th>
<th>Females</th>
<th>Rural (Warnamebool, Wonthaggi, Shepparton, Gippsland)</th>
<th>Metro (SVHM, PMCC, Private Rooms)</th>
</tr>
</thead>
<tbody>
<tr>
<td>42</td>
<td>34</td>
<td>8</td>
<td>18 (42.86%)</td>
<td>24 (57.14%)</td>
</tr>
<tr>
<td>Age Range</td>
<td>33–89</td>
<td></td>
<td>24</td>
<td></td>
</tr>
<tr>
<td>Charlson Index ≥ 6</td>
<td></td>
<td></td>
<td>31 (73.8%)</td>
<td></td>
</tr>
<tr>
<td>Muscle invasive</td>
<td></td>
<td></td>
<td>7</td>
<td></td>
</tr>
<tr>
<td>Non-muscle invasive</td>
<td></td>
<td></td>
<td>4 (2 SCC, 2 Mixed SCC/urothelial)</td>
<td></td>
</tr>
</tbody>
</table>

Table 2 Median time from TURBT to Cystectomy (days)

<table>
<thead>
<tr>
<th>All patients</th>
<th>Non NAC</th>
<th>NAC</th>
</tr>
</thead>
<tbody>
<tr>
<td>56 (14–261)</td>
<td>47.5 (14–112)</td>
<td>170 (117–261)</td>
</tr>
</tbody>
</table>

Results: A total of 42 cystectomies were performed during this period. 35 with ileal conduit, 6 with neobladder, and 1 incompletely resected with locally advanced disease. Patient demographics are summarized in table 1. 8 (19.0%) patients received NAC. 2 also had radiotherapy. I did not complete NAC.

30 (71.4%) of all patients underwent cystectomy within 12 weeks of last TURBT (median 56, 14–261). The median duration of NAC was 84 days (32–119). Of patients not receiving NAC, a higher proportion (85.7%) underwent cystectomy within 12 weeks (median 48 days; 14–112). The median interval between NAC and cystectomy was 39 days (21–122). Of the 12 (28.6%) patients where cystectomy was delayed more than 12 weeks, 9 were from external referral base, 2 referred to perioperative assessment, 3 had TURBT within 18 days of a public holiday. 28 (66.7%) patients who had MDT discussions preoperatively had a median time from TURBT to cystectomy of 65 days (14–261), with time from MDT to cystectomy at 25 days (3–360). Pathological staging was as follows, T0 – 4 patients, Ta – 1, Tis – 1, T1 – 3, T2 – 6, T3 – 14 T4 – 11, N1 – 7, N2 – 5, N3 – 1. All urothelial except for T3- 1 SCC, 2 mixed SCC/urothelial, T4 – 1 SCC, 1 –mixed SCC/urothelial. Overall Clavien Gr1–2 complication rate was 30% (14), Gr3–5 was 9% (4). Overall mortality was 40% (17). 30-day perioperative mortality 2% (1) and cancer specific mortality was 36% (11). At present, 5-year survival rate was 36% (11). Median LOS was 14 days (7–32).

Conclusions: This descriptive analysis revealed comparable results to previous studies in low-volume centers for timing, mortality, complications, survival. NAC delays surgery more than previously published, but our interval from NAC to cystectomy was similar. Whilst there is evidence based survival benefits of NAC, considerable delays in NAC pathway may dilute or remove that survival benefit.

Introduction & Objectives: The diagnostic work-up of prostate cancer has experienced a rapid shift worldwide in recent years. This study aims to provide a current appraisal of the practice of prostate biopsy in Australia and New Zealand in the emerging era of transperineal template biopsy (TPB) and multiparametric MRI (mpMRI).

Methods: A 36-question online survey was distributed to 545 members of the Urological Society of Australia & New Zealand (USANZ), including consultant urologists and trainees. This was an updated survey, based on a similar questionnaire distributed to USANZ members in 2012, addressing patterns of prostate biopsy practice in 4 domains: TRUS biopsy; TPB; mpMRI and peri-operative antibiotic and analgesia use. Survey results were collated and statistical analysis was performed using descriptive statistics and chi-squared test.

Results: 155 participants completed the survey, with a response rate of 21.1%. 81.9% of respondents were consultant urologists and 66.5% worked in a metropolitan setting. 92.3% perform TRUS biopsy and 91.3% sample between 10–16 cores. 66.9% of respondents perform TPB, increased from 38.4% in 2012 (p < 0.001). 59.4% perform mpMRI prior to initial biopsy, increased from 19.6% (p < 0.001). 90.1% perform MRI prior to repeat biopsy after an initial negative biopsy. 97.2% use prophylactic oral antibiotics prior to TRUS biopsy, most commonly quinolones. 55.7% use parenteral antibiotics, compared to 69.4% previously (p = 0.013). 27.7% routinely use carbapenem prophylaxis in settings of recent overseas travel or quinolone exposure, previously 27.9% in 2012 (p = 0.965). General anaesthetic/IV sedation is used for 60.6% of TRUS biopsies and 97.9% of TPB.

Conclusions: Our survey demonstrates a shift in practice of biopsy for the diagnosis of prostate cancer among urologists in Australia & New Zealand, when compared with results of our initial study in 2012. More urologists are performing TPB now, and there has been a corresponding increase in the use of pre-initial biopsy mpMRI despite no current guidelines recommending this practice yet. There has been a reduction in the use of parenteral antibiotics overall, prior to TRUS biopsy, however, rates of carbapenem use have remained stable, suggesting ongoing concerns regarding the risk of sepsis due to antibiotic resistance.

Do multi-parametric MRI guided biopsies add value to the standard systematic prostate needle biopsy? Two year experience of 123 cases

Introduction & Objectives: This study aimed to assess whether mpMRI guided biopsies (MRGB) adds value to systemic
prostate needle biopsy (PNB) in the management of prostate cancer in an Australian regional centre

**Methods:** Institutional Review Board approval for this project was authorised (project 0715-056C) by the NSW Health Central Coast Local Health District Research Committee. 123 males who underwent an MRGB and a systematic PNB from June 2014 to August 2016 on the Central Coast, NSW, Australia were included in the study. Cognitive free-hand biopsy was performed using either TRUS biopsy or transperineal (TP) grid biopsy. MRI-TP fusion biopsy was performed using the BioJet™ Fusion Software System (DK Technologies) combined with a transperineal grid TRUS platform (BK Medical, Denmark). The results of systematic PNB were compared to MRGB. The primary outcome was prostate cancer detection and if MRGB changed management. Analysis was performed using SPSS 23.0.

**Results:** 123 cases were included with a mean age of 65.5, PSA 7.9 ng/ml and prostate volume of 53.9 cc. On mpMRI 75 cases (61%) had a PIRADS 4–5 lesion and 48 (39%) had a PIRADS 3 lesion. 57 cases underwent cognitive biopsy and 66 underwent MRI-Transperineal fusion biopsy. For each case, an average of 22 cores were taken on systematic PNB and 3.9 cores were taken for MRGB. 93 cases (76%) had prostate cancer detected. 23 cases (25%) had a higher Gleason score on MRGB compared to systematic PNB. 11 cases (12%) of prostate cancer were detected on MRGB but not systematic PNB. 9 cases underwent definitive treatment (radical prostatectomy: 8 cases and radiotherapy – 1 case) based on these MRGB results alone. Overall 18 cases (19%) of cases had an upgrade in Gleason score on MRGB which resulted in change in management. TP fusion biopsy resulted in a higher number of patients having a change in their management compared to cognitive biopsy (23% vs. 17%).

**Conclusions:** This is one of the first Australian studies to assess the value MRGB. MRGB has changed management in 19% of our cases with prostate cancer. Without MRGB, 11% of cases with prostate cancer would have been missed and 7% with significant prostate cancer would not have undergone radical prostatectomy. MRGB is a useful adjunct and shows early promise for reducing the need for systematic PNB as the technology matures.

**Description of tumour recurrence using 68-Gallium labelled PSMA PET in men with biochemical recurrence after primary treatment of prostate cancer**

A. KANAGARAJAH*, H. RHEE*, J. VELA*, T. REEVES*, M. WEBB†, C. NELSON*, S. WOOD*, T. HOLT† and P. HEATHCOTE*

*Princess Alexandra Hospital, Brisbane, Australia; †Professor and Chair of Prostate Cancer Research, IHBI, School of Biomedical Sciences, QUT, Brisbane, Australia; ‡Mater Hospital, Brisbane, Australia

**Introduction & Objectives:** With the introduction of 68-Gallium labelled prostate specific membrane antigen (PSMA) binding ligand and positron emission tomography (PET), it has become possible to visualize small lesions in the early phases of biochemical recurrence after primary treatment of prostate cancer. In this case series from two separate tertiary institutions, we prospectively collected patient information to determine the distribution of cancer recurrence after primary surgery both before and after salvage radiotherapy.

**Methods:** Prospectively collected database was established between Queensland X-Ray (QXR) and Princess Alexandra Hospital (PAH), Queensland. Patients had the PSMA PET study performed at one of two QXR sites or at PAH using the same imaging protocol. All patients attending for the PSMA PET were eligible for the study. This is an interim analysis of the first (4) months of data collection of patients presenting for staging with newly diagnosed prostate cancer. Where available final histology from prostatectomy specimens was correlated with the PSMA uptake within the prostate.

**Results:** The study consisted of 112 patients undergoing PSMA PET for biochemical recurrence after primary treatment of localized prostate cancer. 72 patients underwent radiotherapy (39 primary and 33 salvage radiotherapy), 40 patients had surgery as their primary treatment.

In patients who underwent primary surgery, 13 (of 40) were found to have lymph node disease (32.5%), 10 of which were found within the pelvis and 2 with local recurrence. 9 patients were found to have non-lymphatic metastatic disease (22.5%) with six of these patients having bony metastatic involvement. Median PSA for PSMA PET in this group was 0.88 (ng/ml).

Of the 32 patients who underwent salvage radiotherapy and had progressive PSA, the average PSA was 4.0 (ng/ml). 17 patients were found to have lymph node disease within the pelvis (53%). 8 patients had bony metastatic disease (25%) and 6 had non-bony, metastatic lesions (19%). Local recurrence was found in one patient after salvage radiotherapy.

Of the 112 patients involved in the study detection rate for any tumour foci was 20% for patients with a PSA between 0 - 0.5 (ng/ml). The detection rate was 80% for patients with a PSA > 1 (ng/ml).

**Conclusions:** In conclusion, this study demonstrates that PSMA PET is able to detect metastatic disease in different treatment settings. This includes the detection of metastatic lesions even in patients with a low PSA of 0 - 0.5 (ng/ml).

**Time to nadir estimated glomerular function rate after robot assisted partial nephrectomy: predictors and clinical significance on long-term functional outcomes**

L. KIM, G. SANTOK, A. A RAHEEM, K. CHANG, T. LUM, Y.D. CHOI and K.H. RHA

Yonsei University School of Medicine, Seoul, South Korea

**Introduction & Objectives:** The removal of renal mass by robot assisted partial nephrectomy (RAPN) is inevitably followed by a decrease in renal function. Theoretically, in the presence of normally-functioning contralateral kidney a surmountable time to nadir should not be observed. We investigated the impact of postoperative time to nadir estimated glomerular function rate (eGFR) on renal functional changes after RAPN.

**Methods:** From 2006 to 2015, 287 patients with renal mass who underwent RAPN were analysed. The cohort was evaluated based on their time to develop nadir eGFR: group 1 (no nadir), group 2 (<48 hours) and group 3 (≥48 hours). Primary outcome was to evaluate the renal function recovery between groups. Secondary outcome was to evaluate risk factors for development of nadir ≥48 hours using logistic regression analysis.

**Results:** Cumulative eGFR percentage change was worst in group 3 compared to groups 1 and 2 with 13.8%, −0.67% and 8%, respectively. (p < 0.001) CKD
upstaging was more common in group 3 compared to other groups (p < 0.001). Age, tumour size, PADUA score and blood loss were predictors of developing ≥48 hours nadir eGFR (HR: 1.03, p = 0.001; HR: 1.24, p = 0.001; HR: 1.25, p = 0.002; HR: 1.01, p = 0.034), respectively. Retrospective design was the main limitation of this study.

Conclusions: A continuous decline in eGFR (≥ 48 hours) after RAPN is associated with increased risk of poor functional recovery over time. Age, increased tumour size, high PADUA score, and blood loss were independent predictors of developing nadir eGFR ≥48 hours post operatively. Although further studies would be needed to verify our findings, these patients may require closer monitoring due to its potential significance on CKD upstaging.

Factors that are associated with return to baseline renal function following robot assisted partial nephrectomy at 5 years follow up

L. Kim, G. Santok, A. Raheem, K. Chang, T. Lim, Y.D. Choi and K.H. RHA
Yonsei University College of Medicine, Seoul, South Korea

Introduction & Objectives: Partial nephrectomy has been the mainstay of surgical treatment for T1 renal mass due to its significant renal functional benefit compared to radical nephrectomy. However, a paucity of information is available with regards to long term renal function following Robot assisted partial nephrectomy (RAPN). Moreover, there is a wide variation of renal function postoperatively. We sought to investigate long term renal function and to identify predictors of recovery to preoperative renal function following RAPN.

Methods: A retrospective review of prospectively collected data of RAPN was analysed. Patients with a minimum of 5 year follow up were included. Patient clinicopathologic characteristics as well as perioperative outcomes were assessed. eGFR was measured preoperatively, daily from time of surgery till discharge, 1 month, 3 month, 6 month, 1 year, then annually thereafter. Patients who achieved full recovery of renal function to preoperative eGFR (Group 1) were compared with those who did not (Group 2). Multivariable regression analysis was performed to identify predictors of return to baseline renal function.

Results: Of 152 patients, 61 (40%) achieved return of their renal function to baseline eGFR. Mean preoperative eGFR was 85.8 and 94.3 ml/min/1.73 m² in the group 1 and group 2, respectively (p = 0.004). The change in eGFR was consistently less in group 1 from early postoperative period up to 5 years. Renal function continued to improve beyond two years post operatively in a significant number of patients. Lower preoperative eGFR, age < 65 years, and patients with no history of hypertension and diabetes were predictors of full recovery of renal function on multivariate analysis.

Conclusions: Lower preoperative eGFR, absence of hypertension and diabetes and age < 65 years were predictors of recovery to preoperative renal function following RAPN. These parameters could be considered to be potentially valuable during preoperative counseling of patients undergoing RAPN.

Ethnic patterns of prostate cancer in the southwest region of Trinidad and Tobago, West Indies – comparison between Africans and East Indians

B. Koonj Beharry†, L. Goetz* and K. Ramssoobhag†
†Austin Health, Melbourne, Australia; †San Fernando General Hospital, San Fernando, Trinidad and Tobago

Introduction & Objectives: There are 2 major ethnic groups in Trinidad and Tobago - Africans and East Indians with ancestry from mainland Africa and India respectively. The aim of this study was to compare the patterns of prostate cancer between these two major ethnic groups.

Method: The study population consisted of all patients presenting to the San Fernando General Hospital for treatment of prostate cancer between the periods 2002 to 2007. Clinical data from patient records were analyzed using prostate cancer related variables: age, ethnic background, family history of prostate cancer, DRE findings, serum PSA values at presentation, Gleason’s scores, imaging results and treatment mode. Comparative analyses of two ethnic groups – African Trinidadians and East Indian Trinidadians were undertaken.

Results: A total of 546 men underwent treatment for prostate cancer at the San Fernando General Hospital in Trinidad. 387 (71%) had surgical treatment (radical retropubic prostatectomy, brachytherapy or bilateral orchidectomy) and 159 (29%) had non-surgical treatment (hormonal therapy). The mean age of the study population was 71.07 yrs. 63% of patients were African-Trinidadians, 21% East Indian-Trinidadians and 16% were of other races. The prevalence rate of prostate cancer in Africans was found to be 205 per 100,000 and East Indians 32 per 100,000. However risk stratification into low vs intermediate vs high-risk groups using PSA values and Gleason’s scores (D’Amico risk classification) showed no significant differences between the two ethnic groups. 63% Africans vs 62% East Indians were categorized in the high risk group (Pearson Chi² test = 3.21; p = 0.523); 15% Africans vs 11% East Indians in the low risk group and 22% Africans vs 27% East Indians in the intermediate group.

Conclusions: Prostate cancer in Trinidad is more prevalent among men of African ancestry as opposed to those of East Indian origin. However, there is no significant difference in the age or risk category at presentation between the ethnic groups.

Diabetes and elevated urea level predict for uretero-ileal stricture after radical cystectomy and ileal conduit formation

B. Koonj Beharry†, N. Hoag*, N. Papa*, N. Lawrientschuk†, D. Chiu*, S. Sengupta** and D. Bolton†
†Department of Urology, Austin Health, Melbourne, Australia; †Department of Surgery, University of Melbourne, Melbourne, Australia

Introduction & Objectives: Benign uretero-ileal anastomotic stricture is a significant complication following radical cystectomy and ileal conduit urinary diversion after radical cystectomy. The aim of this study was to review our experience with radical cystectomy and ileal conduit diversion to interrogate risk factors for uretero-ileal anastomotic stricture. We examined these risk factors for stricture formation to predict those at greatest stricture risk.

Methods: A retrospective chart review was conducted for patients undergoing radical cystectomy and ileal conduit diversion between 2002 and 2012 at 3 hospitals.
(1 public, and 2 private) in Melbourne, Australia. Patient records were reviewed to capture demographic data including gender, age, body mass index, medical comorbidities, prior chemotherapy, and smoking history. Preoperative data was also collected, including hemoglobin level, serum urea and creatinine, and albumin level. Intraoperative and post-operative data recorded included length of surgery, use of inotropes, requirement of blood transfusion, sepsis, and evidence of anastomotic urine leak. Demographic data and patient variables were analyzed to determine risk factors for uretero-ileal stricture using multivariate logistic regression.

Results: Over the study period, 133 patients underwent cystectomy and ileal conduit formation, with 14 (10.5%) developing uretero-ileal anastomotic stricture. Of 133 patients, median age was 70, with 98 (73.7%) males. 30 (22.6%) patients were diabetic, and mean serum urea level was 6.2 (range 1.3–15). Diabetes and elevated serum urea level (defined as > 7.1 mmol/L) were associated with increased risk for development of uretero-ileal stricture (Odds ratio 4.31 and 4.28 respectively, p < 0.05 for each). There was a strong trend towards an increasing proportion of strictures as the number of risk factors a patient had increased (p < 0.001). Having at least one of these risk factors was strongly predictive of subsequent stricture development (OR=17.3, p = 0.007) with associated sensitivity of 92.9% and specificity of 57.1%.

Conclusions: In this patient cohort, diabetes and elevated serum urea level were predictive for the development of uretero-ileal anastomotic stricture. We hope this may assist in assigning a relative risk for future development of uretero-ileal anastomotic stricture, allowing targeted trial of specific preventive strategies. Further prospective study with larger patient samples is required.

Does age, BMI or prostate volume affect continence outcomes following robot assisted laparoscopic radical prostatectomy (RALP)?

D. LIN*, S. PLAGAKIS*, M. O’CALLAGHAN*, P. NEUMANN, A. FULLER®, R. WELLS, P. SUTHERLAND and D. FOREMAM

*Reparation General Hospital, Daw Park, Australia; †Royal Adelaide Hospital, Adelaide, Australia; ‡South Australia Prostate Cancer Clinical Outcomes Collaborative, Daw Park, Australia; §International Centre for Allied Health Evidence, University of South Australia, Adelaide, Australia; ¶South Terrace Urology, Adelaide, Australia

Introduction & Objectives: Post-operative urinary incontinence is a significant concern for patients choosing to undergo a radical prostatectomy for treatment of prostate cancer. Surgery is offered to older patients with caution due to concerns about poor continence. Whilst it has been established that older patients have worse continence outcomes after open radical prostatectomy, there has been promising data suggesting that RALP is not associated with poorer continence in older men.

Furthermore, a recent systematic review and meta-analysis of studies reporting urinary continence outcomes post RALP has suggested that factors such as a large body mass index (BMI) and large prostate volumes were significant pre-operative predictors of continence outcomes. The aim of our study was to determine the effect of age, BMI and prostate volume at time of surgery on 12 month continence outcomes in men having RALP.

Methods: Using the South Australian Prostate Cancer Clinical Outcomes Collaborative (SA-PCCOC) database, we identified patients who had undergone RALP by a high volume surgeon (>50 cases per annum) between March 2012 and March 2015. Accurate prostate measurements were taken from the patients’ pre-operative magnetic resonance imaging (MRI) reports. The 26-item short-form version of the Expanded Prostate Cancer Index Composite (EPIC) was used to measure continence outcomes. All patients who received an assessment and education by a specialist pelvic floor physiotherapist and had completed EPIC questionnaires before and after treatment were included in this study. Exclusion criteria included salvage radiotherapy and BMI >50. Continence outcomes compared with age was evaluated in 449 patients (age range 45–76 years old); continence rates associated with BMI was analysed in 357 patients and the association between continence outcomes and prostate volume was analysed in 334 patients.

Results: Baseline continence declined with increasing age (β = -0.23, p < 0.01). On average, patients had poorer continence 12 months post RALP when compared with pre-treatment levels; however age was not associated with this decline (p = 0.98). This observation did not change with adjustment for potential confounders including surgical margin status, nerve sparing technique, pathological stage or pre-treatment continence scores (p = 0.41). Logistic regression of 357 patients showed no change in pre-operative urinary continence with increasing BMI. There was also no identifiable association between BMI and urinary continence post RALP in mixed effects linear modelling. There did not appear to be a significant correlation between prostate volume and baseline continence levels (logistic regression, p = 0.18). However, larger prostate size was a significant factor affecting post RALP continence outcomes (p = 0.02), even after adjustment for baseline continence (p = 0.01).

Conclusions: This is one of the largest Australian studies investigating continence outcomes in patients undergoing robotic-assisted laparoscopic radical prostatectomy and the association with common predictive factors such as age, BMI and prostate volume. While prostate volume was found to be a significant predictor of post-operative continence, neither age at time of surgery nor preoperative body mass index were associated with a change in continence outcomes 12 months following RALP by high volume surgeons in patients who underwent a specialist pelvic floor physiotherapy assessment and education program.
Preoperative neutrophil-lymphocyte ratio predicts more aggressive pathology and poorer survival among patients with localised renal cell carcinoma undergoing nephrectomy

R. MANGAT, K. CHEN and W. LAU
Singapore General Hospital, Singapore, Singapore

Introduction & Objectives: The neutrophil to lymphocyte ratio (NLR) is a widely available, easily reproducible and affordable indicator of systemic inflammatory response. The NLR correlates with cancer related inflammation and has been associated with adverse oncological outcomes in multiple malignancies including gastric, lung and colorectal. We hypothesize that a higher preoperative NLR ratio is associated with adverse outcomes in patients with localized renal cell carcinoma (RCC) treated with radical nephrectomy (RN). We aim to evaluate pre-operative NLR with clinical, pathological and oncological outcomes and examine its prognostic value.

Methods: Data of all patients who underwent radical nephrectomy for localized RCC between 1979 and 2014 were analysed retrospectively. NLR was calculated from pre-operative bloods taken within a month prior to nephrectomy. Multivariable analysis using cox regression model was used to investigate an association of NLR and clinicopathological outcomes. NLR was analyzed as a continuous and categorical variable (cut-off of 1.7 and 4), using comparison of median as well as Pearson Chi square respectively. Metastasis-free and overall survival was measured from time of RN using Kaplan-Meier analysis. Multivariate COX proportion analysis was performed to determine.

Results: The median age of the 677 patients included was 58.5 years (29.5-91.1). 439 (65%) were male and 239 (35%) were female. At follow-up, 119, 60, and 117 patients had distant metastasis, death from RCC, and all-cause mortality respectively. Cox proportional analysis of NLR as a dichotomous variable confirmed a cut-off point of 1.7 as the strongest prognostic value in our dataset. Using this cut-off for further analysis, patients with NLR > 1.7 were more likely to have aggressive tumour biology. Pathologically, there was a strong correlation between NLR > 1.7 and coagulative tumor necrosis, sarcomatoid differentiation and higher stage tumors (all, p < 0.05). An elevated NLR was significantly associated with Fuhrman grade when analyzed as a continuous and categorical variable (p < 0.001 and p < 0.046 respectively). Kaplan Meier and Log Rank analysis showed that a NLR > 1.7 was a significant prognosticator for poorer overall survival (p = 0.002) and cancer specific survival (p = 0.029). NLR > 1.7 was associated with poorer overall survival when corrected for SSIGN (p = 0.013).

Conclusions: NLR appears to have prognostic value in patients with localized RCC undergoing RN and predicts for more aggressive tumor biology as well as poorer survival. NLR may add value to pre-operative prognostication and risk stratification of patients with localized RCC.

Metastatic ureteric lesions from the prostate: a review of contemporary literature

T. MANNING*, D. CHRISTIDIS*, D. WETHERELL*, M. PERERA*, P. ZOTOV*, D. BOLTON* and N. LAWRENTSCHUK†
Department of Surgery (Urology), Austin Health, Melbourne, Victoria, Heidelberg, Australia; †Young Urology Researchers Organisation (YURO), Melbourne, Australia; ‡Department of Surgical Oncology, Peter MacCallum Cancer Centre, Melbourne, Australia

Introduction & Objectives: True metastatic ureteric lesions from any primary source, lesions from a prostatic primary represent an increasingly atypical series. Our case adds to the limited existing literature of approximately 50 previously reported cases. Despite how uncommon these lesions are, urologists must always consider the possibility of a metastatic etiology in ureteric mass, including from primary prostate cancer. Conversely in high-grade prostate cancer with co-existing hydronephrosis clinicians should also carefully consider the possibility of a sinister metastatic mass causing obstruction. Investigation of the cause of hydronephrosis with cystoscopic evaluation of the ureteric orifices should be performed to rule out distal ureteric involvement by primary or secondary lesions.

68 Ga-PSMA Ligand PET/CT: initial experience and results in a regional centre

B. MARCH*, D. GRADINSCKA†, A. PEARCE*, A. JEM and M. LOUIE-JOHNSUN§
†Gosford Hospital, Gosford, Australia; ¶PRP, Gosford, Australia; †Radiation Oncology Centre, Gosford, Australia; ‡University of Newcastle, Newcastle, Australia

Introduction & Objectives: 68 Ga-Prostate-specific membrane antigen (PSMA) PET/CT is an emerging imaging study useful in the detection of local, nodal and metastatic disease. The aim of this study was to investigate the detection rates of
Introduction & Objectives: Ureteric instrumentation to investigate suspected upper tract urothelial carcinoma (UTUC) poses a theoretical risk of tumour cells seeding from the upper urinary tract to the bladder, as well as into the lymphovascular space from irrigation during ureteropelvoscopy. Our objectives were to investigate whether there is a difference in: 1) the incidence of, and 2) time to disease recurrence (lower urinary tract and metastatic) for patients undergoing diagnostic ureteric instrumentation prior to radical nephroureterectomy (RNU) for UTUC.

Methods: A retrospective review of all patients who underwent RNU for UTUC at The Canberra Hospital (ACT, Australia) between January 1990–December 2014 was undertaken. Diagnostic ureteric instrumentation prior to RNU was defined as having undergone retrograde pyelography (RPG), selective ureteric washings, ureteric stent insertion or ureteroscopy (+/- biopsy).

Results: 77 patients were included in this study of which 60 patients (77.9%) underwent some form of diagnostic ureteric instrumentation. The incidence of tumour recurrence was 5.4 times greater in patients that underwent diagnostic ureteric instrumentation served as the control arm. Statistical analysis was performed with Kaplan-Meier methods to compare recurrence free rates and Cox Hazard models for multivariate analysis of risk factors for recurrence of UTUC.

Conclusions: The odds of disease recurrence was 5.4 times greater in patients undergoing diagnostic ureteric instrumentation prior to RNU for UTUC at any given point in time. The median time to recurrence was 4.2 times earlier compared to patients who proceed directly to definitive surgery. Future studies should investigate the individual effects of diagnostic retrograde pyelography, selective ureteric washings, ureteric stent insertion and ureteropelvoscopy (+/- biopsy) on UTUC recurrence.
A snap shot of the management of radiotherapy complications at a tertiary referral Urology centre

R. NEWBOLD*, J. MA, D. HENNESSEY, B. NEWELL, D. BOLTON and N. LAWRENSCHUK
Austin Health, Heidelberg, Australia

Introduction & Objectives: Radiotherapy is a proven treatment strategy for many forms of cancer. However, even successful treatment is associated with side effects and complications that may need Urological treatment. The aim of this study is to assess all admissions related to the side effects of radiotherapy to our institution, and report the treatments required and the burden these complications place on the healthcare system.

Methods: All patients admitted, both emergency and elective, to our institution over a six-month period with a complication due to radiotherapy were assessed prospectively. Non-identifiable data was collected from medical records, including age, sex, co-morbidities, radiotherapy indication, time and dose of radiotherapy, complication type and treatment required.

Results: The total number of admissions is 1198 patients, 921 of which were elective and 277 were emergency. 40 (3.33%) of total admissions were related to radiotherapy complications, 20 (50%) of these admissions were elective and 20 (50%) via emergency. Radiotherapy complications made up 2.1% of elective admissions, and 7.22% of emergency admissions. 26 patients (24 male, 2 female) accounted for these 40 admissions. 46 complications of radiotherapy were found in the 26 patients (Table 1). The most common complication was radiation cystitis (43.5%), followed by strictures (19.5%) and fistulas (10.9%). 73.9% of these complications needed surgical intervention while non-operative management was possible in 26.1%. The total bed days for these 40 admissions were 239, 17 (7.1%) of which were ICU bed days.

Conclusions: At our institution, radiotherapy complications made up 3.3% of total admissions and 7.7% of our emergency admissions. Over 70% of these complications needed surgical intervention. The side effects of radiotherapy are considerable and account for a significant portion of the workload in our department.

Impact of adjuvant treatment on long-term quality of life in testicular cancer survivors

T. NGO, A. DOWLING, J. GOAD and L.-M. WONG
St Vincent’s Hospital Melbourne, Fitzroy, Australia

Introduction & Objectives: Issues of survivorship of testicular cancer are emerging due to excellent results from treatment. Treatment generally consists of orchidectomy followed by active surveillance or adjuvant therapy with chemotherapy, radiotherapy or retroperitoneal lymph node dissection. The 10-year overall survival rate for testicular cancer is 95%. The objectives of this project are to determine the effects of adjuvant therapy, education, cancer stage and age of diagnosis on long-term quality of life in testicular cancer survivors.

Rare variants of type 1 papillary RCC: a double case series

R. NEWBOLD*, D. CLOUSTEN†, T. MANNING‡, D. CHRISTIDIS‡, N. LAWRENSCHUK* and D. BOLTON*
*Austin Health, Heidelberg, Australia; †Young Urology Researchers Organisation (YURO), Melbourne, Australia; ‡Focus Pathology, Melbourne, Australia; §Tissupath, Melbourne, Australia

Introduction & Objectives: Papillary renal cell carcinoma (RCC) has traditionally been divided into Types 1 and 2, with well recognised differences in morphology and clinical behaviour. Recently, there have been small series of cases with variant morphology, and rare subcategories of papillary RCC are now being internationally recognised and reported. Oncocytic papillary RCC is typically regarded as a variant of Type 1 papillary RCC with its own distinct morphology, but its behaviour and prognosis is similar to Type 1 papillary RCC. Biphasic alveolar squamous (BAS) RCC has recently been described as another variant of Type 1 papillary RCC. This tumour has a distinct morphology and immunoprofile and is associated with a high incidence of second renal cancers. We report a small series of cases for both oncocytic papillary RCC and BAS RCC.

Methods: We conducted a search through our databases for cases of both of the tumours described, and retrospectively collected general, oncological and histopathological data from the cases involved.

Results: In total we describe 4 cases of oncocytic papillary RCC and 5 cases of BAS RCC. Of the five cases of BAS RCC presented, two patients had additional cancers and one of these patients had Birt-Hogg-Dube syndrome. Prognosis is uncertain, but these tumours may behave aggressively.

Conclusions: Oncocytic papillary RCC and BAS RCC are both rare variants of Type 1 papillary RCC. Larger case series are required to further understand these rare tumours, the way they behave and their subsequent phenotypical patterns.
Methods: 144 patients were identified to have received treatment for testicular cancer at St Vincent’s Hospital from 2001–2016. Patients were contacted by phone and mail. A validated cancer questionnaire (EORTC QLQ-C30) with a testicular cancer module (EORTC QLQ-TC26) was used. Questionnaire answers were recorded on a Likert scale and converted to a score from 0-100. Independent t-tests compared domain scores between different treatments, educational levels, cancer stage and age groups.

Results: The response rate was 40% (57/144). Nine patients were deceased, and the median follow-up after orchidectomy was 42 months. Patients who received adjuvant therapy reported more financial difficulties than those who received surveillance alone (28.89 vs 5.56; P < 0.05). However, there was no difference in overall quality of life between different treatments. Those who were tertiary educated were more comfortable communicating about their disease and sexuality than those who only completed high school (99.24 vs 85.24; P < 0.01). Men who were older at the time of diagnosis reported a more positive outlook about the future (73.81 vs 57.47; P < 0.05) and fewer concerns about infertility than those diagnosed at younger ages (15.48 vs 50.57; P < 0.01). Finally, men with stage 2 disease or above reported lower social functioning than those with stage 1 disease (76.69 vs 93.21; P < 0.02).

Conclusions: Clinicians could tailor counselling according to age, educational level, disease stage and financial status at diagnosis. Importantly, patients could be reassured that the treatment chosen will not have a significant impact on long-term quality of life.

Expression of prostate specific membrane antigen in clear cell renal cell carcinoma, neovasculature of tumour, and circulating tumour cells


*Australian Prostate Cancer Research Centre - Queensland, Queensland University Of Technology, Woolloongabba, Australia; †Princess Alexandra Hospital, Woolloongabba, Australia; ‡Herston Imaging Research Facility, Herston, Australia; †University of Queensland, St Lucia, Australia

Introduction & Objectives: Clear Cell Renal Cell Carcinoma (ccRCC) is the most common subtype of RCC. The tumour is derived from proximal renal tubules, which expresses prostate specific membrane antigen (PSMA) physiologically. In this study, we characterize PSMA expression in ccRCC deposits using immunohistochemistry, reverse transcription polymerase chain reaction (RT-PCR) in circulating tumour cells and in vivo PSMA positron emission tomography (PET).

Materials and Methods: A patient with bilateral ccRCC and oligometastatic disease was identified using standard imaging and positron emission tomography using PSMA binding ligand, 68 Ga-HBED-CC. PSMA immunohistochemistry of ex-vivo tumors was compared with in vivo PSMA PET imaging. Further, RCC circulating tumour cells were enriched (RosetteSep™, StemCell) from the patient and RT-PCR was performed to demonstrate the lack of PSMA expression in pure ccRCC cells.

Results: All ccRCC deposits (left primary, right primary, renal vein thrombus, adrenal metastasis) demonstrated PSMA expression in the neovasculature of tumour deposits, whilst tumour cells did not express PSMA. All lesions detected on conventional imaging were visible using PSMA PET with high contrast and avidity. CTCs were harvested, temporarily cultured, and RNA extracted. CTCs did not demonstrate significant PSMA expression on RT-PCR, whilst housekeeping gene RPL32 and AR genes were appropriately expressed. The findings were confirmed with prostate cancer cell lines that are PSMA positive (PC3/PIP) and negative (DU145), and AR positive (LNCaP) and negative (DU145, PC3/PIP).

Conclusions: This study demonstrates that ccRCC which originates from proximal tubules lose PSMA expression, however gains expressions in the neovasculature, which may be used as a target for PET imaging.

Diagnostic potential of PSMA PET in advanced renal cell carcinoma


*Princess Alexandra Hospital, Brisbane, Australia; †Royal Brisbane and Women's Hospital, Brisbane, Australia; ‡Centre for Kidney Disease Research, University of Queensland, Brisbane, Australia

Introduction & Objectives: Management and survival in patients with renal cell carcinoma is correlated to cancer stage making improvements in radiological staging essential to guiding treatment decisions and
Introduction: Multiparametric magnetic resonance imaging (mpMRI) and prostate specific membrane antigen positron emission tomography (PSMA PET) have been shown to demonstrate intraprostatic tumor with high contrast and detection rate in patients undergoing surgery. In this study, we identify localized prostate cancer using hybrid PSMA PET/MRI using whole-mount prostate as a reference.

Material and Methods: In a prospective pilot clinical trial, 10 patients who were suitable for surgical management of localized prostate cancer were recruited. All patients underwent PSMA PET/CT and hybrid PSMA PET/MRI pre-operatively. The results were separated as PET/CT, mpMRI and hybrid PSMA PET/MRI. The images were reported in European Society of Urogenital Radiology (ESUR) format by three separate experts who were blinded to other radiological or histopathological reports. Resected prostate specimens were assessed using whole-mount histopathological analysis. Reported radiological and histopathological segments were compared for segmental analysis (n = 243).

Results: From 9 patients (1 excluded due to a metastatic lesion on PSMA PET/CT), 33 lesions were identified, of which 20 were clinically significant. mpMRI detected 10 lesions (segmental analysis - sensitivity, specificity, PPV and NPV = 33.87%, 93.37%, 63.64% and 80.48%) and PSMA PET/CT detected 12 lesions with 1 false positive (segmental analysis - sensitivity, specificity, PPV and NPV = 40.32%, 80.11%, 40.98% and 79.67%). Hybrid PSMA PET/MRI was then used to detect tumour with definition for prostate cancer being PI-RADS 3-5 and/or SUVmax greater than 1.5. 12 lesions were identified, however, with 2 false positives. Using segmental analysis, sensitivity, specificity, PPV and NPV were 27.42%, 99.45%, 94.44% and 80% respectively.

Conclusions: In this prospective clinical trial, using the PI-RADS and PET reporting criteria, positive predictive and negative predictive values were substantially improved using hybrid PSMA PET/MRI in comparison to PET/CT or mpMRI alone. Larger study and case series are required to validate the results.
were collected in CellSave™ tubes (Janssen Diagnostics), Lithium Heparin or EDTA tubes at room temperature and processed within 4 hours of collection. Enriched cells on cytospin slides or cultured cells were assessed by immunofluorescent characterization using DAPI and CellSearch® directly conjugated antibodies (Veridex, Warren, NJ, USA) for, pan-CX and CD45. In patients with known CTCs, CellSearch™, ClearCell FX™ and RosetteSep™ were used for comparison of enrichment performance. Cells extracted from CellSearch™ and ClearCell FX™ were used for temporary propagation in a novel in vitro culture media.

**Results:** In 3 patient samples, CellSearch™ enrichment was compared directly with RosetteSep™ negative selection technology. In all three samples, RosetteSep™ yielded more cells (average 442 vs 78 cells). RosetteSep™ yields viable cells allowing downstream culture. This technology was then compared with the ClearCellFX™ microfluid enrichment system. Using the ClearCellFX™ standard protocol a larger number of cells in comparison to RosetteSep™ were extracted (average 940 ± 599 vs 98 ± 106 (n = 5)). Using the ClearCellFX™ high purification protocol, RosetteSep™ extracted larger number of cells (average 57 ± 53 vs 2.8 ± 3.7 (n = 5)). The enriched cells from both systems were successfully cultured in vitro over the short term for assessment of viability.

**Conclusions:** In comparing three enrichment methods for CTCs in men with metastatic prostate cancer, RosetteSep™ negative selection was able to enrich larger number of CTCs than the CellSearch™ positive selection system. The ClearCellFX™ microfluid system standard protocol appeared to provide the most efficient CTC enrichment of the three systems. The study also demonstrates that CTCs can be propagated in vitro following enrichment by either the RosetteSep or ClearCellFX systems, providing opportunities for further analysis.

**Blocked lymphatics in penile squamous cell carcinoma: an Australian case series**

**Introduction & Objectives:** Dynamic sentinel lymph node biopsy is emerging as the gold standard for surveying suspicious nodes in the context of penile squamous cell carcinoma. The introduction of hybrid SPECT/CT has allowed clinicians to observe tomographic lymphoscintigraphy and anatomic detail. However, extensive lymphadenopathy within a sentinel basin can block inflow causing rerouting of lymph fluid to the contralateral nodes that may not yet contain tumor cells, causing a false-negative result.

**Methods:** Twenty-seven patients with histologically proven penile SCC underwent bilateral conventional lymphoscintigraphy and SPECT/CT from 2012–2016. In four patients, SPECT/CT identified a unilateral draining node basin despite palpable lymphadenopathy. These patients underwent bilateral dynamic sentinel lymph node biopsy and the pattern of contralateral lymphatic rerouting by tumor blockage was evaluated.

**Results:** On the CT images, the palpable node metastases could be identified in all 4 groins. None of these groins demonstrated uptake of radioactivity on SPECT/CT and rerouting of lymphatic drainage to the contralateral groin was observed. Tissue pathology of the excised radiolucent nodes demonstrated that inflammation (n = 1) sarcomiosis (N = 1) and metastasis (n = 2) were responsible for lymphatic rerouting.

**Conclusions:** The concept of tumor blockage and rerouting was visualized in 15% of the groins who underwent SPECT/CT. Precise physical examination and preoperative ultrasound with fine-needle aspiration cytology may identify nodes with considerable tumor invasion at an earlier stage and thereby reduce the incidence of false-negative results.

**Complete single contact assessment including MRI for rural patients attending a one stop prostate clinic**

**Introduction & Objectives:** There is increasing evidence to support the use of MRI in prostate cancer diagnosis. The One Stop Prostate Clinic (OSPC) is proven in providing a rapid access service to clinically assess, diagnose, and manage patients suspected to have prostate cancer (PCa) in Western Australia. Managing rural patients in a timely fashion can be logistically challenging. Patients referred from a rural setting also have a higher incidence of PCa. We have incorporated MRI prostate into the one stop assessment of rural patients referred with an elevated PSA and or abnormal DRE.

**Methods:** A prospective analysis of rural patients referred with suspected prostate cancer to OSPC was carried out over a 4 month period. Rural patients underwent MRI prostate as part of their complete OSPC assessment. The MRI was ‘hot reported’ by a dedicated Uro-Radiologist prior to assessment in the OSPC. The MRI report was used to inform the need for biopsy, counsel patients appropriately prior to biopsy, and/or perform cognitive guidance for those proceeding to biopsy and for staging.

**Results:** Twelve patients were included in the study. Patients age ranged between 50 and 65 with a median age of 58.75 years (IQR 54.72 – 62.75). Nine patients presented with an elevated PSA, two had previously been diagnosed with low risk PCa and were on active surveillance. One patient was diagnosed with high grade prostatic intraepithelial neoplasia (PIN) on previous biopsy. All patients underwent MRI prostate prior to being assessed in the OSPC. Eleven patients underwent TRUS prostate biopsy. Of these, four patients were newly diagnosed with PCa, two were diagnosed with ASAP and one with high grade PIN. All cases were discussed at our Uro-oncological MDT.

**Conclusions:** A global assessment of rural patients including MRI at first contact is feasible, more convenient for patients and may reduce costs. Planned future studies...
will determine the utility of this process in clinical practice.

Factors affecting PSA variability in men post radical prostatectomy treatment for prostate cancer

A. OKULLO*,†, P. PENKOFF* and M. PATEL†

Department of Surgery, Westmead Hospital, Westmead, Australia; †Discipline of Surgery, University of Sydney, Sydney, Australia

Introduction & Objectives: Prostatic surface antigen (PSA) is an important biomarker for diagnosis, prognosis, risk stratification and follow up of prostate cancer patients. Following prostatectomy it is common to have very low but detectable levels of PSA. This causes substantial anxiety in patients and the causes are not well understood.

Human factors like the presence of heterophile antibodies and choice of assay by the pathologist have been shown to affect PSA levels. Little is known about which handling and processing factors affect PSA levels and whether they differ among Australian pathologists.

Methods: After ethics approval, we consented and enrolled 12 patients with a PSA level between 0.01 to 0.1 ng/ml post radical prostatectomy.

Three pathology laboratories; Laverty (LAV), Douglass Hanly Moir (DHM) and Healthscope (HSC) were used for sample processing with LAV as our reference laboratory. Six blood samples were collected per patient and handled as follows: Three blood samples were sent to three different pathology laboratories for immediate processing. One sample was shaken vigorously for 5 minutes to achieve hemolysis then sent for immediate processing at LAV. One sample was stored overnight in a fridge at 4 degrees centigrade and another overnight at room temperature then processed the next day by LAV.

Differences in the mean reported PSA values (all in ng/ml) was analysed using SPSS version 8.0. Students T-test was used to compare the difference in means.

Results: 12 patients were enrolled into the study with 11 patients included in the final analysis. The results of one patient were omitted from the final analysis since they were all reported as <0.01.

The mean PSA levels reported by the three different pathologists were; Laverty: 0.035, Healthscope: 0.044, Douglass Hanly Moir: 0.042. There was a significant difference between LAV and HSC (P = 0.02), LAV and DHM (P = 0.012), HSC and DHM (P = 0.033).

The mean PSA value for immediately processed samples was 0.035. When this was compared with the mean PSA value in haemolysed blood (0.035), blood stored overnight at 5 degrees centigrade (0.035) and blood stored at room temperature (0.039), no significant difference was detected (all P > 0.05).

Conclusions: Different pathology labs provide different PSA levels. It is therefore imperative that the same pathologist is used consistently for PSA level testing. Hemolysis and varying overnight storage conditions did not affect the mean PSA results obviating the need for overnight cold storage of blood samples prior to PSA testing.

Urothelial malignancy registry: no more cracks in the system

A. PATEL†*, R. AKBAR* and J. PATERDIS*

Queen Elizabeth II Jubilee Hospital, Queensland Health, Brisbane, Australia; †Griffith University, Brisbane, Australia

Introduction & Objectives: Losing patients to follow up in the Public hospital system is a fear of every clinical unit. Bladder malignancy surveillance requires tight monitoring for many years due to high rates of recurrence. Between outpatient flexible cystoscopies, rigid cystoscopic assessment or tumour resections in theatre, courses of intravesical therapies, and outpatient clinic follow up – there are many opportunities for patients to inadvertently miss surveillance checks, have clinic appointments delayed and even be lost to follow up. A register was constructed, in order to optimize appropriate follow up.

Methods: Literature review was conducted using Embase, Medline / Pubmed using the keywords Malignancy, cancer, register, database, follow-up, and surveillance. Abstracts were screened for appropriateness, and articles were reviewed. No previous similar study with process analysis has been described. A web-based intranet database was constructed with all patients with urothelial malignancy known to our department being manually entered. URN codes were linked with the hospital administration system to allow auto-population of demographic information within the database. Information of dates and types of clinical interaction (clinic, OPD flexible cystoscopy or theatre procedures), are documented, along with findings and planned follow up. This follow up plan prompts reminders to ensure that follow up is booked and attended – this is also auto-populated from the hospital system.

New cases are identified by a clinical nurse coordinator screening all flexible cystoscopies, theatre case audit, and the Histology Register (a tool used to ensure all histology is reviewed by a consultant clinician and communicated with the patient).

In real-time, a snapshot of patients awaiting appointment booking or late for timely follow up are able to be reviewed.

Results: 538 patients on our surveillance program are all accounted for with appropriate follow up. Patients discharged from system have either deceased, discharged for alternative medical reasons, have been privately followed up, or have self-discharged.

Conclusions: Using this application, with multimodal screening and regular database keeping, we have been able to efficiently maintain a clinically relevant urothelial malignancy register with no loss to follow up, ensuring patient safety with timely surveillance.

Neo active surveillance: initial biopsy avoidance and follow-up of men with negative MPMRI


Australian Urology Associates, Melbourne, Australia; †Department of Surgery, Monash University, Melbourne, Australia; ‡Department of Surgery, The University of Melbourne, Melbourne, Australia; ††Department of Surgery, Epworth Healthcare, Melbourne, Australia; ‡‡Healthcare Imaging Services, Melbourne, Australia; **TissuePath, Melbourne, Australia; †§Urology Unit, Alfred Health, Melbourne, Australia

Introduction & Objective: Emerging evidence supports the use of mpMRI to help triage for prostate biopsy when reported by expert radiologists. Our previous report comparing mpMRI to transperineal biopsy showed that 26.5% of men with a negative mpMRI will have significant prostate cancer, the vast majority of whom have Grade Group 2 (Gleason 3 + 4 = 7) disease. Men with negative mpMRI and no biopsy therefore require close follow-up, a program we have termed Neo Active Surveillance (NAS). We aimed to determine the frequency of NAS in our group private practice.
Methods: A custom made REDCap electronic database was used to capture the results of patients who had a mpMRI between June 2013 and June 2016. Information collected included patient age, PSA, Prostate Imaging Reporting and Data System (PIRADS) score, transperineal biopsy of the prostate (TPB) results and initial management.

Results: Of 658 patients undergoing mpMRI from June 2013 to June 2016, 1.8% patients were PIRADS 1, 54% patients were PIRADS 2, 10.3% patients were PIRADS 3, 12.8% patients were PIRADS 4 and 21.1% patients were PIRADS 5. Only 33.3% and 23.1% patients with PIRADS 1 and 2 had a subsequent biopsy respectively. This is in contrast with 63.2% PIRADS 3, 90.5% PIRADS 4 and 92.1% PIRADS 5 patients who went on to have a TPB. Of the patients with a PIRADS 1 MRI who did not have a subsequent biopsy, their mean follow up time was 7.9 months and mean PSA change was 2.0. 0 patients had a biopsy in their later follow up to June 2016 and only 1 had a repeat MRI, PIRADS 1. Patients with a PIRADS 2 MRI who did not have a subsequent biopsy were followed up in a mean time of 6.2 months, with a PSA change of −0.5. 35 (9.8%) had a biopsy during their later follow up to June 2016. 24 (6.7%) and had benign or clinically insignificant cancer, 6 had grade group 2, 4 had grade group 3 and 1 had grade group 4 cancer. and 27 (7.5%) had another MRI (20 PIRADS 2, 2 PIRADS 3, 3 PIRADS 4 and 2 PIRADS 5). Patients with a PIRADS 3 MRI who did not have a subsequent biopsy were followed up in a mean time of 5.3 months, with a PSA change of −0.2. 7 (10.4%) had a biopsy during their later follow up to June 2016. 6 were benign or clinically insignificant cancer and 1 was grade group 2. 7 (10.4%) had another MRI (2 PIRADS 2 and 3 PIRADS 4.

Conclusions: Where mpMRI reporting accuracy is known, mpMRI is being used in current clinical practice to triage for biopsy in the diagnostic work-up of prostate cancer in selected patients. In our series, only 23.4% of negative MRI (PIRADS 1 and 2) had a biopsy immediately afterwards and underwent Neo Active Surveillance instead. As some of these patients will have significant disease, close follow up is mandatory.

Biparametric MRI: could it reduce the cost of MRI while maintaining diagnostic accuracy for prostate cancer?

Introduction & Objectives: Use of multi-parametric MRI (mpMRI) has increased massively in prostate cancer diagnosis, not only in active surveillance and post negative TRUS biopsy, but as part of the upfront diagnostic algorithm. The prostate imaging-reporting and data system version 2 (PIRADS v2) rates the likelihood of significant prostate cancer on a scale from 1 to 5, which encompasses T2W images, diffusion-weighted imaging (DWI) and contrast dynamic-enhanced (DCE) MRI. DCE only affects the overall PIRADS score when a lesion is deemed PIRADS 3 on diffusion weighted imaging (DWI) in the peripheral zone. The aim of this study is to assess the utility of DCE, which requires the administration of intravenous contrast, adding cost and risks to patients.

Methods: Data on all patients undergoing their first prostate mpMRI for initial diagnosis, active surveillance and previous negative biopsies were recorded into a custom-made prospective REDCap database between July 2013 and May 2016. All mpMRIs were reported by experienced radiologists.

Results: 1191 mpMRI were performed during this time period. Mean patient age was 65.1 years and mean PSA was 7.43. 658 patients were undergoing their initial mpMRI without previous biopsies. Only 85 (7.1%) mpMRI had lesions with DWI PIRADS score of 3 in the peripheral zone. Of the initial mpMRIs without previous biopsies, only 56 (8.4%) had lesions with DWI PIRADS score of 3 in the peripheral zone. Of the 85 patients with a lesion that was equal to 3 on DWI in the peripheral zone, 58 had an mpMRI that had an overall PIRADS score of 3 and had a subsequent biopsy. 35 had clinically insignificant cancer or benign biopsy, 17 had grade group 2 on histology and 6 had grade group 3. 4 patients had an overall PIRADS score of 4 and a subsequent biopsy. 3 were benign or clinically insignificant cancer and 1 had grade group 2 cancer. 14 of these patients had a subsequent radical prostatectomy, which showed 1 grade group 1 histology, 7 grade group 2 histology and 6 grade group 3 histology. Lesions with DWI score of 3 only make up a small proportion of mpMRIs, and fewer patients require radical treatment.

Conclusions: DCE appears to have a minor role in determining the overall PIRADS score of a lesion and is relevant in less than 9% of cases. By omitting the DCE, and therefore contrast administration, patients would be spared risks of nephrotoxicity and anaphylaxis, and healthcare costs could be cut without reducing diagnostic accuracy in the vast majority of cases.

Zero hospital admissions for infection after 1194 transperineal prostate biopsies

Introduction & Objectives: Transrectal biopsy is plagued by an increasing rate of serious infection, despite use of recommended fluoroquinolone antibiotics. Transperineal biopsy (TPB), on the other hand, has been associated with an exceedingly low rate of serious infection. The aim of this study was to determine the rate of hospital admissions for infection after transperineal biopsy of prostate.

Methods: Patients underwent transperineal biopsy of the prostate (TPB) between May 2012 and June 2016 by a private group urology practice, at multiple hospitals across Melbourne. A standard
brachytherapy template grid was used, taking a number of samples from left and right prostate posterior, mid and anterior regions. Some patients had extra core biopsies taken from target areas suspicious of cancer identified on prior MRI. Data collected from these patients were entered into an ethics approved prospective database including prophylactic antibiotics used and post operative complications.

Results: 1,194 consecutive patients underwent TPB. Initially patients were treated with quinolone prophylaxis and then later patients received cephalozolin only. 710 (59.5%) had single dose IV cephalozolin, 388 (32.5%) had an oral quinolone, 92 (7.7%) had IV ceftriaxone and 4 (0.3%) had IV clindamycin or vancomycin prophylaxis. Routine practice shifted from use of quinolones to cephalozolin during the study period. 21 (1.8%) patients developed acute urinary retention and 1 patient was treated in the community with oral antibiotics for prostatitis. No patients were readmitted to hospital with infection.

Conclusions: Sepsis post TPB is an exceedingly rare complication, with a 0% rate in this large prospective multicentre cohort. It is safe to use single dose cephalozolin only as antibiotic prophylaxis prior to TPB, negating the need for quinolones. This study supports the current Australian Therapeutic Guidelines recommendation for TPB prophylaxis. Whether any antibiotic prophylaxis is needed at all for TPB is the subject of a future study.

A retrospective analysis of transperineal cognitive fusion biopsy of high grade multiparametric MRI lesions compared with template mapping biopsies for diagnosis of clinically significant prostate cancer in a public tertiary hospital


© 2017 The Authors
BJU International | 119, Supplement 2, 4-42

Introduction & Objectives: Focal therapy (FT) aims to target and ablate limited volume localised prostate cancer (PCa) while preserving non-cancerous prostatic tissue and adjacent structures to minimize treatment toxicity. Irreversible electroporation (IRE) is a novel technique with potential advantages including a sharply demarcated ablation zone and tissue selectivity. The objective of this study was to determine the safety, quality of life (QoL) and oncological outcomes of primary and salvage IRE procedures.

Methods: Between February 2013 and June 2016, all patients who underwent IRE as a primary or salvage treatment for localised PCa were reviewed. Safety and QoL data were prospectively collected; oncological outcomes were retrospectively collected. Safety was assessed by grading adverse events (AE) using Common Terminology Criteria. QoL outcomes were measured by the Expanded Prostate cancer Index Composite (EPIC), SF-12 Physical and Mental Component Summary and AUA symptom scores. Oncological outcomes included follow-up biopsy results and/or 6-month mpMRI. Significant cancer on follow-up biopsy was defined as either Gleason sum 6 with core involvement >5 mm in any core or any Gleason sum 7–10. On follow-up MRI, PIRADS score 4–5 or lesions described as suspicious for significant tumour were considered significant cancer. All analyses were performed for primary IRE and salvage IRE separately. Wilcoxon’s Signed Rank Test and Rank Sum Test were used to assess for differences in paired and unpaired continuous variables respectively.

Results: 107 patients were included in the analysis: 79 primary IRE and 28 salvage IRE. All patients had significant PCa on pre-treatment biopsy. No high-grade (3-5)
A comparison of the incidence of newly diagnosed metastatic prostate cancer at an Australian tertiary facility pre and post publication of the US Preventative Services Task Force (USPSTF) recommendation on PSA testing

S. SMITH
Townsville Hospital, Douglas, Australia

Introduction & Objectives: Currently prostate specific antigen (PSA) screening remains a highly controversial topic within the medical profession. The USPSTF recommendation published in May 2012, changed the recommendation of PSA screening to that of Category D (moderate or high certainty that the service has no benefit or that the harms outweigh the benefits). Subsequently, the Australian College of General Practitioners changed their guidelines recommending against population based PSA screening. The aim of this study is to test the hypothesis that the incidence of metastatic disease in newly diagnosed prostate cancer has increased post changes to the PSA screening guidelines.

Methods: A retrospective analysis was undertaken of patients who had been newly diagnosed with prostate cancer on transrectal ultrasound (TRUS) biopsy at the Townsville Hospital between 2009 and 2015. Patients were divided into two groups based on when they had undergone their TRUS biopsy either pre (2009–2011) or post (2013–2015) release of the USPSTF recommendations on PSA screening. Metastatic disease status was determined by reviewing both a CT chest, abdomen and pelvis as well as a nuclear medicine bone scan that each patient had undergone as part of their disease staging workup. A comparison of the incidence of newly diagnosed metastatic prostate cancer was then made between the two groups.

Results: One hundred and thirty patients were allocated to each group. In the pre USPSTF guidelines group, twenty-three out of one hundred and thirty patients had newly diagnosed metastatic prostate cancer (17.7%). In comparison, forty-one out of one hundred and thirty patients (31.5%) had newly diagnosed metastatic prostate cancer in the post USPSTF guidelines group.

Conclusions: Alarminglly, the incidence of newly diagnosed metastatic prostate cancer nearly doubled in patients referred to the Urology Department at the Townsville Hospital post the release of the USPSTF guidelines in 2012. This data is suggestive that a correlation exists between altered PSA screening guidelines and the incidence of newly diagnosed metastatic prostate cancer within the Australian setting.

Can we predict who to nerve spare using PSMA PET?

H. TRAN, A. WEERASINGHE, A. PIRIPIRIS, D. WOON, P. MANCHOUR, S. APPU and J. LANTON
Monash Health, Clayton, Australia

Introduction & Objectives: Prostate specific membrane antigen (PSMA) PET is a novel imaging modality that has been incorporated into current clinical practice at certain centres. It is currently used pre-operatively for the detection of metastatic disease in the setting of negative lymph node staging by conventional imaging techniques. It is not yet clear whether it has a role in the description of disease in the prostate itself. The aim of this study is to evaluate the diagnostic accuracy of 68 Ga-PSMA PET by determining whether pre-operative PSMA PET avidity in the prostate on 68 Ga-PSMA PET correlates with higher risk prostate cancer on histopathology and whether this in turn should influence surgical technique.

Methods: This is a prospective, multicentre cohort study at Monash Health. Between January 2015 and August 2016, 12 patients (mean age ± SD, 64 ± 5.2 years) were identified with biopsy-proven intermediate to high risk prostate cancer who had undergone 68 Ga-PSMA PET prior to radical prostatectomy. Data (demographics, histopathology of radical prostatectomy) was collated from Monash Health using 68 Ga-PSMA PET images. Statistical analysis with SPSS was performed using t-test.

Results: The correlation of higher risk disease (Gleason 8 and 9) on histopathology with intense avidity on 68 Ga-PSMA PET showed a specificity and sensitivity of 75%. Furthermore, all patients with higher risk disease demonstrated more intense avidity than intermediate risk disease (Gleason 7). The correlation of the location of disease (right or left) on imaging to histopathology demonstrated a sensitivity and specificity of 70.5% and 85.7%, respectively. However, of those with higher risk disease, only 50% of 68 Ga-PSMA PET-avid foci correlated with the location of disease on radical prostatectomy specimen. The remaining 50% hadhot spots that did not correlate to the histopathology.

Conclusions: 68 Ga-PSMA PET is more likely to detect higher risk disease in the prostate as compared to intermediate risk disease, however the location of disease in the prostate does not necessarily correlate to that detected on histopathology. Therefore, surgical decisions regarding nerve sparing should not be altered by the 68 Ga-PSMA PET result.
Patterns of failure in a prospective pilot study of Oligometastases from prostate cancer treated with Stereotactic Ablative Radiosurgery (POPSTAR)

C. UDOVICICH*, S. SIVA†, M. BRESSEL†, S. CHANDER, M. SHAW, J. VIOLET, J. GOAD‡, N. LAWRENCUSCHK*, D. MURPHY*, and F. FAROUDI‡

1Western Health, Footscray, Australia; 2Peter MacCallum Cancer Centre, Parkville, Australia; 3St Vincent’s Hospital, Fitzroy, Australia; 4Austin Health, Heidelberg, Australia; 5Royal Melbourne Hospital, Parkville, Australia

Introduction & Objectives: Stereotactic ablative body radiosurgery (SABR) is an emerging treatment for patients with oligometastatic prostate cancer. The POPSTAR study (ANZCTR Trial ID: ACTRN12613000436774) enrolled patients with their primary cancer controlled with a presentation of one to three oligometastases. We report the interim results of patterns of failure in our cohort.

Methods: Patients underwent single fraction 20 Gy SABR to each oligometastasis. Sites of failure after SABR were identified and classified as local, regional (nodes only) or distant. Kaplan-Meier methods were used to estimate progression-free survival (PFS), freedom from local failure (FFLF), freedom from regional failure (FFRF) and freedom from distant failure (FFDF).

Results: With a median follow up of 24 months, 33 patients with 50 oligometastases were enrolled. The mean age was 70 years (range 51-84) and the median PSA level was 6.4 ng/ml. The median time from primary cancer treatment to SABR was 2.9 years with a primary Gleason score of ≥8 in 44% (n = 14). Patients were treated with SABR to bone (n = 20), pelvic nodal (n = 11), extra-pelvic nodal (n = 1) and to both bone and nodal (n = 1) sites. One, two and three oligometastatic lesions were treated in 67%, 15% and 18% of patients, respectively.

No patients died in the study period. The 24-month FFLF and PFS was 93% (95% CI 84-100) and 32% (95% CI 20-54). For patients with bone only oligometastases, 24-month FFLP and FFDP was 89% and 39%. For pelvic nodal only oligometastases the 24-month FFLP, FFRP and FFDP was 100%, 34% and 45%, respectively. Relapses after SABR to bone (n = 12) occurred to bone only (n = 9), bone and nodes (n = 2) and only nodes (n = 1). Relapses after SABR to pelvic nodes (n = 8) were located in the pelvis only (n = 4) and both pelvis and extra-pelvic nodes (n = 4). Salvage RT was performed for 3/12 patients with distant relapse after SABR to bone metastases and 2/8 patients after SABR to pelvic nodes.

Conclusions: For selected patients with metastatic disease, a single treatment session with SABR offers excellent in-field tumour control with one third of patients being free from disease at 24 months. Subsequent relapses after SABR to bone or node were generally to the same type. Salvage treatments after limited subsequent relapses are feasible and warrant further investigation.

MRI-guided focal laser ablation in localised prostate cancer: interim phase II clinical trial

Y. AL-HAKEEM*, O. RAZ†, H. YILMAZ*, N. COLEPENER* and C. VAROL‡

1Department of Urology, Macquarie University Hospital, Faculty of Medicine and Health Sciences (FMHS), Sydney, Australia; 2Pathologist, Douglas Hanly Moir Pathology, Sydney, Australia; 3Medical Radiation Scientist, Macquarie Medical Imaging (MMI), Sydney, Australia

Background: MRI-guided focal laser therapy is emerging as an intermediate modality between radical treatment and active surveillance in treating low-intermediate risk prostate cancer.

Objective: The aim of this study was to examine the safety, feasibility and cancer control of MRI-guided focal laser therapy (FLT) in patients with clinically localised prostate cancer.

Design, setting and participants: Men aged 50-73 years presenting with PSA ≤ 10 ng/ml and one or two focal prostate lesions on multi-parametric MRI (mpMRI) were included in this study. The lesions were of clinical stage < T3 and subsequently proven by targeted biopsy to be Gleason score ≤ 7 prostate cancer.

Patients were excluded if they had undergone any previous pelvic irradiation or hormonal deprivation therapy. Treatment success was defined based on the consensus criteria for success of focal therapy (Donaldson 2015). From May 2013 to October 2016, a total of 33 patients underwent focal laser therapy at a single medical centre.

Intervention and follow-up: Under sedation or general anesthesia, using real-time MR guidance, a 600 μm laser fiber was placed either transperineal or transrectal to the MRI-visible tumor(s). A 980 nm diode laser at 10-15 W was used for ablation. On average, 3-4 laser ablations were performed per lesion. Each session lasted 2 minutes with temperature reaching up to 100⁰C in the treated area. The median time for the whole procedure was 120 minutes. At the end of the procedure, gadolinium contrast was given intravenously and T1 and T2 images were taken to ensure effective treatment of the cancer. International prostate symptom score (IPSS), Sexual Health Inventory in Men-5 score (SHIM) and PSA levels were assessed prior to the procedure and repeated at 1, 3 and 6 months and then at 6 monthly intervals. MRI was repeated at 3 months. Cancer control was assessed via an MRI-guided biopsy at 6 months which included both targeted and random biopsies.

Results: In 33 patients who enrolled in the study 30 patients received FLT. Treatment was successful in 20 out of 24 patients (83.3%). The follow up biopsy is still pending in 6 patients. There were 3 patient excluded from the analysis due to technical issues in receiving FLT.

There were 4/24 patients (16.6%) who had persistent cancer at their treated areas, one patient received repeat FLT, one EBRT and two placed on active surveillance.

Three patients required short-term catheterisation following the procedure. Two patients had transient haematuria. Incontinent pads were not required in any patient following the procedure. PSA, IPSS and SHIM measurements up to 6 months were not statistically different from baseline (all p values > 0.05).

Conclusions: Our early MRI-guided focal laser therapy experience is a safe and promising form of targeted treatment for localised prostate cancer. There was minimal morbidity with no effect on continence or potency at 6 months. This study is ongoing with treatment review up to 5 years.

Is transperineal biopsy a risk factor for positive margins and negative outcomes in patients who undergo robotic assisted radical prostatectomy?

F. ORDONES*, K. DAS†, A. FULLER‡, K. MORETTI*, M. O’CALLAGHAM† and N. BROOK‡

1Department of Urology, Royal Adelaide Hospital, Adelaide, Australia; 2SAPCCOC,
Introduction and Objectives: Trans-rectal (TRUS) and increasingly transperineal biopsy (TPB) are used as the diagnostic tools for prostate cancer. TRUS is associated with sepsis rate of 1-2%, (of particular concern in the presence of extended spectrum beta lactamase and carbapenem resistant enterobacteriae), and poor sampling of anterior lesions. TPB is not associated with this issues. Anecdotally, TPB is said to increase the difficulty of apical dissection during radical prostatectomy, probably due to a more intense inflammatory reaction associated with TPB. The aim of this study was to compare pathological, functional and oncological outcomes after robotic assisted radical prostatectomy (RARP) in patients who underwent TRUS or TPB.

Methods: The SA-PCCOC database of prostate cancer was examined. All patients who underwent RARP were examined (n = 4125). Of these, 3706 had complete data. Patients who had more than one biopsy of any type, or both biopsy types were excluded from the study.

Results: 2618 patients had a robotic radical prostatectomy proceeded by a single TRUS biopsy; the corresponding figure for TPB was 66. Demographics were statistically matched for the TRUS and TPB groups, except year of surgery (p = 0.011), presence of HGPIN (p < 0.001), time from biopsy to RP (<0.001) and percentage of positive cores (<0.001).

In univariate analysis, there was no significant association between biopsy type and nerve sparing status (p = 0.46) or presence of pathological positive margins (p = 0.22). Time to Biochemical Recurrence was quicker for patients who underwent TRUS in univariate (p < 0.001) but not multivariate analysis. Continence and erectile function at 12 months were no different between groups, and there was insufficient data to comment on results at 24 months.

Conclusions: This large cohort of men undergoing RARP did not demonstrate an association between biopsy type and oncologic or functional outcomes. It is limited by the small number of men who had only TPB prior to surgery.

No increase in TRUS biopsy sepsis rates following reduced quinolone peri-operative antibiotic prophylaxis from 3 days to single pre-operative dosing

P. Viswambaram†, C. Hawks*, K. Mcdermott†, M. Brown* and D. Hayne†
†Fiona Stanley Hospital, Murdoch, Australia; *University of Western Australia, Nedlands, Australia

Introduction & Objectives: Urosepsis is a common complication of TRUS biopsy. With increasing antimicrobial resistance, prospective audit of outcomes is important. Following a change in practice at our institutions to comply with the Antibiotic Therapeutic Guidelines, we report our TRUS biopsy sepsis rates.

Methods: Prospective data has been collected on all patients having TRUS biopsies at our institutions since the inception of the one-stop prostate clinic (OSPC) in August 2011. Each patient is phoned by the OSPC Nurse 2 weeks after the TRUS biopsy, ensuring patients receiving further antibiotics from other sources or that are admitted to hospital, are captured. Patient demographic data, antibiotic usage and the infective complication rates were recorded. Prior to Feb 2015, antibiotic prophylaxis consisted of 6 x 500 mg ciprofloxacin PO commencing 1 hour prior to TRUS biopsy. Subsequently, a single pre-operative 500 mg ciprofloxacin dose was given. Patients with a history of Asian travel received a single dose of 1 g IV Ertapenem throughout the entire study period.

Results: 627 patients underwent TRUS biopsy since August 2011. 357 patients had TRUS biopsies prior to the protocol change while 270 had TRUS biopsies after the protocol change. We were unable to contact 46 patients leaving 581 assessable patients, 326 prior to and 255 subsequent to the protocol change.

There were no significant differences in patient demographics before and after the protocol change. Infective complication rates of 3.37% were noted in patients who received prophylaxis prior to the protocol change while rates of 4.7% were noted in patients who received prophylaxis subsequent to the protocol change (p = 0.52). No patient who received Ertapenem on the basis of a history of recent Asian travel had an infective complication.

Conclusions: Despite the non-randomized design, this large prospective audit strongly supports the use of a single dose of ciprofloxacin prior to TRUS guided prostate biopsy as per the Antibiotic Therapeutic Guidelines.
Female gender is associated with higher mortality after radical cystectomy for organ-confined bladder cancers in UK: a population-based study

L. WANG*, W. RANASINGHE*, L. HOUNSOME†, J. VERNE† and R. PERSAD‡
*Eastern Health, Fitzroy, Australia; †South West Public Health Observatory, Bristol, UK; ‡Department of Urology, University Hospitals Bristol Trust, Bristol, UK

Introduction & Objectives: We aimed to analyse survival rates of T1 and T2 bladder cancer between male and female over the last two decades in England.

Methods: National Cancer Data Repository (NCDR), a prospectively maintained population-based database, national Cancer Information System (CIS) and National Statistics (ONS) were used to calculate Incidence, survival and mortality data for all T1 and T2 bladder cancers in England from 1990–2010. Age standardised relative survival rates were calculated and t test was used to calculate the differences in mean.

Results: Between 2000–2010, 20,683 men and 5,861 women were diagnosed with T1 tumours and 17% and 8% underwent cystectomy, respectively; while, 21% of 14,366 men and 5,820 women diagnosed with T2 disease also progressed to cystectomy. Compared to males diagnosed with T1 cancers from 1990-2010, females had lower 5 -year [78.9% vs 84.3%; p < 0.001] and 10-year [73.8% vs. 79.6%; p < 0.001] relative survival rates, when adjusted for age. For T2 disease, there were also significant reductions in the 5-year [36.4% vs. 42.9%; p < 0.001] and 10 year relative survival rates [32.7% vs. 39.9%; p < 0.001] in females compared to males, when adjusted for age.

Conclusions: Female gender appears to have a worse prognosis after radical cystectomy for organ-confined bladder cancers in UK.

Survival outcomes in men >75 following radical prostatectomy in Victoria

L. WANG*, W. RANASINGHE*, R. PERSAD‡, D. BOLTON† and S. SENGUPTA†
*Queensland Health, Toowoomba, Australia; †Austin Health, Heidelberg, Australia; ‡University Hospital, NHS Trust, Bristol, UK

Introduction & Objectives: We aimed to investigate the outcomes of patients older than 75 years of age in Victoria undergoing radical prostatectomy (RP) for prostate cancer (PC).

Methods: Data on all men undergoing RRP in Victoria between 1st January 2004 and 31st December 2014 were obtained from the Victorian Cancer Registry. Tumour characteristics including Gleason grade, stage of disease and cause of death were also obtained. Statistical analysis was performed using Chi-squared test, Cox proportional hazards method and Kaplan-Meier analysis.

Results: 14686 men underwent RRP during the defined period with a median follow up of 58 months. 332 of these were men over the age of 75. All parameters are comparisons between patients >75 years of age and men <75 years of age. Men >75 years had a higher proportion of Gleason grade ≥8 disease (16.6% vs 11.4%, p < 0.001) but had similar stage of disease. Men <75 had higher rates of 5- and 10- year overall survival (67.3% vs 96.3% and 27.7% vs 89.1%) and higher rates of 5- and 10- year PC specific survival (96.2% vs 99.3% and 94.3% vs 97.4%), respectively. Men >75 had higher rates of deaths from other causes. Age was an independent risk factor for PC specific and overall mortality on multivariate analysis (HR 1.49, 95% CI 1.32–1.68; p < 0.001 and HR 4.26, 95% CI 2.15 – 8.42; p < 0.001), when adjusted for stage and grade.

Conclusions: Older men (>75 years) undergoing RRP in Victoria had higher grade disease but similar stage. Age was an independent risk factor for worse prostate cancer specific and overall survival.

Prostate volume measured by transrectal ultrasonography and MRI compared to actual volume after prostatectomy

Y. WANG*, N. DAVIES*, S. KONDALSAMY-CHENNAKESAVAN†, H.-W. YAP* and J. GLEESON*
*University of Queensland, Rural Clinical School, Toowoomba, Australia; †University of Queensland, Rural Clinical School, Toowoomba, Australia

Introduction & Objectives: Accurate prostate size measurement is useful in a wide variety of clinical situations. Transrectal ultrasound (TRUS) and magnetic resonance imaging (MRI) are thought to be the most accurate methods currently. However, there are relatively few studies that have compared the accuracy of these modalities and existing studies generally had small patient numbers. The aim of this study was to compare the prostate volumes measured with TRUS and MRI with the actual surgical specimen size to assess the accuracy of these modalities. A secondary aim of the study was to determine whether the presence of a large median prostate lobe or the tumour size affected the accuracy of these measurements.

Methods: A retrospective review was performed of patients who underwent radical prostatectomy for prostate adenocarcinoma between 2013 and 2015 in a regional centre in Queensland Australia. The actual size of the prostate as measured from the pathological specimen were recorded and compared to the sizes obtained from TRUS and MRI using linear regression models. The presence of a large median lobe and the final tumour size from the pathological specimen were also recorded. Patients were divided into subgroups based on the presence of a median lobe and tumour size and the accuracy of the size measurements were compared between these groups.

Results: A total of 115 patients underwent radical prostatectomy during the study period. Of these, 91 patients had pre-operative TRUS assessment of prostate size and 53 had MRI assessment. The average prostate size from the pathological specimens was 40.9 (range 20-76) cc. The average prostate size from TRUS and MRI were 36.5 (range 14-83) cc and 44.1 (18-84) cc, respectively. Both TRUS and MRI measurements correlated significantly with the actual specimen volumes. The volumes measured by MRI were linearly related to the actual sizes with the slope of the relationship being 1.1301, R² = 0.726, p < 0.001. The volumes obtained from TRUS was also linearly related to the actual size with the slope = 0.91525, R² = 0.697, p < 0.001.

On average, MRI overestimated the prostate size by 6% while TRUS underestimated size by 9%. The difference in prostate size measured by TRUS and MRI to actual size had a positive linear relationship to the radical prostate volumes. The disagreement between both TRUS and MRI measured prostate size compared to actual size increased as prostate size increased. The presence of a large median lobe was noted in 16 patients but did not significantly affect the accuracy of the measurement by TRUS or MRI. Similarly,
the tumour volume did not have significant impact on the accuracy of the measurements.

**Conclusions:** MRI is slightly more accurate that TRUS for measuring prostate size. Both MRI and TRUS become less accurate as the prostate size increases. Both modalities tend to underestimate prostate size at lower volumes and overestimate size at higher volumes. Neither the presence of a large median lobe or the tumour volume significantly affected accuracy of the measurements.

**Partial nephrectomy is a safe approach to small renal masses: a Western Health experience**

**C. YIP, S. PELLEGRINO, D. STEINER, J. OOI and P. DUNDEE**

*Western Health, Melbourne, Australia*

**Introduction and Objectives:** Renal cell carcinoma (RCC) represents 2-3% of all cancers, with the highest incidence in Western countries. Partial nephrectomy for the treatment of small RCC is gaining popularity as it preserves renal parenchyma, potentially reducing the risk of future chronic kidney disease. This study aimed to compare intra-operative and post-operative complication rates of partial and radical nephrectomy in patients with small renal masses.

**Methods:** A single-centre retrospective review of all patients undergoing surgical intervention for small renal masses (≤40 mm in size) over a 5 year period was performed. Patients were categorised into 2 groups, those undergoing partial nephrectomy (PN) versus those undergoing radical nephrectomy (RN).

**Results:** A total of 322 patients underwent surgery for RCC during the study period. After exclusion criteria was applied a total of 94 patients were suitable for analysis (PN: 62 vs RN: 32). Male patients constituted the majority in both groups (PN: 37/62, 60%; RN: 23/32, 72%). However, gender distribution was not different between the two groups; \(p = 0.27\). Median age (years) at surgery was reduced in PN patients (58.5 vs 67.5; \(p = 0.04\)). Laparoscopic surgery was the main surgical approach utilised in both groups (PN: 52/62, 84%; RN: 30/32, 94%) with no difference found in the operative approach utilised between groups \(p = 0.21\). There was no difference in intra-operative complication rates between groups (PN: 13/62 vs RN: 4/32; \(p = 0.40\)). Total post-operative complications (Clavien score ≥2), were also comparable between the two groups (PN: 17/62 vs RN: 10/32; \(p = 0.81\)). No difference was found between groups for major post-operative complications rates (Clavien score ≥3, PN: 3/62 vs RN: 3/32; \(p = 0.41\)). There was no difference in total delayed complications (i.e. complications after discharge, Clavien score ≥2) between the two groups (PN: 10/47 vs RN: 6/20; \(p = 0.53\)). Major delayed complication rates (Clavien score ≥3) were also comparable between the two groups (PN: 6/47 vs RN: 2/20, \(p = 1.00\)). Pre-operative and post-operative eGFR (6-18 months post-operatively) was recorded for both groups. The mean post-operative reduction in eGFR was significantly less in PN patients (PN: 8.4% vs RN: 36.7%; \(p < 0.001\)). Patients who subsequently developed chronic kidney disease (CKD, eGFR ≤45) post operatively was significantly reduced in the PN group (PN: 1/32 vs RN: 6/16; \(p = 0.004\)).

**Conclusions:** PN is a safe and effective operative approach for the management of small RCC. Despite being more technically demanding, our experience has not demonstrated a significantly increase in complication rates. Patients may also benefit from preserved renal function, with a reduced rate of CKD noted in these patients on long term follow up.

**The advance of urology training with the robotic simulator**

**W. ZHONG and P. MANCUSO**

*Liverpool Hospital, Liverpool, Australia*

**Introduction & Objectives:** With increasing popularity globally, urology simulator provides training in a low-stakes environment and offers the ability to simulate multiple exercises in different settings. Since the first robotic simulator was introduced to Liverpool Hospital in Sydney, the practical role of the simulator is yet to be identified. This review aims to explore the various ways of employing the simulator to provide better skill apprehension, and thus giving further insights into urology training in Australia.

**Methods:** Literature research was conducted with the key words ‘uro*’ and ’virtua*’ and ’simula*’ and ’robo*’. Academic search engines used included ‘Scopus’, ‘Pubmed’, ‘Medline’ and ‘Sciencedirect’. Each article was critically appraised using PRISMA methodology.

**Results:** Globally, three simulator robots are currently used to train surgeons. All three of them employ inanimate tasks to teach trainees, such as picking up and transferring pegs, pattern cutting, string running, and intracorporeal knot tying. Assessment of training can be achieved with both subjective and objective scores. Subjective assessment evaluates the face and content validity indicated by the numeric score given by the trainee. Objective scores are obtained primarily with the Global Evaluative Assessment of Robotic Skills score and the Urethral Anastomosis score. Currently, no definite robotic simulator curriculum has been designed in a systemic way.

**Conclusions:** Cohort study is the main type of study in this area, which lacks blinding and creates more bias. It is suggested that future assessment of performance should be conducted with randomized control studies to yield more accurate results. The development of an Australasian specific curriculum is also needed for the better advancing of simulator training in Australia.