Podium Presentations

Andrology/Prosthetics

Minimally Invasive No-Touch ("MINT") technique for penile prosthesis insertion – 5 years results

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Introduction and Objectives: The minimally invasive infrapubic inflatable penile implant procedure was developed by Dr Perito with the aim of minimising operative time and post-operative morbidity. Dr Eid has also demonstrated a significant reduction in post-operative infections with his No-Touch technique. We have developed a new technique that combines key aspects of these 2 approaches to create a minimally invasive, no-touch ("MINT") technique for penile prosthesis insertion. We theorised that the MINT technique would take advantage of the benefits that each of these established approaches offered and therefore our primary aims were to assess feasibility, safety, post-operative infection rate and revision rate.

Methods: The principles of the MINT technique involve an infrapubic approach combined with a no-touch technique facilitated by using 2 standard surgical drapes (1 clear non-adhesive drape and 1 Loban® drape) and an Alexis® wound retractor (figure 1).

We present results for our first 258 consecutive patients undergoing primary prosthesis implantation from May 2012 to July 2017, and followed-up for at least 3 months. Patients with complex surgery necessitating >1 incision were excluded. Data was collected using a prospective database. This is the largest penile implant series with the longest follow up to be published in Australia.

Results: Average age (±SD) was 60.8 (±10.3) years. Patients had one or more of the following aetiologies for erectile dysfunction: vascular disease (n = 121), post-radical prostatectomy (n = 142), diabetes (n = 80), Peyronie's disease (n = 60), venous leak (n = 17) and priapism fibrosis (n = 4). Implant used: Coloplast Titan (n = 246), Genesis (n = 6), American Medical Systems (LGX; n = 5), (CX; n = 1). The average (±SD) cylinder and rear tip extender length was 19.45 (±1.8) and 1.0 (±0.8) cm respectively. Median (IQR) follow-up was 30.6 (16.8, 45.7) months. There has been 3 (1.2%) complications: one patient had prosthetic infection after prolonged post-op catheter, which was salvaged. 2 patients had urethral perforation which was repaired intra-operatively, but had a post-operative infection. One of these 2 patients had a prosthesis explant and the other patient management is ongoing. There were also 18 (7%) non-infection related ancillary procedures: 11 pump revisions, 2 corporoplasties, 2 prosthesis revisions, 1 revision of reservoir, 1 glansplasty, and 1 prosthesis explant due to pain with no clinical or laboratory signs of infection.

Conclusions: The MINT technique for penile implant surgery is a safe and feasible procedure with a 1.2% infection rate and 7% revision rate in our first consecutive 258 patients with 30.6 months median follow-up. Notably, there were no infections unrelated to procedure complication, that is, no infections the standardised MINT technique.

Psychological impact and health seeking behaviour among Australian men with Peyronie’s Disease. A population based study

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Introduction: Peyronie’s disease (PD) is a chronic inflammatory disease involving the tunica albuginea of the corpora cavernosa. The reported prevalence varies in studies between 3.0% and 13%. A focus for research thus far has been in understanding the pathophysiology and treatment options for PD, however, the psychological implications and factors driving those affected to seek help remain poorly explored.

Aim: Our primary aim was to identify the impact of PD on men’s lives. Secondly, we sought to assess attitudes and behaviours of both men with PD compared with those unaffected by PD towards seeking medical advice and treatment in regards to penile curvature.

Methods: A national online survey was conducted among a sample of 1103 men aged 35–75 years. This included 333 men with PD and 770 men without PD. The questionnaire, designed by Galaxy Research was transferred into Web Survey Creator and hosted online between 19/01/2016 and 23/01/2016. Following the completion of interviewing, the data was weighted by age, gender and region to reflect the latest ABS population estimates.

Results: Just over half (57%), or the equivalent of 1 million men with a curve or bend in their penis, were 16 years or older when it developed. This represents 19% of all men 35–75 years. One in six (18%) are bothered by pain or discomfort when they have an erection, 26% are...
bothered by the way their erect penis looks and 20% are bothered when they try to have sexual intercourse. The vast majority of men (91%) having sexual intercourse less often as a result of the curve in their penis, are bothered by it. One in five (21%) men report difficulty in having sexual intercourse. One in ten (9%) men with PD have sought advice from a medical professional regarding the curve in their penis. The main reasons why men sought advice from a medical professional were penis curvature or deformity (36%), erection problems (27%), and distress over the way their penis looks (16%). One third of men (34%) who seek advice from a medical professional wait 3 months or less from onset before seeking the advice, 29% wait 7–12 months and 36% 1 year or longer. The main reasons why men with Peyronie’s did not seek advice from a medical professional were that they didn’t think it was a serious medical condition (58%). Just 2% of men with Peyronie’s have ever spoken to a psychologist, counsellor, or other similar support as a result of the curve or bend in their penis.

Conclusions: Among men with PD, there is a high prevalence of emotional distress and relationship problems. Self-perception along with physical limitations and poor health seeking behaviours serve to exacerbate these problems and as such make ideal targets for intervention. A multimodal health care approach to PD may allow for improved quality of life by addressing both the emotional and psychological as well as functional issues pertaining to PD.

The impact of changes in PBS criteria on the prescribing patterns of testosterone in Australia

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Introduction and Objective: In response to a sharp increase in the prescribing of testosterone under the Pharmaceutical Benefits Scheme (PBS) in Australia, the Australian government instituted new, stricter prescription criteria in April 2015. We aim to demonstrate the effect the changes have made to testosterone prescribing patterns in Australia.

Methods: Yearly data from January 1992 to December 2016 and monthly data from April 2011 to June 2017 was collected for all items listed for testosterone replacement in the PBS database. Data was analysed cumulatively and individually for each item to examine trends leading up to and post the PBS changes, Australia wide and per state.

Results: The decade leading up to the PBS changes saw an increase in cumulative testosterone prescription from 61,181 in 2005 to 141,643 in the calendar year ending in 2014, driven mostly by the testosterone 1% gel (item 8619P). The two calendar years since have seen a stabilisation in the market, with 165,805 in 2015 and 148,232 in 2016. While there has been a decreased prescription in most forms of testosterone, this has been balanced by the introduction of new therapeutic modalities such as Testosterone undecanoate injection (introduced in 2015) which has seen significant growth in this period.

Conclusion: The changes enforced by the PBS were in keeping with many similar measures taken by equivalent institutions worldwide and have effectively slowed the growth in prescription witnessed in Australia however the introduction of new item numbers has resulted in cumulative prescription witnessed in Australia.

Endourology/Stones

Single use ureteroscopes – local clinical experience and justifying experimental data

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Introduction and Objectives: Since the introduction of single use ureteroscopes in late 2015, various endourologic departments have developed multiple different protocols for their use. These range from a total change over to such instrumentation to deciding not to incorporate this technology at all. We sought to identify patterns of non-disposable instrument damage experienced in our operating theatre, and to use this data to incorporate disposable instrumentation where it was likely to be the most cost effective.

Methods: We analysed all incidents of damage to flexible ureteroscopes (Olympus URF-V) sufficient to require the instrument to be sent back to the manufacturer for repair at our institution. These occasions involved all uses of 7 individual instruments over a 3 year period. The noted fault at the time the instrument was sent for repair was recorded as were the details of the cases immediately prior to the damage ensuing. Before introduction of disposable ureteroscopes into clinical use for cases where there was a higher risk...
of damage to traditional disposable ureteroscopes, laboratory assessment was undertaken to ensure that there would be equivalence of capability with the current non-disposable instrumentation in regard to objective measures of maneuverability and vision. All measurements being repeated on 3 occasions and the results averaged to identify a mean result for each parameter.

**Results:** Over a 3 year period there were 20 instances of ureteroscope damage sufficient to require instrumentation to be returned to the manufacturer for repair. These ranged between 2 and 5 occasions of mandated repair for each instrument. In all but 3 occasions of damage at least one component of the fault to be repaired was a leak at the bending rubber of the distal end of the ureteroscope. Multiple other less consistent forms of damage also were identified. When single use ureteroscopes were evaluated there was comparability of metrics with reusable instruments on indices of flexion and deflection with and without instrumentation in the working channel, and in regard to irrigation use, as well as subjectively in regard to visual appearance of the intra-renal anatomy.

**Conclusions:** Damage to the distal bending rubber of the ureteroscope is the most common cause of damage requiring such instrumentation to be sent back for repair. This fault is more common in management of large stone volumes and lower pole calyceal calculi. Single use ureteroscopes have been able to be successfully introduced in the management of stone disease for those cases where there is a high risk of damage to reusable equipment, with satisfactory outcomes for those patients treated. Such single use ureteroscopes show comparability with standard equipment in regard to most metrics of use.

**Australia versus the UK: a multinational approach to evaluating the management of patients with acute ureteric colic in Australia**

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**Introduction and Objectives:** Ureteric lithiasis is among the most common acute urological presentations in Australia. Although the number of stone procedures is increasing, the decision for intervention versus conservative management remains controversial with substantial regional variation. MIMIC is the largest international retrospective cohort study investigating treatment pathways and outcomes for patients with acute ureteric colic. This study highlights data contributed to the collaboration from health networks across Australia.

**Method:** This study is a multicentre international cohort coordinated by the British Urology Researchers in Surgical Training (BURST) in partnership with the Australian Young Urology Researchers Organisation (YURO). CT-KUB confirmed obstructing ureteric calculi presentations were collected from patients admitted to hospitals in the UK, Ireland, New Zealand and Australia. Patients were managed according to local hospital policy and patients who were discharged with conservative management were followed for at least 6 months. Data was entered into a centralised REDcap database and multivariate analysis was performed on: patient age, sex, previous history, location of presentation, stone size and position.

**Results:** Data was collected from 4181 patients admitted to 71 hospitals in the UK, Ireland, New Zealand with 400 patients entered from 6 health networks across Australia. Regional variation in management and outcomes was noted within Australia and internationally. Most patients in Australia (72%) were discharged with conservative management and of those over two thirds had a confirmed outcome of being stone free or had another admission for intervention with the remainder being lost to follow up. Three quarters of Australian patients experienced spontaneous passage with the remainder requiring active intervention. Spontaneous resolution of ureteric lithiasis was dependent on calculus size, with 79% of stones less than 6 mm and one third of stones larger than 6 mm responding to conservative management. Clearance was affected by anatomical location with proximal, mid and lower/distal ureteric stones passing with increasing rates respectively. These findings are consistent with the across the Australian arm of the study and there was no significant difference between the Australian dataset and the UK cohort.

**Conclusions:** This study represents the most comprehensive data set for the contemporary management of ureteric colic both within Australia and internationally. The dataset collected from the Australian hospitals largely reflected the international cohort. Associations between stone size, stone position and need for intervention were identified. The results of this study can be used to improve management practice both within Australia and internationally.

**Extracorporeal shock-wave lithotripsy (ESWL) is associated with hypertension and diabetes after long term follow-up**

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**Background and Objectives:** In this study, we aimed to evaluate the association of extracorporeal shock-wave lithotripsy (ESWL) treatment for kidney or ureter stones and presence of hypertension and/or diabetes after long-term follow-up.

**Design, Setting, Participants, and Measurements:** All patients with urolithiasis treated by ESWL at our tertiary care center between 1992 and 2013 were retrospectively identified. To assess whether shockwave application to the kidney is associated with long-term adverse effects, patients after ESWL treatment for kidney stones were selected as the main group of interest (kidney group). Patients treated with shock-waves for distal ureter (ureter group) but not for kidney stones were chosen as a comparison group within urolithiasis patients. In 2016, a questionnaire was sent to all patients to assess the prevalence of hypertension and diabetes. The Swiss Health Survey (SHS) data set providing population data was used as an additional comparison group.

**Results:** Chart review identified 2776 patients and patient reported outcomes by a questionnaire were available for 764 patients after shock-wave therapy to the kidney or distal ureter and for 21,597 individuals of the SHS data set. The reported prevalence of hypertension and diabetes was considerably higher in the kidney and ureter group post ESWL treatment compared to the population from the SHS data set (Hypertension: 47.5%, 49.4% and 27.5%; Diabetes: 14.1%, 11.9% and 4.9% respectively).
A multivariable regression analysis adjusted for age, gender and BMI showed that the odds to report hypertension at follow-up were significantly higher the more shock waves were applied either to the kidney (OR 1.05, 95% CI 1.01–1.09, \( p = 0.016 \)) or to the distal ureter (OR 1.09, 95% CI 1.00–1.18, \( p = 0.049 \)). Additionally, the OR to report diabetes at follow-up was significantly higher the more shock waves were applied to the kidneys (OR 1.09, 95% CI 1.04–1.14, \( <0.001 \)) but not to the distal ureter (OR 1.00, 95% CI 0.88–1.13, \( p = 0.961 \)).

**Conclusion:** In this study, ESWL to the kidneys showed a mild but significant increase risk of hypertension and diabetes at long term follow-up. It remains unclear whether this significant association is clinically relevant. However, physicians should advice urolithiasis patients regarding their considerably higher risk of developing hypertension or diabetes during long-term follow-up.

**Stone free outcomes of flexible ureteroscopy for renal calculi utilizing CT imaging**


**Introduction and Objectives:** Stone free rate (SFR) determines ureteroscopy (URS) success rates. Low dose renal only CT scan (LDCT) offers reduced radiation while preserving superior stone fragment visualization. We sought to assess stone free rates following URS for renal calculi at our high volume institution using LDCT.

**Methods:** A retrospective review of patients undergoing flexible URS for renal calculi utilizing active basketing of fragments, as determined by strict CT assessment, was 73%. In patients with residual fragments, the majority are 2–4 mm in size, making URS a treatment option for renal calculi with excellent stone free results.

**Development and validation of predictive nomogram for unsuccessful conservative management for acute renal colic**

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**Introduction and Objective:** Although surveillance and medical expulsion therapy has been recognised as an acceptable initial approach for the management of symptomatic ureteric calculi up to 10 mm, limited published data exist regarding the specific factors associated with successful conservative management. This leads to uncertainty for both patients and clinicians alike in treatment choice. This study aims to identify factors associated with failure of conservative management in patients presenting with acute renal colic, and to develop and validate a nomogram based on Auckland regional data (1.3 million catchment population).

**Methods:** Retrospective analysis was conducted for patients presenting to Auckland City Hospital with acute renal colic who were managed conservatively (2012–2016). Factor domains included: (1) patient (age, gender, ethnicity); (2) clinical (symptom duration, pain, analgesia/antiemetic requirement, alpha blockade, previous renal calculi, renal function, sepsis); (3) stone characteristics (stone burden, density, anatomical position). Using a primary endpoint of requirement for surgical intervention, univariate and multivariate analyses were performed to calculate the odds ratios for failure of conservative management. A nomogram based on significant factors was developed and validated using patients management conservatively between January to June 2017.

**Results:** 353 episodes of conservatively managed acute renal colic were analysed. 76 (21.5%) patients eventually required surgical intervention. Factors for failure of conservative management included symptom duration >3 days (1.12), requirement of opioid analgesia (1.86), use of alpha-blockers (1.52), stone burden (12.9), anatomical position (1.35) and density per 100 HU (7.4) (odds ratio). Multivariate analysis demonstrated an area under the curve of 0.802 (\( p < 0.001 \)). A predictive nomogram for unsuccessful conservative management was developed, based on these results, and validated by using a new sample patients 230 patients.

**Conclusion:** This newly developed nomogram provides an effective clinical tool to aid clinician and patient choice in attempted conservative medical management for acute renal colic.

**Table 1 Logistic regression analysis for factors predicting need for surgery**

<table>
<thead>
<tr>
<th>Variables</th>
<th>Category</th>
<th>OR (95% CI)</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Estimated Glomerular Filtration Rate</td>
<td>( &gt;60 ) vs. ( \leq 60 )</td>
<td>0.630 (0.372-1.07)</td>
<td>0.085</td>
</tr>
<tr>
<td>Opioid Therapy</td>
<td>Yes vs. No</td>
<td>1.71 (0.992-2.96)</td>
<td>0.053</td>
</tr>
<tr>
<td>Duration of Symptoms &gt;3 days</td>
<td>( &gt;3 ) vs. ( \leq 3 )</td>
<td>2.35 (1.29-4.30)</td>
<td>0.005</td>
</tr>
<tr>
<td>Alpha-blockers Therapy</td>
<td>Yes vs. No</td>
<td>0.519 (0.288-0.935)</td>
<td>0.029</td>
</tr>
<tr>
<td>History of Previous Stone Disease</td>
<td>Yes vs. No</td>
<td>1.72 (1.06-2.79)</td>
<td>0.029</td>
</tr>
<tr>
<td>Stone Burden</td>
<td>Continuous</td>
<td>1.08 (1.05-1.11)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Stone Location</td>
<td>Abdominal vs. Pelvic</td>
<td>2.10 (1.27-3.49)</td>
<td>0.004</td>
</tr>
<tr>
<td>Stone Density</td>
<td>Per 100 HU</td>
<td>1.001 (1.001-1.003)</td>
<td>0.029</td>
</tr>
</tbody>
</table>

HU: Hounsfield Units; (AUC 0.802, \( p < 0.001 \))
The efficacy of intra-vesical Botox in patients with Parkinson’s disease and neurogenic detrusor overactivity

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Introduction and Objectives: Patients with Parkinson’s Disease (PD) and extrapyramidal syndromes often report voiding dysfunction and overactive bladder symptoms. Intravesical Botulinum Toxin injections has proven efficacy in the treatment of neurogenic over active bladder. We report the efficacy of intravesical Botox injections for treatment of drug refractory detrusor overactivity carried out at our institution in patients with PD.

Methods: A retrospective review of patients with drug refractory overactive bladder who underwent intravesical botox injection at Concord Hospital from 2007 to 2017 was conducted. Urodynamic findings were reviewed and clinical outcomes and complications obtained from medical records.

Results: 12 patients (mean age 75) had a confirmed diagnosis of PD and 1 patient had supranuclear palsy. 2 patients had high pressure detrusor overactivity (DO) on filling cystometry, 4 patients had decreased compliance and the remainder had low amplitude DO. 2 patients had raised post void residuals on urodynamics, 1 patient had an invalid voiding phase and the remainder had a normal voiding phase with no bladder outlet obstruction.

10 patients had an initial 100-unit botox injection; 3 patients, including 2 with high pressure DO on urodynamics, had an initial 200-unit dose, and 5 patients had dose escalation from an initial 100-unit injection. 6 patients had a significant improvement in their storage symptoms after Botox and 3 patients reported mild improvement in symptoms. Only 1 of 5 patients had an improvement with dose escalation. Overall, 10 of 11 patients had an improvement in their symptoms. However, the majority of patients had some ongoing storage symptoms despite Botox and 2 regained continence.

Post-operatively, 4 patients had raised post void residuals, 3 of whom had a normal voiding phase on urodynamics. Of these, 2 required temporary clean intermittent self catheterization and one patient was managed with a long term SPC. This is significantly higher than the 2% rate of retention post botox for patients with non-neurogenic overactive bladder at our institution and may represent impaired voiding function in the context of progressive neurodegenerative disease.

Conclusions: Whilst the majority of patients with drug refractory neurogenic overactive bladder related to PD reported some symptom improvement following Botox, only 50% had good response. One third of patients had elevated residual urine. Our study shows lower efficacy of Botox therapy and a higher retention rate in PD patients and illustrates the difficulty in the management of neurogenic detrusor overactivity in patients with progressive neurodegenerative disease.

Pelvic floor muscle exercise technique guidance using PeriCoach system

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Introduction and Objectives: The PeriCoach® is an insertable pelvic floor biofeedback device + Smartphone app used to guide women in pelvic floor muscle exercise (PFME) training. Recent upgrades to the device enables detection and monitoring of exercise technique (in addition to force) using an algorithm that distinguishes specific movement patterns and scores them from good (1) to bad (−1). Correct technique is fundamental to improving muscle strength and since at least 50% of women do not correctly contract their pelvic floor muscles with verbal or written instructions alone, this personalisation technique feedback may improve outcomes. The system’s web based portal allows remote analysis of user progress, which some users utilize to work in conjunction with a clinician.

Methods: Users of the PeriCoach system have agreed to de-identified data being used for research. During regular guided exercise sessions, the user is given feedback through icons that indicate how “good” their technique is for each squeeze repetition. Scores are stored in a secure database. An 8 Week Challenge was introduced with all new users invited to participate. Women using the latest version PeriCoach a minimum of 3 times per week for at least 3 weeks were included. Session averages for technique scores were combined to calculate an average “weekly score”. The duration studied will be 8 weeks as this aligns with the PeriCoach 8 Week Challenge.

Results: 28 users met inclusion criteria.

Conclusions: The majority of users are able to self-correct/improve their scores over 8 weeks.

Table 1 Technique scores by user number (where 1 = perfect technique)

<table>
<thead>
<tr>
<th>Users Score</th>
<th>Users Score 1 = 0.9 (%)</th>
<th>Users Score ≤0.8 (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Week 1 (n = 28)</td>
<td>1 (3.6)</td>
<td>7 (25)</td>
</tr>
<tr>
<td>Week 2 (n = 28)</td>
<td>4 (14.3)</td>
<td>5 (17.9)</td>
</tr>
<tr>
<td>Week 4 (n = 26)</td>
<td>4 (15.4)</td>
<td>6 (23)</td>
</tr>
<tr>
<td>Week 6 (n = 18)</td>
<td>6 (33.3)</td>
<td>7 (39)</td>
</tr>
<tr>
<td>Week 8 (n = 15)</td>
<td>6 (40)</td>
<td>1 (6.7)</td>
</tr>
</tbody>
</table>

Table 2 Technique Scores by percentages of users

<table>
<thead>
<tr>
<th>% Of users that improved score (%)</th>
<th>% Of improved users that were connected to clinician (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Week 2 vs. Week 1</td>
<td>68</td>
</tr>
<tr>
<td>Week 4 vs. Week 1</td>
<td>63</td>
</tr>
<tr>
<td>Week 6 vs. Week 1</td>
<td>72</td>
</tr>
<tr>
<td>Week 8 vs. Week 1</td>
<td>67</td>
</tr>
</tbody>
</table>
Botulinum Toxin-A can be used to manage neurogenic detrusor overactivity in adults with Spina Bifida but is less effective in the management of poor compliance

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Introduction and Objectives: The use of Botulinum Toxin-A (BTX) in neurogenic bladder (NB) management has been extensively studied. Only a small number of studies have been published regarding the efficacy of intra-detrusor injections of BTX in children with Spina Bifida (SB). To date there is minimal data specific to its use in adult SB for the management of NB. The aim of our study was to evaluate the clinical and urodynamic improvement in adult SB patients with NB treated with intra-detrusor injections of BTX.

Methods: Data was prospectively collected on adults with SB NB inadequately controlled by anti-cholinergic therapy, at a single centre between 2011–2017. All patients had initial fluoroscopic urodynamics (FUDS) and a subsequent study after treatment with 200 units of BTX. FUDS parameters and efficacy based on clinical responses were evaluated including urge incontinence (UI) episodes, urinary tract infections (UTIs), and validated pre- and post-procedure questionnaires (UG DI-1; IIQ-7; PGI-I; PGI-S).

Results: 19 patients with a mean age of 29 were studied. 2 patients had previous augmentation cystoplasty. Prior to BTX treatment, the mean maximum detrusor pressure (MDP) was 56 cmH2O, and 13 patients reported UI. Improvement in at least one urodynamic parameter was seen in all 17 patients who had post treatment FUDS. Dose escalation was required in 5 patients to 300 units due to an inadequate urodynamic response as demonstrated by worse bladder compliance in 2 patients, decreased bladder capacity in 1, no improvement in 1, and resolution of severe NDO that unmasked poor compliance in another patient.

Bladder capacity increased by 54% and MDP decreased by 28.5%. NDO incontinence resolved in 12 patients (92.3%). Bladder compliance normalised (>10 cmH2O) in only 2 patients. Prior to treatment, 13 patients had unsafe bladder pressures due to poor compliance at capacity (>40 cmH2O). After treatment, 7 patients had persistent poor compliance (>40 cmH2O) that required the addition of anti-cholinergic therapy. UI resolved in 12 of 13 patients (92.3%) and symptomatic UTIs resolved in 5 of 8 patients (62.5%). Patients reported ‘Much Better’ symptoms (PGI-I mean 2.3), reduced severity (PGI-S mean 1.5), and a reduction in both their distress (UG-DI 6 pre-BTX mean 9.5, post-BTX mean 3.7) and incontinence (IIQ-7 pre-BTX mean 11.4, post-BTX mean 3.13).

Conclusions: To our knowledge, this is the first study demonstrating meaningful clinical and urodynamic improvements in adult patients with SB who were treated with BTX. In nearly all patients, poor bladder compliance was unmasked by BTX, and remained at unsafe levels in 41% of the patients, requiring dose escalation or the addition of anti-cholinergic therapy. This study reinforces the need for close FUDS assessment post BTX in patients with SB.

Interstitial cystitis and domestic violence

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Over recent years, within Australia there has been a push from all levels of the community to raise awareness, recognise and support victims of domestic violence. Within the Urology field, consideration is needed in understanding the impact of domestic violence on the patients who present with urological issues. The obvious link and consideration is around patients who suffer urological trauma from violence however there is evolving evidence about the role of domestic violence has on patients suffering from interstitial cystitis.

This literature review was conducted to assess the literature in this space. Databases were searched for the term “interstitial cystitis”; “painful bladder syndrome” and “domestic violence”. The literature in this area is limited with six articles located on the topic across western countries with only two articles citing domestic violence as a risk factor, and resulting in higher than average incidents of interstitial cystitis. Although evolving, and further research in this space is required, it is important to consider domestic violence screening when taking a history from patients who present with urological conditions, in particular interstitial cystitis or painful bladder syndrome.

Radiation induced haemorrhagic cystitis – achieving a treatment guideline based on the available evidence

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Introduction and Objectives: Radiation cystitis is an uncommon but important problem faced by urologists. Patients present with significant morbidity and the symptoms can often be refractory to the numerous available treatment options. There is currently no consensus guideline available for the management of radiation cystitis meaning the treatment initiated is subject to variability in terms of the treating clinician as well as what is available at the particular hospital in question. We aimed to create a practical Australian guideline for the treatment of radiation cystitis based on the available literature on this uncommon subject.

Methods: A MEDLINE search was conducted using the terms “haemorrhagic cystitis”, “radiation cystitis” AND “treatment”. The results were limited to English language articles and human studies only. Review articles and articles that did not include treatment efficacy as the primary outcome were excluded from analysis. Articles analyzing treatment efficacy for causes of haemorrhagic cystitis other than radiation exposure were also excluded. The remaining articles were...
Anticholinergics, who had previously received 300 U intradetrusor BTXA, were enrolled in this single-centre study. Patients with haematuria, symptomatic urinary tract infection or any other bladder pathology, such as cancer, interstitial cystitis or stones, were excluded from the study. Patients received 200 U intradetrusor BTXA. All patients completed three questionnaires (UDI-6, ICIQ-7 and EQ-5D), before and 4 weeks after receiving the 200 U BTXA dose. Changes in patient-reported lower urinary tract symptoms and quality of life (QOL) were recorded using these validated questionnaires. Results were compared with pre- and post-BTXA 300 U questionnaire results, which had been collated.

Results: There were 46 patients included in the study. Mean UDI-6, ICIQ-7 and EQ-5D scores 4 weeks post-treatment improved compared to pre-treatment scores in both the 300 U and 200 U groups (p < 0.05). Importantly, there was no significant difference in the results between the two groups.

Conclusions: In patients with NDO due to MS, 200 U BTXA intradetrusor injections are equally as efficacious and result in similar improvements in QOL when compared with 300 U injections, at least in the immediate post injection period.

Efficacy and outcome of the polycrylamide urethral bulking agent (Bulkamid®) in the treatment of stress urinary incontinence in an Australian population

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Aims: Urethral bulking agents are used for the management of women with stress urinary incontinence (SUI) who have failed or are unsuitable for more invasive and efficacious measures such as the mid urethral sling (MUS). This study aims to evaluate the improvement in symptoms following Bulkamid® injection at 1, 6 and 12 months and to determine the number that required further Bulkamid® injection or alternative SUI management after an initial Bulkamid® injection.

Methods: A retrospective analysis of prospectively collected data on patients from across three public and private practices of 3 urologists, between 2007–2017. Ethics approval was granted. Patient data was collated from medical records and prospectively collected questionnaires. Complete response was defined as no incontinence episodes at the 1 month review, a partial response was defined as a reduction in the number of pads by 50% at this review. Patients were contacted by telephone and the PGI-I and ICQ-FLUTS, validated questionnaires, were administered. The PGI-I, was used to rate the patient’s satisfaction with their urinary symptoms post Bulkamid® from 1 to 7. Statistical analysis was performed using SPSS (Statistical Package for Social Sciences, version 22).

Results: A total of 100 patients were included. The median age was 79 years and the mean BMI was 28 kg/m². 40% had prior continence or prolapse operations. 90% had at least one pregnancy. The mean duration of urinary symptoms was 24 months prior to the time of injection, with 70% having at least moderate if not significant bother from their incontinence episodes. Eight patients (8%) were unable to be contacted by telephone. Pre-operatively, the mean number of pads used was 6 per day. On urodynamics, the mean flow rate of 15 ml/sec, mean Maximum Cystometric Capacity of 366 ml, mean Pdet (Detrusor pressure) at Qmax of 28, mean ALPP of 57 cmH₂O. Two patients had poor compliance and 8 patients had detrusor overactivity. If there was any poor compliance or detrusor overactivity, Bulkamid® did not show any symptomatic benefit.

At the one month, 75% of patients were completely dry and did not require pads. An additional 10% had a partial response. The improvement was sustained in 60% at the 3 month mark and 55% by the 6 months mark. At the 12 month mark, 50% sustained at least a partial response to Bulkamid. Of those whose symptoms recurred, only 5 proceeded to alternative surgery; 2 patients received a further Bulkamid® injection, 2 underwent a MUS. 80% of patients who were contacted, reported that they had a subjective improvement to their urinary symptoms with a mean scoring was 2 on the PGI-I.

Conclusions: Bulkamid® is an effective treatment option in women with urinary incontinence.
stress incontinence. Bulkamid® can be used for those who prefer to or who are unsuitable for a more invasive procedure, without substantial compromise of outcome and with a sustained response and few complications.

Selective bladder denervation for treatment of overactive bladder

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Introduction and Objectives: Overactive Bladder (OAB) is a syndrome characterized by a frequent sudden urge to urinate that is difficult to control and may result in incontinence. A new therapy using RF energy to ablate sub-urothelial tissue at the level of the trigone, Selective Bladder Denervation (SBD), is being studied. The objectives of this Phase 2 study were to evaluate procedure safety and characterize the effect on OAB symptoms.

Methods: 63 female subjects with OAB, were enrolled at 4 sites in Belgium and Canada. Ethics committee approval was obtained and Informed Consent was given by each subject. Initial inclusion/exclusion criteria on a 3-day bladder diary included >8 voids/day, at least 3 episodes of urgency per day with/without incontinence and a total 24 h urine output of <3000 ml. SBD was performed in a single procedure using bipolar RF ablation via cystoscopic guidance. Ablations were placed distal to each ureteric orifice then across the interureteric ridge. Subjects were evaluated primarily at 12 weeks post-op.

Results: Subject baseline demographics and OAB characteristics include a mean age of 66.9 yrs range [38.6–81.5] and a PVR of 19.7 ml range [0–121]. Most subjects, 55/63 (87.3%) were naive to prior Botox treatment and 10 (15.9%) had received prior SNS treatment. 16/63 subjects (25.4%) had previously received a sling implant for stress incontinence and 14 subjects (22.2%) reported prolapse. Key baseline data included a mean of 12.7 voids/day, 8.1 urgency episodes/day and 3.6 UUI/day (urGENCY urinary incontinence). Subjects were given antibiotic prophylaxis prior to the procedure and 76.2% (48/63) subjects were treated under IV sedation using site specific standard of care anesthesia. Median number of ablations was 4 [range 3–6] and subjects reported a mean 4-hour post-op pain score of 2.3 out of 10.

61/63 subjects (96.8%) completed the 12 week visit with 68.9% of reporting subjects documenting improvement via the TBS (Treatment Benefit Scale). Diary outcomes included a mean decrease of −1.5 voids/day, −3.4 urgency episodes/day and −1.6 UUI/day resulting in significant improvement in outcomes (frequency (p < 0.0121), urgency (p < 0.0001), UUI (p-value 0.0002)). Additionally, there was no significant change from baseline PVR at 12 weeks.

Five subjects reported a UTI within 12 weeks post-procedure. No subject required self-catheterization at any time post-op. Two post-procedure serious adverse events were reported in one subject identified to have an undiagnosed ureterocele. The SAEs resolved without clinical sequela and the subject continues in the study.

Conclusions: Selective bladder denervation of the trigone demonstrated efficacy at 12 weeks post-op in the treatment of OAB with minimal adverse effects. Longer term analysis of these data will be necessary to assess whether this therapy may provide durable efficacy without disruption of normal voiding function.

Comparison of detrusor ultrastructure in women and men with bladder outlet obstruction – a potential role for diagnostic bladder biopsy

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Introduction and Objectives: Previous ultrastructural studies in men with bladder outlet obstruction (BOO) have demonstrated that features of myohypertrophy (muscle fascicle derangement, collagenosis, variation in myocyte size/shape) were associated with worse voiding outcomes following transurethral resection of the prostate. The objective of this study was to compare ultrastructural features using the same standardized protocol in female and male patients with BOO to assess whether detrusor biopsy may have a role in the diagnosis of female BOO.

Methods: Thirty patients (7 female, 4 male) with known BOO on urodynamic study and 2 control patients (female) with normal urodynamic studies underwent cystoscopy and detrusor muscle biopsy. The detrusor muscle biopsy specimens were processed for transmission electron microscopy. Previously established diagnostic criteria were used for ultrastructural analysis (eg muscle fascicle derangement, myocyte irregularity, myocyte cell separation, collagenosis, cellular degeneration). The severity of the ‘myohypertrophy pattern’ was assessed and correlated with clinical features.

Results: Features of myohypertrophy (muscle fascicle derangement, collagenosis, variation in myocyte size/shape) were present in the bladder specimens of all female and male patients with BOO but absent in the bladder specimens of control patients. Features of degeneration were present in varying degrees in the bladder specimens of all patients, consistent with previous studies showing that degeneration correlates with age rather than degree of obstruction. Myohypertrophy features were less marked in females with BOO compared to males with BOO, except in one female with prolonged voiding dysfunction after colposuspension. Myohypertrophy features were also seen in one patient with 4 months history of an obstructive sling. Semi-quantitative analysis of ultrastructural features showed severity of myohypertrophy correlated with duration and degree of obstruction in female BOO.

Conclusions: We have demonstrated similar ultrastructural features using a standardized protocol in detrusor biopsies of female patients with BOO compared to male BOO. In particular the myohypertrophy pattern is present in female BOO and is less marked than male BOO but appears to correlate with duration and severity of obstruction. Given the uncertainty in diagnosis of female BOO on urodynamic parameters, the detrusor biopsy may have a potential role in the diagnosis of female BOO.
LUTS/BPH

The WATER study clinical results – a subgroup analysis of larger prostates from the Phase III blinded randomized trial of Aquablation versus TURP

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Introduction and Objectives: Prostate resection for patients with LUTS remains the gold standard for surgical treatment of BPH. The length of resection time and the risk of complications during a transurethral resection of the prostate (TURP) are a direct correlation with the size of the prostate. We aimed to compare the safety and efficacy of prostate ablation using Aquablation (A) versus TURP (T) in prostates between 50 and 80 ml in volume and analyze as a subgroup from the WATER Study.

Methods: In this randomized, blinded, multicenter phase III trial, men with moderate-to-severe LUTS related to BPH were assigned to transurethral resection of the prostate using either standard electrosurgery (TURP) or robotically-assisted waterjet ablation (Aquablation) in a 1:2 ratio. A pre-planned subgroup analysis based on prostate volume (<50 vs. ≥50 ml) used the trial’s co-primary safety and efficacy endpoint. The primary safety endpoint was the occurrence of Clavien-Dindo Grade 1 (persistent ejaculatory dysfunction, erectile dysfunction, or urinary incontinence) or Grade 2 or higher operative complications at 3 months. The primary efficacy endpoint was the reduction in IPSS score at 6 months.

Results: There were 184 patients enrolled in the study. The mean baseline IPSS score (T: 22.2 vs. A: 22.9, p = 0.43), demographic profile, and mean prostate volume (T: 52 ml vs. A: 54 ml, p = 0.31) were similar in both arms. Mean operative time was equivalent between the two groups (T: 35.5 vs. A: 32.8 min, p = 0.28), but mean resection time was significantly lower in the Aquablation group (28 vs. 4 min, p < 0.0001). The primary safety endpoint (Clavien-Dindo grade 1 persistent or grade 2 or higher event in the first 3 months) occurred in 19% of Aquablation subjects and 43% of TURP subjects, p-value <0.01; therefore, demonstrating superiority of Aquablation versus TURP in men with 50–80 ml prostates. There were 99 patients with a prostate volume greater than 50 ml (T: 35 vs. A: 64). For men with larger prostates, IPSS change scores were larger after Aquablation compared to TURP (by approximately 4 points, p = 0.0056). In an exploratory analysis, IPSS change scores were larger with Aquablation compared to TURP (by 3.7 points, p = 0.0118) in men with baseline maximum flow rates (Qmax) <9 ml/s. For men with both larger (>50 ml) baseline prostate volume and lower (<9 ml/s) flow rates, the improvement in IPSS scores was 7 points larger in Aquablation compared to TURP (p < 0.0001). For men with prostate size <50 ml and maximum flow rate >9 ml/s, the change with TURP was 4.3 points larger after TURP (p = 0.0963).

Conclusions: Analyses demonstrate men with large prostates (>50 ml) undergoing Aquablation show significantly better efficacy and safety results as compared to TURP.

Five year durability of prostatic urethral lift in crossover study

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Introduction and Objectives: After the prospective, randomized L.I.F.T. study for benign prostatic hyperplasia (BPH) comparing the results of the Prostatic Urethral Lift (PUL) procedure with sham control (rigid cystoscopy), subjects who were initially randomized to sham were unblinded after 3 months and offered PUL. This was the basis for a crossover study in which each subject acted as his own control. We now present the 5 year results from this study.

Methods: 66 subjects across 19 centers in North America and Australia initially received a sham procedure as part of a randomized study comparing PUL with sham control. After 3 months, these men were unblinded and offered PUL; 53 men chose to enroll in the crossover study. During the PUL procedure, small UroLift® implants were placed to retract the obstructing prostatic lobes and widen the urethral lumen. These subjects were followed for 3 months after the initial sham procedure and then up to 5 years after crossover PUL. Subjects were assessed for symptom relief (IPSS), quality of life (QOL), peak urinary flow rate (Qmax), sexual function and adverse events.

Results: After the initial sham procedure, IPSS and Qmax improved within the first 2 weeks, but by 3 months, IPSS returned to near baseline and Qmax remained slightly elevated (Figure 1). After crossover PUL, IPSS, BPH Impact Index (BPHII) and QOL improved to a greater extent compared to sham, and these improvements remained durable to 5 years. At 5 years after PUL, average IPSS, QOL and BPHII remained improved 50%, 48% and 57% from baseline, respectively (p < 0.001). Sexual function was preserved as there were no reports of de novo,
sustained erectile or ejaculatory dysfunction. Adverse events were typically mild to moderate and resolved within 2 weeks. Subjects returned to normal activity as soon as 7 days after PUL.

**Conclusions:** In this study in which subjects received PUL after initially receiving a sham procedure, we see that the PUL procedure improves symptoms, quality of life, peak urinary flow significantly more than after sham, and these results are sustained for 5 years. Moreover, the PUL procedure delivers these benefits with low morbidity, a fast recovery and no compromise to sexual function. The results of this study corroborate those found in larger randomized studies.

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**Multicentre experience with photoselective vaporization of the prostate on men taking novel oral anticoagulants**

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**Introduction and Objectives:** Photoselective vaporization of the prostate (PVP) is a widely performed surgical procedure for benign prostatic obstruction. This approach has become particular favoured for men on anti-platelet and anticoagulation agents such as clopidogrel and warfarin but there is minimal published experience in the setting of novel oral anticoagulants (NOACs). The objective of this study was to examine the perioperative outcomes in men on NOACs undergoing PVP, with particular reference to perioperative morbidity.

**Methods:** A retrospective analysis of PVP datasets was undertaken from three centres in Sydney (AU), Toulouse (FR) and Boston (US). Subjects who had been treated whilst on NOACs without discontinuation or bridging were identified. Perioperative outcomes and treatment parameters were examined and morbidity recorded according to Clavien Dindo (CD) classification.

**Results:** There were a total of 20 subjects who had undergone PVP whilst NOACs had been continued during throughout the perioperative period. The mean age was 77 ± 6.5 years. The mean prostate volume, energy utilization and vapourisation time was 94 ± 56 ml, 301 ± 211 kJ, 35 ± 21 mins respectively. The mean post-operative duration of catheterization and duration of hospitalization was 2.3 ± 2.7 days and 2.4 ± 2.4 days respectively. No patient had complications related to bleeding, including significant haematuria or clot retention. There were no high grade CD complications. There was a single episode of urinary tract infection and four subjects required re-catheterisation for retentions that were not associated with bleeding or clot.

**Conclusions:** This study supports the safety of men on NOACs undergoing PVP. Whilst this study represents the largest experience of PVP in these men, further larger studies are necessary to confirm the safety of PVP in this high risk group of men undergoing BPH-related surgery.

**Trends in the pharmacological and surgical management of benign prostatic hyperplasia: population based data**

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**Introduction and Objectives:** The last decade has seen significant advances in both the pharmacological and surgical management of benign prostatic hyperplasia (BPH). With the rise of new single and combined pharmacological management options as well minimally invasive surgical therapy (MIST), there has been a change in the proportion of clinicians turning to more traditional management options in the first instance. The objective of this study is to examine the trends in pharmacological and surgical management in Australia from 1995 to 2016, individually for each item number and cumulatively for medical and surgical items (primary outcome) and by state and age category (secondary outcome).

**Methods:** Between January 1995 and December 2016, yearly data was collected regarding all pharmacological and surgical management options listed with the indication of BPH on the pharmaceutical benefits scheme (PBS) and Medicare Benefits Scheme (MBS) databases. Data was sorted cumulatively and according to state, age categories (where possible) and usage per 100,000 population.

**Results:** The PBS data shows a significant increase in the number of prescriptions from 2014 onwards, largely influenced by the availability and popularity of the combined dutasteride/tamsulosin medication. Surgical management has seen steady growth since transurethral resection of prostate (TURP) was introduced in 2000, with TURP increasing until 2012 when usage decreased for the first time, corresponding to the availability and increased usage of a variety of medical therapies and MIST. TURP still accounts for a large majority of surgical interventions for BPH.

**Conclusion:** The management of BPH in Australia has changed drastically over the last two decades with the introduction of new medical and surgical management options driving the change. In this ever-changing field, with new studies and technologies constantly progressing it will be interesting to see what the next few years
Methods: A low-fidelity benchtop model is a feasible and reproducible technique for improving understanding of the periprostatic anatomy and the different surgical approaches for NSRP. The knowledge appears useful and appears to be retained by workshop participants.

Results: Thirty participants completed the NSRP workshop. Significant differences (p < 0.0001) in anatomical and clinical knowledge were noted after the workshop with improvements for both junior and senior trainees. The knowledge was retained at 6 months following the workshop.

Conclusion: A low-fidelity benchtop model is a feasible and reproducible technique for improving understanding of the periprostatic anatomy and different surgical approaches for NSRP. The knowledge appears useful and appears to be retained by workshop participants.

Lessons learned and new challenges: re-evaluation of end-user assessment of a skills based training programme for urology trainees

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Introduction and Objectives: The Victorian section of the Urological Association of Australia and New Zealand (USANZ) implemented a surgical skills training programme in 2004. A retrospective review of end-user experience over the initial 6 years of the program was published in 2011. This prospective review of feedback from 2011 to 2016 is to re-assess the perceived benefit and relevance of the sessions to urology trainees and to identify areas for potential improvement. Comparison between this evaluation and the previous study aims to assess the programme’s response to user feedback.

Methods: All trainees attending skills training sessions between 2011 and 2016 were asked to complete a structured questionnaire at the completion of the session. The questionnaire included 11 topic areas ranging from the year of surgical training to degree of usefulness of the session, including several sections for free text response to offer more detailed feedback. Sessions were examined both individually and collectively to assess end user satisfaction with the structure and content of the program.

Results: 24 individual skills sessions were held over the 6-year period, with a total of 355 attendees. Of these, 331 attendees completed the majority of the questionnaire, a response rate of over 93%.

Overall 88% of the surveyed attendees stated that they had both the support of their supervising consultant and the flexibility of workload to attend the session. 90% of trainees felt that there was adequate reading material provided prior to the skills session, an improvement from 76% in the previous study period. 97% of those surveyed felt that the existing session structure was appropriate and the same proportion found the sessions both useful and interesting, compared to just 63% in the previous study period. Analysis of individual topics demonstrates some variability in outcome measures, but for nearly every assessed parameter greater than 90% of participants agreed that the session fulfilled the expected criteria. New topics developed since the 2011 analysis, including renal transplant and vascular repair, also had high levels of satisfaction. The practical models used have been refined and achieved higher scores than those in the previous assessment period.

Conclusions: The urology skills based training programme has been well received by the surveyed trainees and is now embedded and well accepted as part of the Victorian training program. The format of the sessions has matured and the overall rating, both individually and collectively, is high. There has been a clear increase in satisfaction across most areas assessed when compared to previous feedback. Despite this, there remain areas that can be improved, such as the amount and quality of available equipment and the inclusion of video demonstrations of operative techniques.
**A male chronic pelvic pain clinic: A multidisciplinary approach to treatment**

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**Introduction and Objectives:** Chronic pelvic pain syndrome (CPPS) is a distressing condition significantly impacting a man’s physical, emotional and social health and wellbeing. It is historically difficult to treat, with monotherapies often being found ineffective. In current healthcare structures, diagnosis and management of male CPPS is inconsistent and fragmented. A multimodal and multidisciplinary approach is advocated in the literature. In 2016, we introduced a male chronic pelvic pain (CPP) clinic, aiming to improve management of this complex condition using a multidisciplinary team approach.

**Methods:** The male CPP clinic is a public service available to men with pain in the pelvic region (including the genitals, perineum, anus, lower abdomen or buttocks) that has been present for greater than 3 months. Men are seen by a urologist and specialist nurse for initial assessment via the UPOINT framework (Urinary, Psychosocial, Organ-Specific, Infection, Neurological, and Tenderness). Patients then undergo assessment by a pelvic floor physiotherapist and psychologist, and individualised treatment programs are commenced. Referral to a pain specialist is made if clinically indicated. The National Institute of Health – Chronic Prostatitis Symptom Index (NIH-CPSI) is collected at baseline, and at each urological review. Urological reviews occur at 1, 3, 6 and 12 months.

**Results:** Thirty-one men were referred to the CPP clinic over 12 months. Ten men (32%) failed to attend for initial assessment. The mean age was 50 ± 14.9, with a range of 21–79. Mean baseline NIH-CPSI was 26 ± 6.0. A median of 3.5 UPOINT domains were positive. The most common positive domain was Tenderness (86%), followed by Urinary (79%), Organ-Specific (79%), Infection (43%), Neurological (36%) and Psychological (29%). Nineteen men (90%) attended pelvic floor physiotherapy assessment, and 15 men (71%) attended psychological assessment.

**Conclusions:** The high number of positive UPOINT domains highlights the complex and multifactorial nature of male CPPS, and emphasizes the need for a multimodal and multidisciplinary treatment approach. The experience gained from this 12-month pilot program will be used to improve future program planning and guide research direction.

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**A cross-sectional survey of data presentation and its effect on interpretation**

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**Introduction and Objectives:** Clinical quality reports ought to be readily interpretable by clinicians and hospital executives. Therefore, data presentation of complex data summarised by quality indicators ought to be succinct and interpretable regardless of statistical education. This study aims to compare different methods of visualisation and its effect on interpretation as well as assess urologists and hospital executive’s preferences.

**Methods:** A cross-sectional survey was designed with the purpose of investigating the interpretability of different data presentation methods as well as preference of urologists and hospital executives who are members of Prostate Cancer Outcome Registry–Victoria. A total of 10 questions were asked to test the interpretability of 3 different data presentation methods, mainly funnel plots, league charts and risk-adjusted sequential probability ratio test (RASPRT) chart. Participant’s statistical background and self-rated confidence in interpreting basic statistical data were also noted and used as a predictor for interpretation. Participants were also asked to rank on a nine-point Likert Scale their preferences for each of the charts. Preference questions for a dashboard were also included to assess participant’s interest in using dashboards as a quick one page summary.

**Results:** Funnel plots are readily interpretable when compared to league charts, with a mean score difference of 29% (95% CI = 14.32%, 42.8%, p < 0.0001). Multiple linear regression found that urologists scored 1.39 questions higher when compared to hospital executives (coefficient = –1.39, 95% CI = –2.72, –0.064, p = 0.04). Statistical background had no effect on interpretation. All participants preferred funnel plots and dashboards (median score of 7 out of 9) while remained neutral towards league charts and RASPRT (median score of 5 out of 9). Urologists highly preferred funnel plots and dashboards (median score of 7 and 6 out of 9 respectively) when compared to league charts and RASPRT (3.5 and 3 out of 9 respectively). Hospital executives were neutral towards league charts and RASPRT but highly preferred funnel plot and dashboards.

**Conclusions:** Funnel plots were readily interpretable when compared to league charts and hence, should be used to present cross-sectional data in clinical quality reports. Dashboards should be implemented to provide quick one page summaries of quality indicator data. New visual aids (colour coding) should be used to improve the interpretability of charts presented in clinical quality reports.

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**What can current and prospective SET Trainees learn from the perspectives of senior urologists on the introduction of the SET Urology program?**

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**Introduction:** The USANZ SET program has introduced progressive changes in the selection and training of urologists in Australia and New Zealand. The development of a structured training curriculum and method of assessment has broadly been accepted as a positive advancement, and the transparent selection method has largely resulted in the selection of high caliber candidates, and been inclusive of a broader demographic of trainee. Despite the many positive changes brought about by the SET program there have been criticisms of certain aspects. The opinions and perspectives of senior urologists and management staff of the SET urology program, on the introduction of the SET program, have been interrogated in an attempt to highlight areas of improvement for current and prospective trainees.

**Methods:** Ethics-approved semi-structured, template-based, qualitative interview

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techniques were used to evaluate key aspects of the current urology training program. Interviews were recorded and transcribed for analysis. Grounded theory was used with thematic analysis to assess the data. The primary themes that highlighted shortcomings of the program were summarized and reviewed.

**Results:** The primary shortcomings of the current SET program, as identified in the interviews were; a lack of open operative skills of the junior SET trainees, a move away from the more self-directed attitude of the pre-SET era to one of a more dependent attitude to learning, and a lack of non-technical competencies and immaturity of some trainees, which was not weeded out by the current selection methods.

**Conclusions:** Reflection on the highlighted points from these interviews may serve to direct current and prospective trainees toward means of improvement. The highlighted themes are those in which senior urologists have particular concern and therefore represent areas where trainees should focus attention. The lack of exposure to open operations is a function of the current environment and not likely to change. This means that current and prospective trainees need to seek other means of developing these skills outside the theatre setting, so they can be more effectively consolidated within the theatre setting. Trainees should further appreciate that expecting to be “spoon-fed” through training is likely to result in substandard performance, in an evolving training program that as yet may not be equipped to cater for such dependence. A self-directed attitude to training should be adopted toward all surgical competencies. The task of selecting the most suitable trainees is an almost impossible task, and a topic that will be continually debated. However, a responsibility also lies with the prospective candidate to be honest with themselves, and to be reflective on their own suitability toward a career in urology, having considered all aspects of what such a career entails.

**Analysis of urethral trauma associated with pelvic fractures at a level one trauma centre**

**Introduction:** Pelvic trauma is widely associated with concurrent urethral injury. This pilot project aims to assess the current demographics, location and mechanism of injury of urethral trauma in patients presenting with associated pelvic fractures at a level one trauma centre, Alfred Hospital in Australia.

**Methods:** A retrospective audit of all patients presenting to the Emergency and Trauma Department with urethral trauma and pelvic fractures over a five-year period (2009–2014). Patient demographics, mechanism of injury, grade of urethral injury, location of urethral injury, concurrent bladder injury and types of pelvic fractures were collected.

**Results:** 28 patients were identified. Median age was 46 years. 100% were males. Mechanism of injury; MVA (passenger 17%, pedestrian 32%, driver 32%), horse-riding injury 4% and struck by object 7%. Type of pelvic fractures; open book 54%, non-open book 46%. Grade of urethral injury; I (14%), II (0%), III (43%), IV (25%) and V (18%). Location of urethral injury; anterior urethra (bulbar 18%), posterior urethra 82% (bulbomembranous 11%, membranous 46%, prostatic 18%, bladder neck 7%). Concurrent bladder injury was 36% with 60% of those having associated open book pelvic fracture.

**Conclusions:** From this cohort, MVAs remains the leading cause of urethral trauma with associated pelvic injury with grade III (partial disruption) being the commonest urethral injury grading in patients presenting to the Emergency and Trauma department of Alfred Hospital. The posterior urethra was more commonly involved with the membranous part being the most affected.

**Impact of the Generic Surgical Sciences Exam on the quality of life of surgical residents: a pilot study**

**Introduction and Objectives:** Beyond-blue’s National Mental Health Survey of Doctors from 2013 showed increased rates of anxiety and depression amongst Australian doctors compared to the general population. Escalating performance pressures associated with successfully gaining a place on a Surgical Education and Training (SET) program may contribute to stress and burnout of surgical residents. The Generic Surgical Sciences Examination (GSSE) is now a prerequisite for application to all surgical specialties and in 2016 only 70.9% of Non-SET doctors passed. The aim of this pilot study was to determine the impact of the GSSE on prospective surgical trainees.

**Methods:** A study was performed utilising 19 surgical residents attending a single location preparation course for the GSSE. A likert-type scale survey (negative 3 to positive 3) explored the impact of the GSSE on psychological well being, financial security, relationships, perceived impact on careers and the current level of employer and colleague support.

**Results:** The mean age of participants was 26.42 years, with a mean of 2.47 working years. All participants were from metropolitan hospitals, across Victoria and Queensland. Preparation for the GSSE was perceived to negatively impact quality of life, with the greatest impact on the ability to pursue non-medical interests (−1.95) and spend time with non-medical friends (−1.95). Preparing for the exam affected general psychological well being (−0.74), optimism (−0.54) and enthusiasm for work (−0.63). It was associated with relationship stress (−0.63) and financial stress (−1.79). There was perceived inadequate study leave granted by hospitals.

**Conclusions:** This study sets the foundation for larger standardised research on the impact of stress for surgical residents sitting the GSSE and competing for a place on a SET program. This data is fundamental for the implementation of appropriate interventions to improve the safety and health of junior doctors preparing for a career in surgery.

**Cars versus knives: comparison of blunt and penetrating renal trauma in two major trauma centres in two different continents: United Kingdom and Australia**

**Introduction and Objectives:** Traumatic kidney injury provides a significant urological workload in major trauma centres. A multidisciplinary approach with appropriate training and resources is essential. Management options include nephrectomy, embolisation and conservative management. We compared renal trauma and its management at two different trauma...
centres in two different continents with particular attention to blunt versus penetrating injuries.

Methods: Renal trauma patient databases were compared between two major trauma centres: a UK Trauma Centre (UKTC) 2009–2017 and an Australia Trauma Centre (ATC) 2004–2012.

Results: The UKTC renal trauma database had 149 patients: 90% male (n = 134), average age 32 (range 13–88); compared to the ATC: 180 patients, 86% male (n = 154), average age 37.

36% (n = 53) of renal trauma at the UKTC was penetrating in nature compared to 7% (n = 13) at ATC. Assault was the causative factor in 96% (n = 51) of UKTC penetrating injuries; and was the commonest mechanism of injury at the UKTC (36% n = 53) with 83% (n = 44) stab injuries, 16% (n = 7) gunshot wounds and 1 blunt assault. In comparison, assault accounted for 10% (n = 18) of ATC trauma patients with 61% (n = 11) stab injuries, 33% (n = 6) blunt assault and 1 gunshot injury.

The comment cause of trauma attending the ATC was motor vehicle accident (39% n = 61 vs. UKTC: 7% n = 11). There was also a higher proportion of motorbike trauma at the ATC (23% n = 42 vs. UKTC: 15% n = 23). However the UKTC had higher incidence of pedestrian trauma (9% n = 14 vs. ATC: 2% n = 4)

Sporting related injury was similar: UKTC 15% (n = 22) vs. ATC 14% (n = 26). The predominant causative sport in UKTC was cycling (n = 16) and Australian Football in ATC (n = 15). Mechanism of injury in female and male trauma differed. The predominant mechanism of injury affecting females at UKTC was pedestrian related trauma (n = 6) and fall from height at the ATC (n = 5).

Both centres had isolated renal trauma in 25% of cases. 42% (n = 62) of the renal injury at the UKTC was grade 4–5 compared to 24% (n = 44) at the ATC; likely explained by the incidence of penetrating trauma.

97% of patients at both centres were successfully managed conservatively, even including grade 5 injuries. As an adjunct to conservative management 14% (n = 21) of patients at the UKTC (grade 2–4) and 5% (n = 9) at the ATC (grade 4–5) required embolisation. Three patients required nephrectomy (grade 4–5) and two patients nephron preserving primary surgery at the ATC (grade 5), compared to five nephrectomies at the UKTC (grade 4–5).

Conclusions: Mechanism of renal trauma reflects differences in the area and population the Trauma Centres serve. Standardised renal grading allows for comparison, international learning and research collaboration. Conservative management predominates, with embolisation an increasingly used adjunct technique.

Twitter, conferences and photographs: what are people tweeting about and is it appropriate?

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Introduction and Objectives: Twitter usage at urological conferences is increasing and appears widely accepted. Its use has also been adopted for urological education, advertising and networking. There has been an exponential rise in urology related tweets and a growing urology Twitter community. However, Twitter use is not universally applauded. There are concerns that sharing on Twitter risks breaching intellectual property rights and plagiarism. Sharing a photo of a presentation slide without consent is an example of infringement of copyright. There are also concerns that clinical photographs presented at conferences are tweeting without appropriate patient consent. The American Diabetic Association banned the use of Twitter at their 2017 conference in order to protect intellectual property and asked those that did to remove tweets. In previous analysis we noted that the conference ‘hashtag’ #SIU16 showed 189 tweets containing a photograph. The aim of this project was to better understand the prevalence and content of shared of photographs via Twitter at recent urological conferences.

Methods: Three conferences were selected and their conference ‘hashtag’ #EAU17, #BAUS17, #WCE17 used to generate a Twitter feed for the dates of the conference (except EAU: two days) plus one day after; then tweets analysed. Only the original tweet was included in the analysis; except in instances of photos being retweeted by a different user which was recorded separately.

Results: Symplur analytics revealed the total number of tweets: 2828 #WCE17, 2071 #BAUS17, and 12,429 # EAU17.

There was evidence of re-tweeting photos: the total number of times a photo was re-tweeted were 129 times at #WCE17, 29 times at #BAUS17 and 85 times at #EAU17.

Table showing the content of tweets with photographs:

<table>
<thead>
<tr>
<th></th>
<th>#WCE17</th>
<th>#BAUS17</th>
<th>#EAU17</th>
</tr>
</thead>
<tbody>
<tr>
<td>Presentation slides</td>
<td>33%, 506</td>
<td>21%, 123</td>
<td>28%, 260</td>
</tr>
<tr>
<td>Research findings e.g. graph/ table</td>
<td>7%, 101</td>
<td>6%, 34</td>
<td>7%, 64</td>
</tr>
<tr>
<td>Clinical findings e.g. operative photos, radiographs and examination photos</td>
<td>4%, 57</td>
<td>1%, 5</td>
<td>2%, 14</td>
</tr>
<tr>
<td>Social e.g. meeting up with colleagues, highlighting a renowned speaker</td>
<td>29%, 439</td>
<td>18%, 102</td>
<td>13%, 120</td>
</tr>
<tr>
<td>Other e.g. local tourist attractions, foods and industry photos</td>
<td>15%, 246</td>
<td>19%, 108</td>
<td>18%, 174</td>
</tr>
</tbody>
</table>

Conclusions: Photographs are being tweeted during conferences on a range of topics. Of significance, research and presentation slides are being distributed on Twitter; this may represent a breach of copyright. Clinical photographs shared, whilst fewer in incidence, are potentially a substantial breach of patient consent. Presenters, delegates and conference organisers should define acceptable use of photographs on Twitter.
The creation of a Urology Green List for safe publishing
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Introduction and Objectives: Predatory academic publishing is an industry that has experienced substantial growth over the past 10 years. More often than not, the content is of questionable scientific quality and there has also been a questionable peer review process. Recognizing predatory publishers can at times be challenging. Until recently, there was heavy reliance on the Beall List of Predatory Publishers but this became defunct in January 2017. In response to this, a Urology Green List (UGL) has been created as a venue for identifying bona fide urological journals. The aim of this study was to evaluate the early public response to the UGL.

Methods: A list of journals that were considered safe for urologists to publish was created and named the UGL as a “go to” portal to verify genuine urology journals. Inclusion was based upon historical performance as a journal, association with a professional body, indexing and website characteristics. An international advisory board was formed. The UGL was announced on the BJUI Blogs and pageviews examined. Significant global interest was also examined.

Results: A total of 55 journals have been included on the UGL since its creation in March 2017. A total of 28 urologists invited, 27 responded and were agreeable to joining the International Advisory Board. Up to October 2017, the UGL website has had over 5000 pageviews. The introduction to the UGL published on the BJUI Blogs has attracted almost 75,000 pageviews, placing it amongst the 5 most viewed blog pieces in the history of the BJUI Blogs. A letter introducing the UGL was accepted for publication in the journal Nature (Impact factor 40.137). Though this exposure, the UGL has also featured in an article for the magazine The Scientist.

Conclusions: The early response to the creation of the UGL has been positive. Internet page views confirm that there has been definite interest in the concept of having a list that focuses on the identification of appropriate journals to publish rather than predatory journals and that the concept has attracted interest on an international scale.

Ergonomics in urology – a survey of Australian trainees
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Introduction: The progressive development, and adoption of minimally invasive operative techniques has and continues to reshape the surgical landscape and Urologists have been at the forefront of embracing and adopting such techniques. Different approaches place different demands on the bodies of surgeons, who often operate in large volumes. These demands can result in musculoskeletal distress amongst surgeons, and has been recognised amongst consultant surgeons in a multinational survey. We postulate that these issues arise during the training phase, which presents an opportunity to address these concerns early to allow proper technique adoption to minimise harm and create more a more positive and sustainable surgical practice.

Methods: We anonymously surveyed urological trainees from Australia and NZ to seek correlations between the type, volume and duration of surgical work performed, surgeon habits and characteristics, and the prevalence of musculoskeletal complaints and injury across career and the type of treatments sought.

Results: Of the 85 who were requested via email to participate, there were 35 who consented to and completed the survey. Males represented 77% of respondents compared to 23% females. The average BMI across respondents was 24.3. Chronic pain was reported in 65.7%, with 19.2% feeling this was caused by operative work, and a further 46.2% stating their work exacerbated their pain. This was predominantly reported as both neck and back pain (51.4%), with only 20% reporting neither back nor neck pain during operative work. The potential for effect on clinical performance appeared evident, with 54.3% reporting that it sometimes effects performance, with 11.4% of respondents admitting to taking time off for musculoskeletal pain. Trainees rated Open surgery to be the most common cause of musculoskeletal distress at 61%, followed by

Laparoscopic and Endoscopic procedures. There is a very strong willingness among trainees to engage better and more ergonomics practices, with 81.8% stating that they would attend a workshop on ergonomics in surgery.

Discussion: Previous studies have indicated that surgeons do take into account ergonomic considerations when determining an operative approach. Correct ergonomics is a learned and practiced behaviour. The consideration of operating room setup, proper posture, and practice of postural resets are necessary components for a longer, healthier, and pain-free surgical career. There needs to be a more concerted effort amongst trainees, training providers and healthcare organisations to offer support and training in this area which would benefit the surgeon and reduce the burden on the healthcare system by reducing time off work needed to manage issues that arise in the operating theatre.

Paediatrics/Reconstruction
Management and long-term complications of posterior urethral trauma in patients with pelvic fracture in a major trauma centre
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Introduction: The management of urethral trauma (especially posterior urethral injuries) is a very controversial topic, however, the current data shows primary realignment (SPC + IDC) to be fairly effective. This study aims to analyse the management and long-term complications of urethral injuries in patients with pelvic fracture at a major trauma centre, Alfred Hospital in Australia.

Methods: A retrospective audit of all patients presenting to the Emergency and Trauma Department with urethral trauma and pelvic fracture over a five-year period (2009–2014). Patient demographics, grading and location of urethral injury, management (primary endoscopic realignment), complications (stricture/recurrent UTI) and need for further surgeries were recorded.

Results: 28 patients were identified. Median age was 46 years. 100% were males.
Grade of urethral injury; I (14%), II (0%), III (43%), IV (25%) and V (18%). Location of urethral injury; anterior urethra 18%, posterior urethra 82%. 78% of patients with posterior urethral injuries had primary realignment and 60% of the remaining patients were managed with SPC with view of delayed repair. 22% of patients who had primary realignment required delayed anastomotic urethroplasty due to stricture, 75% of whom developed long term UTI. 39% of patients with posterior urethral injuries developed long term UTI.

Conclusions: From this study, it can be found that primary realignment is commonly used in this trauma centre to manage posterior urethral injuries and the success rate in preventing urethral strictures down the tract is significant. UTI is still one of the most common complications post urethral injury.

One stage delayed bladder closure with Kelly radical soft tissue mobilisation in bladder extrophy: preliminary results

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Introduction and Objectives: The radical soft-tissue mobilization (RSTM, or Kelly repair) is an anatomical reconstruction of bladder extrophy performed as part of a two-step strategy after successful neonatal closure. The objective was to determine the feasibility of a combined one-stage procedure of delayed bladder closure and RSTM without pelvic osteotomy.

Methods: From 11/2015 to 03/2017, 11 patients with bladder extrophy (8 males and 3 females) underwent combined bladder closure with RSTM at 3 centers. The delayed bladder closure was done at a median age of 4 months [0.5–24]. RSTM included full mobilisation of bladder template, urethral diaphragm and corpora cavernosa from the medial pelvic walls, followed by anatomical reconstruction with anti-reflux procedure, bladder closure, urethro-cervicoplasty, muscle sphincter approximation, and penile-clitoral reconstruction. A video of the technique will be presented. The main criteria evaluated was bladder dehiscence or prolapse. Secondary outcomes included bladder-neck or urethral fistula, urethral stenosis, parietal hernia, dilatation of the upper urinary tract, ischemia of the glans or clitoris.

Results: All bladder extrophy cases were successfully closed without osteotomy, with no case of bladder dehiscence after a 9 months [3–21] follow-up. No patient had dilatation of the upper urinary tract or ischemia of the glans or clitoris at the end of follow-up. Urethral fistula or stenosis occurred in 4 patients: 3 fistula closed spontaneously in less than 3 months; 1 urethral stenosis was successfully dilated with 3 sessions of endoscopic high-pressure balloon. One patient had a parietal hernia.

The main limitation is the short follow-up, although the main outcome criteria, namely bladder dehiscence, is usually expected to happen very early after surgery.

Conclusion: The Kelly RSTM can be safely combined to delayed bladder closure without osteotomy in classic bladder extrophy.

Fascia lata harvest site morbidity in pelvic organ prolapse surgery

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Introduction and Objectives: There has been increasing concern regarding use of synthetic mesh for pelvic organ prolapse (POP) surgery in recent years. An alternative technique of anterior prolapse repair is using autologous fascia lata as a reinforcement. Although several studies have evaluated this surgery for POP outcomes, there is a sparsity of data regarding harvest site morbidity. The objective of this study was to examine autologous fascia lata harvest site morbidity in the context of POP surgery.

Methods: A retrospective review of all patients who underwent autologous fascia lata graft for POP surgery at a single institution by a single surgeon 1st January 2013 to 31st December 2015 was performed. Outcomes assessed include intraoperative and postoperative complications, pain and functional outcomes. Statistical analyses were performed using Microsoft Excel 2016.

Results: Fourteen women (mean age 69 years, range 36–84) underwent fascia lata graft harvest for POP surgery during the study period. Mean follow up was 10.8 months. All surgeries involved transvaginal repair of anterior compartment prolapse (mean cystocele grade 3.6). There were no intraoperative complications during graft harvest. The early postoperative course was complicated by seroma in 14% (2/14) of patients, which resolved spontaneously. One patient developed a harvest site haematoma, which was treated by aspiration. There were no harvest site infections. 36% (5/14) of patients had ongoing harvest site pain at 3 weeks follow up; no pain was chronic beyond 3 months. There were no late complications identified beyond 3 months. No cases of muscle prolapse at the harvest site, restricted range of motion or functional gait disturbance were noted.

Conclusions: Autologous fascia lata graft harvest in POP surgery was completed in all cases without intraoperative complication. Early harvest site complications were of low Clavien-Dindo grade (1–2). There were no late complications; no chronic pain, muscle prolapse, restricted range of motion or gait disturbance.

Management of post TURP urethral stricture

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Introduction and Objectives: Urethral stricture is a common complication after transurethral surgery. According to Hofmann, the incidence of urethral stricture after transurethral resection of prostate (TURP) varies between 2.2% and 9.8%.

Methods: A retrospective study was conducted. 193 patients underwent treatment for post TURP stricture at our institute from 1995 to 2016. Patients with evidence of urethral stricture at the time of TURP, and meatal stenosis were excluded from the study. 182 patients were included in the study group.

Results: The patient’s age ranged from 54 to 87 years. The mean preoperative Q max was 6.18 ml/s. Location of stricture: 71 proximal bulb (PB), 72 distal bulb (DB), 5 penile (P), 17 peno-bulbar (PB) stricture and 16 pan-urethral stricture. The mean length of stricture was 1.95 cm for
bulbar strictures, 4.60 cm for penile strictures, 4.8 cm for penu-bulbar strictures and 11.68 cm for pan-urethral. 79 patients with distal bulbar stricture underwent dorsal onlay BMG, 71 Proximal bulbar stricture had ventral onlay BMG, 6 required augmented anastomotic and 9 double face BMG Urethroplasty. Mean buccal mucosal graft length was 6.25 cm (4–8) and width was 1.5 cm. Overall success rate was 83.36%.

### Surgery

<table>
<thead>
<tr>
<th>N</th>
<th>193</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dorsal onlay</td>
<td>79 [59 DB + 5 P + 15 PB]</td>
</tr>
<tr>
<td>Urethroplasty</td>
<td>5 [P + 15 PB]</td>
</tr>
<tr>
<td>Ventral onlay</td>
<td>71 [PB]</td>
</tr>
<tr>
<td>Urethroplasty</td>
<td>06 [DB]</td>
</tr>
<tr>
<td>Double Face</td>
<td>09 [7 DB +2 PB]</td>
</tr>
<tr>
<td>Augmented Anastomotic Panurethral stricture</td>
<td>16</td>
</tr>
<tr>
<td>Endoscopic Procedures</td>
<td>11 (6 DB + 1 P + 3 PB)</td>
</tr>
</tbody>
</table>

### Conclusions:
Urethral stricture is a common complication after transurethral surgery. Post TURP stricture should be treated by Urethroplasty when feasible, rather than repeated dilations.

### Comparison of outcomes of double-barrelled wet colostomy versus ileal conduit and end colostomy for urinary and faecal diversion – single centre experience

**Introduction:** Total pelvic exenteration (TPE) for the management of locally advanced pelvic malignancies is a radical operation that requires both urinary and stool diversion. Conventionally this has been achieved by an ileal conduit and end-colostomy (ICEC). An alternative approach involves the construction of a double-barrelled wet colostomy (DBWC), where ureters are anastomosed into the blind-ending efferent loop colostomy. It enables mobilisation of rectus abdominis flap to fill the perineum and avoids the need for bowel anastomosis to form a separate ileal conduit. We compared the outcomes of the DBWC vs ICEC.

**Aims:** The primary objective of this study was to compare perioperative outcomes following DBWC and ICEC. The secondary objective was to assess early and late complications as well as renal function.

**Methods:** A retrospective review of prospectively collected data was performed. Patients with advanced pelvic malignancies who underwent DBWC or ICEC as part of TPE from 2012 to 2016 were included in the study. The following parameters were measured: Baseline characteristics (Age, BMI, ASA, sex, Extent of disease and type of carcinoma, presence of lymph nodes involvement, presence of chest and bone metastasis), Perioperative outcomes (operative time, length of stay – ICU and total, transfusion), Rates of intra- and postoperative complications. The Clavien scoring system was used to document the grade of complications within 30 days of surgery. Renal tract ultrasound was performed prior to first follow up at six weeks and annual imaging subsequently. Renal function using Creatinine and biochemical changes were also measured at regular interval.

**Results:** Of 77 patients who met the study criteria 41 patients underwent DBWC and 36 ICEC. There was no significant difference in age, sex, BMI, ASA, neo-adjuvant chemotherapy status, and pre-operative renal function between the two groups. The most common type of cancer was of the rectum origin. Operative time, length of ICU and total hospitalisation were slightly shorter in the DBWC group; however, it was not statistically significant. 5 patients developed Clavien III or greater complications in both groups.

The urinary complication rates were similar between the two groups. However, 2 patients in the DBWC group required revision to bilateral stoma due to stricture and recurrent urinary tract infections. Although not statistically significant, parastomal hernia was more common in the ICEC group. There was no significant difference in renal function or biochemical changes between two groups.

**Conclusion:** The DBWC is a safe, effective alternative option. A single stoma facilitates the use of rectus flap to fill the large perineal defect. The convenience of a single stoma may also translate into a better quality of life and it is currently under investigation.

### Evaluation of prenatal diagnosis of posterior urethral valve via ultrasound and its relationship with long term prognosis of patients

**Introduction and Objectives:** Posterior Urethral Valve (PUV) is the most common obstructive uropathy in male infants, which is now commonly diagnosed in routine prenatal ultrasonography. The aim of this study was to evaluate the prognostic factors in fetal and postnatal period affecting long-term renal function.

**Methods:** Retrospective review of all patients referred to our tertiary pediatric hospital between the years of 2001 to 2014 with provisional diagnosis of PUV, based on hydronephrosis seen on prenatal ultrasound scans.

**Results:** During the years 2001 to 2014, 1500 patients with prenatal diagnosis of hydronephrosis were referred to our centre. On the other hand, 431 patients with provisional diagnosis of PUV were referred, of whom 116 were diagnosed during prenatal period. 37 patients were excluded from this study due to lack of appropriate follow up. 79 patients with provisional antenatal diagnosis of PUV based on US were included in our study. Several prognostic factors, including prenatal and postnatal sonographic parameters were evaluated along with renal function, and long term renal outcome. Gestational age at the time of diagnosis, amniotic fluid level, and presence of dilated ureter were considered on the prenatal ultrasound. At the end of our follow up, chronic renal failure was observed in 16.1% of our patients. Presence of a dilated ureter was the only sonographic parameter with a significant relationship with end stage renal disease (ESRD) (p < 0.05). Gestational age at diagnosis and oligohydramnios were unreliable predictors. Initial and nadir serum Creatinine were found to have a significant impact on the final renal outcome (p < 0.001).

**Conclusions:** Based on our findings, detection of dilated ureter on prenatal ultrasound, can predict the incidence of...
ESRD in children with PUV. Initial and Nadir Serum creatinine are also significant prognostic factors. On the other hand, the result of our study suggests the improvement in outcome of children with PUV, who have undergone primary valve ablation together with bladder neck incision early during first years of their lives. However, a larger sample size and longer follow-up period until adolescence is needed to prove this hypothesis.

Urethral syringoceles: clinical presentations in various age groups

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Introduction and Objectives: Urethral syringocele or Cowper’s syringocele is defined as a cystic dilation of the bulbourethral glands. It is an uncommon, but also under-diagnosed condition that is most commonly seen in pediatric population. We present 7 cases of urethral syringocele in children with several different presentations and challenging diagnosis, with a review of literature on presentation, diagnostic workup and treatment.

Methods: Retrospective review of 7 cases with diagnosis of urethral syringocele who presented to our tertiary pediatric hospital.

Results: Age at presentation was from prenatal to 16 years. Various presentations seen in our 7 cases were: in utero diagnosis of urethral obstruction and hydrenephrosis, scrotal abscess formation in 2 cases, post-micturition dribbling, poor urinary stream and penile swelling, and acute urinary retention. Method of diagnosis was micturition cystourethrogram (MCUG) in 5 cases, direct cystoscopy in one, and magnetic resonance imaging (MRI) in another case. Surgical intervention was necessary in all patients.

Conclusions: Our experience in paediatric population shows that syringocele can present in various ways, and high degree of suspicion is needed to make a correct diagnosis. Careful clinical, radiological and endoscopic evaluations are necessary for establishing diagnosis and choice of treatment. Transurethral deroofing is a simple and effective method of treatment, although in 2 of our cases, perineal approach was necessary to drain the scrotal abscess.

Incidence of congenital genital abnormalities detected in male patients over ten years of age presenting for routine voluntary medical male circumcision. A retrospective record review

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‡Teight to Care, Clinical HIV Research Unit, Faculty of Medicine, South Africa; †Right to Care, Johannesberg, Gauteng, South Africa

Introduction and Objectives: Due to the reduction in HIV transmission through male medical circumcisions (MMC), numerous clinics throughout South Africa offer a voluntary free service to boys from the age of ten years and above. An examination prior to the procedure may detect congenital abnormalities missed after birth. The aim of this study is to measure the incidence of these abnormalities, determine the demographic and clinical characteristics of this group and determine what referral systems, interventions, and follow-up is available to them.

Methods: The study is a descriptive, observational, retrospective analysis of de-identified medical records at a routine MMC service at a Johannesburg clinic in 2015.

Results: Out of 2634 patients that presented for circumcision, 44 had abnormal examination findings. Twenty-five of these patients had congenital abnormalities: Hypospadias (7/25); phimosis (16/25); Undescended testicles (2/25); Epispadias (0/25). Two patients out of 25 who were referred were actually seen at the urology outpatient department.

Conclusions: The incidence of congenital genital abnormalities of males presenting for routine circumcision is low. Despite the low incidence the effect on fertility, sexuality, ability to urinate and on psychological wellbeing is significant. Referral services to the urology department should be restructured to improve all outcomes.

Acute transverse myelitis in children: long-term bladder and bowel outcomes

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Introduction and Objectives: Bladder and bowel dysfunction are common in acute transverse myelitis (ATM), but their characteristics and natural history have only been briefly reported in the paediatric population. Here we describe the urological presentation and long-term bladder and bowel outcomes of ATM in children.

Methods: We retrospectively reviewed the medical history, clinical features, radiological and urodynamic findings in children with ATM between 2000 and 2017.

Results: 30 patients were admitted with a diagnosis of ATM, aged 6 months to 16 years at onset (median 8.9 years). Of these, 12 showed lower urinary tract (LUT) or bowel symptoms, either at presentation (7) or during follow-up (5). The most common urological presenting symptom was acute urinary retention (6). One patient also developed priapism and faecal incontinence. One patient presented with urgency and further 3 had additional constipation. Only one patient had isolated constipation with no urological symptoms. Of the 6 with initial retention, two had complete resolution of their bladder symptoms at follow-up, but one, who presented with priapism, has residual erectile dysfunction. Patient’s progress was followed-up for a median of 5 years (1–14 years). Two children had complete resolution of the symptoms after the acute phase and 2 more during follow-up. Four patients developed LUT symptoms and UTIs. The remaining 5 developed LUTS during follow-up, with UTIs in 2. The only significant ultrasonographic abnormality was post-void residual volume after trial of void (4) or during follow-up (2). Five children (5–17 years) were investigated with video-urodynamics, which showed a small cystometric capacity in all. Three children also had high leak point pressure and detrusor overactivity, and 1 poor compliance; incomplete bladder emptying was identified in 2. Five patients were managed with clean intermittent catheterization (CIC), 7 with anticholinergics and 4 with intravesical injection of Botulinum Toxin A. From the CIC group, 1 patient recovered normal bladder function, 1 remains on CIC, and 3 failed, due to poor compliance (2) and poor residual upper limb function in 1, who has a long-term SP. Two patients treated with anticholinergics had complete resolution of the symptoms and 1 had improvement only of nighttime incontinence after Botox® injection. At most recent follow-up, 5 patients had recovered normal bladder function, 4 have
persistent LUTS with UTIs in one, and 1 patient remains on CIC+anticholinergics. All patients with initial bowel symptoms have recovered normal function, only 1 required treatment. Four patients developed constipation and/or soiling during follow-up. Two of them are managed with enemas and one is improving on oral laxatives.

Conclusions: Persistent bowel and LUT dysfunction is common in ATM. All children require long-term follow-up as symptoms may occur long after diagnosis and should undergo routine renal ultrasound and urodynamic evaluation to guide treatment if symptoms persist.

Uro-Oncology/Robotics

MRI software fusion biopsy and targeted lesions of the prostate: is near enough, good enough?
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†Austin Health, Melbourne, Victoria, Australia; †Royal Melbourne Hospital, Melbourne, Victoria, Australia; †University of Minnesota, Minneapolis, Minnesota, USA; †Eastern Health, Melbourne, Victoria, Australia

Introduction and Objectives: The utility of software platform fusion biopsy using multiparametric MRI (mpMRI) in the diagnosis of prostate cancer is contentious and has been described by some as an unnecessary luxury. We present a consecutive series of patients who underwent mpMRI-software based fusion biopsy of a target lesion (PIRADS 4 or 5) described on prior MRI to determine its usefulness in cancer detection. We aimed to determine whether targeted biopsy of a prostate lesion through the use of mpMRI software fusion platform was essential for the detection of prostate cancer in patients undergoing this procedure.

Methods: We performed a retrospective analysis of patients reviewed in the outpatient setting. Patients who had undergone mpMRI that revealed an index lesion of PIRADS grade 4 or 5 followed by transperineal prostate biopsy were included. All biopsies were by the transperineal approach and utilized the standard grid directed biopsies according to Victorian Transperineal Biopsy Collaboration and target 3–4 core biopsies of the target site. Fusion was achieved with Biojet fusion software. Histopathology was analyzed for cancer detection in target biopsy samples and standard grid biopsy samples.

Results: 29 patients met inclusion criteria with PIRADS 4 or 5 grade lesions on mpMRI and subsequent biopsy. Cancer was detected in 24 (86%) patients. In biopsy positive patients, location for the highest Gleason grade pathology detected was 5 (17%) in the target site, 7 (24%) in the systematic biopsy and 12 with concordant samples. Targeted biopsy failed to detect cancer in four patients that was detected by template biopsy.

Conclusions: Targeted biopsy of index lesions identified on mpMRI was correlated with poorer pathological findings in our group. Although the rate of cancer detection is increased by use of the MRI fusion technique and is of great utility our series supports the notion that mpMRI software fusion biopsy is not an essential adjunct for appropriate diagnostic capacity of transperineal prostate biopsy.

Drilling holes in the lifeboats: Cx Triage can prevent 32% of cystoscopies in haematuria assessment
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Introduction and Objectives: Cx Triage is a segregation index combining phenotypic (clinical characteristics) and genotypic (gene expression) biomarkers from a urine sample. Kavalieris et al reported this index as having a sensitivity = 0.95 and a negative Predictive Value (NPV) = 0.98. The paper does not give details of the bladder tumours missed by the index. The objective of this study is to investigate the impact of the introduction of the Cx Triage index into our haematuria pathway, and in particular to assess its impact on the need for cystoscopy.

Methods: Cx Triage was added to the Canterbury haematuria assessment pathway for 1 year. The performance of the test was assessed as a test alone, and within the context of the pathway.

Results: 475 fully investigated patients with haematuria were available for assessment. Within this cohort, 44 bladder cancers were detected. Two low risk cancers were missed by the test and one by the pathway, giving a sensitivity and NPV for the test of 95.5% and 98.6%. The sensitivity for detecting bladder cancer from the pathway is 97.7% and the NPV 99.3%. In 42% of patients with microscopic and 27% with macroscopic haematuria (32% overall) the Cx triage was negative.

Conclusions: The risk of missing a significant bladder cancer is negligible when Cx Triage is added into the algorithm for the assessment of haematuria. The tests high NPV could allow 32% of patients with haematuria to have their assessment in the community through their GPs and to avoid cystoscopy.

Feasibility study of Lipiodol-tissue glue mixture as a novel fiducial marker in porcine bladder to assist targeting for radiotherapy
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Austin Health, Melbourne, Victoria, Australia

Introduction: Radiotherapy following prostatectomy has a significant risk of toxicity to pelvic structures, which can be reduced using fiducial markers to guide radiotherapy. Lipiodol offers an alternative marker to gold seeds which may be associated with fall out and scarring in the post-prostatectomy setting, however dispersion of Lipiodol through tissue can compromise its utility. By combining Lipiodol with tissue glue the injected Lipiodol can be stabilized preventing dispersion. This technique has been similarly performed in the oesophagus for oesophageal cancer and varices. To our knowledge, the combination of Lipiodol and tissue glue has not been used in the bladder. We present results of an in vitro model, using porcine bladder, to demonstrate the utility of Lipiodol and tissue glue combination for use as fiducial markers to aid image-guided radiotherapy.

Methods: Porcine bladders were placed within a porcine phantom pelvis. A mixture of 1 ml Lipiodol ultra and 1 ml tissue glue (Hystoacryl, Tisseal or Glubran2) were combined within a 2 ml syringe and endoscopically injected into the bladder mucosa, using a rigid cystoscope and a Wilson’s needle, in 0.1 ml aliquots to identify the area of interest. The porcine bladders were subsequently imaged within the phantom pelvis using kilovoltage (kV) planar imaging, computed tomography (CT) and cone beam computed tomography (CBCT).
Results: Lipiodol glue combinations were successfully administered in multiple fiducials that were evident on CT and CBCT. The Lipiodol combined with Hystoacryl or Glubran2 were visible on kV imaging. The Lipiodol Glubran2 combination was deemed subjectively easiest to use at delivery, and a better fiducial on KV imaging. No fiducial was evident on megavoltage planar imaging.

Conclusion: This study demonstrates it is technically feasible to mix contrast medium Lipiodol with Hystoacryl or Glubran2 tissue glue, which injected endoscopically provide discrete fiducial markers to aid image-guided radiotherapy. Although promising, a pilot study is required to assess the durability of these markers through a course of radiotherapy and assess for safety in patients.

Suboptimal follow up of men with prostate cancer on active surveillance: findings from the Prostate Cancer Outcomes Registry–Victoria

Introduction and Objectives: Active surveillance (AS) minimises overtreatment in men with low-risk prostate cancer. This study aimed to evaluate adherence to AS follow-up including the frequency of prostate specific antigen (PSA) testing and repeat prostate biopsy among men being managed with AS in the Prostate Cancer Outcomes Registry – Victoria (PCOR-Vic).

Methods: Data collected by the Prostate Cancer Outcome Registry-Victoria (PCOR-Vic) on men diagnosed August 2008–December 2014 were analysed. Men were eligible if they were on AS for ≥2 years, aged ≤75 years at diagnosis and had a Gleason Grade group ≤3. AS follow up was defined as ≥3 PSA tests and ≥1 biopsy in the two years after initial biopsy, and management was assessed to determine adherence with this definition.

Results: We identified 1635 participants who were eligible; of whom 1202 (73.5%) did not receive adequate AS follow up and 433 (26.5%) did receive adequate AS follow up. Significant predictors of adequate AS follow up in the multivariate logistic regression model included being diagnosed in a private hospital compared with a public hospital (OR = 1.83, 95% CI 1.42–2.37, p < 0.001). Significant predictors of not receiving adequate AS follow up included diagnosis by transurethral resection of the prostate (TURP) or trans-perineal biopsy (TP) compared with trans-rectal ultrasound biopsy (TRUS) (OR = 0.54, 95% CI 0.39–0.77, p < 0.001 and OR = 0.32, 95% CI 0.19–0.52, p < 0.001, respectively); and being aged 66–75 years at diagnosis compared with <55 years (OR = 0.65, 95% CI 0.45–0.92, p = 0.015).

Conclusions: Almost three-quarters of men who have prostate cancer with low risk of disease progression in our community do not have follow-up investigations in a fashion consistent with defined AS protocols. This is likely to be due to multiple factors including clinical-, patient- and health system- related reasons. The clinical consequences of this are unknown.

Patterns of infection following transrectal ultrasound guided biopsy of the prostate in a regional New South Wales centre

Introduction and Objectives: Infection following transrectal ultrasound biopsy of the prostate (TRUS) remains an important topic. Rates, severity and patterns of infection are well described, however limited data is available investigating rates in regional centres. We aimed to determine the rates, severity as well as patterns of resistance in patients presenting with post TRUS infection in a large regional centre in New South Wales, Australia.

Methods: We performed a retrospective review of all patients who underwent TRUS biopsy of the prostate from August 2013 until August 2017 in the Murumbidgee Local Health District. All patients received prophylactic fluoroquinolone antibiotics prior to and following biopsy. The demographics as well as patterns of infection and antibiotic resistance were examined.

Results: A total of 326 men underwent transrectal ultrasound guided biopsy of the prostate over the study period. A total of nineteen (5.8%) patients presented with clinical signs of post TRUS infection, of which eighteen patients (5.5%) required readmission for intravenous antibiotics. The median time to admission was 2 days (0–7) and the average length of hospital stay was 5 days (1–15). Three (0.3%) patients required admission to intensive care for inotropic support with no mortality. Thirty patients (68%) had positive blood cultures, of which all were positive for Escherichia coli. Four of these patients (21%) had extended spectrum beta lactamase (ESBL) producing isolates, which were resistant to their pre-operative antibiotics. Ampicillin, cefalosporin and piperacillin/tazobactam resistance was observed in 77%, 46% and 38% respectively, however no resistance to meropenem or amikacin was observed in our cohort. There was no significant difference in infection rates among the three surgeons performing the procedure (p = 0.75).

Conclusion: Rates of post TRUS infection in our regional New South Wales centre are similar to other published series across Australia. Patients presenting with sepsis demonstrated high positivity rates of multiresistant organisms.

Current status of training in robotic surgery in urology Australia and New Zealand

Introduction and Objectives: Robotic prostatectomy has become the standard of care in the management of localised prostate cancer and, in many centres the preferred option for minimally invasive renal surgery and cystectomy. Training of Urological trainees in robotic technology however is challenging. Presently most trainee exposure to robotic surgery technology comes in the form of assisting in the private sector as there are few robotic devices in public hospitals which is the main site of urology training. Overseas robotic
First Australian multi-centre experience of robotic MRI-ultrasound fusion transperineal biopsy using the iSR’obot Mona Lisa

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*Australian Urology Associates, Victoria, Australia; †Royal Adelaide Hospital, South Australia; ‡Sunshine Coast Urology, Queensland, Australia

Introduction and 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 first multi-centre Australian experience using a novel robotic device—the iSR’obot Mona Lisa—to perform MRI-US fusion transperineal biopsy.

Methods: Databases from three urologists using the iSR’obot Mona Lisa in Melbourne, Adelaide and the Sunshine Coast were pooled. Data entered included PSA, biopsy indication, clinical stage, MRI PIRADS score, targetted and template core number, biopsy grade group, and biopsy complications. Clinically significant cancer was defined as Grade Group (GG) 2 or higher.

Results: In ANZ as of September 2017 there were 48 robotic devices in the private sector, and there were 28 public hospitals that either had, or had access to a robotic device. In Victoria in 2017, 80% of radical prostatectomies in the private sector, and there were 12 public hospitals that either had, or had access to a robotic device. A review of the number and sites of robotic devices currently existing in ANZ and numbers of procedures was performed. Trainee exposure to robotic procedures was assessed with a focus on training experiences in SET training posts. The current experience and exposure robotic surgery for recently qualified urology trainees (beyond the SET program) was also examined. The Victorian Govt. (2016) reported that given the capital outlay, that robotic surgical procedures could only be accessible to the public hospitals through direct collaboration with the private hospitals. A current example of collaboration between a public and private hospital in Geelong, Victoria was reviewed as a model as to how robotic experience for local trainees in a SET training posts could be improved.

Conclusions: In order to match demand, robotic training should be incorporated into formal urological (SET) training. Doing so will be a challenge given the capital costs are prohibitive most public hospitals. In Geelong there is an example of an effective collaboration between the private and public hospitals to optimise patient outcomes, reduce the disparity between public and private access to robotic technology and importantly to meet the training requirements of trainees.

<table>
<thead>
<tr>
<th>Grade group (GG)</th>
<th>Benign (N/A)/PIRADS 1-3</th>
<th>GG2 (4 + 3)</th>
<th>GG3 (4 + 4)</th>
<th>GG4 (4 + 4)</th>
<th>GG5 (4 + 5)</th>
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<td>12</td>
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<td>7</td>
<td>24</td>
<td>19</td>
<td>6</td>
<td>10</td>
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</tbody>
</table>

The end of transfemoral biopsies: systematic and targeted transperineal prostate biopsies under local anesthetic in the outpatient setting

F. KUM*, O. ELHAGE*, J. MALIJIV†, N. FAURE-WALKER*, K. WONG*, M. KULKARNI†, B. CHALLACOMBE*, P. CATHCART* and R. POPERT†
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Introduction and Objectives: Traditionally, prostate biopsies have been performed in an outpatient setting via the transrectal (TRUS) approach. The PrecisionPoint™ transperineal access system enables both standard systematic template and targeted transperineal prostate biopsy, under local anesthetic in the outpatient setting. We present our single center experience of the histological outcomes and tolerability of this procedure.
Methods: 154 patients have undergone prostate biopsies using the PrecisionPoint™ system at our institution from April 2016 to September 2017. Initial cases were performed under general anaesthetic (GA) to enable familiarization with the technique and local anaesthetic (LA) protocol. Median age was 65.4 (36–84) years, median PSA 7.5 (0.7–137.4) ng/ml with a median prostate volume of 40 (10–157) cc and PSA density of 0.2 (0.05–27.5) ng/ml/cc. Histological outcomes were recorded, in addition to pain scores using the validated ‘Visual Analogue Score’ (VAS).

Results: Cognitively MRI targeted biopsies were performed in 30 (19.5%) patients; a further 30 (19.5%) had targeted biopsies in addition to standard systematic biopsies; and 94 (61%) patients underwent systematic biopsies without targets. Mean numbers of biopsy cores were 6.7 (6–13) for targeted biopsies alone, 27.5 (28–32) cores for targeted + systematic biopsies and 24.2 (24–38) cores for systematic only biopsies respectively.

130 (84%) of the cases were for primary diagnostic biopsies, 21 (14%) were on active surveillance (AS), and 3 (2%) were for restaging.

Of patients who had a cognitively targeted biopsy alone, 93% (25/27) of the primary biopsies were malignant. In patients who underwent systematic + targeted biopsy, 93% (25/27) of the primary biopsies were malignant. Of these, the target lesion was positive in 20/25 (80%) cases. 2 were positive from the target only but negative on the systematic biopsies, 5 were positive from the systematic biopsy only, but the target was negative. Of the 75 cases who had primary systematic biopsies alone, 46 (61%) were positive.

When comparing LA transperineal versus conventional TRUS biopsy methods, VAS scores were not significantly different for ultrasound probe insertion (p = 0.746), LA administration (p = 0.238), biopsies (p = 0.4) and overall rating (p = 0.2).

Complications were minimal with one vasovagal episode, urinary retention in one patient, and clot retention in another, both patients had combination LA and sedation. No patients developed urinary sepsis.

Conclusions: Prostate biopsies can be performed safely under LA in an outpatient setting using the PrecisionPoint™ system. Cancer pickup rates are equivalent to conventional transperineal prostate biopsy and the procedure is tolerated well. This method of transperineal biopsy has potential to supersede the transrectal approach in the outpatient setting.

Subinguinal radical orchidectomy: a new “minimally invasive” approach to open surgery

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Introduction and Objectives: The traditional approach for radical orchidectomy requires incision of the external oblique fibres with entry into the inguinal canal and ligation of the spermatic cord at the internal inguinal ring. In addition to the morbidity of a significant incision through skin and facia, a known complication is damage to the nerves within the canal leading to local anaesthesia or persistent inguinal and scrotal neuralgia. A “subinguinal” orchidectomy utilises a smaller incision with ligation the cord at the level of the external ring, avoiding incision of the external oblique fibres and exploration of the inguinal canal. Contemporary series of radical orchidectomy suggest that cord involvement occurs in 3% of testicular tumours, and that subinguinal orchidectomy would therefore provide adequate oncological control of the primary tumour. We present the early oncological outcomes of 26 orchidectomies performed by a subinguinal approach.

Methods: Between May 2011 and August 2017, cases of radical orchidectomy via a subinguinal approach were identified during a retrospective audit of theatre records. Data on operative details, clinical and pathological stage were extracted from clinical records.

Results: 26 orchidectomies performed via the subinguinal approach were identified. The median age was 39 years (range 22–79) and mean follow up time 15.3 months (range 0.46–51.6). The indication for surgery was testicular cancer in 20 patients, lymphoma, germ cell tumours and trauma in 2 patients each. The majority of cases had pathological T1, 3 had pathological T2 and 1 had pathological T3 disease. All patients were discharged home the same day, with the exception of one patient who required an overnight bed for social reasons. No patients experienced neuropathic
Robotic assisted radical prostatectomies: effective collaboration between public & private sectors to improve access & outcomes for regional patients

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Objective: Robotic-assisted radical prostatectomy (RARP) has become the standard of care in the management of localised prostate cancer. The capital outlay for the robotic device is however expensive and it is therefore predominantly available in the private sector. In Australia, there is a clear disparity with the access that public patients have to this technology. There are 44 robots in the private sector, compared to only 11 in the public. The University Hospital Geelong (UHG) has negotiated with the Geelong Private Hospital (GPH) for public patients and improves outcomes for regional patients.

Methods: The Victorian Health Department reported that given the cost, the robotic device will only be accessible to public hospitals through collaboration with the private hospitals. At UGH, the patient is admitted and then transported to GPH utilising the tunnel that connects the two hospitals. The RARP is performed at GPH and the patient is transferred back across to UHG for ongoing care. The prospective audit on intra-operative and post-operative details, has been approved by the Barwon Health Ethics Committee. Surveys including ICIQ, IIEF-5 and SF-36 are posted to patients at week 1 and 6 and months 3 and 6 post-operatively.

Results: Since April 2017, 15 RARPs have been performed. 12 patients had an uncomplicated discharge on day 1 post operatively, compared to the open approach with a mean of 3 days. No patients required blood transfusion. One patient had prolonged catheterisation prior to a successful TOV. 92% of surveys have been returned. The program allows patients to remain close to their family. It shows a commitment to improving patient outcomes and progressing health care in regional centres. It is innovative and is an example of a moment other regional centres can use to introduce robotic surgery.

Conclusion: Through effective collaboration, UHG has successfully implemented a scheme that minimised the disparity between the health care of the private and public patients and improves outcomes for regional patients.

Expanding pathways towards improving patient experience of robot-assisted radical prostatectomy (RARP): assessing patient satisfaction and attitudes

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Introduction and Objectives: Men from high risk breast cancer families with an identified BRCA2 mutation, and also where no BRCA mutation has been identified (BRCA), have an increased risk of prostate cancer (PCA) and higher rate of PCAs specific mortality. Standard clinical features such as tumour stage and outcome prediction models are less accurate in BRCA2 carriers. Histological features may be more useful. Intraductal carcinoma (RARP) for prostate cancer, using a convergent mixed-method qualitative analysis approach

Methods: 412 patients who underwent RARP between January 2014 and June 2016 were mailed questionnaires and invited to participate in focus groups. Qualitative data was thematically analysed using NVivo. Descriptive statistics were obtained from the questionnaire using SPSS.

Results: 169 patients responded (41% of sample size) of whom 97.6% were satisfied and 91.1% would likely recommend RARP. Key themes from the qualitative data highlighted the psychosocial impacts of the diagnosis and RARP process. The importance of early recovery, the benefits of pelvic floor exercises and educational resources were emphasised.

Conclusions: Patients were overwhelmingly satisfied with RARP, largely due to relevance and timeliness of the information and support provided both before and after surgery. With an increased understanding of the factors and outcomes that are most important to patients, we can create more targeted care pathways. Key themes will help inform the implementation of an ERAS protocol to further improve recovery and early return to function.
of the prostate (IDCP) is regarded as an adverse pathological finding and has been associated with reduced progression free and cancer-specific survival. To investigate the significance we undertook genomics-wide copy number analysis (CNA) of normal matched prostate glandular epithelium, prostate intraepithelial neoplasia (PIN), adenocarcinoma and IDCP from BRCA2 mutation carriers, and adenocarcinoma from BRCA patients. Survival of BRCA2 and BRCAX patients with and without IDCP was also assessed.

**Methods:** Areas of normal prostate, PIN, adenocarcinoma and IDCP were microdissected from archival FFPE blocks. Genome-wide CNA was generated using the Affymetrix OncoScan array and interpreted using Nexus Copy Number software. A pathology review and survival analysis was performed using three groups; BRCA2 carriers with and without IDCP (n = 14 vs 19, respectively); BRCAX men with and without IDCP (n = 16 vs 46, respectively); and BRCA2 carriers vs BRCA with IDCP (n = 14 vs 16, respectively).

**Results:** Normal tissue was the most genomically stable (fraction of the genome altered [FGA] = 0.00). In the BRCA2 cohort PIN tissue was the next most stable (FGA = 0.04) followed by adenocarcinoma (FGA = 0.14) and IDCP (FGA = 0.16), (p = 0.0497).

Adenocarcinoma tissue from BRCA2 carriers displayed higher levels of aberration than adenocarcinoma tissue from BRCAX patients (FGA 0.14 vs 0.09, respectively).

BRCA2 carriers displayed a higher incidence of IDCP (42%) compared with sporadic cases (9%, p = 0.004), BRCAX patients also displayed a higher incidence of IDCP (26%) but this was not significant at this sample size (p = 0.102). BRCA2 carriers had significantly worse overall and PCA specific survival in the presence of IDCP (HR: 16.9, p = 0.0064). BRCA also displayed poorer survival (HR: 3.57, p = 0.0086).

**Conclusions:** IDCP is more common in patients with familial PCAs and confers a significantly more aggressive disease pattern with more copy number aberrations than less aggressive histotypes. Even in the absence of traditional high-grade risk factors patients with IDCP display poorer survival. These outcomes will affect patient selection for earlier and multimodality PCA treatment. Greater significance should be placed on the identification of IDCP in pathology specimens, and pathologists should be encouraged to include this finding as part of a standardized reporting template for PCAs.

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**Primary healthcare screening of prostate cancer: the impact of clinical practice guidelines**


Austin Health, Heidelberg, Victoria, Australia

**Introduction and Objectives:** Prostate cancer (PC) screening remains a controversial concept. Various governing bodies have advocated various practice guidelines ranging from no screening to screening most men, causing confusion amongst primary health care providers. We aimed to examine the changes in the practice of PC screening by general practitioners (GPs) in Victoria.

**Method:** Printed surveys were distributed to a sample of 180 GPs in Victoria in 2012, 2014 and 2017. These survey dates followed the introduction of changes to major PC guidelines in 2012, 2013 and 2015 respectively. Chi-squared test was used for statistical analysis.

**Results:** The response rates were 65.1%, 41.6% and 41.1%, respectively, for 2012, 2014 and 2017 respectively. The most commonly used guidelines were USANZ, RACGP and NHMRC. A majority of GPs (95%) in 2017 believed PSA testing was at least ‘somewhat effective’ in reducing PC mortality compared with 74% in 2012 (p < 0.01). However, there were no differences in their practice of PSA screening between 2012 and 2017 (61% vs 63%) in men aged 40–69. The most commonly used guidelines were USANZ, RACGP and NHMRC. Majority of GPs (88%) chose to refer men to a urologist regarding PSA-based detection of PC in 2017 compared to 2012 (66%) (p = 0.02), due to uncertainty about PC-screening.

**Conclusions:** Current PSA-screening guidelines appear to have altered the perception of the benefit of PSA testing amongst GPs. However, this is yet to be reflected in clinical practice, and confusion persists amongst GPs about use and interpretation of PSA results. Promotion of collaborative uniform guidelines by the major organisations may improve PC screening practices amongst GPs.

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**Robotic retroperitoneal lymph node dissection for non-seminomatous germ cell tumour in a centralised post-chemotherapy surgical practice**

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Addenbrooke’s Hospital - Cambridge University Hospitals, Cambridge, UK

**Introduction and Objectives:** To investigate the feasibility of robotic retroperitoneal lymph node dissection (RPLND) for patients with non-seminomatous germ cell tumour (NSGCT) in a centralised practice where standard treatment is initial chemotherapy for clinical Stage 2 or greater disease.

**Methods:** We retrospectively reviewed the intra-operative, post-operative and follow up data for patients who were referred for RPLND since the introduction of a robotic RPLND program. Patients referred to the centralised surgical centre for RPLND were considered for robotic RPLND if they had unilateral retroperitoneal disease consistent with the laterality of their previous orchidectomy and with no evidence of encasement of vessels. A unilateral template dissection was performed in all cases using a lateral approach for left-sided (para-aortic) disease or supine approach for right-sided (interaortocaval and para-aortic) disease.

**Results:** 18 patients were referred for RPLND with 9 patients being deemed suitable for robotic RPLND. The median size of the residual mass was 30 mm (15–80 mm). Median robotic console time was 120 min (75–245 min) with median blood loss of 50 mls (25–200 mls). The median length of stay was 1 night (1–2 nights). There were no conversions, no complications or unplanned re-admissions. 8 patients had mature teratoma and 1 patient had yolk sac tumour. Surgical margins were clear in all cases. No disease recurrence has been seen in the limited follow up period (median 6 months).

**Conclusions:** Robotic RPLND may have a role in selected cases of clinical Stage 2 or greater disease for NSGCT; including in the post-chemotherapy setting. However,
Robotic-assisted radical cystectomy with concurrent primary urethrectomy for patients with urethral disease

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Addenbrooke’s Hospital - Cambridge University Hospitals, Cambridge, UK

Introduction and Objectives: To assess the outcomes of concurrent primary urethrectomy at the time of robotic-assisted radical cystectomy (RARC) for patients with evidence of urethral disease.

Methods: We analysed the peri-operative and pathological outcomes of patients undergoing RARC with concurrent primary urethrectomy for patients with biopsy proven urethral disease since the introduction of the RARC program. The urethrectomy was performed through a perineal incision with the specimen delivered into the abdomen and excised en bloc with the cystectomy specimen. These results were compared to patients having RARC without urethrectomy who did not have an orthotopic bladder substitute. Hence all patients analysed had an ileal conduit as urinary diversion.

Results: 33 patients had RARC, 10 patients (8 male and 2 female) had a formal primary urethrectomy at the time of RARC (Group 1). 15 patients had RARC without orthotopic bladder substitution (Group 2). The results are compared below.

Conclusions: The addition of concurrent primary urethrectomy at the time of RARC appears to have similar peri-operative and pathological outcomes, albeit with an increased operative time and slightly longer length of stay.

<table>
<thead>
<tr>
<th></th>
<th>Group 1</th>
<th>Group 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of patients</td>
<td>10</td>
<td>15</td>
</tr>
<tr>
<td>Total Operative Time (mins) (Median, Range)</td>
<td>488, 315–540</td>
<td>390, 315–480</td>
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<tr>
<td>Estimated Blood Loss (mls) (Median, Range)</td>
<td>600, 200–1000</td>
<td>600, 200–1500</td>
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<tr>
<td>Length of Stay (days) (Median, Range)</td>
<td>5.5, 4–25</td>
<td>4, 3–19</td>
</tr>
<tr>
<td>Clavien 3 or greater complications</td>
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<td>3</td>
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<tr>
<td>Unplanned Readmissions</td>
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<tr>
<td>Lymph Node Yields (Median, Range)</td>
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<td>16, 7–34</td>
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Reconsidering the role of pelvic lymph node dissection with radical prostatectomy for prostate cancer in an era of improving radiological staging techniques

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Background: Performing an extended pelvic lymph node dissection (PLND) on all men with intermediate and high-risk prostate cancer at the time of a radical prostatectomy (RP) remains controversial. The majority of patients PLND histology is benign and the long-term cancer free progression in men with positive lymph node metastasis is low. The objective is to investigate the probability of long term biochemical freedom from recurrent disease (bNED) in men with lymph node metastasis identified at the time of radical prostatectomy (RP).

Subjects and Methods: A retrospective review of the pathology of 1184 pelvic lymph node dissections performed at the time of a radical prostatectomy by multiple surgeons referred to a single uro-pathology laboratory between 2008 and 2014 identified 61 men with node positive prostate cancer. Of the men with positive nodes, 24 had a standard PLND and 37 an extended PLND (ePLND). bNED was defined as a post-operative serum PSA <0.2 ng/ml.

Results: The median follow up is 4 years (2–8). The median lymph node count was 7 (range 2–16) for PLND and 22 (range 6–46) for the ePLND. A single lymph node metastasis was identified in 56% of the 61 men. Only 10% of men who underwent a PLND remained free of biochemical recurrence of disease and only 5% had undetectable serum PSA. There was no difference in bNED outcome between a PLND and ePLND. The number of men needed to be treated with a PLND at the time of RP (NNT) to result in an undetectable post-operative PSA at a median follow up of 4 years is 395.

Conclusions: In men with lymph node metastasis, the probability of long term bNED is low and the NNT for cure is high. With emerging improved radiological imaging techniques increasing the detection of lymph node metastasis outside the extended lymph node dissection templates, more scientific investigation is required to evaluate which men will benefit from a PLND and which men can avoid an unnecessary PLND procedure.

Bringing back Listerian principles to reduce TRUS-related sepsis. A prospective comparison of transrectal and trans-perineal biopsies of the prostate: experience of a single surgeon

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Introduction and Objectives: Transrectal ultrasound guided biopsy (TRUS biopsy) is the gold standard. In contrast to transperineal template biopsy (TP biopsy), TRUS biopsy is simpler and cheaper to perform and may not require general anaesthesia. However, in recent times this technique has come under fire over concern regarding the risk of infective complications when compared to the reportedly negligible rates of sepsis associated with TP biopsy.

Targeted antibiotic prophylaxis has been used to reduce infection risk, however, given the rising rates of resistant bacteria, we must find antimicrobial-sparing techniques to reduce infection rates. Aseptic theory would suggest that disinfecting the TRUS biopsy needle between passes should reduce sepsis rates by decreasing the bacterial load on the needle and thus decreasing the inoculum. There is some evidence to suggest decreased sepsis rates with formalin disinfection of the biopsy needle.
needle. As there are potential risks associated with formalin exposure, this study aimed to investigate if a similar reduction in infection rates could be achieved by washing TRUS biopsy needles in cetrimide solution and then normal saline between passes.

The objective of this study was to compare the complication rates of TRUS biopsy using cetrimide needle disinfectant with TP biopsy from a single surgeon’s clinical experience.

**Methods:** From February 2012 to August 2017 data from all prostate biopsies undertaken in the private practice of a single experienced urological surgeon were collected prospectively. Patient demographics, mode of biopsy, number of biopsies, histopathology and complications were recorded. All patients routinely received antibiotic prophylaxis and a bisacodyl suppository prior to biopsy. TP biopsies were undertaken according to standard technique. During TRUS biopsies the surgeon vigorously washed the biopsy needle in a chlorhexidine/cetrimide solution (chlorhexidine gluconate 0.05% w/v and cetrimide 0.5% w/v) and then rinsed it in normal saline between each pass. The wash was undertaken with the inner aspect of the needle exposed in order to flush faecal contents from the biopsy needle itself. Post-biopsy urosepsis in this study was defined as presentation following biopsy with fever requiring intravenous antibiotics and hospital admission.

**Results:** 613 cases were included in this study (TP = 362, TRUS = 251). Overall complication rate was 4.4% (27 cases). The observed rate of post-biopsy sepsis was similar across each group; 0.55% for TP biopsy and 0.40% for TRUS biopsy. Similarly, UTI rate post-biopsy was 0.49% overall (0.55% TP biopsy, 0.40% TRUS biopsy). The most commonly recorded complication was acute urinary retention which occurred at a rate of 3.3% post-TP biopsy (none after TRUS).

**Conclusion:** Our study suggests low rates of sepsis post-TRUS biopsy can be achieved when the biopsy needle is washed in a solution of chlorhexidine/cetrimide in between passes. Although limited by a relatively small sample size, our findings suggest that this simple adjustment to standard TRUS biopsy technique could contribute to improving the safety of TRUS biopsy as well as limiting the development of antibiotic resistance by minimising the faecal content retained on the TRUS biopsy needle after each pass.

**Villis Marshall**

**Body-mass index affects pre-treatment risk categorization by suppressing “true” attributable serum PSA and impedes early diagnosis in Prostate Cancer**


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**Introduction and Objectives:** Obesity is a growing worldwide epidemic with over 1.9 billion adults being overweight (BMI ≥25) while prostate cancer is the second most commonly diagnosed cancer. Recent evidence points towards an association between BMI and more aggressive disease; but this is contentious. Exact mechanisms are unknown; however, there are two schools of thought; diagnostic bias or obesity-related biological mechanisms. We aim to differentiate them by utilising the tumour attributable PSA.

**Methods:** Consecutive patients undergoing prostatectomy for clinically localized prostate cancer from January 2004 to October 2012 at the Epworth Hospital Richmond were identified from a prospectively recorded dedicated database.

**Results:** 1587 patients were included. Rates of clinical T2/T3 disease significantly increased with each BMI category (p trend = <0.001). When comparing very obese men to healthy men, they had larger mean tumour volumes (5.1 vs 3.3 cc; p = 0.05). By calculating the “expected” PSA and its difference with observed PSA, we demonstrate that the “real” PSA in the very obese men were significantly underestimated. Cox regression analysis with observed PSA demonstrated having a BMI ≥35 kg/m² had a higher risk for BCR; however, multivariable analysis with an ‘adjusted’ PSA showed there was no longer an associated risk.

**Conclusions:** It is highly probable that obesity itself does not drive the aggressive development of prostate cancer; however, it leads to the suppression of a “true” tumour attributable PSA measurement. This potentially leads to a later diagnosis in prostate cancer and a relative increase in risk of biochemical recurrence.

**A multi-centre cohort study evaluating the role of inflammatory markers in patients presenting with acute ureteric colic (MIMIC)**


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**Introduction and Objectives:** Conflicting evidence exists regarding the role of raised inflammatory markers in acute ureteric colic and spontaneous stone passage. This domain is particularly relevant when considering criteria for discharge in those patients where conservative management is a valid option. MIMIC aims to assess whether (WBC) at presentation of acute ureteric colic is associated with likelihood of spontaneous stone passage in a large and diverse patient cohort.

**Methods:** Design: A collaborative Multi-centre cohort study in 71 centres disseminated in the UK by the British Urology Researchers in Surgical Training (BURST) and in Australia/New Zealand by the Young Urology Researchers Organisation (YURO) on behalf of BURST

**Primary Outcome:** Spontaneous stone passage (SSP)

**Inclusion criteria:** Acute renal colic with CT-KUB confirmed ureteric stone.

**Follow up:** 6 months

**Statistical Analysis:** A multivariate logistic regression was performed including: WBC, Neutrophils, CRP, Creatinine, Stone size, Stone position, Hydronephrosis, NSAID use, Medically Expulsive Therapy (MET) use, Antibiotic use.

**Results:** Data were collected from 4181 patients. 75% (n = 3127) were discharged with conservative management. 80% (n =
2516) had a confirmed outcome and were included in the multivariate analysis.

Overall SSP rate for this cohort was 74% (n = 1863).

WBC was not significantly associated with SSP on either the univariate or multivariate analysis (adjusted OR 0.99 [95% CI 0.99–1.00], p = 0.527).

A number of factors were found to be significant on univariate analysis but after adjusting for key confounding variables in multivariate analysis the strongest predictors of SSP were stone size (OR 0.57 [95% CI 0.53–0.61], p = 0.00001) and position (OR 3.31 [95% CI 2.60–4.22], p = 0.00001).

For each incremental increase in stone size by 1 mm, the odds of SSP decreased by 43%. Stone clearance rate for stones measuring 0–5 mm was 84% compared to 42% for stones measuring 6 mm or greater. Compared to proximal ureteric stones, distal ureteric stones had a three times greater odds of SSP. Stone clearance rate was 51% for proximal ureteric stones, 69% for mid ureteric stones and 83% for lower/distal ureteric stones.

Medical Expulsive Therapy (Tamsulosin, Prazocin etc) remains controversial in its effectiveness, with its use having a reduced odds in SSP, though it was not statistically significant (OR 0.76 [95% CI 0.61–0.96], p = 0.0503).

Conclusions: To our knowledge MIMIC is the largest contemporary cohort assessing outcomes from acute ureteric colic. Our data shows that in patients with acute ureteric colic who are suitable for initial conservative management, WBC alone should not be used to influence decisions on whether to discharge or perform intervention. Stone size and stone position should inform clinical decisions and management pathways. These data will be used to develop a risk calculator predicting spontaneous stone passage in the near future.

**Metformin offers no protective effect in men undergoing external beam radiation therapy for prostate cancer**

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Introduction and Objectives: In preliminary studies, Metformin was shown to be protective in prostate cancer (PC) via inhibition of mammalian target of rapamycin (MTOR). However, larger clinical studies have demonstrated conflicting evidence on its protective effect in PC. External beam radiotherapy (EBRT) induces Hypoxia inducible factor 1 alpha (HIF1α) in PC tissue, which in turn increases radio-resistance. HIF1α, a transcription factor, is also thought to be upregulated via the PIK3/MTOR pathway. Therefore, it was hypothesised that metformin should reduce radio-resistance and increase survival in men undergoing EBRT for PC. We aimed to assess the effects of metformin on PC outcomes in men treated with EBRT and determine its effect on HIF1α.

Methods: All patients, with histological clinical stage T1-3b Nx/0 M0 PC treated with curative intent with EBRT at a major cancer centre in Victoria from 2000 to 2007 were included. Use of Androgen Deprivation Therapy (ADT) also was recorded. The outcome measures of time to biochemical failure (BF), metastasis, PC specific mortality and overall mortality were analysed for men taking vs not taking metformin, using a competing risk model and cox proportional regression model.

To determine Metformin’s effect on HIF1α in PC cells in vitro, PC3 cells with constitutively high basal HIF1α levels similar to radiated PC tissue, were subjected to increasing doses of metformin.

Results: A total of 2055 eligible cases were identified with a median follow-up of 95.7 months of which 116 were on metformin. There were no differences in age, initial PSA, Gleason scores, T stage, DAmico risk or duration of ADT. Treatment with metformin did not result in any apparent improvement in time to BF, time to metastasis detection or overall survival, but there was a 1.5 fold increase in PC-specific deaths (p < 0.05) in men on metformin and ADT when adjusted for cancer risk and co-morbidities. On comparison of men on high doses of metformin (>1 g/day) with on lower doses of metformin (≤1 g), there was no difference in either time to metastases or time to BF.

In PC3 cells in vitro, only maximal toxic doses of metformin (100 µM) achieved a 50% reduction in HIF1α levels.

Conclusions: No association was found between the use of metformin and time to metastasis detection, time to BF or overall survival in men undergoing radiation therapy ± ADT for PC. In vitro, low therapeutic concentrations of metformin had no effect on HIF1α which could explain the conflicting evidence for metformin in men undergoing EBRT for PC. Higher, more toxic doses of metformin may be required to inhibit the MTOR-HIF1α pathway in this patient group.

**An investigation using molecular and metabolomic biomarkers for the non-invasive detection and characterisation of prostate cancer**

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Introduction and Objectives: Biomarkers that improve on PSA-based detection of clinically significant prostate cancer are required. The overall objective was to examine biomarkers in prostate-specific biofluids for prostate cancer detection. Specifically, in this case control study we sought to investigate molecular (mRNA, microRNA) and metabolite biomarkers in samples of ejaculate and post-ejaculate urethral washings (PEUW) to characterise localised prostate cancer.

Methods: Men being investigated for prostate cancer due to elevated PSA, abnormal DRE or other concern at the Royal Brisbane and Women’s Hospital or local private consulting rooms during 2007 to 2012 voluntarily contributed ejaculate and PEUW samples to a prospective biobank. Samples underwent RNA isolation, amplification and qPCR for B2-microglobulin, PSA, PCA3 and Hepsin. A subset underwent deep small RNA sequencing and candidate microRNAs quantified with qPCR. Supernatants were analysed in vitro using high field (900 MHz) NMR spectroscopy, with subsequent data subjected to standard processing, spectral alignment, data reduction, Quantile normalization and Pareto scaling. Metabolomics methodology was optimized following an analysis of tartrate and temperature variation. Data were combined with serum PSA and compared to dependent clinical variables cancer status (positive/negative) and significance (benign or Gleason 3 + 3 vs. Gleason ≥7). Diagnostic performance was
determined using multivariate modelling (principal component and partial least squares analysis) and receiver operating characteristic (ROC) analysis.

**Results:** 152 patients provided samples during 2007 to 2012 with 98 confirmed to have biopsy-proven prostate cancer. Gleason ≥7 disease was present in 82 patients in whom median serum PSA was significantly elevated (6.75 vs 6.0 ng/ml, p < 0.05). MicroRNAs combined with serum PSA best predicted prostate cancer (area under curve = 0.869) with improved specificity (66.7%) at 90% sensitivity compared with serum PSA (area under curve = 0.619, specificity 27.6%, p < 0.05). PEUW mRNA analyses were comparable to serum PSA. Metabolomic analysis showed that metabolites best predicted low and intermediate risk CaP with grouping observed between these groups and benign and high risk samples. Lipids/lipoproteins dominated spectra of high grade samples. Prostate biochemical stability was optimised and integrated into a study protocol for a phase II window study.
Introduction and Objectives: The widespread use of reusable endoscopes has gained increased attention due to the rise of multi-drug resistant pathogens and concerns that current sterilising techniques may be inadequate for completely preventing the transmission of these pathogens between patients. This has led to the development and increased use of single use endoscopes. In urology, no literature exists directly comparing the performance of commercial digital, single use flexible ureterorenoscopes. We aimed to compare two single use, digital flexible ureterorenoscopes (Pusen UE3022 and Boston Scientific LithoVue) and to compare them to a reusable, video ureterorenoscope (Olympus URF-V2).

Methods: A prospective, comparative study was conducted at Nepean Hospital, New South Wales, Australia. The clinical outcomes for patients undergoing flexible ureterorenoscopy between July 2016 and Sept 2017 were included for analysis. The first group underwent surgery using the single use LithoVue (Boston Scientific) and the second group used the single use UE3022 (Pusen). A representative sample of patients undergoing surgery with the re-useable URF-V2 (Olympus) was chosen for comparison. All operators were asked to rate on a 5-point Likert scale the visibility and manoeuvrability of the endoscope for each case. Data was analysed using SPSS 24.0. Continuous variables were analysed with one-way ANOVA and Tukey post hoc analysis. Categorical variables were analysed using Fisher’s exact test.

Results: One hundred and two renal units were treated in 87 patients. Mean age was 54, 35% were female and 95% of cases were performed for renal calculi. There were 37 cases in the LithoVue group, 24 in the Pusen UE3022 group and 41 in the Olympus URF-V2 group. The visibility (out of 5) was rated as significantly better with the LithoVue (4.49, 95% CI 4.27–4.7) and Olympus URF-V2 (4.83, 95% CI 4.71–4.95) when compared to the Pusen (3.88, 95% CI 3.5–4.25), F(99)=17.203, p = 0.001. This difference was also seen with the maneuverability (out of 5) of the ureterorenoscopes: LithoVue (4.7, 95% CI 4.51–4.89) and Olympus URF-V2 (4.93, 95% CI 4.82–5) when compared to the Pusen (4.08, 95% CI 3.87–4.3), F(99)=24.260, p = 0.001. There was no difference in the clearance rate of renal calculi, 81% (LithoVue), 92% (Olympus), 96% (Pusen). Scope failures occurred in 1 LithoVue (deflection control mechanism broke), 1 Olympus URF-V2 (Deflection mechanism did not work) and 2 Pusen UE3022 (image failed to load onto machine). Two major benefits noted with the Pusen UE3022 scope over the LithoVue was the lack of screen lag and the ability of the control mechanism to lock the tip in active deflection.

Conclusions: Our study is the first to directly compare two different single use, digital flexible ureterorenoscopes. Our study shows that the performance of single use ureterorenoscopes is approaching that of the reusable video, ureterorenoscopes. In the era of multi-resistant organisms and increasing concern over current sterilising techniques for fragile ureterorenoscopes, the single use ureterorenoscopes are an increasingly feasible alternative to traditional, expensive, reusable ureterorenoscopes.

Evaluation of Gallium-68 PSMA PET/CT for post-prostatectomy biochemical recurrence in comparison to traditional CT abdomen/pelvis and bone scan

Introduction and Objectives: Timely detection of the site of recurrence post-radical prostatectomy is paramount to decide further treatment after biochemical recurrence. Ga-68 PSMA PET/CT has been increasingly used in this setting to determine local, lymph node or distant recurrences. We aim to evaluate the use of Gallium-68 PSMA PET/CT, compared to conventional CT abdomen/pelvis and bone scan, for detection of local or distant metastasis following biochemical failure/recur-rence in post-prostatectomy patients.

Methods: We conducted a chart review of our institutional prospective database to identify patients with post-prostatectomy biochemical failure/recurrence who underwent 68Ga-PSMA PET/CT (PSMA), CT abdomen and pelvis (CTAP) and whole-body SPECT bone scan (BS). The results of the 3 imaging modalities were analysed for their ability to detect local recurrence and distant metastases. Data analysis was performed with SPSS 24.0, concordance was assessed and Cohen’s Kappa statistic was applied.

Results: A total of 394 patients were identified with a median PSA of 0.28 ng/ml (range 0.01–36 ng/ml). 394 patients were identified as having PSMA and CTAP for comparison. 387 patients were identified as having PSMA and BS for comparison.

When PSMA was compared to CTAP for detection of local or distant metastases there was concordance for 266 patients (163 negative and 103 positive for local or distant metastasis). PSMA and CTAP concordance was 68% (Kappa = 0.376 [CI 95% 0.298–0.454]). A total of 114 patients had local or distant metastasis detected on PSMA only, while 14 patients had disease detected on CTAP but not on PSMA.

When PSMA was compared to BS for detection of bone metastases there was concordance for 352 patients (308 negative and 44 patients positive for bone metastasis). PSMA and BS concordance was 91% (Kappa = 0.664 [CI 95% 0.561–0.766]). PSMA only positive bone metastases were present in 28 patients while BS only metastases were present in 7 patients.

Conclusions: The use of PSMA has a higher detection rate of predicted local or distant metastasis compared to CTAP and BS in the post-operative staging of biochemical recurrences after radical prostatectomy. PSMA and BS concordance was higher in detection of bone metastases than the concordance of PSMA and CTAP for detection of local or distant disease. Further studies are needed to evaluate the true sensitivity and specificity of PSMA in identification of local and distant metastatic disease in the post-prostatectomy setting.
How accurate is multi-parametric MRI for predicting prostate cancer pathology and tumour staging in the real world? An Australian multi-centre study

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Introduction and Objectives: The reported accuracy of multi-parametric MRI (mpMRI) for the detection of significant prostate cancer varies considerably in the literature. Some studies looking at the “real world” performance of mpMRI report significantly lower detection rates than those reported from academic tertiary centres. Our study aimed to assess the accuracy of multi-parametric MRI (mpMRI) for the detection of significant prostate cancer in men undergoing radical prostatectomy (RP) in an Australian multi-centre setting. Secondary aims were to assess concordance between mpMRI and RP for local tumour staging and index lesion locations.

Methods: Patients who had an mpMRI performed within 12 months of RP between January 2013 and August 2016 at 3 Australian Sites were included (Central Coast, New South Wales, St Vincents Hospital, Melbourne, Victoria, and Bendigo Hospital, Victoria). The results of mpMRI were compared to the final RP specimen results.

Analysis was performed using SPSS 24.0. Binary overall PI-RADS (1–2 negative and 3–5 positive), and significant cancer variables at RP were defined for analysis using Fisher’s exact test. Normality tests were performed on all continuous variables. For normally distributed variables the t-test was performed for comparisons between 2 groups. Mann Whitney U tests were employed for non-parametric analysis.

Results: Two hundred and thirty-five cases were included for analysis. The mean age was 64.9 years, PSA 9.5 ng/ml and prostate volume 44.6 cc. 32% of cases had an abnormal DRE. mpMRI PI-RADS scores were 1–2 for 23 cases (10%), 3 for 38 cases (16%) and 4–5 for 174 cases (74%).

mpMRI had an 91% sensitivity and 95% positive predictive value for significant prostate cancer at RP. The sensitivity for predication of significant prostate cancer significantly improved from 87% to 99%, p = 0.005 with the adoption of PI-RADS version 2. Overall concordance between index lesion location on mpMRI and RP specimen was 75%. Index lesion concordance improved from 68% to 91%, p = 0.002 after the adoption of PI-RADS v2 reporting and MRI technical specifications.

mpMRI had a 38% sensitivity, 95% specificity, 90% PPV and 57% NPV for extra-prostatic disease. Sensitivity for prediction of T3 disease improved from 30% to 62%, p = 0.008 with PI-RADS version 2.

Conclusions: Our Australian multi-centre study confirms the diagnostic utility of mpMRI. In cases undergoing RP, an abnormal mpMRI is highly predictive for significant prostate cancer. The adoption of PI-RADS version 2 technical specifications and reporting criteria has significantly improved the accuracy of mpMRI.

Introduction and Objectives: Post-operative urinary incontinence is a significant concern for patients choosing to undergo a radical prostatectomy for treatment of prostate cancer. Many factors are thought to affect continence outcomes following radical prostatectomy and membranous urethral length (MUL) measured prior to radical prostatectomy has been identified as one such factor by numerous authors.

A recent systematic review and meta-analysis of all studies reporting the effect of MUL on the recovery of continence following RP found a greater preoperative MUL is significantly and positively associated with an earlier return to continence.

The aim of our study was to determine the effect of pre-operative MUL 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). Accurate MUL measurements were taken from the patients’ pre-operative magnetic resonance imaging (MRI) scans. The 26-item short-form version of the Expanded Prostate Cancer Index Composite (EPIC) was used to measure continence outcomes. Continence was defined as 100/100 in the EPIC26 Urinary Continence domain score. Only patients who received an assessment and education by a specialist pelvic floor physiotherapist, had completed EPIC questionnaires before treatment and did not have radiotherapy treatment within 12 months of surgery were included in this study. The effect of MUL on continence outcomes was evaluated in 602 patients.

Results: The observed median and distribution of MUL measurements in this study was consistent with the published literature. There was a near perfect correlation between the measurements of MUL in the coronal and sagittal planes. A coronal measurement was used to facilitate comparison to other authors. There was no association between MUL and baseline continence. Using a mixed effects linear model and continence measured at 3, 6 and 12 months, urethral length was found to be associated with continence post RALP. Adjustment was made for age, margin status, nerve sparing status, stage continence before surgery and time. For each 0.67 mm increase in MUL, there was a 1/100 point increase in the EPIC26 domain score at 12 months (p < 0.001). In men who were continent before surgery, MUL was significantly associated with a return to continence at 12 months post-surgery (OR 1.15, 95% CI 1.05–1.28, p = 0.006).

Conclusions: This is one of the largest Australian studies investigating continence outcomes in patients undergoing RALP and its association with MUL. A stringent inclusion criteria and definition of continence provided for accurate analysis of post-operative continence outcomes. MUL had no effect on baseline continence but had a positive and significant association...
with continence outcomes over 12 months post RALP.

**Poor employment conditions adversely affect mental health outcomes among surgical and urology trainees**

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**Introduction and Objectives:** Poor mental health in junior clinicians is prevalent and may lead to poor productivity and significant medical errors. We aimed to determine the mental health outcomes of surgical trainees compared to age-matched reference standards for the Australian population. We further aimed to provide contemporary data on the mental health of surgical trainees and identify risk factors relating to poorer mental health outcomes.

**Methods:** Ethics approval was obtained from the Royal Australasian College of Surgeons. A detailed questionnaire targeted to surgical registrars was developed comprising of questions based on the 36-item short-form health survey (SF-36) and Physical Activity Questionnaire (IPAQ). Each of the questionnaires has proven validity and reliability in the clinical context. Additional questions pertaining to employment conditions and job satisfaction were included. We used IPAQ, SF-36 scores and linear regression to evaluate the impact of putative predictors on mental health. Weighted scores of each subscale of SF-36 were compared to published Australian population standards. Power calculations prior to survey collection was performed and a sample size of 50 participants was required to identify a 10% difference in mental health outcomes compared to age-matched population standards.

**Results:** A total of 83 responses were collected during the study period, of which 49 (59%) were from men and 34 (41%) were from women. The mean Mental Component Summary (MCS) score for both genders was significantly lower than the population mean at ages 25–34 (p < 0.001). Poor satisfaction with one’s work culture and a feeling of a lack of support at work were extremely strong predictors of a lower MCS score (p < 0.001). Hours of overtime worked, particularly unpaid overtime, were also strong predictors of a poorer score. **Conclusions:** Australian surgical trainees reported lower MCS scores from the SF-36 questionnaire compared to the general population. Increasing working hours, unpaid overtime, poor job security and job satisfaction were associated with poorer scores among trainees. Interventions providing improved working conditions need to be considered by professional training bodies and employers.

**Optimising the tension of an autologous fascia pubovaginal sling to minimise complications**

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**Introduction and Objectives:** To find the optimal degree of autologous fascia (AF) sling tension, measured by lax sling/suture length that minimises the risk of urinary retention.

**Methods:** This prospective study analysed female patients undergoing AF sling for stress urinary incontinence (SUI) by two primary operators from January 2016 to August 2017. Intra-operative measurements of lax sling dimensions tented over rectus were recorded. Clinical assessment of retention was coupled with the SU16 and PGI validated questionnaires. Logistic regression was used to analyse the likelihood of a sling being too tight for a given height.

**Results:** 51 patients were recruited with median age of 55 (34–78) and follow up of 11 (1–20) months. All patients reported improvement of SUI. However, 7 (13%) had retentive complications necessitating ongoing intermittent self-catheterisation (ISC) or division of sling. Logistic regression demonstrated a strong association between short sling height and failed post-operative TOV (p = 0.01), need for post-operative ISC (p = 0.01) and need for sling division (p = 0.00). Age, BMI, operator and VLPF were not confounders on log regression analysis. The subjective PGI (p = 0.02) and UDI6 retention domain (p = 0.01) correlated well with surgeon assessment of urinary retention.

**Conclusions:** A lax sling height stretching at least 40 mm above rectus dramatically reduces the risk of retention, ISC and need for sling lysis. Given the ability to curtail the incidence of urinary retention, this complication should no longer undermine the excellent continence results achieved with pubovaginal AF sling surgery.

**Antegrade memokath deployment for benign, anastomotic uretero-ileal strictures – how we do it**

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**Introduction & Objectives:** Anastomotic strictures following uretero-ileal anastomosis are a problem faced by a subset of patients following cystectomy. We aim to describe our minimally invasive technique of managing benign, anastomotic uretero-ileal strictures.

**Methods:** Patients who developed benign, anastomotic uretero-ileal strictures following radical cystectomy and ileal conduit formation were managed initially with retrograde deployment of the thermo-expandable ureteral Memokath 051 metal stent. These patients all had percutaneous nephrostomies placed prior to the procedure to relieve their urinary tract obstruction. If retrograde deployment was unsuccessful, antegrade deployment of the Memokath stent was attempted. This involved using the nephrostomy to place a ureteric guidewire down to the ileal conduit and then dilating the antegrade tract with a ureteric access sheath. A flexible ureteroscope was then placed antegrade through the access sheath and the Memokath deployed across the stricture in the usual fashion.

**Results:** Two patients had an antegrade Memokath placed between March 2017-June 2017. Both cases had a percutaneous nephrostomy placed initially, due to an infected, obstructed system. Attempts at retrograde Memokath insertion failed as it was difficult to move the Memokath introducer to the correct position due to the angulation of the uretero-ileal anastomosis. Both patients had successful placement of the Memokath via the antegrade approach described above.

**Conclusions:** Benign, anastomotic uretero-ileal strictures are a difficult issue to manage, for which antegrade Memokath deployment is a feasible minimally invasive solution.