100 Testicular ptosis: a new diagnosis and its management
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Introduction: A previously unreported condition of testicular ptosis will be described and a novel way of management will be presented. We define testicular ptosis as, when in a natural squatting position, the dependent scrotum touches the ground.

Patients and Methods: From May 1995 to March 2003, a total of 136 patients underwent inguinal varicocelectomy. 68 patients with testicular ptosis additionally underwent spermatic cord strengthening. After the internal spermatic veins (ISVs) were exposed via an inguinal approach, the largest were ligated and shortened via resection. The two ends were tied in an overlapping fashion with two separate ligatures to enhance its strength. The other 68 patients without testicular ptosis had only ligation and resection of the spermatic veins. Venous tensile strength was also measured using the 3 cm length of resected spermatic vein with a Shimo DFG-20 force gauge. All were followed up with ultrasonography, physical examination with Valsalva’s maneuver and presence of ptosis on an annual basis.

Results: Follow up times ranged from one to eight years (mean 4.7 ± 1.7) and the range of elevation gain in the testicular ptosis group was 2.1 to 3.7 cm (mean 3.0 ± 0.3). Overall patient satisfaction with surgery in both groups was 92.6% (63 patients) and three patients had prolonged testicular pain. In the ptosis group the tensile strength of the internal spermatic vein ranged from 0.32 to 1.55 kgf (0.893 ± 0.274), which is statistically weaker (p < 0.05) when compared to the control group, whereby the tensile strength varied from 0.44 to 1.67 kgf (0.987 ± 0.275).

Conclusions: We have shown that weaker tensile strength of the spermatic veins is present in those with testicular ptosis but recognize that testicular ptosis may have other underlying factors. We suggest that reinforcement of the internal spermatic vein in this way may be beneficial for patients who receive varicocele surgery, particularly in those whose testicles are over-descended.

101 Veno-occlusive erectile dysfunction in young patients resulting from the ‘Jelqing maneuver’: results of penile venous stripping surgery
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Introduction: We report a retrospective study on veno-occlusive erectile dysfunction resulting from ‘Jelqing’ – a natural penile enlargement technique.

Patients and Methods: From October 2000 to September 2011, 37 men aged between 19 and 30 years with erectile dysfunction and a history of the Jelqing maneuver were confirmed to have veno-occlusive dysfunction with cavernosography. 29 patients underwent penile vein stripping surgery and 8 men were treated with non-surgical means. All patients were followed with the abridged five-item version of the index of erectile function (IIEF-5) and cavernosography.

Results: In the surgical group, the pre-operative IIEF-5 score of 11.2 ± 2.3 (n = 29) was increased to 21.8 ± 1.9 (p < 0.001). In the non-surgical group however, the mean baseline IIEF-5 score of 11.5 ± 2.3 (n = 8) differed to 12.1 ± 2.6 (p > 0.05) after medical treatment only. Although there was no significant difference between the two groups’ pre-operative IIEF-5 score, there was a statistically significant difference after venous surgery was performed. The follow-up period ranged from 6 months to 11 years, with an average of 5.5 ± 1.7 years. Eventually both groups had six men each (26.9% and 75.0%) whom required additional oral phosphodiesterase-5 inhibitor treatment. In the non-surgical group a man suffered from depression.

Conclusions: In this study, we may conclude that ‘venous’ aetiology should be an important factor rather than just the psychogenic origin in young males who suffer from erectile dysfunction who practice the Jelqing maneuver.

102 Successful implementation of a penile rehabilitation program in an Australian public hospital
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Introduction: Numerous consensus guidelines recommend penile rehabilitation (PR) after radical prostatectomy. However, implementation of such a program in an Australian public hospital system is challenging because of resource limitations and financial constraints. The aim of this study was to identify the key steps needed to successfully implement a comprehensive PR program in an Australian public hospital.

Materials and Methods: From February 2013, we undertook a step-wise consultative approach to determine the processes needed to initiate a PR program. The key steps identified were:

1. Assessing the baseline knowledge of PR amongst staff of the urology unit.
2. Presenting data to staff on the evidence for PR.
3. Identifying resources available within and external to the public hospital network.
4. Designing a PR program based on available resources.
5. Gaining financial support for a PR program.
6. Results: Based on our systematic approach to implementation of a PR program we identified that:
   - Few staff members knew the rationale or evidence behind PR.
   - A formal presentation of evidence to key stakeholders – urologists, nursing staff and pharmacy was crucial to gain support.
   - Financial assistance for the program, especially for regular PDE5I prescriptions, was essential.
   - Nursing support is critical for ongoing follow-up.
   - Teaching of, and supporting an intracavernosal injection protocol is difficult in a public hospital framework.
   - Outsourcing and public private partnerships can overcome public resource limitations.
   - Publicising the PR program is important for recruitment.

Conclusions: Successful implementation of a PR program in an Australian public hospital is possible. Undertaking a step-wise consultative process is important. There are several key components that need to be worked through such as identifying public and private resources, gaining financial support and facilitating nurse led clinics.

103 Critical analysis of circadian rhythms in testosterone production in older men

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Introduction: Conventional wisdom suggests that serum testosterone (T) level measurement is best conducted in the morning (AM). This study aimed to define the magnitude of the difference between morning and afternoon T levels and to assess the impact of aging on this variation.

Patients and Methods: We reviewed our institutional database for men who had AM (before 10am) and PM (after 2pm) total T (TT) levels within 3 months of each other. We excluded patients with a prior orchiectomy, with T levels <100 ng/dl and those with a history of androgen deprivation therapy. The differences in TT level between AM and PM were measured and were stratified by decade age increase (<50 years, 51–60 y, 61–70 y, 71–80 y, >80 y).

Results: 367 men with mean age = 59 ± 14 y had an age distribution of: 26% ≤50 y, 17% 51–60 y, 34% 61–70 y, 18% 71–80 y, 5% ≥80 y. In the entire cohort, there were no differences between mean AM and PM TT levels (411 ± 242 vs 392 ± 265, p = 0.15). Both AM (r = −0.12, p = 0.03) and PM (r = −0.14, p = 0.01) TT values were negatively associated with age. AM TT levels by age category were: 466 ± 341, 379 ± 213, 405 ± 200, 391 ± 172, 341 ± 167 respectively (p = 0.09). PM TT by age category were: 468 ± 386, 358 ± 184, 370 ± 218, 369 ± 188, and 347 ± 151 respectively (p = 0.03). There were no significant differences between mean AM and PM levels by age groups: −1, p = 0.9; 22, p = 0.2; 35, p = 0.10; 22, p = 0.3; and −6, p = 0.8 respectively. While 60% of men had no meaningful difference (−100 to +100) between AM and PM levels, 11% had >200 ng/dl decrease, 13% 100–200 ng/dl decrease, 7% 100–200 ng/dl increase and 9% >200 ng/dl increase.

Conclusions: This study did not detect a significant circadian variation in TT levels based on aging. However, 14% had a significant difference between AM and PM levels (≥200 decrease or increase).

104 Assessment of sexual function and satisfaction in patients with renal cell carcinoma and inferior vena cava tumour thrombus

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Introduction: Male sexual dysfunction (MSD) is highly prevalent among aging men. Sexual problems like erectile and ejaculatory dysfunction can lead to psychosocial distress and alteration in quality of life. Recently, sexual satisfaction and sexual desire were identified to play an equally important aspects in male sexual health. To our knowledge this is the first study to examine the prevalence of MSD in men who underwent surgery for renal cell carcinoma (RCC) with tumor thrombus. This study also evaluates the various factors associated with the development of MSD in this cohort of patient.

Patients and Methods: This is a retrospective review of all patients who underwent radical nephrectomy and thrombectomy over the last 5 years in a major tertiary hospital. Patient demographics and surgical outcomes were documented. A telephone survey using validated Male Sexual Health Questionnaire (MSHQ, Sanofi-Aventis) were conducted in all patients. Patient clinical characteristics and MSHQ data were analyzed using standard statistical model.

Results: Of the 12 patients identified, 5 patients completed survey. Four patients have deceased and 3 patients were lost to follow up. The mean age was 63 years (54–74) and the level of IVC tumour thrombus were Grade II (3/5), Grade III (1/5) and Grade IV (1/5). All patients had clear cell RCC with 4 patients with pT3b and one had pT3c. The median follow up was 14 months (1–54) and there was no evidence of recurrence or metastases in all patients at the time of review. The results (mean scores of the MSHQ were as follow:- Erection scale = 9.2/20 (5–15); Ejaculation scale = 13.4/40 (3–24); Sexual satisfaction scale = 18.5/30 (14–21); Sexual activity scale = 7.4/20 (4–10) and Sexual desire scale = 12/20 (10–14).

Conclusions: This unique study provides for the first time an assessment MSD among a subset of male patients with RCC and IVC thrombus. The study showed poor scores across all scales in the MSHQ, suggesting that MSD is often under-reported and under-diagnosed in these men. This study serves to provide a framework for more comprehensive evaluation of MSD and strategies to assist men with high risk RCC surgery.
Endourology/Stones

105 Bipolar transurethral resection of the prostate: is blood grouping required?
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Introduction: Transurethral resection of the prostate (TURP) is the most common surgical treatment for benign prostatic hyperplasia (BPH) worldwide. Bipolar TURP has advantages such as shorter catheter indwelling times and hospital stays, and fewer bleeding episodes without any risk of transurethral resection syndrome.

Patients and Methods: A retrospective audit of patient information was conducted, for 55 patients admitted under a single surgeon for bipolar TURP over three years. Details on demographics, surgical procedure, pre and post-operative haematology, blood product ordering and usage were collected for patients admitted over a one year period. Results were analysed via percentages.

Results: Average was 74.8 years (range 52–92 years). 96.4% of patients (52) had complete resection of the gland. 100% (55) had bipolar resection with complete haemostasis achieved post op. 12.7% (7) had a high bleeding risk (on warfarin). 100% (55) were grouped and saved, but none required transfusion and no units were crossmatched. Transfusion index was 0 as was crossmatch to transfusion ratio. The average haemoglobin drop is 1.4. Average pre-operative INR 1.0, (range 1.1–2.7). Average length of stay was 2.4 days (range 1–5). Complications: UTI 5.4% (3), clots 5.4% (3).

Conclusions: We conclude pre-operative G+5 is not required for bipolar TURP. We compare our results with other published data.

106 Clotting status pre percutaneous nephrolithotomy: is it required?
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Introduction: Percutaneous nephrolithotomy (PCNL) demonstrates better results of stone clearance compared to ESWL or open stone surgery. Intraoperative and postoperative haemorrhage is a frequent complication. Transfusion rates of up to 34% have been reported. We aim to review this cohort to see if clotting status pre-procedure is required.

Patients and Methods: We conducted a retrospective analysis of 100 patients undergoing PCNL over the past year under a single surgeon. We recorded pre-operative clotting status, post-operative haemorrhage, blood transfusion rate and complications. In addition, stent/ nephrostomy insertion, bleeding risk and length of stay was recorded.

Results: 32% of procedures (16) were done on the right, 68% (34) on the left. 62% (31) had a nephrostomy inserted post procedure, 6% (3) had antegrade stents. Complete stone clearance was achieved in 36 (72%). Bleeding risk was high in 2% (1). The mean length of stay was days 3.0 (range 1–9). Average pre-operative INR was 0.9 (range 0.9–1.5). Average post-operative haemoglobin drop was 0.8.

Conclusions: We demonstrate that patients have no significant complications related to pre-operative clotting status. We concluded pre-operative clotting status is not required as routine before this procedure. Results are compared with other published data.

107 A renal simulator (TRISTANS) advances nephrostomy & PNL training
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Introduction: Percutaneous entry is the initial and most important part of percutaneous nephrolithotomy (PNL). Needle puncture directly into the fornix of a calyx is the safest route of percutaneous entry into the renal collecting system. The nephrostomy is safely performed while monitoring three images (the transurethral endoscopic, fluoroscopic and ultrasonic images). This combined use of echo-fluor-guided puncture with the endoscopic retrograde vision through flexible ureterorenoscopy is called TRISTAN (tripartite synchronous tangibility). A new nephrostomy training simulator has been developed. Trainees can now gain the necessary hands-on experience without risk to patients by using this simulation system. This study examined the use of this simulator as a training method and an educational tool.

Materials and Methods: The Ultrasound Percutaneous Nephrostomy Trainer (Limbs and Things, Australia & New Zealand) was modified by the insertion of the Flexor ureteral access sheath (COOK Medical, USA) to allow a flexible ureteroscope to be passed into calyces. This training simulator is named TRISTANS. Six urologists participated in the nephrostomy & PNL training course and received hands-on training in 2013. Two urologists performed nephrostomy on the TRISTANS. The assistant first performed retrograde ureterorenoscopy to identify the desired calyx. Percutaneous antegrade access to the calyx of interest was obtained by the surgeon using an 18-gauge nephrostomy needle under ultrasonic guidance. The puncture of the nephrostomy needle into the fornix of the targeted calyx was monitored under direct ureterorenoscopic vision. Six nephrostomies were performed by three pairs of urologists and the times from the ureterorenoscope insertion through the needle puncture into the fornix of the targeted calyx were recorded.

Results: The recorded operative times ranged from 24 to 95 sec (mean 51 sec). The ureterorenoscope could be moved up and down and rotated through different...
planes of viewing, just as in a real-life nephrostomy. The moving tip of the ureterorenoscope could be directly visualized under the light beam guidance of the ureterorenoscope. Side-by-side display of the ureterorenoscopic image and the ultrasound image allowed the trainee to confirm real penetration of the fornix with the needle and clearly visualize the relationship between the 2D image on the screen and the underlying 3D anatomy of the kidney. The material re-seals left no needle tracks. The location of the targeted calyces allowed the nephrostomy to be performed at varying angles.

Conclusions: The TRISTANS, a new nephrostomy training simulator, is a promising as educational tool, cost-effective and can be used multiple times during training. Greater experience is required to determine if this simulator will be effective for nephrostomy & PNL training.

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Supine PCNL: initial Tauranga experience and review of literature
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Introduction: First described in 1987, the adoption of supine PCNL (sPCNL) has been slow, with prone PCNL (pPCNL) remaining the favoured technique. However in the last decade there has been steady interest in sPCNL with confirmation of a safety profile.

Patients and Methods: Between Feb 2013 and Aug 2013 data was collected prospectively on patients undergoing complete sPCNL by a single surgeon. After retrograde insertion of a ureteric catheter, the patient remains supine, with ipsilateral flank elevation using two fluid bag (3 L), allowing relevant landmarks to remain visible (posterior axillary line, iliac crest, and the 12th rib). Puncture is under fluoroscopic control and tract dilation is performed using a balloon or serial metal dilators. We also performed a review of the published literature on sPCNL according to the CONSORT statement from 1986 to August 2013. Review data was collated by two authors independently.

Results: Fourteen patients underwent sPCNL with complete single site access in all patients. Mean operating time was 97 mins. Median hospital stay was 2 days (1–4). There was one postoperative transfusion. Renal stone clearance was achieved in all patients. In the systematic review six randomised trials were identified. Meta-analysis revealed shorter anaesthetic time, equivalent stone clearance rate with equivalent complication rate. Anaesthesia advantages include avoidance of prone positioning hence easy access to airways, reduced pressure site injury, allowing high risk to have surgery. Surgeon advantages include being seated, reduced radiation exposure to hands, simultaneous retrograde intra-renal endoscopic surgery, and significantly reduced theatre time.

Conclusions: sPCNL is an alternative to pPCNL with a good safety profile according to review of RCTs. It offers multiple advantages over pPCNL. Our initial experience with this method has been positive.

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‘Mirror’ ureteric colic – local experience and review of the literature
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Introduction: Patients with ureteric calculi usually present with ipsilateral ‘lump to groin’ pain. Rarely ureteric colic may present with contralateral pain, which is referred to as ‘mirror pain’. We present our experience of this rare entity of mirror pain and a review of the relevant literature.

Methods: We report the case notes of a rare presentation of contralateral ureteric colic or ‘mirror pain’ secondary to a ureteric calculus. A comprehensive literature review of this rare condition was also conducted.

Results: The patient was a 47-year-old male who presented with left ureteric colic. A renal tract ultrasound demonstrated gross hydronephrosis of the right kidney secondary to obstruction of the proximal right ureter. Further investigations with an intravenous urogram and renal tract CT scan confirmed an obstructed right kidney secondary to a proximal ureteric calculus. The left ureter and pelvicalyceal system were normal with no calculi present. The patient subsequently had an open right nephrectomy and stone extraction from the proximal right ureter, following which his symptoms resolved.

Conclusions: ‘Mirror pain’ or contralateral ureteric colic is rare. Urologists should be aware of this unusual clinical presentation and appreciate that upper urinary tract calculi can cause pain on the contralateral side.

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Basketting ureteric stones – forces, safety and avulsions
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Introduction: The risks of removing ureteric stones with baskets include ureteric perforation, wall injury and avulsion. The endourologist, when basketting a stone, is constantly balancing the risks of these complications with the desire to remove the stone. The amount of force used by urologists is unknown and likely to differ between individuals. We have studied the mechanics involved in basketting stones with the overall desire to create a basket that would allow the urologist to pull at a safe force before it would safely disengage the contents of the basket before reaching the threshold required to cause significant damage to a ureter. The ideal basket would disengage without leaving fragments behind that could damage a ureter and would then slide away easily.

Patients and Methods: To do this we designed a force gauge that was used to measure the force used by urologists and trainees in a simulated setting. It was also used to measure the breaking force of baskets and the force required to avulse a porcine. We also analysed the way baskets...
**Nephrostomy tube diversion in stone disease**

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**Introduction:** Nephrostomy tubes (NT) are preferably used locally for stone disease in the event of sepsis, renal impairment or severe pain. Definitive surgery is delayed following discharge. All other patients (NNT) are managed in the community, with delayed definitive surgery when required.

**Patients and Methods:** We retrospectively reviewed 3 years of patients presenting to Christchurch Hospital with renal stones undergoing surgery. We aim to compare the difference between those with NT and without NNT. We looked at demographic features, acute admission rates, ED re-presentation, time to definitive management and success.

**Results:** 229 eligible patients were identified; 19 (8.3%) had NT insertion. Five patients were lost to follow up, including two deaths.

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<tr>
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<th>NT (n = 19)</th>
<th>NNT (n = 211)</th>
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<tr>
<td>Age (years)</td>
<td>61</td>
<td>53</td>
</tr>
<tr>
<td>Sex (Male)</td>
<td>68%</td>
<td>70%</td>
</tr>
<tr>
<td>Admitted to hospital</td>
<td>100%</td>
<td>19%</td>
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<tr>
<td>Re-presentation to ED</td>
<td>11%</td>
<td>13%</td>
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<tr>
<td>T to 1st treatment (median days)</td>
<td>38 (26.5–56.5)</td>
<td>50 (22–183)</td>
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<tr>
<td>Success at 1st treatment</td>
<td>42%</td>
<td>42%</td>
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<tr>
<td>Overall success</td>
<td>74%</td>
<td>72%</td>
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<tr>
<td>Residual stone disease</td>
<td>26%</td>
<td>25%</td>
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**Conclusion:** Patients requiring NT were older and all were admitted to hospital; 11% of NT patients presented to ED, less frequently than the NNT group due to earlier treatment and diverted urine. Those with NT had a shorter median waiting time to definitive management. Both groups had identical rates of success at first treatment and similar rates of overall success and residual stone disease. Of the two patients who died, the cause of death in one patient is unclear, but this patient had a number of medical co-morbidities; another died of pancreatic cancer.

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**The use of unenhanced computed tomography to discriminate between uric acid and non-uric acid calculi of the renal tract using Hounsfield unit value alone**

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**Introduction:** Computed tomography of the abdomen is the gold standard imaging modality for the diagnosis of renal tract calculi. The ability of imaging to discriminate between certain stone types has obvious benefits for treatment planning and management of patients who present with renal tract calculi. In particular, the fact that uric acid calculi can theoretically be dissolved through a process of urinary alkalinisation means that identification of these calculi with imaging can facilitate dissolution therapy. Studies have been carried out assessing different radiological parameters that may be used to make these discriminations. Some methods have been found to be promising, but most involve specialised imaging and radiological software.

The aim of this study was to assess whether or not it is possible to discriminate between uric acid and non-uric acid calculi based on Hounsfield unit value alone from unenhanced CT, which can be done in an outpatients department or emergency department, without the requirement for further focused imaging or the use of other radiological software.

**Methods:** We first searched our laboratory database for patients who underwent urological removal of renal tract calculi, whose stones were subsequently analysed. We identified 69 patients with pure calcium oxalate stones, 21 with pure calcium hydrogen phosphate stones, and 20 with pure uric acid stones. We then analysed the CT imaging that these patients underwent prior to their urological procedure. Renal tract calculi were analysed for size and position as well as Hounsfield unit value. The Hounsfield unit value was then correlated with the known stone composition and these data were tabulated and analysed.

**Results:** Mean Hounsfield unit value for calcium oxalate/calcium hydrogen phosphate and uric acid calculi was 772.77 (±308.56) and 433.32 (±81.04) respectively. There is some overlap between uric acid value and those of non-uric acid calculi. Below a Hounsfield unit value of 500 there is an 42.11% chance that the calculus is made of uric acid (p < 0.01). Above a Hounsfield unit value of 500 there is a 95.38% that the calculus is calcium oxalate or calcium hydrogen phosphate.

**Conclusions:** Although there is some overlap between the Hounsfield unit values of uric acid and non-uric acid calculi, there is a high probability that above a value of 500 Hounsfield units a renal tract calculus is composed of calcium. This method of discrimination is not overly accurate, however it may function as a useful tool to identify calculi that are not amenable to dissolution therapy.

The use of plain X-ray KUB for follow-up of renal and ureteric calculi composed of calcium oxalate and calcium hydrogen phosphate

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Introduction: Radiological imaging remains ubiquitous in the follow-up of patients with renal tract calculus. Some contentiousness exists related to the radiation doses associated with serial CT scanning of patients with renal tract calculi. Calcium oxalate stones remain the most common stone composition across most populations. These calculi are theoretically radio-opaque on plain X-ray KUB and thus follow-up with plain X-ray KUB may be appropriate in some patients, avoiding the higher radiation doses associated with CT scanning.  

We wished to assess the proportion of pure calcium oxalate and pure calcium hydrogen phosphate calculi that are visible on plain X-ray KUB in order to assess the practicality of using this imaging modality for follow-up of calcium stones of the renal tract.

Methods: We searched our laboratory database for renal tract calculi which contained >85% calcium oxalate or >85% calcium hydrogen phosphate. We identified 25 of both stone types. The imaging for each of these 50 patients was obtained through our hospital radiology system and these images were analysed. Calculi were first identified on CT, their location noted and their size measured. This CT was then compared to a plain X-ray KUB which was taken on the same day as the CT scan. It was noted whether the calculus was visible or not on X-ray KUB.

Results: As expected, larger calculi were more frequently visible on X-ray KUB. The average calculus seen on X-ray was 8.8 ± 5.4 mm, and the average calculus not seen on X-ray was 4.3 ± 2.0 mm as measured on CT (p < 0.001). X-ray was found to be 86% sensitive for calculi >5 mm. 50% of stones <5 mm were not seen on X-ray. There was also statistical significance for the relationship between visibility on X-ray KUB and position in the renal tract (p = 0.02). Calculi were most often visible in the renal pelvis and proximal ureter (88%), 53% on mid-ureteric calculi and 71% of distal ureteric calculi were visible.

Conclusions: We have demonstrated that plain X-ray KUB is relatively sensitive for calculus >5 mm composed on calcium salts, particularly those of the upper renal tract. Sensitivity for calculi <5 mm was not as good, particularly in the mid and distal ureters. This would suggest that use of plain X-ray KUB alone for large calculi, particularly those of the upper ureter and renal pelvis may be appropriate in the correct setting. Calculi measuring <5 mm and those in the mid to distal ureter may require other imaging modalities such as CT or ultrason as an adjunct to plain X-ray for accurate follow-up.

Composition of renal tract calculi on the Gold Coast – a decade of stones

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Introduction: Renal calculi are common on the Gold Coast. A number of factors contribute to this, namely; first world westernised society, the humid sub-tropical climate, and the large Caucasian population of Northern European ancestry. The Gold Coast remains a fast growing population with annual increases in net migration from Europe as well as closer neighbours such as New Zealand. The objective of this study was to investigate whether the changing population demographics of the Gold Coast, as well as other society changes over the last decade, had lead to changes in the composition of renal tract calculi that are treated at the Gold Coast Hospital.

Methods: We searched the Gold Coast Hospital laboratory database from 2000–2012 for all renal tract calculi that were analysed during this period. The percentage constituent compound of each calculus was tabulated. We divided each compound into 3 groups depending on the percentage of the compound that was found in each stone; >85%, 50–84%, 1–49%. These data were analysed using linear regression.

Results: There were 1437 renal tract calculus analysed during these 13 years. There was a steady annual increase in the number of calculi analysed, from 83 in 2000 to 170 in 2012 (R 0.770, p < 0.01). The most prevalent stone type throughout the years were those containing >85% calcium oxalate (49.34% ± 6.25), followed by those containing >85% uric acid (14.63% ± 3.16). Although the total numbers of renal calculus analysed have increased, the percentage of stones >85% calcium oxalate has not changed (R 0.014, p = 0.965), nor has the percentage of stones >85% uric acid (R 0.013, p = 0.967). The number of cystine stones did not change over the time period, with an average of 1 per year.

Conclusions: As the population of the Gold Coast has risen we have seen an increase in the number of renal tract calculi being analysed each year. However, despite the changing population demographics and society changes over the last 13 years on the Gold Coast there has been no significant change in the composition of renal tract calculi that present to the urology department.
Safety, efficacy and flow properties of an arthroscopy pump giving set during flexible ureterorenoscopy

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Introduction: Flexible ureterorenoscopy (URS) is commonly used in the management of intra-renal stones. Limitations include accessibility and vision, particularly when using a laser. We aim to determine the safety, efficacy and flow properties of a simple arthroscopy giving set with a built in hand held pump. We hypothesise this giving set offers good stone free rates (SFR), with improved vision and irrigation flow without compromising patient morbidity.

Patients and Methods: We examine a single surgeon's prospective case series of flexible URS performed using the arthroscopy pump giving set. Data was collected for an 18-month period, during 2012–13. All cases were performed for upper urinary tract stones. Primary outcomes measures included: SFR, length of stay, urosepsis rates and complications. We quantify the increase in flow generated by the giving set on a laboratory based bench test model. We define the effect of flexible URS instrumentation (Optical Integrity ScopeSafe™ 200μm laser fibre and a Coloplast nitinol basket) on pump flow characteristics. Flow tests were run five times to ensure accuracy. Statistical analysis was performed using One-way ANOVA (nonparametric) testing with GraphPad Prism®.

Results: 86 patients underwent flexible URS for upper tract stones. Mean stone size was 10 mm (2–31 mm). Overall SFR was 91.8%, with 3 patients (3.3%) requiring a second flexible URS procedure. With intra-renal stone <15 mm the SFR was 94% and 80% for those >15 mm. Median length of stay for flexible URS was 1 day (0–22 days). Two patients (2%) developed postoperative urosepsis, one required inotropes and renal supportive treatment. Other complications include: postoperative colic (2%), acute urinary retention (1%) and haematuria requiring readmission (1%). Significant improvements in flow properties were demonstrated with the pump system. Flow rates (mL/min) increased by 55–62% for standard flexible URS without instrumentation, 73–95% for a 200μm Integrity ScopeSafe™ laser fibre and 126–173% with a 1.5F Coloplast Nitinol basket in the scope (all significant P < 0.0001).

Conclusions: By adopting an arthroscopy giving set we achieved good SFR. The rate of urosepsis was low, with no increased morbidity. Flow study tests demonstrate the device delivers a significant improvement in flow rates with instrumentation (200μm laser fibre or 1.5F Nitinol basket). This data supports the hypothesis that the giving set offers a safe and effective modality to help improve vision and achieve good SFR during flexible URS.

What is the appropriate size of basket for use in flexible ureterorenoscopy?

N.J. RUKIN, K. WILLIAMS and A. WRIGHT
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Introduction: Advances in flexible ureterorenoscopy (URS) technology have enabled larger stones to be treated via a retrograde approach. Despite this, irrigation flow rate and scope deflection has a significant effect on the success of flexible URS. We aim to determine what size of Nitinol basket offers the user the best flow rate, without compromising scope deflection.

Methods and Patients: We performed a laboratory based bench test to determine the effect of four commonly used intra-renal Nitinol baskets (1.3F, 1.5F, 1.9F, 2.2F). All testing was performed using both a Flex XC™ and Flex X2™ flexible ureterorenoscopes (Karl Storz, Germany). The length of basket protrusion (1 cm) and height of the saline irrigation fluid (1 metre) were constant. We calculated the loss of deflection (angle and percentage) and irrigation flow (mL/min) and compared to a control group (no basket). Flow tests were run five times and means calculated; deflection angles were repeated to ensure accuracy. Statistical analysis was performed using One-way ANOVA testing.

Results: Flow and deflection properties for each size basket are summarised in Table 1. Loss of deflection is minimal for all baskets, with the 1.3F having the least loss. Flow rates vary greatly, with marked reductions noted with increasing basket size. A 2.2F basket reduces flow by almost 90%, with a reduction of 55–65% with a 1.3F–1.5F basket. The smaller size baskets (1.3F, 1.5F and 1.9F) demonstrated significantly improved flow rates (P < 0.0001) when compared to a 2.2F basket. Flow rates increase by over 250% when switching from a 2.2F to 1.3F Nitinol basket.

Table 1. Loss of deflection and reduction in flow for four stone baskets in both ureterorenoscopes

<table>
<thead>
<tr>
<th>Basket</th>
<th>Mean loss of deflection in degrees (% loss)</th>
<th>Mean flow (mL/min)</th>
<th>Mean loss of flow (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Upwards</td>
<td>Downwards</td>
<td></td>
</tr>
<tr>
<td>No basket (Control)</td>
<td>0–0</td>
<td>0–0</td>
<td>41.5/38.6</td>
</tr>
<tr>
<td>1.3F</td>
<td>14 (5.1)/19 (7.0)</td>
<td>18 (7.5)/10 (3.9)</td>
<td>18.5/15.1</td>
</tr>
<tr>
<td>1.5F</td>
<td>20 (7.4)/26 (9.6)</td>
<td>18 (7.5)/25 (9.8)</td>
<td>15.0/13.3</td>
</tr>
<tr>
<td>1.9F</td>
<td>21 (7.8)/18 (6.7)</td>
<td>19 (7.9)/23 (9.0)</td>
<td>9.2/7.2</td>
</tr>
<tr>
<td>2.2F</td>
<td>20 (7.4)/32 (11.9)</td>
<td>16 (6.7)/28 (11.0)</td>
<td>4.4/3.9</td>
</tr>
</tbody>
</table>

*First value represents the Flex X2 scope and second value the Flex XC scope.

Conclusions: Somewhat surprisingly basket size has a minimal effect on deflection angles in flexible ureterorenoscopy. This maybe accounted for by the elasticity properties of Nitinol. Increasing basket size effects internal scope dynamics, causing reducing intraluminal capacity and significantly reduced flow rates. Therefore, the ideal basket size (1.3F or 1.5F) is dependent mainly on the flow dynamics; with smaller size baskets offering significantly improved irrigation.
117 Loss of remuneration due to inaccurate operative coding in ureteric stenting and rigid/flexible ureteroscopy

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Introduction: Ureteric stenting and rigid/flexible ureteroscopy (URS) are common endourology procedures undertaken in our department. In the public system, operative coding varies greatly depending on the exact nature of procedures undertaken. We examined if there is a potential loss of remuneration for ureteric stenting and rigid/flexible URS procedures due to poor operative coding by clinical coders.

Patients and Methods: We collected data from 64 random operation notes, over a three year period (2010–13), reviewing ureteric stenting and rigid/flexible URS. We compared the operation coding and overall reimbursement fee between those coded by the clinical coder and those coded by a urological surgeon. We determined whether there were any components of the procedure that were commonly miscoded or missed and whether this had resulted in a potential loss of remuneration.

Results: Of the 64 cases reviewed; 11 were ureteric stentings, 42 rigid URS and 11 flexible URS cases. We found 2 out of 11 stent insertions were not coded correctly, with varying loss of remuneration due to case complexity. For rigid URS, most cases were correctly coded (95%). We did note there were two cases out of 18 laser cases that were miscoded. This loss of revenue was approximately £545 per case, costing a total of at least £1090 (A$1874). However the main area of coding discrepancy was seen with flexible URS, where 9 out of 11 cases (82%) were incorrectly coded (coded as standard rigid URS only). Further investigation into this has demonstrated that the clinical coders did not appreciate the exact nature of a flexible URS and did not know the specific code required. This discrepancy resulted in a mean loss of revenue of £1074 per case (range: £1014 to £1559/A$1743–2680).

Other common areas of miscoding included: the use of an image intensifier (46 out of 64 missed) with cost varying costs due to case complexity.

Conclusions: Accurate operation coding would have enabled at least £11,851 (A$20378) extra remuneration for these randomly selected cases. This revenue is independent of medical comorbidity coding. In view of these results we have introduced a simple coding sticker, placed directly after the operation note, in which the surgeon ticks the correct operation codes. This simple measure should help to significantly increase our remuneration for ureteric stenting and rigid/flexible URS.

118 Contemporary management of large renal calculi with flexible ureterorenoscopy and laser lithotripsy

A. YEATES and B. KUA
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Introduction: Advances in technology surrounding flexible ureterorenoscopy (FURS) and Holmium:YAG Laser stone ablation has increased the success rate of renal stone clearance. It has also increased the feasibility of treating complex and large renal calculi (>20 mm) using FURS and laser compared with percutaneous nephrolithotomy which is a comparatively morbid operation. This cohort study highlights the outcomes of thirteen patients with renal calculi >20 mm treated with FURS and laser. To date there has been no known published series in Australia and New Zealand looking at treatment of large renal calculi with FURS.

Patients and Methods: A retrospective review was performed of 13 patients undergoing FURS from July 2011 to May 2013. Only patients with either a single calculus or multiple calculi with a combined diameter greater than 20 mm located within the renal pelvis or proximal ureter were included in the study. A 9.9 Fr Olympus digital flexible ureterorenoscope (URF-V, Olympus Medical Systems, Japan) was used for renal access. Endoscopic fragmentation and ablation of calculus was performed with a 200 and 365 micrometer Holmium:YAG laser fibre. A 14/16 Fr ureteric access sheath (Cook Medical, USA) was used routinely. A ureteric stent was inserted when required. Post operative follow up was performed using appropriate imaging (CT or XR). Successful clearance was defined intraoperatively as visual clearance of the renal tract with fragments too small to retrieve with a basket and on follow up as fragments of less than 2 mm on surveillance imaging. Measured outcomes included: stone clearance rate, operative time, number of procedures to stone clearance, complication rate and recurrence-free follow up period.

Results: 92% of followed-up patients (11/12, median follow up 11 months) had successful calculus clearance with staged procedures. Median number of procedures to achieve clearance was 1.66. Six patients required a single procedure, while seven patients required two procedures to achieve clearance. Median operative time was 80.5 minutes (range 30–158 min first procedure, 10–91 min second procedure). Median length of stay was 2 days/1 night. 4/13 patients had a stent prior to their initial procedure, all 13 had a stent inserted afterwards. 3/7 patients with a second procedure had a stent postoperatively. 2/13 had a complication (ileus conservatively managed for 3 days; candida-positive blood culture nine days postop required inpatient admission and stent removal).

Conclusions: FURS and laser is an effective treatment modality for complex and large renal calculi providing a feasible, safer option to PCNL when counselling patients. FURS requires longer operative time and staged procedures. It should be offered to patients as an option for treatment of large renal calculi.

Female Urology

119 Symptom relief after oral pentosan sulfate or intra-vesicle chondroitin sulfate treatment in patients with interstitial cystitis

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Introduction: Chronic pelvic pain and recurrent cystitis are common conditions that present to the gynecologist's office. In women, the cause that is most often attributed is endometriosis. However, it is becoming increasingly recognized that chronic pelvic pain in women, especially in association with urinary symptoms, may be related to 'Interstitial Cystitis' (IC). This condition has not been well understood in the past with the pathophysiology being unclear. Diagnosis is made on the basis of
cystoscopic findings of petechial hemorrhages and Hunner’s ulcers involving the bladder mucosa. Treatments based on these findings can require a 3 to 6 months course before any symptom improvement is noted. Common treatments are oral tablets of pentosan sulfate (Elmiron) and intra-vesicle bladder instillation of chondroitin sulfate (Uracyl). Both treatments have been reported to be effective over placebo but both are very different in their method of administration.

Objective: To compare treatment response in terms of symptoms and to measure improvement in quality of life

Patients and Methods: The study is a retrospective cohort study. 248 patients who had cystoscopic hydrodistention (HD) for irritative lower urinary tract symptoms (LUTS) were reviewed; 168 patients were excluded due to following reasons: 1 patient diagnosed with bladder cancer, 99 patients had history of interstitial cystitis, 56 patients had no cystoscopic hydrodistention (HD) and 56 patients had no cystoscopic findings of petechial hemorrhages and Hunner’s ulcer. 1 patient had negative cystoscopic findings, 99 patients were excluded due to following reasons: 1 patient diagnosed with bladder cancer, 99 patients had negative cystoscopic findings for interstitial cystitis, 56 patients had no treatment due to cost, 6 patients were lost to follow up or had incomplete data on the Pelvic Urgency and Frequency (PUF) Scale, and 6 patients received alternative treatments.

Both oral pentosan sulfate and intra-vesicle chondroitin sulfate treatments significantly improved the symptom score, bother score and total PUF score compared to baseline scores before treatment and 6 month after treatment (table 2).

We found that the symptom score, bother score and total score were significantly improved after 3 months with the use of oral pentosan sulfate treatment in compared to intra-vesicle chondroitin sulfate treatment, P-value of 0.027, 0.035 and 0.026 respectively. No differences were found after 6 months of treatment between the two treatment groups (table 3).

Conclusion: The treatment of interstitial cystitis with either oral pentosan sulfate or intra-vesicle chondroitin sulfate improves the symptom score, bother score and total PUF score. Although oral pentosan sulfate treatment had an earlier effects at 3 months compared to intra-vesicle chondroitin sulfate, there were no differences between the two treatment groups after 6 months.

<table>
<thead>
<tr>
<th>Table 1. Demographic characteristics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oral pentosan sulfate (n = 51)</td>
</tr>
<tr>
<td>Age – Mean (sd)</td>
</tr>
<tr>
<td>Age – Median</td>
</tr>
<tr>
<td>BMI – Mean (sd)</td>
</tr>
<tr>
<td>Menopausal Status – Post</td>
</tr>
<tr>
<td>Gravida – Mean (sd)</td>
</tr>
<tr>
<td>Gravida – Median</td>
</tr>
<tr>
<td>Living Children – Mean (sd)</td>
</tr>
<tr>
<td>HD Fluid Volume – Mean (sd)</td>
</tr>
<tr>
<td>UDS findings</td>
</tr>
<tr>
<td>1st Urge – [n] mean (sd)</td>
</tr>
<tr>
<td>Max bladder capacity – [n] mean (sd)</td>
</tr>
<tr>
<td>Pdet at capacity – [n] mean (sd)</td>
</tr>
<tr>
<td>UI/evidence of OAB</td>
</tr>
<tr>
<td>PVR capacity – [n] mean (sd)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Table 2. prevalence of the PUF score before hydrodistention and 6 months after treatments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Test</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>Symptoms Score</td>
</tr>
<tr>
<td>Bother Score</td>
</tr>
<tr>
<td>Total Score</td>
</tr>
</tbody>
</table>
after 18 months ICIQ-UI, ICIQ-QOL, and PRFG was interpositioned in the tract. Injected around the fistula into the tissue hemorrhage was occurred; PRP was the fistula until a small amount of prepared from 12 patients’ own blood.

and after intervention. PRP & PRFG was and midterm term follow up were gathered and short improvements (\( p < 0.001 \)) in incontinence were treated with injection of botulinum neurotoxin type A into the detrusor. Data from the disease duration, voiding diaries, ICIQ-UI and ICIQ-QOL showed remarkable improvement in 11 patients. One patient had significant improvement, but did not consent to the second injection. None of the patients had voiding dysfunction, urinary incontinence or retention or urinary tract infection. In 18 months follow up, 11 patients considered themselves sexually active bladder. This treatment is likely to have a major impact on future management.

Materials and Methods: The data including age, parity, ICIQ-UI, ICIQ-QOL, duration of leakage, the diameter of fistula and complications were collected before and after intervention. PRP & PRFG was prepared from 12 patients’ own blood. Deepithelialisation was performed around the fistula until a small amount of hemorrhage was occurred; PRP was injected around the fistula into the tissue and PRFG was interpositioned in the tract. After 18 months ICIQ-UI, ICIQ-QOL, U/A, U/C and bladder sonography was done.

Results: No complications were observed during and after the injection. Mean age was 39.83 ± 8.40 years. At 3-months’ follow up, 11 patients considered themselves clinically cured; transvaginal physical examination and cystography was normal in 11 patients. ICIQ-UI and ICIQ-QOL showed remarkable improvement in 11 patients. One patient had significant improvement, but did not consent to the second injection. None of the patients had voiding dysfunction, urinary incontinence or retention or urinary tract infection. In 18 months follow up ICIQ-UI and ICIQ-QOL showed the same improvement as the previous follow up and U/A, U/C and bladder sonography was normal in all patients.

Conclusions: Autologous PRP injection and PRFG interposition is a safe, effective and novel minimally invasive approach for VVF treatment which obviates the need for open surgery. We would like to call this technique Hamidi-Shirvan method.

Table 3.

<table>
<thead>
<tr>
<th></th>
<th>Oral pentosan sulfate (n = 51)</th>
<th>Intravesicle chondroitin sulfate (n = 29)</th>
<th>P Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sexually Active</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Pre HD</td>
<td>32/47 (68.1%)</td>
<td>15/29 (51.7%)</td>
<td>0.154</td>
</tr>
<tr>
<td>• Post HD</td>
<td>31/46 (67.4%)</td>
<td>16/29 (55.2%)</td>
<td>0.287</td>
</tr>
<tr>
<td>• 3 Months post treatment</td>
<td>28/40 (70.0%)</td>
<td>16/29 (55.2%)</td>
<td>0.206</td>
</tr>
<tr>
<td>• 6 Months post treatment</td>
<td>28/41 (68.3%)</td>
<td>15/27 (55.6%)</td>
<td>0.287</td>
</tr>
<tr>
<td>Symptoms Score – [n] Mean (sd)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Pre HD</td>
<td>[47] 11.0 (4.4)</td>
<td>[29] 12.2 (3.7)</td>
<td>0.233</td>
</tr>
<tr>
<td>• Post HD</td>
<td>[46] 9.1 (3.8)</td>
<td>[29] 11.0 (3.4)</td>
<td>0.027</td>
</tr>
<tr>
<td>• 3 Months post treatment</td>
<td>[40] 8.6 (3.6)</td>
<td>[29] 10.8 (4.4)</td>
<td>0.027</td>
</tr>
<tr>
<td>• 6 Months post treatment</td>
<td>[41] 8.4 (4.7)</td>
<td>[27] 9.2 (4.4)</td>
<td>0.484</td>
</tr>
<tr>
<td>Bother Score – [n] Mean (sd)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Pre HD</td>
<td>[47] 5.9 (2.8)</td>
<td>[29] 6.7 (2.1)</td>
<td>0.160</td>
</tr>
<tr>
<td>• Post HD</td>
<td>[46] 4.9 (2.2)</td>
<td>[29] 5.5 (2.4)</td>
<td>0.235</td>
</tr>
<tr>
<td>• 3 Months post treatment</td>
<td>[40] 4.4 (2.2)</td>
<td>[29] 5.7 (2.6)</td>
<td>0.035</td>
</tr>
<tr>
<td>• 6 Months post treatment</td>
<td>[41] 4.3 (2.7)</td>
<td>[27] 4.7 (2.9)</td>
<td>0.564</td>
</tr>
<tr>
<td>Total – [n] Mean (sd)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Pre HD</td>
<td>[47] 16.9 (6.8)</td>
<td>[29] 18.9 (5.4)</td>
<td>0.176</td>
</tr>
<tr>
<td>• Post HD</td>
<td>[46] 13.9 (5.7)</td>
<td>[29] 16.6 (5.7)</td>
<td>0.050</td>
</tr>
<tr>
<td>• 3 Months post treatment</td>
<td>[40] 13.0 (5.5)</td>
<td>[29] 16.4 (6.8)</td>
<td>0.026</td>
</tr>
<tr>
<td>• 6 Months post treatment</td>
<td>[40] 12.6 (7.3)</td>
<td>[27] 14.0 (7.0)</td>
<td>0.432</td>
</tr>
</tbody>
</table>
Management of patients with missed iatrogenic injury to the ureter and urinary bladder following gynaecological surgery

M. SMOLSKI*, R. TURO*, N. MCLEOD†, A. SINCLAIR‡, G. COLLINS* and S. BROWN*
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Introduction: In developed countries uro-genital fistulae are uncommon and predominately occur as a complication of gynaecological and obstetric surgery. The diagnosis of a iatrogenic fistula is often delayed. This can add to the physical and psychological morbidity. Patients whose diagnosis and treatment are delayed often lose confidence in their healthcare providers and regard the whole treatment as a failure, despite successful injury repair. We report on our experience on managing care of female patients with iatrogenic uro-gynaecological injuries.

Patients and Methods: We have reviewed retrospectively 12 consecutive cases of iatrogenic injury to urinary tract following gynaecological procedures referred to one specialist urology centre.

Case notes were reviewed including intra operative details and complications recorded, post operative course with emphasis placed on onset, type and extent of symptoms, delay in diagnosis and timing of referrals. Invasive and non-invasive tests used were recorded. We evaluated also the time until full recovery from the onset of symptoms.

Results: The age ranged from 20 to 88 (median 46). 7 patients had resulting Vesico-vaginal fistulae (VVF). Among 5 patients who had ureteric injury 2 patients developed Uretero-vaginal fistulae (UVF), 2 patients developed pelvic urinoma and 1 patient had uretero-uterine fistula. Ureteric injuries involved 4 on the left and one on the right ureter.

All patients were symptomatic. Onset of symptoms varied between 1 and 30 days post op (mean 15 days). The most prevalent symptoms were lower abdominal pain, urine leakage per vagina mistaken for genuine urinary stress or urge incontinence. Importantly, on all speculum examinations in women with fistulae there was pooling of urine seen in the vagina.

Delay in diagnosis varied from 2 weeks to 2 years (mean 19 weeks).

The time to definitive surgery from onset of symptoms was between 9 weeks to 3 years (mean 27 weeks).

Conclusion: Delayed diagnosis of iatrogenic injury to the ureter and urinary bladder is frequent. It has profound impact on emotional and sociological wellbeing. If injury is suspected intraoperative cystoscopy and retrograde uretero-pyelography should be performed. Post-operatively pooling of urine on speculum examination is pathognomonic for uro-genital fistulae. EUA and Cystoscopy and CT Urogram are currently available and effective diagnostic modalities. MRI is excellent but not always accessible. Cystogram and IVU are probably inferior to Cystoscopy and CT Urogram. Conservative management has got role in smaller VVF and limited ureteric injuries but one need to consider increasing chance of UTI, LUTS and failure of treatment.

LUTS/BPH

123

180 Watt Thulium laser vaporization of the prostate for BPH – safety and efficacy in 100 cases with up to 1 year follow up

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Introduction: Thulium laser prostatectomy has been shown to have short and medium-term results equivalent to TURP, with less bleeding and shorter hospitalisation. This observational study assessed safety and efficacy outcomes of 180 Watt Thulium laser vaporization of the prostate (ThuVAP) in the management of BPH in 100 patients in a community practice.

Methods: Prospective data was collected on patients normally considered suitable for TURP for BPH. ThuVAP was performed by a single practitioner from July 2011–November 2013 using a laser-resectoscope vapourisation technique, with follow-up for one year.

Results: A total of 100 patients were included in the study with 56 discharged from care to date. Indications included 65 patients (65%) with uncomplicated lower urinary tract symptoms, 26 catheter dependent (26%), 4 in chronic retention, and 5 with other indications (stones, infection, haematuria). Average age was 71.2 years (49–93), mean prostatic volume was 85 cc (27–240), mean operating time 75 min (20–157) and mean lasering energy 421 kJ (72–962). No patient required ancillary procedures or early return to theatre for bleeding. No patient required transfusion. 86 patients (86%) had their catheter removed the day of the procedure. One patient (1%) required recatheterisation for clot retention prior to discharge. 87 patients (87%) were discharged on the first postoperative day. No patient required therapy for dysuria. 4 patients required readmission for late clot retention (1–4 weeks). 2 patients later required a bladder neck incision, and 3 patients developed urethral stricture requiring dilation. High-grade prostate cancer was identified in 1 patient at 6 months.

Efficacy was acceptable with an average increase in flow rate from 7.6 to 18.7 ml/ sec, an average decrease in post-void residual from 172 to 49 ml, and an average decrease in PSA of 44% at 6 months. By one year average IPSS had improved from 21.9 to 4.5 and bother scores improved from 4.2 to 0.7.

A modest learning curve in operative efficiency was observed with an improvement in ‘foot on the pedal’ ratio (laser in use/laser turned on time) from 60% to 72% (t-stat 4.1, p < 0.0001), with a decrease in operative time vs. prostatic volume (1.17 to 0.9 min/cc, p = 0.02). There appeared to be no learning curve for safety and other outcome measures.

Conclusions: 180 Watt Thulium laser vaporization of the prostate is safe and effective, with minimal bleeding, short catheterisation and hospitalisation times, and a low complication rate. Outcomes up to one year are comparable to those reported with TURP and 180W PVP. There was a gradual improvement in operative efficiency. Use of a familiar resectoscope-like working element, along with the lack of laser overshoot risk facilitates safe transition from TURP to ThuVAP.
124  Intravesical botulinum toxin A in men: urinary retention and success rates

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Introduction: Current guidelines for the use of intravesical botulinum toxin A (BTXA) are based on outcomes of trials which look entirely or mostly at outcomes in females. This retrospective review looks at the outcomes of intravesical BTXA specifically in males.

Patients and Methods: All males undergoing intravesical BTXA treatment at the Royal Berkshire Hospital, a large district general hospital, from June 2009 to June 2013 were identified from the Bluespier theatre management database. Records were obtained to determine urodynamic results and treatment outcomes.

Results: 37 males underwent intravesical BTXA treatment, of whom 35 had notes available for review. 34/35 (97%) had urodynamic proven detrusor overactivity, small capacity bladders or neurogenic bladders. 7/35 (20%) utilized intermittent or indwelling catheters prior to treatment. 12/28 (43%) required de novo catheterisation following treatment. The mean dose of BTXA used was 139 units of onabotulinum toxin A in those who did not catheterise prior to treatment, and 232 units in those who did. 21/35 (60%) saw symptomatic improvement and 19/35 units in those who did. 21/35 (60%) saw symptomatic improvement and 19/35 patients below the age of 80. Pre-operative variables including prostate volume, urinary flow rate (Qmax), haemoglobin (Hb) and PSA were recorded. Patients had their Hb measured day one post operatively. Associated complications and readmissions were recorded. At 3 months post HOLEP the Qmax, PVR and PSA were measured. The patients had their histology reviewed during follow-up.

Results:

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Median</th>
<th>Age &lt; 80</th>
<th>Age ≥ 80</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hospital Stay (days)</td>
<td>1</td>
<td>1</td>
<td></td>
<td>0.032</td>
</tr>
<tr>
<td>Blood loss</td>
<td>7.9%</td>
<td>12.1%</td>
<td></td>
<td>0.031</td>
</tr>
<tr>
<td>Pre-operative prostate volume</td>
<td>72.9 cm³</td>
<td>79.4 cm³</td>
<td></td>
<td>0.377</td>
</tr>
<tr>
<td>Pre-operative Qmax</td>
<td>5.6 ml/s</td>
<td>0 ml/s</td>
<td></td>
<td>0.012</td>
</tr>
<tr>
<td>Complications</td>
<td>17.1%</td>
<td>10%</td>
<td></td>
<td>0.247</td>
</tr>
<tr>
<td>Prostate cancer</td>
<td>11.6%</td>
<td>14.3%</td>
<td></td>
<td>0.604</td>
</tr>
<tr>
<td>Post-operative PSA</td>
<td>0.99 ng/ml</td>
<td>0.64 ng/ml</td>
<td></td>
<td>0.071</td>
</tr>
<tr>
<td>Readmission</td>
<td>9.3%</td>
<td>17.1%</td>
<td></td>
<td>0.188</td>
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<td>Post-operative Qmax</td>
<td>21.78 ml/s</td>
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</tr>
</tbody>
</table>

Conclusions: Outcomes from HOLEP in the octogenarian population are similar to that of younger patients. Despite increased comorbidities and bigger prostate volumes in the older population, HOLEP appears to be a safe and effective procedure.

125  HOLEP in the octogenarian population

V. MEIYAPPAN and C. CHEMASLE
Palmerston North Hospital, New Zealand

Introduction: A large proportion of patients having HOLEP are above the age of 80. We compare the outcomes, on those having HOLEP, above and below the age of 80.

Patients and Methods: 164 patients underwent HOLEP, between February 2009 and May 2013, by a single surgeon at Palmerston North Hospital. There were 35 octogenarians (age ≥ 80) and 129 patients below the age of 80. Pre-operative variables including prostate volume, urinary flow rate (Qmax), haemoglobin (Hb) and PSA were recorded. Patients had their Hb measured day one post operatively. Associated complications and readmissions were recorded. At 3 months post HOLEP the Qmax, PVR and PSA were measured. The patients had their histology reviewed during follow-up.

Results:

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Median</th>
<th>Age &lt; 80</th>
<th>Age ≥ 80</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hospital Stay (days)</td>
<td>1</td>
<td>1</td>
<td></td>
<td>0.032</td>
</tr>
<tr>
<td>Blood loss</td>
<td>7.9%</td>
<td>12.1%</td>
<td></td>
<td>0.031</td>
</tr>
<tr>
<td>Pre-operative prostate volume</td>
<td>72.9 cm³</td>
<td>79.4 cm³</td>
<td></td>
<td>0.377</td>
</tr>
<tr>
<td>Pre-operative Qmax</td>
<td>5.6 ml/s</td>
<td>0 ml/s</td>
<td></td>
<td>0.012</td>
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126  HOLEP in glands greater than 80 ml in volume

V. MEIYAPPAN and C. CHEMASLE
Palmerston North Hospital, Palmerston North, New Zealand

Introduction: Many patients who require HOLEP have glands greater than 80 ml in volume. Our aim was to compare the outcomes of HOLEP in glands greater than 80 ml with smaller glands.

Patients and Methods: Between February 2009 and September 2013 we performed 175 HOLEPs. The data was collected prospectively. Age, previous history of TURP and prostatic volume was recorded in all patients. They had their Qmax, post-void residual, hemoglobin level and PSA measured pre and post-operatively. We also measured the enucleation time/efficiency, morcellation time/efficiency, tissue weight and readmission rates. We identified 75 patients with prostate volumes greater than 80 ml (80 to 220 ml). We compared them to the 100 patients with smaller glands (17 to 76 ml).

Statistical tests included the Mann Whitney U test, Independent Samples t-test and Pearson’s Chi Square. A P-value < 0.05 was considered as significant.

Results: The tissue weight retrieved varied between 32 and 196 g in glands greater than 80 ml. Comparatively it was 2 to 57 g for smaller glands.

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127
Bipolar transurethral resection in saline (TURis) versus monopolar transurethral resection of prostate (TURP): a comparison of short term outcomes and length of stay
B. PAIX*; G. WONG; D. KWOK; A.D. SOUSA; N.R. BROOK; R. SINGH-RAI
*Lyell McEwin Hospital, Adelaide, Australia; †Royal Adelaide Hospital, Adelaide, Australia; ‡University of Adelaide, Adelaide, Australia

Introduction: Bipolar plasmakinetic energy is one technology challenging monopolar transurethral resection of the prostate (TURP) to be the gold standard for surgical treatment of benign prostate hyperplasia. The cost-effectiveness of bipolar technology for prostate surgery is not well established. We aim to determine the safety and efficacy of bipolar transurethral resection in saline (TURis) versus monopolar TURP at the Lyell McEwin Hospital, while comparing average length of stay and cost.

Patients and Methods: 44 consecutive patients underwent TURP or TURis, with 22 patients in each group. Case notes, operative notes and histopathology records were prospectively reviewed to determine patient demographics, operative data, duration of surgery, resected prostate tissue, perioperative complications, re-admissions, and haemoglobin levels before and after surgery. Results were analysed using the Mann-Whitney Test and the Wilcoxon signed-rank test.

Results: The two cohorts were similar in age & anticoagulant profile. There was no significant difference in post-operative complications. The TURis procedure resected an average 14.9 grams in the mean duration of 64 minutes, whilst the Monopolar TURP procedure resected an average 19.4 grams in 53 minutes. There was a mean haemoglobin drop of 10 g/L for TURP (p = 0.003) and 0 g/L (p = 0.51) for TURis. Average length of stay was 39 hours for TURis versus 51 hours for TURP (p = 0.01). There was an increased cost of $335 per patient for TURis vs. $74 extra funding per patient.

Conclusions: TURis is a safe and effective alternative to TURP, with less bleeding and shorter length of stay. More research is required to determine the cost effectiveness of TURis compared with TURP.

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The pathophysiologic mechanisms for triggering detrusor overactivity in chronic ischemic urinary bladder
H.C. TAI; H.J. YU and C.T. CHENG
*Department of Urology, National Taiwan University, Taipei, Taiwan; †Department of Life Science-National Taiwan Normal University, Taiwan

Introduction: Chronic bladder ischemia was associated with detrusor overactivity and/or impaired detrusor contraction by vascular occlusive disease or bladder outlet obstruction. We developed bilaterally partial femoral arterial occlusion and evaluated the responses and possible mechanisms in chronic bladder ischemia-induced bladder dysfunction.

Patients and Methods: Bilateral femoral arterial occlusion was performed in Avertin-anaesthetized Female Wistar rats for 2 or 4 weeks. Biochemical and transcystometric parameters were compared between control, 2- or 4-week chronic bladder ischemia rats. The bladder ATP and acetylcholine content, oxidative stress, inflammation, endoplasmic reticulum stress, purinergic and muscarinic cholinergic receptors expression were examined by western blot and immunocytochemistry.

Results: Partially vascular occlusion decreased bladder blood flow and increased frequency and suppressed voiding contractile amplitude in the chronic bladder ischemia rats vs. control rats. Increased bladder and urinary reactive oxygen species production, mast cell number, monocytes/macrophages infiltration, the expression in 3-nitrotyrosine, GRP78, Beclin-1 and TUNEL stain were all identified in the chronic ischemic bladders in a time-dependent manner. Chronic bladder ischemia time-dependently reduced ATP and acetylcholine content and enhanced protein expression of postsynaptic P2X1, P2Y1 and P2X3 purinergic receptors and M2 and M1 muscarinic cholinergic receptors expression in the smooth muscles of urinary bladder.

Conclusions: Chronic bladder ischemia by partially vascular occlusion significantly enhanced the appearance of oxidative stress, inflammation, autophagy and apoptosis in the urinary bladders. These alterations possibly contribute to the decrease of ATP and acetylcholine neurotransmitters and a compensated upregulation of purinergic and muscarinic cholinergic receptors expression in the ischemic bladder.

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Management of acute urinary retention; systematic review
P.WOON; V. CHALASAN and H. WOO
The University of Sydney, Sydney, Australia

Introduction: Acute urinary retention (AUR) is a common urological emergency associated with inability to empty the bladder to completion. Notably, recent epidemiological data suggest that AUR is becoming more common. The resurgence of AUR is an inevitable major public health issue in the western world with increasing life expectancy leading to more hospital presentations in the elderly population. In this review we aim to present a structured review of current literature on management of AUR and to evaluate current practices around the world.

Patients and Methods: A Medline search (from Jan 1946 to Sep, 2013) was conducted using the keywords 'acute AND retention AND urin*'. This search was further refined by obtaining articles that contained these keywords within the title. Google Scholar search using 'acute urinary retention' was also performed to complement the Medline search. Articles were confined to English full text and studies on adult men. The obtained literature was manually reviewed and further reference searches were performed.

Results:
• Total of 542 articles were identified and reviewed
• Immediate bladder decompression should be followed by an accurate history and thorough examination to identify the cause of AUR
• Urethral catheterisation is the predominant first choice worldwide for bladder decompression
• Suprapubic catheterisation and in-and-out catheterisation are under-utilised in management of AUR
• There is no international consensus on duration of catheterisation prior to trial without catheter (TWOC)
• Larger prostate size (>50 ml), older age (>70 years) and greater drained volume at
catheterisation (>1L) are associated with lower success rate of TWOC
- Prolonged catheterisation (>3 days) is generally associated with more complications and longer hospital admissions
- Ambulatory care at home is being utilised increasingly worldwide to reduce patient admissions
- Use of α-adrenergic receptor blockers prior to TWOC increases the success rate
- 5α-reductase inhibitors alone or combined with α-adrenergic receptor blockers are effective in prevention of AUR in patients with benign prostate hypertrophy
- Surgical intervention is the usual end point for patients with persistent symptoms or decreased quality of life from AUR
- Immediate emergency prostatectomy following AUR is associated with greater peri-operative morbidities
- Newer laser surgeries are an efficacious and safe treatment modality for AUR

Conclusions: AUR impacts patients as well as the health system. Further research is warranted for development of economical, efficient and evidence-based practice in management of AUR.

Oncology

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Zero sepsis in 331 consecutive transperineal biopsies

J. GRUMMET*,†,§, M. WEERAKOON‡, S. HUANG*, N. LAURENTSCHUK†,§, M. FRYDENBERG§, D. MOON†,§ and D. MURPHY†,§
*Alfred Health, Melbourne, Australia; †Epworth Healthcare, Melbourne, Australia; ‡Peter MacCallum Cancer Centre, Melbourne, Australia; §Monash University, Melbourne, Australia; *University of Melbourne, Melbourne, Australia

Introduction: Worldwide TRUS biopsy sepsis rates are increasing with the prevalence of multi-resistant bacteria in rectal flora. Transperineal (TP) biopsy avoids rectal wall transgression altogether. Sepsis rates from TP biopsy are reported as near-zero. As a multi-centre collaborative research group, we aimed to determine our rate of infective re-admission for TP biopsy.

Patients and Methods: The Victorian Transperineal Biopsy Collaboration (VTBC) was formed across Alfred Health, Epworth Healthcare and the Peter MacCallum Cancer Centre. VTBC databases were pooled and queried for re-admission for infective complications. All patients underwent TP biopsy under general anaesthetic using a transrectal ultrasound probe mounted on a stabilizer with a brachytherapy template grid. All patients received varying prophylactic antibiotics.

Results: 331 TP biopsies were performed in the 4.2 years between September 2009 and October 2013. 47% of patients had 15–20 cores, 51% had greater than 20 cores taken. Antimicrobial prophylaxis included a quinolone in 66% of patients. 27% had prophylaxis with a single dose of cephalozin alone or in combination with a single dose of gentamicin. No patients were re-admitted for infective complications.

Conclusions: All efforts must be made to minimize morbidity in prostate cancer diagnosis. In the current environment of increasing TRUS biopsy sepsis and multi-resistant rectal bacteria, TP biopsy offers a negligible risk of sepsis and negates the need for widespread use of broad-spectrum antibiotic prophylaxis. TP biopsy should therefore be considered as an option for all men in whom a prostate biopsy is indicated.

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TRUS biopsy sepsis and use of carbapenem antibiotics at a single high volume institution

O. LEAHY*,†, M. O’REILLY*†, D. PHILLIPS* and J. GRUMMET*†,§
*Cabrini Health, Melbourne, Australia; †Alfred Health, Melbourne, Australia; ‡Monash University, Melbourne, Australia

Introduction: TRUS biopsy sepsis can cause serious morbidity and even mortality. There is concern over literature reports of rising rates of TRUS biopsy sepsis and multi-resistant bacteria in rectal flora. We sought to determine the number of hospital admissions for sepsis following TRUS biopsy and the rate of both prophylactic and therapeutic use of carbapenem antibiotics over the last 4 years in a single institution.

Patients and Methods: The Cabrini Health Medical Records Department computer database was queried for coding of admissions under any Cabrini urologist for sepsis and prostate-related infections over 4 years from 2009 to 2012. Treating urologists and patients were de-identified. These records were then examined for whether a TRUS biopsy had been performed within 14 days prior. The rate of carbapenem use for treatment was also assessed. Over the same time period, the database was also queried for patients undergoing TRUS biopsy at Cabrini Health and matched to orders for the supply of a carbapenem for use as prophylaxis.

Results: Over the 4 years studied, there were 63 admissions for TRUS biopsy sepsis at Cabrini Health. Twenty-three admissions were of the 1,937 patients who had TRUS biopsies performed at Cabrini (rate of 1.2%) and 40 were following TRUS biopsies at other centres. Thirty-seven (58.7%) of these patients received intravenous carbapenem as part of their sepsis treatment. None of the Cabrini TRUS biopsy sepsis patients had received a carbapenem as prophylaxis. Of the 1,937 Cabrini TRUS biopsy patients, 154 (8%) were given a carbapenem as prophylaxis, with rapid increase in use over the 4 years studied (0, 5, 12, and 13%).

Conclusions: This study did not show evidence of an increasing rate of TRUS biopsy sepsis at this institution. However, most patients received a carbapenem as sepsis treatment and there was a dramatic uptake in the use of carbapenems for prophylaxis over the study period. This highlights urologists’ concern over increasingly prevalent multi-resistant bacteria in rectal flora. The study also highlights the difficulty in measuring the true rate of TRUS biopsy sepsis for a single institution, as these patients more often underwent their biopsy at a different institution. A statewide study has since been conducted to overcome this problem.

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Bladder paraganglioma

A. GUPTA and N. PHILLIPS
Royal Brisbane Hospital, Brisbane, Australia

Introduction: Paraganglioma (pheochromocytoma) of the bladder is a rare tumor (incidence 1 in 300,000) that originates from the chromaffin tissue of the sympathetic nervous system associated with the urinary bladder wall. They may be non-functional or functional i.e. secrete catecholamine causing paroxysmal hypertension, palpitation, and micturition...
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**Computed tomography urography and renal tract ultrasound for diagnosing bladder cancer**

C. HANDLEY, P. MANOHAR and P. MCCAHY
Urology Department, Monash Health, Melbourne, Australia

**Introduction:** Flexible cystoscopy is recognised as the gold standard investigation for detecting bladder cancer. CT urography is accepted as the most sensitive and specific investigation for upper tract lesions. We conducted a retrospective cohort study to assess CT urography and ultrasound in the detection of bladder cancer.

**Patients and Methods:** Records of 290 consecutive referrals to a Monash Health haematuria clinic, from May 2010 to April 2013, were retrospectively reviewed. We analysed the imaging for detection of bladder cancer by reviewing the radiologist report. Reports suggesting likely or possible bladder cancer were considered positive. These were compared to histopathology results. Sensitivity, specificity, positive predictive value and negative predictive value were calculated for each modality and compared to flexible cystoscopy.

**Results:** A total of 290 patients were included with 23 bladder cancers detected. 278 had flexible cystoscopy, 227 CT urography and 163 ultrasound.

<table>
<thead>
<tr>
<th>Total Bladder Cancers Detected</th>
<th>Sensitivity</th>
<th>Specificity</th>
<th>PPV</th>
<th>NPV</th>
</tr>
</thead>
<tbody>
<tr>
<td>CT Urography</td>
<td>227 13/19</td>
<td>68.42%</td>
<td>99.51%</td>
<td>92.86%</td>
</tr>
<tr>
<td>(HG 77.78%)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CT (non contrast)</td>
<td>27 0/3</td>
<td>27.27%</td>
<td>99.34%</td>
<td>75%</td>
</tr>
<tr>
<td>Ultrasound</td>
<td>163 3/11</td>
<td>95.65%</td>
<td>98.04%</td>
<td>81.48%</td>
</tr>
<tr>
<td>Flexible cystoscopy</td>
<td>278 22/23</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Conclusions:** Both CT urography and ultrasound have a high specificity for detecting bladder cancer in patients with haematuria. Patients with bladder cancer identified on imaging should be referred directly for rigid cystoscopy and resection. Results from previous research, suggesting CT urography could replace flexible cystoscopy as an investigational tool, were not replicated in this group. Our study shows flexible cystoscopy remains a necessary investigation for patients with haematuria.

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**Large nested variant urothelial carcinoma: invasive disease masquerading as low grade**

A. KELLER and A. ASHORAR
Ipswich Hospital, Ipswich, Australia

**Introduction:** Nested urothelial carcinoma (UC) is a rarely described, and likely underreported, histological variant of UC. It’s macroscopic and microscopic appearance mimics that of benign conditions or low grade UC. It can occur as a pure or mixed form, co-existing with low grade UC. Despite its benign cytologic appearance nested variant UC behaves in an aggressive manner with invasion, metastasis and death common.

**Patients and Methods:** A 59 male was referred to our facility after investigations for haematuria demonstrated a large bladder mass. Cystoscopy demonstrated a large tumour mass involving the prostatic fossa, bladder neck and the entire floor of bladder. Macroscopically it resembled well differentiated UC, however due to the extensive and broadbased involvement of the bladder and prostatic fossa we expected a high grade malignancy. The initial histologic report categorized the malignancy as low grade non-invasive UC.

A re-resection was performed a few weeks later, in the interim period extensive tumour regrowth had occurred. A subsequent histology report described a mixed nested variant of UC demonstrating extensive invasion of muscle with superficial areas of low grade papillary UC.

**Results:** Staging scans demonstrated no evidence of metastatic disease and our patient proceeded to a radical cystectomy and ileal conduit formation. The surgical specimen demonstrated extensive invasion of the prostatic stroma, perivesical fat and both distal ureters. Iliac and obturator nodes were negative for metastasis. Due to nested UC’s highly aggressive behaviour our patient has been referred for consideration of adjuvant chemotherapy.

**Conclusions:** Nested UC is a rare primary bladder neoplasm that can masquerade as benign disease processes or can be undergraded as low grade UC. Nested UC requires aggressive treatment due to its propensity for local invasion and
metastasis. Nested UC should be considered if the histologic report appears at odds with the findings at operation.

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Prostate-specific antigen velocity (PSAV) as a prognostic indicator post external beam radiotherapy (EBRT): comparison with conventional measures of treatment response

S. KINSEY-TROTMAN*, Z. SHI†, K. MORETTI‡,‡, M. BORG†,‡, M. O’CALLAGHAN§,§, C. PINNNOCK§,§ and T. KOPSAFTIS§,§
*The Queen Elizabeth Hospital, Woodville, South Australia; †The University of Adelaide, Adelaide, Australia; ‡South Australian Prostate Cancer Clinical Outcomes Collaborative (SAPCCOC), Dow Park, Australia; ‡Repatriation General Hospital, Daw Park, Australia; ‡Finders University of South Australia, Bedford Park, Australia

Introduction: Early indicators of treatment response to EBRT for prostate cancer are poorly defined. No consensus exists. Most conventional indicators are unable to predict recurrence early, and only do so once the PSA rises above the nadir. In a previous paper we demonstrated a relationship between prostate specific antigen velocity (PSAV) and disease-specific mortality. Both a rapid fall immediately following EBRT and a rapid rise from the nadir were associated with a worse prognosis. In this study we compare our analysis with conventional accepted parameters of biochemical response with respect to the prognostic significance of each parameter.

Patients and Methods: Patients from the prospectively maintained South Australian Prostate Cancer Clinical Outcomes Collaborative database were used for the analysis. The registry collects clinical, pathological, treatment and outcome measures from patients attending major metropolitan treatment centres in South Australia. Those treated by EBRT with curative intent and with more than one PSA recording in the 2 years post-treatment were included (n = 848). The PSAV relationships from our previous analysis were compared with time to biochemical failure (BCF) by ASTRO criteria, PSA nadir value below 1 and time to reach PSA nadir for each patient in the dataset. The prognostic value of these independent predictors of prostate-cancer specific mortality (PCSM) was then represented via a concordance index. Results were adjusted for age, Gleason pattern, PSA at diagnosis and adjuvant/neo-adjuvant androgen deprivation therapy.

Results: The analysis consisted of 848 men with mean age of 69.6 (SD 7.3) years. The mean number of PSA measurements in the 2 year period was 4.4 (SD 1.9). A biochemical failure was found in 243, of which a failure within 18 months of treatment completion had the highest negative prognostic value for PCSM (C = 0.80). Stratification based upon time to nadir of ≤ or >18 months resulted in a c-statistic of 0.76. Reaching a nadir value less than 1 also showed prognostic significance with a c-statistic of 0.80. Risk stratification utilising our PSAV model gave a c-statistic of 0.77. Our PSAV model gave comparable values for the concordance index as time to BCF, PSA nadir and time to PSA nadir, however the rapid PSA decline post treatment (of −4.17 ng/mL/yr) of our model is available at an earlier stage post therapy in comparison to a significant proportion of nadir values and the majority of biochemical failures which occurred more than 24 months post treatment, and accordingly was the earliest predictor of poor outcomes amongst all the parameters.

Conclusion: Risk stratification based upon PSAV following EBRT provides meaningful prognostic value at an earlier stage than conventional existing parameters. 1 Shi, Z. Pinnock, C. Kinsey-Trotman, S. Borg, M. Moretti, K. Walsh, S & Kopsaftis, T, 2013, Prostate-specific antigen (PSA) rate of decline post external beam radiotherapy predicts prostate cancer death, Radiotherapy and Oncology, vol.107, no.2, pp.129–133.

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Robot-assisted partial nephrectomy for renal tumors with RENAL nephrometry score ≥10: perioperative outcomes from a large multicentre international dataset (Vattikuti global quality initiative on robotic urologic surgery)

*OLV Vattikuti Robotic Surgery Institute, Aalst, Belgium; †Vattikuti Urology Institute, Henry Ford Hospital, Detroit, MI, USA; ‡Medanta Kidney and Urology Institute, Delhi, India; §Tajiv Gandhi Cancer Institute and Research Centre, Delhi, India; *Peter MacCallum Cancer Centre, Melbourne, Australia; **University of Turin, San Luigi Hospital, Orbassano, Italy; ††Vita-Salute University, San Raffaele Hospital, Milan, Italy; ‡‡MRC Centre for Transplantation, Kings College; Guy’s Hospital, London, United Kingdom; §§OhioHealth Dublin Methodist Hospital, Dublin, OH, USA

Introduction: Robot-assisted partial nephrectomy (RAPN) has been shown to be a safe and effective minimally invasive treatment for small renal tumors. Anatomical classification systems have been developed to better define the surgical challenge of renal tumors and predict the risk of complications, longer warm ischemia times (WIT) and positive surgical margins (PSMs). At present, limited data from small and mainly single-institutional series are available on the outcomes of RAPN for renal tumors with very high surgical challenge. Patients and methods: 81 patients who underwent RAPN between October 2006 and July 2013 for a renal tumor with a RENAL nephrometry score ≥10 were identified from a multi-institutional retrospective database including 1011 cases of RAPN from 9 tertiary robotic centres in Europe, North America, India and Australia. Intraoperative outcomes, pathological outcomes and complications were assessed. Complications were graded according to the Clavien-Dindo classification system.

Results: Median age of patients was 56 years and the average Charlson comorbidity score was 2 (IQR 0–3). Median tumor size was 45 mm (IQR 33–55, range 21–110). The tumors were cT1a, cT1b and cT2 in 28 (34.6%), 43 (53.1%) and 10 cases (12.3%), respectively.

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Sixty masses (74%) had a RENAL score 10, 19 (23.5%) had a RENAL score 11 and 2 (2.5%) had a RENAL score 12. Median operative time was 220 minutes (IQR 152–259). Median estimated blood loss and WIT were 100 ml (IQR 100–250) and 22 minutes (IQR 16–28), respectively. Five intraoperative complications occurred (6.2%). Postoperative complications were observed in 15 cases (18.5%) and 6 (7.4%) were Clavien grade ≥3. Hospital stay was on average 3 days (IQR 1–5). A benign pathology was found in 10 cases (12.3%). Six tumors (7.4%) were pT3a at final pathology and positive surgical margins were detected in 2 cases (2.5%).

Conclusions: RAPN for renal tumors with a RENAL score ≥10 is feasible with limited blood loss and an acceptable complication and positive surgical margin rate in centres with advanced robotic expertise. A longer than typical operative time and WIT are due to the high surgical challenge of these lesions.

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Irreversible electroporation utility in renal cancer ablation: short- to medium-term outcomes and in vivo validated numerical simulations
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Introduction: Irreversible electroporation (IRE) non-thermal focal ablation uses brief DC electric pulses to irrecoverably destabilize cell membranes, killing cells in a volume of tissue without damaging the extracellular matrix; making IRE a promising targeted, nephron-sparing therapy for renal tumors. Clinical IRE remains in its infancy, and treatment effects relate to electric field distribution as well as cell and tissue properties, which will change between tissues. This Phase I study describes our early findings regarding the use of IRE in the treatment of renal cancers to examine its utility in these cases and uses preclinical in vivo experiments to determine relevant renal properties to improve treatment planning.

Patients and Methods: Patients: Human Research and Ethics Committee approval was obtained for a limited, prospective, non-randomized study to investigate the safety of IRE for the treatment of solid tumours, including kidney. Nine patients with renal tumours deemed unresectable and poor candidates for thermal ablation were selected between 2008 and 2012. Patients were anesthetized during insertion of two to six needle electrodes prior to receiving neuromuscular blockade and pulse delivery, which was synchronized with cardiac rhythm. Patients were followed up clinically for adverse events and with imaging for recurrence free survival. Modeling: Clinically-relevant IRE protocols produced canine renal lesions, where electric currents and lesion dimensions were correlated with numerical simulations to calculate tissue properties and kidney-specific lethal electric field threshold.

Results: Patients: IRE was performed on a total of 12 renal tumours in one or two procedures (mean diameter 2.8 ± 1.1 cm; range 1.6–4.5 cm). Six patients had RCC while 3 had metastatic disease, where 5/9 had unresectable disease in a single kidney. Mean follow-up was 14 months (range 6–24 months). Overall recurrence-free success was 67%, where outcome was correlated with tumour size. Modeling: Kidney response to the pulses found an improved function to most accurately predicts lesions, with a 574 ± 63 V/cm lethal electric field threshold. Histology showed a necrotic core at the highest electric fields surrounded by a transitional perimeter of differential tissue viability dependent on renal structure.

Conclusions: Initial findings in a limited number of clinical cases of tumours in the kidney are promising, especially for unresectable disease in a single kidney. IRE can produce controllable targeted regions of renal ablation without damaging the collecting system or being affected by blood perfusion heat sink. Numerical simulations can improve treatment planning and develop patient-based protocols. The heterogeneous transition zone between the completely necrotic core and surviving cells demonstrates differential susceptibility to IRE.
The original method of forming uretero-reservoir anastomosis

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Introduction: An important stage of urinary diversion after radical cystectomy is the formation of ureteral anastomosis. The goal was to improve the results of urinary diversion through the use of the original uretero-reservoir anastomosis.

Patients and Methods: Generated by the original method of ureter – reservoir anastomosis in 90 patients, 34 of them – with orthotopic bladder and 56 with enteric conduit (total – 160 anastomoses). Following the procedure Camey-Le Duc anastomosis used in 38 patients, 21 of them – with orthotopic bladder and 17 with enteric conduit (total – 56 anastomoses).

Results: Stricture of ureter-reservoir anastomosis were in 5 (3.6%) patients; in the control group – 6 (15.9%). The reservoir – ureteral reflux – 3 (3.3%); in the control group – 4 (10.5%). Calculus anastomosis zone – 0 and 1 (2.6%). Using an original technique allowed the implantation of the ureters significantly reduce the incidence of major complications (reservoir – ureteral reflux, anastomotic stricture and calculus) compared with the methodology Camey-Le Duc with 28.95 ± 7.4% to 8.9 ± 3.0% (p < 0.05).

Conclusions: Given the lower incidence of complications application of the developed technique is most effective when the plastic orthotopic bladder with high intrareservoir parenchymal pressure and impaired renal function.

Patterns of use of adjuvant therapy in patients with stage 1 NSGCT

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Introduction: The optimal treatment for patients with stage 1 non-seminoma germ cell tumour (NSGCT) following orchidectomy remains controversial. Adjuvant chemotherapy, surveillance and retroperitoneal lymph node dissection are each considered to be appropriate options post-orchidectomy. We correlated post-orchidectomy treatment decisions with clinico-pathological parameters in patients with stage 1 NSGCT.

Methods: Clinical and pathological variables, including serum markers, tumour stage, size, histology, multifocality and lymphovascular invasion (LVI) were tabulated by retrospective chart review of patients treated between January 2005 and June 2012 at our institution. Follow up for surveillance was every month for the first year, every two months in the second year; every three months in the third year, and annual visits in the fourth and fifth years. Clinical examination and measurement of tumour markers were performed at each visit. Non-compliance for patients undergoing surveillance was defined as missing three consecutive follow up clinics. Associations of predictors with choice of management were analysed by logistic regression, with statistical significance ascribed to p-values <0.05.

Results: Thirty-two patients of median (range) age 26.5 (17–40) years were studied, with 20 (62.5%) undergoing surveillance and 12 (37.5%) chemotherapy (cisplatin/etoposide). Five (16%) patients under surveillance and none having chemotherapy were non-compliant. With a median follow up of 48 mo, two (6%) patients had relapsed at a median interval of 7.4 mo, one in the retroperitoneal lymph nodes, the other in the lung. Both these patients were under surveillance, and one was in fact non-compliant. On univariate analysis, patients with elevated markers preoperatively were less likely to undergo chemotherapy (Odds ratio [95% confidence interval] 0.06 [0.01–0.35], p < 0.002 for alphafetoprotein [AFP] and 0.14 [0.03–0.72] for beta-HCG), with a trend toward chemotherapy for patients with lympho-vascular invasion (OR [95% CI] 4.0 [0.83–19.32], p = 0.085). On multivariate analysis, AFP was the only variable predictive for choice of treatment.

Conclusions: The majority of patients with stage 1 NSGCT undergo surveillance after orchidectomy in our practice. Outcomes appear comparable between chemotherapy and surveillance groups. Patients who had raised AFP pre-operatively were less likely to receive chemotherapy.

Stage I seminoma – treatment choices and outcomes at a single tertiary referral institution

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Introduction: Following orchidectomy, management options for stage I seminoma includes adjuvant carboplatin, radiotherapy to para-aortic lymph nodes or surveillance. We aimed to review the patterns of care, factors impacting treatment choice and outcomes for stage I seminoma.

Methods: For all patients with stage I seminoma treated between June 2006 and June 2012 at our institution, clinical and tumour characteristics were obtained by retrospective chart review. Follow up for surveillance was conducted every three months for the first two years, every six months in the third to fifth years and annual visits thereafter until tenth year. Non-compliance to follow up was defined as consecutively missing three follow up clinics. The association between variables and treatment was assessed using logistic regression analysis.

Results: Seventy-one patients of median (range) age 35 (20–63) years were treated. Sixty-two patients received adjuvant carboplatin, six underwent surveillance and one patient had adjuvant radiotherapy.
With a median follow-up of 22 months, no patients had relapsed or died. There appears to be no clear relationship between clinico-pathological variables and choice of treatment, but meaningful statistical analysis was precluded by the preponderance of patients treated with chemotherapy. There were 2/6 (33%) patients undergoing surveillance and 15/62 (24%) undergoing chemotherapy who were non-compliant.

Conclusions: We confirm the excellent prognosis of patients with stage I seminoma regardless of adjuvant treatment option. At our institution, adjuvant carboplatin was strongly favoured in the post-orchiectomy management of stage I seminoma.

Results: The phantom studies have demonstrated that the polymer fiducials have less artifact on CT scans compared to gold fiducials, but while visible on cone-beam CT, they were not visible on 2D MV CT. Insertion of the polymer fiducials was well tolerated, with no significant bleeding, infection or pain. Imaging findings have confirmed the findings from the phantom studies.

Conclusions: Polymer fiducial markers are a potential alternative to gold fiducials, with some possible advantages. Further evaluation in larger trials is warranted.

Conclusion: These results reflect international studies that show an increased incidence of localised renal cell carcinoma and an increased trend towards laparoscopic and partial procedures. Survival rates in NSW are equivalent or better than most international data.

143 Renal cell carcinoma patterns of care in New South Wales

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Introduction: To evaluate the patterns of care of newly diagnosed renal cell carcinoma (RCC) in New South Wales (NSW).

Methods: NSW Cancer registry data linked to hospital admission data for all patients diagnosed with RCC in NSW between 2001 and 2007 were evaluated. Patterns of care for patients diagnosed with localised, regional and distant disease were analysed. Particular emphasis on the management of localised disease (radical nephrectomy, partial nephrectomy, radiofrequency ablation and active surveillance) was performed.

Results: Between 2001 to 2007 there were 5399 cases of renal cell carcinoma diagnosed in the state of New South Wales. Cases were grouped to localised (68%), regional (14%) and distant (17%). Incidence rates remained unchanged for regional and distant disease but increased for localised disease over this time period. Of patients with localised disease, 86% (n = 2724) underwent surgical treatment. Over the 6 years there was also a trend of decreasing radical nephrectomy and increasing partial nephrectomy. There was also a trend of decreasing open operations and increasing laparoscopic operations. Five year disease specific survival for localised, regional and metastatic disease were 92%, 68% and 15% respectively.

Introduction: International studies have demonstrated patients with end-stage renal failure (ESRF) have predominantly lower Fuhrman grade, pathological T1 and papillary disease. We describe the grade, stage and histology of RCC among patients with chronic kidney disease (CKD) as compared to the general sporadic population in an Australian cohort.

Methods: A retrospective review was performed on patients identified from the Australian and New Zealand Dialysis and Transplantation registry diagnosed with RCC between Jan 1984 and Jan 2013 while receiving renal dialysis or after renal transplant at Westmead or Blacktown Hospital, and two separate RCC series who were surgically treated between Jan 1993 and Dec 2007 or treated with radiofrequency ablation between Aug 2002 and Mar 2011. Data was collected on age, gender, tumour size, grade, TNM stage, histology and GFR at diagnosis. Patients were allocated to two groups based on CKD status, defined as chronic renal failure (CRF), ESRF or renal transplant (RT) for comparison. CRF was defined as Kidney Disease Outcomes Quality Initiative (KDOQI) stage 3 to 4 CKD (GFR 15–59 mL/min/1.73 m²) and ESRF as KDOQI stage 5 chronic kidney disease (GFR < 15 mL/min/1.73 m²). We used Chi-squared and student T-tests for categorical and continuous data, and multiple logistic regression for multivariate analysis. A p value ≤ 0.05 was considered statistically significant. The study was
Conducted in accordance with the Declaration of Helsinki.

Results: A total of 642 patients were included: 469 non-CKD, 159 CRF, 7 ESRF and 7 RT. Patients with CKD were older at diagnosis (mean ± SD; 60.8 ± 12.4 yr vs 71.0 ± 11.8 yr; p < 0.01).

High grade disease (Fuhrman ≥ 3) was observed in a greater proportion of the CKD group (31.7% vs 42.3%; p = 0.04). CKD remained positively associated with high grade disease when adjusted for age ≥ 70 years and male gender (OR 1.65 95% CI 1.04–2.63, p = 0.03). CRF was strongly associated with high grade disease on subgroup analysis (OR 1.73 95% CI 1.06–2.82, p = 0.03).

Tumours were larger among the non-CKD group (mean ± SD; 51.6 ± 30.9 cm vs 45.7 ± 30.6 cm; p = 0.15) but did not reach statistical significance. There was no difference for T stage ≥ 3 (16.4% vs 19.1%; p = 0.43), nodal metastases (3.0% vs 3.0%; p = 0.94) and distant metastases (5.5% vs 6.4%; p = 0.69). A greater proportion of the non-CKD group had clear cell pathology (78.9% vs 67.6%; p < 0.01) but this was not observed for papillary tumours (8.3% vs 11.0%; p = 0.30).

Conclusion: CKD status among patients diagnosed with RCC was associated with higher grade disease and less clear cell pathology. There was no difference in TNM staging and size between the two groups. Our findings support the importance of local population data in contrast to international studies that included blood and urine tests, ultrasound, non-contrast CT, biopsy, Cystoscopy, ureteroscopy and retrograde pyelogram. The only abnormal findings were positive cytology. Further, the diagnosis was made more difficult in a setting of a non-functional kidney. This case supports the difficulty in diagnosing CDRCC until histology is verified. The aggressive nature of this disease was also demonstrated by the rapid progression of the disease in the relatively short time course between initial suspicion and surgery.

Conclusion: Early diagnosis of CDRCC is very difficult and a high degree of suspicion is required, especially in a setting of acute end-stage renal failure. Aggressive investigation and prompt radical intervention is advised to improve prognosis.

Introduction: Collecting duct renal cell carcinoma (CDRCC) is a rare and aggressive form of renal cell carcinoma, accounting for approximately 1% of all RCCs. CDRCC is associated with disease specific survival of 58% at three years. Diagnosis is often difficult and occurs in the late stages of disease. Approximately 70% of cases are poorly differentiated at diagnosis and 28% of these have distant metastases. We discuss the difficulties in the diagnosis of this tumour in a patient in end-stage renal failure.

Patients and Methods: A previously healthy 49 year old woman presented with mild bilateral flank pain and fatigue. Over a period of two months, the patient’s renal function deteriorated acutely to end-stage renal failure requiring haemodialysis. Initial investigations revealed microscopic haematuria and a urinary tract infection. Ultrasound revealed mild dilatation of the right pelvicalyceal system with some echogenic material. Non-contrast computed tomography (CT) however suggested parapelvic cysts rather than dilated calyces. The left kidney findings were unremarkable. Importantly, no masses or parenchymal architectural abnormalities were demonstrated on CT. Biopsy of the right kidney revealed only acute tubular necrosis with no malignancy. Further urine examination showed positive cytology. Subsequent cystoscopy, ureteroscopy and retrograde pyelogram were normal however bladder washings confirmed positive urine cytology from the right ureter. A clinical decision was made to proceed to right laparoscopic nephroureterectomy taking into account high suspicion of urothelial cell carcinoma in a patient on dialysis (non-functional kidney). Macroscopically, the kidney felt hard but shape was preserved. No obvious growth was identifiable. Histopathology confirmed stage 3b CDRCC replacing almost the whole kidney parenchyma.

Results: This patient underwent a full armament of investigations to diagnose a renal malignancy. These investigations included blood and urine tests, ultrasound, non-contrast CT, biopsy, Cystoscopy, ureteroscopy and retrograde pyelogram. The only abnormal findings were positive cytology. Further, the diagnosis was made more difficult in a setting of a non-functional kidney. This case supports the difficulty in diagnosing CDRCC until histology is verified. The aggressive nature of this disease was also demonstrated by the rapid progression of the disease in the relatively short time course between initial suspicion and surgery.

Introduction: Urological tumours are rare during pregnancy. Radiological advancements have increased the number of incidentalomas. However, its management remains a dilemma in pregnancy due to difficulty in predicting maternal-fetal outcomes. These have changed in the recent years with improvements in surgical techniques and intensive care facilities.

Patients and Methods: We report a case of a renal tumour diagnosed in the 1st trimester in a 21-year-old during first pregnancy. She had only mild abdominal discomfort of unknown duration prior to pregnancy. From Gladstone Queensland, it was difficult to follow up due to remoteness from tertiary hospitals. Abdominal ultrasound ordered by her GP discovered a large left renal upper pole mass. Follow up imaging at 10 weeks gestation revealed an increased size, which...
then grew to $17.0 \times 15.0 \times 10.0 \text{ cm}^3$ at 31 weeks gestation. A healthy baby girl was delivered naturally at term. A KUB CT scan postpartum revealed a heterogeneous mass with mixed density and contrast enhancement and a small indeterminate liver lesion. Open radical nephrectomy performed 3 weeks later removed a 2086 g tumor measuring $23.0 \times 17.0 \times 13.0 \text{ cm}^3$. Pathology revealed chromophobe RCC, pT2bN0M0 with perinuclear halo and transitional cells. There was no venous infiltration and the tumor was CK7, CD117 positive and CD10 negative with no sarcomatoid or rhabdoid differentiation. Follow-up MRI 1 week post operation no sarcomatoid or rhabdoid differentiation.

Introduction: The natural history, management and followup of early stage urothelial bladder cancer has been well documented, with well referenced clinical guidelines to assist appropriate followup protocols. Less information in known regarding long term and very long term outcome of these patients, including the status of their preserved bladder. This study aims to review these outcomes of this cohort and consider appropriate followup recommendations.

Patients and Methods: Systematic review of a single practice, 2 surgeon, prospective bladder cancer database over 43 years, was used to identify patients with low stage urothelial bladder cancer (CIS, Ta, T1), who continued on urological followup beyond 15 years from diagnosis. Followup assessed urothelial cancer events, treatment and outcomes until the present, or patient death.

Results: 30 patients were identified. Followup ranged from 15 to 43 years, mean 21.2 years. Age at diagnosis 40–72 years (mean 56.2 years). Followup cystoscopies per patient ranged 11-48 (mean 22.4). Pathology at diagnosis – low grade 76%; (23% unifocal, 53% multifocal), high grade 24%. Single dose chemotherapy – 58%. Induction immunotherapy 53%. New urothelial bladder occurrences 83%. One cancer and one non-cancer death. 20% radical local treatment; 27% upper tract TCC.

Conclusions: The long term natural history of low and high grade urothelial bladder cancer has been further defined with this cohort. Bladder preservation is safe and feasible. However long term followup is critical with significant medium and long term cancer events involving bladder and upper urinary tract. Adjuvant therapy may be of benefit. Long term follow up needs to be considered in followup protocols for urothelial cancer with bladder preservation.

147 Long term outcome (minimum 15 years followup) for non-muscle invasive urothelial bladder cancer initially managed with bladder preservation

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148 Pathological outcomes of patients on active surveillance progressing to radical prostatectomy; a snapshot from the prostate cancer registry

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Introduction: Around 30% of patients on Active Surveillance (AS) go on to have radical treatment at 12 months post commencement of AS. As positive surgical margins are thought to be a predictor of disease recurrence, we sought out to compare the pathological outcomes of men initially on AS undergoing deferred treatment (radical prostatectomy, RP) to those undergoing immediate treatment.

Materials and Methods: De-identified data for men was obtained from the prostate cancer registry, in Victoria, Australia. Patients included were diagnosed between 2008–2012 with a minimum of 12-month follow-up and classification as per the NCCN guidelines. Pathological outcomes were assessed based on biopsy and surgery Gleason score, positive margin rates, pathological TNM staging and focal extension.

Results: A total of 67 patients (median age 67) initially on AS proceeded to RP (deferred treatment). 49/67 low risk and 18/67 intermediate risk. Almost all were diagnosed on TRUS. 4/67 (6%) patients were classified as clinical T1a, 51/67 (76%) as T1–T2a, and 3/67 (4.4%) as T2b. A total of 716 low-risk men underwent RP (immediate treatment). Majority were diagnosed by TRUS 702/716 (98%). Median PSA at diagnosis was 4.9, at 12 months 0.05 and median age at diagnosis 59.65 (7 years younger than AS cohort). 10/716 (1%) patients were clinically staged as T1a, with 553/716 (77%) classified as T1–T2a.

49 low-risk patients progressing from AS to RP all had a biopsy Gleason score of less than 6.
than 6. 11/49 (22%) had a surgery Gleason score of less than 6, 27/49 (44%) Gleason 7 (3 + 4), 8/49 (16%) Gleason 7 (4 + 3) and 3/49 (6%) Gleason 8–10. 38/49 (77%) patients had pT2 disease, with 5/49 (10%) progressing to T3 disease. 1/49 (2%) had local nodal involvement and none had metastatic disease. 10/49 (20%) had positive surgical margins, with 5/49 (10%) patients having ≤1 mm focal extension and 4/49 (8%) patients with >1 mm focal extension.

In comparison, 716 patients with low-risk disease underwent RP, all with biopsy Gleason score of less than 6. Of these, 104/716 (14%) had a surgery Gleason score of less than 6, 363/716 (50%) Gleason 7 (3 + 4), 63/716 (8.7%) Gleason 7 (4 + 3), and 147/716 (2%) Gleason 8–10. 561/716 (38%) had pT2 disease, with 90/716 (12%) showing pT3 disease, and 1/716 (0.1%) Gleason 8–10. 38/716 (5.3%) had a surgery Gleason score of less than 6. Of these, 150/716 (21%) however our results are preliminary.

**Conclusions:** Patients undergoing immediate treatment were noted to be significantly younger to those men receiving deferred treatment. Men receiving deferred treatment were noted to have a higher positive margin rate (20% vs 17%) however our results are preliminary.

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**149 Transitioning to robotic assisted laparoscopic prostatectomy (RALP): an analysis of two surgeons’ experience and learning curves**

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**Introduction:** As with any new surgical technique there is a learning curve associated with robotic assisted laparoscopic prostatectomy (RALP). Many trained surgeons make the transition from traditional open or laparoscopic radical prostatectomy (LRP) to RALP. Data suggests that experienced laparoscopic surgeons are less likely to experience a steep learning curve with the new robotic technique. In this study we aim to compare an open versus a laparoscopic trained surgeon’s experience of RALP and surgical learning curve.

**Patients and Methods:** We analysed a prospectively collected database of 2239 RALPs collected over 8 years performed by 22 urologists at a single institution. We compared positive surgical margin (PSM) percentages with a moving average plot for an experienced laparoscopic surgeon and an open surgeon for their first 130 RALP cases. Equivalence between the plots was assessed with a one-sided t-test. Baseline data for the two surgeons was compared with the Wilcoxon rank sum test or Kruskal-Wallis test.

**Results:** We plotted a simple moving average of percentage PSM over 25 consecutive RALP cases each surgeon had performed (Figure). There is a significant difference (p < 0.0001) between the moving average points for the open and laparoscopic surgeon. However, after case number 56 the moving average points for the open surgeon are no longer significantly higher (p > 0.05) than those of the laparoscopic surgeon. The cohorts of 130 patients for each surgeon were comparable in terms of pathological stage: pT2 in 78.1% and 78.0%, and pT3 in 21.9% and 22.0% (p = 0.979) for the open and laparoscopic surgeon respectively. Median PSA ng/mL (open v lap: 6.6 v 5.7 p = 0.364) and median prostate mass g (open v lap: 46 v 52 p = 0.094). There was weak evidence of a difference in Gleason grade between the cohorts however, after adjustment for Gleason grade in a multivariate logistic model, the surgeon type was still predictive of margin positivity after 80 cases (p = 0.011) and 130 cases (p = 0.046).

**Conclusion:** We observed that beyond 56 personal cases percentage PSM rates were equivocal for both surgeons. Our data suggests that an open surgeon has a steeper learning curve than a laparoscopic surgeon but reaches parity in margin positivity rates at around 50–60 cases.

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**150 Expression of EMT markers in prostate cells**

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**Introduction:** The epithelial-mesenchymal transition (EMT) is a cellular process that is linked with tumour progression (1). However, the role of EMT in prostate cancer has not been established. Our primary aim is to determine the expression of EMT markers in normal and cancerous prostate cell lines. A secondary aim is to measure the degree of resistance of
prostate cancer cells to the chemotherapeutic agent docetaxel. Our hypothesis is that resistance to chemotherapy will correlate with high mesenchymal protein expression.

Methods: We cultured four immortalised prostate cell lines: RWPE-1 and PNT1A were derived from normal prostate epithelial tissue and LNCAP and PC3 are prostate cancer cell lines. Expression of the EMT markers E-cadherin, vimentin, phospho-MAPK, phospho-AKT, MMP-9 and GAP-DH was measured in extracts of all four cell lines by Western Blot. Expression was quantified densitometrically and an expression ratio calculated based on GAPDH. In addition, all four cell lines were treated with 1μM docetaxel and cell survival measured by MTT assay.

Results: Compared to control normal epithelial cell line RWPE-1, expression of the mesenchymal marker vimentin was 4.09 and 2.41 fold higher in PNT1A and PC3 cells, respectively. E-cadherin expression was highest in RWPE-1 cells and was 20x fold lower in PNT1A cells, which had the lowest expression overall. Phospho-MAPK, a marker related to cell proliferation and differentiation, was extremely low in the prostate cancer cell lines LNCAP and PC3s. MMP-9 expression in LNCAP cells was 2.10 higher compared to RWPE-1 cells. In advanced prostate cancer PC3 cells MMP-9 expression was lower than RWPE-1 cells by 13%. Resistance of advanced prostate cancer PC3 cells compared to 1μM docetaxel was higher than LNCAP cells with cell survival of 88% and 20%, respectively, compared to untreated control.

Conclusions: Lower expression of E-cadherin and higher expression of vimentin in PC3 cells support a mesenchymal cell type and correlates with docetaxel resistance. EMT protein expression in the cell line PNT1A is inconsistent with an epithelial phenotype and RWPE-1 appears to be the cell line that more closely resembles epithelial cells.


Other

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Urosepsis following trans-rectal biopsy of the prostate: a contemporary analysis of incidence and antibiotic sensitivities

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Introduction: Transrectal ultrasound-guided (TRUS) biopsy of the prostate remains the standard technique for the histological diagnosis of prostate cancer. Large epidemiological studies suggest there is an increasing rate of hospitalisation for infectious complications following TRUS biopsy. Our primary aim was to review a contemporary cohort of patients to assess the local incidence of hospital admissions for urosepsis following TRUS prostate biopsy. Our secondary aim was to review the causative organisms and antibiotic susceptibilities to help guide optimal treatment in post-biopsy urosepsis.

Patients and Methods: We performed a retrospective review of 152 patients undergoing TRUS biopsy at our centre over a 2-year period from July 2011 to June 2013. All patients readmitted with urinary tract infection within 30 days of biopsy were identified. Data was collected on demographics, co-morbidities, preoperative PSA, antibiotic prophylaxis, time to re-presentation to hospital, length of hospital stay, urine and blood microbiology and antibiotic sensitivity.

Results: Mean age was 65. All patients received prophylactic antibiotics. Eight patients (5.2%) were readmitted to hospital within 30 days of their biopsy with sepsis. Median time to presentation after biopsy was 2 days (range 1–5 days). Median length of stay on re-admission was 7 days (Mean 6.5 days, range 1–13 days). No patients died or required intensive care unit admission during their admission for urosepsis. Diabetes was a major co-morbidity amongst patients with urosepsis (50%). Of the patients readmitted with urosepsis, 75% (6) had microbiologically positive urine cultures and 50% (4) had microbiologically positive blood cultures. The bacteraemic sepsis rate was 2.6%. The most common organism isolated on urine and blood cultures was Escherichia coli. Significant E. coli resistance to ciprofloxacin, gentamicin, ampicillin and trimethoprim was observed. High sensitivity towards nitrofurantoin, ceftriaxone and meropenem was observed amongst infectious strains of E. coli.

Conclusions: The incidence of hospital admission for sepsis following TRUS biopsy in our locality is high and increasing over the last 2 years. E. coli was the most common cause of sepsis. In patients readmitted with sepsis, multi-drug resistance was common with a high rate of resistance to common empirical antibiotic agents. High sensitivity to ceftriaxone or meropenem was observed and empirical treatment with one of these agents may be an effective initial antibiotic choice while awaiting culture sensitivity results to become available.

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Laparoscopic pyeloplasty in the paediatric population

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Introduction: Open dismembered pyeloplasty has long been considered the gold standard for the treatment of PUJ obstruction in children. Although laparoscopic transabdominal pyeloplasty has been shown to be comparable if not superior to open pyeloplasty in adults, reports of this technique in the paediatric population are limited. We aim to examine our experience with laparoscopic dismembered pyeloplasty in the paediatric population.

Patients and Methods: We retrospectively reviewed the records of 52 children undergoing laparoscopic pyeloplasty for PUJ obstruction at a single institution over an 8-year period. Data was collected on demographics, operating time, complications, hospital stay and outcome. Complications were graded by the Clavien classification system.

Results: Mean age was 10. 32 were left sided procedures. 27 patients had crossing vessels causing extrinsic compression at the PUJ. Mean operating time was 122 minutes (range 56–195). Twelve patients had extra-renal drains placed. Median length of stay was 2 days (mean 2.5). There were no conversions to open. The overall post-operative complication rate was 15%, all of
which were minor (Clavien Grade I-II). There were no Clavien grade IV or V complications. The estimated overall success rate was 96%. Two patients required redo pyeloplasty due to recurrent PUJ obstruction at 4 and 4.5 years respectively.

Conclusions: This study suggests that laparoscopic pyeloplasty is safe, reliable and reproducible in children with good short-term results. Laparoscopic pyeloplasty represents an attractive alternative to conventional open pyeloplasty in children.

153 Proton beam therapy websites: characteristics and claims
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Introduction: Proton beam therapy (PBT) is a form of external beam radiotherapy.
- Evidence is emerging for the superiority of PBT for paediatric cancers and those of the eye, spine and skull, however no level I evidence currently exists for the treatment of localised prostate cancer.
- Patients considering prostate cancer treatment increasingly rely on web-based resources, however the anarchic nature of the internet means consumers could be making healthcare decisions based on low quality or inaccurate claims.
- We thus sought to evaluate PBT websites with respect to characteristics of website information and claims made.

Materials and Methods:
- We identified 36 websites using snowball-purposive sampling to emulate a consumer searching the internet.
- We evaluated ‘Google’ search items for ‘proton therapy’ in September 2013 for the first 100 search results and prospectively defined inclusion criteria as English-language websites with information on PBT for therapeutic use; this included hospitals, proton therapy centres and PBT representative organisations.
- Excluded were websites of manufacturers, research facilities and sites with no information on the therapeutic use of PBT.

Results
- The majority, 61.1% of websites originated from the US, with a smaller contribution from Europe (22.2%) and Australasia (16.7%). Most of the websites (58.3%) were from institutions currently in operation. Prostate cancer was listed as an indication for PBT in 72.2% of all websites; 13.9% indicate treatment only for cancers where the strongest evidence lies eg brain.
- Information on risks was only documented in 16.7% of cases, of which hair loss, skin reaction &/or fatigue were most common (66.7%).
- Regarding website navigation, PBT content in 55.6% of websites was not located on the main homepage but on average two clicks into the site. Manufacturer text or links was infrequent (2.8%). Emotive language was used in one fifth of cases and reference to insurance coverage noted in one third.
- Claims of clinical, institutional and manufacturer superiority (Table 1).

Table 1. Claims made on PBT websites included in the study

<table>
<thead>
<tr>
<th>Claims</th>
<th>n</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clinical superiority</td>
<td>28</td>
<td>77.8</td>
</tr>
<tr>
<td>Precision of localisation</td>
<td>15</td>
<td>41.7</td>
</tr>
<tr>
<td>Non or least invasive</td>
<td>33</td>
<td>91.7</td>
</tr>
<tr>
<td>Less damage to surrounding</td>
<td>5</td>
<td>13.9</td>
</tr>
<tr>
<td>healthy tissues</td>
<td>27</td>
<td>75</td>
</tr>
<tr>
<td>Fewer complications</td>
<td>7</td>
<td>19.4</td>
</tr>
<tr>
<td>Reduced or minimal side</td>
<td>4</td>
<td>11.1</td>
</tr>
<tr>
<td>effects</td>
<td>1</td>
<td>2.8</td>
</tr>
<tr>
<td>Short treatment times</td>
<td>11</td>
<td>30.6</td>
</tr>
<tr>
<td>Normal lifestyle in peri-</td>
<td>8</td>
<td>22.2</td>
</tr>
<tr>
<td>treatment period</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Maintained or better quality of life</td>
<td>10</td>
<td>27.8</td>
</tr>
<tr>
<td>Painless</td>
<td>12</td>
<td>33.3</td>
</tr>
<tr>
<td>Improved cancer control</td>
<td>7</td>
<td>19.4</td>
</tr>
<tr>
<td>Decreased likelihood of</td>
<td>4</td>
<td>11.1</td>
</tr>
<tr>
<td>secondary malignancies</td>
<td>1</td>
<td>2.8</td>
</tr>
<tr>
<td>Can treat recurrent tumours</td>
<td>18</td>
<td>50</td>
</tr>
<tr>
<td>Short half life therefore</td>
<td>13</td>
<td>36.1</td>
</tr>
<tr>
<td>minimal radiation exposure</td>
<td>5</td>
<td>13.9</td>
</tr>
<tr>
<td>to others</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Comparatively better than</td>
<td></td>
<td></td>
</tr>
<tr>
<td>conventional radiotherapy</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Institutional superiority</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Manufacturing superiority</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Conclusions: In an era where the internet is increasingly unregulated and consumers are relying more heavily on this information, our study provides evidence that claims on PBT websites may overestimate benefits and underestimate risks.

154 Successful introduction of a single dose antibiotic prophylaxis for TRUS biopsy at Princess Alexandra Hospital
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Introduction: Antibiotic prophylaxis for TRUS-guided needle biopsy of the prostate (TRUSBP) is the standard of care in modern Urology. Considerable variation in antibiotic regimens exists worldwide. Our previous prophylaxis consisted of pre- and post-procedure oral Trimethoprim and immediate pre-operative intravenous Gentamicin. Single-dose pre-operative oral Ciprofloxacin offers advantages of simplicity, cost and observed compliance. We audited the early outcomes of a change in prophylaxis protocol at a large Australian tertiary hospital.

Patients and Methods: We reviewed the records of all patients who had TRUSBP at Princess Alexandra Hospital (n = 150) from 1 January to 30 September 2013. The change in protocol occurred midway through this period. 22 cases deviating from the prophylaxis protocol were excluded leaving 70 patients for analysis in the old protocol and 58 with the new protocol. We compared rates of infective complication (symptomatic bacteriuria or septicemia) occurring between these groups. Statistical analysis was performed using Fisher’s exact test.

Results: There was 1 case of infection in the New Protocol group (1.75%), vs 3 cases in the Old Protocol group (4.5%). This difference was not significant. All 4 cases involved symptomatic bacteriuria. There were no septicemia events. Among the 22 patients where prophylaxis did not conform to one of the protocols, there was 1 case of bacteriuria and 1 case of septicemia.

Conclusions: In this study, single dose Ciprofloxacin prophylaxis did not appear inferior to a more complex regimen used previously. Although this is a reassuring interim result in the quality cycle, the numbers are small and further audit is required to confirm the durability of this
outcome. Although the practical advantages of this simple regimen are great the increased incidence of infection with fluoroquinolone-resistant organisms after TRUSBP around the world is concerning. It may be postulated that such widespread use of Quinolones in such prophylactic roles is contributing to this issue. For Australian patients without risks for multi-resistant organisms it would appear that a single, pre-operative dose of Ciprofloxacin is a safe alternative to Trimethoprim with Gentamicin.

155 Mortality secondary to Fournier’s gangrene can be reduced with a multimodal approach and early, aggressive surgical debridement

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Introduction: Fournier’s gangrene is a rare but rapidly aggressive, potentially fatal necrotising fasciitis involving the perineum and external genitalia. Despite advances in modern treatment, mortality rate is still as high as 50% in reported case series. Our aim is to review patients treated for Fournier’s gangrene at our tertiary referral centre over the last twelve months, and compare their outcome to the literature.

Patients and Methods: Patients who were treated for Fournier’s gangrene at our tertiary referral centre from 1st of August 2012 to 31th of July 2013 were included in the study. Patient demographics including age, sex, relevant past medical history, number of surgical debridements, length of stay (LOS) in intensive care unit (ICU), overall LOS and the overall mortality rate were prospectively entered into a database.

Results: A total of six patients were admitted with Fournier’s gangrene over the defined period. All patients were male with a mean age of 55 years (range 45 to 85). 67% of patients had history of diabetes mellitus while 33% were known intravenous drug users. The mortality rate was 17% and the sole mortality was an elderly man with a history of metastatic bladder cancer who was palliated. The five patients who were actively treated received broad spectrum antibiotics, early and aggressive surgical debridement, and were cared for in intensive care unit. The mean LOS in ICU was 10.5 days while the mean overall LOS was 29 days. Patients had on average four surgical debridements during their stay. All five actively treated patients also received input from the Plastic surgical team for split skin grafts and one patient required involvement of the Colorectal surgeons for formation of defunctioning colostomy.

Conclusions: While Fournier’s gangrene remains a surgical emergency associated with high mortality rates, our data compares favourably with other case series. Aggressive therapy with prompt surgical intervention as well as a multimodal approach involving other specialties such as Plastic Surgery and Intensive Care appears to improve outcome and should continue to be the mainstay of treatment.

156 Urology and pelvic fractures: the need for multi-disciplinary care in pelvic trauma patients

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Introduction: Genitourinary injury is a common complication of pelvic trauma that may lead to significant long-term urinary and sexual dysfunctions. As part of a comprehensive trauma assessment, all patients with pelvic fracture should be investigated for possible genitourinary injuries. Ideally, this would involve a multi-disciplinary approach, with urology being part of the team that assesses all patients who presented with pelvic trauma. Unfortunately this is not always achievable and possible. This study investigated (1) the prevalence of urology involvement in pelvic trauma assessment at our institution and (2) whether genitourinary injuries were missed in patients who did not have urology input.

Methods: A retrospective chart review was conducted after internal ethics board approval in all patients with ICD codes of ‘fractured pelvis’ and ‘urinary tract injury’ at the Princess Alexandra Hospital from 2006 to 2012. Data was collected on the following parameters: (1) the presence of urology consultation after a diagnosis of pelvic fracture, (2) numbers of missed lower urinary tract injuries on initial trauma assessment, and (3) the presence of urinary or sexual dysfunctions in pelvic fracture.

Results: A total of 71 patients with ICD codes of ‘fractured pelvis’ and ‘urinary tract injury’ were identified over the 7-year period. Of the 71 patients with pelvic fracture, only 37 patients (52.1%) received urology input. In the group of patients with pelvic fractures who did not receive urology input, 2 of the 34 patients (5.8%) had a delayed diagnosis of lower urinary tract injury resulting in delayed intervention and prolonged hospitalisation. In addition, in the subset of patients who did not receive urology input, 4 of the 34 patients (11.7%) developed long-term genitourinary dysfunctions requiring subsequent urological intervention.

Conclusions: This study showed that urological input was not always consulted in a large percentage of patients with pelvic trauma. This was associated with significant negative consequences in patient outcome, with delayed management of lower urinary tract injury in a small percentage of patients. Furthermore, our results indicate that long-term genitourinary dysfunction is reasonably common in patients with pelvic trauma. For the above reasons, we propose that urology consultation is paramount in pelvic trauma patients and should be part of the multi-disciplinary team involved in the care of all patients with pelvic fractures.

157 Current smoking status is associated with higher grade urothelial cancer and frequent recurrences. Tobacco screening and counseling is easy to implement and should be considered as part of routine urological practice

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Introduction: Smoking is a well-known risk factor for bladder cancer (HR 2.9–5.5). Approximately 66% of bladder cancers can be attributed to smoking, with smokers presenting with more advanced stage and higher grade. After TURBT smokers have a higher incidence of disease recurrence and progression, and have a poorer outcome of BCG and intravesical
With smoking cessation, bladder cancer risk is decreased by over 30% within 1–4 years of cessation, and by over 60% after 25 years. Smoking cessation has been shown to induce a better outcome of non-muscle invasive bladder cancer treatment. Smoking cessation beyond 10 years reduces the risk of disease recurrence and progression after TURBT, and mitigates the risk of disease recurrence, cancer specific mortality and overall mortality after radical cystectomy. Despite this, 55.6% of urologists never discuss smoking cessation with their patients, 40.7% do not believe that smoking cessation alters the course of bladder tumours, and 37.7% did not feel comfortable counselling their patients to stop smoking.

We aimed to determine the smoking status of patients undergoing surveillance for urothelial carcinoma, the potential role of smoking in each patient’s disease dynamics and the practicality of implementing a brief smoking cessation intervention.

**Patients and Methods:** Between 2012 and 2013 all urothelial cancer patients from Ballarat Health Services were evaluated for smoking status, disease grade and tumour recurrences. Current smokers were assessed by the validated Fagerström test for nicotine dependence and the readiness to quit questionnaire (Figure 1) at the time of their surveillance cystoscopy or outpatient appointment. Smokers then received a brief intervention using the 5As (Figure 2: Ask, Advise, Assess, Assist, Arrange) and if interested, were referred to the Ballarat Community Health QUIT Programme.

**Results:** A total of 101 patients are currently undergoing regular flexible cystoscopies for urothelial carcinoma surveillance. 80% had a history of smoking or were current smokers. 21 (20.8%) are current smokers, 59 are ex-smokers (58.4%). Smokers were more likely to have a history of high grade disease, compared to ex-smokers or non-smokers, (47.6%; 44%; 25%). A difference in recurrence rates was seen between the groups (current smokers: 33.3%; ex-smokers: 49.2%; non-smokers 45%). All smokers assessed were willing to undergo the Fagerström test and participated in the brief smoking cessation intervention.

**Conclusions:** Our study highlights the risk of smoking status has on urothelial carcinoma incidence, grade and recurrence. We have shown that a urology registrar can successfully implement a brief smoking cessation intervention program and this should be taken up by all trainees and urologists. In the future, we will prospectively evaluate introducing this brief smoking cessation intervention, hoping to show that patients who are involved are more likely to attempt to quit, decreasing their risk of tumour recurrence and disease progression.
**SMOKING IS A NICOTINE ADDICTION**

Assess your level of nicotine dependence with the Fagerström Test

<table>
<thead>
<tr>
<th>Questions</th>
<th>Answers</th>
<th>Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>1  How soon after you wake up do you smoke your first cigarette?</td>
<td>After 60 minutes</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>31-60 minutes</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>6-30 minutes</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>Within 5 minutes</td>
<td>3</td>
</tr>
<tr>
<td>2  Do you find it difficult to refrain from smoking in places where it is forbidden?</td>
<td>Yes</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>No</td>
<td>0</td>
</tr>
<tr>
<td>3  Which cigarette would you hate most to give up?</td>
<td>The 1st in the morning</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>All others</td>
<td>0</td>
</tr>
<tr>
<td>4  How many cigarettes per day do you smoke?</td>
<td>10 or less</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>11-20</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>21-30</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>31 or more</td>
<td>3</td>
</tr>
<tr>
<td>5  Do you smoke more frequently during the first hours after awakening than during the rest of the day?</td>
<td>Yes</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>No</td>
<td>0</td>
</tr>
<tr>
<td>6  Do you smoke even if you are so ill that you are in bed most of the day?</td>
<td>Yes</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>No</td>
<td>0</td>
</tr>
</tbody>
</table>

**DEPENDENCE SCORES**

<table>
<thead>
<tr>
<th></th>
<th>Very low</th>
<th>Low</th>
<th>Medium</th>
<th>High</th>
<th>Very high</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-2</td>
<td></td>
<td>3-4</td>
<td>5</td>
<td>6-7</td>
<td>8-10</td>
</tr>
</tbody>
</table>

Your score is: __________. Your level of dependence on nicotine is: _________________.

Adapted from Heatherton et al. 1991 and the Niagra Health System.

If your score demonstrates some level of dependence on nicotine you may need help quitting smoking. Reaching out to your family and friends can help, but you may need additional support.

**Speak with your healthcare professional** to get the help you need.
Figure 2. A Brief Intervention Using The 5As.

A BRIEF INTERVENTION USING THE 5As

Name of patient: ______________________ Date: ______________________

ASK
Identify and document tobacco use at each visit.
□ Yes □ No If yes, how many cigarettes per day? ______
Have you ever tried to quit? □ Yes □ No If yes, how many times? ______
If yes, how did you attempt to quit in the past? __________________________

ADVISE
In a clear, strong, personalized manner, urge the smoker to quit.
Clear – “It’s important to quit now without putting it off. I can help if you need it.”
Strong – “Quitting is the best thing you can do for your health. We have ways to help you.”
Personalized – Point out how tobacco use affects their health, their children and their families.

ASSESS
Is the smoker ready to make a quit attempt? Does the smoker want treatment or intervention? Does the smoker require additional motivation to quit? How does the patient feel about quitting and why?
How motivated are you to quit on a scale of 1 to 10? 1 2 3 4 5 6 7 8 9 10
(With 1 being no motivation and 10 being fully motivated)
Are you planning to quit smoking at this time? □ Yes □ No If yes, when? ____________
What are the reasons for you wanting to quit? _____________________________
What are the reasons why you feel you are not ready to quit? ______________________

ASSIST
Recommend counselling and pharmacotherapy to help the smoker quit.
Talk with your patient to devise a quit plan best suited to him or her. Stress the importance of support from family and friends.
I spent ______ minutes counselling patient about quitting smoking.
I prescribed (or referred patient to obtain) pharmacotherapy: □ Yes □ No
Which one: ___________________________

ARRANGE
Schedule follow-up contact (preferably within 1 week after the quit date).
Contact can be made in person or by telephone.
I scheduled a follow-up appointment with patient: □ Yes □ No
Date: ___________________________
Many common urological investigations are over-ordered and should be questioned. The Urologist can improve care by eliminating unnecessary tests and procedures

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Introduction: In 2012, The ABIM Foundation (a not-for-profit foundation established by the American Board of Internal Medicine in 1999 to advance medical professionalism and physician leadership in quality assessment and improvement), along with Consumer Reports and nine medical specialty societies, announced a set of lists of ‘Things Physicians and Patients Should Question’ as part of the Choosing Wisely® campaign in recognition of the importance of physician and patient conversations to improve care and eliminate unnecessary tests and procedures (www.choosingwisely.org). The American Urological Association (AUA) established a committee to review evidence from the association’s guidelines and identify potential tests or procedures that should be questioned. As a result the AUA recommended ‘Five Things Physicians and Patients Should Question’ – 1: A routine bone scan is unnecessary in men with low-risk prostate cancer; 2: Don’t prescribe testosterone to men with erectile dysfunction who have normal testosterone levels; 3: Don’t order creatinine or upper-tract imaging in patients with benign prostatic hyperplasia (BPH); 4: Don’t treat an elevated PSA with antibiotics for asymptomatic men with an elevated PSA and 62% will perform an ultrasound on a boy with a non-palpable testicle. Participants nominated a number of investigations that are thought to add no clinical benefit to the urological patient or are over-ordered. These questionable tests/procedures included ultrasound for renal colic, urodynamics for women with mild stress urinary incontinence (in the absence of urgency symptoms), CT in low-risk prostate cancer and urine cytology except when CIS is suspected.

Conclusions: There are major funding and health care delivery challenges confronting Australian and New Zealand doctors. Much of the rise in health care costs can be attributed to advances in medical technology, including diagnostic and therapeutic advances, radiological investigations, and minimally invasive surgical procedures. It is extremely important that Urologists understand the importance of rationalizing their use of investigations. We have identified a number of common urological investigations that are over-ordered and have developed educational material to address these issues. In addition to the Choosing Wisely® list, we also recommend further tests or procedures that should be questioned.

Prevalence of anaemia is more common in patients who have worse renal function after nephrectomy and may contribute to increased cardiovascular morbidity

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Introduction: Current evidence suggests that nephrectomy induced chronic kidney disease (CKD) is associated with increased risk of cardiovascular (CV) death. The majority of patients with medically induced CKD will never reach end stage kidney disease (GFR < 15 mL/min), although they are more likely to die from CV causes. It is established that the prevalence and severity of anaemia increases with progressive loss of kidney function, and anaemia is a strong risk factor for the development of left ventricular hypertrophy, an independent predictor of CV mortality. It is unclear whether anaemia develops in the setting of nephrectomy induced CKD, and whether it leads to an increased risk of CV morbidity. Therefore, we compared cardiac specific morbidity in patients undergoing radical nephrectomy, and assessed our cohort for the presence of anaemia in relation to CKD stage.

Patients and Methods: 91 patients who underwent nephrectomy in Ballarat between 2006–2009 were identified. We collected haemoglobin (Hb) and haematocrit (Hct) results, and yearly Hb/Hct results up to 5 years. Anaemia was defined as per the WHO definition as males having a Hb < 13 g/dL and females < 12 g/dL. We calculated glomerular filtration rate (GFR) using the abbreviated Modified Diet in Renal Disease (MDRD) study equation, and assigned CKD stage as per the National Kidney Foundation classifications. The prevalence of anaemia was stratified by each CKD stage and was analysed using Fisher Exact test. We then assessed all patients for new cardiac events.

Results: Across the entire cohort, the prevalence of anaemia increased as CKD stage increased. At one year, the prevalence of anaemia was highest in patients with CKD stage 4 (66.7%), compared to CKD 3 (28.6%) and CKD stage 2 (15.4%) patients. Due to small patient numbers this difference was not statistically significant (p = 0.215). By five years, the prevalence of anaemia in patients with CKD stage 2 or 3 did not differ significantly (30%, 33% respectively), and we found an increasing prevalence of anaemia in patients with CKD stage 4 over time (up to 100%). Importantly, a number of anaemic patients experienced a cardiac event during the 7-year follow up period.

Conclusions: The prevalence of anaemia is more common in patients who have a higher CKD stage after nephrectomy, and
may be a key risk factor for CV morbidity in nephrectomy patients. The clinical impact of nephrectomy is especially important in patients who develop CKD stage 4, and efforts should be made to aggressively treat, or prevent, anaemia in this group of patients.

160 Urological training – are we doing enough?


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Introduction: The exposure of a urological trainee to surgical procedures may have an impact in producing a competent urological surgeon. We aimed to evaluate the exposure of Urology specialist trainees to transrectal ultrasound (TRUS) and biopsy, radical prostatectomy and radical cystectomy.

Patients and Methods: Data was collected by independent collators from 19 urology units in the North West.

Results: Urology trainees performed 330/625 (53%) TRUS biopsies in 2006 compared with 92/536 (17.2%) in 2010. In 2006, the remaining TRUS procedures were performed by consultants (32.5%), non-training grade doctor (2.4%), radiologist (5.9%) or urology nurse specialist (6.4%), compared with 2010; consultants (20.7%), non-training grade doctor (46.3%), radiologist (4%), urology nurse specialist (11.8%) or SHO (Senior House Officer) (1%).

In 2006, the first named surgeon for radical prostatectomy was a consultant in 205/225 (91.1%) cases recorded, and 20/225 (8.9%) for Specialist Registrars (SpRs). In 2011, the proportion of cases with a consultant as the principal operator had increased to 194/198 (98%), compared with 4/198 (2%) for trainees. In 2006, trainees were first assistants in 172/225 cases (76%), compared with 123/198 (62%) cases in 2010. Other assistant grades in 2006 were as follows: SHO 5/225 (2%), non-training grade doctor 4/225 (1.8%), other 12/225 (5.3%), not recorded 12/225 (5.3%); for 2010 the corresponding figures were: SHO 28/198 (14%), non-training grade doctor 38/198 (19.2%), other 12/225 (5.3%), not recorded 6/198 (3%).

In 2006, SpR grade doctors were recorded as assistant in radical cystectomy procedures in 98/127 (77.2%) cases, in 2010 67/106 (63.2%). Other assistant grades in 2010 were as follows: non-training grade doctor 33/106 (31%), SHO 5/106 (4.7%).

Conclusions: These results highlight the increasing problem of exposure of trainees to procedures. This seems to be true for both major surgeries as the principal operator through to assisting in major procedures and performing diagnostic procedures such as TRUS.

161 An evaluation of internet-based language translation software as a health communication tool with non-English speaking patients

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Introduction: It is common to encounter patients unable to speak English in all fields of medicine. While there are many forms of interpreter services available to most clinicians, these can often be difficult or time consuming to use, particularly at short notice. Google translate presents the ability to instantly translate into and from most clinicians, these can often be difficult or time consuming to use, particularly at short notice. Google translate presents the ability to instantly translate into and from 71 languages other than English. We aimed to assess how online translating software such as this could aid in communicating with patients from non-English speaking backgrounds.

Patients and Methods: Sample consent forms for four common urological procedures were sourced from Queensland Health’s website. The sections of these forms describing risks of the procedure were translated using Google translate into three separate languages (Spanish, Malay, Polish). Colleagues fluent in these languages rated the resulting translations using a scale to assess errors in translation and ability to be understood in original context. Each paragraph was allocated a score corresponding to the poorest translated sentence within that paragraph.

Results: Of the total 147 sample paragraphs translated, 53% were rated as either perfect or containing minor grammatical errors only. A further 28% of paragraphs contained moderate errors, creating potential to be misunderstood, while 14% contained major errors and 2% were incomprehensible. Results proved to be similar across each of the three languages assessed.

Conclusions: Imperfections in translating software make it unsuitable for tasks in which precise communication is critical, such as formal consent. For more casual encounters, where live translation services are not available, online translators may provide an accessible, convenient and reasonable way of communicating with patients of non-English speaking background.
bladder neck incision for post-prostatectomy bladder neck contracture. Severity of incontinence was severe in 58%, moderate in 33% and mild in 8%. Mean follow-up was 6 months. 33% patients had adjustments of the reservoir volume postoperatively. At follow up 66% patients were continent, 17% had mild incontinence, 8% had moderate incontinence all patients improved in regard to their category as well as subjectively. 2 patients had postoperative perineal/genital pain that resolved over several months. One patient developed an infection post operatively and the titanium reservoir was removed, he remains continent with no further evidence of infection.

Conclusions: The ATOMS device is a safe treatment for post-prostatectomy incontinence and is of benefit regardless of the level of severity. Adjustment is frequently un-necessary but is useful and straightforward where required. Patients must be warned about the possibility of post-operative pelvic or genital pain that may persist for several months.

163 Penile fractures in a tertiary UK referral centre – the functional outcome


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Introduction: Penile fractures are mostly diagnosed clinically and preferably repaired to reduce the risk of fibrosis and erectile dysfunction. Concomitant urethral injury is common. Imaging may have a role in locating and marking the injury and this could aid in planning the surgical approach for a repair. The functional outcomes in these patients were reviewed

Methods: 38 patients with a penile fracture were included in this retrospective study. They presented between 2005 and 2013. The mean patient age was 39.6 years old (range 22–72). The median follow up was 15 weeks (range 1–48). Intercourse was the usual mode of injury, but also reported was turning in bed and masturbation. Imaging was used in nearly all cases, with USS being the most common modality (71%); MRI was used in 8 patients (21%); no imaging was done for 3 patients (8%). The surgical approach was influenced by pre-operative imaging in many cases. A transverse penoscrotal incision and a ventral midline incision over a marked defect were most commonly used. A subcoronal incision with de-gloving of the penis was therefore rarely necessary. A perineal incision was needed for 1 patient. The IIIE-5 questionnaire was used in the follow up of 20 patients (53%).

Results: In patients with a confirmed penile fracture, 72% had a unilateral corporal injury (n = 27); both cavernosal corpora were involved in 28% of patients (n = 11). A urethral injury was seen in 34% of patients with a proven fracture (n = 13); of these, 6 patients had a complete transection of the urethra. Partial urethral injuries were undetected/unreported on imaging; complete transections were more commonly detected/reported on imaging. Imaging correctly detected the site of the injury in 80% of the fractures. The fracture was most commonly seen at the penoscrotal junction (76%, n = 29), and therefore a de-gloving approach was unnecessary. Of the 20 patients who were followed up with the IIIE-5 questionnaire, 75% reported good erections, the remaining 25% reported mild, or mild to moderate erectile dysfunction. Straight erections were reported in 95% of the 38 patients. In patients with urethral involvement in the injury, an ascending urethrogram was performed. This showed 1 patient with a leak, which settled with prolonged catheterisation. A stricture developed in 2 patients, requiring a urethroplasty. Uroflowmetry of the remaining patients with urethral injury showed values within the normal range.

Conclusions: Surgical repair of a penile fracture with or without urethral injury has a low morbidity and a good functional outcome. Pre-operative imaging appears to be an accurate tool in the diagnosis of a suspected penile fracture it can assist in the decision to use an alternative surgical approach to the more routinely used de-gloving technique. Urethral injuries, specifically partial injuries, may not always be accurately detected with the use of imaging, perhaps due to under-reporting. Blood at the urethral meatus or bilateral corporal injury should raise the clinical suspicion of an associated urethral injury. Follow up for these patients should include uroflowmetry and possibly retrograde imaging.

164 Creating an interactive iBook ‘common sense urology’ for junior doctors

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Introduction: Many surgical specialties have limited exposure in the undergraduate curriculum. ‘Common Sense Urology’ came about in 2007 as a textbook to assist Nurses, Resident Medical Officers and Junior Registrars to further their knowledge of Urological problems and procedures. Over the last year implementing this textbook as an interactive iBook has been a goal to provide students and professionals with a resource that is simple with interactive multimedia and integration with the internet. While most publishing companies have transcribed their texts to digital format there has been limited progression and implementation of the interactive abilities of devices such as the iPad.

Patients and Methods: Over the last year multimedia including video of surgical procedures, xray, clinical images and pathology have been collated to form an interactive Urology iBook. The textbook was written by Dr Neil S I Gordon and progressively updated with the most up to date evidence available at the time. It has been developed with the use of the iBooks Author on Apple operating systems and has been tested on iPad. The iBook was developed for the iPad because of its ease of use, popularity amongst students and trainees as well as its large screen and multi touch interface.

Results: Initial testing has been carried out with a group of university students from James Cook University, Cairns to assess applicability, interactivity and practical usage in clinic, ward and emergency department scenarios. The ability to use the flow diagrams and the reference images made it an extremely valuable tool for day to day usage. In addition, using the videos of operative procedures was of significant assistance to demonstrate procedures at the time of pre-operative consent to patients.
proposed to undergo those procedures. A multiple choice self directed quiz was implemented for students and residents to test their knowledge once completing a particular chapter.

Conclusions: The addition of interactive iBook is a valuable aid to education of students and medical professionals. This may contribute significantly to improving informed consent for patients as well as medical professionals’ basic knowledge in the field of Urology.

165 Engaging the wider both urological and public community through social media with Facebook and Twitter

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Introduction: Throughout the course of the 21st century society has progressed with the methods that they engage with through Social Media. In an attempt to increase Urological awareness and knowledge throughout the wider community of Cairns, Cairns Urology has been increasing its presence on social media platforms including Facebook and Twitter.

Patients and Methods: The Cairns Urology Facebook page was initially set up in 2008 as a way to engage with James Cook University Medical Students to further their knowledge of Urology and Urological Problems. Since then the page has evolved to engage with the broader Cairns community. Because of this exposure we have had increasing numbers visiting our page as well as international surgeons asking questions through the Facebook site and ‘info’ email address. The Twitter account has been linked to the Facebook account to allow ease of posting information to a variety of sites. Because of the increase in use of Microblogging sites and Social Media use among the wider medical community USANZ implemented a hashtag (#) question service. This has recently been added to the function of Facebook and we have been using this increasingly to gain exposure and inform the community.

Results: Current active users on our Facebook page are 180 with a broad organic engagement of the wider social media of 150 views for single posts. The page has a demographic of 60% men and 40% women with the highest age group between the ages of 25–34. It has engaged users from Australia, Egypt and the United States of America.

Conclusions: Social media is a great way to engage with the wider community regarding health issues. While it is still controversial engaging with health professionals through a medium such as Facebook, it is slowly evolving to become a part of everyday life. However, this does not replace the clinical consultation of professionals.

166 Is laparoscopic radical prostatectomy a suitable treatment modality for high and very high-risk localized and locally advanced prostate cancer?

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Introduction: Traditionally, radiotherapy is the preferred treatment for high-risk localized or locally advanced prostate cancer although radical prostatectomy is considered an option. However there is published evidence that laparoscopic radical prostatectomy (LRP) may be inferior to open radical prostatectomy (ORP) in this regard. We present our series of high risk (HRPC) and very high-risk (VHRPC) localized and locally advanced prostate cancer compared to our D’Amico low/intermediate-risk (DLIRPC) cohort treated with LRP.

Methods: From a prospectively collected database of a single-surgeon series of 168 consecutive patients treated with LRP between September 2009 and April 2013, 38 (23%) and 130 (77%) had D’Amico high risk (DHRPC) and DLIRPC respectively. DHRPC were further sub-stratified into VHRPC (n = 20) defined as G10, G8–9 & >50% cores positive, G8–9 & PSA > 20 ng/mL, ≥cT3 or any PSA > 40 ng/mL (Bittner N et al 2012) and HRPC (n = 18). Pelvic lymphadenectomy was routinely performed for DHRPC patients. Perioperative outcomes included blood transfusions, positive surgical margins (PSM), major complications and long-term biochemical failure and continence rates. Median follow-up was 24 (6–48) months.

Results: Patient demographics, perioperative outcomes and long-term continence and biochemical failure are summarised in Table 1. Clinically palpable disease was present in 22/38 (58%) patients with DHRPC with 8/20 (40%) of VHRPC having clinical T3 disease. Positive surgical margin (PSM) rate for pT2 HRPC and VHRPC was 12.5% & 0% whilst that for pT3 was 30% & 55.6% respectively. Operating times, length of stay and major complication rate were higher in the DHRPC group compared to DLIRPC group due to the addition of pelvic lymphadenectomy in the latter.

Conclusions

Table 1. Comparison of LRP Demographics and Early and Late Outcomes of D’Amico High risk (DHRPC) vs Low/Intermediate Risk Prostate Cancer (DLIRPC) treated by LRP

<table>
<thead>
<tr>
<th></th>
<th>DHRPC (38)</th>
<th>LIRPC (130)</th>
<th>p value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean age (years)</td>
<td>66 (56–74)</td>
<td>62 (40–76)</td>
<td>0.004</td>
</tr>
<tr>
<td>Mean PSA (ng/ml)</td>
<td>13.0 (3.2–41)</td>
<td>7.1 (1.6–16)</td>
<td>0.0001</td>
</tr>
<tr>
<td>Mean operating time (mins)</td>
<td>251 (120–430)</td>
<td>229 (105–440)</td>
<td>0.14</td>
</tr>
<tr>
<td>Mean length of stay (days)</td>
<td>3.9 (1–20)</td>
<td>2.4 (1–21)</td>
<td>0.05</td>
</tr>
<tr>
<td>Open Conversion</td>
<td>2.6% (1/38)</td>
<td>0.8% (1/130)</td>
<td>0.40</td>
</tr>
<tr>
<td>Rectal Injuries</td>
<td>0%</td>
<td>0%</td>
<td>NA</td>
</tr>
<tr>
<td>Blood transfusions</td>
<td>2.6% (1/38)</td>
<td>3.1% (4/130)</td>
<td>1.0</td>
</tr>
<tr>
<td>Major Complications Clavien &gt;3b</td>
<td>7.9% (3/38)</td>
<td>0.8% (1/130)</td>
<td>0.04</td>
</tr>
<tr>
<td>Biochemical failure*</td>
<td>32% (12/38)</td>
<td>6.9% (9/130)</td>
<td>0.001</td>
</tr>
<tr>
<td>HRPC</td>
<td>5.5% (1/18)</td>
<td>1.0</td>
<td></td>
</tr>
<tr>
<td>VHRPC</td>
<td>55% (11/20)</td>
<td>0.0008</td>
<td></td>
</tr>
<tr>
<td>3 month Continence</td>
<td>58% (22/38)</td>
<td>68% (89/130)</td>
<td>0.25</td>
</tr>
<tr>
<td>12 month Continence</td>
<td>80% (20/25)</td>
<td>92% (79/86)</td>
<td>0.14</td>
</tr>
</tbody>
</table>

*PSA >0.20 or salvage radiotherapy for rising PSA (<0.20).
LRP for high and very high risk localized and locally advanced prostate cancer is a reasonable treatment option at our institution as it can be performed safely with low perioperative morbidity. Patients need to be counseled in regards to the possibility of multimodal treatment especially in the locally advanced VHRPC group although in a significant proportion LRP as monotherapy will be sufficient.

167 Laparo-endoscopic single-site (single-port) nephrectomy – is LESS in fact MORE?

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Introduction: Laparoendoscopic Single Site Surgery (LESS)/Single port nephrectomy is considered by some a natural progression or evolution of minimally invasive surgery. Since the initial report of single-port nephrectomy in 2007, numerous reports of urological applications for single port surgery have been described. We describe our initial experience and lessons learnt of two cases with single-port nephrectomy.

Methods: Two patients, Case 1, 20 year-old male, (BMI 34) and Case 2, 34 year-old female, (BMI 24) with atrophic kidneys underwent single-port laparoscopic nephrectomy using Coviden SILS port over a 12 month period. A 3rd patient was excluded from analysis after the SILS port fell onto the floor prior to the start of the case and conventional multiport laparoscopy was performed.

Results: Both cases were completed successfully using single port technique with operative times of 200 and 195 minutes respectively, both with negligible blood loss. Case 1 was discharged on day 1 and case 2 on day 3 postoperatively. There were no significant complications in either patient. In comparison, 12 consultant performed multiport laparoscopic nephrectomies (for masses <60 mm) over the same period had a mean operative time of 91 (50–115) minutes, mean length of stay 2.3 (2–4) days, nil complications and blood loss <150 ml for all cases. Technical modifications between the two single-port cases will be discussed.

Conclusions: In our very limited experience, single port laparoscopic nephrectomy is a feasible procedure for carefully selected patients. However, the technical demands resulting in at least doubling the operative times when compared to conventional multiport laparoscopic nephrectomy with the only clinical benefit of cosmesis challenges the role of this procedure at our institution.

168 Subclonal origin of prostate cancer metastasis with mutator phenotype from a novel MSH2 gene fusion

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Introduction: There has been recent interest in the mechanism behind the elevated risk of prostate cancer in men with Lynch syndrome, where a DNA mismatch repair gene mutation such as in MSH2 is inherited. These cancers may possess more than 10-fold the usual number of mutations and the analysis through single case genomics studies may present clues as to how cancers evolve, metastasise and respond to therapy. Here we present results from whole genome and transcriptome sequencing of paired prostate cancer metastasis and primary tumour samples from a patient with a mutator phenotype implicating a mismatch repair defect. We aimed to determine the clonality of the metastasis in relation to the primary cancer and to characterise the underlying molecular cause of the mutator phenotype in this case.

Patients and Methods: Our patient was a 64 year-old man with Gleason 9 prostate cancer who in 2008 developed metastatic disease at 22 months post-radical prostatectomy. Fresh frozen tumour samples were taken from his original prostatectomy specimen. Similar samples were taken at percutaneous biopsy of a bone metastasis at 35 post-operative months. Tissue samples were cryosectioned and tumour content confirmed by a pathologist prior to mechanical homogenisation and simultaneous DNA and RNA extraction (Allprep Micro Kit, Qiagen). Whole genome sequencing was performed to 40x coverage and transcriptome sequencing to 120 million reads per sample both on the Illumina HiSeq2000 platform. Copy number was called using Allele-Specific Copy number Analysis of Tumours. Genome Analysis Toolkit was used for WGS read alignment and single nucleotide variants called using MuTect.

Results: Subclonal analysis revealed that the metastasis derived from a subclone of the primary tumour accounting for just 30% of the cells, rather than the dominant subclone accounting for 70%. Transcriptome sequencing revealed a novel MSH2-NRXN1 fusion transcript present in both primary and metastasis. WGS data confirmed an intrachromosomal translocation event resulting in a truncated MSH2 gene product and inactivation. A high number of mutations with overrepresentation of C>T and T>C mutations and indels consistent with a mutator phenotype from DNA mismatch repair was seen (35,515 mutations in primary, 64,716 in metastasis). Allele-specific copy number analysis revealed loss of heterozygosity at 2p21, consistent with loss of the other MSH2 allele.

Conclusions: The dominant subclone within the primary tumour did not give rise to the metastasis sampled. The subclonal origin of metastasis suggests that different selection pressures may exist between primary and metastatic sites and optimal therapy and response to that therapy may also differ. We have also shown how the mismatch repair gene MSH2 may be inactivated in sporadic prostate cancer.
Genomic analysis of multiple prostate cancer metastases highlights metastasis from low-grade cancer foci and dynamic adaptations to therapy

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Introduction: Genomic studies of multiple samples of metastatic prostate cancer matched with primary tumour samples from the same individuals can allow inference of evolutionary processes behind cancer progression and provide a biological rationale for various clinical questions. In this single case genomics study of paired samples of primary and serial metastases, taken pre- and post-castration from the same individual, we examined the change in subclonal population within a metastasis in response to androgen deprivation and the origin of metastases in multifocal prostate cancer.

Patients and Methods: A 71 year-old patient underwent radical prostatectomy in 2009 for organ-confined Gleason 3 + 4 prostate cancer. The specimen also contained a separate focus of Gleason 3 prostate cancer. The archival prostatectomy specimen was macrodissected to sample each tumour focus and DNA extracted using the QIAamp DNA FFPE Tissue kit. Whole genome sequencing was performed to 40× coverage and transcriptome sequencing to 120 million reads per sample both on the Illumina HiSeq2000 platform. The Illumina HumanOmniExpress-FFPE BeadChip was used for SNP analysis on archival tissue DNA.

Results: All the fresh frozen samples shared 223 mutations, with 504 unique to the sampled primary cancer, 3200 mutations unique to the mutations and the local recurrence. Subclonal analysis revealed that the local recurrence sample was most closely linked with the post-androgen deprivation metastasis sample, suggestive of metastatic re-seeding from the local recurrence after commencement of androgen deprivation therapy. Analysis of the archival tissue DNA samples from different foci of primary cancer to determine the origin of the cancer metastasis revealed evidence to suggest that the low-grade focus of transition zone adenocarcinoma at least contributed subclones to the various metastatic sites.

Conclusions: Control of local disease may be important in the treatment of metastatic prostate cancer, as it could serve as a reservoir of resistant subclones capable of re-seeding distant sites. The discovery of metastatic subclones from Gleason 6 foci may have implications for focal therapy and suggests that our understanding of cancer biology as it pertains to metastasis is far from complete.
findings at flexible cystoscopy. 62 strictures or contractures were found, four patients had bladder stones, three patients had fistula's and one patient was found to have mesh erosion. Factors that were associated with significant findings at flexible cystoscopy included being male (44% compared to 12% for females), a history of previous genitourinary surgery (54% compared 16% for those without), and a flow rate of 12 ml/s or less (45% compared to 8% for those with flow rates over 12 ml/s). In our study prior radiation therapy or catheterisation were not associated with an increase in significant findings at flexible cystoscopy.

Conclusions: Flexible cystoscopy is a valuable tool in this setting with a high pick up rate in our study. Being male, a history of genitourinary surgery, and low flow rates were associated with significant findings. However being a retrospective study of patients it has selection bias and does not include all patients presenting with these symptoms but those who also had a flexible cystoscopy.

Conclusions: We conclude that real-time robotic TRUS guidance during RALRP is feasible and safe and it provides the console surgeon with valuable guidance, to potentially improve the procedure outcomes. The overall goal of our automatic tool tracking system is to provide an easy to use guidance system so that the surgeons could use the surgical tool itself to point to the ultrasound plane and remotely manipulate the imaging plane.

Introduction: Flexible cystoscopy is an important diagnostic tool for patients with many urological complaints. In 2010 the National Institute of Clinical Excellence (NICE) recommended the use of flexible cystoscopy for evaluation of men with profound lower urinary tract symptoms (LUTs), recurrent urinary tract infections (rUTIs), sterile pyuria, haematuria or pain. However evidence for the investigation of all but haematuria is lacking.

The aim of this paper was to review the use of flexible cystoscopy for LUTs, rUTIs, pain and sterile pyuria to try and determine which patients may benefit from this investigation.

Methods: A retrospective review of all patients undergoing flexible cystoscopy in one year from July 2012 was undertaken. The indication for the flexible cystoscopy was identified as well as findings. We also looked at whether the patients had a history of genitourinary surgery, radiation therapy, a flow rate, and whether they required a catheter or intermittent catheterisation.

Results: A total of 1481 flexible cystoscopies were carried out on 1248 patients in one year. 207 flexible cystoscopies were performed for LUTs (144), RUTIs (44), pain (14) and sterile pyuria (5). 34% of patients had significant

Conclusions: A large proportion of all elective operative time is consumed by non-operative minutes. Inefficiencies existed in turnover of patients as well as over as well as underbooking of patients on elective lists. A multi-parametric approach must be taken to improve operation list utilisation. Parallel processing of patients is now being undertaken at our institution and analysis of our theatre throughput efficiency is ongoing.

Introduction: Theatre efficiency is coming under increased scrutiny as elective theatre operating waitlists continue to grow. Theatre lists account for a large proportion of a hospitals expenditure as well as being a significant source of revenue. Brisk changeover of patients between cases and appropriate booking of cases has paramount importance in maximising efficient utilisation of limited funding.

Patients and Methods: A prospective audit of theatre utilisation was undertaken over a 6 month period. Actual operative minutes were compared against recorded non-operative time. Non-operative time included all time during the allocated theatre session where no surgical procedures were occurring, including anesthetic induction and changeover time. Any delays attributed to the surgical team were removed from the non-operative time so as not to bias the result. Where delays existed the causative factors were identified where possible and recorded.

Results: During the six month period we performed 304 cases split between 283 minor and 21 major operations. A total of 26,850 sessional minutes were available for elective operating. 432 minutes were wasted with late theatre list starts. Elective lists finishing early wasted 1664 sessional minutes over the 6 month audit period. The sessions ran overtime a cumulative 1406 minutes. Actual operative minutes totalled 15,018. Total non-operative minutes totalled 9754.

Conclusions: Radical prostatectomy (RP) remains an excellent treatment choice for localized prostate cancer. A significant potential post-operative complication from this operation is urinary incontinence. The aim of this study is to evaluate the effectiveness of pelvic floor muscle (PFM) training pre- and post-operatively in improving urinary continence post-RP.

Methods: A retrospective analysis of a prospective database of all patients who had robot-assisted radical prostatectomy (RARP) performed by 2 urologists from 2011 to 2013. Pelvic floor muscle (PFM) strength were graded as strong (grade 1),
post-operative. Pelvic floor physiotherapy almost all patients regained their pelvic strength were recorded. The primary endpoint was to evaluate any differences between pre- and post-operative PFM strength. The secondary endpoint was to evaluate the time from pre-operative physiotherapy assessment to time of discharge from physiotherapy following surgery.

**Results:** A total of 141 patients had RARP with mean age of 62.8 years (range 42–77 years). Pathologically Gleason pattern 7 accounted for 59% of patients with overall 21% positive surgical margins. The majority of the patients 65% (91 patients) pre-operative PFM strength was categorized as strong, followed by 12% (17 patients) and 9% (13 patients) as having moderate and weak strength respectively.

In patients with strong PFM, 76% maintained their PFM and 15% had a weaker PFM following surgery while 8 patients had no physiotherapy follow up. In patients with moderate PFM, 42% were able to improve their PFM to strong, 29% maintained their PFM and 5 patients had no follow up. In the weak group, 62% improved their PFM to either moderate (23%) or strong (39%), 1 patient remained unchanged and 4 patients had no follow up. All 17 patients from the 3 groups who didn’t complete physiotherapy instead followed up with their urologists and had no incontinence issues.

50% of patients were discharged from physiotherapy in less than 3 months. By four months, 90% of all patients were discharged from physiotherapy and only 3% had ongoing review by physiotherapy for at least 8 months. 1 patient required an artificial urinary sphincter for severe urinary incontinence.

**Conclusions:** Urinary continence is influenced by patient, surgical and pathological factors. In this pilot study, almost all patients regained their pelvic floor strength with time and were discharged from physiotherapy 4 months post-operative. Pelvic floor physiotherapy may be an important modifiable patient factor, which can have some impact in improving patients’ urinary continence by strengthening the pelvic floor muscles.

**174 Development of an anastomotic index for prediction of uretero-ileal strictures**

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**Introduction:** Radical cystectomy with urinary diversion is the standard therapy for muscle-invasive urothelial carcinoma of the bladder. Ileal conduit remains the most frequently utilized method of urinary diversion. Uretero-ileal anastomotic stricture is a common and troublesome late complication of ileal conduits.

**Methods:** We retrospectively analyzed patients who had radical cystectomy and urinary diversion with ileal conduit at 3 hospitals (1 public and 2 private) in Melbourne from 2006 to 2012. All patients who had radical cystectomy in the public hospital and the personal series of a single surgeon from 2 private hospitals during that period were included in the study. Each patient’s medical record was reviewed for demographics such as age, gender, body mass index, comorbidities, history of prior chemotherapy, and smoking history. Data was also obtained prior to surgery of haemoglobin level, serum urea and creatinine, and albumin level.

**Results:** Of the 134 patients that had radical cystectomy and ileal conduit formation, 14 patients developed strictures (10.4%). The median age of the patients was 70 years (range 35–85 years). 74% of patients were males, 23% were diabetic and 64% had a history of cigarette smoking.

The median pre-operative serum urea for patients who had no stricture was 6.1 mmol/L while for those with strictures it was 7.2 mmol/L. Two out of 91 patients (2.2%) who had a low index score developed strictures whereas 12 out of 42 (28.6%) with a high index score developed strictures (odds ratio = 17.8, p < 0.001) with a sensitivity and specificity of 85.7% and 74.8% respectively.

**Conclusions:** This index may be a useful tool for predicting subsequent development of uretero-ileal strictures following radical cystectomy however further validation is required.

**175 Urological Society of Australia and New Zealand’s alignment with the BJUI: a collaborative regional and international success**

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**Introduction:** Urologists, like any specialists within their field, consistently strive for the highest standards of clinical and research practice. Dissemination of clinical outcomes, basic research and ideas both locally and internationally through publications helps achieve this goal. The Urological Society of Australia and New Zealand (USANZ) recognised such importance in 2009 when it moved its official publication from the bi-nationally based ANZ Journal of Surgery (ANZJS) to the BJU International (BJUI).

We conducted a search of literature to investigate the number of urological publications in ANZ in the ANZJS and BJUI with an aim to measure the impact of regional and international exposure resulting from the USANZ decision.

**Methods:** Utilising a combination of several medical subject headings (or MeSH terms) an algorithm was constructed to...
elucidate the number of ANZ urology-based publications, which were included in both the ANZJS and the BJUI between 2009–2013. This data was then collated and statistically analysed for trends.

**Results:** The total number of ANZ publications in the BJUI underwent a notable increase in the ensuing years post the USANZ move to official journal status. Conversely the number of ANZ urological studies in the ANZJS fell. The increase in BJUI publications was most significant between 2010 and 2011. Increases occurred via the USANZ supplement of the BJUI but also within the ‘main journal’.

**Conclusions:** An increasing number of ANZ authors were successful in achieving publication in the BJUI. This outcome is in contrast with a decreasing representation in the ANZJS. This trend reflects a larger international representation of ANZ research within the area of urology and a successful strategic move by the USANZ to enhance the international academic reputation of ANZ urologists.

### 176 The conservative management of renal trauma: a literature review and clinical guideline


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**Introduction:** Over the last 50 years there has been a paradigm shift towards managing increasingly severe renal trauma conservatively. This is because a non-operative approach has been shown to reduce nephrectomy rate, complications, and hospital stay. However, whilst several studies have shown a conservative approach to be successful, there is little guidance as to what this conservative approach should entail. As such there seems to be a wide variation in practice regarding several aspects of the conservative management of renal trauma. In an attempt to standardize this a literature review was performed, and consensus recommendations are made by a multi-disciplinary panel of experienced clinicians.

**Patients and Methods:** A literature review was conducted utilizing Medline, Embase, and AustHealth; relevant articles published between 1980 and 2012 were examined. Based on this literature review and collective experience, recommendations were constructed by a multi-disciplinary panel of experienced clinicians including urologists, trauma surgeons, radiologists, and infectious disease physicians. These recommendations were subsequently modified following a formal review and debate at the Western Australian USANZ 2013 state conference, to represent a consensus of expert opinion. Renal trauma is classified according to the American Association for the Surgery of Trauma (AAST) kidney injury severity scale. Recommendations are graded using the European Association of Urology (EAU) grading scale.

**Results:** Consensus recommendations were reached regarding five key aspects of the conservative management of renal trauma. These were:

1. Initial monitoring, thromboprophylaxis, bed rest, and discharge criteria
2. Antibiotics
3. Imaging
4. Follow-up
5. Advice on return to activity

The recommendations will be presented in full at the conference.

**Conclusions:** Consensus recommendations were reached based on best available evidence and a consensus of opinion amongst experienced clinicians. These recommendations may help standardize the conservative management of renal trauma.

### 177 The urological sequelae of previous radiotherapy: a 5-year study of admissions and interventions at Fremantle Hospital

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**Introduction:** Radiotherapy is a common treatment for several pelvic malignancies, which carries a significant risk of urological complications. Evidence on the extent of the burden of these sequelae on urology departments is largely anecdotal. A retrospective audit was therefore conducted to evaluate the impact of radiotherapy-related complications have on an inpatient urology service.

**Patients and Methods:** All patients who attended Fremantle Hospital between 2007 and 2011 for urological reasons directly attributable to previous radiotherapy were identified retrospectively from hospital records; their notes and electronic records were reviewed. No patients were excluded from the study. Departmental records for the same period were analysed and compared.

**Results:** Thirty-three patients were identified; the majority (79%) of these had received radiotherapy for prostate cancer, with the remaining patients having had bladder (9%), cervical (6%) or colorectal (6%) cancer. The majority of patients (79%) underwent radiotherapy after 1999. Twenty-five patients were treated for radiation cystitis, 16 were treated for stricture disease, and 1 was treated for a recto-vesical fistula. For patients with radiation cystitis, 9 patients required a total of 223 sessions of hyperbaric oxygen therapy; 95 units of blood were transfused. Ninety-six individual admissions were identified, with a total length of stay of 402 days; this represents 2.6% of all urology bed days over the 5-year period. Average length of stay was 4.2 days in the studied population, as compared with 2.3 days for the department as a whole. Reasons for admission were for elective procedures (49%), haematuria (32%), sepsis (10%) and retention (8%). Eighty-two per cent of patients required at least one operation to treat their complication. Sixty-six procedures were conducted during these admissions, the majority of which (71%) were cystoscopy procedures. Additional procedures of note included 3 cystectomies, 2 laparotomies, 2 embolisations, a urethrolapty, a urethral ligation, and an internal iliac artery ligation.

**Conclusions:** Approximately 3% of urology bed days are used in the treatment of complications of radiotherapy. Patients with complications of radiotherapy have a longer average length of stay, and are very likely to require operative intervention. Radiation cystitis and stricture disease are the commonest urological complications encountered. In a urology department with 1300 admissions per annum, approximately 1 procedure was carried out per month for radiotherapy-induced complications.
178 Analysis of gene expression influenced by EphB4 identifies integrin β8 as simultaneously regulated in prostate cancer cells

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Introduction: Our lab is interested in the role of EphB4 as a key player in prostate cancer. EphB4 is a receptor tyrosine kinase that is overexpressed in 66% of prostate cancers and has been shown to play vital roles in migration and invasion in a variety of epithelial tumours. Little is known about the intrinsic pathways EphB4 is involved in to promote tumour progression and a key objective of this study was to define the molecular networks that EphB4 regulates in prostate cancer. One of the key regulated genes identified was Integrin β8 (ITGB8). The integrin receptors play an essential role in the communication between the cell and the extracellular matrix, influencing adhesion, migration and invasion of cancer cells. Whilst several members of the integrin family have been a focus in prostate cancer, nothing is known about the role of ITGB8 in this devastating disease.

Methods: We employed transient knockdown of EphB4 in LNCaP cells followed by cDNA microarray analysis, coupled with bioinformatic approaches, to identify genes regulated by loss of EphB4. Validation experiments were carried out on selected target genes using real-time PCR and western immunoblotting to confirm their differential, EphB4-mediated expression.

Results: The microarray analysis revealed that 260 genes were upregulated and 300 were downregulated when EphB4 was knocked down by 70% in LNCaP prostate cancer cells. Gene ontology analysis showed the process of cell adhesion as being most significantly enriched. Several integrins appeared to be deregulated, but ITGB8 was the top hit with a 29-fold down-regulation in EphB4 siRNA treated cells, compared to control cells (treated with a scrambled, control siRNA). Strikingly, as might be expected, overexpression of EphB4 led to a simultaneous increase in ITGB8 expression. Analysis using the Oncomine clinical cohort database revealed that ITGB8 and EphB4 are both highly expressed in prostatic intraepithelial neoplasms with decreasing expression in prostate carcinomas and basal expression in metastases.

Conclusions: We have discovered that EphB4 regulates ITGB8 expression and that they are concomitantly expressed in prostate cancer and that both are highly expressed in PIN. This suggests that EphB4 and ITGB8 could be involved in the onset of prostate cancer and targeting these two proteins synergistically may impact on prostate cancer progression.

179 Comparison of retropubic versus perineal approaches for radical prostatectomy

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Introduction: Multiple therapeutic options are available for localized prostate cancer. Open radical prostatectomy can be carried out with two approaches, retropubic and perineal. Previous studies have found similar efficacy in the results. The aim of the present study was to examine a contemporary series of the two approaches in comparison to each other in a single centre with long term oncological outcomes.

Methods: All patients that were diagnosed with prostate cancer on prostate biopsy between 2000 and 2003, who underwent radical prostatectomy were included. A retrospective analysis was performed on these patients approximately 10 years post surgery. The primary outcomes were biochemical recurrence and prostate cancer specific mortality. The groups were also compared for age, Gleason score, PSA and pathology outcomes.

Results: 954 patients were diagnosed with prostate cancer. Seventy two patients underwent retropubic prostatectomy whilst 87 had perineal prostatectomy. Surgery was performed by two different surgeons and the patients were similar amongst the two groups. However, the median age was significantly lower in the retropubic group, 61 (46–71) years, compared to perineal group 65 (49–79) years. There were no significant differences in biochemical recurrence and prostate cancer specific survival. The pathological markers such as prostate weight and margin status were also similar.

Conclusions: Long term outcomes were comparable in both approaches for radical prostatectomy in localized prostate cancer. Appropriate patient selection and surgeon preference are key factors in determining which open technique is utilized.

180 Everolimus for tuberous sclerosis complex-associated angiomyolipomas: a case series

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Introduction: Renal angiomyolipomas (AMLs) develop in up to 80% of Tuberous Sclerosis Complex (TSC) sufferers and renal complications are second only to CNS complications as a cause of mortality and morbidity due to haemorrhage and destruction of renal parenchyma. There is currently no national consensus on the management of TSC-associated AMLs and practice is variable. Current options for larger lesions include observation, angio-embolisation, nephron-sparing procedures and total nephrectomy. mTOR-inhibitors such as Everolimus have gained favour internationally as first-line therapy to prevent continued growth of AMLs based on encouraging results from the recent EXIST-2 randomised controlled trial which showed an AML response rate of 42% with Everolimus versus 0% in the placebo arm. We aimed to evaluate the efficacy of Everolimus in a prospective case series of three patients with precarious, bilateral AMLs who were referred to our centre for consideration of aggressive surgical intervention.

Patients and Methods: Three TSC patients with high-risk feature renal AMLs underwent open-label treatment with Everolimus in the outpatient setting of a tertiary teaching hospital. All patients were followed with regular clinical reviews with a consultant nephrologist, laboratory tests including Everolimus levels and 3-monthly MRIs to assess the progress of the ‘principle’ AML (defined as AML with the
largest area in each kidney on pre-treatment imaging, as determined by a radiologist). The main outcome of interest was radiological evidence of principle AML regression, and secondary points of interest were drug-related adverse effects and other notable clinical benefits.

Results: Radiological improvement in the principle AMLs were observed on the 6-month imaging in two of our patients while one patient's AMLs remained stable. The adverse effects were generally consistent with those reported in the EXIST-2 trial. Secondary benefits including improvement in the dermatological and neurological manifestations of TSC were also seen.

Conclusion: The results of our small case series support the findings of the EXIST-2 trial and highlight the potential benefits, side effects and other considerations in using Everolimus to treat AMLs in this phenotypically variable disorder. Clinicians should be familiar with these aspects of Everolimus therapy in order to appropriately select and counsel candidates given that m-TOR inhibitors are likely to be approved in Australia for this indication in the near future.

181 Outpatient letters: when are they sent?

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Introduction: When a patient is seen in an outpatient clinic in a large tertiary referral hospital, correspondence from the treating clinician to the patient's referring GP helps communicate clinical findings, investigation results and planned management. However, not all patient visits result in an outpatient letter being sent. The aim of this study was to assess the completion of letters to GPs at our Uro-Oncology clinic, and factors affecting this.

Patients and Methods: Using the outpatient bookings system, patients attending the weekly Uro-oncology clinic at Austin Health between January and June 2013 were identified. A retrospective chart review was carried out to assess whether the outpatient visit led to a dictated letter being sent to the GP. Factors potentially impacting letter dictation, including which doctor saw the patient, how many patients were seen at that clinic, the diagnosis, stage of treatment and inclusion in the subsequent multi-disciplinary meeting (MDT) were recorded. Associations were analysed using logistic regression, with statistical significance set at p < 0.05.

Results: Over 25 clinics, 1012 outpatient visits were recorded, with 662 (65.4%) resulting in a letter being dictated. Patients were more likely to have a letter dictated at the time of progression (70%) or review after specific investigations (91%), but less likely at the first post-treatment review (57%) or pre-treatment (51%), p < 0.0001. Significant variations were also noted in the proportion of patients for whom each doctor dictated a letter, ranging from 13.5% to 100% (p < 0.0001), although there was no significant variation by seniority level. Inclusion in the MDT, number of patients seen at clinic and time to next appointment (Odds ratio [95% Confidence interval] 0.39 [0.23–0.66], 0.92 [0.87–0.97] and 1.09 [1.03–1.15]) were other factors that had a significant impact on letter dictation. On multivariate analysis, stage of treatment and number of patients seen no longer remained significant predictors of letter dictation, but treating doctor, MDT inclusion, time to next appointment and discharge from clinic all were.

Conclusions: At our Uro-Oncology clinic, about two-thirds of patient visits are followed by dictated correspondence to GPs. Analysis of factors leading to a letter being dictated suggest that specific investigation results, evidence of cancer progression and discharge from clinic are well communicated to GPs. Clinic workload, doctors preferences and clinical complexity warranting MDT discussion may preclude letter dictation.

182 Da Vinci robotic partial nephrectomy in South Australia

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Introduction: Nephron sparing procedures are current standard for treatment of small renal masses less than 4 cm. Da Vinci robotic partial nephrectomy (RPN) is emerging as an alternative to other surgical methods and being performed in many centres worldwide and in Australia.

Patients and Methods: The aim of our study was to present the South Australian experience in Da Vinci RPN. We reviewed prospectively collected data for the RPNs performed at The Royal Adelaide Hospital between July 2010 and March 2013. Main parameters recorded were estimated blood loss (EBL), warm ischaemia time (WIT), mean operative time (MOT), blood transfusion, preoperative biopsy, surgical margin status, conversion to open procedure, length of stay (LOS). The complexity of the lesions was retrospectively scored using R.E.N.A.L. nephrometry scoring system.

Results: 25 patients, mean age 65.4 ± 13.19 (29–91). Male to female ratio 16:9. There was one death within the study period. There were no blood transfusions or open conversions in the series.

Preoperative biopsy of the renal mass was performed in 8 patients and the biopsy results correlated 100% with the final histopathological diagnosis. 6 (24%) were oncocytomas, 19 (76%) were renal cell carcinomas (RCC). RCCs were mostly of clear cell type (11), and evenly distributed papillary and chromophobe types (4 each).

MOT was 159 ± 34.51 min (90–240), WIT was 21 ± 6.83 min (12–37), EBL was 217 ± 219.87 ml (20–750). 5 patients had positive surgical margins. LOS was 3.4 ± 1.83 days (1–9).

R.E.N.A.L. nephrometry score (18 patients) was – low complexity in 72% and moderate complexity in 28%, mean 5.6 ± 1.84 (4–9).

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Legal problems of regenerative medicine

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Introduction: Clinical trials of the regenerative technologies as well as their implementation in medical practice require the timely creation of an appropriate legal basis. At present the legal aspects of regenerative medicine are not well developed, which makes it necessary to conduct research in this area.

Patients and Methods: The analysis of the legal and ethical problems related to the activities in the field of regenerative medicine. The studied sources related to the legal regulation of issues of regenerative medicine.

Results: The study of the problems of regenerative medicine shows that none of the countries that adopted these technologies has not escaped the legal and ethical issues, however, in terms of national legislation these problems have their own features. In Russia the development of the relevant legislation is necessary because of the gaps in the legal regulation of a number of aspects related to the activities in this area.

Conclusions: Clinical trials and application of the regenerative medical technologies in practice require a special legal regulation. Activities in this area may be involved in both criminal and civil proceedings. The problems of regenerative medicine require a complex discussion. Its legal basis should be developed in conjunction with doctors, lawyers, biologists and a number of other professionals involved in this field.

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Investigation of tumour necrosis factor receptor-associated factor 1 expression in renal cell carcinoma from a single asian centre


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Introduction: Tumour necrosis factor receptor-associated factor-1 (TRAF-1) is a protein involved in the regulation of inflammation, apoptosis and proliferation. We have previously found decreased TRAF-1 in a renal cell carcinoma (RCC) patient cohort from Princess Alexandra Hospital in Brisbane, compared with normal kidney. A Malaysian patient population was added as a multi-centre study. The aim was to compare TRAF-1 expression in normal kidney, RCC tissue, and serum from control and RCC patients from the University of Malaya Medical Centre (UMMC).

Patients and Methods: The formalin-fixed, paraffin-embedded tissue of 69 clear cell RCC patients from UMMC and the paired normal kidney were stained with TRAF-1 (immunohistochemistry) and analysed using Aperio ImageScope morphometry (positive pixel counts/PPC) to compare TRAF-1 expression. The ELISA method was employed to determine TRAF1 in serum from 15 ccRCC patients and 15 healthy people. Statistical analysis was carried out using ANOVA, Tukey’s post-hoc (tissue) and Mann-Whitney U-test (serum).

Results: In tissue samples, TRAF-1 expression was lower in ccRCC (82591 ± 5646) (p < 0.05) compared with normal kidney (168512 ± 6166 PPC). TRAF-1 in serum from ccRCC patients was increased compared to normal serum (202.28 ± 74.58 vs 50.63 ± 13.56 pg/ml; p = 0.012).

Conclusions: Lower TRAF-1 in ccRCC, seen in our previous Australian cohort, was confirmed. Significantly-increased serum TRAF-1 may indicate the protein is
actively secreted from developing ccRCC. Serum TRAF-1 may be a useful non-invasive indicator of RCC development.

186 Pathological changes of the urinary tract from chronic oral ketamine and its reversibility in a rat model

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Introduction: Prolonged ketamine abuse can cause urinary tract damage but the reversibility of these damages is still unclear. We aim to determine the histopathological effects of oral ketamine in the urinary tract using rat models and the reversibility of these changes after ketamine cessation.

Methods: Rats (N = 8 in each group) were fed by oral gavage with 200 mg/kg of pure ketamine for 4 and 12 weeks, respectively. Control rats were given distilled water. Half of the rats were sacrificed immediately after the feeding period for examination while the cessation groups were taken off ketamine for 8 weeks before necropsy. Histopathological examination was performed on the bladder and kidney.

Results: Rats treated with ketamine for 4 weeks showed inflammatory changes in the bladder but not in the kidney. After ketamine cessation, there was no bladder inflammation in all rats. Rats treated with ketamine for 12 weeks showed bladder submucosal inflammatory changes and interstitial nephritis. These pathological changes were also reversed after ketamine cessation.

Conclusion: Inflammatory changes in the bladder precede the changes in the kidneys. Pathological changes from short and intermediate ketamine exposure were reversible upon ketamine cessation.

187 Hypoxia Inducible Factor 1 alpha (HIF1α) increases risk of metastases in men with locally advanced high risk prostate cancer

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Introduction: HIF1α has been implicated as an independent predictor of progression to metastasis in men who have had radical prostatectomy for prostate cancer. However, the effects of HIF1α in locally advanced PC are unknown. We aim to investigate the effects of HIF1α in development of metastases in locally advanced high risk prostate cancer.

Methods: All patients with D’Amico high-risk disease treated at Austin Health with primary androgen deprivation (ADT) ± radiotherapy between 2006 and 2011 for whom tissue was available for analysis were included in the study. Forty-nine samples (74% from transurethral resection and 26% from Transrectal needle biopsy) were obtained and were stained for HIF1α. Eighteen men who had metastases at the time of histological diagnosis were excluded, since the end point of the study was progression to radiologically identifiable metastases. Patients were followed in a urologic oncology clinic and underwent routine bone scan on a yearly basis or earlier if there was any suspicion for disease progression. Time to metastases was assessed using Cox-proportional hazard method, adjusting for age, Gleason score, PSA at diagnosis and time from clinical diagnosis to obtaining tissue.

Results: Of the 31 men who met the inclusion criteria, the average age was 71.4 years and histologic assessment demonstrated 58% Gleason 9–10 and 42% Gleason 8 tumours. HIF1α was over-expressed in 44.8% of tumours. On a univariate analysis, tumours with evidence of HIF1α over-expression had an increased risk of progression to metastases (Hazard ratio 10.9 (95% CI 1.1–104), p = 0.038).

Conclusion: HIF1α over-expression appears to increase the likelihood of developing metastases in locally advanced high risk prostate cancer treated with ADT ± radiation therapy. Larger scale studies are warranted to investigate these findings.

188 Oncological outcomes of upper tract urological cancers in patients progressing to end-stage kidney disease post nephrectomy

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Royal Melbourne Hospital, Melbourne, Australia

Introduction: While renal cell carcinomas (RCC) are more common, transitional cell carcinomas (TCC) of the upper urinary tract are frequently associated with a poor prognosis. We aimed to investigate the oncological outcomes of patients presenting with end stage kidney disease (ESKD) post nephrectomy for upper tract cancers.

Patients and Methods: All patients referred to the nephrology unit at RMH with progression to ESKD post nephrectomy for upper tract cancers from 2000–2013 were identified using Nephworks, a prospectively maintained database. Patients with partial nephrectomies were excluded. Patient demographics, co morbidities and survival and were recorded and any missing tumour histopathological characteristic data were completed using hospital medical records. Statistical analysis was conducted using Chi-squared and Fishers tests with Cox proportional hazards model and Log rank test being used for survival analyses.

Results: 71 patients met inclusion criteria; 29 (41%) of whom had progressed to requiring renal replacement therapy. Median age was 61 years (33–88 years) at diagnosis with 72% being male. RCCs were the most frequent histological diagnosis (73%) with the remainder being transitional cell carcinomas TCCs. Staging and grading data was available in 87% of cases. Patients who had nephrectomies for TCCs had higher stage (53% vs 17%, p = 0.014) and higher grade (71% vs 33%, p = 0.011) disease compared to RCCs. There were 10 cancer-specific deaths in these patients, with TCCs having higher cancer-specific
mortality rates on univariate (Hazard Ratio (HR) 6.1 (95% CI 1.7–21.7) and multivariate analyses (HR 10.4 (95% CI 1.8–60.3, p = 0.009), adjusted for grade, stage and dialysis status.

Conclusions: Patients who present with ESKD post nephrectomy for TCC have worse cancer specific outcomes compared to those who have RCC. Larger studies are warranted to further investigate these findings.

189 Current practice in screening for prostate cancer in primary care


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Introduction: Despite the controversies, increasing numbers of men are screened for prostate cancer (PC). We aimed to examine the current practice of PSA screening amongst general practitioners (GPs) in Australia.

Patients and Methods: Postal and electronic surveys were distributed amongst 438 GPs throughout Australia.

Results: Response rate was 34% (149/438). 81% GPs believed PSA testing was at least ‘somewhat effective’ in reducing PC mortality. 30.8%, 21.8% and 7.5% of GPs recommended PSA screening annually, bi-annually and 5-yearly, respectively, in an average risk man between the ages of 49–69, while 19.5% did not recommend screening. 22% recommended annual screening in men more than 75 years of age.

USANZ (82.7%) and RACGP (80.1%) recommendations were thought to be at least ‘somewhat useful’. Although reference ranges for PSA tests (age-related, free:total) were felt to be useful, majority (72.4%) found it easier to refer to an urologist due to the confusion.

Conclusions: Current PSA screening practice varied between GPs and different PSA tests appear to add more confusion to the current practice.

190 Genetic instability in familial prostate cancer

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Introduction: Family history is a well established risk factor for prostate cancer. BRCA2 mutation carriers have been shown to present with more aggressive prostate cancer and have a poor survival. Recent advances in laboratory and bio-informatics is enabling us to investigate and understand the pathways involved in tumour genesis and potentially identify new clinical markers for treatment.

Patients and Methods: Our group has recently performed whole genome Copy Number Analysis on tumour and normal tissue from BRCA2 carriers and BRCAX individuals and identified a number of areas of genetic instability. Using the same tumour tissue DNA for further somatic mutation analysis, we also utilized a custom built targeted gene panel that contains numerous common ‘hot spot’ tumour suppressor genes. Many of the genes represented on the targeted Illumina gene panel are linked to new ‘actionable’ mutations which are defined as mutations that predict responses to targeted therapies.

Results: Some of the areas displaying copy number instability are within the regions of the genome where known tumour suppressor genes are located such as chromosome 8, 10 and 13. Work done previously in the general population has led to the proposition of a chain of genetic events from early to metastatic recurrence. The increased frequency of copy number aberrations (CNA) associated with aggressive disease in the BRCA2 population confirms that this is a high risk population.

Using the Illumina Panel several deleterious mutations in known tumour suppressor genes such as TP53 were detected in BRCA2 patients.

Conclusions: BRCA2 carriers and BRCAX individuals represent a high risk group of patients in regards to lethal prostate cancer. We now have a better understanding of the genetic events that confer this risk.

191 Post operative follow up of T1 renal cell carcinoma: a validation audit of existing guidelines

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Introduction: Low stage renal cell carcinoma (RCC) is increasingly commonly diagnosed. There are a number of guidelines but no consensus on the recommended postoperative surveillance of patients who undergo surgical excision of these lesions.

Patients and Methods: A retrospective audit identified 34 patients who underwent radical or partial nephrectomy for T1 RCC at the Redcliffe Hospital between July 1999 and June 2011. We compared the existing surveillance recommendations from the American Urological Association (AUA) and European Association of Urology (EAU) with respect to cost and efficacy of diagnosing recurrences in our cohort of patients.

Results: Within our cohort five patients developed recurrent RCC: one local recurrence; three contralateral metachronous recurrences; and one metastatic recurrence. Time from operation to recurrence ranged from 9 to 80 months. Applying the AUA surveillance guidelines to our cohort resulted in detection of one of the five recurrences. In contrast, applying the EAU surveillance guidelines resulted in detection of four of the five recurrences.
applied to our cohort, were more efficacious at detecting postoperative recurrences than the AUA guidelines. A larger patient cohort is required to demonstrate a statistically significant difference.

192 Xanthogranulomatous pyelonephritis: are there any predictors to minimize surgical morbidity?

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Introduction: Xanthogranulomatous pyelonephritis (XGPN) is associated with increased operative difficulty and surgical complications. Preoperative and intraoperative prediction of level of difficulty can guide the surgeon to either consider the option of open approach straight away or to proceed with elective as opposed to emergency conversion in case of laparoscopic approach, thereby minimizing the complication rates and stress to the operating team. This study is an attempt to identify such factors.

Patients and Methods: For preoperative prediction of difficulty, we prospectively performed CECT of the select group of patients who had a very high clinical index of suspicion for possible XGPN and were planned for simple nephrectomy. For intraoperative prediction; operative time, operative technique, blood loss and complications were recorded. The study was performed between January 2006 and August 2013.

Results: Eighty nephrectomies were performed with suspicion of XGPN on CECT and 65 patients ultimately had a pathologic diagnosis of XGP. Laparoscopic nephrectomy was performed in 28 patients (group I) and by the open approach in 30 patients (group II). Seven cases (group III) from the laparoscopic group were converted to the open technique. Of the factors examined; grade 2 or more of XGPN on the preoperative CECT, a longitudinal renal length greater than 12 cm (group I → 7.2 ± 1.8 cm, versus group II → 13.6 ± 1.5 cm; p < 0.05) and time to access the renal vessels (group I → 32 ± 18 min, versus group II → 91 ± 11 min; p < 0.05) were associated with a higher conversion rate.

Conclusions: Laparoscopic nephrectomy for the treatment of xanthogranulomatous pyelonephritis is feasible and associated with low levels of morbidity provided one understands the spectrum of presentation in XGPN and adopts tailored approach. Preoperative CECT can predict and guide as to which patients can undergo safe laparoscopy (grade 1 XGPN) or where the direct open surgical approach (grade 3 XGPN) should be preferably undertaken.

Grade 2 XGPN and longitudinal renal length of more than 12 cms represents the grey zone and one should have a low threshold for elective conversion during laparoscopy. In case, the laparoscopic approach is chosen for grade 3 cases, the retroperitoneoscopic approach is suggested where the need for conversion could be decided early without reflecting the colon and avoiding potential injury to other adjacent vital structures. Extrapelvic nephrectomy should be avoided in open approach and the sub capsular approach preferred.

### Table 1. Demographic data

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<th>Group</th>
<th>Group II</th>
<th>Group III</th>
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<td>30</td>
<td>7</td>
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<tr>
<td>Age in years</td>
<td>41.5 ± 8.2</td>
<td>42.5 ± 9.6</td>
<td>42.0 ± 8.4</td>
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<td>BMI</td>
<td>26.2 ± 4.1</td>
<td>25.6 ± 4.2</td>
<td>24.8 ± 7.2</td>
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<tr>
<td>Gender Male</td>
<td>12 (42%)</td>
<td>10 (34%)</td>
<td>3 (48%)</td>
</tr>
<tr>
<td>Gender Female</td>
<td>16 (58%)</td>
<td>20 (66%)</td>
<td>4 (52%)</td>
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<td>Side Right</td>
<td>15 (55.2%)</td>
<td>16 (52%)</td>
<td>1 (15%)</td>
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<tr>
<td>H/o diabetes</td>
<td>20 ± 22</td>
<td>22 ± 14</td>
<td>4 ± 12</td>
</tr>
<tr>
<td>H/o pain</td>
<td>23 ± 6</td>
<td>26 ± 4</td>
<td>6 ± 3</td>
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<tr>
<td>H/o fever</td>
<td>18 ± 4</td>
<td>20 ± 4</td>
<td>4 ± 3</td>
</tr>
<tr>
<td>Renal insufficiency</td>
<td>12 ± 4</td>
<td>14 ± 2</td>
<td>2 ± 2</td>
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<td>(S creatinine &gt; 1.5 mg%)</td>
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<tr>
<td>Positive urine culture</td>
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</tr>
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<td>Calculus disease</td>
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<tr>
<td>Nephrostomy placement</td>
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*Significant.

### Table 2. Pre-operative, intraoperative and postoperative data

<table>
<thead>
<tr>
<th>Group</th>
<th>Group II</th>
<th>Group III</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number</td>
<td>28</td>
<td>30</td>
<td>7</td>
</tr>
<tr>
<td>Pre op CT grade</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Grade 1 → 25</td>
<td>Grade 1 → 14,</td>
<td>Grade 1 → 0,</td>
<td>0.0346*</td>
</tr>
<tr>
<td>Grade 2 → 2</td>
<td>Grade 2 → 18,</td>
<td>Grade 2 → 2,</td>
<td></td>
</tr>
<tr>
<td>Grade 3 → 1</td>
<td>Grade 3 → 5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Surgical time (min)</td>
<td>122.5 ± 15.8</td>
<td>215.6 ± 38.3</td>
<td>245.7 ± 35.6</td>
</tr>
<tr>
<td>Blood loss (cc)</td>
<td>191 ± 96.5</td>
<td>300.2 ± 142.4</td>
<td>345.5 ± 67.8</td>
</tr>
<tr>
<td>Hospital stay (days)</td>
<td>2.1 ± 1.4</td>
<td>4.3 ± 2.3</td>
<td>3.9 ± 2.5</td>
</tr>
<tr>
<td>Renal length (cm)</td>
<td>7.2 ± 1.8</td>
<td>13.6 ± 1.5</td>
<td>14.2 ± 2.5</td>
</tr>
<tr>
<td>Time to secure renal vessels (min)</td>
<td>32 ± 18</td>
<td>91 ± 11</td>
<td>84 ± 15</td>
</tr>
<tr>
<td>Final histopathology</td>
<td>Focal (F) → 26,</td>
<td>F → 4,</td>
<td>F → 1,</td>
</tr>
<tr>
<td>Diffuse (D) → 1,</td>
<td>D → 23,</td>
<td>D → 6,</td>
<td>P → 3</td>
</tr>
<tr>
<td>Diffuse with (P) perinephric fat → 1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mean operative time (min)</td>
<td>228</td>
<td>155</td>
<td>289</td>
</tr>
<tr>
<td>Mean EBL (mL)</td>
<td>383</td>
<td>350</td>
<td>400</td>
</tr>
<tr>
<td>Mean hospital stay (days)</td>
<td>3.8</td>
<td>8.2</td>
<td>7.8</td>
</tr>
<tr>
<td>Major complications (%)</td>
<td>10</td>
<td>20</td>
<td>25</td>
</tr>
</tbody>
</table>
Role of pre-operative duplex ultrasonographic to parameters predict functional maturation of wrist radio cephalic arteriovenous fistula for hemodialysis access

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Introduction: Radio-cephalic arteriovenous fistula (RCAVF) is the first choice for native AVF. Pre-operative vessel assessment with ultrasonography has been reported to enhance the outcome of autogenous AVF but data regarding its predictive value for functional maturation of RCAVF is scanty. We aimed to determine the role of preoperative duplex ultrasonography for prediction of functional maturity of radio-cephalic fistula in wrist.

Materials and Methods: The data from 173 patients were analysed. The estimated Duplex variable included size, patency and continuity of cephalic vein and size, peak-systolic velocity and wall calcifications in radial artery at wrist. The subjects underwent RCAVF creation and were reviewed 6–8 weeks post-procedure for adequacy of maturation. Doppler variables between successful and failed maturation groups were compared.

Results: Successful functional fistula maturation was noted in 138 (80.9%) patients. The cut-off values for radial artery diameter, cephalic vein diameter and peak systolic velocity for maximal chance of successful maturation of RCAVF were 2.3 mm, 2.2 mm and 32.8 cm/s respectively. Vascular calcifications were detected pre-operatively in 15 diabetic patients and 9 (60%) had fistula failure.

Conclusion: Pre-operative Duplex USG can provide a good prediction on functional maturation of RCAVF. Vascular calcifications were associated with high risk of maturation failure in diabetics.

The crucial role of the single assistant in four arm robotic radical prostatectomy - a video analysis

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*St. Vincent’s Hospital, Sydney, Australia; † The Canberra Hospital, Canberra, Australia

Introduction: This video paper aims to describe the technical aspects, role, and responsibilities of a single surgical assistant for both standard and complicated cases. A review of the literature yields descriptions of surgical technique and case series using three or four arm systems with two assistants, but no characterisations of the procedure employing only one assistant. We aimed to create an instructional video demonstrating some of the key manoeuvres required for the procedure. By utilising multimedia, we aimed to improve the educational value and accessibility of the paper.

Patients and Methods: Multiple robotic radical prostatectomies were observed and analysed. Critical roles were identified in consultation with both the operating surgeon and assistants. All operative footage was externally recorded. An external HD video camera and a head mounted HD camera were used to record the assistant. Recordings of past cases were examined retrospectively for further footage. Patient consent was obtained for all cases.

Results: Pre-operatively, the assistant is integral for patient preparation including positioning, robot docking, and port insertion. Assistance during this time is crucial for patient safety, ergonomic and operative efficiency. Specifics and video are provided.

Intra-operatively, the assistant’s role is multifactorial. The assistant requires an intimate awareness of the surgeon’s field of view as well as the patient’s anatomy in order to avoid obstruction of the camera, instrumental hindrance, and to avoid damage during blind insertion and removal of instruments. Proficiency at instrument changes and troubleshooting is also important. Techniques in both complicated and uncomplicated patients are discussed with accompanying video. During analysis, the importance of the role of non-verbal communication became apparent. Two-way gesture based communications between the surgeon and assistant demonstrate areas of bleeding, desired direction of retraction, and clip placement. Sympathetic and anticipatory assistance is required. A competent assistant also provides an added layer of security as a second set of eyes monitoring potential problems and equipment settings.

Conclusions: The single assistant in four arm robotic prostatectomy plays a crucial role for operative safety and efficiency. Non-verbal communication is also a central component for experienced teams. We believe that video analysis represents a useful training tool and that careful attention to the role of the assistant helps to minimise operative time and potential complications.

Contemporary perceptions of relative cancer risk factors amongst Australians

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Introduction: The current NSW school syllabus makes no mention of cancer, despite it being a leading cause of death and morbidity, with 1:2 Australian men & 1:3 Australian women affected by the age of 85. The risk of developing urothelial cancer (UC) before 85 is 1:69. UC, caused by smoking in 50% of cases, carries significant morbidity, mortality & economic cost. Anecdotally, awareness of its incidence and preventable risk factors is poor. Unfortunately the drop in smoking rates amongst Australians has plateaued. In this present study a survey of cancer awareness was created – initial distribution has been through social media with widespread staged distribution to follow. The aim is to 1) assess for suitability of social media to distribute a cancer survey and 2) assess for knowledge deficits on cancer incidence/modifiable risk factors. The ultimate goal is to use this evidence to shift the school curriculum to include targeted education for primary cancer prevention at an age before unsafe habits develop.

Materials and Methods: A 30-part anonymous questionnaire was developed & extended the UK Cancer Awareness Measure, a validated questionnaire for assessing unprompted cancer awareness. A pilot cross-sectional survey was distributed through social media in Sept–Oct 2013,
Is there a role for ultrasound in acute scrotal pain: a 3-year audit of acute scrotal pain presentations to a multi-campus tertiary hospital

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Introduction: It is accepted that scrotal exploration should be undertaken if testicular torsion is suspected. We set out to assess the incidence of torsion in patients undergoing scrotal exploration, and whether pre-operative ultrasound influenced the decision to operate.

Methods: We conducted a 3-year audit of emergency scrotal explorations for acute scrotal pain at the Monash Hospital network, (undertaken by paediatric surgery, urology and general surgery). Patient and hospital/surgical team demographics were collected, as well as information about duration of pain, time to proceeding to surgery, incidence of torsion, orchidectomy (uni/bilateral) and orchidectomy. We also assessed the numbers of patient who received pre-operative ultrasound, the ultrasound results, and whether this correlated to clinical findings at the time of surgery.

Results: There were 290 scrotal explorations, 106 confirmed torsions and 15 orchidectomies. Age range of presentation was 2 days to 56 years (mean 13.9). Duration of pain prior to presentation was 15 minutes to 5 weeks (mean 31 hours). Time from presentation to commencement of surgery was 39–2880 minutes (mean 203 minutes). Highest incidence of exploration occurred in 12–15 year olds. 45 patients underwent preoperative ultrasound; 25 suggested definitive torsion. Of these, 22 were confirmed at operation. Of remaining ultrasounds, most suggested alternative pathology but stated ‘torsion cannot be excluded’, and 3 suggested intermittent torsion. Of those equivocal reports, 1 of 18 patients was torted at operation.

196 International urology journal club via twitter – twelve-month experience

I. THANGASAMY, M. LEVERIDGE, B. DAVIES, A. FINELLY, B. STORK and H. WOO

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Introduction: Online journal clubs have increasingly been utilised to overcome the limitations of the traditional journal club. However to date there is no reported online journal club available for international participation. We aim to present a 12-month experience from the International Urology Journal Club, a world first international journal club using an online micro-blogging platform, Twitter, and to demonstrate the viability and sustainability of such a journal club.

Patients and Methods: An asynchronous, 48-hour, monthly journal club titled #urojc was created on Twitter and moderated by the Twitter account @iurojc. The discussions surrounded papers typically published within the previous two to four weeks, and involved the authors when possible. Data from each month’s discussion was obtained via third party Twitter analysis services. Transcripts and participants were analysed quantitatively to determine number of tweets, number of total and new users, and user demographic data when possible; and qualitatively to determine relevance of tweets.

Results: The first 12 months saw a total of 189 unique users representing 19 countries and six continents. There was a mean of 39 participants per month, which included 14 first-time participants per month (not including the first month). Mean number of tweets per month was 195 of which 62% represented original tweets directly related to the topic of discussion, and 22% represented re-tweets of original posts. A mean of 130,832 impressions, or ‘reach’, were created per month. The @iuroc moderator account has accumulated more than 1,000 followers.

Conclusions: Social media provides an enormous international communication potential that has not been possible in the past. We believe the pioneering #urojc is both viable and sustainable. There is unlimited scope for journal clubs in other fields to follow the example of #urojc and utilise online portals to revitalise the traditional journal club.
Introduction: The ethics governing procedural consent in surgery dictate that the patient be duly informed of the potential risks of any procedure. This study evaluates the quality, competence and confidence with which current surgical residents undertake the informed consent process.

Methods: The existing Queensland Health surgical consent form was used as the standard template for information provision of general and specific risks for a given procedure. Current surgical residents from 3 hospitals were asked to complete a survey midway through, and at the end of their 10 week surgical rotation. Factors such as previous exposure, career path interest and the current rotation undertaken by the residents were evaluated. The survey asked the participant to outline 5 most important risks to discuss with the patient for a given procedure, and these responses were given scores of 1 or 2 for each response for general or surgery specific risks respectively. They were then asked how comfortable they were at consenting for this given procedure, and whether they felt confident consenting independently or under supervision of their senior colleagues.

Results: We aimed to have at least 50 residents participate in this study. Preliminary results at this stage show 18 participants have completed the initial survey, with 2 participants lost to follow-up at the second survey. Of these, there were 12 Interns, 3 Junior House Officers (PGY2) and 1 Senior House officer (PGY3+) who completed both surveys. Across both surveys, only 1 respondent had participated in the surgery they were consenting for, and a further 13 responses pertained to procedures that the participant had never witnessed. The 5 most important surgical specific risks were scored between 0 and 10, with an average score of 5.22 and 5.62 out of 10 for surveys 1 and 2 respectively. Results show that those who indicated an interest in a surgical career path scored below the average with 5.11 and 5.33 respectively. Only 3 residents felt completely or somewhat uncomfortable consenting for procedures. More than half (10/18) of the participants respondents felt that they needed supervision conducting consent. 

Conclusions: This study identifies that there was a poor application of informed consent amongst current residents. There was a minor improvement in scores with greater exposure to their resident term. Our results are incongruous with the perceived competency with conducting consent that most residents believe they have. Further study to improve resident insight and knowledge is required in order to ensure that patients have proper informed consent. It appears that residents require greater supervision and guidance at informed consent.

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### Table 1. Number of explorations and torsions by age range

<table>
<thead>
<tr>
<th>Age Range</th>
<th>No. Explored</th>
<th>Definite Torsion</th>
<th>Suspected intermittent/detorsion</th>
<th>Not Viable</th>
<th>Questionable viability</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;2 months</td>
<td>3</td>
<td>2</td>
<td>0</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>2 mo–2 year</td>
<td>8</td>
<td>5</td>
<td>0</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>3–7</td>
<td>28</td>
<td>5</td>
<td>0</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>8–11</td>
<td>64</td>
<td>5</td>
<td>2</td>
<td>6</td>
<td>2</td>
</tr>
<tr>
<td>12–15</td>
<td>102</td>
<td>60</td>
<td>10</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>16–19</td>
<td>41</td>
<td>17</td>
<td>5</td>
<td>4</td>
<td>0</td>
</tr>
<tr>
<td>20–24</td>
<td>19</td>
<td>5</td>
<td>1</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>25–29</td>
<td>12</td>
<td>5</td>
<td>2</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>30–49</td>
<td>11</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>&gt;50</td>
<td>1</td>
<td>0</td>
<td>0</td>
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### Table 2. Ultrasonography findings and operative correlation

<table>
<thead>
<tr>
<th>Ultrasound findings</th>
<th>No. of US</th>
<th>Operative Findings</th>
<th>Definite torsion</th>
<th>Other pathology</th>
<th>No pathology found</th>
</tr>
</thead>
<tbody>
<tr>
<td>Definite torsion/reduced blood flow</td>
<td>25</td>
<td>22</td>
<td>1</td>
<td>2 (1 likely spontaneous de-torsion)</td>
<td></td>
</tr>
<tr>
<td>No torsion</td>
<td>2</td>
<td>0</td>
<td>2</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Consistent with epididymo-orchitis</td>
<td>4</td>
<td>1</td>
<td>3</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Equivocal</td>
<td>6</td>
<td>0</td>
<td>5</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>'Other pathology likely but cannot exclude'</td>
<td>3</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>'Likely intermittent torsion'</td>
<td>2</td>
<td>0</td>
<td>2</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Non-specific findings/no abnormality</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Good/normal blood flow to testis</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td></td>
</tr>
</tbody>
</table>

Conclusions: Torsion was more common in adolescents as expected. Ultrasound may be useful in select cases of scrotal pain where there is low clinical suspicion of torsion, but does not replace clinical judgement, and should not delay prompt surgical exploration in suspected torsion.

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Surgical consent: are residents achieving an acceptable standard?

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*Princess Alexandra Hospital, Brisbane, Australia; ‡Redcliffe Hospital, Brisbane, Australia; §University of Queensland, Brisbane, Australia

Introduction: Renal oncocytoma is a benign renal epithelial neoplasm, which...
constitutes 3 to 7% of all primary renal neoplasms. However, a renal oncocytoma with a purely cystic pattern is extremely rare. In the literature, only 8 cases of cystic renal oncocytoma have been reported. We describe a rare case of cystic renal oncocytoma at our institution, and present a review of the literature.

**Patients and Methods:** A 75 year old man presented with a symptomatic large left renal cyst. Subsequent laparoscopic deroofing of the renal cyst and histopathological examination of the cyst wall, revealed a rare case of cystic renal oncocytoma. A literature search was performed on MEDLINE using search terms ‘cystic renal oncocytoma’ in the English language, at any date. Eight case reports were identified to be relevant. The references of each case report were examined for further relevant publications. We evaluate the features of our case in light of the few previously reported cases, with special attention to similarities and differences.

**Results:** A 75 year old man presented with a 20 cm large left renal cyst which was symptomatic with dyspepsia, abdominal distension and curvature which was bothersome. CT-guided aspiration of the cyst drained 2.4L of cyst fluid, and the patient reported resolution of his symptoms. Cytology of the cyst fluid revealed no malignant cells. At 1 year follow-up the patient described recurrence of dyspepsia, and a repeat CT showed recurrence of the cyst, measuring 3L in volume and compressing adjacent organs. Laparoscopic deroofing of the left renal cyst was performed, with resolution of dyspepsia. Macroscopic examination of the cyst wall revealed a flat piece of brown and grey tissue. Microscopically, sections showed a cyst with a complex epithelial lining. The cells of the epithelium had abundant eosinophilic cytoplasm and were arranged in sheets. Immunohistochemical staining of the tumour showed diffuse strong positivity for CK7 and CD117. The renal tumour was then exposed by opening a window in Gerota’s fascia. With the aid of intraoperative ultrasound, the main renal artery was 13 minutes, the lower pole artery was 16 minutes, and for the main renal artery was 13 minutes. Histopathology showed a 1.6 cm renal cell carcinoma stage T1a. Negative surgical margins were achieved. The patient had an uneventful recovery, with no recurrence on follow-up 6 months later.

**Conclusions:** We describe a rare and interesting case of symptomatic cystic renal oncocytoma at our institution. It is an extremely rare condition, and literature review revealed there have been only 8 previously reported cases. Further management is with ongoing surveillance.

200 **Indocyanine green-based fluorescence imaging: application during robotic partial nephrectomy**

J. YAO, N. MCLEOD and H. LAU Westmead Private Hospital, Westmead, NSW, Australia

**Introduction:** Partial nephrectomy has become the standard of care for small renal masses, achieving equivalent oncological outcomes with effective preservation of renal function. Recently, the use of near-infrared fluorescence (NIRF) imaging system using indocyanine green (ICG) dye has been described during robotic partial nephrectomy as an adjunctive means of identifying renal vasculature and tumour clearance. We present a case of a partial nephrectomy performed using the da Vinci® Si™ Surgical System with integrated NIRF capability and discuss technical steps involved.

**Patients and Methods:** A 67 year old man was referred to the urologist with macroscopic haematuria. His CT revealed an ill-defined endophytic 2 cm isodense lesion of the left kidney. The patient was positioned in a standard lateral position. A transperitoneal approach was used. Two 8 mm robotic working ports were triangulated with the robotic camera port. 5 mm and 10 mm assistant ports were used. The main renal artery and a segmental renal artery supplying the lower pole of the left kidney were isolated. The renal tumour was then exposed by opening a window in Gerota’s fascia. With the aid of intraoperative ultrasound, the margins of the tumour were identified, and the planned resection margin scored with diathermy. A bulldog vascular clamp was applied to the lower pole renal artery, followed immediately by administration of 2 ml (5 mg) of intravenous ICG. NIRF demonstrated no fluorescence, and thus successful selective ischaemia of inferior third of the kidney. The tumour, however, was seen to traverse the ischaemic segment – demonstrating that segmental clamping did not achieve adequate reduction of perfusion to the tumour field. Thus the main renal artery was clamped. The renal vein was left unclamped. The tumour showed no fluorescence compared to the normal renal parenchyma. Excision was performed with excellent vision by toggling between white light and fluorescence modes. A layer of green fluorescing normal renal parenchyma covering the base of the resected specimen provided intraoperative reassurance of a negative margin. The renal defect was then repaired in two layers. On release of the clamp, there was no active bleeding. Gerota’s fascia was repaired. The total ischaemic time for the lower pole artery was 16 minutes, and for the main renal artery was 13 minutes. Histopathology showed a 1.6 cm renal cell carcinoma stage T1a. Negative surgical margins were achieved. The patient had an uneventful recovery, with no recurrence on follow-up 6 months later.

**Conclusions:** NIRF using intravenously injected ICG has emerged as a useful adjunct to robotic partial nephrectomy. It provides the surgeon with a visual contrast between normal parenchyma and the tumour, and allows demonstration of regional perfusion deficit after segmental clamping of renal vasculature, facilitating a bloodless surgical field. We envision this technology as an adjunct rather than replacement of white light imaging.

201 **Prospective randomised controlled trial of written vs verbal information given to patients at the time of flexible cystoscopy**

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**Introduction:** Patients undergoing day procedures such as flexible cystoscopy (FC) are usually given information regarding the findings from the procedure and further treatment plans, either verbally (as is the
usual practice at our institution) or in writing. We hypothesized that the provision of written information would aid patient understanding, and thereby reduce anxiety.

Methods: All patients undergoing FC were invited to participate unless language, psychological or cognitive barriers were identified. Patients completed a pre-procedure questionnaire including self-rating of anxiety and understanding of the procedure on Likert scales (1–5). FC was conducted as per usual practice. The findings from the FC and plan of management were communicated to patients either verbally (Group 1) or on a standardized written template (Group 2), according to randomized allocation. On discharge, patients completed a post-procedure questionnaire including self-assessment of how well-informed and how anxious they felt.

Results: Two hundred patients were recruited, with 171 evaluable questionnaires returned, 88 from Group 1 and 83 from Group 2. The distribution of age, sex and prior FC as well as the pre-procedure self-assessment of anxiety and understanding were similar between the two groups. Post-procedure, all patients except 4 in Group 1 had an accurate understanding of the findings at FC and the proposed management plan. Patients in Group 2 reported feeling better informed (median [range] 5 [4–5] compared to 4 [1–5] out of 5, p < 0.0001) and lower anxiety levels (1 [1–4] compared to 2 [1–5] out of 5, p < 0.005).

Conclusion: The provision of written information at the time of FC detailing the findings and management plan leads to patients feeling better informed and less anxious. However, most patients appear to gain an accurate understanding from the provision of verbal information alone.

203 Surgical management of upper tract paediatric urolithiasis – experience at an Australian urological centre

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*Mater Misericordiae Children’s Hospital, Brisbane, Australia; †Princess Alexandra Hospital, Brisbane, Australia

Introduction: Paediatric urolithiasis is a rarely encountered problem in Australian urologic centres. Due to underlying anatomical and metabolic abnormalities, these patients often require repeated surgical interventions. We aim to determine the effectiveness of contemporary interventions including extracorporeal shock wave lithotripsy, ureteroscopy and laser and percutaneous nephrolithotomy in managing urolithiasis of the upper tract in a paediatric population.

Patients and Methods: The medical records of all paediatric patients (Max age 16) admitted for surgical treatment of upper tract urolithiasis between 1 July 1998 and 30 October 2013 were retrospectively reviewed. A single paediatric urologist in a single centre treated all patients. Data on demographics, aetiology, interventions and outcomes were collected and analysed.

Results: Over the study period, 38 patients were treated for upper tract urolithiasis with a median follow up of 267 days. A total of 88 procedures were conducted. A total of 44 renal units were treated with a median stone size of 12 mm. The majority (57.9%, n = 22) of patients treated were boys. The median age of patients receiving first intervention for stones was 10.5 years (Range 1–16 years old). The most common underlying anatomical abnormality in our population was pelviureteric junction obstruction (18.4%, n = 7). 15.7% (n = 6) patients had an underlying metabolic aetiology for their stones. 19 Patients were able to obtain stone fragments of which calcium based composition was the most common (57.9%, n = 11). Overall 28 (73.4%) patients were able to achieve ‘stone free’ status at last follow up. The most commonly performed procedure was ESWL (62.5%, n = 55) achieving ‘stone free’ status in 23 (41.8%) patients at last follow up. 50% (n = 19) patients required...
Molecular mechanisms in testicular descent and the effect of androgen blockade

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Douglas Stephens Surgical Research Institute, Melbourne, Australia; †University of Melbourne, Department of Paediatrics, Melbourne, Australia; ‡Royal Children’s Hospital, Department of Urology, Melbourne, Australia

Introduction: Testicular descent occurs in two stages, which are dependant on differing hormonal cues. The ligament that directs the testis into the scrotum is termed the gubernaculum. As the testis descends the gubernaculum differentiates into cremaster muscle. Molecular cues regulating changes in cremaster cell morphology remain elusive, but beta-catenin is involved with myogenesis. Peroxisome proliferator-activated receptor (PPAR)-gamma is a nuclear receptor with insulin-sensitising properties that act downstream of insulin like hormone 3, which controls the transabdominal stage of testicular descent. PPAR-gamma is vital for skeletal muscle myogenesis in vivo. We hypothesize that cremaster myogenesis involves PPAR-gamma, and androgen blockade would cause alterations in expression.

Methods: Ethical approval was obtained from the Australian Ethics Committee (license number A644). Gubernaculum from male Sprague-Dawley (SD) rats (n = 18) and SD rats treated with anti-androgen reagent, flutamide (n = 18) at E19, D0 (birth) and D2 were processed for fluorescent immunohistochemistry. Antibodies against PPAR-gamma and beta-catenin were visualized by confocal microscopy.

Results: The intracellular location of PPAR-gamma antibodies changed over time, and was altered by androgen blockade. In control animals, PPAR-gamma is seen intranuclear at E19 and predominantly cytoplasmic at D2. Androgen blockade caused PPAR-gamma expression to remain cytoplasmic at both E19 and D2. Beta-catenin expression increased with age in all animals. Androgen blockade caused displacement of cytoplasmic fluorescence of both antibodies, with a banding pattern observed.

Conclusions: The developing cremaster cells heavily expressed PPAR-gamma. As PPAR-gamma is formed in the cytoplasm, and translocates into the nucleus (after ligand binding) we hypothesise this pathway is blocked between E19 and D2 in control animals. Expression of beta-catenin confirms previous findings, acting as a control to ensure androgen blockade was achieved in the treatment group. Androgen blockade caused no intranuclear expression of PPAR-gamma, consistent with premature blockage to nuclear translocation. Premature cremaster myogenesis in androgen blockade is confirmed by a banding pattern in D2 animals, due to myotube formation displacing the cytoplasm. This confirms cremaster muscle undergoes premature maturation in androgen deficient states, as part of the cryptorchid phenotype.
atrophy but most likely caused by a change in the mechanical properties of the reservoir with time, resulting in a loss of tensile strength, preventing it from transmitting an adequate cuff occlusive pressure to the urethra.

206 Outcomes of artificial urinary sphincter implantation in the irradiated patient

N. SATHIANTHATHEN*, K. TALBOT†, S. MCGUIGAN‡ and D. MOON*†
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Introduction: To present the largest Australian series of men undergoing artificial urinary sphincter implantation and determine the impact a past history of radiation therapy has on the outcomes of prosthetic surgery for stress incontinence.

Patients and Methods: A cohort of 77 consecutive men undergoing AMS800® artificial urinary sphincter implantation for stress incontinence after prostate cancer treatment, including 29 who had been previously irradiated, were included in a prospective database and followed up for a mean period of 21.2 months. Continen ce rates, and incidence of complications, revision, and cuff erosion were evaluated with results in irradiated men compared to those who had undergone radical prostatectomy alone. The effect of coexisting hypertension, diabetes mellitus, and surgical approach on outcomes were also analyzed.

Results: Overall the rate of social continence (0–1 pad/day) was 87% and similar in irradiated and non-irradiated men (86.2 vs 87.5%). Likewise, the incidence of infection (3.4 vs 0%), erosion (3.4 vs 2.0%) and revision surgery (10.3 vs 12.5%) were not significantly different. There was a far greater incidence of coexisting urethral stricture disease in irradiated patients (62.1 vs 10.4%) which often complicated management, however AUS implantation was still feasible in these men and in four such cases a transcorporeal cuff placement was utilized. There was a trend towards poorer outcomes in diabetic patients, and increased reoperation rates in those men who had a transverse scrotal rather than perineal approach although this did not reach statistical significance.

Conclusion: Prior irradiation can increase the complexity of treatment due to a greater incidence of coexisting urethral stricture disease, however these patients are still able to achieve a level of social continence similar to non-irradiated men with no discernable increase in complication rates, cuff erosion, or the need for revision surgery. Artificial urinary sphincter implantation remains the gold standard for management of moderate-severe stress incontinence in both irradiated and non-irradiated men following prostate cancer treatment.

Reconstructive Urology/Transplant

207 The outcome of redo bulbar and membranous urethroplasty

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Introduction: Current urethroplasty techniques offer high success rates however recurrent strictures remain a significant issue and are associated with more challenging surgical treatments. This study evaluates the outcomes of redo-urethroplasty in patients with recurrent bulbar or membranous urethral strictures.

Patients and Methods: Between February 2006 and November 2012, 41 redo-urethroplasties were performed in 38 patients in a single centre. Patients with at least one failed previous open urethral surgery were included in the study. Details related to previous surgery together with operative and post-operative data were collected retrospectively. Patients were followed up clinically, radiologically and by flow rate assessment. Median follow-up was 25 months. Penile strictures were excluded from this analysis.

Results: The majority of strictures treated were related to pelvic fracture urethral injury (37%) or idiopathic in origin (32%). A variety of previous open procedures had been undertaken. The redo procedures consisted of bulbo-prostatic anastomotic urethroplasty and dorsal or ventral patch BMG urethroplasty, performed in 12 patients each; scrotal flap urethroplasty performed in 6 patients; bulbo-bulbar anastomotic urethroplasty in 5 patients; and augmented urethroplasty using cheek or lingual graft in the remainder.

Conclusion: No major complications were reported. A majority of patients obtained a satisfactory outcome with an overall radiological success rate of 75.6%. For patients developing post-operative recurrent stricture, the median time to recurrence was 3 months. There was no correlation between a specific surgical technique and a better success rate. The majority of failures were pelvic fracture-related strictures (70%): the radiological success rate increased to 92.7% when these were excluded. Also, a total of 8 patients in our cohort had more than one previous failed attempt at urethral reconstruction. Five of these (62.5%) had successful outcomes.

Conclusions: Redo-urethroplasty is a safe and effective procedure although it is associated with reduced success rate compared with primary urethroplasty. Redo bulbar urethroplasty was almost always successful. Pelvic fracture-related strictures are associated with a higher risk of failure following redo-urethroplasty which emphasizes the importance of a successful primary surgery in these cases.

208 How feasible is urethral dilation in an outpatient setting using topical anaesthetic?

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Introduction: On average 150 urethral dilatations a year are performed in our unit mainly to deal with recurrent urethral strictures which are not suitable for urethroplasty. These are usually performed under general anaesthetic. The procedure itself takes a few minutes but the total theatre time per case may extend up to 45 minutes. The aim of this study is to assess the feasibility of performing these procedures in an outpatient clinic setting using topical anaesthetic (TA) as an alternative.

Patients and Methods: Between June and October 2013, 30 patients (mean age 56 years) with urethral strictures opted to have a urethral dilatation under TA. Lidocaine Hydrochloride gel (Instillagel®) was used as the TA. A floppy tipped hydrophilic (Terumo®) guidewire was advanced across the urethra and the stricture dilated using Cook® S-shaped
serial dilators over the wire, up to 20Fr where possible. Pain during the procedure was assessed using a Visual Analogue Score (0–10). Patients documented whether or not they would choose to have the procedure under TA again. Stricture location and complications were also recorded.

Results: Of the 30 patients, 17 (57%) said they would have the procedure again using TA. In this group, 59% of patients performed intermittent self dilatation (ISD) on a regular basis. Of those who declined having the procedure repeated under TA, 92% were not performing ISD. 68.7% of patients with bulbar strictures and 62.5% of those with penile strictures would have the procedure repeated under TA. In penile strictures this rose to 75% if they performed ISD. 4 out of 5 (80%) patients with bladder neck contractures would not opt for another TA dilatation. Pain was the commonest reason for not wanting to have the procedure again under TA in 53.8% of cases with a mean pain score of 5.8 in these patients compared to 2.2 in the rest. In 25 cases (83%) it was possible to dilate the stricture up to at least 18Fr. Only 3 patients (10%) required use of a flexible cystoscope to negotiate the guidewire across the stricture. All patients were discharged home within 3 hours of having the procedure. Only one complication was recorded, urethral bleeding, which settled on conservative management.

Conclusions: Urethral dilatation under TA is feasible and safe when carried out in an outpatient setting in a selected patient group. In units where this procedure is carried out frequently, it may free up valuable operating theatre time. Patients with idiopathic bulbar strictures are most suitable. Those with penile urethral strictures may be candidates if they already carry out ISD. TA urethral dilatation is not suitable for patients with bladder neck contractures.

209 Failure of first stage penile urethroplasty using buccal mucosal graft – causes and outcome of revision surgery

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Introduction: Staged penile urethroplasty using buccal mucosal graft (BMG) has become the treatment of choice when dealing with complex penile urethral strictures with severely scarred or absent urethral plates. However, revision of the first stage may be required to deepen the glans cleft or due to graft contracture, resulting in a three or more-staged procedure. We review those cases requiring revision of their first stage to identify possible risk factors for failure and whether this has any bearing on the final outcome after eventual tubularisation of the graft.

Patients and Methods: Our database of patients undergoing staged penile reconstruction using BMG was searched to identify those requiring regrafting after the first stage. Marsupialisation procedures and those using other substitution material such as posterior auricular graft were excluded. These were compared to a cohort of staged penile urethroplasties using BMG over the 3 years. Clinical and radiological parameters and flow rate.

Results: 18 of 88 (20.4%) first stage penile urethroplasties using BMG required revision to create a neo-urethral plate of adequate width to tubularise satisfactorily. 2 patients required 2 revisions while one required 3 before successful tubularisation. 12 cases were following failed hypospadias repair. 6 were Lichen Sclerosisus (LS)-related. Only two graft infections were documented. All but one (93.3%) had a successful outcome following eventual retubularisation based on clinical and radiological parameters and flow rate. Compared to those with a successful first stage, the failures had longer strictures (72.2% vs 11.1%). Consequently 5 patients required more than one graft (left and right cheek or sublingual) compared to 2 in the non-failure group. In most cases graft contracture occurred at the proximal (close to proximal urethrostomy) or distal ends of the graft over the corporal heads especially in patients with a small glans. No difference in age, ASA score, BMI, number of previous urethroplasties, smoking, diabetes, hypertension were identified as potential contributors to graft failure. There was also no difference in final outcome.

Conclusions: Revision after first stage penile urethroplasty is commoner in patients undergoing surgery following failed hypospadias repair. Those with longer strictures, requiring use of multiple grafts are more prone to failure. Graft infection is a risk for failure but is not a primary determinant of outcome. Importantly, staged urethroplasty using BMG is associated with an excellent outcome when treating complex penile urethral strictures, even if they may require one or more revisions prior to the final reconstruction.

210 Tubular collagen-based and collagen-PCL scaffolds with seeded smooth muscle cell for urethra repair in rabbits

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Introduction: Hypospadias and urethral strictures are conditions requiring additional tissue for reconstruction. Due to a limited source of tissue, autologous skin and oral mucosa are frequently used. However, long-term follow-up studies demonstrated significant complications and diminished quality of life. Recently, a variety of tubular biodegradable biomaterials have been used, and cell seeding seems to be important to improve the host acceptance and neovascularization.

Objective: To compare the in vivo performance of smooth muscle cell (SMC) seeded and unseeded tubular collagen-based and collagen-Polyacaprolactone (PCL) scaffolds in a rabbit urethral reconstruction model.
Patients and Methods: Thirty-two New Zealand rabbits underwent an open bladder biopsy for SMC harvesting. The SMC were cultured for 3 weeks and labeled with ethynyldeoxyuridine (EdU). Two types of scaffolds were use to correct a 1-cm urethra defect: pure collagen-based 0.5 wt% and collagen 0.5 wt%−PCL (hybrid) scaffolds. SMC seeded collagen tubes were implanted in 8 rabbits urethras, which were evaluated after 1 and 3 months (4 rabbits each subgroup). The unseeded group (8 rabbits) served as control and rabbits each subgroup). The unseeded group (8 rabbits) served as control and hybrid scaffolds. After 1 and 3 month, the rabbits underwent an urethrography and were sacrificed. The penises underwent H&E, immunohistochemistry and EdU fluorescence staining.

Results: The pure collagen-SMC-seeded group presented 1 stricture at 1-month and 1 fistula at 3-months while 3 strictures were present in the unseeded group at 1 month and 1 at 3 months. In the seeded group, more SMC expression and neovascularisation was observed, and less mononuclear and giant cells could be found. In the hybrid scaffolds, two rabbits died: one enrolled in the unseeded group for 1 month evaluation and one in the seeded group for three months evaluation. Five fistulas were seen for seeded groups (2 at 1-month and 3 at 3-months). Four stenosis at the seeded groups and 3 stenosis at the unseeded groups. Higher inflammatory response and giant cell were seen.

All scaffolds showed luminal urothelial cell retention. The detection of EdU-labeled SMC revealed SMC transplantation survival after 3 months in vivo.

Conclusion: SMC-seeding improved tubular pure collagen scaffolds for urethral regeneration in this rabbit model. Labeled SMC could be detected in vivo at least after 3 month the implantation. The presence of PCL (hybrid scaffolds) showed higher inflammatory signs and complications rate disregarding the presence of SMC.

211 First report of the stapled mesh stoma reinforcement technique (SMART) in a urologic context
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Introduction: Parastomal hernia is a common significant complication of ileal conduit formation. High recurrence rates even after traditional surgical repair are reported. Newer techniques of enforcing the stoma trephine with mesh have been shown to significantly reduce the rate of parastomal herniation but can be time-consuming. The stapled mesh stoma reinforcement technique (SMART) is a novel and quick method of constructing a reinforced stapled trephine. We report the first case utilizing this technique in a urologic context.

Methods: A 59 year old lady with an ileal conduit and history of previous parastomal hernia repair presented with increasingly severe parastomal pain, obstruction of the ileal conduit and features of early small bowel obstruction. A midline laparotomy and adhesiolysis was performed. The ileal conduit was dissected free and mobilised, the parastomal hernia reduced and the hernial sac mobilised and the defect repaired. A new stoma aperture on the left side of the abdomen was fashioned; a cylinder of skin and fat was excised, and a cruciate incision was made on the anterior rectus sheath. A 25 mm CS Compact™ EA circular stapler was used to secure a ProLite Ultra™ mesh to the staple line on the posterior rectus sheath. The anvil of the stapler was placed in the abdominal cavity and the shaft of the anvil grasped and delivered through the posterior rectus sheath. The stapler trocar was engaged with the anvil shaft and the stapler fired, leaving behind a reinforced stapled trephine consisting of the mesh, posterior rectus sheath and peritoneum. The mesh circumference was secured to the anterior sheath and the ileal conduit passed through the reinforced stoma trephine. A standard stoma appliance was applied.

Results: There were no peri-operative complications and the re-sited stoma remained healthy and functioned normally.

Conclusions: We report the first utilization of the SMART technique in a urologic context. Favorable results with medium term follow-up (reported out to 7 years) with the device in the general surgical context may be applicable to urology. Longer term data is clearly desirable though this technique deserves consideration in the treatment of urologic para-stomal herniae.

212 Ventral buccal mucosal onlay graft urethroplasty for non-traumatic bulbar urethral strictures: the barbagli surgical technique and my initial results in Australia
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Introduction: There are a variety of surgical options for the management of recurrent bulbar urethral strictures including end-to-end anastomotic, substitution onlay graft, substitution inlay graft, augmented anastomotic and non-transsecting anastomotic urethroplasty. The ventral buccal mucosal onlay graft urethroplasty is well-described but is uncommonly performed in Australia. I present a standardized surgical technique for ventral buccal mucosal onlay graft urethroplasty and my initial results with a minimum of 12 months follow-up to determine its efficacy.

Methods: I describe my standardized surgical technique (10 diagrams and photos) for ventral buccal mucosal onlay graft urethroplasty. I discovered the technique during a mini-fellowship with Prof Guido Barbagli at his Center for Reconstructive Urethral Surgery in Arezzo, Italy where it is the most commonly used procedure for bulbar urethral strictures. Prospective data including patient characteristics, stricture characteristics, surgical details, post-operative complications and outcomes have been collected on all patients who have undergone ventral buccal mucosal onlay graft urethroplasty between February 2012 to present. This study includes patients with a minimum of 12 months follow-up. Inclusion criteria were recurrent non-traumatic bulbar urethral strictures. Patients with previous open urethroplasty,
Penile grafting for benign causes; an analysis of outcome

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Introduction: Common conditions such as hidradenitis suppurativa, balanitis xerotica obliterans, Peyronie’s disease can cause impairment of sexual function. Lack of penile skin can result in impairment of penile function. Grafting techniques have been developed to maintain penile length and function. We present results of our three year series focusing on patient outcomes for skin grafting in patients undergoing penile grafting for benign causes.

Patients and Methods: Over a three year period 11 cases under a single surgeon undergoing penile reconstruction were reviewed. Patients were followed up for a maximum of 36 months. Split thickness skin grafts were applied to glans/coronal defects. Full thickness skin grafts were used for shaft defects. We examine underlying pathology, cosmesis, graft take, sexual function, patient satisfaction and complications.

Results: 100% were cosmetically satisfied both grafted. 100% of grafts had good take with no requirement for further surgery. Grafting did not affect penile function. There was minimal loss of penile length. 100% were satisfied with the outcome of the procedure. Complications included meatal stenosis in 50% of grafted patients. One patient required further scrotal debulking. There were no contractures.

Conclusions: For cases of benign pathology, penile grafting does result in patient satisfaction with good overall cosmesis and erectile function. Good outcomes depend on having an experienced specialist surgeon and team who are able to handle complications when they arise.

A modified approach to artificial urinary sphincter (AUS) cuff placement for high-risk patients

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Introduction: The AUS cuff has traditionally been placed by an approach similar to a proximal urethroplasty; that is, midline division of the bulbospongious muscle with direct dissection on the urethra to encircle it. While encircling the urethra, its dorsal aspect is thinnest which increases risk of intraoperative damage or cuff erosion. We use a modified dissection that preserves the dorsolateral fibromuscular tissue with the aim of decreasing complications in our high-risk population. This retrospective chart review demonstrates our outcomes with this technique.

Patients and Methods: With institutional review board approval consecutive patients (single institution, single surgeon) with placement or revision of an AUS between January 2007 & December 2012 were identified. Primary outcomes were complications and indications for reoperation. Secondary outcomes were success rates as measured by social continence (1 pad or fewer) and improvement (50% or fewer pads).

Our modified technique involved a standard midline perineal incision. Sharp dissection is continued outside the bulbospongious muscle until the corporal bodies are reached and dissected free from the muscle at the level of the inferior pubic ramus. Here the muscle (with bulbar urethra) is encircled, then divided anteriorly with transverse cautery to expose the urethra and allow placement of the cuff, whilst including some dorsolateral fibro-muscular tissue. After cuff placement the anterior muscle is re-approximated. A sub-rectus space is created for the pressure-regulating balloon. Placement of the scrotal pump is standard.

Results: 176 patients (224 cases) were identified. Mean age of patients at time of surgery was 66.6 years (range 32 to 89). Pre-procedure radiation was involved in 42.9% of cases (n = 96). Median follow-up per patient was 32.6 months (2.9 to 80.6). Five patients were lost to follow-up.

Mean time to re-operation was 25.1 months (2.1 to 63.9). The most common indications for reoperation were decreased efficacy (n = 35), mechanical failure (n = 12), urethral instrumentation associated erosion (n = 6), infection (n = 2), and other isolated causes (tubing too long, pressure regulating balloon migration, etc.) (all n = 1). Self-resolving post-operative urinary retention was seen in 11.6% (n = 26). There was one post-op scrotal haematoma.

The overall social continence rate for this period was 64.2% (n = 113) with 73.3% (n = 129) of patients showing improvement.

Conclusions: Our modified technique is safe with low infection (<1%) and erosion rates (3%) and functional outcomes comparable to contemporary series, despite our higher risk population. It is reproducible in almost all settings, including previous sling placement.

Ischemic time and delayed graft function in kidney transplantation

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Introduction: End-stage kidney disease is one of the major health problem around the world which proved efficiently corrected by kidney transplantation. Recently there is still a lot of shortage in donated organ, therefore longer ischemic time allowed may increase organ availability. The aim of this study was to find the optimum ischemic time that resulted in acceptable rate of delayed graft function (DGF).
Patients and Methods: Between January 2001 and January 2011, 351 kidney transplantations were performed at our institution. One hundred and eleven transplantations with missing ischemic time or status of DGF were excluded. Demographic data of patients, baseline laboratory values, surgical factors and cold ischemic time (CIT) were collected. Univariate and multivariate analysis were used to assess factors influencing DGF.

Results: There were 240 kidney transplantations, 191 were cadaveric donors and 49 were living donors. Sixty-three percent of the patients were male. Their mean (SD) age, height and body mass index (BMI) were 38.3 yrs (14.0), 159.29 cm (12.1), and 21.2 kg/m² (3.5), respectively. The mean (SD) preoperative creatinine and blood sugar were 10.4 mg% (3.8) and 113.6 mg% (41.2), respectively. The median time of onset from end stage renal disease (ESRD) to transplantation was 36.0 months, (range <1–110). The mean (SD) operative time, median (range) operative blood loss and median (range) ischemic time were 135.7 minutes (53.6), 22.4, and 6.7 (1.9–23.2), respectively. Twenty cases underwent reoperation within 7 days. There was no perioperative mortality.

Ischemic time was divided into four groups; 0–12 hrs (N = 68), >12–24 hrs (N = 119), >24–36 hrs (N = 51) and >36–48 hrs (N = 2). The corresponding DGFs were 8.8%, 26.0%, 41.2% and none, respectively. Univariate analysis of these factors for association with DGF revealed that cold ischemic time (CIT), BMI and type of donor were associated with risk of DGF. Univariate analysis of these factors for association with DGF revealed that cold ischemic time (CIT), BMI and type of donor were associated with risk of DGF.

Conclusion: We found a significant increase rate of DGF as the ischemic time lengthened. CIT of 24 hrs appears to be the optimum time associated with acceptable DGF. We also noticed that BMI may have an effect on DFG.

216 Results following replacement and revision Artificial Urinary Sphincter (AUS) surgery compared to primary implantation

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Introduction: The AUS remains the gold-standard treatment of severe sphincter weakness incontinence. Despite excellent results in the long term, up to 36% of patients will require further surgery to replace the device for malfunction or to explant it because of infection and/or erosion, with re-implantation of another sphincter at a later stage. The aim of this study is to compare the outcome of device replacement surgery for malfunction and following explantation for infection and/or erosion to that of primary implantation.

Patients and Methods: 291 AUS (AMS 800TM, American Medical Systems Ltd, Minnetonka, Minnesota, USA) were implanted in our unit between January 2006 and May 2013. 229 were bulbar while 62 were bladder neck cuffs. They were analysed in 3 groups: Group 1 comprising 213 primary implantations; Group 2 consisting of 50 replacements for suspected device malfunction; Group 3 containing 28 revision implantations on average 10 months after explantation for infection/erosion of a previous device. All causes of incontinence were treated. Mean patient age was 62 years with a mean follow-up of 18.2 months (range 3–80.5 months).

Results: Continence rates of 77.5% and 74% were achieved in primary and replacement implantations respectively compared to 46.4% in those having had previous infected/eroded devices in Group 3. 21.4% of the latter were incontinent compared to only 5.6 and 8% in Groups 1 and 2. The explantation rate for infection and/or erosion was 11.7% for first-time implants, 8% for replacement devices and significantly higher (17.8%) in the revision group. 7 patients in Group 3 were on to their third device while 5 were having their fourth sphincter implanted which may contribute to this worse outcome. However even in the 16 having had only one previous AUS explanted, 7 (43.8%) were either incontinent or needed further surgical revision.

Conclusions: Replacement of an AUS in patients having had previous infection and/or erosion is associated with a significantly worse outcome compared to those having a replacement for malfunction or those undergoing primary implantation. For this reason we now perform staged implantations in patients with compromised urethras following multiple erosions. In these and other cases where developing a plane around the urethra is difficult, the cuff only is implanted at the first stage. The rest of the components are implanted three months later after having endoscopically excluded cuff erosion. Rates of early infection and erosion are significantly less with this technique.

217 Which stricture-related factors influence the outcome of urethroplasty?

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Introduction: There is a tendency to refer to the results of urethroplasty as if they were the same for all types of stricture and in all locations. This review summarises our experience in almost a thousand unselected patients with typical stricture problems.

Patients and Methods: Between 2007–11 we performed urethroplasty in 998 men of whom the outcome is evaluable at a minimum of 1 year in 797. Patients with bladder neck contractures, ureorectal fistulae or rare conditions, or having rare procedures or perinealurethrostomy are excluded.

There were 139 posterior urethroplasties (BPA) and 70 bulb urethroplasties (EPA) for trauma; 357 bulb urethroplasties for idiopathic (278) or iatrogenic (79) strictures; and 231 pendulous/penile urethroplasties for hypospadias (132) or lichen sclerosus (99). 19% of procedures were revisions of previous surgery elsewhere.

We review here the results of our first procedure in these patients and of the subsequent salvage surgery when necessary.
as judged by the requirement for further surgery of any sort.

**Results:** The primary success rate (PSR) for BPA was 77%. Of the remaining 23%, half were salvaged by a single further procedure. The remaining 11% were salvaged by further surgery or are on some schedule of urethral dilatation (UD) or are awaiting further surgery. The PSR for EPA for straddle injuries was 79% and all the remaining 21% were salvaged by a single further procedure. None are on UD or have required or are awaiting further surgery.

The PSR for bulbar urethroplasty of all types was 90%, improving to 95% with a single further procedure. The outlying group was those with post-TURP strictures who had a PSR of 71%, only improving to 81% with a single further procedure. The PSR for penile urethroplasty was 72% in both Hypospadias (H) and Lichen Sclerosus (LS). This improved to 89% with a single further procedure in H whereas for LS the improvement after a single further procedure was to only 80%. In both these latter two groups, the remaining patients who still had a stricture after their initial urethroplasty and a single further procedure were salvaged by further surgery or are on some schedule of UD or are awaiting further surgery.

**Conclusions:** These results are worse than those in the literature, including our own, mainly because those are in selected patients, typically patients without a previous urethroplasty. However urethroplasty outside specialist centres is still common and so we have reviewed our experience in unselected patients excepting only rarities. Bulbar urethroplasty gives much the best results and is much the easiest to salvage, excluding post-TURP strictures on both counts. Penile and posterior urethroplasty are significantly more challenging on both counts, particularly BPA and surgery for LS.

**Aetiology and location are both important in the outcome of urethroplasty.**

**218 Development of a tubularised urethral substitute using a novel nanocomposite polymer**

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**Introduction:** Limited availability and donor site morbidity are limitations of current urethroplasty techniques using autologous tissue substitution. We are currently developing a urethral substitute using the novel type II chemically engineered nanocomposite material, Polyhydral OligomericSilsequioxane-poly (carbonate-urea) Urethane (POSS-PCU), as an unseeded ‘off-the-shelf’ tubularised urethral substitute. POSS-PCU has been used successfully as a tissue substitute in the upper airway and in the vascular field amongst others. This study evaluates the biocompatibility of this polymer when exposed to urine in vitro and how this affects its mechanical properties.

**Patients and Methods:** Bilaminar POSS-PCU tubes (10 cm long; 24Fr diameter) were produced by casting a non-porous 20µm thick inner layer and coagulating an outer layer over it, for a combined wall thickness of 1 mm, using a purposely developed extrusion device. These were then exposed to pooled human urine over a 10 week period in an incubator at 37oC. Accelerated aging in this way allowed assessment of the performance of the biomaterial when exposed to urine. A dynamic model using an oscillating pump was set up in which the conduits were exposed to urine flow at a pressure of 200 cm H2O. Calcium deposition was assessed quantitatively using absorption spectrometry. Stress/strain behaviour using an Instron-5565 tensile tester (Instron Ltd, Buck, UK) and contact angles using the EasyDrop DSA20E system were evaluated.

**Results:** No leakage was demonstrated from the constructs which also resisted diverticalisation at the pressures tested in the flow circuit, which by far exceed normal voiding pressures. The burst pressure was in excess of 600 cm H2O. The percentage elongation at break point was 353.8 ± 13% at a thickness of 1 mm. After exposure to urine this did not change significantly. Contact angle measurement by the sessile drop method also showed that the hydrophobicity of the luminal surface of the conduits did not change significantly after exposure. POSS-PCU tubes demonstrated increased resistance to calcium deposition compared to silicone and latex controls (14.85 vs 17.9 vs 21.9 mg/dL).

**Conclusions:** Bilaminar POSS-PCU conduits provide a non-porous luminal surface which possesses good biocompatibility with urine in vitro. The outer porous layer allows for ingrowth of cells and blood vessels. The mechanical properties of the constructs provide characteristics which make them suitable for use as a tubularised urethral substitute. This will be assessed in vivo in an animal model.

**219 The urologist’s role in multidisciplinary management of placenta percreta**

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**Introduction:** Placenta percreta is the most serious of the placental adhesive disorders in which the placenta grows abnormally deep into the uterus, penetrating the myometrium, breaching the serosa and invading other surrounding pelvic organs. These patients are at risk for massive hemorrhage at delivery and usually require caesarean hysterectomy. Multidisciplinary evaluation and management is needed for patients with involvement of the surrounding pelvic organs. Although bladder and ureteric involvement is rare, estimated at 1:10,000 births, the rise in caesarean section rates is causing an increased incidence of placenta percreta and an increased need for urological intervention. The aim of this study is to evaluate urological interventions in cases with placenta percreta in our collaborative experience of a tertiary referral centre.

**Methods:** We performed a retrospective analysis of a prospectively collected data set, consisting of all women that presented with placenta percreta at the Royal Women’s Hospital from August 2009 to September 2013.
Results: Since August 2009, forty-eight women presented with placenta percreta. Thirty-six of them (75%) underwent urological interventions. The patients were divided into three groups: planned hysterectomy (n = 29), planned conservative management (n = 5) and undiagnosed placenta percreta (n = 7). In the planned hysterectomy group all 29 patients underwent preoperative cystoscopy and stent placement. In 10 patients (34%), the placenta partially invaded the bladder and/or ureter, needing urological repair. In the conservative management group, four underwent preoperative cystoscopy and stenting and one case required closure of a cystotomy. Of the 7 patients with undiagnosed percreta, two were noted to have bladder involvement requiring repair at the time of caesarean-hysterectomy.

Conclusions: Placenta percreta is a rare, but life-threatening obstetric condition that needs to be managed in a multidisciplinary fashion. Urologists play an important role in prevention of secondary urological involvement and in reconstructive surgery of the bladder and ureter that is needed in up to a third of these patients.

220 Analysis of living donor nephrectomy and recipient renal transplant in a tertiary centre


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Introduction: The number of patients with end stage renal failure requiring renal transplant continues to increase but waiting time for renal transplant and number of available grafts persist. The increased waiting times on deceased donor waiting list and the superiority of the results of live donation versus cadaveric kidney transplantation have led to an increased number of living donor kidney transplants. We aimed to study the outcomes of living donors and recipients of living donor kidneys in our centre.

Patients and Method: We performed a retrospective study of all patients who underwent living donor laparoscopic nephrectomies and living donor renal transplants at Austin Health, a tertiary hospital in Melbourne between November 2009 and March 2013. The operative time, warm ischaemia time, length of stay, pre and post-operative creatinine and complications were analyzed.

Results: 42 donor-recipient pairs (84 patients) were operated & donor patients had equal male and female donors with mean age of 52.5 years (range, 34–72 years) with average operating time of 194.3 minutes (range, 126–270 minutes) and warm ischaemia time (WIT) of 3 minutes 36 seconds (range, 1 minute 50 seconds–8 minutes). Mean length of stay in hospital was 6 days (range, 4–11 days). 35 patients (83%) had left nephrectomies and remaining 7 had right nephrectomies. 36 donors (85.7%) had single artery and 6 patients had 2 arteries while 41 patients (97.6%) had single vein. Pre- and day 1 post-operative was creatinine were 72 mmol/L and 107 mmol/L respectively and stabilized at 104.5 mmol/L at 1 month mark. Length of stay was 6 days (range, 4–11 days). The average operating time for renal transplant was 208 minutes with WIT time for vascular anastomoses was 7 minutes and 41 seconds. Pre- and day 1 post-operative creatinine levels for recipients were 600 mmol/L and 274 mmol/L respectively. Mean creatinine at 1 month post-operative was 121 mmol/L with an average length of stay of 10 days. Currently, 1 patient developed failing of graft kidney 6 years post transplant secondary to recurrent IgA nephropathy.

Conclusion: We describe the first 42 paired cases of living kidney donation and transplantation performed in our programme. Our experience confirms that living kidney donation transplantation can be done with excellent success and low morbidity for the donor. However, risks of donation have to be clearly discussed with the potential donor and must be balanced against the better outcome for recipients. It should also be emphasized that living donation may have a positive impact in the donor.

221 The original method of formation of neobladder

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Introduction: Radical cystectomy is a surgical treatment for bladder cancer. After these operations, an important issue is medical and social rehabilitation of patients. Improved results of surgical treatment and quality of life of patients with bladder cancer is possible through the development of new methods of urinary diversion after cystectomy.

Patients and Methods: An original method of forming a vertical orthotopic bladder urethral valve, reservoir mechanism. 55 patients with urinary reservoir formed vertical neobladder after cystectomy. The age of the patients: 20–30 years – 1 (1.8%); 31–40 years – 7 (12.7%); 41–50 years – 11 (20.0%); 51–60 – 21 (38.2%); 61–70 – 13 (23.6%); over 70 – 2 (3.6%). The distribution of patients in stages: T1N0M0 (total lesion of the mucous – 9 (16.4%); T2aN0M0 – 15 (27.3%); T2bN0M0 – 3 (5.5%); T3aN0M0 – 3 (5.5%); T3bN0M0 – 11 (20.0%); T4aN0M0 – 9 (16.4%); T1–4N1–3M0 – 5 (9.1%). Distribution of the degree of differentiation as was follows: G1 – 17 (30.9%); G2 – 23 (41.8%); G3 – 15 (27.3%).

Results: The number of patients with orthotopic bladder formed with the valve mechanism, which were dry during the day at 6 months was 76.5 ± 10.2%; 12 months. – 88.2 ± 7.8; 24 months. – 86.7 ± 8.7, at 36 months. – 92.8 ± 6.9. Nighttime urination at 6 months in the study group was 35.3 ± 10.5%; at 12 months – 88.2 ± 7.8%; at 24 months – 86.6 ± 8.8%.

Conclusions: An original method of forming a vertical orthotopic bladder valve mechanism, resulting in better surgical rehabilitation of patients after cystectomy.
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Using the operation Studer after radical cystectomy (our experience)

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Introduction: Operation Studer is a well-established operation after cystectomy. The aim of our work is the rehabilitation of patients with bladder cancer after cystectomy operations through the use of Studer. We present our experience.

Patients and Methods: 19 patients underwent surgery for the procedure Studer. Age distribution: 31–40 years old 2 (10.5%), 41–50 years (10.5%), 51–60 5 (26.3%) 61–70 9 (47.4%) over 70 1 (5.3%). The distribution of patients according to tumor stage: T1N0M0 5 (26.3%); T2aN0M0 – 3 (15.8%); II stage T2bN0M0 – 5 (26.3%); T3bN0M0 – 4 (21.1%); T2bN0M0 – 3 (15.8%); T1–4N1–3M0 – 1 (5.3%). Distribution of the degree of differentiation: G1 – 5 (26.3%); G2 – 7 (36.8%); G3 – 7 (36.8%).

Results: The number of patients were continent during the day in 6 months 31.4 ± 7.8%; 12 months – 83.3 ± 5.4%; 24 months – 90.4 ± 6.4%, at 36 months – 90 ± 6.7%. Nighttime urination at 6 months amounted to 14.3 ± 5.9%; at 12 months – 50.0 ± 9.1%, at 24 months and 61.9 ± 10.6%.

Conclusions: An original method of forming a vertical orthotopic bladder valve mechanism, resulting in better surgical rehabilitation of patients after cystectomy.

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Bilateral puborectalis interposition repair of rectourethral fistula

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Introduction: Rectal-urethral fistula is a rare but significant complication usually seen after radical prostatectomy, inflammatory bowel disease or caused by iatrogenic instrumentation. Usually this type of fistula repair requires laparotomy, excision of fistula and omental interposition. Previously other perineal approaches to repair this type of fistula include York Mason trans-sphincteric approach or trans-perineal sphincteric preserving ± gracilis interposition technique. Complications after repair commonly seen include recurrent fistula, urinary and anal incontinence. We describe here a new perineal, anal and urethral sphincters preserving technique using the puborectalis as a bilateral rotational flap interposition that does not need the mobilisation of gracilis muscle flap, or the use of omentum.

Methods: Careful perineal dissection between the urethra and anal canal, with particular attention to the anal sphincter, and the fused plan of the Denovillier’s fascia, the fistula is exposed. The dissection is carried out further cranially and laterally after the exposure of the fistula. The puborectalis muscle can be identified by its longitudinally fibres and just medial to the ischio-rectal fat pad. After debridement and primary closure of the fistula a strip of the puborectalis is dissected off its medial attachment on both sides and rotated medially to cover the fistula tract in a double breast fashion before closure of the wound. The repair is protected by catheter urinary diversion as well as by a temporary colostomy.

Results: The rarity of this group of patients made a large study near impossible. Four patients referred to our unit had the puborectalis flap repair between Nov 2011 and Dec 2012. One patient has Crohn’s disease, two patients had previous radical prostatectomy, one had post operative radiotherapy, and the remaining patient had previous perineal trauma and attempted closure of the fistula with fibrin glue. After repair and radiological confirmation of healed fistula, the temporary colostomy was closed three months later except the patient with ileostomy due to Crohn’s disease. All patients were analy continent and urinary continence has not worsened by the procedure to present day.

Conclusion: With limited experience we present this new method of urethro-rectal fistula repair. It appeared to have high success rate and very low morbidity to continence. With increasing rate of radical prostatectomy in our community this alternate perineal approach to this debilitating complication may offer a better outcome.

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Laparoscopic intervention in a young female with transcaval ureter: a case report

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Introduction: Transcaval ureter is a rare embryological anomaly of the inferior vena cava, wherein a partially duplicated infra-renal inferior vena cava creates an opening through which the right ureter can pass. This periureteric venous ring is likely to represent the unusual persistence of both the right posterior cardinal and right supracardinal veins during embryological development of the inferior vena cava. Few cases of transcaval ureter have been reported in medical literature. This case report also offers the opportunity to review the literature on the detection and management of transcaval ureter.

Methods: A 21-year-old woman was referred by her general practitioner for management of a two-month history of intermittent episodes of worsening dull right flank pain. The pain was exacerbated by consuming large amounts of fluids, but was otherwise not associated with any additional urinary symptoms. Examination revealed tenderness over the right costovertebral angle. Results of a full blood count, urea, electrolytes and creatinine, cholesterol and triglycerides, liver function tests, and a urinalysis were unremarkable. Ultrasound of the renal tracts demonstrated a right hydrenephrosis. CT of the abdomen and pelvis showed the right ureter passing posteriorly to the inferior vena cava and mild dilatation of the right renal pelvis. A CT intravenous pyelogram revealed transcaval ureter, with the right ureter passing medially through a venous ring created by a partially duplicated inferior vena cava.

Results: The patient underwent cystoscopy with insertion of a right double-J ureteric stent, followed by a retroperitoneal laparoscopic uretero-ureterostomy to correct the anomaly and relieve the obstruction of the ureter. During the
surgery, transcaval ureter was confirmed. The right ureter was sectioned on both sides of the inferior vena cava followed by an uretero-ureteric anastomosis. Postoperative convalescence was uneventful and a follow up X-ray of the renal tracts showed a normally placed right-sided ureteric stent. Since surgical intervention, the patient experienced resolution of the flank pain.

**Conclusions:** This case demonstrates the importance of imaging techniques such as CT intravenous pyelogram to make a correct preoperative diagnosis of transcaval ureter. Recognition of this rare anomaly is clinically important in explaining a cause of ureteric obstruction, and in planning appropriate surgical intervention to avoid potential complications of recurrent urinary tract infections, urinary calculus formation and impaired renal function. Although traditionally performed via open surgery, the patient in this case underwent surgical correction by a laparoscopic approach.

**Patients and Methods**
- 315 consecutive patients having undergone RARP between May 2008 and September 2012 under the care of two consultant urological surgeons at three Melbourne hospitals were identified.
- 53 patients were excluded for follow up less than six months, follow up occurring elsewhere or having undergone radiotherapy or urethral instrumentation within one year of follow up. 262 patients were included in the analysis.

**Conclusion**
- Wilcoxon rank, Kruskal-Wallis, Bernard's unconditional test and Cox proportional hazard model for interval censored data were used for comparison of variables. Univariate analysis was used for predictors of time to UC recovery.

**Results**
- Of 262 men, 9% (n = 24) were ≥70 years old. Older men had higher PSA (p = 0.007) and clinical stage (p = 0.0004) compared to the younger cohort. There were more non-nerve sparing procedures in the older group (p = 0.009) and a shorter mean operative time (p = 0.004).
- At 4–6 weeks, the number of pads used per day was greater in older men (p = 0.03) and there was a trend towards fewer older men being fully continent (p = 0.08) compared to their younger counterparts, however by 3 months and all time points thereafter there was no difference in continence between the groups (Figure 1).
- 12-month continence was 89% and 92% for men <70 and ≥70 years respectively
- Age, BMI, D’Amico risk group nor nerve sparing were predictors of time to urinary continence recovery.

**Conclusions**
- Urinary continence recovery after RARP in men ≥70 years appears comparable to young men and therefore not a reason to deny older men with a reasonable life expectancy curative surgical treatment of localised prostate cancer.
Introduction

Partial nephrectomy (PN) has become the gold standard for the treatment of small renal masses over the last decade. Aboumoukou et al. (2012) in a large systematic review and meta-analysis reported robotic assisted partial nephrectomy (RAPN) to be a feasible and safe alternative to laparoscopy with decreased warm ischaemia time (p = 0.0008).

We aim to describe initial outcomes from a single surgeon case series of RAPN in Melbourne.

Methods

- 49 consecutive patients having undergone RAPN between November 2010 – October 2013 under the care of one consultant surgeon at three Melbourne hospitals were identified; Peter Mac, Epworth and Cabrini Healthcare.
- Simple frequencies were used for data analysis.
- Outcomes included staging, perioperative, complications, pathological and oncological characteristics

Results

- From 50 operative cases, 51 lesions were removed from 49 patients.
- Mean age was 58.3 years, the majority were male (68%) and the mean BMI was 28.5 (18–36.2). Regarding comorbidities age adjusted Charlson index was on average 4.6 and 53.3% and 11.1% of patients had pre-existing hypertension and diabetes respectively. 26.7% had previous abdominal surgery.
- RENAL nephrometry score for lesions was 30%, 66% and 6% for low, moderate and high complexity respectively.
- Mean operative time was 151 minutes and warm ischaemia time 17.8 minutes.
- Mean LOS was 3.1 days (2–6). Average blood loss was 172.5 mls (20–1050 mls) with a mean difference in haemoglobin pre and post op of 20 ng/ml. There were no conversions to an open approach.
- Clavien complications totalled 13.2%; minor complications (I & II) 4.4%, major complications, 8.8%. Blood transfusion was required in one patient (2.2%) who also required radiological embolisation for persistent haematuria (IIIA). Two patients were readmitted for haematuria and clot colic requiring stent insertion (IIIb). One patient with a cardiac history was admitted to ICU with a non-ST elevation myocardial infarction (IV). There were no deaths.
- Of the 51 lesions, 84.3% were malignant, the majority of which were clear cell (74.4%). Of all benign lesions (16%) the majority were oncocytomas, 75%. Two positive surgical margins were noted however both were in benign tumours. No oncologic recurrence has been noted with a mean follow up of six months.

Conclusions

- RAPN has been safely introduced into Australia in both the private and public sectors with at least comparable results to large international series.
228 Practice patterns and perioperative outcomes of radical prostatectomy in Victoria: a comparison of open, laparoscopic and robotic prostatectomy in 5138 patients over 3 years

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Introduction
• RARP was introduced into the Victorian (VIC) public system in July 2010 at Peter Mac.
• We aimed to report recent patterns of care of radical prostatectomy (RP) in VIC and compare all patients by surgical approach in regards to demographic characteristics and primary outcome measures including length of hospital stay (LOS) and blood transfusion rates. Secondary outcome measures include hospital in the home (HITH) stay, intensive care unit (ICU) admission and need for continuous mechanical ventilation (CMV).

Methods
• Data was extracted from the VIC Admitted Episodes Data Set (VAED) utilising the Australian Classification of Health Interventions (ACHI) codes for open and laparoscopic prostatectomy of all patients in Victoria from July 14 2010-April 13 2013 (33 months).
• Refined: VIC diagnosis-related groups (DRG) M01A/B and an International Classification of Diseases (ICD) primary diagnosis code C61.
• Excluded: procedure codes for cystectomy.
• 5138 patients were compared in regards to demographic characteristics, primary and secondary outcomes listed above.
• Public data could be separated to compare open (ORP), laparoscopic (LRP) and robotic (RARP) approaches and private into ORP and minimally-invasive prostatectomy (MIP = LRP & RARP).

Results
• 52 VIC hospitals undertook RP; 23 public (60.9% metro), 29 private (72.4% metro).
• Publically, over the last three years the number of ORPs has decreased and RARPs increased. All RARPs were performed in a metropolitan hospital whereas 12% of LRPCs and 30% of ORPs were performed rurally.
• Publically, the mean (±SD) LOS was significantly improved with RARP (1.67 ± 2.03) compared to LRP (3.56 ± 2.66) and ORP (4.82 ± 3.43).
• Privately, mean LOS was improved for MIP (3.07 ± 1.79) compared to ORP (5.24 ± 2.61).
• Similarly public blood transfusion rates were significantly improved with RARP with no transfusions compared to 6.1% laparoscopically and 54.7% with an open approach. Privately, 1.8% of MIP patients required transfusion compared to 16.5% ORP.
• Comparing public Vs private ORP, notably there are significantly greater blood transfusions required in public, 54.7% compared to 16.5%. However significantly shorter LOS for public (4.82 ± 3.43) compared to private ORP (5.24 ± 2.61).
• In the private system, ICU admission differed significantly with 23% ORP requiring admission versus 9% MIP.

Conclusions
• Patterns of care in the surgical management of RP are shifting towards more robotic procedures at metropolitan-based institutions. In the public health system, there are significantly improved length of stay and blood transfusion rates. Similarly in the private system, we see improved length of stay, blood transfusion rates and ICU admissions with MIP over ORP. Comparing public to private ORP there is a reduced length of stay, ICU admission rate but greater blood transfusion requirement.

229 Rectal invasion from advanced prostatic adenocarcinoma: a case series

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Introduction: Rectal invasion is a rare outcome from prostatic adenocarcinoma due to the protective barrier of Denonvilliers’ fascia. Previously reported rates of rectal infiltration are as high as 9% from autopsy studies, however limited data is available and no independent risk factors have been identified. Five patients have been identified with this rare sequela from the Hawke’s Bay region over the past thirteen years.

Methods: All patients were identified from the Hawke’s Bay region with prostatic invasion from advanced localised rectal adenocarcinoma from both public and private sectors. Data was retrospectively collected from electronic medical health records. Information collected included patient demographics, PSA, Gleason score, staging, progression of disease, diagnosis of rectal invasion and subsequent management.

Results: The mean age of patients was 76 years (range 66–92) at time of diagnosis of prostate cancer with initial PSA ranging from 13.1–51.4. All patients were of European descent. Four patients had an initial Gleason score between 6–8 with two of these patients receiving radical treatment for prostate cancer and two receiving hormonal manipulation. The final patient was diagnosed with a Gleason pattern 5 prostate cancer following an acute presentation with large bowel obstruction. Symptoms preceding the diagnosis of rectal invasion included rectal bleeding, perineal pain, constipation or large bowel obstruction. Following the diagnosis of rectal invasion, three patients received a defunctioning colostomy and three patients received palliative radiotherapy. Three patients subsequently died with a mean survival of 91 months (range 40–140) from initial diagnosis of prostate cancer and 19 months (range 2–50) following diagnosis of rectal invasion. Two patients are still alive at 9 and 159 months after initial diagnosis of prostate cancer.

Conclusions: While rectal invasion is an uncommon sequela from prostatic adenocarcinoma, this should be considered for patients presenting with symptoms suggestive of rectal pathology in order to guide appropriate further management.
The risk of venous thromboembolism after open radical prostatectomy and the role of extended thromboprophylaxis

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Introduction: VTE is a common cause of preventable death in hospitalised patients. The administration of extended prophylaxis (EP) in those high risk cancer patients who are otherwise not at risk for major bleeding complications is a class 2a indication from the American College of Chest Physicians. These guidelines are based on 3 systematic reviews that are limited by the low number and quality of included studies; the small sample size; the high loss to follow-up and the focus on asymptomatic DVT. In addition these studies lack a cohort of urological patients with results extrapolated from general surgical and gynaecological procedures. This year at Monash Health, EP was introduced specially wide to encompass all open pelvic and upper tract operations for urological malignancy. The aim of this study was to determine the 30 day post-operative risk of a clinical DVT/PE for ORP to draw conclusions about the need for EP, and the first step in the audit cycle to determine its efficacy.

Patients and Methods: Retrospective analysis of all patients who underwent open radical prostatectomy at Monash Health between Jan 2008 and May 2013. During this time standard prophylaxis was thromboembolic prevention stockings (TEDS) and post-operative LMWH (CP). The 30 day post-operative risk of symptomatic DVT/PE was determined from review of electronic hospital and GP records.

Results: Between Jan 2008 and May 2013 275 patients underwent open radical prostatectomy at Monash Health. Data was available on 261. The 30 day post-operative risk of DVT/PE was 2.7% (7/261).

Conclusions: The incidence of symptomatic VTE in our target population is low at 2.7%, and is in line with contemporary ORP series (0–6.2%) [Table 1]. Although data on EP in ORP is unfortunately limited, rates of VTE of 0% have been reported with the concurrent use of EP and sequential compression devices (SCD). We will need to await the outcomes of EP at Monash to see whether we can replicate this dramatic reduction. Of note these rates are higher in comparison to minimally invasive prostatectomy (RALP/LRP), presumably due to earlier mobilisation, despite pneumo-extraperitoneum. LMWH in these series seem to add little benefit to standard SCD.

Positive surgical margins after radical prostatectomy: the dilemma of adjuvant radiotherapy

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Introduction: Radical prostatectomy (RP) is the gold standard for the management of clinically organ confined prostate cancer (PC). Positive surgical margins (PSM) may result from a variety of reasons. The goals of neurovascular bundle and sphincter preservation conflict with adequate cancer control in high risk patients. PSM has been associated with a higher risk of biochemical recurrence (BCR) and patients are often advised adjuvant radiotherapy (ART) to reduce the risk of BCR and cancer progression. Recent reports challenge the role of PSM as an independent association with systemic progression, cancer specific and overall mortality. Patients receiving ART for PSM may needlessly be exposed to radiation risk and side effects. We present our single surgeon experience of post radical retropubic prostatectomy (RPP) cancer control, BCR and need for radiation therapy.

Patients and Methods: All consecutive patients with clinically localized PC and operated for RRP by a single surgeon (RN) between Oct 2007 and March 2012 are included. All patients had a minimum 12 months of post operative follow up and were reviewed at least 3, 6, and 12 months post operatively. PSM were determined as per reviewing pathologist and information gathered retrospectively through chart review. BCR defined as per ASTRO/AUA guidelines as prostate specific antigen (PSA) ≥ 0.2 ng/ml.
Results

**FIG. 1.** Overview of number (%) of patients cancer control, BCR and need for radiation

*Positive Surgical Margin 44/115 (38%)*

- BCR 9/44 (20%)
- No BCR 35/44 (80%)
- Received Radiation 21/44 (38%)

*Negative Surgical Margin 71/115 (62%)*

- BCR 5/71 (7%)
- No BCR 66/71 (93%)
- Received Radiation 11/71 (15%)

If all patients with PSM had been offered radiotherapy we would have exposed 35/44 (80%) of PSM patients to unnecessary radiation. If radiotherapy was only offered to patients with BCR, only 14/115 (12%) patients in total would have been offered radiation.

**Conclusions:** Cancer control is the most important outcome affecting patients post RP, yet there is no consensus on management of patients with PSM. Recent reports have questioned the degree of association of PSM with BCR and also show that patients with BCR have a variable prognosis. Despite this, PSM patients are being managed by ART in a bid to decrease the risk of BCR. Given the sensitivity of PSA to detect disease recurrence in post RP patients with PSM, a ‘wait and watch’ approach such as early salvage radiotherapy may be beneficial.

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**Prevalence of high risk features in radical prostatectomy specimens in patients who met criteria for nerve-sparing radical prostatectomy**

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**Introduction:** Superior erectile function and continence outcomes have been reported after nerve sparing radical prostatectomy (NSRP) compared with non-nerve sparing radical prostatectomy (NNSRP). Due to concerns that NSRP may be associated with inadequate oncological resection, criteria have been proposed to select patients for NSRP to minimise risk of poorer oncological outcomes. The objective of this study was to assess the prevalence of high-risk features in NNSRP specimens in patients who met criteria for NSRP and to compare biochemical recurrence rates (BCR). We hypothesized that the prevalence of high-risk features may be greater than expected and correlation between preoperative and postoperative parameters may not be as robust as expected. Therefore performing NSRP may lead to higher BCR compared with NNSRP. Such findings would be important in a clinician’s decision-making process and when counseling a patient to undergo NSRP versus NNSRP.

**Methods:** A retrospectively collated database of all men who underwent RP for prostate cancer, from April 2007 to December 2012 inclusive, at a single institution, by 5 surgeons, was examined. Of 274 men who underwent RP, 106 men met preoperative criteria to undergo NSRP based on PSA ≤ 10, stage < T2, and transrectal ultrasound prostate biopsy (TRUSPB) results (<Gleason 4 + 3 = 7, <50% cores involved, no extracapsular extension (ECE)). Of this group, 82 men underwent NNSRP. Histopathological assessment of TRUSPB and RP specimens were performed by a single pathology service. Data was interrogated for histopathological results and BCR over 5 years. Statistical analysis was performed in Microsoft Excel 2011, comparisons made using Student’s t test and clinical significance set at P < 0.05.

**Results:** Of the 82 men, 13% (11/82) had ECE and 10% (8/82) had extraprostatic perineural invasion (EPPNI). No patients had lymphovascular invasion. 22% (18/82) of men had positive surgical margins (PSM), 29% (24/82) were upgraded regarding Gleason score from TRUSPB to RP; in 12% (10/82) the upgrade was to Gleason 4 + 3 = 7. 1 case was downgraded from Gleason 3 + 4 = 7 to Gleason 3 + 3 = 6; 2 cases had no malignancy found on RP.

There was a significantly lower PSM rate in men who underwent NNSRP compared with NSRP (42 vs 22%, P = 0.027). No significant difference in 2 year (P = 0.10) and 5 year (P = 0.13) BCR rates were demonstrated between NSRP and NNSRP groups; however, the study was underpowered for this analysis.

**Conclusions:** In men who met criteria for NSRP and underwent NNSRP, there was an higher than expected rate of high risk features after RP; 13% had ECE and 10% had EPPNI. Furthermore, 12% of men who met criteria for NSRP and underwent NNSRP, had an upgrade in Gleason score at RP that would have rendered them unsuitable for NSRP if detected preoperatively. Although no significant difference in BCR rates at 2 and 5 years between NSRP and NNSRP groups was detected, the study was underpowered for this analysis.

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**233 MR guided prostate biopsy: our initial experience**

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**Introduction:** Multiparametric MRI and its role in investigating prostate cancer has been outlined in recently published literature (ESUR 2012 MR guidelines). We describe our initial experience with MR guided prostate biopsy.
Patients and Methods: 24 patients underwent 3T multiparametric MR guided prostate biopsy over a period of 10 months from Nov 2012 to Aug 2013. All data was prospectively collected. Ethics was approved from Mater Health Services. Data was collected for age, co morbidities, PSA, PSA velocity, DRE, Prostate volume, PSA density, prior TRUS/Transperineal biopsy results, mpMRI findings, MRI biopsy results and outcomes of patient management.

The age group ranged from 36 to 76 years of age. 7 patients had more than one co-morbidity. The commonest co-morbid condition was HT. PSA velocity ranged from 0.12 to 6.33 ng/ml/year while PSA density ranged from 0.06 to 2.07. 5 patients underwent primary MR guided biopsy while 19 patients had prior TRUS &/or Transperineal biopsy prostate. 1 patient underwent MR guided biopsy post radiation for rising PSA.

All MR guided prostate biopsies were reported by a single Uropathologist. 10 patients had a benign biopsy while 14 had prostate cancer ranging from Gleason 3+4 to 5+4.

6 patients underwent radiation treatment (EBRT/LDR/HDR brachytherapy) while 6 patients underwent radical prostatectomy (open/Robotic).

Results: The age group ranged from 36 to 76 years of age. 7 patients had more than one co-morbidity. The commonest co-morbid condition was HT. PSA velocity ranged from 0.12 to 6.33 ng/ml/year while PSA density ranged from 0.06 to 2.07.

5 patients underwent primary MR guided biopsy while 19 patients had prior TRUS &/or Transperineal biopsy prostate. 1 patient underwent MR guided biopsy post radiation for rising PSA.

All MR guided prostate biopsies were reported by a single Uropathologist. 10 patients had a benign biopsy while 14 had prostate cancer ranging from Gleason 3+4 to 5+4.

6 patients underwent radiation treatment (EBRT/LDR/HDR brachytherapy) while 6 patients underwent radical prostatectomy (open/Robotic).

Conclusions: Prostate mapping and needle localization of prostate cancer remains an evolving field. Till date TRUS remained to be a gold standard in localizing prostate cancer. Recently mpMRI and MR guided biopsy has emerged as a promising technology in this field.

Conventional gray scale TRUS has a limited sensitivity and specificity. mpMRI 3T with appropriate image sequencing has been able to localize high grade prostate cancer.

The challenge remains in biopsying the index lesion using MR guided biopsy. In this paper we discuss our initial experience with MR guided biopsy of prostate.

mpMRI 3T and MR guided biopsy has a promising role in paving out the pathway for managing these challenging clinical cases.

234 The accuracy of 3.0 Tesla MRI in local and nodal staging of prostate cancer

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Introduction: There is no uniform consensus on how best to stage prostate cancer. We report on the accuracy of our 3.0 Tesla (3T) MRI in predicting the local and nodal stage of prostate cancer in patients undergoing radical prostatectomy at Waikato Hospital.

Patients and Methods: All patients who underwent radical prostatectomy (RP) between January 2010 and June 2013 and had a pre-operative 3T MRI were included in the study. All MRI examinations were performed with a General Electric 3T MRI, utilising T1 and T2 weighted views as well as diffusion weighted imaging and generation of apparent diffusion coefficient values. All MRIs and RP specimens were reviewed by genitourinary radiologists and pathologists. We compared the MRI and histology findings and calculated the sensitivity, specificity, positive and negative predictive values (PPV, NPV) for extracapsular extension (ECE), seminal vesicle invasion (SVI), and lymph node disease (LND).

Results: A total of 115 patients underwent RP. 65 patients had pre-operative MRI were eligible. Median age was 63 (43–75), median PSA 7.9 (3.08–31). Table 1 shows the breakdown according to D’Amico classification. Comparisons between MRI and final histology resulted in a sensitivity and specificity of 33.3% and 87.5% for ECE (Table 2), 50.0% and 95.2% for SVI (Table 2), and a 97.5% specificity of LND (Table 2). The PPV and NPV are shown respectively. The sensitivity for LND could not be calculated because there were no false negatives.

Conclusions: Local and nodal staging of prostate cancer with 3T MRI at Waikato Hospital resulted in a sensitivity of 33.3–50% and specificity of 87–97.5%. However, larger patient numbers are required for more representative values.

---

### Table 1. Patient characteristics by D’Amico classification

<table>
<thead>
<tr>
<th>D’Amico</th>
<th>Number who had RP</th>
<th>Patients with 3T MRI</th>
<th>Age</th>
<th>Median PSA</th>
</tr>
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<tbody>
<tr>
<td>High</td>
<td>11</td>
<td>10</td>
<td>66</td>
<td>53–75</td>
</tr>
<tr>
<td>Intermediate</td>
<td>56</td>
<td>34</td>
<td>64</td>
<td>43–75</td>
</tr>
<tr>
<td>Low</td>
<td>48</td>
<td>21</td>
<td>62</td>
<td>46–71</td>
</tr>
<tr>
<td>Total</td>
<td>115</td>
<td>65</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Table 2. Accuracy of MRI for ECE, SVI and LND

<table>
<thead>
<tr>
<th></th>
<th>Histology +</th>
<th>Histology –</th>
<th>Sensitivity</th>
<th>Specificity</th>
<th>PPV</th>
<th>NPV</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. ECE</td>
<td></td>
<td></td>
<td>33.3%</td>
<td>87.5%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MRI +</td>
<td>3</td>
<td>7</td>
<td></td>
<td></td>
<td>30%</td>
<td>89.1%</td>
</tr>
<tr>
<td>MRI –</td>
<td>6</td>
<td>49</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>b. SVI</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MRI +</td>
<td>1</td>
<td>3</td>
<td></td>
<td></td>
<td>25%</td>
<td></td>
</tr>
<tr>
<td>MRI –</td>
<td>1</td>
<td>60</td>
<td></td>
<td></td>
<td>98.4%</td>
<td></td>
</tr>
<tr>
<td>c. LND</td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>MRI +</td>
<td>1</td>
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<td></td>
<td></td>
<td>50%</td>
<td></td>
</tr>
<tr>
<td>MRI –</td>
<td>0</td>
<td>39</td>
<td></td>
<td></td>
<td>100%</td>
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235  
Prostate cancer management over the last decade  
*Stepping Hill Hospital, Stockport, United Kingdom; †Royal Albert Edward Infirmary, Wigan, United Kingdom  

Introduction: Over the last decade we have witnessed enormous progress in our understanding of the biology of prostate cancer (PCa). Since the pioneering work of Huggins and Hodges, ongoing cytogenetic investigations have led to the development of new therapies. Several factors have contributed to the way we diagnose and manage localised prostate cancer in modern era, these include: a better understanding of significant and insignificant disease, the role of active surveillance, emergence of alternative treatments to radical prostatectomy (brachytherapy, focal therapies), and the expanding role of laparoscopic and robot-assisted procedures. We aimed to examine changes in the management of prostate cancer in the North West of England over a 10-year period.  

Patients and Methods: Retrospectively collected data on practice of urologists in the diagnosis, staging and management of prostate cancer over a 10-year period as part of the Northwest Regional Urology Audit by independent data analyst. In this cross sectional study results were analysed at three time points: 2003, 2007, and 2011 in a sample of 648 patients  

Results: Median time from management decision to surgery for 2003 was 46 days, for 2007 34 and for 2011 27 days. Gleason grade increased over time, with 23% of patients in 2003 with Gleason 7, 32% in 2007 and 49% in 2011. Significant increase in last 3 years was observed for Gleason 8 or more disease: 6% in 2003, 5% in 2007 and 8.6% in 2011. Increase of clinical stage was noted, with 2% of stage T3 patients diagnosed in 2003 and 2007, and 5% in 2011. Overall postoperative complication rate reported has decreased from 12% in 2007 to 9% in 2011. Continence rates at 3 months were stable over time: 55% in 2003 to 45% (2007) and 44% (2011).  

Blood transfusion rate has decreased from 9.7% in 2007 to 6.6% in 2011. Of concern has been an increasingly poor documentation of pre-operative potency (43%; 2011) and post-operative (31%; 2011).  

Conclusions: The treatment of patients with prostate cancer in our region has changed enormously in last decade. Detection of higher risk prostate cancer, more common opportunistic PSA testing, aging of the population together with the increasing use of newer, higher-cost technologies in the treatment of patients with prostate cancer may have significant implications for current and future management strategies.  

236  
The influence of prostate weight on peri-operative outcomes of robot-assisted laparoscopic prostatectomy  
*Royal Melbourne Hospital, Melbourne, Australia; †Bankstown Hospital, Sydney, Australia  

Introduction: Robot-assisted laparoscopic prostatectomy (RALP) in patients with large prostate glands is known to be challenging. The increased size of some prostates decreases the working space in the pelvis, creating impaired visibility and limiting the mobility of the prostate. Moreover, it is often difficult to perform a bladder neck sparing procedure and bladder neck reconstruction is required. The objective of this study is to evaluate the impact of prostate weight on surgical and pathological outcomes of RALP.  

Patients and Methods: We performed an analysis of all men undergoing RALP at our centres between October 2003 and September 2013. All peri-operative and pathological data were prospectively collected in our database. Men were divided into three groups depending on the weight of the pathological prostate specimen: small (<50 g), medium (50–74 g) and large (≥75 g) prostates. The parameters analysed included age, PSA, clinical staging, biopsy Gleason score, D’Amico risk stratification, operative time, estimated blood loss, hospital stay, pathological staging and Gleason score and complication rates.  

Results: In our centres, 2041 consecutive men underwent RALP from October 2003 to September 2013. Based on the criteria above, 1178 radical prostatectomy specimens were classified a small, 682 as medium sized and 181 as large. Patients with large prostates were significantly older and had a higher pre-operative PSA values than patients with smaller glands (median age 65 vs. 62 vs. 59 years, median PSA 8.0 vs. 6.7 vs. 5.8 ng/ml for large, medium and small glands respectively).  

As described in literature, operation time and estimated blood loss were significantly elevated in the large prostate group (median operation time 185 vs. 171 vs. 165 min and median blood loss 250 vs. 200 ml for large, medium and small glands respectively). Transfusion rates were, however, not significantly different. Also peri-operative complication rates (for all Clavien scores) and hospital stay were similar in the three groups. In the large prostate group, there were significantly less positive surgical margins compared to small prostates for pathological for pT2 tumours, with a similar trend in pT3 specimens. (positive margins 7.7%, 9.7% and 15.3% for pT2 tumours and 42.4%, 45.6% and 49.2% in large, medium and small tumours respectively).  

Conclusions: RALP in men with large prostates can be technically challenging, as illustrated by longer operation times and higher peri-operative blood loss. Nevertheless, with the implication of some small changes in the surgical technique the operation can be performed safely with similar complication rates and at least similar oncological efficacy.  

237  
Assessing GP attitudes towards prostate cancer screening among 500 general practitioners in the Sydney South Western Local Health District  
J. FOO*, P. RATHORE*, P. MANCUSO* and M. WONG†  
*Liverpool Hospital, Sydney, Australia; †Bankstown Hospital, Sydney, Australia  

Introduction: PSA screening is controversial among various general
practices around the world. Urological Association recommends PSA screening to decrease the mortality and morbidity associated with a delay in prostate cancer diagnosis. In the Sydney South Western Local health district, we are seeing patients not being routinely screened for prostate cancer and presenting with metastatic disease and its associated complications. Current guidelines in Australian General Practice does not recommend routine screening for prostate cancer unless patients ask for screening. The purpose of our study is to survey the attitudes and understanding of GPs within our health district regarding prostate screening and provide feedback and tailored educational sessions for GPs within our area of study. Methods: A questionnaire regarding PSA testing and associated needs for education was sent via electronic mail and letters to all GPs in the Sydney South West Health Local District. A series of questions pertaining to beliefs about prostate cancer screening, types of typical tests performed for prostate screening, age of starting prostate screening offered, age of cessation of prostate screening, percentage of patients choosing to undergo prostate screening if offered, views on prostate cancer screening pertaining to GPs and their relatives, and risks versus benefits of prostate cancer screening were posited. Results were received in an electronic time-stamped response or in written forms returned in reply-paid envelopes and then analysed.

Results: Of the contacted GPs, 80% responded (electronically and reply-paid). A 95% majority of GPs surveyed believed in performing DRE and PSA tests for prostate cancer screening and that it was useful despite not being a recommendation in the Red Book guidelines. However, GPs still did not actively offer appointments for prostate cancer screening.

Conclusions: The findings of this study elucidate the variability of PSA testing amongst GPs within the South Western Sydney local health district. The basis of prostate cancer screening amongst GPs in this study were not consistent with College guidelines nor national societies recommendations. A majority of GPs did believe strongly that prostate screening would benefit the long term health outcomes of male patients however did not actively organise PSA screening. A combination of PSA and DRE were the most common bimodal form of screening amongst GPs for patients with a history of LUTS or positive family history of prostate cancer. The feedback received is crucial towards forming a standardised Australian guideline for prostate cancer screening and will be useful in tailoring efforts towards providing education for GPs to improve their involvement in diagnosing early prostate cancer and reducing the morbidity and complications of a late diagnosis.

238 Impact of obesity on the clinical and pathological outcomes of patients undergoing radical cystectomy – Liverpool experience

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Introduction: Radical cystectomy (RC) remains the gold standard for the treatment of invasive bladder cancer and provides the best long term survival outcome. However, despite vast improvements in perioperative patient care, RC continues to carry a significant complication rate and morbidity. Studies have shown that obesity is closely linked with higher rates of postoperative complications in post radical cystectomy patients. There is a paucity of information known about the association between Body Mass Index (BMI) and oncological outcomes after RC. Thus, we sought to compare clinical and pathological outcomes of patients receiving RC in our unit with current literature.

Methods: A retrospective analysis of patients who had undergone RC from January 2006 to August 2013 was performed. The data was obtained from the clinical information department after obtaining ethics approval. Indications for RC were limited to muscle invasive, refractory Ta, T1, or carcinoma in situ despite intravesical chemotherapy or immunotherapy. No patients had known metastatic disease at time of surgery based on clinical and radiological assessments. A number of variables were extracted (age, sex, smoking status, BMI, comorbidities, duration of operation, year of operation, type of urinary diversion, blood transfusion, number of days of ICU admission, time to first flatus, length of hospitalisation, complications, histopathology – T staging, presence of carcinoma in-situ, margin positivity, lymph node involvement, lymph node count). The BMI was classified in categorical variables (<25, 25–29.9, 30–34.9, ≥35). Statistical analysis was performed using SAS 9.3 (Cary, North Carolina, USA).

Results: There were 117 cases from January 2006 to August 2013. The mean and median BMI was 28.5 and 28, respectively (range 19–41). There was a statistically significant association between BMI and transfusion rate (p = 0.008), duration of surgery (p = 0.035), length of stay (p = 0.02). Number of lymph nodes sampling was significantly less in the obese group (p = 0.01). However, BMI was not statistically associated with other variables such as the rate of paralytic ileus, histopathological T staging, margin positivity and lymph node involvement.

Conclusions: An increased BMI appears to be associated with a higher rate of transfusion, longer operating time and length of stay. There were no statistically significant differences between BMI and the pathological features apart from less number of lymph node count in the obesity group. Larger, prospective studies are needed to validate these results.

239 Laparoscopic partial nephrectomy without ischaemia. Case series with perioperative outcomes

D. GILBOURD*, K. PEDLER*, C. VAROL*† and M. ARIANAYAGAM*†
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Introduction: Treatment of small renal masses with nephron sparing surgery can achieve equivalent outcomes to radical nephrectomy oncologically. Undertaking this using a laparoscopic approach is a technically demanding procedure and usually requires a period of warm ischaemia time while the renal artery is occluded to minimize blood loss during renorrhaphy. In our practice patients undergoing laparoscopic partial nephrectomy with favourable anatomy were identified and after identifying the
renal artery, the resection was completed without ischaemia, minimizing renal injury.

**Patients and Methods:** Patients undergoing laparoscopic nephrectomy for resection of small exophytic renal mass between 2005 and 2013 by 2 surgeons where hilar clamping was not performed were included in a prospective case series. Tumour characteristics were reviewed including size and location. Perioperative outcomes including operative time, blood loss, transfusion requirement and complications were assessed. Specimen pathology including histopathologic diagnosis and margin status were also reviewed.

**Results:** 16 patients were included performed by 2 surgeons. Age ranged from 36–84 years with a mean of 58. 5 tumours were right sided and 11 were left sided. Mean tumour size was 27 mm (range 14–41) on preoperative radiology and 26 mm (14–40) on histopathology. Location of tumour was lower pole in 67%, upper pole in 25% and midpole in 8%. Operating time averaged 150 minutes (range 75–200). Average blood loss was 380 mL (range 100–600). 3 patients received blood transfusion. Complications encountered were ileus in 1 patient, pneumonia in 1 patient and a delayed return to theatre for bleeding in 1 patients after restarting warfarin. Histopathology revealed clear cell carcinoma in 56%, papillary carcinoma in 13%, oncocytoma in 24% and a low grade liposarcoma in one patient. One patient with oncocytoma had a positive margin suspected on histopathology.

**Conclusions:** This case series demonstrates the viability and safety of laparoscopic partial nephrectomy without hilar clamping in patients with appropriate tumour characteristics.

## 240

**Radical robotic assisted laparoscopic prostatectomy: a day case procedure**

S.S. GOONEWARDENE* and E. ROWE†

*Homerton University Hospital, London, United Kingdom; †Southmead Hospital, Bristol, United Kingdom

**Introduction:** Prostate cancer is one of the most common cancers in men. Radical robotic assisted laparoscopic prostatectomy (RRALP) is the standard technique to treat locally advanced prostate cancer at Bristol Urological Institute. Standard operating procedure with this minimally invasive technique dictates an overnight admission. Patients operated on early in the list with no complications are fit for discharge by that evening. However, there is no paper to date that addresses day case surgery for robotic radical prostatectomies.

**Patients and Methods:** 100 cases admitted to the Bristol Urological Institute under a single surgeon (EWR) were examined from June 2013–December 2010. Case notes and electronic records were scrutinized. Information on procedure, length of stay, complications, Clavien grade, medical reviews and medical/nursing interventions were collected. Data was analyzed and results calculated using percentages.

**Results:** The mean age of patients undergoing a RRALP was 63.8 years (range 50–77 years). The mean length of stay was 1.4 days (range 1–6 days). There were 74 nerve sparing procedures (74%). 38 patients had lymph node resection (38%). There were no intraoperative complications. There were no conversions to open procedures. No patients required intraoperative or postoperative transfusions. No patients required a return to theatre. 88 patients (88%) had ideal post op follow up, including pain relief, with discharge home the next morning. These patients were also stable at the postoperative ward round the same day. There were 13 complications, all Clavien 1 (7 patients) and 2 (6 patients). 7% occurred within a four hour period after 4 hours. 8% required an extra medical review, in addition to ward round. Complications included postoperative hypotension (4, one requiring ITU admission), fever, ileus, large drain output (4), UTI (2), and bleeding.

**Conclusions:** The first objective of any RRALP is oncological control, the second is to give patients a straightforward postoperative recovery with no complications. The complications that arose during this study were Clavien 1 and 2. Out of 100 patients, only 12 had complications, with 7 of those being detected 4 hours postop. However, only five cases needed secondary care intervention, the others could have been managed by primary care. These results demonstrate it is possible for this procedure to be conducted as a day case procedure. We develop a protocol based on these results, for this procedure to be done as a day case procedure.

## 241

**The Worcestershire prostate cancer survivorship programme: a new concept for holistic long term care and follow-up**

S.S. GOONEWARDENE*, V. NANTON†, A. YOUNG‡ and A. MAKAR†

*Homerton University Hospital, London, United Kingdom; †University of Warwick, Coventry, United Kingdom; ‡Worcestershire Acute Hospitals, Worcester, United Kingdom

**Introduction:** Survivorship encompasses patients who have completed curative cancer management. Previously survivorship follow-up was based in secondary care. Already overburdened clinics were full of survivors, which could have been followed up in the community, putting additional pressure on already overburdened staff. In addition patients may receive brief clinic appointments, limited holistic care, and experience financial burdens. We have piloted a new community based model in prostate cancer survivors with over five hundred patients. On entering the programme, the patient would be discharged from clinic, and entered into a specially developed software database. This reviews new PSA results, triggering alerts if results are abnormal, resulting in a specialist nurse (CNS) bringing patients back to clinic for review. The programme is also supplemented by survivorship conferences once a year where patients have access to healthcare professionals and a range of information on prostate cancer related topics.

We aim to evaluate this model with Pickering Institute patient questionnaires, find out what they want at a community based centre and GP perspective on this programme.

**Patients and Methods:** We have developed a team composed of PCTs, commissioners, psychology, project managers and IT workers. Patients were entered into this programme over the past 3 years. Inclusion criteria specified patients must be: 2 years post radical prostatectomy with a negligible PSA reading, 3 years post radical radiotherapy (with or without hormones) with a stable PSA reading or 3 years post...
brachytherapy with a stable PSA reading. Patient questionnaires focused on distress, perceived control and quality of life (rated on a scale of 1–10). Focus groups were conducted to collate views of the overall scheme.

**Results:** We demonstrate patients do have psychological, emotional and social issues which are unaddressed. They also greatly want a patient centre, and specify needs including requirement for sexual health advisors, dieticans and psychologists. The general practitioner thoughts highlight the need and requirement for community based follow up.

**Conclusions:** We discuss ways in which these results can be used for development of the programme, including: better explanation of the system, PSA feedback, a budding system, and how a programme like this can be put into use for survivors across all specialities.

243 **Focal cryotherapy for prostate cancer 5 year results**

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**Introduction:** Localised prostate cancer management presents a challenge to the patient and Urologist with radical prostatectomy and radiation therapy being the most common form of management. However, the desire for minimally invasive, low morbidity management with disease control remains. Focal cryotherapy may be able to fulfil these criteria.

**Patients and Methods:** Over a five year period (2008–2013) focal cryoablation was performed on a cohort of six consecutive patients attending a private Urology clinic with biopsy proven, clinically unilateral low and intermediate risk prostate cancer who elected to proceed with focal cryotherapy. All patients had undergone transrectal ultrasound biopsies and routine staging with CT scan. At the time of diagnosis and subsequent consultations the patients were given written and verbal information regarding all treatment options. In each case the patient was made aware that there may be evidence of possible disease recurrence or in the contralateral (untreated) side or that metastatic disease may become evident and that further investigation including biopsy may be warranted. They were informed that results in any treatment are not guaranteed. The possibility of an effective minimally invasive low morbidity localized treatment is reported. Post-operatively the patients were followed up with 3 monthly consultations, examination and Prostate Specific Antigen (PSA) levels. PSA density (PSA/ml prostate volume measured on transrectal ultrasound) was also used as an indicator of treatment effectiveness.

**Results:** Follow up results were available in all patients over the period of the study. The mean age of patients was 64 years (57–73). All cases were treated as day surgery and discharged home the same day. There were no admissions to hospital for any reason during the study. There were no patient deaths. There were no post-operative co-morbidities. One patient developed urinary retention and required catheter drainage for 26 days. All patients were fully continent from the time the catheter was removed. No patient developed any deterioration in pre-operative potency. Post-operative follow up was carried out 3 monthly for the first 12 months and then 6 monthly thereafter. The average length of follow up was 28 months (6–60). Pre-cryotherapy mean PSA was 5.85 ng/ml and Gleason score 6 (n=2) or 7 (n=4). Post cryotherapy mean PSA was 1.47 ng/ml (p=0.00006). This is a 75% reduction in the pre-cryotherapy level. Pre-cryotherapy PSA density was 0.214 ng/ml. Post-cryotherapy PSA density was 0.046 ng/ml (79% reduction) p=0.00030.

**Conclusions:** Focal cryotherapy for localized prostate cancer in these low and intermediate risk patients appears to offer encouraging oncological results with minimal morbidity, full control of urinary continence and no deterioration of sexual function. PSA density may be a useful parameter in the monitoring of non-extirpative treatment of prostate cancer. Focal cryotherapy may be an alternative to active surveillance, watchful waiting or more radical treatments in those patients with unilateral disease who wish a minimally invasive, low morbidity treatment. Further studies are recommended.

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Assessment of clinical indications and pathological outcomes for trans-perineal biopsies of the prostate performed at a single public hospital

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Introduction
– Assess the clinical indications for trans-perineal biopsy of the prostate at our institution
– Assess the pathological outcomes for those undergoing trans-perineal prostate biopsy at our institution

Patients and Methods
– Retrospective analysis from January 2010 to July 2013
– 97 patients’ clinical notes were assessed and 92 were included in final analysis

Results
– Clinical indications included:
  ◦ Previous negative trans-rectal biopsy prostate (52%)
  ◦ Active surveillance (40%)
  ◦ Raised PSA (4%)
  ◦ Other (4%)
– Pathological outcomes
  ◦ Overall (n = 92)
    ▪ Prostate cancer diagnosis (41%)
    ▪ Intermediate and high-grade prostate cancer diagnosis (23%)
    ▪ Anteriorly located prostate cancer (20%)
      ◦ Intermediate or high-grade (72%)
    ▪ Previous negative trans-rectal biopsy (n = 48)
      ▪ Prostate cancer diagnosis (29%)
      ▪ Intermediate and high-grade prostate cancer diagnosis (17%)
      ▪ Anteriorly located prostate cancer (10%)
      ◦ Intermediate or high-grade (60%)
      ▪ Active surveillance (n = 36)
        ▪ Prostate cancer detected (56%)
        ▪ Intermediate and high-grade prostate cancer diagnosis (31%)
        ▪ Anteriorly located prostate cancer (25%)
          ◦ Intermediate or high-grade (78%)

Conclusions
– Clinical indications in this study are vastly different from previously published series that demonstrate the main indication (as high as 66%) for trans-perineal biopsy to be primary investigation for raised PSA and/or abnormal DRE.
– Further studies should look at stratifying those patients who would benefit from a primary trans-perineal prostate biopsy (e.g. high risk of post-TRUS biopsy sepsis).
– Trans-perineal prostate biopsy is useful in detecting clinically significant cancers in those who have had a negative trans-rectal biopsy or are on active surveillance.
– Anteriorly located cancers represent up to one half of all prostate cancers detected in our series, and the majority of these contain intermediate or high-grade disease.

Modified PI-RADS based on T2 and Diffusion Weighted Imaging (DWI) correlates well with cognitive fused biopsy outcome in both the biopsy naive and previously biopsied patients

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Introduction: MRI of the prostate allows visualization of target lesions. Multiparametric MRI with Prostate Imaging Reporting and Data System (PI-RADS) can be used to predict the probability of malignancy. ‘Cognitive’ fused ultrasound biopsy enables MRI guided biopsies without ‘in-bore’ MRI inconvenience and the cost of dedicated MRI/fused US systems but maybe less accurate. Using T2 and DWI imaging we evaluated the ability of modified PI-RADS (as no contrast) to predict prostate biopsy outcomes using ‘cognitive’ MRI/US fusion in biopsy naive men and in men with a previous negative biopsy attending for a repeat biopsy.

Patients and Methods: 52 biopsy naive and 42 men with a previous negative biopsy booked for a prostate biopsy underwent pre-biopsy MRI. A standard MRI at a single center by a single radiologist was performed on a GE 3T magnet with body coil according to the ESUR guidelines. Image sequences were T2, T1, Diffusion-weighted imaging with Apparent diffusion coefficient, without an endorectal coil or contrast. Subsequent biopsy was by a single experienced urologist viewing the MRI images while using a BK flexFocus ultrasound. Biopsies were via a transrectal or a transperineal route depending on the location of the index lesion on MRI. A modified PI-RADS score was assigned for the dominant lesion, if present.

Results: All biopsy naive men underwent a biopsy irrespective of modified PI-RADS score. An anterior lesion was identified in 4/52 biopsy naive men with a Gleason score 7 or higher cancer on transperineal biopsy. In 42 previously biopsied men 4 had a missed anterior cancer, 6 a missed significant midline, basal or central tumor. Modified PI-RADS 1 and 2 scores were associated with benign pathology in all men biopsied irrespective of DRE. In previously biopsied men a repeat biopsy was generally avoided in this group, given that they have already had a previous negative biopsy. In biopsy naive patients a PI-RADS 3 was associated with cancer in 50% but ½ of positive biopsies were Gleason 3 + 3 = 6. In previously biopsied men all biopsies were negative in modified PI-RADS 3. For modified PI-RADS 4,5, all biopsies were positive in men with previous negative biopsies, while this was true for only 50% of biopsy naïve men. Modified PI-RADS 4,5 was associated with Gleason 7 or higher in all patients.

Conclusions: In biopsy naive men low PI-RADS scores correlate well with the absence of malignancy, while in previously biopsied men low PI-RADS scores provided an opportunity to avoid a further negative biopsy. High PI-RADS scores correlated well with the higher grade of cancer detected and were more predictive in men with a previous negative biopsy. Anterior cancers which would otherwise be missed were seen in both groups and targeted with transperineal biopsies.

Analysis of outcomes and impact on clinical management with Transperineal Template Biopsy

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Alfred Health, Melbourne, Australia

Introduction: TRUS biopsies are associated with high false-negatives, sepsis and other complications.

The Transperineal Biopsy (TPB) with a template grid provides systematic sampling of the entire prostate including anterior and transition zones. Sepsis rates of TPB in the literature are negligible.
We aimed to review the impact of TPB at our institution by assessing rates of cancer detection and grading, treatment outcomes and complication rates.

**Patients and Methods:** A review of data was performed for all patients who underwent TPB between 2009 and 2013. Variables included reason for TPB, age, PSA, previous histological diagnosis, TPB histology, and ongoing management plan.

**Results:** 110 patients underwent 111 TPBs at our institution between September 2009 and March 2013. On average, 22 cores were taken from each procedure. Disease upgrade occurred in 37.5% of Active Surveillance patients (15/40), and new cancer detected in 35% of patients with Previous-Negative-TRUS (19/53), and 58.8% in patients undergoing TPB for Other Reasons (10/17). Of these patients, anterior and/or transition zones were involved in 66%, 79% and 80%, respectively. Involvement in anterior and/ or transition zones only occurred in 40%, 37% and 10%, respectively. Of new cancers detected, clinically significant cancers (Gleason ≥ 7) were found in 74% (14/19) of patients with Previous-Negative TRUS and 100 (10/10) in patients undergoing TPB for other reasons. In 44 patients who received disease upgrading overall, 77% underwent treatment with curative intent. Complications included a 6.3% (n = 7) rate of Acute Urinary Retention and 2.7% (n = 3) of Clot Retention. There were no episodes of Urosepsis.

**Conclusions:** TPB at The Alfred showed a high rate of disease upgrading, with a large proportion involving anterior and transition zones. As a result, a significant amount of patients went on to receive curative treatment. The Transperineal Template Biopsy is a valuable diagnostic procedure with minimal risk of developing urosepsis. We believe this procedure should be offered as an option for all repeat prostate biopsies. As a result of our analysis, patients at our institution are now prescribed perioperative Tamsulosin.

**247**

**OGX-225 is a novel drug that targets IGFBP-2 and IGFBP-5 in castration and enzalutamide resistant prostate cancer**

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*Vancouver Prostate Centre, Vancouver, Canada; †Kobe University Graduate School of Medicine, Kobe, Japan; †Osaka Medical College, Osaka, Japan

**Introduction:** Castration and the next generation androgen receptor (AR) antagonist enzalutamide have been shown to improve survival in men with advanced prostate cancer. However, resistance will inevitably develop via a multitude of possible mechanisms which include insulin-like growth factor (IGF) signaling. Targeting insulin-like growth factor-binding protein (IGFBP)-2 and IGFBP-5 using a novel bispecific antisense oligodeoxynucleotide (ASO), designated OGX-225, presents as one strategy to treat castration and enzalutamide-resistant prostate cancer.

**Methods:** Effects of OGX-225 on IGFBP-2 and IGFBP-5 expression levels, cell growth, and apoptosis were evaluated in human castrate sensitive (LNCaP), castrate resistant (PC-3, 22RV1 and V16D), and enzalutamide-resistant (MR42D and MR49F) prostate cancer cell lines in vitro. The effect of OGX-225 on LNCaP and PC-3 xenograft growth was also evaluated.

**Results:** Whole transcriptome analysis demonstrated that mRNA for IGFBP-2 is overexpressed (4 fold) in castrate resistant prostate cancer cell lines; and that the expression of IGFBP-5 increases over 300 fold in enzalutamide-resistant MR42D prostate cancer cells compared to LNCaP parental cells. OGX-225 induced potent dose-dependent, sequence-specific knockdown of IGFBP-2 in LNCaP, 22Rv1, MR42D, and MR49F, and IGFBP-5 expression in PC3 cells. This treatment decreased cell viability by over 50% in all cell lines through induction of a strong apoptotic response. Compared to control ASO, OGX-225 significantly suppressed castrate-resistant progression of LNCaP xenografts as measured by delayed tumor growth and serum prostate-specific antigen levels. OGX-225 also inhibited growth of androgen-independent PC-3 xenografts. Pharmacodynamic activity of OGX-225 in vivo was demonstrated through significant down-regulation of IGFBP-2 and IGFBP-5 mRNA levels in the LNCaP and PC3 xenografts, respectively.

**Conclusions:** This study reports the first preclinical proof-of-principle data that a novel bispecific inhibitor of IGFBP-2 and IGFBP-5, OGX-225, delays prostate cancer progression and displays specific anti-cancer activity in enzalutamide-resistant prostate cancer cell lines.

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**A comparison of 3T MR imaging of the prostate with and without an endorectal coil**

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**Introduction:** Magnetic resonance imaging (MRI) can play an integral role in prostate cancer detection and treatment planning. It has been established that an endorectal coil (ERC) should be used when imaging the prostate at 1.5 T to achieve best results. However, its role at 3 T is more controversial since the higher filed strength improves the signal-to-noise ratio and can compensate for the lack of signal from an ERC. The purpose of this study was to prospectively compare the diagnostic accuracy of 3 T MRI with and without ERC to detect prostate cancer in men about to undergo surgery.

**Methods:** Institutional review board approval was obtained to perform a prospective study to assess the accuracy of MRI with and without an endorectal coil to detect prostate cancer. Between September 2009 and October 2011, 22 patients with clinically localised prostate cancer underwent 3 T MRI initially with a standard body-array (SBA) coil and then with ERC (Medrad) prior to surgery. Two experienced abdominal radiologists (SC and AH) independently read all imaging data sets from which patient identification was removed. MRI reports were then compared to whole mount histopathology with reference to Gleason scores.

**Results:** The mean age was 62.0 years (SD ± 6.6 years). The median preoperative PSA was 6.7 ng/ml (range 2.86–14). A total of 66 prostate cancer lesions were identified in the whole mount pathology specimens. 37 of these were sub 1 cm
Gleason 3 + 3 incidental cancers and none were detected by either MRI modality. The remaining 29 lesions were considered clinically significant being either the index lesion, or greater than 1 cm in length, or Gleason 7 or above. The number of lesions detected by each modality is given in Table 1. Importantly, MRI missed the majority of Gleason 6 cancers. SBA missed four of 13 Gleason 3 + 4 cancers. The ERC did not affect the accuracy of diagnosing high risk cancers with both modalities missing one of the 5 cancers.

Conclusions: The lack of an ERC did not affect the accuracy of MRI to detect low risk or high risk cancers, but some Gleason 3 + 4 cancers will be missed without an endorectal coil.

### Table 1. Prostate cancer lesions detected by MRI with and without coil for two independent observers (SC and AH)

<table>
<thead>
<tr>
<th></th>
<th>Gleason 3</th>
<th>Gleason 3 + 4</th>
<th>Gleason ≥4 + 3</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(n = 48)</td>
<td>(n = 13)</td>
<td>(n = 5)</td>
</tr>
<tr>
<td>SC coil</td>
<td>6 (12.5%)</td>
<td>13 (100%)</td>
<td>4 (80%)</td>
</tr>
<tr>
<td>SC no coil</td>
<td>4 (8.3%)</td>
<td>9 (69.2%)</td>
<td>4 (80%)</td>
</tr>
<tr>
<td>AH coil</td>
<td>6 (12.5%)</td>
<td>11 (84.6%)</td>
<td>4 (80%)</td>
</tr>
<tr>
<td>AH no coil</td>
<td>3 (6.3%)</td>
<td>9 (69.2%)</td>
<td>4 (80%)</td>
</tr>
</tbody>
</table>

### Introduction

Active surveillance (AS) is emerging as an alternative to immediate definitive therapy for localised prostate cancer. The success of AS relies on biopsy to select and monitor men with low-grade, low-volume tumours that are unlikely to progress. However, there are concerns about grade misclassification and poor localisation of tumours on biopsy. In this Australian-first retrospective observational study, our objective was to determine the tumour grading and index tumour localisation accuracy of transrectal ultrasound-guided (TRUS) biopsy in men who undergo radical prostatectomy (RP) after a period of AS.

### Methods

We retrospectively examined the records of 55 men who underwent delayed RP after a period of AS at an Australian hospital between January 2001 and July 2013. Inclusion criteria for AS consisted of Gleason score (GS) ≤ 3 + 4 + 7, clinical stage ≤ T2 and less than 4 cores containing cancer. Extended TRUS technique was used for all surveillance biopsies. Triggers for RP included tumour upgrading to GS ≥ 4 + 3, tumour upstaging and PSA progression. We compared index tumour on final surveillance biopsy and RP with respect to GS and location as per sextant biopsy sites. Index tumour was defined as the tumour focus with the highest GS.

### Results

Of the 29 men who progressed due to standard cores and anteriorly. Notably, tumours that progressed due to standard cores and anterior cores were not significantly different for Gleason score, largest core length, total core length or period on AS.

### Conclusions

The addition of anterior needles to the extended TRUS biopsy scheme improves the detection and localisation of anterior prostate cancers in men undergoing AS. This suggests that more extensive and directed sampling may be of benefit in accurately selecting men suitable for AS.

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### Transrectal ultrasound-guided biopsy with anterior needles improves detection and localisation of prostate cancer in men undergoing active surveillance

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### Introduction

Active surveillance (AS) for localised prostate cancer relies on biopsy to accurately select men with low-risk, low-volume disease. However, there has been evidence of sampling error leading to tumour misclassification and incorrect localisation by current extended transrectal ultrasound-guided (TRUS) biopsy techniques. In this Australian-first retrospective observational study, our objective was to assess the tumour detection rates of anteriorly-directed needles in comparison with standard TRUS biopsy needles, in men undergoing AS.

### Methods

We retrospectively analysed the records of 85 men on AS who underwent re-biopsy at an Australian hospital between July 2011 and June 2013 using anterior TRUS biopsy: extended TRUS biopsy with added anteriorly-directed needles. Eligible men were on AS with Gleason score (GS) ≤ 3 + 4 = 7 and clinical stage ≤ T2. Anterior TRUS biopsy involved sampling 14 cores from standard sextant biopsy sites in addition to 8 anterior cores. We described the rates of additional tumour detection and change in management associated with the anterior cores.

### Results

Eighty-five men underwent re-biopsy with anterior TRUS biopsy needles, in men undergoing AS. This suggests that extended TRUS biopsy with anterior needles to the extended TRUS biopsy scheme improves the detection and localisation of tumours on biopsy. In this Australian-first retrospective observational study, our objective was to determine the tumour grading and index tumour localisation accuracy of transrectal ultrasound-guided (TRUS) biopsy in men who undergo radical prostatectomy (RP) after a period of AS.

### Conclusions

The addition of anterior needles to the extended TRUS biopsy scheme improves the detection and localisation of anterior prostate cancers in men undergoing AS. This suggests that more extensive and directed sampling may be of benefit in accurately selecting men suitable for AS.
(p < 0.001). Biopsy GS 3 + 4 tumours were most commonly concordant. 24 of 55 men (43.6%) had discordant index tumour location between biopsy and RP. A trend of greater inaccuracy in the left (62.5% discordance) and right (58.3%) mid-zones was noted, however there was no significant difference in accuracy between sextant biopsy sites (p = 0.498).

Conclusions: TRUS biopsy commonly misclassifies tumour grade in Australian men who fail AS, with underestimation of GS more common than overestimation. TRUS biopsy also fails to accurately localise cancers. As such, this has implications on the ability to select patients who are appropriate for AS. Men diagnosed with low-risk disease should undergo earlier confirmatory biopsy, with more thorough template sampling of the prostate, to exclude undergraded disease. Template sampling or multi-parametric MRI may improve prediction of index tumour location.

Discussion: Synovial sarcoma is a malignant mesenchymal tumour typically arises from the articular soft tissues of extremities in younger adult. It can occur in other unusual location but rarely involving the genitourinary tract. Renal involvement has been reported in literature but primary prostatic sarcoma is extremely rare. Histologically, in this case the tumour tissue is formed by masses of spindle cells embedded within fibrocollagenous stroma. Immunohistochemically positive expression for bcl-2 and MIC 2 gene product supported the diagnosis of synovial sarcoma. To date no definitive treatment protocol has been established due to rarity of synovial sarcoma which makes treatment challenging.

252 Preliminary results of robot-assisted laparoscopic partial nephrectomy: early vascular unclamping to reduce warm ischaemia time
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Introduction: The incidence of renal masses is on the rise with increased use of abdominal imaging. Nephron sparing surgery, such as robot-assisted laparoscopic partial nephrectomy (RALPN) is recommended for T1 tumours. The role of warm ischaemia time (WIT) whilst performing partial nephrectomy is an important factor in reducing morbidity. This study presents the initial experience of early vascular release as a means to minimise WIT during RALPN.

Patients and Methods: With Hospital Ethics Committee approval, the outcomes of RALPN of 2 fellowship-trained surgeons (TG and CC) were analysed. Data was prospectively collected from July 2011 to date. Perioperative data included age, gender, side of mass, preoperative renal function, tumour size and relevant medical history. Intraoperative data included, operative duration, console time, WIT, estimated blood loss and complications. 6 months postoperative renal function and tumour histological findings were also collected. Data was summarised using median, ranges and analysed using Wilcoxon Signed-Rank test where appropriate. A P < 0.05 was considered to indicate statistical significance.

RALPN was performed via a four-arm transperitoneal approach. The renal artery and vein were individually clamped with robotic vascular bulldog clamps to allow cold scissor excision of the tumour. The cut surface was then sutured with one or two running 3-0 V-LocTM sutures, following which the vascular clamps were released. Specific bleeding vessels were then selectively oversewn and the collecting system repaired. Renorrhaphy was then completed using a running horizontal mattress 0-0 V-LocTM suture.

Results: A total of 16 patients with a median age of 67 years (48–80) underwent RALPN. There were 10 male, 9 left and 7 right-sided renal lesions. The median preoperative renal function was 74 ml/min/1.73 m² (53–90) and the median tumour size was 2.65 cm (1.3–5.5). The median values for operative time was 230 minutes (180–280), console time, 192.5 minutes (150–230), WIT, 15 minutes (8–25), and blood loss, 100 ml (50–1000). The renal function at 6 months was 63 ml/min/1.73 m² (53–90). Compared with preoperative renal function this was not statistically significant (P = 0.196). Final histology included 9 clear cell renal cell carcinoma (RCC), 3 papillary RCC, 1 angiomyolipoma and 3 eosinophilic variant clear cell RCC. There was one focal positive margin in a central 5.5 cm pT3a RCC. There were no transfusions, secondary haemorrhages or urine leaks.

Conclusions: Early vascular release resulted in an effective technique to minimise WIT and maintain renal function without compromising perioperative morbidity.

253 Predictive factors of organ-confined prostate cancer in radical prostatectomy: a review of our centre data
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Introduction: Organ-confined prostate cancer is often curable with radical prostatectomy with excellent prognosis.
The aim of our study is to identify any pre-operative parameters which can predict organ-defined prostate cancer before radical prostatectomy.

Patients and Methods: We retrospectively reviewed data of all patients undergoing radical prostatectomy from January 2006 to December 2011. Organ-confined disease is defined as pathological T2 (pT2) disease as per prostatectomy specimen. Patients’ demographics, pre-operative parameters including prostatic specific antigen (PSA) levels, prostate volume as per transrectal ultrasonography (TRUS), digital rectal examination findings and histopathological findings of TRUS biopsy specimen were analysed.

Results: 169 patients were included in our centre, with a mean age of 68 (±5.9) years old. 11 (6.5%) underwent open radical prostatectomy and 158 (93.5%) had the operation in laparoscopic approach, with 5 of them had open conversion. 147 (87%) patients had pT2 prostate cancer, 20 (11.8%) had pT3 disease and 2 (1.2%) had pT4 disease. Organ-confined disease, when compared with pT3/4 disease, was associated with fewer positive cores on TRUS biopsy (26.5% vs. 54.5%, mean difference 28.0; 95% CI 11.9–44.0, p = 0.002), lower maximum percentage of cancer involvement in a single core (31.8% vs. 51.6%, mean difference 19.8; 95% CI, 7.5–32.2, p = 0.002), and fewer Gleason score 5 on TRUS biopsy (3.4% vs. 22.7%, OR 0.22; 95% CI 0.10–0.47, p = 0.004). Organ-confined disease, in addition, had a trend with lower PSA level, PSA density and overall Gleason score on TRUS biopsy but statistical significance cannot be reached. On the other hand, PSA velocity and DRE findings did not correlate well with incidence of organ-defined disease in our cohort.

Conclusions: A Detailed histopathological examination of TRUS biopsy specimen provides good predictors of organ-confined prostate cancer after radical prostatectomy, and is superior to PSA in such context. This can help us in selection of patient to radical prostatectomy and formulation of operative strategy.
on how to approach patients who have been injected with GnRHAs and consequently suffered from pituitary apoplexy.

**Patients and Methods:** A systematic search was undertaken of the MEDLINE, as well as relevant websites for journal articles and reports relating to pituitary apoplexy induced by gonadotropin-releasing hormone agonists.

**Results:** We present the first Asian case of a 77-year-old man who developed pituitary apoplexy (PA) soon after gonadotropin-releasing hormone agonist (GnRHa) (leuprorelin) injection to treat prostate cancer. He suffered from severe generalized headache followed by vomiting a coffee grounds-like substance after leuprorelin (3.75 mg) subcutaneous injection and anti-androgen therapy at noon. He was admitted to the Emergency Room (ER) because of pain at midnight; esophagogastroduodenoscopy (EGD) and brain-computed tomographic (CT) scan were arranged immediately. The former revealed lacerations at the E-C junction, and the latter showed no obvious intracerebral hemorrhage. The cause of persistent headache was still a puzzle while Ophthalmologic examination manifested left cranial nerve III palsy, ptosis and eye movement limitation, and newly onset left-side blurred vision. Neurologic and laboratory examination did not reveal major abnormality. However, hyponatremia (Na 123 mmol/L) and high follicle stimulating hormone level (55.3 mIU/mL; normal range 1–19 mIU/mL) were noted. Brain MRI revealed an enlarged pituitary gland (1.7 × 1.8 × 1.3 cm) with low signal intensity lesion on T1W images and slightly hyper intense on T2W images, indicating the development of pituitary gland infarction. Due to disease progression, the patient underwent sublabial trans-sphenoid pituitary tumor removal under microscope. Pathological sections exhibited degenerative cells with necrotic debris, fibrinoid materials, and mixed inflammatory cells. Neuron Specific Enolase stain failed to demonstrate any surviving pituitary gland cells, confirming the development of PA.

Two months later, his PSA decreased to 0.46 ng/mL. Moreover, 4 months after surgery, his visual field, range of EOM, and visual acuity of both eyes had improved tremendously. His recovery to date is almost complete.

**Conclusions:** The occurrence of PA can be induced by several factors, such as head trauma, cardiac bypass surgery associated with fluctuating blood pressure, pregnancy, Sheehan syndrome, anticoagulation, pituitary function test, or as in our case, GnRHa used for treating PCa. The causal relationship of GnRHa and PA is established on time relationship and consistency association. The exact mechanism of GnRHa-induced PA is still unclear. The principle initial acute symptoms are similar to PA owing to other causes. Most cases manifested moderate to severe headache, possibly attributed to irritation or stretching of dura mater in the sella supplied by branches of the trigeminal nerve. Other associated clinical features such as nausea and vomiting are also commonly seen and can be extremely severe, resulting in fatal consequences. The present case exhibited upper GI bleeding due to E-C junction tearing, which might be related to severe vomiting. Visual symptoms occur after headache in every patient, including ptosis, ophthalmoplegia, decreased visual acuity, loss of visual field, and anisocoria, consistent with the imaging finding of extrasellar extension. Prompt and proper intervention is crucial to these PA patients, especially to those who had consciousness change or cranial nerve palsy. Whether to have every prostate cancer patient have a brain MRI before GnRHa injection is still debatable.

**256 Audit of the first year of robotic assisted laparoscopic prostatectomies in an Australian public hospital**

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The Nepean Hospital Penrith, Australia

**Introduction:** Robotic Assisted Laparoscopic Prostatectomy (RALP) has been shown in meta-analyses to possess advantages for both patient and hospital when compared to more traditional radical prostatectomy methods (Euro Urol Vol. 62 Issue 3). The da Vinci Si surgical robot installed at the Nepean Hospital is the first such devices in use in a NSW public hospital. The device manufacturer approved training method is for a new surgeon to have three proctored cases followed by solo cases. Anecdotally this approach involves considerable anxiety for the newly credentialed surgeon, and can result in excessively long procedures causing major disruption to the hospital. As this was not practical for the introduction of the Nepean surgical robot, a structured mentorship program consisting of an experienced robotic surgeon mentoring a robotically naive surgeon has been used to minimize the negative effects of the learning curve, whilst maintaining good patient outcomes.

This audit presents the data gathered during the first year of this program.

**Patients and Methods:** Data was prospectively collected on all patients having RALP performed at the Nepean Hospital in the first year. A total of 67 patients are included in this audit. Data was harvested from data collected pre-operatively, peri-operative, and post-operatively. This was then stratified based on whether the case was being performed by an experienced robotic surgeon, a robotically-naive surgeon in the mentorship program, or a surgeon who has completed the mentorship program.
Results

<table>
<thead>
<tr>
<th></th>
<th>Experienced</th>
<th>Mentored case</th>
<th>Newly-trained</th>
</tr>
</thead>
<tbody>
<tr>
<td>N</td>
<td>16</td>
<td>38</td>
<td>13</td>
</tr>
<tr>
<td>Average patient age</td>
<td>61</td>
<td>62</td>
<td>62</td>
</tr>
<tr>
<td>Median Gleason score</td>
<td>4 + 4 = 8</td>
<td>3 + 4 = 7</td>
<td>4 + 4 = 8</td>
</tr>
<tr>
<td>Capsule involvement</td>
<td>6 (37.5)</td>
<td>11 (29.0)</td>
<td>5 (41.7)</td>
</tr>
<tr>
<td>Set-up time (minutes)</td>
<td>44</td>
<td>44</td>
<td>46</td>
</tr>
<tr>
<td>Non-console time (minutes)</td>
<td>48</td>
<td>76</td>
<td>57</td>
</tr>
<tr>
<td>Console time (minutes)</td>
<td>146</td>
<td>225</td>
<td>181</td>
</tr>
<tr>
<td>Positive margins pT2</td>
<td>0/7 (0)</td>
<td>2/29 (6.9)</td>
<td>3/6 (50.0)</td>
</tr>
<tr>
<td>Positive margins pT3/4</td>
<td>7/9 (77.8)</td>
<td>6/9 (66.7)</td>
<td>4/6 (66.7)</td>
</tr>
<tr>
<td>Post-operative complications</td>
<td>2 (12.5)</td>
<td>2 (5.3)</td>
<td>1 (8.3)</td>
</tr>
<tr>
<td>Median Length of Stay (days)</td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>ED presentations (%)*</td>
<td>1 (6.25)*</td>
<td>5 (14.3)*</td>
<td>1 (9.1)*</td>
</tr>
<tr>
<td>Unplanned readmissions (%)*</td>
<td>1 (6.25)*</td>
<td>4 (11.4)*</td>
<td>0 (0)*</td>
</tr>
</tbody>
</table>

*As the final cases in this study have not yet reached 28 post-operative days this data will be updated prior to presentation/publication.

The only statistically significant difference between the groups is in console time (F_{2,64} = 14.01, P > 0.0001).

Conclusions: The teaching method used at the Nepean Hospital has proved to be a viable means of introducing RALP. Operating theatre parameters and operative results were broadly comparable between the two groups suggesting that the mentorship approach has achieved the goal of teaching the RALP technique whilst minimising disruption. With future research we aim to prove that longer term surgical outcomes for patients having RALP in the public hospital system are comparable to published results from elsewhere.

An approach to teaching robotic assisted laparoscopic prostatectomy

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Introduction: Robotic Assisted Laparoscopic Prostatectomy (RALP) has been used in Australia since 2003, however so far there is not a local consensus regarding the best way to train and certify surgeons to perform this procedure. The device manufacturer method of teaching a surgeon to perform RALP consists of three proctored cases followed by the newly qualified surgeon performing operations solo. The traditional alternative to this is for a newly qualified urologist to take a Fellowship at a specialist facility in order to be exposed to many cases in a training environment. Neither of these approaches is wholly satisfactory when introducing a surgical robot into a new hospital in which there is not an adequate pool of trained urologists to use the robot: the proctored approach anecdotally can result in excessively long operations performed by the newly qualified surgeon with considerable anxiety, and a Fellowship is not a viable option for many established urologists for obvious logistical reasons. As an alternative with the introduction of a surgical robot at the Nepean Hospital a mentorship program was implemented based on Schönberger’s ten stages of laparoscopic prostatectomies (these will be described). This approach allowed for a graduated learning curve for the trainee surgeon whilst controlling the amount of time spent teaching during any case. This study describes the training approach used.

Patients and Methods: As part of the introduction of the Nepean Surgical Robot data has been collected on all cases performed, including 67 RALP. This has been stratified based on whether the surgeon performing the operation was either an experienced robotic surgeon, a robotically naïve surgeon in the mentorship program, or a surgeon who had completed the mentorship program.

Results: Although console time varied significantly depending upon whether the case was being performed solo or as a mentored case, the difference in total procedure length between mentored and solo cases was only 33% (279 versus 209 minutes), with newly trained surgeons coming to within 14% of the time taken by experienced surgeons (238 minutes). There is a learning curve apparent in the time taken to perform stages of the operation. All patient groups had similar outcomes, suggesting that safety has been maintained.

Conclusions: The mentorship program has trained previously robotically naïve urologists to perform RALP in an efficient way. We believe that this represents a training model which can be implemented in other hospitals, and provides a means of training registrars in the technique without jeopardising other training outcomes. We also believe that it may represent a framework for credentialing robotic surgeons.

Free to total serum prostate specific antigen ratio (f/t PSA) in symptomatic men does not help in differentiating benign from malignant disease of the prostate

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Introduction: Free to total PSA ratio (f/t PSA) has been used to help improving specificity of PSA in the range of 4–10 ng/ml based on the data on population based screening. There is no data on test characteristics of f/t PSA in men presenting with clinical symptoms of benign prostatic hyperplasia (BPH). Aim of this study is to determine the usefulness of f/t PSA in symptomatic men.

Patients and Methods: From January 2006 to June 2012, men of 50 to 75 years with lower urinary tract symptoms (LUTS), normal rectal examination and PSA between 4–20 ng/ml had free and total PSA assessment. Men with clinical evidence of prostatitis, retention, history of 5α blocker reductase inhibitors and those who had surgery or biopsy on prostate in last three months were excluded. Receiver Operating Characteristic (ROC) curves
were derived for f/t PSA and total PSA. The effect of age, prostate volume and Gleason score on the f/t PSA was also analyzed. All statistical analyses were done on SPSS 16 (Chicago USA).

**Results:** Of 170 men with the mean age of 67.4 ± 6.6 years, 43 (25.3%) had cancer on biopsy. Area under the curve for predicting the presence or absence of prostate cancer in all the men with f/t ratio was 0.63 (CI 0.54–0.71). The Median value of f/t PSA for men with cancer was 5.5% (1–25%) and 9.2% (1–63%) for those with no cancer. Cut offs derived at 95% specificity at PSA between 4–10 and 4–20 ng/ml were 0.5% and 1% respectively. The specificity of f/t PSA ratio at cut off levels 7%, 10% and 15% was 73%, 60%, 45% for PSA range of 4–10 ng/ml and 63%, 47% and 35% for PSA range of 4–20 ng/ml PSA. Age, prostate volume and Gleason grade did not show any effect on f/t PSA.

**Conclusions:** In men with LUTS the specificity of various f/t PSA ratio cut offs; described for population based screening, is too low to be used as an aid to defer the decision of biopsy in PSA ranges of 4–10 and 4–20.

259 **Geographical variation in renal cell carcinoma: is it still a disease of elderly?**

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**Introduction:** To study the spectrum of renal cell carcinomas (RCC) in India with regards to age of onset, stage at presentation and survival.

**Patients and Methods:** Patients with renal tumor, treated from January 2000 to December 2012 were analyzed for age at presentation, clinical features and histopathological characteristics. Clinical diagnosis was made by contrast enhance computed tomography (CECT) scans and or MRI. Renal masses diagnosed as Angiomyolipoma, infective masses and hydatid cysts were excluded from the analysis. Impact of various age groups on gender, tumor size, TNM stage, Fuhrman grade, histopathological subtypes, lymph node, inferior vena cava (IVC) involvement and survival was analyzed. Patients were grouped in 5 age groups i.e. ≤39, 40–49, 50–59, 60–69 and more than 70 years of age.

**Results:** Of total 617 renal tumors in 617 patients (2 patients had bilateral tumors but only the larger tumor was considered), clinically suspected as RCC, 586 had epithelial cell tumor and rest of the 31 had non epithelial cell tumor. The mean tumor size was 8.08 ± 3.5 cm (median 7, range 1–25 cm). Tumor of less than 4 cm size was present in only 10.4% of the patients. The mean age at diagnosis was 55.15 ± 13.34 (median 56, range 14–91 years) 30.03% of renal tumors presented in patients younger than 3 years of age. Though there was no difference in stage, Fuhrman grade, IVC involvement and lymph nodal spread among various age groups, younger patients had higher proportion of non clear cell RCC and only 48.59% of them presented with conventional RCC. Mean survival was lower in patients younger than 39 years with HR of 1.7 (0.8–3.2)

**Conclusions:** Renal cell carcinoma is more frequent in younger people in India. One third of the patients were less than 50 years of age and only 10.4% of the patients had tumor of less than 4 cm (Ta). Younger patients of <39 years of age had relatively lower survival rates.

260 **Anteroposterior ratio of tumor to abdomen (APROTA) on CECT: a new parameter to predict conversion during laparoscopic radical nephrectomy for tumors larger than 10 cm?**

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**Introduction:** To describe a new parameter on CECT abdomen to predict conversion to open surgery while doing laparoscopic radical nephrectomy (LRN) for tumors >10 cm in size.

**Patients and Methods:** In a prospective cohort design, from Nov 2009 to May 2013, of total 65 LRN performed, 27 had tumor of more than 10 cm size. The APROTA was calculated by dividing antero-posterior (AP) diameter of the tumor at its maximum girth by AP diameter of the abdomen on the axial section of the CECT scan. The APROTA was compared in patients who had successful surgery (group A) from those who had conversion to open surgery (group A). Receiver operative curve was used to calculate the cut off at 99% of specificity for conversion.

**Results:** Two patients, who had elective conversion due to bleeding and adherence of duodenum to the tumor, were excluded. Of remaining 25 tumors of median size of 12 (11–21) cm, 13 (52.6%) had conversion to open surgery. There was significant difference in the APROTA in group A and B i.e. 0.52 (0.44–0.57) in group A and 0.64 (0.55 to 0.74) in group B, p < 0.001. The mean operative duration for all patients was 180 ± 59 minutes (range 140–300 min). Inability to reach the hilum due to lack of space was the main reason for conversion. On ROC curve, a cut off level to predict conversion was derived as 0.56 with 99% of specificity. The reason for conversion were inability to access renal hilum in 11 out of 13, wherein the mean time to reach the hilum was 91 ± 11 min, which was significantly higher than that of patients in group A; 32 ± 18 min, p < 0.05. Colonic injury was the reason for conversion in 2 patients.

**Conclusions:** Adequacy of space in the abdomen to maneuver the tumor is an important factor. An objective radiological parameter, APROTA is useful to predict conversion in LRN for tumors of >10 cm size.

261 **‘Molecular cystoscopy’: Micro-RNAs could be a marker for identifying early genotypic changes of transitional cell carcinoma in normal mucosa of the urinary bladder**

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**Introduction:** Non muscle invasive bladder cancer (NMIBC) is prone to recurrence due to multifocality. Normal looking mucosa may harbor genetic changes preceding a visible tumor. To explore the role of quantitative expression of Micro RNAs (miR) in bladder cancer tissue in
Comparison to normal mucosa and healthy controls.

Methods: During Oct’ 2011 to Dec’ 2012, tissue from bladder tumor of 21 patients (cases tumor, CT), normal mucosa (case control, CC) of the same patients (n-21) and normal bladder mucosa from 10 healthy controls (HC) were obtained. Micro RNAs of angiogenesis (miR-129b), endothelial mesenchymal transition (miR-200a, miR-205, miR-99b, miR-100, miR-10b) and apoptosis (miR-126, miR-145, miR-21) were quantified using stem−loop RT Taq Man PCR. Expression was quantified by using 2−ΔΔct method taking miR-RNU-48 as endogenous control. Statistical analysis was done by Chi square and independent sample T test by using SPSS version 16.

Results: The mean age of the patients and controls were 55.41 ± 11.03 and 52.14 ± 13.04 years. miR-21, miR-205, miR-126, miR-10b and miR-200a were highly expressed in CT (p < 0.027, <0.048, <0.025, <0.029 and <0.005) as compared to HC. Expression of miR-21 and miR-129 both were co-related with grade and stage (p = 0.001 and <0.009, respectively) and the level of expression was different in the same grade of non-muscle invasive tumors. The median fold change of miR129, miR205 and miR200a was significantly higher in normal looking mucosa of bladder tumor patients than the HC (p < 0.005) (Table 1).

Table 1. Median values of fold change of various mRNas in various tissue samples

<table>
<thead>
<tr>
<th>miRNA</th>
<th>CT</th>
<th>CC</th>
<th>HC</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>miR129</td>
<td>4.31</td>
<td>11.16</td>
<td>1.01</td>
<td>0.015</td>
</tr>
<tr>
<td>miR200a</td>
<td>182.32</td>
<td>3.65</td>
<td>1.15</td>
<td>0.014</td>
</tr>
<tr>
<td>miR205</td>
<td>407.36</td>
<td>4.62</td>
<td>1.25</td>
<td>0.001</td>
</tr>
</tbody>
</table>

Conclusion: Higher fold changes in expression of miR129, miR205 and miR200a in normal looking mucosa of bladder cancer patients may help in molecular diagnosis of transitional cell carcinoma and open a new vista to manage NMIBC.

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Asymptomatic prostatic inflammation in men with clinical BPH and erectile dysfunction affects the positive predictive value (ppv) of PSA

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Introduction: To test the hypothesis that the sexual dysfunction in elderly men with BPH leads to prostatic inflammation; diagnosed by prostatic fluid interleukin-8 (IL-8), which lowers the ppv of PSA to diagnose prostate cancer.

Methods: Hundred and sixty men with lower urinary tract symptoms (LUTS) between 50–75 years of age with an elevated PSA of more than 4 ng% with normal DRE and 50 age matched controls with normal PSA were prospectively evaluated for prostatic fluid interleukin 8 levels. Erectile dysfunction (ED) was measured by self administered questionnaire of sexual health inventory for men (SHIM). Patients with category I to III prostatitis, retention, patients on catheter and 5-alpha reductase inhibitors were excluded. Total and free serum PSA and IL-8 in prostatic fluid were measured 6–8 weeks after a course of Ofloxacin 400 mg and Piroxicam 20 mg given daily for 2 weeks. TRUS guided biopsy was done only when PSA did not fall below 4 ng/ml. Follow-up PSA was done every 3 months for 2 years.

Results: Mean age of patients and controls were 63.18 (SE ± 7.10) and 60.18 (SE ± 6.02) years respectively. Mean concentration of IL-8 in prostatic fluid of the patients was significantly higher i.e. 6425 pg/ml (SE ± 1985.7) than in control i.e. 1543 pg/ml (SE ± 375.7), (P < 0.001). Following anti-inflammatory treatment there was a significant fall in the mean level of IL-8 in prostatic fluid of the patients was significantly higher i.e. 6425 pg/ml (SE ± 1985.7) than in control i.e. 1543 pg/ml (SE ± 375.7), (P < 0.001). Corresponding to this, a significant fall was noted in total PSA levels to less than 4 ng/ml in 105 (65.62%) patients. Of those 105, 100 men (62.5%) continued to have normal PSA at the mean follow up of 24 ± 5 months. Fifty two percent of men had moderate to severe ED. The degree of ED correlated with the prostatic fluid IL-8 levels. Men with the highest level of IL-8 had the greater degree of ED.

Conclusion: Men with symptomatic BPH and erectile dysfunction had significant inflammation of the prostate to cause spurious rise in PSA resulting in an unnecessary biopsy.

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Transperineal template biopsy of the prostate: the Palmerston North experience 2012–2013

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Introduction: Transperineal template biopsy of the prostate (TPB) is a rapidly emerging procedure in urology but the indications for its use are not clearly defined. We acquired an ultrasound machine with the capability of performing TPB 13 months ago.

The objectives of this descriptive study were to evaluate our indications for use, the patient characteristics and the influence the biopsy had in changing the therapeutic plan. We also looked at the complication rate and patient’s preference of the two prostate biopsy modalities available (transrectal and transperineal).

Patients and Methods: Data was both retrospectively and prospectively collected on 30 patients undergoing TPB between August 2012 – September 2013.

Results: The mean patient age was 63.7 years (range 49–74 years) and mean PSA 12.1 ng/mL (range 0.27–22). In 22 of the 30 patients (73%), the indication for biopsy was a continued rise in PSA and a prior transrectal (TRUS) biopsy. Of these 22 patients, 18 had prior negative biopsies and 4 were on active surveillance. The remainder of the 30 patients had a variety of indications. The mean prostate volume was 76 cc. The median number of core specimens taken was 25 (range 10–50). 14 of the 30 patients (47%) were positive for cancer with 11 offered a change of therapeutic plan to radical treatment or active surveillance. The other 3 were either new diagnoses or carried on with their previous plan. 3 of the 4 active surveillance patients had worse histology and underwent radical treatment.

A third of patients had mild haematuria. There were no serious complications such as urinary retention or UTI/sepsis. Patients
Introduction: Historically, surgical management of renal cell carcinomas (RCCs) with inferior vena cava (IVC) tumour thrombus often lead to significant morbidity and mortality. However, vast improvements have been achieved in the management of these patients in recent times. We describe the clinical outcomes of such patients and discuss critical aspects of new surgical techniques in our centre.

Patients and Methods: A retrospective review of all RCC patients with IVC tumour thrombus who underwent surgery with IVC reconstruction using vascular grafts in Princess Alexandra Hospital was performed. Clinical characteristics and operative details with clinical outcomes were analysed.

Results: There were 6 male patients with median age of 62 years (40–74) who underwent nephrectomy and IVC thrombectomy with vascular graft reconstruction in the last 2 years. The extent of IVC tumour thrombus (Mayo) were: level II (1/6), level III (3/6) and level IV (2/6). Following IVC thrombectomy, IVC reconstruction with vascular graft Gelsoft included patch graft (1/6) and IVC replacement (5/6). 2 patients required thoracotomy but without need for cardiopulmonary bypass (CPB) for removal of atrial tumour thrombus and liver mobilization was required for 5 patients intraoperatively. Mean length of hospital stay was 13.8 days and majority had no significant post operative complications. On follow up, all IVC grafts were patent, with no recurrence in IVC and no significant lower limb oedema. 5 patients are still alive (8 months of follow up) while one passed away 20 months following surgery due to metastatic disease. In these cases, meticulous resection of IVC wall invaded by tumour with appropriate reconstruction (patch graft or tube graft replacement) with vascular graft was paramount to ensure good surgical clearance of tumour leading to decreased risk of recurrence at IVC. So far, Gelsoft synthetic vascular grafts used in these patients did not lead to any infective or thrombotic complications with no disease recurrence and avoided the morbidity of lower limb oedema. Adequate liver mobilization with proper assessment of hepatic vein involvement determined resectability with the help of hepatobiliary transplant surgeons was also important. Similarly, intra-atrial tumour thrombus were also successfully removed without the need for CPB.

Conclusions: Careful pre operative planning, involvement of multidisciplinary team and modification of surgical techniques involving use of vascular graft reconstruction are critical aspects in management of IVC tumour thrombus, leading to better clinical outcomes.

Introduction of blue light cystoscopy to an Australian teaching hospital

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Introduction: The gold standard for diagnosis and management of non-invasive urothelial carcinoma is white-light cystoscopy. Even with this, recurrence rates after transurethral resection of bladder tumour (TURBT) is around forty-percent at one year. Surveillance and treatment for recurrent disease represents a huge burden. Extending white-light cystoscopy and TURBT with photodynamic diagnosis (PDD) has been shown to improve outcome in enhanced detection of inconspicuous lesions and more effective resection. Published data has shown that PDD detects thirty-percent more tumours than white-light cystoscopy and associated with reduced recurrence of non-muscle invasive urothelial carcinoma. Two agents commonly used in this are 5-aminolevulenic acid and hexylaminolevulinate. Blue-light cystoscopy has been used in Europe for more than 10 years for the detection of urothelial carcinoma however its use in Australia currently is limited. Our objective was to assess the ease and effectiveness of implementation of blue-light cystoscopy at a Melbourne teaching hospital, to aid in detection and management on non-muscle invasive urothelial carcinoma. We present our initial experience of introducing this novel technique at our institution.

Methods: After obtaining the equipment and the hexylaminolevulinate solution, suitable patients were identified to undergo blue-light cystoscopy. The hexylaminolevulinate solution was administered 1 hour pre-operatively and cystoscopy performed comparing both white-light and blue-light cystoscopy. Any suspicious areas were biopsied. Procedures were performed by the registrar under supervision of a urologist with expertise in photodynamic diagnosis.

Results: Six patients underwent blue-light cystoscopy, three for positive cytology with previous normal white-light cystoscopy and upper tract imaging, two for surveillance of previous high-grade non-invasive urothelial carcinoma and/or carcinoma in situ (CIS) and one for a positive Cx Bladder® test. Of the six patients, two (33%) had CIS and/or non-invasive urothelial carcinoma detected on biopsy of an area only visible under blue-light cystoscopy. One patient was noted to have multifocal disease surrounding the initial resection that was not appreciated on white-light cystoscopy ensuring a more thorough resection.

Conclusions: Blue-light cystoscopy has been successfully introduced at our institution with promising results in patients in whom there is a suspicion of recurrent or residual disease. This technique seems to be a valuable teaching tool in a tertiary training centre.
Association of prostate cancer risk variants with clinicopathological characteristics and mortality

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Introduction: Genome wide association studies (GWAS) have identified more than 70 germ-line genetic variants/single nucleotide polymorphisms (SNPs) to be independently associated with prostate cancer susceptibility to date. However, the effect of these SNPs on prostate cancer prognosis is uncertain. The aim of this study is to investigate whether the prostate cancer risk SNPs are associated with the established clinicopathological prognosticators and prostate cancer mortality.

Methods: 73 known prostate cancer susceptibility SNPs were genotyped in a cohort of 2407 prostate cancer cases of European ancestry in the population-based Studies of Epidemiology and Risk Factors in Cancer Hereditary (SEARCH). All participants were diagnosed between 2003 and 2011, and were followed up for a median of 67 months (range: 14–116). 213 deaths were reported in the cohort, of which 113 are prostate cancer specific deaths. Cox proportional hazard regressions, adjusting for left truncation, were used to estimate the effect of each SNP on prostate cancer mortality (PCSM) and all cause mortality (ACM). Simple linear regressions were used to test for the SNP-PSA association, with the serum PSA level logarithm-transformed to best approximate the assumption of normality. Gleason score (≤7, 7, >7) and clinical stage (T1, T2, T3, T4) were categorized into ordinal groups, and the ordered logistic regressions were used to test for the association with each SNP. No significant deviations from the proportional hazard assumptions and proportional odds assumptions were evident. Bonferroni correction was applied to account for multiple hypotheses testing, with the threshold for significance defined as P < 6 × 10⁻⁴.

Results: In the univariate analyses, 5 SNPs were identified to be nominally associated with PCSM, 2 SNPs with ACM, 2 SNPs with serum PSA level at diagnosis, 6 SNPs with Gleason score and 2 SNPs with clinical stage (P < 0.05). None of the SNPs however showed statistically significant association after correcting for multiple testing.

Conclusions: There is lack of evidence to suggest an association between the currently known prostate cancer risk SNPs and prognosis in our cohort of prostate cancer cases. Due to the relatively small number of deaths observed, our study was underpowered to detect an association with small effect size. Larger studies are needed to validate the SNPs showing nominal association.

Localised prostate cancer management in Wellington – an evolving paradigm

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Wellington Regional Hospital, Wellington, New Zealand

Introduction: Prostate cancer (PC) represents a spectrum of disease threat; from low-risk (LR) cancers, which seldom threaten life, to high-risk (HR) cancers, which have often already metastasized by the time of diagnosis. Modern risk-stratification tools allow management to be tailored to the disease threat. Accordingly, LR disease is managed with Active Surveillance (AS) and HR disease with Radical Prostatectomy (RP). AS has been shown to be safe in LR disease. Emerging data increasingly supports RP for HR disease. We examined these changes in practice in Wellington over the past eight years.

Methods: Retrospectively collected data on the cohort of men diagnosed with PC in Wellington Hospital between 2006 and 2013 was analysed. We compared the earlier cohort (2006–2009) to the later cohort (2010–2013).

Results: 770 men were diagnosed with PC. The proportion of LR patients managed with AS increased from 50 to 64% and that managed with RP decreased from 34 to 27% (Fig. 1). 61% of AS patients met PRIAS inclusion criteria.

Over the same period the proportion of HR patients managed with RP increased, at the expense of all other therapies (Fig. 2). The median time to PSA recurrence was 43 months.
Conclusions: Management of localised PC in Wellington has moved towards a risk-stratified approach with an increased utilisation of AS for LR disease and RP for HR disease. These changes have been associated with favourable outcomes to date in all risk groups and mirror international trends.

Patients and Methods: Clinical and functional outcomes data were collected prospectively on 200 consecutive patients undergoing radical prostatectomy, performed by a single surgeon (DM) across four centers (The Epworth Private Hospital, The Royal Melbourne Hospital, Cabrini Private and The Avenue Private) using either a pure laparoscopic (n = 100) or robotic (n = 100) surgical approach. Data collection occurred between September 2007 and March 2011 for the LRP group and between April 2008 and March 2011 for the RARP group. The primary endpoints for analysis were positive margin rates, and 12-month continence and potency rates. Continence was defined as no regular pad use and potency as the ability to achieve erections satisfactory for intercourse with or without the use of PDE-5 inhibitors. Secondary endpoints consisted of length of stay, blood loss, complications, and biochemical recurrence rates within the first year after surgery. The Biochemical Recurrence (BCR) rate was defined as >0.1 ug/L. Procedures converted to open were excluded from the outcomes analysis. Barnard’s Unconditional test was used to compare differences between categorical variables. A p-value of <0.05 was considered to be statistically significant.

Results: There were 100 patients in each group. One LRP was converted to an open procedure. The patients were similar with respect to age and D’Amico risk. Pre-operative PSA was higher for patients that underwent LRP compared to RARP (p < 0.001). Mean operative time (p = 0.29) and estimated blood loss (p = 0.88) were comparable between groups. Length of stay was significantly shorter for the RARP group (p < 0.003). There was no difference in positive surgical margin (PSM) rates. There were fewer Clavien complications in the robotic group (9% vs 14%). Functionally, RARP resulted in a significantly higher 12-month continence rate (93% vs 82%, p = 0.028) and trend to a higher 12-month potency rate (74% vs 56%, p = 0.12) for a bilateral nerve-sparing procedure.

Conclusions: RARP results in a shorter length of hospital stay and higher 12-month continence rates and there is a trend toward fewer complications and improved 12-month potency rates. PSM rates are comparable between RARP and LRP.

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Clinical data as prognostic tools in the management of renal cell carcinoma (RCC)


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Introduction: Although there has been an increase in incidental diagnosis of renal cell carcinoma (RCC), a substantial proportion of patients still present with the typical clinical signs and symptoms; with 20–30% of patients having advanced RCC at diagnosis. Therefore, the aim was to determine the association of predictive clinical parameters of localized and advanced RCC at diagnosis.

Patients and Methods: Medical records of 147 RCC patients diagnosed at University of Malaya Medical Centre (UMMC) from 2003–2012 were assessed. Symptoms at presentation included the classical triad (macro-hematuria, loin pain, abdominal mass), para-neoplastic (fever, loss of weight/appetite [LOW/LOA], lethargy), and blood tests (albumin, alkaline
phosphatase [ALP], calcium, hemoglobin, platelets, lymphocytes, neutrophils) were analysed. Logistic regression analysis was carried out to determine odds ratio (OR) of advanced/localized RCC, based on the clinical parameters. 

**Results:** Among the classical triad of symptoms, only abdominal mass (OR 2.94; \( p = 0.003 \)) was significantly predictive for advanced RCC. Patients with all the triad symptoms were more likely to have advanced disease (OR 6.77; \( p = 0.011 \)). Fever (OR 2.57; \( p = 0.068 \)), LOW/LOA (OR 3.47; \( p < 0.001 \)) and lethargy (OR 3.16; \( p = 0.022 \)) were predictors of advanced disease. A combination of at least two para-neoplastic symptoms had stronger predictive value (OR 6.98; \( p = 0.001 \)). Among the blood tests, elevated ALP (OR 5.84; \( p = 0.001 \)), corrected calcium (OR 12.77; \( p = 0.018 \)), low albumin (OR 4.90; \( p < 0.001 \)), hemoglobin (OR 4.58; \( p < 0.001 \)) and low lymphocyte count (OR 3.89; \( p < 0.001 \)) were also indicators of advanced RCC.

**Conclusions:** Clinical symptoms and blood tests can be useful prognostic predictors, alongside medical imaging, in assessing whether a patient has localized or advanced RCC. However other tools, such as novel biomarkers, may need to be developed to add to these clinical parameters, for better identification of RCC stages of disease.

### 270 Radical nephrectomy and vena caval thrombectomy with the use of cardiopulmonary bypass: a contemporary experience

**A. Raman**, **A. Jawale** and **A.B.F. Grant**

**Introduction:** To report on the experience of a single surgeon in a regional Australian centre with radical nephrectomy and vena caval thrombectomy with the use of cardiopulmonary bypass.

**Patients and Methods:** 15 consecutive patients undergoing radical nephrectomy and vena caval thrombectomy with cardiopulmonary bypass over a 13 year period were identified. These were performed by a single surgeon in 2 hospitals in a regional centre in NSW, Australia. Retrospective analysis of prospectively collected data was performed. Data was collected on intraoperative and pathological findings as well as postoperative complications. Oncological outcomes and long term follow up were analysed retrospectively in this study.

**Results:** All patients had a radical nephrectomy and vena caval thrombectomy with cardiopulmonary bypass. The median operating time was 336 minutes (mean 326.1 minutes) and median transfusion of packed red blood cells was 8 units (mean 6.9). The median bypass time was 107 minutes (mean 112.3 minutes) and the median circulation arrest time was 25 minutes (mean 25.3 minutes). The median length of hospital stay was 11 days (mean 14.5 days). Minor complications were seen in 2 patients and major complications seen in 6, with 1 intraoperative death. The overall 5 year survival rate was 84%. Median follow up was 32 months (range 0–158). Median survival time was 135 months.

**Conclusions:** Radical nephrectomy with caval thrombectomy with cardiopulmonary bypass can be performed in a regional centre with acceptable post-operative morbidity and mortality. Long term survival is possible in some patients.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Median (IQR)</th>
<th>Mean (range)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maximum tumour diameter, mm</td>
<td>102.5 (67.5)</td>
<td>92.8 (120)</td>
</tr>
<tr>
<td>&lt;70, n (%)</td>
<td>4 (33.3%)</td>
<td>70, n (%)</td>
</tr>
<tr>
<td>Pathological stage, n (%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>T3b</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>T3c</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>T4</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Fuhrman grade, n (%)</td>
<td>2</td>
<td>3 (25%)</td>
</tr>
<tr>
<td>3</td>
<td>7 (58%)</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>2 (17%)</td>
<td></td>
</tr>
<tr>
<td>Tumour histology, n (%)</td>
<td>Clear cell</td>
<td>11 (92%)</td>
</tr>
<tr>
<td>Papillary</td>
<td>1 (8%)</td>
<td></td>
</tr>
<tr>
<td>Surgical margin status, n (%)</td>
<td>Negative</td>
<td>2 (17%)</td>
</tr>
<tr>
<td>Positive vein</td>
<td>5 (42%)</td>
<td></td>
</tr>
<tr>
<td>Positive soft tissue</td>
<td>5 (42%)</td>
<td></td>
</tr>
</tbody>
</table>

### Table 2. Pathological findings

**Table 1. Operative findings**

<table>
<thead>
<tr>
<th>Variable</th>
<th>Median</th>
<th>Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operative time (mins)</td>
<td>336</td>
<td>326.1</td>
</tr>
<tr>
<td>Cardiopulmonary bypass time (mins)</td>
<td>107</td>
<td>112.3</td>
</tr>
<tr>
<td>Duration of circulatory arrest (mins)</td>
<td>25</td>
<td>25.3</td>
</tr>
<tr>
<td>No. of units transfused</td>
<td></td>
<td></td>
</tr>
<tr>
<td>packed cells</td>
<td>8</td>
<td>6.9</td>
</tr>
<tr>
<td>platelets</td>
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<td>1.4</td>
</tr>
<tr>
<td>fresh frozen plasma</td>
<td>4</td>
<td>3.5</td>
</tr>
<tr>
<td>cryoprecipitate</td>
<td>3</td>
<td>4.5</td>
</tr>
<tr>
<td>Length of stay (days)</td>
<td>11</td>
<td>14.5</td>
</tr>
</tbody>
</table>

## 271 Stereotactic body radiotherapy (SBRT) in the treatment of oligometastatic prostate cancer: early results

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**Introduction:** Metastatic prostate cancer has been traditionally treated with androgen deprivation therapy (ADT). ADT is however associated with debilitating side effects. Oligometastatic disease may represent an intermediate disease stage that is amenable to aggressive local therapy, allowing deferral of ADT commencement. Stereotactic body radiotherapy (SBRT) is a relatively non-invasive treatment that delivers an ablative dose of radiotherapy to target tissues, while minimising scatter to adjacent structures. Early evidence in other cancers suggests SBRT is a safe and effective treatment for oligometastatic disease, which may even offer cure in selected patients. The objective of this study is to establish the effectiveness and safety of SBRT in treating oligometastatic prostate cancer.

**Methods:** We performed a retrospective analysis of all men with oligometastatic prostate cancer (defined as 5 or less sites of metastasis) treated with SBRT.
Effectiveness of treatment was measured by PSA serum levels and ADT use.

Results: Between 2007 and 2013, 29 SBRT treatments were performed in 27 patients with oligometastatic prostate cancer. Median follow-up duration was 5 months (range 6 weeks to 4.3 years).

Pre-treatment characteristics: Median age was 70 (range 50–80). 45% of patients were hormone naïve, 25% were castrate resistant and 30% had received ADT at some time but were not castrate resistant.

Oligometastases were treated between 2 months to 13 years (median 4 yr) after radical treatment of the primary tumour. PSA levels prior to SBRT were <0.01 to 81.51 (Median 6.9). Over 85% of cases had only one site of metastasis. In 2/3 the site of metastasis was bone and 1/3 lymph node. Only one patient had concurrent bone and lymph node lesions. Bone lesions were treated with 12–50 Gy (mean 38) in 1–20 Fx (mean 11) and lymph nodes with 18–70 Gy (mean 36) in 3–35 Fx (mean 8).

Efficacy details: The majority of patients had a decrease in PSA level in response to SBRT. A greater proportion of men with nodal disease (88%) compared to bone (65%) had a decrease in PSA at the first post-treatment measurement (6 weeks). This trend continued in later follow-up. Of those men not taking ADT at the time of SBRT only 11% have been subsequently started on treatment. Of those men receiving ADT at the time of SBRT, 20% subsequently had their ADT ceased due to successful PSA response.

Toxicity details: No significant treatment toxicity was recorded.

Conclusions: This promising early data suggests SBRT has the potential to safely control oligometastatic disease in the short term, and may delay the need for ADT and its associated side effects. Longer follow-up and prospective controlled trials are warranted.

Outcomes of a haematuria clinic at an Australian tertiary hospital: results of a three-year audit

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Introduction: It is important to investigate haematuria in a timely and systematic manner to identify malignant pathology. The objective of this prospective cohort study is to report the outcomes of the first three years of a haematuria clinic at Royal Melbourne Hospital, a Victorian tertiary hospital.

Patients and Methods: All patients referred to Royal Melbourne Hospital with haematuria assessed at the dedicated haematuria clinic from April 2010 to April 2013 were included. Outcomes were recorded prospectively and analysed retrospectively.

Results: 643 patients were seen in the haematuria clinic with microscopic (170, 26%) and macroscopic haematuria (463, 72%) during this time period, all within 28 days of referral being triaged. 65 (10%) patients were diagnosed with urothelial carcinoma (UC), 63 with bladder UC and two with upper-tract UC. 267 (42%) patients were discharged from clinic after a single point of contact. 153 (24%) patients underwent definitive management of benign pathology. 223 (34%) patients were referred for further investigations. UC was more common in males, older patients and patients with macroscopic haematuria. 149 patients underwent urinary cytology prior to cystoscopy. Whilst 6 cases of high-grade UC were correctly identified on cytology, 12 cases of UC were missed. More importantly no cases of UC were diagnosed on cytology that were not diagnosed using imaging or cystoscopy.

Conclusions: This audit has led to several changes in the clinic protocols, which has now reduced the patients needing urologist follow-up to under 10%. The Royal Melbourne Hospital haematuria clinic has thus served as an effective tool for rapid, streamlined assessment of patients presenting with haematuria.

The adoption of routine pelvic lymphadenectomy may be associated with improved overall survival in patients undergoing radical cystectomy for bladder cancer

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Introduction: Bilateral pelvic lymphadenectomy (PLND) has been shown to provide a survival benefit for patients undergoing surgery for invasive bladder cancer. Furthermore, both progression-free survival and overall survival (OS) may be correlated with the number of lymph nodes removed at surgery. The purpose of this study was to determine whether the adoption of routine PLND since 2006 has resulted in improved OS in patients undergoing radical cystectomy for urothelial carcinoma.
The effect of clinical stage and lesion complexity on the practice of surgery for renal cell carcinoma in the state of Victoria


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Introduction: The last decade partial nephrectomy (PN) has become the gold standard for the management of small renal masses (SRMs). Patients who have had PN may have a survival advantage over those treated with radical nephrectomy (RN) through decreased risk of chronic kidney disease (CKD). We sought to investigate the current practice of surgery for renal cell carcinoma (RCC) in the State of Victoria, in particular with regard to the effect of clinical stage and lesion complexity.

Patients and Methods: We undertook a retrospective review of 738 consecutive surgeries for pathologically-confirmed RCC between 2005 and 2012 at six Victorian tertiary referral centres. The 488 RN and 250 PN operations were performed through both open and laparoscopic approaches. Statistical evaluation utilised chi square analysis.

Results: There were 476 male and 262 female patients with a mean age of 60 years. Mean operative time was 206 minutes and median length of stay (LOS) was 5 days. The mean tumour size was 54 mm. Lower T-stage lesions were preferentially treated with PN (p < 0.001) and minimally-invasive (p < 0.001) approaches. Increasing T-stage was associated with a higher proportion of Clavien-Dindo Grade III-V complications (p = 0.220). For T1a lesions (n = 218) the use of RN increased with lesion complexity (p < 0.001), with 21% of low-complexity, 52% of moderate-complexity and 100% of high-complexity lesions undergoing radical surgery.

Conclusions: The choice of radical versus partial nephrectomy for patients undergoing surgery for RCC in Victoria is largely determined by lesion complexity and clinical stage.

Choosing the best surgical approach for T1b renal cell carcinoma


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Introduction: Stage T1b renal cell carcinoma (RCC) is a contentious entity as both radical and nephron-sparing approaches may be justified in different circumstances. The excess morbidity of partial nephrectomy must often be weighed against the benefits of nephron-sparing surgery. We sought to develop a conceptual framework for the management of these challenging lesions.

Patients and Methods: We undertook a retrospective review of 110 radical (RN) and 36 partial nephrectomies (PN) performed for T1b RCC between 2005 and 2012 at six Victorian tertiary referral centres. Data was collected with regard to age, surgical approach, lesion complexity as assessed by RENAL nephrometry, postoperative renal function and the presence of CKD risk factors. Statistical analysis utilised two-sample Student's T-tests and chi square analysis.

Results: There were 90 male and 56 female patients with a mean age of 58 years. 62% of patients underwent laparoscopic RN, 14% open RN, 12% open PN, 9% lap PN and 3% robotic PN. Age > 60 years (n = 73) was associated with increased postoperative complications (p = 0.027), longer LOS (p = 0.012) and higher risk of pre-existing CKD with eGFR < 60 mL/min (34% vs 15%, p = 0.012). RENAL nephrometry scores were available in 101 patients. The more complex the lesion, the less likely the patient would undergo PN (p < 0.001) or minimally invasive surgery (p < 0.001). Nephrometry score had no significant relationship with operative time, LOS, margin rate or complication rate.

Conclusion: Multiple factors need to be taken into consideration when choosing the optimal surgical approach for T1b renal lesions. Thought should be given to the experience of the surgeon, the age of the patient, the complexity of the lesion and the presence of CKD and its risks factors.

Pathology of renal cell carcinoma in the state of Victoria

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Introduction: The utilisation of renal mass biopsy varies among institutions within the State of Victoria. Detractors often quote the risk of concurrent benign and malignant pathology as a reason for avoiding biopsy, preferring to base their management decisions on imaging and patient factors. We sought to determine the prevalence of multiple histologies in patients undergoing surgical extirpation for renal cell carcinoma, as well as the
effect of lesion complexity on pathological outcomes.

Patients and Methods: We performed a retrospective review of 488 radical (RN) and 250 partial nephrectomies (PN) performed for RCC at six Victorian tertiary referral centres. Patients with benign histopathology were excluded from analysis. The RENAL nephrometry score was calculated from the most contemporary pre-operative CT scan. Statistical evaluation utilised Student’s T-tests and chi square analysis.

Results: There were 476 male and 262 female patients with a mean age of 60 years. The distribution of pathological subtypes were 72% clear cell, 14% papillary, 8% chromophobe, 1% collecting duct, 1% multilocular cystic and 3% with other classifications. The mean tumour size was 54 mm. Twelve patients (2%) had multiple histologies. Oncocytoma coincided with RCC in five of these patients (0.67%). RENAL nephrometry scores were available in 501 patients. Higher-complexity lesions were more likely to have a higher pathological T-stage (p < 0.001), a higher Fuhrman grade (p = 0.023) and positive surgical margins (p = 0.012). Diabetic patients (n = 122) were also more likely to have positive margins (30% vs 18%, p = 0.008).

Conclusions: Increasing lesion complexity is associated with poorer pathological features, which supports a more aggressive approach in the management of these tumours. The low rate of multiple histologies reinforces the value of renal biopsy in small renal masses and complex PN cases.

277 Is transperineal prostate biopsy more accurate than transrectal biopsy in determining final Gleason score and risk category? A comparative analysis

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Introduction: Upgrading of transrectal prostate biopsy (TPB) may offer a more thorough mapping of the prostate compared to TRUSB, and a more accurate assessment of the tumour. In this retrospective cohort study of prospectively collected data, we compare the initial TRUSB and TPB Gleason grade and sum to the final assessment at RP. The aim of this study is to assess the degree of upgrading and increase in clinical risk category of TPB compared to TRUSB.

Patients and Methods: Following ethics committee approval, a total of 431 laparoscopic and robotic RP specimens of 2 urologists fellowship-trained in minimally invasive RP, were examined in the private sector between Nov 2008 and Oct 2013. Final RP Gleason grade and sum were compared to the initial prostate biopsy. All pathological assessments were performed by a dedicated uropathology unit experienced in prostate pathology (Aquesta Pathology). Upgrading was defined either as an increase in the primary Gleason grade, or as identification of a higher grade tertiary pattern at final RP analysis. Increase in clinical risk category was defined as an increase from low risk disease (Gleason 6 or less), to either intermediate (Gleason 7) or high risk (Gleason 8–10) disease; or as an increase from intermediate risk to high risk disease. The chi squared test was used to compare categorical variables while the Wilcoxon rank sum was used for continuous quantitative variables.

Results: The 431 RP specimens comprised 283 in which the prostate cancer was diagnosed at TRUSB and 148 diagnosed at TPB. There was no significant difference between TRUSB and TPB in mean prostate weight (46.4 g vs. 44.2 g), final RP pathological stage or mean tumour volume (2.15 cc vs. 2.14 cc). Overall 38.5% of TRUSB and 37.2% of TPB were upgraded which was not significantly different (p = 0.55). Similarly there was no significant difference in whether there was an increase to a higher Gleason sum (TRUSB 23.3% vs. TPB 20.9%; p = 0.57). However TRUSB was significantly more likely to increase to a higher clinical risk category compared to TPB (TRUSB 22.3% vs. TPB 14.2%, p = 0.04).

Conclusions: In this series TPB more accurately predicted clinical risk category compared to TRUSB. TPB should be considered prior to active surveillance to ensure that occult higher risk disease has not been underdiagnosed. Upgrading and increase in clinical risk category was relatively common in each group highlighting the need for improved pre-treatment staging accuracy.

278 Androgen influence on prostate cancer secreted microvesicles production and content

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Introduction: There is a large body of evidence showing that prostate cancer and its progression to castrate resistant disease is driven by the action of androgens and the androgen receptor. Exosomes, nanosize vesicles secreted by cells, have been shown to be involved in cell to cell communication, and evidence from studies in other types of cancer suggests that the exosomes and microvesicles are regulators which mediate adaptive cancer processes.

Methods: LNCaP cells were grown in androgen deprived condition in charcoal stripped serum (CSS) and treated with androgen dihydrotestosterone (DHT) and androgen antagonist MDV 3100. The exosomes from conditioned media from LNCaP cells were isolated by serial ultracentrifugation, purified exosomes were assessed by electron microscopy, BCA assay and western blot. Exosome fraction consists of currently accepted exosomal marker such as Alix and TSG101 were analysed by mass spectrometry.

Results: Treatment with DHT changed the composition of exosomal protein content. 78/577 total proteins were found in all samples, including CD9, Alix, TSG101, HSP90-beta, and the prostate specific biomarker, Prostate Specific Membrane Antigen (PSMA), which was found in all exosome samples irrespective of growth conditions. Ingenuity pathway analysis showed that DHT treatment increased the
number of proteins known to be involved in cell survival in comparison with LNCaPs grown in CSS.

Conclusions: Our data support the hypothesis that androgens through the androgen receptor play a regulatory role in the secretion process, both qualitatively and quantitatively determining exosome size, content, and number in the context of the androgen sensitive prostate cancer cell, LNCaP. Our data indicate that androgens not only mediate prostate cancer progression through regulating gene transcription, but also alter cell to cell communications between prostate cancer cells via secreted nanosize vesicles such as exosomes. The data support that exosome analysis has the potential to detect and differentiate prostate cancer response to androgen targeted therapies. Exosome isolation and characterisation from advanced prostate cancer patients undergoing systemic therapy could provide an indicator of treatment response and treatment resistance.

279 Combined (retroperitoneal and transperitoneal) approach for laparoscopic radical nephrectomy in large (T2) right sided renal tumors - a critical analysis of anatomical factors affecting the surgical outcome

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Introduction: Though the trans-peritoneal approach provides a larger working space and better anatomical orientation, there are reports of high conversion rates to open surgery in T2b tumors. We herein describe a combined approach (CA) (Retroperitoneoscopic and transperitoneoscopic) for safe and efficacious removal of such large tumors and analyze the anatomical factors affecting the optimal surgical outcome.

Materials and Methods: This is a prospective review of 36 cases of T2 right sided renal tumor which were found suitable for laparoscopic retrieval. Initial 14 cases were approached transperitoneoscopically (TP) and then the practice was changed to a CA for the later 22 cases in view of an unacceptable higher rate of conversion. In the CA, the main renal artery was initially clipped with the retroperitoneoscopic (RP) approach followed by repositioning the patient for the TP dissection and retrieval of tumor.

Results: Out of the initial 14 cases of TP radical nephrectomy, seven had to be converted to open due to either failure to progress near the hilum (in two cases due to reactive lymph adenopathy or desmoplastic reactions and in one due to significant bleeding) or a vascular accident (four cases). In the subsequent 22 cases, there was only one elective conversion due to anomalous venous anatomy coupled with severe desmoplastic reaction. During the TP approach large right renal tumor; the tumor bulk, presence of lymph nodes, short and stout renal vein, fragile peritumoral vessels and the inferior venacava act as an anatomical barrier to approach the renal artery. It becomes further difficult in cases with multiple arteries and an artery with a very early division. With initial RP clipping of the artery which can be done almost at its aortic origin, the tumor shrinks to a great extent, the peritumoral vessels die down and the renal vein becomes practically empty as well. Further, there are no lymph nodes barriers to approach the artery retroperitoneoscopically.

One may argue that in such tumor the entire procedure could have been carried out retroperitoe-neoscopically itself, but in view of the limited space with large tumor in situ, it is difficult to proceed further. It is worth mentioning that it is also very tricky to tackle the adrenal gland by RP approach especially in cases of upper polar tumor.

Conclusions: Presence of lymph nodes, short and stout renal vein, fragile parasitic vessels and the inferior venacava act as an anatomical barrier that may complicate right TP radical nephrectomy in large tumor. The combined approach is safe and efficacious in the large right sided renal tumors to overcome these difficulties.
performed by an experienced operator. Size, location and tumour histology were not associated with local recurrence. Larger studies are required to investigate lower pole position as a potential predictor of local recurrence.

Table 1. Baseline demographics

<table>
<thead>
<tr>
<th>Predictor</th>
<th>Median (IQR) or number (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age (years)</td>
<td>76 (68–80.5)</td>
</tr>
<tr>
<td>Gender</td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>73 (69.5)</td>
</tr>
<tr>
<td>Female</td>
<td>32 (30.5)</td>
</tr>
<tr>
<td>Tumour location</td>
<td></td>
</tr>
<tr>
<td>Exophytic</td>
<td>75 (71.4)</td>
</tr>
<tr>
<td>Mixed</td>
<td>18 (17.1)</td>
</tr>
<tr>
<td>Endophytic</td>
<td>12 (11.4)</td>
</tr>
<tr>
<td>Upper pole</td>
<td>15 (14.3)</td>
</tr>
<tr>
<td>Middle pole</td>
<td>57 (54.3)</td>
</tr>
<tr>
<td>Lower pole</td>
<td>33 (31.4)</td>
</tr>
<tr>
<td>Central</td>
<td>10 (9.5)</td>
</tr>
<tr>
<td>Tumour size (cm)</td>
<td>2.5 (1.9–3.0)</td>
</tr>
<tr>
<td>Tumour stage</td>
<td></td>
</tr>
<tr>
<td>cT1a</td>
<td>95 (90.5)</td>
</tr>
<tr>
<td>cT1b</td>
<td>10 (9.5)</td>
</tr>
<tr>
<td>RCC subtype</td>
<td></td>
</tr>
<tr>
<td>Clear cell</td>
<td>60 (57.1)</td>
</tr>
<tr>
<td>Papillary</td>
<td>10 (9.5)</td>
</tr>
<tr>
<td>Chromophobe</td>
<td>9 (8.6)</td>
</tr>
<tr>
<td>Oncocytic</td>
<td>7 (6.7)</td>
</tr>
<tr>
<td>Non-diagnostic</td>
<td>18 (17.1)</td>
</tr>
<tr>
<td>Chronic kidney disease (≥CKD)</td>
<td>59 (56.2)</td>
</tr>
<tr>
<td>Stage 3</td>
<td>7 (5–8)</td>
</tr>
<tr>
<td>Age-adjusted Charlson</td>
<td>7 (5–8)</td>
</tr>
<tr>
<td>Comorbidity Index Score</td>
<td></td>
</tr>
</tbody>
</table>

Table 2. Univariate and multivariate analysis for predictors of local recurrence

<table>
<thead>
<tr>
<th>Predictor</th>
<th>Univariate HR (95% CI)</th>
<th>P value</th>
<th>Multivariate HR (95% CI)</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age &gt; 75 yr</td>
<td>1.06 (0.21–5.30)</td>
<td>0.94</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>Male</td>
<td>1.03 (0.18–5.77)</td>
<td>0.97</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>Size &gt; 3 cm</td>
<td>2.23 (0.45–11.08)</td>
<td>0.33</td>
<td>1.43 (0.27–7.54)</td>
<td>0.68</td>
</tr>
<tr>
<td>Size &gt; 4 cm</td>
<td>0.04 (0.00–2170.64)</td>
<td>0.57</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>Central location</td>
<td>1.82 (0.21–15.62)</td>
<td>0.59</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>Lower pole</td>
<td>6.33 (1.13–35.62)</td>
<td>0.04</td>
<td>6.12 (0.97–38.57)</td>
<td>0.05</td>
</tr>
<tr>
<td>Endophytic</td>
<td>0.04 (0.00–1.88 × 10^4)</td>
<td>0.63</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>Clear cell pathology</td>
<td>6.06 (0.68–54.21)</td>
<td>0.11</td>
<td>5.21 (0.50–54.58)</td>
<td>0.17</td>
</tr>
<tr>
<td>CRF</td>
<td>3.16 (0.37–27.33)</td>
<td>0.30</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>Age-adjusted Charlson</td>
<td>2.01 (0.23–17.25)</td>
<td>0.52</td>
<td>–</td>
<td>–</td>
</tr>
</tbody>
</table>

Introduction: Periprostatic fat (PPF) is not routinely dissected and sent for analysis in robot assisted radical prostatectomy (RARP). Analysis of PPF has revealed that it harbours lymph nodes. Given its close proximity and lymphatic drainage, the PPF has potential to harbour malignancy via extra-capsular extension or lymphatic spread of the primary neoplasm. The aim of this study was to discern the prevalence and significance of lymph nodes in the PPF yielded during RARP.

Patients and Methods: 880 consecutive patients undergoing RARP in a single surgeon series from January 2006 to August 2013 were documented. In the first 126 patients the PPF was dissected but not sent for analysis. We analysed 590 consecutive cases between February 2008 and February 2013 inclusive. A separate sample of PPF was dissected and analysed and the presence and size of lymph nodes were documented.

Results: A total of 58 out of 590 patients (9.83%) had lymph nodes in the anterior lympho-fatty tissue complex. The average number of lymph nodes when present was 1.34 ± 1.21. Pathological assessment of the lymph nodes revealed tumour infiltration in 2 out of 590 (0.34%) patients. In patients with lymph nodes in the PPF, 3.45% (2 out of 58) were found to have malignant involvement. One of these patients had a negative pelvic node dissection and died of metastatic disease four years post operatively. The other patient had no pelvic node dissection and has an undetectable PSA three years post operatively.

Conclusions: We recommend PPF should routinely be dissected, with the pathologist alerted to analyse for lymph nodes. The significance of positive nodes needs further evaluation. Adjuvant therapy may need to be considered earlier in such patients. Further follow up and study is required to determine if there is a therapeutic benefit with PPF dissection and in particular if there is a role for a more extended PPF dissection.

Introduction: In recent years, many centres have used ultrasensitive Prostate-specific antigen (PSA) testing to monitor for the detection of biochemical recurrence (BCR) post radical prostatectomy (RP).
The primary aim of this report is to raise awareness of PSA discrepancies specifically in the context of monitoring for BCR following RP. To our knowledge, this is the first documented report of significant discrepancies in PSA testing post RP.

Patients and Methods: In a single surgeon series of over 900 robot assisted radical prostatectomies three patients were noted to have significant variations in post op PSA results.

Patient 1, a 72 year old man had Gleason 4 + 4 Pca staged at pT2a with clear margins.

Patient 2, a 66 year old man had Gleason 3 + 4 Pca staged at pT3a with clear margins.

Patient 3, a 60 year old male had Gleason 4 + 3 Pca staged at pT3a with clear margins.

The assay systems utilised were Abbott ARCHITECT Ci16200 Integrated System (Lab 1), Roche assay on the Modular E170 instrument (Lab 2), ADVIA Centaur XP (Lab 3) and Abbott Architect i2000SR (also Lab3).

Results:

Patient 1: Lab1 (ARCHITECT) showed clinically significant elevation in PSA (0.22) at 7 months post op, whereas Lab2 (E170) and Lab3 (ADVIA) showed no elevation (<0.02, <0.03). This discrepancy continued across multiple readings over a 14 month period. Follow up with Lab1 was ceased and PSAs with Lab2 and Lab3 continue to be undetectable.

Patient 2: Lab1 (ARCHITECT) revealed an undetectable PSA of <0.01 at 3 and 8 months post operatively relative to Lab3 (ADVIA), which had a detectable value of 0.03 during testing at a similar time. Patient is awaiting further PSA testing at all three labs.

Patient 3: Lab3 (ADVIA) gave undetectable PSA levels (<0.03) at 4, 5, and 7 months post op, however at 12 months post op his PSA was detectable at 0.05. This was repeated 3 weeks later at Lab3 with their routine assay (ADVIA) and also the Architect i2000SR simultaneously and was undetectable (<0.03, <0.02) on both assays at this point.

Conclusions: We would recommend caution in interpreting PSA results below 0.1 from a single laboratory in the context of BCR post RP. A spurious elevation in PSA results is significant as it may result in unnecessary psychological burden to the patient and inappropriate management. Conversely, falsely low PSA results may lead to missing early disease recurrence and possible delay of therapy.

We would recommend repeating PSA testing in patients who have measureable PSA levels in the ultrasensitive range post RP.

Cross-referencing PSA results across different assay methods can be a useful tool in alleviating patient anxiety and in documenting biochemical recurrence. Further study is required to identify the exact cause of these discrepancies.

283 Enhancing MRI of prostate cancer using PSMA-targeting iron oxide magnetic nanoparticles

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Introduction: Novel imaging techniques for prostate cancer (PCa) are required to improve staging and real-time assessment of therapeutic response. We performed preclinical and real-time assessment of newly-developed, biocompatible magnetic nanoparticles (MNPs) conjugated with J591, an antibody specific for prostate specific membrane antigen (PSMA), to enhance magnetic resonance imaging (MRI) of PCa. PSMA is expressed on 90% of PCa, including those that are castrate-resistant, rendering it as a rational target for PCa imaging.

Materials and Methods: The specificity of J591 for PSMA was confirmed by flow cytometric analysis of several PCa cell lines of known PSMA status. MNPs were prepared, engineered to the appropriate size, labeled with DiR fluorophore, and their toxicity to a panel of PC cells was assessed by in vitro Alamar Blue assay. Immunohistochemistry, fluorescence microscopy and Prussian Blue staining (iron uptake) were used to evaluate PSMA specificity of J591-MNP conjugates. In vivo MRI studies (16.4T MRI system) were performed using live immunodeficient mice bearing orthotopic LNCaP xenografts and injected intravenously with J591-MNPs or MNPs alone.

Results: MNPs were non-toxic to PCa cells. J591-MNP conjugates showed no compromise in specificity of binding to PSMA+ cells and showed enhanced iron uptake compared with MNPs alone. In vivo, tumour targeting (significant MR image contrast) was evident in mice injected with J591-MNPs, but not MNPs alone. Resected tumours from targeted mice had an accumulation of MNPs, not seen in normal control prostate.

Conclusions: Application of PSMA-targeting MNPs into conventional MRI has potential to enhance PCa detection and localization in real-time, improving patient management.
insertion, peri-prostatic block and biopsy taking.

**Results:** From 7/2012 to 4/2013, 246 patients were recruited, 162 from QMH and 84 from TWH. The mean age was 68.5. The mean prostate size was 41.7 ml and the mean prostatic specific antigen level was 16.1. The mean VAS during biopsy taking was 3.4 and was more painful than during probe insertion and peri-prostatic block, which VAS were 2.5 and 2.39 respectively (both p < 0.001). The mean VAS during probe insertion, peri-prostatic block and biopsy taking were 2.31, 2.34 and 3.14 respectively in combination arm and 2.87, 2.50 and 3.90 respectively in PNB only arm. Only the difference in VAS during biopsy taking reach statistical significance (p = 0.037).

Subgroup analysis of patients aged below 70 revealed significant differences in VAS during probe insertion and biopsy taking, ie. mean VAS during probe insertion (2.37 vs 3.29, p = 0.046), peri-prostatic block (2.29 vs 2.67, p = 0.368) and biopsy taking (3.25 vs 4.29, p = 0.024) in combination arm and in PNB respectively.

**Conclusion:** Patients experience more pain during biopsy taking than probe insertion and peri-prostatic block. Emla cream in addition to peri-prostatic block is superior to peri-prostatic block alone, especially for patients aged below 70.