

2

**Stenting and Dilatation - How Does it Happen?**

Dr. Sim Mei Yi<sup>1</sup>, LIM Kheng Sit Jay<sup>1</sup>  
<sup>1</sup>Singapore General Hospital

**Introduction:** Ureteral stents are placed in the ureters to assist the outflow of urine and are important therapeutic devices that alleviate ureteral obstruction before or/and after medical procedures to promote healing. The placement of stents induces a passive dilatation of the ureters, but the underlying mechanism accounting for this biological phenomenon remains poorly understood. In this study, we aim to investigate the possible biomolecules involved in this process.

**Methods:** Ureter tissue samples were obtained from 5 porcine models; 2 were stented unilaterally for 3 days, 2 were stented unilaterally for 5 days and 1 was not subjected to ureteral stenting. Tissue RNA was extracted and subjected to RNA sequencing analysis. Immunofluorescence staining was performed using PGE2 receptor and Ki67 antibodies. The differential gene and protein expression were then correlated to the stented / non-stented ureters macroscopically and radiologically.

**Results:** RNA sequencing analysis showed significant differential gene expression between stented and non-stented ureters. The protein expression of PGE2 receptor and Ki67 were observed to be elevated in the stented ureters.

**Conclusions:** Ureteral stenting led to an increase in gene and protein expression of molecules associated with cell proliferation and inflammation, which may potentially play a role in ureteral dilatation.

4

**Variability in Testosterone Measurement Between Radioimmunoassay (RIA), Chemiluminescence Assay (CLIA) and Liquid Chromatography-tandem Mass Spectrometry (MS) Among Prostate Cancer Patients on Androgen Deprivation Therapy (ADT)**

Dr. Raj Tiwari<sup>1</sup>, Ms. Katherine Lajkosz<sup>1</sup>, Dr. Mohamed Baker Berjaoui<sup>1</sup>, Dr. Yazan Qaoud<sup>1</sup>, Dr. Miran Kenk<sup>1</sup>, Dr. Clive Woffendin<sup>2</sup>, Dr. Patrick Caron<sup>3</sup>, Dr. Chantal Guillemette<sup>3</sup>, Dr. Neil Fleshner<sup>1</sup>  
<sup>1</sup>University of Toronto, <sup>2</sup>Oregon Health and Science University, <sup>3</sup>Laval University

**Introduction & Aims:** Testosterone (T) levels of less than 20 ng/dL on ADT therapy have been associated with better prostate cancer outcomes. CLIA and RIA are widespread and inexpensive however MS is regarded as the reference standard. We set out to determine the discordance rates of T measurements amongst men on ADT.

**Methods:** A retrospective review of men with PCa on LHRH monotherapy for 3 or more months was conducted. Serum samples were measured by all 3 assays. T measurements were compared analyzing for variability looking for categorical concordance.

**Results:** 95 patients were included with a mean age of 70 years. Mean ADT duration was 24.1 months. 95% of patients had T ≤ 20ng/dL by MS and CLIA as compared to 80% by RIA. After subdividing into T categories of ≤ 20, 20-50 and ≥ 50ng/dL concordance analysis showed that 4.3% and 18.9% of T measured by MS would have a different category result when remeasured by CLIA (Kappa 0.84) or RIA (Kappa 0.50) respectively. 16.8% of T measured by CLIA would have a different category when remeasured by RIA (Kappa 0.58). CLIA and RIA overestimated T in 66.7% of patients with T < 20 ng/dL measured by MS while CLIA and RIA underestimated T in only 4.4% of cases with T > 20ng/dL measured by MS.

**Conclusions:** There is significant variability in inter-assay T measurements. CLIA and RIA overestimated T levels in majority of patients thereby misdiagnosing truly castrate patients as being inadequately treated.

3

**Differences in Gleason Score Distribution and Tumour Aggressiveness in Large Contemporary Cohorts of Chinese and Caucasian Men**

Dr. Raj Tiwari<sup>1</sup>  
<sup>1</sup>University Health Network

**Introduction & Aims:** Prostate cancer (PCa) incidence and mortality is lower in Chinese Asians (ASI) than Caucasians (CAU). Whether this is driven by disease or improved outcomes is unclear. We aim to study if ASI men have a higher prevalence of high grade PCa (HG-PCa) on biopsy than CAU but are at lower risk of disease progression after radical prostatectomy (RP), for similar Gleason Score (GS).

**Methods:** A retrospective multi-centre cohort study of 2343 ASI (Shanghai) 2626 CAU (Toronto) were recruited assessing for HG-PCa. For GS ≥ 8 PCa post RP outcomes 282 ASI from Shanghai/Singapore and 192 CAU from Toronto/Paris were recruited. Propensity-score-matching was used to reduce imbalances between cohorts.

**Results:** The proportion of men found with GS ≥ 8 (31.5 vs. 10%) on biopsy was significantly higher in Shanghai than Toronto (p < 0.001). GS ≥ 8 in ASI was more prevalent on biopsy than in CAU (p < 0.001), including in men with PSA < 10 ng/ml (p < 0.001). No statistically significant difference was found for metastasis-free survival after RP on in the full or matched cohorts (p = 0.33, p = 0.92, respectively). Hormone therapy-free survival and castration resistant PCa-free survival was not influenced by ethnicity.

**Conclusion:** ASI present with a larger proportion of aggressive GS≥8 tumors compared to CAU, even at lower PSA levels. GS≥8 tumors treated by RP were equally aggressive in ASI and CAU.

5

**Peri-ureteric Mass an Unusual Case of Immunoglobulin G4-related Disease (IgG4-RD)**

Dr. Isabella Williams<sup>1,2</sup>, Dr. Nelson Wang<sup>1,2</sup>, Dr. Paul Bergamin<sup>1,2</sup>, Dr. Christopher Toon<sup>3</sup>, Dr. Jeremy Pulvers<sup>3</sup>, Dr. Matthew Winter<sup>1,2</sup>  
<sup>1</sup>Department of Urology, Royal North Shore Hospital, <sup>2</sup>North Shore Urology Research Group (NSURG), <sup>3</sup>Department of Anatomical Pathology, NSW Health Pathology, Royal North Shore Hospital

Immunoglobulin G4-related disease (IgG4-RD) of the ureter is a rarely reported disease, often mimicking urothelial carcinoma. This paper describes a case of an otherwise healthy patient with a lesion involving the ureter revealed on Computed tomography (CT), avid on fludeoxyglucose positron emission tomography (FDG PET), that prior to surgery was suspicious for urothelial carcinoma, until intra-op frozen section revealed otherwise. Diagnosis of ureteral IgG4-RD should be considered as a differential diagnosis, with serum IgG4 levels obtained.

**Keywords:** ureter, IgG4, peri-ureteric mass

6

**Mixed Connective Tissue Disease and Idiopathic Retroperitoneal Fibrosis: a Rare but Important Association. A Case Report and Literature Review**  
Dr. Thomas Neerhut<sup>1</sup>, Dr. Handoo Rhee<sup>1</sup>  
<sup>1</sup>Princess Alexandra Hospital

**Introduction:** Idiopathic Retroperitoneal fibrosis (RPF) is a fibro-inflammatory disease characterised by inflammation and fibrosis of retroperitoneal structures. Aetiology remains unknown but autoimmune vasculitic process are suggested. In patients with known mixed connective tissue disease (MCTD) it has rarely been described.

**Methods:** Six databases including PubMed, Embase, CINAHL, OVID Medline, Scopus and Cochrane were searched from inception until November 2021. Following a review of the literature, we found only one other similar presentation has been reported.

**Results/The Case:** A 43 year old male presented to the emergency department with right flank pain. Past medical history included MCTD (Sjogrens syndrome (SS) and systemic lupus erythematosus overlap). Previous rheumatological consults noted a high ANA (anti-nuclear antibody) titre of 1:1280 with speckled pattern while anti-double stranded DNA (anti-dsDNA) was positive when tested previously. CT showed right hydronephrosis with periureteric inflammation along with a prominent proximal ureteric stricture. In the context of known connective tissue disease, autoimmune RPF was diagnosed. As renal function was normal ureteric stenting was not performed. Prednisolone was commenced with methotrexate. At follow up abdominal pain had resolved, US KUB displayed resolution of hydronephrosis and renal function remained intact.

**Conclusion:** The case presented describes a rare presentation of RPF in a patient with MCTD. The links between these two entities requires further exploration. A high level suspicion must be exercised in patient with known MCTD presenting with symptoms of RPF to avoid delays in treatment and thus avoid the need for possible surgical interventions.

10

**Novel Utility of SOFA Score to Predict the Development of Septic Shock Post Renal Decompression**

Dr. Yu Xi Terence Law<sup>1</sup>, Dr. Liang Shen<sup>2</sup>, Dr. Vincent Wei Sheng Khor<sup>3,4</sup>, Dr. Weiren Chen<sup>1</sup>, Dr. Wei Jing Kelven Chen<sup>1</sup>, Dr. Pradeep Durai<sup>3</sup>, Dr. Vineet Gauhar<sup>3</sup>, Dr. Kwok Ying Lie<sup>3,5</sup>, Dr. King Chien Joe Lee<sup>1</sup>

<sup>1</sup>Department of Urology National University Hospital, <sup>2</sup>Biostatistics Unit, Yong Loo Lin School of Medicine, National University of Singapore, <sup>3</sup>Department of Urology, Ng Teng Fong General Hospital, <sup>4</sup>Department of Urology, Hospital Pengajar Universiti Putra Malaysia, <sup>5</sup>Advanced Urology, Gleneagles Hospital

**Objectives:** To identify predictive factors for the development of sepsis/septic shock post decompression of calculi-related ureteric obstruction using the Sequential Organ Failure Assessment (SOFA) score. To compare clinical outcomes and odd risks ratio of patients developing sepsis/septic shock following the insertion of percutaneous nephrostomy (PCN) versus insertion of retrograde ureteral stent (RUS).

**Methods:** Clinico-epidemiological data of patients who underwent PCN and/or RUS in two institutional for calculi-related ureteric obstruction was retrospectively collected from January 2014 to December 2020.

**Results:** Patients with PCN were generally older, had poorer Eastern Cooperative Oncology Group status and larger obstructive ureteral calculi compared to patients with RUS. Patients with PCN had longer durations of fever, persistence of elevated total white cell and creatinine, and longer hospitalisation stays compared to patients who had undergone RUS. RUS upfront has more unsuccessful interventions compared to PCN. There were no significant differences in the change in SOFA score post-intervention between the 2 interventions. In multivariate analysis, higher temperature just prior to the intervention (Odds ratios (OR):2.062, p = 0.002) and Cardiovascular SOFA score of 1 (OR:4.389, p = 0.006) were significant independent prognostic factors for the development of septic shock post decompression of ureteral obstruction

**Conclusions:** Despite a marginally higher risk of failure, RUS should be considered in patients with lower procedural risk. Patients going for PCN should be counselled for a longer stay. Post HD/ICU monitoring, inotrope support post decompression should be considered for patients with elevated temperature within 1 hour pre-intervention and cardiovascular SOFA score of 1.

9

**Far from the Truth: Real-world Treatment Patterns Amongst Newly Diagnosed Metastatic Prostate Cancer in the Era of Treatment Intensification**  
Dr. Xinyan Yang<sup>1</sup>, Dr. Yu Guang Tan<sup>1</sup>, Dr. Weiren Chen<sup>1</sup>, Dr. Rene Gatsinga<sup>1</sup>, Dr. Kenneth Chen<sup>1</sup>, Dr. Kae Jack Tay<sup>1</sup>, Prof. John Shyi Peng Yuen<sup>1</sup>  
<sup>1</sup>Sgh Urology

**Objectives:** Treatment intensification with novel hormonal agents (NHA) and chemotherapy have become the standard of care in the treatment of metastatic prostate cancer (mPCA). We aim to report the prescription patterns and treatment outcomes of mPCA.

**Methods:** We conducted a retrospective cohort study using real-world data from a large prospectively maintained prostate cancer registry in a tertiary institution. We selected patients diagnosed with mPCA from January 2016 to December 2020. Patient characteristics, tumour and treatment characteristics, time to castration-resistant prostate cancer (CRPC) and overall survival (OS) were analysed.

**Results:** A total of 630 patients with metastatic prostate cancer were identified. 55.3% had high volume disease by CHAARTED criteria. 54% of the cohort were prescribed ADT only. 37.9% received treatment intensification with chemotherapy or NHA. Prescription of NHA, increased from 10.4% in 2016 to 53.8% in 2020, but that of chemotherapy remained stable (12.7%-5.6%). Multivariate analysis showed Charlson Comorbidity Index 0-2 (p < 0.001), ECOG 0-1 (p = 0.038), and age 65 (p = 0.012), PSA > 400 (p = 0.001), uro- and medical oncologists (p < 0.001 for both) were associated with increased use of treatment intensification. Median time to CRPC (58 vs. 37 months, p < 0.001) and OS (61 vs. 55 months, p = 0.001) were longer with treatment intensification than ADT alone, as more significant in the subgroup with high-volume disease than in the overall study population (58 vs. 35 months, p < 0.001).

**Conclusion:** This study demonstrated the trend of treatment prescription of mPCA and factors contributing to the use of treatment intensification. Treatment intensification improved median time to CRPC and OS.

11

**Single Versus Multiple Renal Arteries in Kidney Transplantation: a Systematic Review and Patient-Level Meta-Analysis of 11,314 Transplants**  
Dr. Ee Jean Lim<sup>1</sup>, Mr. Khi Yung Fong<sup>2</sup>, Dr. Jing Qiu Li<sup>1</sup>, Dr. Edwin Jonathan Aslim<sup>1</sup>, Dr. Valerie Huei Li Gan<sup>1</sup>

<sup>1</sup>Singapore General Hospital, <sup>2</sup>National University of Singapore

**Background:** We performed an individual patient data meta-analysis to analyze the rates of recipient survival and graft survival between single renal artery (SRA) and multiple renal arteries (MRA).

**Material and methods:** An electronic literature search in line with PRISMA guidelines was performed. Prospective and retrospective studies comparing SRA versus MRA in renal transplantation, reporting Kaplan-Meier curves for either recipient overall survival (OS) or graft survival (GS), were included in this review. One stage meta-analyses with Cox models with random effects were conducted to determine hazard ratios (HRs). Conventional two stage meta-analyses and network meta-analyses under random effects models were used to determine overall recipient and comparative outcomes of SRA and MRA.

**Results:** Among 18 studies, rates of GS were not significantly lower in MRA than SRA grafts (shared-frailty HR = 0.95, 95%CI = 0.88-0.93, p = 0.241). Two-stage meta-analysis was concordant with the one-stage analysis (HR = 0.93, 95%CI = 0.84-1.03, p = 0.141, I<sup>2</sup> = 14%). 5-year and 10-year GS were 82.4% (95%CI = 81.6%-83.2%) and 64.3% (95%CI = 63.2%-65.4%) for SRA; these values were 82.8% (95%CI = 81.2%-84.6%) and 66.6% (95%CI = 64.4%-69.0%) for MRA. Meta-regression of publication year, male percentage, donor and recipient ages, mean follow-up time, as well as the percentages of living donors, recipients undergoing first transplant, double renal arteries among the MRA group, and open surgeries against logarithmic transformed HRs for OS and GS was conducted. No significant associations were demonstrated.

**Conclusions :** This first-ever patient-level meta-analysis comparing grafts with multiple renal arteries to those with single renal arteries shows similar rates of graft survival and overall recipient survival.

13

15

**Robotic Assisted Surgery for Iatrogenic Urological Injuries — A Single Team Experience**

Dr. Vipin Tyagi<sup>1</sup>  
<sup>1</sup>Sir Gangaram Hospital

**Introduction:** Urological injuries during a urological or non-urological surgeries are not uncommon complications. These iatrogenic injuries not only cause a major psychological trauma to the patient but also present a surgical challenge to the surgeons. We are sharing our experience of managing these complications by robotic assistance.

**Materials and Methods:** From 2012 to 2021, patients who had urological injuries during a urological or non-urological surgery and were managed by robotic assisted reconstructive surgeries are included in this study. All the characters of the urological injuries, surgical technique, Perioperative parameters and functional outcomes are evaluated.

**Results:** We have did 47 cases of robotic assisted reconstructive surgeries for urological injuries. Patients aged between 16-59 years underwent Ureteric Reimplant (17), Boari Flap implant (5), Uretero-Ureterostomy (3), Pyelo-ureterostomy (2), ileal ureter (1), Vesicovaginal fistula repair (17), augmentation cystoplasty (1) and pyelonephritis-nativeureterostomy in transplant stricture (1).

All patients were successfully got rid of their injuries except 2. 1 patient with pyelo-ureterostomy still on DJ stent and second one is having recurrence of fistula. No major complication encountered in any of these surgeries.

The major positive effect of a successful reconstruction reflected in the positive and satisfactory patients experience.

**Conclusion:** The robotic assisted reconstruction for iatrogenic urological injuries following urological and non urological surgeries is one of the best surgical way. It not only give the surgeons a freedom of best reconstruction but also give a satisfactory subjective and objective outcomes.

**Hyperthermic Intravesical Chemotherapy for Bladder Cancer: a Hot Topic**  
Dr. Isabella Williams<sup>1</sup>, Dr. Elliot Anderson<sup>1</sup>, Ms. Elizabeth Hayess<sup>1</sup>, Dr. Shannon McGrath<sup>2</sup>, Ms. Julia Sheppard<sup>1</sup>, Dr. Paul Anderson<sup>1</sup>  
<sup>1</sup>Royal Melbourne Hospital, <sup>2</sup>Northern Health

**Introduction & Objectives:** While Intravesical Bacillus Calmette-Guérin (BCG) is a well-established and effective treatment for high risk, non-muscle invasive bladder cancer, some patients cannot receive or complete BCG therapy (immunosuppression, adverse reactions, supply shortages). One promising technique is hyperthermic intravesical chemotherapy (HIVEC). Our objective was to examine a single-centre experience with HIVEC MMC as an effective alternative treatment of high-grade NMIBC for patients that failed or unable to undergo BCG treatment.

**Methods:** 23 patients received MMC via Combat HIVEC™ via indwelling catheter. Administered as an induction course of 6 weekly treatments followed by maintenance regimen. Surveillance cystoscopy was performed at 6 weeks following induction.

**Results:** Median age 77 years (range 59-89). 21 patients completed full induction (6 cycles), with 2 patients discontinuing treatment due rash. Complete response in 10 patients (45%) at first cystoscopy. Five patients developed recurrence, with median time to recurrence 9 months (range 3-30 months).

Of 10 patients receiving maintenance HIVEC, 2 ceased due to disease progression, 4 ceased due to adverse events and 2 lost to follow-up. One patient had recurrence 2 years post and proceeded to cystectomy.

Two patients died, 3- and 4-years post HIVEC. Both had multiple high-grade recurrences, one progressed to HGT2+CIS with prostatic involvement, and the other HGT1 recurrence refused cystectomy.

**Conclusions:** HIVEC is a promising treatment option for high-risk NMIBC in patients where BCG is ineffective, contraindicated, or unavailable. Induction HIVEC MMC appears to be well tolerated with acceptable efficacy.

14

17

**Single Stage Dilation of Urethral Strictures with a Tapered S-dilator – is it Feasible?**

Dr. Isabella Williams<sup>1</sup>, Dr. Elliot Anderson<sup>1</sup>, Prof. Nathan Lawrentschuk<sup>1</sup>  
<sup>1</sup>Royal Melbourne Hospital

**Introduction:** Urethral dilation of strictures has traditionally been undertaken with gradually increasing sized sounds or similar devices to get to the desired calibre. However, with the development of new materials and techniques such as direct vision it may now be possible with benefits of time, costs and patient morbidity. The aim of this prospective series was to establish if single-stage dilation is feasible.

**Methods:** Patients with urethral strictures suitable for dilation were considered for single-stage dilation. Under cystoscopic vision, urethral strictures were visualised and dilated using a single tapered S-curve dilator (Cook Medical, USA) over a wire. All dilations were successful with half being done under local anaesthetic.

**Results:** Ten patients had urethral strictures dilated using a single tapered S- dilator (Cook Medical). All dilations were successful with half being done under local anaesthetic. All patients had expected patency for periods consummate with their urethral stricture disease. A cost economic analysis suggests that using a S-curve single-stage dilator over the S-curve dilator set (8-20Fr) also has an economic benefit, with savings of around \$600.

**Conclusions:** We have established that single stage dilation of urethral strictures is feasible. Further studies are required to confirm the benefits of time saved, costs and patient morbidity to affirm if this strategy could become "standard-of-care".

**Comparison Between Mini-PCNL and Standard PCNL in Pediatric Patients: a Systematic Review and Meta-analysis**

Mr. Kindy Aulia<sup>1</sup>, MD. Widi Atmoko<sup>1</sup>, Prof. MD. Ph.D. Ponco Birowo<sup>1</sup>, Dr. MD. Nur Rasyid<sup>1</sup>  
<sup>1</sup>Department Of Urology, Faculty Of Medicine, Universitas Indonesia, Cipto Mangunkusumo Hospital

**Introduction and Objectives:** We conducted a systematic review and meta-analysis to determine efficacy and safety of mini-PCNL compared to standard PCNL in children with nephrolithiasis.

**Materials and Methods:** Results were subjected to qualitative analysis using synthesis method. Adequate results were extracted and analyzed quantitatively using fixed-effect model on homogenous data or random-effect model on heterogeneous data for meta-analysis. Outcome variables are shown as odds ratios (ORs) with 95% confidence intervals (CIs). All statistical analyses were performed with Review Manager version 5.4.

**Results:** We reported that stone-free rate and residual stone varies between two studies with contrary results. However, our quantitative analysis showed that there was insignificant difference of stone-free rate (OR 0.75; 95% CI 0.22-2.54) and residual stone (OR 1.27; 95% CI 0.55-2.91) between both groups. Complications rate were shown insignificantly different between mini-PCNL group and PCNL group in two studies in both Clavien 1 (OR 0.65; 95% CI 0.27-1.54) and Clavien 2 grade (OR 0.48; 95% CI 0.19-1.22). In addition, pooled analysis of both complication grades was also insignificant in difference between groups (OR 0.56; 95% CI 0.30-1.06).

**Conclusion:** Efficacy and safety of mini PCNL was neither superior nor inferior compared to standard PCNL in terms of managing nephrolithiasis in pediatric patients. Moreover, mini PCNL was considered better in terms of post-operative pain and tract infection, thus mini PCNL could be considered as a treatment option for pediatric patients with nephrolithiasis.

19

## An In-Vitro Comparative Assessment of Single-use Flexible Ureteroscopes Using a Standardized Ureteroscopy Training Model

Mr. Wei Zheng So<sup>1</sup>, Dr. Vineet Gauhar<sup>3</sup>, Dr. Kelven Chen<sup>2</sup>, Dr. Jirong Lu<sup>2</sup>, Dr. Wei Jin Chua<sup>2</sup>, Dr. Ho Yee Tiong<sup>2</sup>

<sup>1</sup>Yong Loo Lin School of Medicine, National University of Singapore, <sup>2</sup>National University Hospital, Singapore, <sup>3</sup>Ng Teng Fong General Hospital, Singapore

**Introduction:** Perceived benefits like decreased contamination rates and reduced post-operative incidence of complications after urolithiasis surgery have led to an increased adoption of single-use flexible ureteroscopes (su-fURS). Using a validated, standardized simulator model with enhanced 'fluoroscopic' capabilities, we performed an in-vitro comparative assessment of four commercially available models of su-fURS. Both objective and subjective parameters were assessed in this study.

**Methods:** Two standardized tasks, (1) Exploration of the Model's Kidney Collecting System and (2) Repositioning of a stone fragment from the upper renal to lower renal pole were assigned to participants, who performed these tasks on all four scopes. Four models of su-fURS (Boston LithoVue, PUSEN PU3033A, REDPINE, INNOVEX EU-ScopeTM) were assessed, with task timings as end-points for objective analysis. Cumulative 'fluoroscopic' time was also recorded as a novel feature of our enhanced model. Post-task questionnaires evaluating specific components of the scopes were distributed to document subjective ratings.

**Results:** Both subjective and objective performances (except stone repositioning time) across all four su-fURS demonstrated significant differences. However, objective performance (task timings) did not reflect subjective scope ratings by the participants ( $R_s < 0.6$ ). Upon Kruskal-Wallis H test with post-hoc analyses, REDPINE and INNOVEX EU-ScopeTM were the preferred su-fURS as rated by the participants, with overall scope scores of 9.00/10 and 9.57/10.

**Conclusions:** Using a standardized in-vitro simulation model with enhanced fluoroscopic capabilities, we demonstrated both objective and subjective differences between models of su-fURS. However, variations in perception of scope features (visibility, image quality, deflection, maneuverability, ease of stone retrieval) did not translate into actual technical performance. Eventually, the optimal choice of su-fURS fundamentally lies in individual surgeon preference, as well as cost-related factors.

## Optimal Sequencing of Prostate Health Index and Magnetic Resonance Imaging for Risk Stratification in a Biomarker-Imaging Biopsy Pathway

Dr. Yi Quan Tan<sup>1</sup>, Dr. Ziting Wang<sup>1</sup>, Dr. Woon Chau Tsang<sup>1</sup>, A/Prof. Edmund Chiong<sup>1</sup>

<sup>1</sup>Department Of Urology, National University Hospital, National University Health System

**Introduction and Objectives:** To determine the optimal sequence of Magnetic Resonance Imaging (MRI) and Prostate Health Index (PHI) as risk stratification tools in the early detection of prostate cancer.

**Materials and Methods:** 181 men presented between Aug 2016 and Oct 2020, undergoing MRI and PHI before MRI-fusion biopsy. Biopsy included targeted and saturation cores. To determine the optimal sequence of MRI and PHI, modelling was performed with 4 pathways to guide biopsy decisions. PIRADS 3 or more, and PHI of 30 or more, were considered positive tests and patients proceeded with biopsy. For each pathway, we determined the percentage of biopsies avoided, unnecessary biopsies (negative and Grade Group 1), and clinically-significant cancers missed (Grade Group 2 and above).

34

## Does Adding Aromatherapy with Music Help Reduce Pain during Shockwave Lithotripsy Compared to Standard Analgesia Alone? A Randomized Controlled Trial

Dr. Yu Xi Terence Law<sup>1</sup>, Dr. Arshvin Kesavan<sup>1</sup>, Dr. Wayren Loke<sup>1</sup>, Dr. Wei Jin Chua<sup>1</sup>, Prof. Bee Choo Tai<sup>2,3</sup>, Dr. Liang Shen<sup>4</sup>, Associate Prof. Ho Yee Tiong<sup>1</sup>, Dr. Wei Jing Kelven Chen<sup>1</sup>

<sup>1</sup>Department of Urology, National University Hospital, <sup>2</sup>Saw Swee Hock School of Public Health, National University of Singapore and National University Health System, <sup>3</sup>Yong Loo Lin School of Medicine, National University of Singapore and National University Health System, <sup>4</sup>Biostatistics Unit, Yong Loo Lin School of Medicine, National University of Singapore

**Objective:** To assess the effect of aromatherapy with lavender oil alone, and in combination with music, on pain and anxiety during extracorporeal shockwave lithotripsy for kidney stones.

**Methods:** This was a single centre prospective, randomized controlled trial. The subjects were block randomised into 3 study groups, Group 1: Control; Group 2: Aromatherapy only; Group 3: Aromatherapy and music. All subjects were given patient-controlled intravenous alfentanil as standard analgesia. The primary outcome measures were pain and anxiety scores using visual analogue scale (VAS) and State-Trait Anxiety Inventory.

**Results:** Ninety patients were recruited and randomized prospectively into Group 1 (n = 30), Group 2 (n = 30), and Group 3 (n = 30). For pain outcome, both Group 2 and Group 3 showed a trend towards lower mean VAS pain scores of 2.73 in both groups compared to the control with a mean VAS score of 3.50 (p = 0.272). After general linear modelling and adjusting for other variables, patients in Group 3 had significantly lower mean pain VAS scores compared to the control (mean difference = -1.214, 95%CI: -2.358- -0.07, p = 0.038). Patients in Group 2 also had lower mean VAS scores when compared to the control (Mean difference = -1.053, 95%CI: -2.163-0.57, p = 0.063), which was approaching significance. There was no significant difference in anxiety scores between groups post treatment.

**Conclusions:** Our study shows that aromatherapy with music is effective in augmenting pain relief for patients undergoing shockwave lithotripsy, when used with standard analgesia. A combination of aromatherapy and music is simple to implement, non-invasive, inexpensive and can be recommended for clinical use.

31

## Results: Overall cancer detection rate was 61.3%, and the clinically-significant cancer detection rate was 37.6%. 88.4% had a PIRADS 3 or higher lesion, and 82.9% had a PHI level of 30 or more. If PHI was used first-line, with MRI as second-line when PHI was negative, 2.21% of biopsies would be avoided, and no clinically-significant cancers would be missed. If MRI was used first-line, with PHI as second-line when MRI was negative, 2.21% of biopsies would be avoided, and no clinically significant cancers would be missed. However, if PHI was used first-line, but obtaining MRI when PHI was positive, and only performing biopsies for MRI-positive men, 26% of biopsies were avoided, yet 3.9% of clinically-significant cancers would be missed.

**Conclusion:** The combination of PHI and MRI as risk stratification tools did not miss any clinically-significant cancers. This was evident when the tests were used sequentially in cases where the first-line test was negative. Whether PHI or MRI was sequenced as the first-line test did not affect the overall diagnostic performance in the early detection of prostate cancer.



35

37

**Direct Head-to-head Comparison of the Diagnostic Accuracy of Prostate-specific Membrane Antigen Positron Emission Tomography (PSMA-PET) and Conventional Imaging Modalities for the Initial Staging of Intermediate-to-High Risk Prostate Cancer: a Systematic Review and Meta-Analysis**

Miss Kit Mun Chow<sup>5</sup>, Mr. Wei Zheng So<sup>5</sup>, Dr. Han Jie Lee<sup>1</sup>, Dr. Alvin Lee<sup>1</sup>, Assoc Prof. John Yuen<sup>1</sup>, Dr. Kae Jack Tay<sup>1</sup>, Dr. Sue Ping Thang<sup>3</sup>, Clin Asst Prof. Jeffrey Tuan<sup>2</sup>, Clin Asst Prof. Winnie Lam<sup>1</sup>, Dr. Nathan Lawrentschuk<sup>4</sup>, Prof. Michael Hofman<sup>3</sup>, Prof. Declan Murphy, Dr. Kenneth Chen<sup>1</sup>  
<sup>1</sup>Department of Urology, Singapore General Hospital, Singapore, <sup>2</sup>Division of Radiation Oncology, National Cancer Centre Singapore, <sup>3</sup>Department of Nuclear Medicine, Singapore General Hospital, <sup>4</sup>Sir Peter MacCallum Cancer Centre, <sup>5</sup>YLL School of Medicine, National University of Singapore, Singapore

**Context:** Whether prostate-specific membrane antigen positron emission tomography (PSMA PET) is truly superior to conventional imaging (CI) in the initial staging of prostate cancer is a question previous reviews have endeavored to answer through indirect comparisons of studies separately evaluating PSMA and CI, but a true direct comparison has yet to be established.

**Purpose:** To perform a systematic review and meta-analysis with direct head-to-head pairwise comparisons of PSMA and CI, including magnetic resonance imaging (MRI), computed tomography (CT) and bone scan (BS), for upfront tumor, nodal and bone metastasis staging.

**Data Synthesis:** Random effects meta-analysis was performed to pool estimates of sensitivity and specificity, followed by likelihood ratio tests comparing bivariate meta-regression models with and without covariate terms for imaging modality. Resultant summary logit estimates were back-transformed to plot hierarchical summary receiver operating characteristics (HSROC) curves.

**Results:** 34 studies were included. PSMA was found to be significantly more sensitive and specific than CT and MRI for nodal staging, and BS for bone metastasis staging ( $p < 0.05$ ). Subgroup analyses performed for nodal staging at different gleason grade groups (GGG) found that PSMA had higher diagnostic accuracy than MRI/CT at both  $GGG \leq 3$  and  $GGG \geq 4$ . Threshold effect and the time interval between imaging modalities and histopathological confirmation accounted for some of the heterogeneity observed between studies.

**Conclusion:** Direct pairwise comparisons of studies where both PSMA and CI were performed in same patient cohorts found PSMA to significantly outperform CI and suggests that PSMA could replace CI in initial staging of prostate cancer.

**The Great Imitator: Xanthogranulomatous Inflammation as Mimics of Malignancy**

Dr. Ming Tow Chan<sup>1</sup>, Dr. Karthik Thandapani<sup>2</sup>, Dr. Benjamin Goh<sup>1</sup>  
<sup>1</sup>National University Hospital, <sup>2</sup>Ng Teng Fong General Hospital

Xanthogranulomatous inflammation is an uncommon benign inflammatory disease process characterized by aggregation of lipid laden foamy macrophages, among other inflammatory cells. These lesions have previously been identified in many anatomic sites, most frequently in the kidney and renal pelvis, but also occasionally seen in the urachus.

Our case series describes 2 cases – one of xanthogranulomatous pyelonephritis, and the other of urachal xanthogranuloma, both of which were initially clinically suspected as malignancy.

The first case is a 68-year-old lady who presented with loss of appetite and weight. A contrasted CT scan revealed an enhancing solid mass with a cystic component of the left lower pole, with involvement of the proximal ureter causing mild hydronephrosis. After multidisciplinary review, decision was made for a renal biopsy. The second case is a 53-year-old gentleman who presented with lower urinary tract symptoms and a pelvic mass of 5 months duration. CT abdomen & pelvis revealed a supravescical mass tapering towards the umbilicus, inseparable from anterior abdominal wall and one of the adjacent bowel loops. He underwent excision of urachal tumour, umbilicus, partial cystectomy, and bilateral pelvic lymph node dissection. Histology for both cases identified xanthogranulomatous inflammation.

The clinical relevance of this disease is that it often mimics malignancy, and preoperative imaging is unable to differentiate between the two. Hence, it is important to keep this entity as a differential in the diagnosis of urachal or renal lesions as early diagnosis and treatment can prevent the complications of this disease.

36

**Intensive Sampling of the Umbra and Penumbra Improves Clinically-significant Prostate Cancer Detection and Reduces Risk of Grade Group Upgrading at Radical Prostatectomy**

Dr. Alvin Lee<sup>1</sup>, Dr. Kenneth Chen<sup>1</sup>, Prof. Christopher Cheng<sup>2</sup>, A/Prof. Henry Ho<sup>1</sup>, A/Prof. John Yuen<sup>1</sup>, Dr. Ngo Nye Thane<sup>3</sup>, Dr. Yan Mee Law<sup>4</sup>, Dr. Kae Jack Tay<sup>1</sup>  
<sup>1</sup>Department of Urology, Singapore General Hospital, <sup>2</sup>Department of Urology, Sengkang General Hospital, <sup>3</sup>Department of Pathology, Singapore General Hospital, <sup>4</sup>Department of Diagnostic Radiology, Singapore General Hospital

**Objectives:** To evaluate the clinically-significant prostate cancer (csPCa) detection rate of overlapping and perilesional systematic biopsy cores and its impact on grade group (GG) concordance at prostatectomy.

**Methods:** Biopsy maps of those undergoing MRI-targeted (TB) and systematic biopsy were reviewed to reclassify systematic cores. Perilesional (PL) cores were defined as adjacent cores within 10mm of the target lesion ("penumbra"). Overlap (OL) cores were defined as cores within the ROI itself ("umbra"). All other cores were designated as distant cores (DC). The incremental csPCa detection rate ( $GG \geq 2$ ) and rate of GG upgrading on prostatectomy as OL, PL and DC were sequentially added to TB were determined.

**Results:** Out of the 398 patients included, the median number of OL and PL cores were 5 (IQR 4-7) and 5 (IQR 3-6) respectively. OL cores detected more csPCa than PL cores (31% vs. 16%,  $p < 0.001$ ). OL and PL cores improved the csPCa detection rate of TB from 34% to 39% ( $p < 0.001$ ) and 37% ( $p = 0.001$ ) respectively. TB+OL+PL had greater csPCa detection compared to just TB+OL (41% vs. 39%,  $p = 0.016$ ) and TB+PL (41% vs. 37%,  $p < 0.001$ ). TB+OL+PL+DC had better csPCa detection rate than TB+OL+PL (42% vs. 41%,  $p = 0.031$ ). Of the 104 patients who underwent prostatectomy, GG upgrading rate for TB+OL+PL was lower compared to TB (21% vs. 36%,  $p < 0.001$ ) and was not significantly different compared to TB+OL+PL+DC (21% vs 19%,  $p = 0.500$ ).

**Conclusion:** A biopsy strategy incorporating both intensive sampling of the umbra and penumbra improved csPCa detection and reduced risk of grade group upgrading at prostatectomy.

39

41

**Prevalence of Bladder Pain Syndromelike Symptoms: a Population-based Study in Korea**

Prof. Hoon Choi<sup>1</sup>

<sup>1</sup>Department Of Urology, Korea University Ansan Hospital

**Objectives:** To investigate the prevalence of bladder pain syndrome (BPS)-like symptoms in the general population of South Korea.

**Methods:** Between April 16, 2016 and April 29, 2016, we conducted an online survey and computer-assisted personal interviews with adults aged 40-79 years in Korea using structured questionnaires. The sample size was 3,000 (95% confidence level standard error  $\pm$  1.79%), and the sampling method was simple randomization according to sex, age, and residential area in proportion to the resident registration demographics of the Korean Ministry of Interior and Safety as of March 2016. All participants were surveyed using the Korean version of the Pelvic Pain and Urgency/Frequency (PUF) Patient Symptom Scale and Geriatric Depression Scale (GDS). The primary outcome was the prevalence of BPS-like symptoms, defined as a total PUF score of  $\geq$  12.

**Results:** Overall, the prevalence of BPS-like symptoms was 16.4% (483 of 3,000 participants). Women (21.4%) had a significantly higher prevalence of BPS-like symptoms than men (10.7%) ( $P < 0.01$ ). The prevalence by age was significantly higher in the 70s group than in the other age groups ( $P < 0.01$ ), and increased significantly with the increasing severity of depression on the GDS ( $P < 0.01$ ). The prevalence of BPS-like symptoms according to the marital status was significantly different, that is, the prevalence among divorced/bereaved individuals was higher than those of married or unmarried individuals ( $P < 0.01$ ).

**Conclusion:** Our large, representative population-based study showed that BPS-like symptoms are widespread among the general population of South Korea. BPS is considered a disease that deserves greater attention as it is far more common than previously thought and can negatively affect many people's quality of life.

**Role of PSMA PET in Diagnosis and Staging of Renal Cell Carcinoma**

Dr. Gerard Bray<sup>1</sup>

<sup>1</sup>Gold Coast University Hospital

**Introduction:** Prostate-specific membrane antigen (PSMA) positron emission tomography (PET) imaging has revolutionised prostate cancer staging. There is new evidence that PSMA PET can be used as staging in renal cell carcinoma.

**Methods:** We carried out a literature review to correctly identify the evidence behind the use of PSMA PET in renal cell carcinoma staging.

**Results:** We found multiple articles examining the use of PSMA PET. One study showed there were no false negative PSMA PET lesions. Multiple other studies were found which highlight PSMA PET to be effective in diagnosing metastatic disease.

**Conclusion:** We present evidence that PSMA PET may play a key role in pre-operative staging of renal cell carcinoma. Further studies should cautiously explore the efficacy of this modality.

40

**Thyroid-like Follicular Carcinoma of the Kidney in a Renal Transplant Recipient – a Case Report**

Miss Malia Alexandra Foo<sup>1</sup>, Dr. Ee Jean Lim<sup>2</sup>, Professor Hwai Liang Alwin Loh<sup>3</sup>, Dr. Edwin Jonathan Aslim<sup>2</sup>, Dr. Valerie Huei Li Gan<sup>2</sup>

<sup>1</sup>Yong Loo Lin School Of Medicine, <sup>2</sup>Singapore General Hospital, Department of Urology, <sup>3</sup>Singapore General Hospital, Department of Anatomical Pathology

Thyroid-like follicular renal cell carcinoma of the kidney (TLF-RCC) is a rare entity, with less than 40 cases reported in literature. We report the first case of TLF-RCC in a transplant recipient and review the literature.

A 61-year-old gentleman was found to have a tumour in his left native kidney on an ultrasound done for malignancy screening. His past medical history includes hypertension, dyslipidaemia, gout, hepatitis B and a deceased donor renal transplant in 2000 for end stage renal failure secondary to chronic glomerulonephritis. His eGFR is 58 mg/mmol and current immunosuppression maintenance regime consists of prednisolone, ciclosporin and azathioprine. A staging CT revealed a 3.3 cm x 2.9 cm mass in the native left kidney consistent with a RCC, with no evidence of nodal or metastatic disease. A 1.4 cm ground glass nodule in the subpleural region of the upper pole apical segment of the right lung was also detected, suspicious for a primary lung malignancy. Biopsy of the lung lesion showed a T1bN0Mx lepidic adenocarcinoma. After discussion with cardiothoracic surgery, the decision was made to delay treatment of the lung malignancy which was deemed non-aggressive.

He underwent an uneventful laparoscopic radical left nephrectomy. Histological examination revealed a T1aNXMX thyroid-like follicular carcinoma of the kidney (TLF-RCC) with tumour cells forming follicular structures accompanied by luminal colloid-like material. On immunohistochemistry, tumour cells stain positive for PAX8 but TTF-1 and thyroglobulin are negative. Away from the tumour, there was marked parenchymal atrophy with arterial sclerosis and prominent tubular "thyroidisation".

TLF-RCC has been reported in heterogenous populations, ranging from 10 to 83 years of age. While generally regarded as a tumour of low malignant potential, there have been limited case reports describing metastasis to the bone, renal hilum, meninges, lung and lymph nodes. Surgery remains the mainstay of treatment as with all other subtypes of RCC, with fairly good prognosis and low reported recurrence rates at follow up. Modifications to immunosuppression regime should be considered, after discussion with the managing renal physician, for renal transplant patients with malignancies. There is no consensus on renal cancer screening in renal transplant recipients, although we practice annual/biennial ultrasound screening at our institution in view of the high rates of renal malignancy in ESRD patients which continue post-transplant.

43

52

**Testosterone Replacement Therapy and Prostate Cancer; Should Risk Preclude Prescription?**

Dr. Gerard Bray<sup>1</sup>  
<sup>1</sup>Gold Coast University Hospital

**Introduction:** Since the year 2000, the prescription and usage of testosterone replacement therapy (TRT) has risen dramatically. With this rise, there have been concerns that we may see a rise in prostate cancer. The theory behind this is that prostate cancer progression and growth is driven by androgens and so large amounts of circulating androgens could pre-dispose to this. We carried out an in-depth literature review to assess the evidence behind TRT and its risk on prostate cancer.

**Methods:** Literature search was carried out from conception to Jan 2022. Search engines used included; PubMed (MEDLINE), Scopus, Web of Science. Search strategy was included.

**Results:** TRT appears to be safe for use in symptomatic hypogonadism. There is yet to be conclusive evidence that TRT is an independent risk factor for prostate cancer. TRT did not appear to have consistent effects on PSA levels. With regard to prostate cancer, there was no link between TRT and prostate cancer. Some studies suggest TRT may reduce the risk of aggressive prostate cancer.

**Discussion:** TRT is a safe treatment for men with symptomatic hypogonadism. There is no evidence TRT when prescribed is recommended doses leads to prostate cancer.

**Functional Outcomes and Oncological Control after Focal Therapy for Localized Clinically Significant Prostate Cancer: Outcomes of a Phase II Prospective Trial in Focal Cryotherapy**

Dr. Yu Guang Tan<sup>1</sup>, Dr. Yan Mee Law<sup>1</sup>, Dr. Nye Thane Ngo<sup>1</sup>, Dr. LY Khor<sup>1</sup>, Dr. PH. Tan<sup>1</sup>, Dr. E. Ong<sup>2</sup>, Dr. KP. Low<sup>2</sup>, Prof. John SP. Yuen<sup>1</sup>, Prof. Henry SS. Ho<sup>1</sup>, Dr. Jeffrey Tuan<sup>2</sup>, Dr. R. Kanesvaran<sup>2</sup>, Prof. R. Gupta<sup>3</sup>, Mr. S. Rozen<sup>4</sup>, Prof. MLK. Chua<sup>3</sup>, Prof. T. Polascik<sup>3</sup>, Dr. Kae Jack Tay<sup>1</sup>  
<sup>1</sup>Singapore General Hospital, <sup>2</sup>National Cancer Centre Singapore, <sup>3</sup>Duke Cancer Centre, Durham, USA, <sup>4</sup>Duke-NUS Graduate Medical School

**Introduction and Objectives:** We report the impact of focal cryotherapy (FCT) on multi-domain functional outcomes in a Phase II clinical trial (NCT04138914) for clinically significant prostate cancer (csPCa).

**Methods:** The primary outcome was to detect a 5 point deterioration in the expanded prostate index composite (EPIC) functional domains. mpMRI and prostate biopsy were used to select patients with PSA < 20 ng/ml, Gleason score < 4+4, and mpMRI lesion volume < 3 ml. FCT was performed transperineally for 2 freeze-thaw cycles. PSA and EPIC scores were obtained at baseline and post-treatment at 1, 3, 6 and 12 months. MpMRI and prostate biopsy were performed at 12 months to determine recurrence.

**Results:** 28 patients were recruited. Mean age was 68 years, with PSA of 7.3 ng/ml and PSA density of 0.19. Transient worsening of the urinary (mean diff 16.0, p < 0.001, 95% CI: 8.8-23.6) and sexual (mean diff 11.0, p:0.005, 95% CI: 4.0-17.7) domains was observed at 1-month post-treatment but recovered by month 3. Patients who had ablation extending to the neurovascular bundle had a delayed recovery of sexual function at month 6. At 12-month repeat mpMRI and biopsy, 22 patients (78.6%) had no detectable csPCa. Three patients had GG2, 1 GG3 and 1 GG4. Three patients underwent repeat FT, one underwent radical prostatectomy while the remaining two with low-volume GG2 cancer opted for active surveillance.

**Conclusion:** FCT was associated with a transient deterioration of urinary and sexual function with resolution at three months post-treatment. FCT can be an effective treatment in well-selected patients with csPCa.

48

54

**Outcomes of Buccal Mucosal Graft Substitution Urethroplasty at a Regional Urology Centre in Singapore**

Dr. Stefanie Goh<sup>1</sup>, Dr. Marcus Chow<sup>1</sup>, Dr. Kuan Hao Yee<sup>1</sup>, Ms. Molly May Ping Eng<sup>1</sup>, Mr. Ian Eardley<sup>2</sup>, Mr. Weida Lau<sup>1</sup>  
<sup>1</sup>Department of Urology, Khoo Teck Puat Hospital, National Healthcare Group, <sup>2</sup>Department of Urology, St James's University Hospital, Leeds Teaching Hospitals NHS Trust

Anterior urethral stricture disease affects up to 0.6% of men in susceptible populations. Though urethroplasty has superior outcomes compared to endoscopic treatment, it is still less prevalent worldwide. Substitution urethroplasty using buccal mucosal graft (BMG) has become the standard of care in the management of a variety of anterior urethral strictures not amenable to endoscopic treatment or excision and primary anastomosis. In this case series, we report the outcomes of substitution urethroplasty for urethral strictures at a regional Urology centre following an advanced reconstructive urology fellowship posting.

10 patients who presented with anterior urethral strictures underwent buccal mucosal graft urethroplasties during a 16-month period from December 2019 to March 2021.

The median follow up was 5.5 months. None of the patients experienced a post-operative anastomotic leak. There was no erectile dysfunction, poor ejaculation, urinary dribbling or spraying, or oral discomfort reported. Seven patients had good post-operative uroflowmetry results. Three patients had progression or recurrence of urethral stricture requiring additional procedures.

We report excellent outcomes in BMG urethroplasty at a regional urology centre in Singapore after appropriate fellowship training. BMG urethroplasty is a highly effective and versatile technique and should be in the armamentarium of all reconstructive urologists.

**Clinical Utility of Dynamic Sentinel Node Biopsy for Early Penile Cancer: a Report of Two Cases in Singapore**

Miss Isis Lim<sup>1</sup>, Dr. Linyi Zhang<sup>2</sup>, Dr. Weida Lau<sup>2</sup>  
<sup>1</sup>Department of Medicine, Yong Loo Lin School Of Medicine, National University of Singapore, <sup>2</sup>Department of Urology, Khoo Teck Puat Hospital

**Background:** The most important prognostic factor in penile cancer is the presence of inguinal lymph node involvement, therefore warranting thorough investigations and optimal management of lymph nodes. The European Association of Urology (EAU) recommends intermediate-risk (pT1b, Grade 1 or 2) or high-risk (pT2 or greater) penile cancer patients with non-palpable inguinal lymph node (cN0) to undergo either an invasive bilateral modified inguinal lymph node dissection (ILND) or dynamic sentinel node biopsy (DSNB). DSNB has been reported by studies to have lower rates of long-term morbidity compared to ILND. Despite that, DSNB is currently not practiced in Singapore, owing to its technically challenging procedure which requires specialist centre training.

**Methods:** We detail the first two reported dynamic sentinel node biopsy performed in a regional hospital in Singapore, discuss the indications, issues, and benefits of such a procedure. We also report the post-procedure and functional outcome of the patients.

**Results:** DSNB was performed on two cN0 patients with intermediate-to-high risk penile cancers in a regional hospital in Singapore. The procedure identified positive sentinel nodes, and appropriate surgical management for the patient was advised. Both patients did not experience any post-operative complication associated with DSNB, and were well on follow-up at 6-months and 1-month respectively.

**Conclusion:** We recommend that DSNB provides a viable option for diagnosis and staging of penile cancer for patients who are indicated for it due to its lower risks of long-term morbidity. Appropriate specialist training and a prepared team is vital to ensure the success of the procedure.

56

## Circumcision in Australia: Trends Over the Last 5 Years

Dr. Arya Bahadori<sup>1</sup>  
<sup>1</sup>Redcliffe Hospital

**Introduction:** Male circumcision is an ancient practice and is one of the most performed surgical procedure worldwide as well as the Australian private sector, often performed for non-therapeutic reasons. In Australia, routine circumcision peaked at 85% in the 1950s and remained as high as 50% in the 1970s. This study examined the trends in circumcision over the last 5 years.

**Method:** Circumcision performed between 2016 and 2021 were obtained from the Medicare Benefits Schedule. Item numbers 30654 and 30658 were used for collection of data. A yearly data for number of cases as well and per capita for all states and age groups were obtained.

**Results:** Altogether 109723 circumcisions were performed. Preschool aged boys had the highest incidence 76752 cases in total 69.95% of total cases in Australia. The highest number of cases were performed in New South Wales followed by Victoria and Queensland. However Western Australia had the highest cases per capita at 98 per 100000 population followed by Victoria and then NSW with the incidence progressing from 41 per 100000 in 2017 to 56 per 100000 in 2021.

**Conclusion:** The incidence of circumcision in Australia has been slowly increasing over the last 5 years. Further research is required to examine the reason behind this increase.

59

## Usefulness of RENAL Scoring for Presumed RCC in Small Renal Masses Treated with Partial Nephrectomy: Analysis of 222 Cases in Singapore

Ms. Vasundhara Kandarpa<sup>1</sup>, Dr. Ziting Wang<sup>2</sup>, A/Prof. Edmund Chiong<sup>2</sup>, A/Prof. Ho Yee Tiong<sup>2</sup>  
<sup>1</sup>Nus Yong Loo Lin School Of Medicine, <sup>2</sup>National University Hospital Department of Urology

**Introduction:** With advancements and increasing usage of modern imaging, small renal masses are often identified incidentally or at an early stage. We aim to investigate the utility of the RENAL nephrometry score in discerning between benign and malignant renal masses

**Methods:** From December 2009 to November 2021, 222 patients from National University Hospital (NUH) undergoing partial nephrectomy for presumed renal cell carcinoma were included in the study. Tumours were classified using RENAL score to low (4-6), medium (7-9), and high (10-12) complexity. Data analysis was performed using STATA Version 13.1.

**Results:** Our cohort had 146 males and 76 females with a mean age of 57.8 years +/- 11.8. Age > 50 years old (OR 2.87, 95% CI 1.16-7.07, p = 0.02) was associated with malignancy. 226 renal masses were resected in 222 patients, with 10.4% benign masses including 10 angiomyolipomas, 6 oncocytomas, 4 renal cysts, 1 extrarenal lymphoid nodule, 1 leiomyoma and 1 adult nephroma. Mean RENAL score was 7.62 +/- 1.9 (range 4-11), which was not significantly different between benign and malignant masses. Higher tumour size determined pathologically was associated with malignancy (p = 0.04), however, as 83% of our cohort had an R score of 1, a higher R score was not associated with malignancy. Higher "E" score (i.e. more endophytic) was associated with malignancy (OR 2.15, 95% CI 1.09-4.05, p = 0.03).

**Discussion:** Endophytic tumours and patient's age are predictive factors of malignancies. Further prospective studies should be done to elicit other clinical and radiological factors.

58

## Real-World Treatment Patterns in Patients with Metastatic Castrate Resistant Prostate Cancer in a High Volume Tertiary Care Center

Dr. Rene Gatsinga<sup>1</sup>, Dr. Yu Guang Tan<sup>1</sup>, Dr. Weiren Chen<sup>1</sup>, Dr. Xin Yan Yang<sup>1</sup>, Dr. Hong Hong Huang<sup>1</sup>, Dr. Kae Jack Tay<sup>1</sup>, Dr. Kenneth Chen<sup>1</sup>, A/Prof. John SP. Yuen<sup>1</sup>  
<sup>1</sup>SGH, Department of Urology

**Introduction & Objectives:** Multiple treatments are available for patients with metastatic castrate-resistant prostate cancer(mCRPC), but the actual prescription frequency is largely unknown. We study the real-world prescription patterns of mCRPC in a tertiary care center and the factors influencing them.

**Methods:** Health records of 330 patients with de novo metastatic hormone-sensitive prostate cancer (mHSPC), treated and progressed to mCRPC between 2016 and 2020, from a prospective uro-oncological database, were reviewed for their demographics, co-morbidities, treatment utilization patterns, cancer specific survival, and type of treating physician.

**Results:** The median age was 74 years. 65.5% (n = 216) had high-volume disease at initial diagnosis. At CRPC, 70.3% (n = 232) of patients received at least one additional line, 21.5% (n = 71) two lines, and 5.5% (n = 18) three lines of treatment in addition to traditional androgen deprivation therapy. As first-line treatment, Novel Hormonal agents (NHA) were the most used 81.9% (n = 190), followed by Docetaxel 12.1% (n = 28). Uptake of newer agents (PARPI/Luthecium/Xofigo) remains low at 8.6% (n = 20). Patients with age lower than 80 years (OR2.08, p 0.01, 95%CI:1.22-3.57), and lower Charlson Comorbidity Index (OR1.38, p < 0.01 and 95%CI:1.12-1.75) were less likely to receive additional treatment line. Patients who received treatment intensification for mHSPC(OR2.45, p:0.03, 95%CI:1.07-5.62) and referral to oncologists(OR:1.59, p < 0.01, 95%CI:1.04-2.48) were more likely to receive additional treatment lines. Patients who received additional treatment had a better survival; mean of 27 months vs. 18 months (HR1.72, p < 0.01, 95%CI:1.23-2.38).

**Conclusions:** We report real-world prescription patterns of CRPC in a high-volume tertiary care center. Treatment intensification at HSPC and early referral to oncologist may have important downstream effects on prescription patterns at CRPC.

61

## Indonesian Kidney Transplantation Behavior in Rural Communities: Survey Conducted In Ponorogo, Jawa Timur

Mr. Prima Surya<sup>1</sup>, Mrs. Ashifa Faadilah<sup>2</sup>  
<sup>1</sup>RSU Aisyiah Ponorogo, <sup>2</sup>Ikatan Dokter Indonesia Cabang Ponorogo

**Introduction:** Awareness about transplantation in Indonesia is still very minimal. Efforts to promote ytransplantation in Indonesia are limited by the personal beliefs held by large sections of society.

**Aim:** To investigate the understanding of CKD patients, communities at risk of CKD, and communities without risk of CKD regarding kidney transplantation.

**Method:** The survey will be conducted in two type B hospitals in Ponorogo, Jawa Timur, with subjects of CKD patients from stages I-V, the general public not with CKD at risk, and the general public without CKD at risk.

**Result:** This research survey has not been carried out.

**Discussion:** Understanding the limitations of society to avoid kidney transplantation needs to be done to improve the implementation of this surgery in the future. Considering that there are quite a lot of people with hypertension and type 2 diabetes mellitus as a risk of CKD in Indonesia. In the near future, kidney transplantation in Indonesia is urgently needed..

**Conclusion:** A research survey should be conducted to assess the need of society to increase the number of kidney transplantat surgery quantities in the near future.



62

65

**Treatment of Bladder Leiomyoma with a Partial Cystectomy**

Dr. Zhong Li Titus Lim<sup>1</sup>, Dr. Scott McClintock<sup>1</sup>, Dr. Yang Sun<sup>1</sup>, Dr. Neil Smith<sup>1</sup>, Dr. John Pisko<sup>1</sup>, Dr. Christopher Tracey<sup>1</sup>  
<sup>1</sup>Gold Coast University Hospital

**Introduction & Objectives:** Bladder leiomyoma is a rare form of bladder neoplasm which has only been described in case reports and small case series. We present a case of a bladder leiomyoma in a male which was treated with a partial cystectomy.

**Case Report:** A 25-year-old male, who did not have any risk factors of urothelial cancer, presented with visible haematuria, dysuria, as well as suprapubic pain. Initial workup including cytology revealed atypical cells as well as an ultrasound which revealed a large polypoid lesion arising from the roof of the urinary bladder, measuring 71 mm in diameter. Subsequent contrast-enhanced computerized tomography (CT) further characterized this lesion as arising from the midline bladder wall with no upper tract lesions. A transurethral resection of bladder tumour (TURBT) confirmed this lesion and histology was suggestive of a benign leiomyoma with necrosis and secondary polypoid cystitis. Subsequent Magnetic Resonance imaging (MRI) showed extension of the mass through the muscularis propria of the superior bladder wall. An open partial cystectomy was performed, and the tumour was removed in entirety. This 7 cm tumour was consistent with a leiomyoma with 90% infarction with erosion and ulceration.

**Conclusion:** Bladder leiomyoma is a rare but benign bladder tumour. It easily mimics urothelial carcinoma, and a tissue diagnosis is required to differentiate between the two. Symptomatic lesions can be treated with a partial cystectomy.

**Novel Fully Automated Digital Registry to Enhance Ureteric Stent Tracing (TRACER)**

Dr. Han Jie Lee<sup>1</sup>, Ms. Shuqin Ye<sup>1</sup>, Ms. Hui Min Tan<sup>1</sup>, Ms. Kandy Jia Hui Yeo<sup>1</sup>, Ms. Gui Feng Tang<sup>1</sup>, Ms. Michelle Siok Keow Tan<sup>1</sup>, Ms. Sing Yi Chia<sup>1</sup>, Ms. Pei Fong Khoo<sup>1</sup>, Ms. Hui Cheng Choa<sup>1</sup>, Ms. Wan Chi Wong<sup>1</sup>, Ms. Moarie Tan<sup>1</sup>, Ms. Puay Chuan Lee<sup>1</sup>, A/Prof. Lui Shiong Lee<sup>1</sup>  
<sup>1</sup>Sengkang General Hospital

**Background:** Tracing of transiently-deployed implants like ureteric stents is crucial for timely removal. Current processes rely heavily on manual inputs, which is time-consuming, prone to omission errors, and lack automated scheduled reminders. We present a novel system (TRACER) aiming to overcome these issues and ensure prompt removal of ureteric stents.

**Methodology:** TRACER aims to 'track and remind', using an algorithm with the following sequential workflow: (1) a two-pronged trigger for tracking (thus minimising omission), (2) validation of tracked data, (3) automated clinician reminder for timely removal and (4) cessation of reminders after stent removal. To evaluate the performance of TRACER, the records of all patients undergoing stent placement between May 2021 and February 2022 were reviewed and compared between manual stent log entries, electronic operative records and TRACER dataset.

**Results:** A total of 395 ureteric stents were placed through 354 procedures in 264 patients. 25 stents might have been omitted from tracking due to incomplete trigger (stent logged by 1 party rather than 2), but was detected by the TRACER algorithm during data validation. Aside from 2 patients transferred to other hospitals for care the demise of 2 patients, and 4 tumour stents not due for change within the study period, all stents were removed on time. When compared to the manual system, the use of TRACER shortened the tracking process time from 4 minutes to 30 seconds per stent, corresponding to a reduction from 27 to 3.4 man-hours in the study period.

**Conclusions:** TRACER is safe, viable and provides significant savings on manpower. It demonstrates high potential to be scaled and expanded to all implantable devices.

63

66

**A Case of Late Recurrence of Seminoma in an Iliac Lymph Node**

Dr. Zhong Li Titus Lim<sup>1</sup>, Dr. Scott McClintock<sup>1</sup>, Dr. Yang Sun<sup>1</sup>, Dr. Neil Smith<sup>1</sup>, Dr. John Pisko<sup>1</sup>, Dr. Christopher Tracey<sup>1</sup>  
<sup>1</sup>Gold Coast University Hospital

**Introduction & Objectives:** Late recurrence of testicular tumours is defined as cases occurring more than two years following initial treatment. Such presentations are rare. We report a case of ureteric obstruction caused by a late recurrence of seminoma present in an iliac lymph node requiring open nodal dissection.

**Case Report:** A 59-year-old man, who had previous history of a left orchidectomy for seminoma seventeen years ago with subsequent adjuvant radiotherapy, presented with left sided flank pain. He had completed five years of surveillance post initial treatment and did not have further scans. Contrast enhanced computerized tomography (CT) revealed left sided hydronephrosis, as well as a necrotic mass in the left hemipelvis displacing the left ureter. Tumour markers were normal. Due to its location, the lesion was unable to be biopsied percutaneously. An open nodal dissection was performed to remove the necrotic mass both for diagnostic and treatment purposes. Histology revealed a 3 cm necrotic lymph node which had atypical cells with features in keeping with residual or recurrent seminoma. Following surgery, his ureteric obstruction has resolved, and he has proceeded to undergo three cycles of bleomycin, etoposide and platinum (BEP) chemotherapy.

**Conclusion:** Although late recurrences of seminomas are rare post initial treatment, they can occur beyond standard surveillance protocols.

**Advancing to Ambulatory and Day Surgery in Percutaneous Nephrolithotomy**

Dr. Jia Lun Kwok<sup>1</sup>, Dr. Yuyi Yeow<sup>1</sup>  
<sup>1</sup>Tan Tock Seng Hospital

**Introduction & Objective:** Patients scheduled for Percutaneous Nephrolithotomy (PCNL) used to be admitted to the inpatient wards and discharged after 1-2 nights' stay. We report our shift for PCNL patients as a default to be observed in our ambulatory short stay surgery ward (AS23), with planned discharge on first post operative day, within 24 hours of ward admission.

**Methods:** On review of our institutional data, we realized that a large proportion of patients were discharged after a one-night hospital stay, with no significant complications. We decided to explore admitting these patients to the AS23 ward after surgery instead, to reduce inpatient bed needs. Mini PCNL was chosen for suitable patients to decrease tract size, aiming to have less bleeding and less postoperative pain. We also as a default perform tubeless or totally tubeless procedures, reducing demand on nursing requirements and increasing suitability for admission to AS23. Suitable patients were also chosen for day surgery discharge on same day post operatively.

**Results:** The admission of suitable patients to the AS23 care facility commenced in September 2019. Our overall caseload for PCNL was 53 in 2020 (1st COVID year), and 74 in 2021. For ambulatory short stay cases, we had 11% (n = 6) of total cases in 2020 and 38% (n = 28) in 2021. For day surgery cases, we had 2% (n = 1) of total cases in 2020 and 18% (n = 13) in 2021. The Average Length of Stay (ALOS) prior to 2020 in the inpatient wards was 3.2 days. This decreased to 1.6 days in 2020 and 1.0 days in 2021. This decrease equated to 124 bed days saved for every 100 patients.

**Conclusions:** We have successfully implemented a post PCNL short stay programme in a short stay ambulatory ward setting. This maximises the use of existing resources, conserving inpatient beds for other more critically ill patients. By adopting newer technology in miniaturizing instruments and tubeless procedures, this led to lower risk of post-operative morbidity and shorter duration of stay.

67

**Rezum Water Vapour Therapy (Rezum): is it Safe to Continue Antiplatelet or Anticoagulation Medication?**

Dr. Samuel Lee<sup>1</sup>, Associate Professor Palaniappan Sundaram<sup>1</sup>, Dr. Thomas Chan<sup>1</sup>, Dr. Shu Hui Neo<sup>1</sup>, Dr. Alvin Low<sup>1</sup>, Dr. Benjamin Lim<sup>1</sup>, Associate Professor Lui Shiong Lee<sup>1</sup>, Dr. Yong Wei Lim<sup>1</sup>  
<sup>1</sup>Sengkang General Hospital

**Objective:** To report the outcomes of Rezum for LUTS in patients who are continued on antiplatelet or anticoagulation medication.

**Materials and Methods:** 10 men had undergone Rezum from November 2021 to March 2022 at Sengkang General Hospital. They were followed up prospectively for 3 months. Patient characteristics and outcome measures were collected from the time of enrollment. All 10 men did not stop their antiplatelet and anticoagulation. Outcomes were measured at 1 month, 2 month and 3 months postoperatively.

**Results:** n = 10 men with a mean age of 75.2 years and mean prostate volume of 44.8 ml underwent Rezum. There were 7 patients (70%) who on single antiplatelet therapy, 1 patient (10%) on dual antiplatelet therapy and 2 patients (20%) on novel anticoagulation therapy (NOAC). There is significant improvement in IPSS of 9 points at the 1 month follow up, and this improved IPSS is sustained at the 3 month review. No patient complained of severe hematuria or passing out clots. 9 patients (90%) had successful removal of catheter in 1 week. We do not report any Clavien-Dindo 2 or more surgical complications in this population at 30 days. 1 patient (10%) had a bladder neck contracture which required an elective transurethral bladder neck incision after 2 months.

**Conclusion:** This pilot study suggests that Rezum is a safe and effective option for patients who have bothersome LUTS, and cannot stop anticoagulation or antiplatelet medication.

69

**The Impact of Body Mass Index (BMI) on Oncological and Surgical Outcomes of Patients Undergoing Nephrectomy: a Systematic Review and Meta-analysis**

Dr. Chloe Ong<sup>1</sup>, Dr. Terence Law<sup>1</sup>, Dr. Alex Mok<sup>2</sup>, Dr. Kenny Ho<sup>2</sup>, Dr. Ziting Wang<sup>1</sup>, A/Prof. Edmund Chiong<sup>1,3</sup>, A/Prof. Ho Yee Tiong<sup>1</sup>, Dr. Jeremy Teoh<sup>2</sup>  
<sup>1</sup>Department of Urology, National University Hospital, National University Health System, <sup>2</sup>S.H. Ho Urology Centre, Department of Surgery, The Chinese University of Hong Kong, Hong Kong, <sup>3</sup>Department of Surgery, Yong Loo Lin School of Medicine, National University of Singapore

**Introduction:** Obesity, or high body mass index (BMI), is a known risk factor for renal cell carcinoma and predictor of poorer outcomes in general. However, despite the host of chronic conditions that usually accompany obesity, recent research has shown that it is in fact associated with improved survival rates – this has been termed the ‘obesity paradox’. Our aim is to perform a systematic review and meta-analysis to evaluate the impact of BMI on oncological (primary) and surgical (secondary) outcomes of patients who underwent nephrectomy.

**Methods:** The review protocol was registered in PROSPERO with ID CRD42021275124. Studies were identified from four electronic databases. Two independent authors conducted the screening and data extraction, while a third resolved discrepancies. Studies which addressed post-nephrectomy oncological and surgical outcomes were included.

**Results:** Twenty-three studies consisting 18,546 patients were identified for the final meta-analysis. Regarding oncological outcomes, higher BMI was shown to predict higher overall survival, cancer-specific survival and recurrence-free survival rates. There was no appreciable effect of BMI on the incidence of positive surgical margins. On the other hand, lower BMI tended to fare better in surgical outcomes such as operation time, warm ischaemic time, length of hospital stay, intraoperative or post-operative complications, blood transfusion requirements, and conversion to open, although the difference was clinically insignificant.

**Conclusion:** Our study suggests that higher BMI is associated with improved long-term oncological survival and similar perioperative outcomes as lower BMI. More research into the underlying biological and physiological mechanisms will allow us to better understand the effect of BMI, beyond mere association, on post-nephrectomy outcomes.

68

**Outcomes of Rezum Water Vapour Therapy (Rezum) for Lower Urinary Tract Symptoms (LUTS)**

Dr. Samuel Lee<sup>1</sup>, Dr. Benjamin Lim, Dr. Thomas Chan, Dr. Shu Hui Neo, Dr. Alvin Low, Associate Professor Palaniappan Sundaram, Associate Professor Lui Shiong Lee, Dr. Yong Wei Lim  
<sup>1</sup>Mohh

To report the outcomes of a single centre, single operator study of Rezum for LUTS in patients with clinical benign prostatic hyperplasia.

23 men had undergone Rezum from November 2021 to March 2022 at Sengkang General Hospital. They were followed up prospectively for 3 months. Patient characteristics and outcome measures were collected from the time of enrollment. Outcomes were measured at 1 month, 2 month and 3 months postoperatively.

They have a mean age of 68.7 years with a mean prostate volume of 49.8 ml underwent Rezum. 9 patients (39.1%) presented with 1 or more episodes of acute retention of urine, 5 patients (21.7%) had an indwelling urinary catheter at the time of surgery. There is a significant improvement in LUTS after Rezum. A mean IPSS of 18.1 ± 8.6 was recorded at baseline, this improved to 9.3 ± 5.5, 8.8 ± 4.6, 8.3 ± 2.5 at 1, 2, 3 months respectively. Peak flow rate (Qmax) of 7.8 ± 3.9 at baseline, to 13.3 ± 5.3, 17.7 ± 3.8 at 2 and 3 months respectively. Prostate specific antigen (PSA) reduction from 4.9 at baseline to 3.62 at 12 weeks postoperatively. 16 patients (70%) had a successful expected trial off urinary catheter. There were no Clavien-Dindo 2 or greater complications at 30 days. 1 patient (4.3%) had a bladder neck contracture which required an elective transurethral bladder neck incision.

**Conclusion:** Rezum can be a safe and effective minimally invasive option for patients with LUTS and can be done under sedation. It can be an option for patients who decline TURP, in view risk for general anaesthesia.

70

**Penoscrotal Transposition and Congenital Penile Curvature Due to Cavernosal Disproportion: A Case Report**

Dr. Muhammad Haritsyah Warli<sup>1</sup>, Dr. Kharisma Prasetya Adhyatma<sup>1</sup>, Dr. Ramlan Nasution<sup>1</sup>  
<sup>1</sup>Urology Division, Department of Surgery, Faculty Of Medicine, Universitas Sumatera Utara

**Introduction:** Corporal disproportion defined as a congenital abnormality of corpus cavernosum that causes an abnormal curvature of the penis. In this report, we showed unique congenital abnormalities of penoscrotal transposition and congenital penile curvature due to corporal cavernosum disproportion.

**Case:** A 22-year-old male visit our clinic due to extreme deviation of his penis with penoscrotal transposition. The patient was scheduled to undergo a one-stage surgery of simultaneous chordectomy and penile reconstruction. Intra-operative finding showed a significant disproportion (shortening) of the right side cavernosum. The urethra was intact, in normal length, and normally located meatus. We excised the short cavernosum and leaving the penile crus intact to achieve straight erection, followed by penoscrotal transposition correction. A follow-up period of 6 months post-surgery revealed the patient was satisfied with the post-surgery condition. There was no complaint regarding urinary and sexual function regardless of the excision of unilateral cavernosal body. Sexual function is satisfactory with EHS 4 and straight erection.

**Conclusion:** To the best of the author(s) knowledge, there is no penoscrotal transposition with extreme corporal cavernosum disproportion case have been reported before. We would like to emphasize that a single stage correction by excision of the unilateral short cavernosal and penoscrotal transposition reconstruction was considered satisfactory.

71

**Comparison of Prostate Cancer Detection Rates Between Systematic and Target Biopsy at Different Prostate-Specific Antigen Densities**

Dr. Lin Kyaw<sup>1</sup>, Dr. Ziting Wang<sup>1</sup>  
<sup>1</sup>National University Health System

**Introduction:** Magnetic resonance imaging (MRI) of prostate has become the standard of care in evaluating patients with raised Prostate-specific antigen (PSA). MRI prostate have been shown to help reduce the need for unnecessary biopsies and allows for MRI-fusion targeted biopsies. However, with increased use of MRI prostate, the wait time for MRI prostate has invariable become longer. There is little data guiding triaging of patient for MRI prostate. The aim of this study is to review if PSA density can be used as a marker to aid in selection of patient for MRI prostate.

**Materials and Methods:** Retrospective review of patients who underwent systematic (STpBx) and targeted (TTPbX) transperineal prostate biopsy from 9/2015 to 11/2021. All biopsy naïve patients were included. Patients were further subdivided according to PSAD (Group 1: PSAD < 0.15, Group 2: 0.15 ≤ PSAD < 0.3, Group 3: PSAD ≥ 0.3). Statistical analysis done using one-way ANOVA and chi-squared test with p-value of < 0.05 considered significant.

**Results:** 276 patients included, all underwent both STpBx and TTPbX. Descriptive statistics of all patients and subgroups shown in Table 1. There were significant differences (p = 0.024) between detection rate of STpBx and TTPbX in group 1. In groups 2 and 3, there were no differences (p = 0.273, p = 0.456, respectively) (Table2). PIRADS grading is lower (p = < 0.001), and size of largest lesion is smaller (p = 0.001) in group with lower PSAD (Table3).

**Conclusion:** Given limited resources in terms of long MRI waiting time, operating theatre slots as well as risk of general anaesthesia, certain select patients with high PSA density can undergo systematic biopsy rather than targeted.

74

**Overview of Testicular Cancer Burden in Australia - a Time-trend Analysis**

Dr. Brian Ng Hung Shin<sup>1</sup>, Dr. Handoo Rhee, A/Prof. Eric Chung  
<sup>1</sup>Princess Alexandra Hospital

**Objective:** To provide estimates of national incidence, mortality and survival associated with testicular cancer in Australia.

**Methods:** Data regarding testicular incidence and population statistics were retrieved from the Australian Institute of Health and Welfare databases from 1982 to 2021.

**Results:** Incidence of testicular cancer is on the rise. The aged-standardised incidence rate was 4.2 cases per 100,000 in 1982, 6.2 cases in 2000 and 7.7 in 2021. Age-specific rates followed a binomial distribution with peak incidence in males aged 30-34. Mortality fell over the years from 0.2 deaths in 1982, to 0.1 per 100,000 in 2000 and plateaued thereafter. Mean age of death was 41.1 in 1982, 44.5 in 2000 and 55.6 in 2016. In 2013-2017, 97.4% of males survived 5 years after diagnosis (95% CI: 96.7-98.0%). Differential age to incidence ratio was noted with 63% of cases occurring in those aged 20-39 over the past 2 decades. The lifetime risk of being diagnosed with testicular cancer was 0.3% in 1982, 0.4% in 2000 and 0.5% in 2010 to 2021. However, lifetime risk of death had an opposite slope with a risk of death of 0.05% in 1980 compared to 0.01% in 2017.

**Conclusion:** Similar to other countries, testicular cancer is on the rise in Australia. Mortality rate has however plateaued since the year 2000. Study of influence of factors influencing testicular tumorigenesis and different age-incidence patterns are warranted to assist with healthcare decisions and adjust resource implement plans.

73

**Analysis of the National Burden of Urinary Bladder Cancer in Australia Over the Last 4 Decades**

Dr. Brian Ng Hung Shin<sup>1</sup>, Dr. Handoo Rhee, A/Prof. Eric Chung  
<sup>1</sup>Princess Alexandra Hospital

**Objectives:** Geographical variations of Urinary bladder cancer (UCB) exists. As Australia represents a cultural microcosm, we aim to assess the burden of bladder cancer over the last 4 decades.

**Methods:** Data regarding UCB was retrieved from the Australian Institute of Health and Welfare databases from 1982 to 2021.

**Results:** Age-standardised incidence of bladder cancer has fallen from 17.8 cases per 100,000 in 1982 to 9.3 in 2021. Incidence varied amongst age group. In 2017, 51.9% occurred in the 60-79 age group, 37.1% in 80+ and 10.4% in 40-59. Mortality counts fell across the years with 5.4 deaths per 100,000 people in 1982 to 2.9 in 2021. The overall mean age of death was 73.9 in 1980, 76.5 in 2000 and 81.2 in 2020. UCB survival rates differed between gender. In 2013-2017, 57.6% of males of all ages survived 5 years after the diagnosis (95% CI: 56.3-58.8%) compared to 47.5% females (95% CI: 45.4-49.6%). The lifetime risk of being diagnosed with UCB in 2021 was 1 in 64 or 1.6% overall, with a male to female risk of 2.4% : 0.7%. Next, the lifetime risk of dying of bladder cancer in 2021 was 0.9% for males vs. 0.4% for females.

**Conclusions:** Despite the shift in Australian demographics, population growth and ageing populations, incidence and mortality rate have fallen. These patterns may reflect differences in stage at time of diagnosis, changes in tobacco & occupational exposure policy and access to treatment.

75

**An Update on Urethral Diverticula: Results From a Large Case Series**

Dr. Henley Tran<sup>1</sup>, Dr. Athina Pirpiris<sup>2</sup>, Dr. Madalena Liu<sup>3</sup>  
<sup>1</sup>Redcliffe Hospital, Metro North Hospital and Health Service, <sup>2</sup>Eastern Health, <sup>3</sup>Monash Health

**Introduction:** Urethral diverticula are an uncommon pathology with an incidence rate of 0.6-6.0%. Symptoms and clinical examination findings can be subtle and nonspecific. We investigate the presentation, investigations, and management of patients with urethral diverticula and the importance of MRI in the management of urethral diverticula.

**Methods:** This was a retrospective study of female patients who underwent urethral diverticulectomy between 2010 and 2018 by a single surgeon. Clinical data was collected on patient demographics, presenting symptoms, investigations performed, operative technique, and minimum of two-year follow-up. A 2 Tesla MRI pelvis was performed for all patients and reviewed by experienced urologists.

**Results:** 17 patients were included in this study. Median age was 43 years. 70% presented with a palpable vaginal lump; 64% presented with lower urinary tract symptoms (LUTS) or recurrent urinary tract infections (UTIs). MRI demonstrated communication between the urethral diverticulum and the urethral lumen in 80% of cases, compared to only 47% endoscopically. All women underwent a transvaginal approach to excision. Eight had a Martius flap. Mean length of hospital stay was 2 days. Mean postoperative follow-up ranged from 6 months to 24 months, mean follow-up period of 12 months. There were no postoperative complications or recurrences.

**Conclusion:** The most common presentation of our patients was with a palpable vaginal lump, LUTS, or recurrent UTIs. In our case series MRI demonstrated a high degree of concordance with operative findings. Preoperative MRI provides vital information on urethral diverticulum characteristics important for surgical planning and excluding alternative pathologies.

76

## Sexual Dysfunction Statistics in Australia: A Time Perspective

Dr. Brian Ng Hung Shin<sup>1</sup>, Dr. Handoo Rhee, A/Prof. Eric Chung  
<sup>1</sup>Princess Alexandra Hospital

**Objectives:** Our aim is to describe the evolving landscape in the management of erectile dysfunction in Australia over the past decade.

**Methods:** Annual data was extracted from the Medicare Benefit Schedule, Pharmaceutical Benefit Schedule and Australian Institute of Health and Welfare databases for the years 2010-2020.

**Results:** From 2010-2020, surgical procedures for ED has increased by 26%, with an increased proportion of admissions due to public procedures (16.8% vs. 25.5%). Inflatable erectile device is more commonly performed than malleable prosthesis implants; and there was an increased utilisation of penile prosthesis implants from 2.3 per 100,000 men in 2010 to 3.5 per 100,000 men in 2020. The commonest age group was 55-64 year old followed by 65-74 year old. The overall prescription rate for phosphodiesterase 5 inhibitors declined from 309 to 216 per 100,000 from 2010 to 2020 despite Sildenafil came off patent. Similarly, intracavernosal therapy with alprostadil use also declined but more precipitously from 12.1 to 4.7 per 100,000. Financial burden due to ED surgery has increased since 2010 whilst the burden due to medical therapy has decreased.

**Conclusion:** The increased in surgical procedures suggests that more men are being screened for, or seeking treatment for ED. The reason behind the lower rate of prescribing of ED therapy is not clear but may be due to discontinuation of treatment. Reclassification of vardenafil on the R-PBS had minimal impact on prescribing practices. Exploration of motivators to therapies may help with service delivery and improve outcomes for men with ED.

78

## Different Approach in Alleviating Renal Colic: A Systematic Review and Meta-analysis of Randomized Controlled Trials Evaluating the Efficacy of Magnesium Sulfate for Renal Colic Management

Mr. Farhan Haidar Fazlur Rahman<sup>1</sup>, Mr. Leonardo Lie<sup>1</sup>, Mrs. Dilla Firzani<sup>1</sup>, Mr. Sigit Solichin<sup>2</sup>  
<sup>1</sup>Emergency Unit, Metropolitan Medical Center Hospital, <sup>2</sup>Department of Urology, Metropolitan Medical Center Hospital

**Introduction:** Renal colic is one of the most common complaints found in emergency room. In standard practice, analgesics from non-steroidal anti-inflammatory drug (NSAID) and opioid groups have been the treatment of choice. However, several cases used magnesium sulfate as a tocolytic for alternative to alleviate pain. This study aims to measure the efficacy of magnesium sulfate in treating renal colic.

**Methods:** A systematic study search according to PRISMA guideline was conducted on MEDLINE, CENTRAL, and EMBASE. The primary outcome measured subjective pain severity within the first 15, 30, and 60 minutes of analgesic administration between intervention and control groups (which received either ketorolac or morphine sulfate) using mean difference (MD), with 95% of confidence intervals (CIs). Statistical analysis were performed using Review Manager 5.4 and STATA 17.

**Results:** Five randomized controlled trials were included, with 227 of 453 total patients received magnesium sulfate. Pooled analysis showed no significant difference between both groups in pain severity according to visual analog scale (VAS) measured at 15, 30, and 60 minutes after drug administration (MD 0.41, 95%CI -0.31, 1.12, p = 0.27, I2 = 50, MD 0.13, 95%CI -0.59, 0.84, p = 0.73, I2 = 88, and MD -0.28, 95%CI -0.72, 0.16, p = 0.22, I2 = 89, respectively). Egger's test calculation showed no evidence of small-study effects (p = 0.18).

**Conclusion:** This study revealed that magnesium sulfate had no significant difference in alleviating pain severity at three points of measurement, when compared to control group. Nonetheless, magnesium sulfate can be an alternative in reducing renal colic as it did not show inferiority to the control group.

77

## Minimally Invasive Surgical Therapy for Management of Lower Urinary Tract Symptom: How Reliable is Infodemiology?

Dr. Brian Ng Hung Shin<sup>1</sup>, Dr. Handoo Rhee, A/Prof. Eric Chung  
<sup>1</sup>Princess Alexandra Hospital

**Objective:** We aim to investigate practice patterns of Australian urologists in the use of Rezum and Urolift and compare it to online public interest.

**Methods:** Google Trends data for Urolift and Rezum from the last 12 months was obtained for specific territories. Temporal trends were compared to Medicare Benefit Schedule [MBS] for the same time period.

**Results:** Google Trends analysis showed interest for Rezum and Urolift in 5 out of 7 states only: Western Australia [WA]; South Australia [SA], New South Wales [NSW], Victoria [VIC] and Queensland [QLD]. There was no interest for Urolift in SA. The percentage of interest varied amongst other states with REZUM: Urolift being WA 100:0%, SA100:0%; NSW 63:37%, VIC 50:50%, QLD 33:67%. In contrast, MBS data revealed the presence of Urolift in all states with varied rates of services per capita. The 3 states with most activities for Urolift in 2021 were the Northern Territory at 12 per 100,000 services per 100,000 population, followed by QLD 5, WA 5 services per 100,000. MBS data also showed that REZUM only occurred in NSW, VIC, QLD in 2021 with actual number of services below 10.

**Conclusion:** Geographic areas of inquisitiveness do not seem to match with services delivery from population data. It is unknown how patients avoid decision paralysis with increasing availability of minimally invasive prostate surgeries for benign prostatic hyperplasia. This degree of knowledge could be conducive in guiding counselling in decision-making process and avoid patients in falling of pernicious trap of mis-information.

79

## GSTT2 and the Response to BCG Immunotherapy

Ms. Mugdha Patwardhan<sup>1</sup>, Dr. Edmund Chiong<sup>2</sup>, Dr. Kesavan Esuvaranathan<sup>2</sup>, Dr. Ratha Mahendran<sup>1</sup>  
<sup>1</sup>Yong Loo Lin School of Medicine, NUS, <sup>2</sup>Department of Urology, NUS

Whilst *M. bovis* Bacillus Calmette-Guérin (BCG) therapy remains the gold-standard for treatment of high-risk non-muscle invasive bladder cancer, 30-40% of patients fail therapy, resulting in disease recurrence and progression. A better understanding of the underlying mechanisms of BCG therapy can aid in elucidating key response pathways which may lead to discovery of new targets and in turn new approaches. The Glutathione-S-transferase theta 2 (GSTT2) gene is a member of the GST family. Loss of GSTT2 expression has been associated with modulation of intracellular ROS and BCG survival in bladder cancer cell lines. Additionally, retrospective analysis of bladder cancer patients showed that patients with the GSTT2B deletion responded better to fewer instillations of BCG. To understand these responses a GSTT2 knockout mice model was developed. The subcutaneous model was selected to provide opportunity to study immune responses to BCG in male mice. Once tumors were established, the mice were treated with BCG, after which tumors were harvested for analysis of immune infiltration and gene expression. The in-vivo model revealed differences in immune cell recruitment into the tumor microenvironment as well as differences in the expression of key immune-related genes, especially markers of immune exhaustion. Thus, loss of GSTT2 may influence downstream response to BCG. Further understanding of the role of GSTT2 in modulating the response to BCG may not only allow for GSTT2 to serve as a potential biomarker for predicting response but may also clarify the role of certain pathways and mechanisms in the response to therapy.



81

83

**Reinventing Uroflowmetry: Urofluere – an Ambulatory Uroflowmetry Device**

Dr. Tiffany Ng<sup>1</sup>, Mr. Alvin Low<sup>1</sup>, Mr. Brendan Ong<sup>2</sup>, Mr. Keane Hi<sup>2</sup>, Mr. Sahad Zahir<sup>2</sup>, Mr. Glenn Teo<sup>2</sup>, Mr. Wen Kang Wong<sup>2</sup>, Mr. Karupppasamy Subburaj<sup>2</sup>, Mr. Shao Ying Huang<sup>2</sup>, Ms. Puay Chuan Lee<sup>1</sup>, Mr. Lui Shiong Lee<sup>1</sup>

<sup>1</sup>Seng Kang General Hospital, <sup>2</sup>Singapore University of Technology and Design

**Introduction:** Existing uroflowmetry machines are mostly confined to the clinic setting, expensive, laborious, and crucially, results may be inaccurate by the unnatural toileting experience.

**Aims:** We aim to find a solution with the following requirements – 1) Accurate and affordable measurement of urinary flow; 2) Intuitive and portable design to allow ease of use; 3) Integration into an existing toilet.

**Methods:** We collaborated with the Singapore University of Technology and Design to design the ambulatory uroflowmetry device - Urofluere.

**Results:** The Urofluere uses a load cell force-based sensor. Urine flow and impact cause deformation of the load cells, which is translated into a signal and plotted on a flow versus time graph. An ergonomic double funnel design helps to collect urine spray and minimize the pooling of fluid in the funnel which leads to inaccuracies of flow. It is also easily mounted over the toilet for ease of use and cleaning. Current prototype testing has shown accurate flow rate measurements within 0.5 ml/s, with less than a 15% error margin. Compared to current portable uroflowmetry devices in the market that cost about SGD 340, the Urofluere prototype costs about SGD 70. Further development of the Urofluere aims to incorporate a turbine flow sensor to improve accuracy and include wireless data collection.

**Conclusion:** The Urofluere is a promising uroflowmetry device. It is low cost, convenient and accurate. With evolving trends toward telemedicine and aims to improve efficacy in the clinic, an ambulatory uroflowmetry device will enhance both patient and clinician experience.

**Retrospective Study of Outcomes of Emphysematous Pyelonephritis in a Single Institution from 2015 to 2019 – a 5 Year KTPH Experience**

Dr. Mon Mon Oo<sup>1</sup>, Dr. Ang Zhou<sup>1</sup>, Dr. Jia Lun Kwok<sup>2</sup>, Dr. Molly Eng<sup>1</sup>

<sup>1</sup>Khoo Teck Puat Hospital, <sup>2</sup>Tan Tock Seng Hospital

Emphysematous pyelonephritis (EMP) is a urological emergency with high mortality and morbidity. In recent years, as radiological intervention became readily accessible, early drainage has improved outcomes.

Between Jan 2015 and Dec 2019, a total of 19 patients were admitted to Khoo Teck Puat Hospital with EMP. Patients had a median age of 60 years with a male to female ratio of 1:4. 74% of the patients has poorly controlled Diabetes Mellitus. 12 (63%) patients presented with Huang and Tseng class 1 EMP, 3 (16%) with class 2, 2 (10.5%) with class 3a and 2 (10.5%) with class 3b. 14 (74%) patients had hydronephrosis and 12 (63%) were due to obstructing stones. The most common pathogen was E coli and 3 (15.8%) patients had ESBL bacteraemia.

There was no mortality or need for emergency nephrectomy. 8 (42.1%) patients required monitoring at high dependency or intensive care unit for hemodynamic instability. 18 (95%) patients required drainage with either percutaneous nephrostomy tube and/or drain. Median time to intervention was 25 (6-118) hours from the time of registration at emergency department. 6 (35.3%) patients had drainage within 12 hours, 9 (52.3%) patients within 24 hours and 16 (94.1%) patients within 72 hours. Those who had drainage later was due to delay in scan and hence diagnosis. Median length of hospitalization was 15 (7-45) days.

Early percutaneous drainage has significantly improved outcomes of this once-deadly disease, hence high index of suspicion in high risk patients with intraabdominal sepsis is important for timely diagnosis and intervention.

82

85

**To Pre-stent or Not? Assessing the Predictors for Pre-stenting in Retrograde Intra-renal Surgery (RIRS)**

Dr. Tiffany Ng<sup>1</sup>, Mr. Alvin Low<sup>1</sup>, Mr. Yong Wei Lim<sup>1</sup>, Mr. Lui Shiong Lee<sup>1</sup>, Mr. Palaniappan Sundaram<sup>1</sup>

<sup>1</sup>Seng Kang General Hospital

**Objective:** To assess variables associated with patients who require pre-stenting for retrograde intrarenal surgery (RIRS).

**Methods:** Between 2019 and 2021, 68 cases of RIRS procedures for renal stones were selected from a single-center databank. Cases with concurrent ureteric stones were excluded. These cases were split into two groups – Group 1 consists of cases that achieved successful access on the first attempt without pre-stenting. Group 2 consists of cases that required pre-stenting due to difficult ureteral access. Patient factors, medical history, stone factors, alpha-blocker use, and surgical experience were evaluated against the need for pre-stenting.

**Results:** Out of 68 cases, 54 were under the no pre-stenting group and 14 were under the pre-stenting group. The mean age was 53.9 versus 44.5 years respectively (p = 0.03). All 16 cases with diabetes mellitus (DM) did not require pre-stenting, while 27% without DM required pre-stenting (p = 0.02). Body mass index (BMI), presence of hypertension, and heart or kidney disease did not significantly differ between both groups. History of calculi and previous stone procedures did not yield statistically significant associations. 71.0% versus 85.6% of cases with and without pre-operative alpha-blocker use respectively fall into the no pre-stenting group (p = 0.12). RIRS performed by endourologist are less likely to require pre-stenting (14.0% vs. 54.4% p < 0.01).

**Conclusions:** The majority of patients (80.4%) did not require pre-stenting. Older age, history of DM, and procedures by endourologist are associated with lower rates of pre-stenting required. Alpha-blocker use did not show any significant difference in outcomes.

**Case Report of Tamsulosin-induced Priapism**

Miss Hui Ting Liu<sup>2</sup>, Dr. Weida Lau<sup>1</sup>, Dr. Mon Mon Oo<sup>1</sup>

<sup>1</sup>Khoo Teck Puat Hospital, <sup>2</sup>Yong Loo Lin School of Medicine, NUS

Tamsulosin, an alpha-1 adrenoceptor antagonist, is commonly used for medical expulsive therapy (MET) of ureteral stones. While its effect on postural blood pressure is common knowledge, a less well-known adverse effect is priapism.

We present the case of a 36-year-old Chinese male who developed priapism after taking Tamsulosin for presumptive ureteric colic. He developed an episode of painful erection 2 weeks after starting medication, which was self-resolving over a 2-day period. Subsequently, he developed another episode at 4 weeks with continuation of medication. He underwent corporal blood aspiration and irrigation, as well as intracavernosal phenylephrine injection which achieved only initial partial detumescence with subsequent recurrence of full rigidity. He then underwent bilateral T-shunts. Post-operatively, he made an uneventful recovery.

Tamsulosin was discontinued and inpatient CT KUB revealed no ureteral stone.

On follow-up at 2 weeks, he had no new episodes of priapism. He was started on sildenafil 50 mg daily for penile rehabilitation.

This case report together with a review of literature on reported cases of priapism caused by Tamsulosin, aims to create awareness of this potentially life-changing side effect for male patients being treated with Tamsulosin as MET. Awareness will deter doctors from indiscriminately prescribing tamsulosin for presumptive ureteral colics and also to warn appropriate patients of this potential adverse effect so that they can seek early medical attention if priapism does occur.

87

**The Role of Video Urodynamics in Predicting Voiding Success Post Bladder Diverticulectomy – a Retrospective 10 Year Series from a Single Centre**  
Miss Xanicia Long Jiahuan<sup>1</sup>, Mr. Yong Jin<sup>2</sup>, Mr. Yuguang Tan<sup>2</sup>, Professor Lay Guat Ng<sup>2</sup>

<sup>1</sup>MOHH, <sup>2</sup>Singapore General Hospital, Department of Urology

**Introduction:** Acquired bladder diverticula are usually an end-result of raised intra-vesical pressure due to bladder outlet obstruction (BOO) or detrusor overactivity (DO). Whilst the diverticulum forms an outlet that reduces detrusor pressure, it may cause high PVRU, eventually leading to recurrent UTIs and stones. VUDS can be performed pre-operatively to evaluate detrusor contractility, PVRU and assess preferential diverticula filling during voiding.

**Methods:** We conducted an IRB waived retrospective study of all VUDS performed in a single tertiary institution over 10 years (2012-2022). All patients with VUDS performed for bladder diverticula were studied; those with concomitant bladder tumours or stones were excluded. We evaluated how detrusor contractility represented by Pdet@Qmax, correlated with post-operative voiding function in terms of change in Qmax and PVRU.

**Results:** A total of 37 patients met the study criteria, with a mean age of 65.9 years. 81.1% of the study population were male, while 18.9% were female. 72.9% of the cohort had BOO, 18.9% had DO, while 8.1% had decompensated acontractile bladders. 88.2% of those who had BOO or DO underwent diverticulectomy, and only 1 patient from this group required CISC post-operatively. All 7 patients who did not undergo diverticulectomy were managed with CISC; 42.9% of them had acontractile bladders and the rest declined surgery. Pre-operative pdet@Qmax correlated significantly with a change in PVRU ( $r = -0.45$ ;  $p = 0.01$ ), but a similar correlation was not seen in the change of Qmax post-operatively ( $r = 0.16$ ,  $p = 0.40$ ).

**Conclusion:** VUDS predicts the success of voiding post-bladder diverticulectomy and should be considered a routine prior to surgical intervention.

90

**Feasibility and Safety of Laparoscopic Radical Cystectomy: a Single Centre Experience**

Mr. Karthik thandapani<sup>1</sup>, Dr. Wong Joseph CS<sup>1</sup>, Dr. Loke Wei Tim<sup>1</sup>  
<sup>1</sup>NUHS

**Introduction:** Radical cystectomy is an uncommon surgery, usually done via open laparotomy, and is associated with significant morbidity. Although robot-assisted laparoscopic cystectomy has less morbidity, is only done in centres with a robot and necessary expertise. We report the feasibility, safety and adopted method of laparoscopic radical cystectomy in our centre.

**Methods:** We retrieved cystectomy cases from OT records since 2019 and analysed the laparoscopic cases.

**Results and Discussion:** A total of 9 laparoscopic cystectomies were done, with 2 conversions to open for bleeding and presence of T4 disease. All 7 patients had an ileal conduit for urinary diversion. Median operative time was 392 mins (377-425 mins), blood loss 600 mls (300-1700 mls), LOS 8 days (3-12 days). 2 patients developed post-operative Ileus. Average nodal count was 13 (8-21).

Our method involves a transperitoneal approach, starting with extirpation of the pelvic organs (bladder and prostate in men; bladder, urethra and uterus in women) followed by dissection of pelvic nodes. Both ureters are tagged with sutures and the left ureter slung under the mesocolon to the right iliac fossa. The anticipated distal end of the ileal conduit is tagged with a suture as well. All suture tags are grasped with laparoscopic instruments before a small peri-umbilical longitudinal incision is made to deliver the specimen. This incision is also used to fashion the conduit extracorporeally. The small incision and minimal bowel handling decreases Ileus and allows early mobilisation.

**Conclusion:** A laparoscopic approach is feasible for a safe radical cystectomy, with the potential to minimise post-operative morbidity.

88

**Preliminary Outcomes of Water Vapour Ablation for the Management of Benign Prostatic Hyperplasia**

Dr. Clarissa Gurbani<sup>1</sup>, Dr. Weida Lau<sup>1</sup>  
<sup>1</sup>Khoo Teck Puat Hospital

**Introduction:** Water vapour ablation (Rezum) has emerged in recent years as a promising alternative to surgery in patients with bothersome lower urinary tract symptoms related to benign prostatic hyperplasia (BPH-LUTS). We report our preliminary experience with ablative therapy in our institution.

**Methods:** Men at least 50 years old with an IPSS of  $\geq 13$ , prostate volume 30 cc to 80 cc, maximum flow rate (Qmax) of  $\leq 15$  mls/s, postvoid residual urine (PVRU)  $< 100$  mls were included. Patients with intravesical prostatic protrusion, urinary tract infection, or in retention were excluded. Patients were then followed up at 1 week, and 1-, 3-, and 6-month intervals for review of their IPSS, QOL, Qmax and PVRU.

**Results:** 6 patients underwent ablative therapy, with an average age of 68 years, prostate volume of 52.1 cc and pre-treatment Qmax and PVRU of 9.7 ml/s and 37.8 mls respectively. All were successfully trialed off catheter (TOC) 1 week-post-op, with a 20% decrease in PVRU post-TOC (mean 31.5 mls). Post-Rezum IPSS scores at 1 month showed a 93.7% improvement from the pre-treatment baseline in the 4 patients who were followed up until 3 months. 2 developed short-term complications (urgency, dysuria) which resolved by 3 months. Cost analyses comparing conventional surgery versus ablation by subsidy brackets showed a cost savings of \$5306 for the highest bracket with ablation, and comparable costs for the lowest bracket (\$828 versus \$856 respectively).

**Conclusion:** Ablative therapy for the management of BPH-LUTS is a safe and promising alternative to surgery. Institutionally, there are also significant cost-savings involved with Rezum versus conventional surgery.

92

**Early Experience of Focal Therapy for Localised Prostate Cancer Using High-intensity Focused Ultrasound (HIFU) in Singapore**

Dr. Kian Tai Chong<sup>1</sup>, Dr. Sam Peh<sup>1</sup>  
<sup>1</sup>Surgi-TEN Specialists, Farrer Park Hospital

**Objectives:** We started focal therapy for localised prostate cancer in Singapore using FDA-approved Focal One high-intensity focused ultrasound (HIFU) machine in Nov 2019. In this report we review our early experience.

**Methods:** Retrospective review of all prostate cancer patients treated with Focal One HIFU machine from Nov 2019 until May 2022. We analyse its treatment outcome and complications rates.

**Results:** Twenty-six (26) men between 46 to 88 years old with stage 1 and stage 2 prostate adenocarcinoma underwent focal therapy using Focal One HIFU machine. Total PSA before positive prostate biopsies for Gleason 3+3 (tPSA 2.76-15.12 ug/L), Gleason 3+4 (tPSA 1.25-11.8 ug/L) and Gleason 4+4 (tPSA 5.89-10.81 ug/L) were similar. There was no blood loss during HIFU. Post-HIFU nadir PSA were 0.4% to 64.2% of pre-treatment PSA. The youngest patient at 46 years old had Gleason 4+4 prostate cancer, with post-HIFU nadir PSA at 0.278 ug/L and no sexual or urinary side effects. Complications include prostatitis (n = 6), erectile dysfunction requiring medication (n = 4), temporary urinary retention (n = 3), epididymo-orchitis (n = 1), leg oedema without deep vein thrombosis (n = 1) and short-segment urethra stricture (n = 1). One out of 26 patient (3.8%) had cancer recurrence, occurring mainly at the contralateral prostatic lobe which was not treated with HIFU energy for his original Gleason 3+3 tumour.

**Conclusions:** Our early experience of focal therapy for localised prostate cancer using Focal One HIFU machine showed no blood loss, variable reduction for post-treatment PSA, acceptable complication rates and one patient with outfield cancer recurrence.

95

**Natural Language Processing in Urology: Automated Extraction of Clinical Information from Histopathology Reports of Uro-Oncology Procedures**

Dr. Honghong Huang<sup>1</sup>, Fiona Xin Yi LIM<sup>2</sup>, Gary Tianyu GU<sup>3</sup>, Matthew Jiangchou HAN<sup>4</sup>, Andrew Hao Sen FONG<sup>5</sup>, Elian Hui San CHIA<sup>6</sup>, Eileen Yen Tze BEI<sup>1</sup>, Sarah Zhuling THAM<sup>1</sup>, Aixin SUN<sup>2</sup>, Jay Kheng Sit LIM<sup>1</sup>

<sup>1</sup>Department of Urology, Singapore General Hospital, <sup>2</sup>School of Computer Science and Engineering, Nanyang Technology University, <sup>3</sup>Department of Diagnostic Radiology, Singapore General Hospital, <sup>4</sup>Department of Future Health System, Singapore General Hospital, <sup>5</sup>Doctor Anywhere, <sup>6</sup>Office of Insights & Analytics, Singapore Health Services

**Objectives:** To automate routine extraction of unstructured information from Uro-oncological histopathology reports by applying rule-based and Machine Learning (ML)/Deep Learning (DL) methods to develop an Oncology focused natural language processing (NLP) algorithm.

**Methods:** Our algorithm employs a combination of Rule-based approach or Support Vector Machines/Neural Networks and is optimised for accuracy. We randomly extracted 5772 Uro-oncology histology reports and split the dataset into training and validation datasets at an 80:20 ratio. The training dataset was annotated by medical professionals. The validation dataset was annotated by cancer registrars and defined as the gold standard which the algorithm outcomes were compared against. The accuracy of NLP-parsed data was matched against human annotation results. We defined an accuracy rate of > 95% as acceptable.

**Results:** Among 11 variables extracted by our algorithm, 8 data fields met the accuracy of > 95%, while another 3 data fields had accuracies between 61.2% to 89.7%. The rule-based approach was more effective and robust. ML/DL models had poorer predictive performances due to highly imbalanced data distribution and variable writing styles between different reports and data used for domain-specific pre-trained models.

**Conclusion:** Our NLP algorithm can automate clinical information extraction accurately from histopathology reports with an overall average micro accuracy of 93.3%.

100

**Clinical Outcomes of Sengkang General Hospital (SKH) LINK Programme -- A Safe and Cost effective Initiative to Right-Site Patients with Benign Prostate Hyperplasia (BPH)**

Dr. Shu Hui Neo<sup>1</sup>, Dr. Ryan Lee<sup>1</sup>, Dr. Lui Shiong Lee<sup>1</sup>

<sup>1</sup>Sengkang General Hospital

**Introduction and Aims:** SKH LINK programme is a novel initiative to facilitate right siting for continuity of care for patients with benign prostate hyperplasia(BPH) to family physicians(FP). LINK FP receive appropriate post-graduate training as a pre-requisite. We report initial clinical outcomes.

**Materials and Methods:** Suitable patients are paired with a FP preferably in proximity to residence. Follow-up includes clinical assessment, serum PSA, IPSS and QoL assessment 6 monthly. The criteria for return referral to tertiary care is pre-defined by the referring urologist.

**Results:** There were 48 men enrolled between November 2019 (inception) and February 2022, with a median age of 68 years (53-87), median prostate volumes of 40 mls (16-170), and a majority with intravesical prostatic protrusion Grade 3 (38%). Prescribed therapy comprised alpha blockers (33%), 5-alpha reductase inhibitors (21%), combination therapy (42%) and others (4%). The median PSA at enrolment was 2.3 mg/L (0.4-9.0), and 2.5 at 1 year (p = 0.33). Median IPSS scores were 7 (enrolment) and 5 (12 months) (p = 0.77). Median QoL scores were 2 at enrolment and at 12 months (p = 0.33). There were 11 (23%) patients who required an elective return referral after a median of 11 (6-14) months, comprising one patient who required surgical therapy for progression. These patients were attended to by their primary urologists within 1 month. One patient presented urgently for self-limiting gross haematuria. LINK provided a median cost of S\$95 (2.3-3104) per patient, when compared to those requiring hospital visits in the same period.

**Conclusion:** The LINK programme allows for safe, cost-effective and seamless right siting of BPH patients, while allowing return referrals when needed.

97

**The Impact of Tumor Location on Continence Outcomes Post Radical Prostatectomy in Patients Originally on Active Surveillance**

Dr. Raj Tiwari<sup>2</sup>, Dr. Adnan El-Achkar<sup>1</sup>, Dr. Christian Ayoub<sup>1</sup>, Dr. Mohamed Baker Berjaoui<sup>2</sup>, Dr. Yazan Qaoud<sup>2</sup>, Dr. Miran Kenk<sup>2</sup>, Dr. Neil Fleshner<sup>2</sup>, Dr. Mohamed Shahait<sup>3</sup>

<sup>1</sup>Department of Surgery, Division of Urology, American University of Beirut, <sup>2</sup>Division of Urology, University of Toronto, <sup>3</sup>Department of Surgery, King Hussein Cancer Center

**Introduction and Aims:** Active surveillance (AS) is increasingly chosen for low-risk prostate cancer with 30% seeing progression. There is a lack of data on the effect of tumor location on continence outcomes for those that undergo radical prostatectomy (RP). We investigate the effect of tumor location at biopsy on their continence outcomes.

**Methods:** A retrospective review of 426 patient on AS who underwent delayed RP. Clinico-pathological and continence data was collected. Early continence was defined as use of 0 pads at 3 months, while continence was defined as 0 pad use at 12 months.

**Results:** The mean age at RP was 61 years and median time from biopsy to RP was 2 years. The median mean PSA preop was 5.53 ng/dl. 96 (22.5%) and 178 (41.8%) patients had apical and lateral prostate tumors respectively. Age at RP, prostate volume, Gleason score at biopsy and nerve preservation had no effect on continence. Longer median time from biopsy to surgery (p = 0.001) was associated with worse early continence. Patients with apical lesions were less likely to have early continence (36.4% vs. 51.7% p = 0.04) and continence at 12 months (71.1% vs. 84.5% p = 0.037). For patients with apical lesion, the number of biopsies negatively impact early and 12 months continence (p = 0.042 and p = 0.037, respectively).

**Conclusion:** AS patients with apical lesions, higher biopsy number and longer time from biopsy to RP have worse continence rates.

102

**Bladder Irrigation Sensor System (BLISS) Device – an Automated CBWO Monitoring Device**

Ma Victoria Dela Cruz Gonzalves<sup>1</sup>, Lui Shiong Lee<sup>1</sup>, William Wei Liang Ng<sup>1</sup>

<sup>1</sup>Department of Urology, SKH, <sup>2</sup>Department of Advanced Clinical and Specialty Nursing, SKH

**Introduction and Aims:** Continuous Bladder Washout (CBWO) is common and requires intensive and frequent checks to prevent complications. The BLISS device is designed to augment early detection of disruption to CBWO by measuring the rate of change in the weight of the urinary bag. The earlier detection of interruption to continuous flow in CBWO may improve safety by reducing morbidities of bladder over distension and perforation and reduce the need for intensive manpower monitoring currently employed.

**Materials and Methods:** BLISS is operational based on the changing weight of the urine bag while it is being filled. Laboratory testing showed BLISS to be capable of the following technical specifications: detectable flow rates between 10 ml/min to 180 ml/min, detectable target volumes (in the urine bag) between 100 ml to 5000 ml, and the flow rate time of 20s to 180s. BLISS was able to emit an auditory alarm when user set thresholds were breached (within the operational ranges described above). The device is powered by a chargeable battery and is installed easily to a conventional hospital bed.

**Conclusions:** BLISS has been validated in dry laboratory testing and is planned for clinical trials in the near future. This device may be applied in a variety of clinical settings requiring the deployment of CBWO.

8	18
<p><b>Robotic Assisted vs. Traditional Laparoscopic Partial Nephrectomy Outcomes: A Single Surgeon Comparative Study</b>            Dr. Gerard Bray<sup>1</sup>, Dr. Arya Bahadori<sup>1</sup>, Mr. Derek Mao<sup>2</sup>  <sup>1</sup>Gold Coast University Hospital, <sup>2</sup>Bond University</p> <p><b>Introduction &amp; Objectives:</b> There are still no clear differences between robotic assisted and the traditional laparoscopic partial nephrectomy (RAPN) with regards to other peri-operative, post-operative and oncological outcomes. Current limitations in the field denote the lack of single surgeon series to compare the two approaches as other studies often include multiple operators of different experience levels. The current study aims to assess the differences in outcomes between the two approaches.</p> <p><b>Methods:</b> We retrospectively compared patient demographics, peri-operative outcomes and renal function of all partial nephrectomies undertaken by a single surgeon with experience in both laparoscopic and robotic surgery. All numerical results from each outcome and group were combined for statistical analysis using GraphPad Prism (version 7.03).</p> <p><b>Results:</b> A total cohort of 95 patients underwent LPN (N = 49) or RAPN (N = 46) between the dates June 2017 to June 2021. The robotic and laparoscopic cohorts had similar age, co-morbidities and pre-operative renal function. Warm ischaemia time, length of stay and acute renal function deterioration were all significantly reduced with RAPN, compared to LPN. There were no significant differences in positive margin rates.</p> <p><b>Conclusions:</b> RAPN is a safe and effective approach which in our study displayed multiple benefits compared to LPN. Benefits of RAPN include quicker operative times, reduced clamp time, earlier hospital discharge and improved acute renal function. This represents the first single surgeon study to highlight these advantages. Further large-scale prospective trials are required to further explore the role of robotics in renal preservation surgery.</p>	<p><b>Renal Endometriosis: A Rare Disease Treatable with Holmium Laser Ablation</b>            Dr. Jingqiu Li<sup>1</sup>, Dr. Vipatsorn Shutchaidat<sup>1</sup>, Dr. Kae Jack Tay<sup>1</sup>, A/Prof. Henry Sun Sien Ho<sup>1</sup>, Dr. Jin Yong<sup>1</sup>  <sup>1</sup>Singapore General Hospital</p> <p><b>Introduction:</b> Endometriosis predominantly affects reproductive organs but can also be found in non-reproductive organs, including the urinary system. Renal endometriosis is extremely rare. There only have been 16 histology-proven renal endometriosis reported over the past 30 years.</p> <p><b>Case Presentation:</b> A 38-year-old female with a history of glomerulonephritis was referred to our center for microscopic hematuria. She denies any urinary symptoms or cyclical hematuria. Contrast-enhanced ultrasound of the kidneys and computer tomography (CT) urography showed a solid mass arising from the right upper calyx and extending to the renal pelvis. All treatment options, including active surveillance, ureterorenoscopy with biopsy, and partial or radical nephrectomy, were discussed with her in great detail. Given her age and the size of the mass, the patient was recommended to consider ureterorenoscopy with biopsy. The patient decided to proceed with ureterorenoscopy, which showed a sizeable polypoidal lesion protruding into the renal pelvis. Biopsy was taken from the lesion, and histology was suggestive of endometriosis. The patient subsequently had high-powered Holmium laser ablation of the lesion with a flexible ureteroscope, using a laser setting of 1J 15Hz. The total laser time was eleven minutes. She was discharged well on the same day with no intra-operative or post-operative complications. Follow-up imaging at six months post-operatively showed complete ablation of the lesion with no recurrence.</p> <p><b>Conclusion:</b> Renal endometriosis is a rare disease with limited evidence available suggesting the optimal management. Here we report a case of biopsy-proven renal endometriosis, which was successfully treated with endoscopic holmium laser ablation.</p>
12	24
<p><b>The LAPE Pouch: A Solution to Specimen Storage in Total Extra-peritoneal RLRP</b>            Dr. Ee Jean Lim<sup>1</sup>, Dr. Alvin Lee<sup>1</sup>, Dr. Yuguang Tan<sup>1</sup>, Dr. Yan Mee Law<sup>2</sup>, Dr. Tze Kiat Ng<sup>1</sup>, Dr. Kenneth Chen<sup>1</sup>, A/P John Shyi Peng Yuen<sup>1</sup>  <sup>1</sup>Department of Urology, <sup>2</sup>Department of Diagnostic Radiology</p> <p><b>Introduction:</b> We describe a novel creation of a triangular extra-peritoneal space bounded by the lateral abdominal wall laterally, peritoneal reflection medially and inferior epigastric vessels distally (the LAPE pouch) that serves as an ideal entrapment pouch for specimen storage in TEP-RLRP.</p> <p><b>Patients and Methodology:</b> 50 consecutive patients underwent TEP-RLRP with the creation of the LAPE pouch for specimen storage. Inclusion criteria for TEP-RLRP were: (1) BMI <math>\leq</math> 35 kg/m<sup>2</sup>, and (2) MRI prostate volume of <math>\leq</math> 80 ml. Patient's demographics, intraoperative data (LAPE creation time, blood loss) and post-operative complications were analyzed. The step-by-step technique of LAPE pouch creation is as follows: (1) creation of extra-peritoneal space; (2) identification of key anatomical boundaries; (3) blunt dissection to create the LAPE pouch; (4) the fourth robotic port insertion at the tip of the LAPE triangular.</p> <p><b>Results:</b> The mean age of patients was 66 years (51-77), mean BMI of 24.6 kg/m<sup>2</sup> (19.8-34.8), mean PSA of 7.9 ng/ml (1.4-18), and mean MRI-measured prostate volume of 45.1 ml (20-80). Mean dissection time for LAPE pouch was 1.4 minutes (1.0-3.1). All specimens were successfully placed in the pouch with only one (2%) specimen displacement after placement intraoperatively. There were no complications because of LAPE pouch creation or use. Mean final prostate size corresponds well with MRI-measured prostate volume (47.9 gram vs. 45.1 ml).</p> <p><b>Conclusions:</b> This study presents a novel, safe and easy technique in creating an additional triangular extra-peritoneal space that overcome the pitfall of TEP RLRP in specimen storage.</p>	<p><b>Symptomatic Gall Bladder Polyp Diagnosed as Solitary Renal Cell Carcinoma Metastasis 4 Years Following Nephrectomy: A Case Report</b>            Dr. Gerard Bray<sup>1</sup>  <sup>1</sup>Gold Coast University Hospital</p> <p>Renal cell carcinoma (RCC) is among the most common cancers worldwide where metastatic disease carriers a poor prognosis. Herein, we present a 74-year-old male presenting with a symptomatic solitary metachronous metastasis to the gall bladder 4 years following nephrectomy for RCC. Solitary RCC metastasis to the gall bladder following nephrectomy is rarely reported in the literature and brings with it a clinical conundrum. Herein, surgical excision with a cholecystectomy was employed without systemic therapy. Evidence in the current literature depicts that solitary metastectomy is justified and associated with improved long-term survival in this subset of patients.</p>



25

32

**First do no Harm: Is there a Role for Salvage Brachytherapy for Recurrent Prostate Cancer after External Beam Radiotherapy or Brachytherapy in Low Volume Centres**

Dr. Arya Bahadori<sup>1</sup>  
<sup>1</sup>Redcliffe Hospital

**Introduction & Objectives:** Prostate cancer remains one of the most significant male cancers worldwide. Radical prostatectomy (RP) and external beam radiation therapy (EBRT) remain the two most unequivocally effective and popular therapies for localised prostate cancer. The current local salvage therapy options include RP, brachytherapy, high intensity focussed ultrasound (HIFU), cryotherapy and stereotactic body radiotherapy (SBRT). Salvage brachytherapy is one such effective technique as a salvage treatment post-EBRT and brachytherapy however its safety profile remains a contentious issue. Therefore, we review the side effects experienced by patients in our centre.

**Methods:** Between January 2015 and January 2021, 8 patients with local recurrence of prostate cancer post radiotherapy or brachytherapy, underwent salvage brachytherapy for further management of their disease. Toxicity was assessed in their subsequent follow ups.

**Results:** Median follow up after salvage brachytherapy was 24 months. Overall, there was 1 case of haematochezia, patient was initially treated with EBRT (he underwent colonoscopy which showed proctitis). 2 patients complained of urinary urgency and frequency. 5 patients denied any urinary or bowel symptoms post treatment.

**Conclusions:** Even though salvage brachytherapy is not an established and common treatment in post EBRT or BT recurrent prostate cancer, it offers a safe alternate of slowing down the progression of the disease without causing any harm to patient. Longer follow up period is recommended in order to ensure the safety of this procedure.

**Renal Cell Carcinoma Metastasis to the Maxillary Sinus. A Case Report and Literature Review**

Dr. Arya Bahadori<sup>1</sup>  
<sup>1</sup>Redcliffe Hospital

**Introduction and Objectives:** Distant metastases of clear cell renal carcinoma to the maxillary sinus is very rare. We report a case of a 61 year old man with history of RCC, presented 4 years after nephrectomy with facial pain and visual disturbances post teeth extraction in February 2022. CT Head showed a large aggressive hyper enhancing left maxillary sinus tumour involving the left nasal cavity with the obstructive maxillary sinus causing pressure erosion of floor of left orbit. CT CAP and FDG PET did not show any other metastasis. He underwent Examination under anaesthetic and biopsies from the left sinonasal tumour confirmed metastatic renal cell carcinoma of clear cell type. Tumour was surgically resectable so patient underwent pre op embolization and surgical resection.

**Method:** We conducted a MEDLINE literature search using the keywords renal cell cancer, renal carcinoma, sinus, nose, head and neck, metastasis, and distant.

**Results:** The most common complaints are epistaxis, nasal obstruction and diplopia. Survival overall is significantly better in patients who had isolated metastasis. Adjuvant radiotherapy was not associated with better outcome.

**Conclusion:** Metastatic renal cell carcinoma to the maxillary sinus is rare and has unpleasant symptoms. Surgical resection, radiotherapy or surgical resection and adjuvant radiotherapy are the common treatment options. Urologists should be made aware of these symptoms so that prompt diagnosis can be achieved during surveillance for RCC.

28

38

**Skin Metastasis from Prostate Cancer. A Case Report and Review of the Literature**

Dr. Arya Bahadori<sup>1</sup>  
<sup>1</sup>Redcliffe Hospital

**Introduction & Objectives:** Prostate cancer is one of the most common cancers among men worldwide and in Australia. Most prostate cancers progress either locally invading the seminal vesicles or distant metastasis to bone. Skin is not a common site of metastasis. We report a case of a 67-year-old man with known metastatic (lymphatic) castrate resistant prostate cancer previously treated with hormone therapy and chemo therapy who suffered out of hospital cardiac arrest likely secondary to Fournier's gangrene sepsis. He underwent extensive debridement and the histo-pathology of the scrotal, penile, suprapubic and bilateral groin tissue showed poorly differentiated adenocarcinoma with extensive lymphovascular invasion with immunohistochemistry in keeping with prostatic origin.

**Method:** We performed an online database search on papers on management metastatic prostate cancer to skin.

**Results:** Skin metastasis in prostate cancer is rare with around 100 cases reported worldwide in the literature. If prostate cancer metastases to the skin then it is almost always late in its course. Per literature review these metastases are usually localised to the abdominopelvic region, distributed to the inguinal region and penis, abdomen, head and neck, chest, extremities, and back.

**Conclusions:** Skin metastasis is found to present late in the disease and is associated with poor prognosis.

**Thulium Fiber Laser vs. Holmium Laser for Enucleation of Prostate (ThuFLEP vs. HoLEP) in Treatment of Benign Prostatic Hyperplasia, from the Surgeon's Perspective**

Dr. Lin Kyaw<sup>1</sup>, Dr. Karthik Thandapani<sup>1</sup>, Dr. Pradeep Durai<sup>1</sup>, Dr. Vineet Gauhar<sup>1</sup>, Dr. Sarvajit Biligere<sup>1</sup>  
*Division of Urology, Department of General Surgery, Ng Teng Fong General Hospital*

**Introduction:** Endoscopic enucleation of prostate (EEP) has been established as standard of care in the treatment of benign prostatic hyperplasia (BPH) with excellent outcomes. EEP can be performed with various energy sources such as- Holmium:YAG (HoLEP), Thulium:YAG, Bipolar/Monopolar electrodes. Recently, Thulium fiber laser (TFL) has been developed. Having close wavelength to Ho:YAG, its application is not limited to treating urolithiasis, but to soft tissue as well. TFL in EEP (ThuFLEP) has been previously showcased. We report our initial experience comparing HoLEP vs. ThuFLEP from the surgeon's perspective, highlighting intra-operative differences in soft tissue response and challenges.

**Materials and Methods:** Video presentation showcasing differences between HoLEP and ThuFLEP(using Fiberdust) at various stages of the operation. The surgical techniques and laser settings are described in Table1.

**Results:** Both patients in the video have similar baseline characteristics (Table2). Compared to HoLEP, ThuFLEP generally results in greater degree of carbonization making it difficult for recognizing correct tissue planes. Obliteration of surgical planes leads to more mechanical pushing of the prostatic tissue during enucleation. Hemostasis in ThuFLEP might also be more inferior compared to HoLEP due to lesser depth of penetration of the laser (Table2).

**Conclusions:** Our initial experience with ThuFLEP, showed comparable overall results to HoLEP. However, it is the opinion of the surgeons that the increased carbonization of soft tissue and inferior hemostatic effect in ThuFLEP may lead to a higher learning curve for surgeons trying to learn EEP. Further RCTs are needed to evaluate outcomes of ThuFLEP as compared with HoLEP.

45	50
<p><b>Looking at the Trend in Use of ESWL vs. Laser Lithotripsy for Management of Renal Stones in Australia Over the Last 25 Years</b> Dr. Arya Bahadori<sup>1</sup> <sup>1</sup>Redcliffe Hospital</p> <p><b>Introduction:</b> Treatment of renal stones have changed significantly over the last few decades. There are many options for urologists to treat renal stones including Extracorporeal Shock wave Lithotripsy (ESWL) and Holmium laser lithotripsy. Given that both procedures are minimally invasive and effective for stone clearance, we look at the trend for the usage of these two methods in Australia (in the private sector) over the last 25 years.</p> <p><b>Method:</b> Medicare statistics Webpage was searched for item numbers for ESWL (36546) and pyeloscopy/ureteroscopy and destruction of stone using laser (36656, 36809) between January 1997- December 2021.</p> <p><b>Results:</b> There were a total of 71105 ESWLs performed throughout Australia over the last 25 years. Victoria had the most cases with 28732 followed by NSW at 25434 and Queensland at 10289. The highest number of cases were treated in 2002 with 3743 cases being treated. Overall, the numbers treated have been slowly down trending with only 1819 cases in 2021. Laser lithotripsy on the other hand was performed in 177600 patients in total. 74512 in Victoria followed by NSW and Queensland. Overall numbers treated have been rapidly increasing with the highest year being in 2021 where 15993 cases were treated.</p> <p><b>Conclusion:</b> We believe that advances in ureterorenoscopy over the past two decades have reduced complication rate and increased success rate in using laser to treat renal stones. Also the success of ESWL depends of the competency of the lithotripter as well as size, location and composition of the stones and patient's habitus which can limit the use of this method.</p>	<p><b>The Rise and Fall of Percutaneous Nephrolithotomy in Australia</b> Dr. Arya Bahadori<sup>1</sup> <sup>1</sup>Redcliffe Hospital</p> <p><b>Introduction:</b> According to European Urological Association guidelines, percutaneous nephrolithotomy (PCNL) is considered to be first line treatment for large and complex renal stones (<math>\geq 2</math> cm). Though its efficacy is unbeaten compared to other minimally invasive modalities, it comes with higher morbidity. We looked at the number of cases who underwent PCNL in Australia in private practice between 1994 and 2021 to better understand its popularity over time.</p> <p><b>Method:</b> The medicare item numbers for percutaneous nephrolithotomy was found on the MBS online medicare benefits schedule. The 2 numbers used were 36639 and 36645.</p> <p><b>Results:</b> As you can see from the graph there is a bell-shaped curve based on numbers treated between 1994-2021 with a total of 8963 cases in Australia. The highest number of cases were treated in 2006 with 427 PCNLs being performed privately. Interestingly there were 228 cases treated in 1994 compared to 224 in 2021 and 241 in 2019 prior to the pandemic.</p> <p><b>Conclusion:</b> The number of PCNLs has been reducing steadily over the last few years. We hypothesise that innovation and more advanced surgical equipments/techniques has allowed urologists to be able to deal with large renal stones using the retrograde approach avoiding PCNL given the higher morbidity associated with this procedure. Other reasons could include advances in imaging techniques identifying patients with renal stones mch earlier. Further research into this area is required to shine a light on the reasons behind the decrease in number of PCNLs privately in Australia.</p>
<p><b>46</b></p> <p><b>Are We Performing More Partial Nephrectomies Compared to Radical Nephrectomies Privately in Australia? Looking at the Data for the Last 15 Years</b> Dr. Arya Bahadori<sup>1</sup> <sup>1</sup>Redcliffe Hospital</p> <p><b>Introduction:</b> First partial nephrectomy was completed in 1887 but it took over a century to become recommended practice. Kidney sparing approaches have become the gold standard for management of small renal masses and have shown to be equivalent to radical nephrectomy for oncological outcome. These can be performed open, laparoscopically and more recently robotic assisted. We look at the number of partial nephrectomies and radical nephrectomies performed in Australia in private care in the last 15 years.</p> <p><b>Method:</b> Australian government website for medicare statistics was searched for item numbers for Radical nephrectomy (36516) and partial nephrectomy (36522) between January 2007- December 2021.</p> <p><b>Results:</b> There was a total of 2304 radical nephrectomies performed with overall increase of only 220% between 2007 and 2021. 8728 partial nephrectomies were performed in the last 15 years with year 2021 being the highest year (909 cases). Overall, the numbers treated have increased by 375% compared to 2007.</p> <p><b>Conclusion:</b> Kidney cancer incidence has been steadily increasing largely due to modern widespread use of imaging with around 70% of cases being incidentally detected and are often less than 4cm in size. Urologists have a proud history of embracing innovation and new techniques as well as the extensive research in benefits of kidney sparing operations, where possible, partial nephrectomy is preferred therefore a larger overall increase. However more research is required to further investigate this hypothesis.</p>	<p><b>51</b></p> <p><b>A Safer Method for Identifying the Dysplastic Upper Pole Moiety of a Duplex Kidney Using Near-infrared (NIR) Fluorescence Imaging with Intravenous Indo-cyanine Green (ICG) During a Laparoscopic Left Heminephrectomy</b> Dr. Nigel Seng<sup>1</sup>, Dr. Chong Weiliang<sup>1</sup>, Professor Eu Kiang Sharon Yeo<sup>1</sup>, Professor Chong Yew Lam<sup>1</sup> <sup>1</sup>Mohh</p> <p><b>Introduction and Objective:</b> We present a case of a laparoscopic left heminephrectomy for bilateral duplex kidneys with completely duplicated ureters, with the utilisation of indo-cyanine green (ICG) intraoperatively to distinguish between the viable lower pole moiety from the dysplastic upper pole moiety after selective renal artery clamping.</p> <p><b>Methods &amp; Results:</b> Prior rigid cystoscopy with bilateral retrograde pyelogram revealed both the ectopic ureters to be emptying into the urethra, below the sphincter mechanism, with the right ectopic ureter entering the urethra at the 7 o'clock position and the left at the 2 o'clock position. The lower moiety ureter was first stented to allow ease of intra-operative identification and to facilitate the subsequent dissection of the upper moiety ureter. Both upper moiety renal artery and aberrant lower renal moiety artery were identified separately and isolated. Before transection, the upper moiety renal artery was selectively clamped with a laparoscopic bulldog clip and 5 mls of intravenous ICG was administered. Using NIR fluorescence imaging on a Karl Storz Spies ICG laparoscopic camera system, the demarcation between the unperfused upper moiety and the perfused lower moiety was clearly visualised. Intravenous ICG was re-administered to demonstrate that the perfusion to the lower pole moiety had been well maintained at the end of the case.</p> <p><b>Results:</b> The total operative time was 370 minutes and estimated blood loss was 200 mls. The patient recovered and was discharged on post-operative day 4.</p> <p><b>Conclusion:</b> Intraoperative NIR fluorescence imaging with ICG allows clearer differentiation of the upper and lower pole moiety for resection in laparoscopic heminephrectomy in duplex kidneys with duplicated ureters.</p>

53

60

**Bilateral Inguinal Sentinel Lymph Node Excision for Nodal Staging in a Patient with Penile Cancer**

Dr. Stefanie Goh<sup>1</sup>, Dr. Weida Lau<sup>2</sup>  
<sup>1</sup>Mohh, <sup>2</sup>NHG

For T2-T4 and T1 grade 2-3 clinically node negative penile cancers, invasive nodal staging is recommended via either dynamic sentinel node biopsy (DSNB) or modified inguinal lymphadenectomy (mILND), with the other alternative being upfront radical lymphadenectomy. DSNB has the advantage of decreased morbidity without compromising survival benefit, with a morbidity rate of 5.7% (including bleeding and wound infection) compared to 38.9% with mILND.

This video shows one of the few cases of bilateral DSNB performed in Singapore, for a patient with T2 grade 2 penile squamous cell carcinoma post partial penectomy. Lymphoscintigraphy was done on the day of the operation, showing sentinel lymph nodes bilaterally. The bilateral sentinel nodes were localised using both the gamma counter and methylene blue and excised.

The patient recovered well postoperatively. Histology showed the left inguinal node as positive for metastases, while the right inguinal node was negative. He then underwent a left radical inguinal lymph node dissection, with histology showing 0/14 lymph nodes involved, margins negative.

With the bilateral inguinal sentinel lymph node excision, the patient was able to avoid bilateral radical lymph node dissection, which is a procedure associated with much higher morbidity. Though dynamic sentinel lymph node biopsy is not commonly practised in Singapore yet, it is regarded in guidelines as a standard technique of invasive nodal staging and patients can benefit from the lower morbidity it provides.

**Successful Management of an Acutely Bleeding Giant Prostate with Prostatic Artery Embolisation Prior to Emergent Transurethral Resection of Prostate - a Video Case Report**

Miss Xanicia Long Jiahuan, Miss Lim Eejean, Mr. Nanda Kumar Karaddi Venkatanarasimha, Mr. Kenneth Chen, Mr. Aslim Edwin Jonathan  
<sup>1</sup>Ministry of Health Holdings, <sup>2</sup>Singapore General Hospital, Department of Urology, <sup>3</sup>Singapore General Hospital, Department of Radiology, <sup>4</sup>Singapore General Hospital, Department of Urology, <sup>5</sup>Singapore General Hospital, Department of Urology

**Introduction:** The bleeding large prostate presenting with clot retention can pose several challenges. Efficient bedside evacuation of clots is made difficult by unfavorable angulation at the bulbar urethra and straining from urinary retention. An emergency cystodiathermy often results in conversion to transurethral resection of the prostate (TURP). Significant intra-operative bleeding obscures endoscopic vision and necessitates blood transfusions. Prostatic artery embolisation (PAE) prior to TURP helps to significantly reduce bleeding.

**Case and Methods:** We present a case of a 68-year-old man who presented with clot retention secondary to hemorrhage from a 270 grams prostate. Bedside clots evacuation was difficult due to recurrent clot formation and difficult urethral catheterization. A suprapubic catheter (SPC) was inserted for urgent decompression and washout of clots. Computer tomography angiogram and urgent PAE were performed followed by bipolar TURP.

**Results:** 133 grams of prostatic chips were resected within 176 minutes. Good intra-operative visibility was achieved due to markedly reduced bleeding and efficient irrigation via SPC. Post-operative hemoglobin remained stable without the need for blood transfusions. He was discharged on postoperative day 3 after removal of all catheters with minimal residual urine, while preserving continence.

**Conclusion:** PAE in an acutely bleeding large prostate can be helpful in stemming bleeding, reducing the need for transfusions and converting an emergency case to a semi-urgent or even an elective one. TURP performed in the same setting is made optimal and safer with clear endoscopic vision and good hemostasis. This results in shorter hospital stay, quicker recovery and return to normal function

55

64

**Tips and Tricks to Avoid Intraoperative Complications in Robotic Kidney Surgery**

Dr. Chloe Ong<sup>1</sup>, A/Prof. Ho Yee Tiong<sup>1</sup>, Dr. Benjamin Goh<sup>1</sup>  
<sup>1</sup>Department of Urology, National University Hospital, National University Health System

Robotic kidney surgery has recently been more commonly performed by urologists globally due to expanding indications and surgical competency. When mastered, this modality enables surgeons to tackle complex, larger renal tumours, while ensuring the best outcome for patients – especially in terms of reduced intraoperative blood loss, shorter post-operative length of hospital stay and recovery time, and better preservation of renal function.

The volume of robotic kidney surgery has also been on the rise locally with improved access and competency. The team at National University Hospital (NUH) Department of Urology has built up a healthy volume of robotic operations and training programme in the last three years. However, the journey to surgical competency is not a direct and easy one, and it certainly helps to learn vicariously from the experience of others, saving us the pain of dealing with the same complications ourselves.

In this video, we present a challenging case of an otherwise healthy middle-aged male with left renal cell carcinoma and superimposed infection, who underwent a robotic left radical nephrectomy. We will focus on four intraoperative complications which occurred – bowel injury, splenic injury, nerve transection, and opening of the mesenteric window. For each instance, we will also show positive examples of alternative manoeuvres from other cases, or suggest ways that could have reduced the chances of these complications occurring.

**Penile Glans Resurfacing: A Video Representation for Treatment for Superficial Penile Cancer**

Dr. Zachery Yeo<sup>1</sup>, Dr. Weida Lau<sup>2</sup>  
<sup>1</sup>MOHH, <sup>2</sup>KTPH Urology

Penile glans resurfacing is a surgical technique for treatment for superficial penile cancer that has showed good oncological and cosmetic outcomes. We present the surgical steps and techniques to complete penile glans resurfacing surgery, and the cosmetic outcomes of this reconstructive surgical technique.

72

**Robotic Radical Hemi-nephroureterectomy for Upper Tract Urothelial Carcinoma in a Horseshoe Kidney: How We Did It**

Dr. Russell Tan, Dr. Jin Yong<sup>1</sup>, Dr. Ee Jean Lim<sup>1</sup>, Dr. Kenneth Chen<sup>1</sup>, Dr. Kae Jack Tay<sup>1</sup>, Dr. John Yuen<sup>1</sup>  
<sup>1</sup>Sgh

**Background:** The incidence of upper tract urothelial carcinoma (UTUC) is rare, with radical nephroureterectomy being the gold standard treatment, especially in young patients who have normal renal function. We present a case of a 54-year-old male with left UTUC in a horseshoe kidney, who presented with painless gross haematuria and had normal renal function. CT Urography demonstrated a 4cm soft tissue mass involving the entire left upper to mid pole of the horseshoe kidney, with a separate 0.5cm lesion in the lower-pole and multi-focal lesions in the bladder. TURBT and RIRS confirmed pTaHG TCC in the bladder and in the left hemi-renal pelvis.

**Methods:** The patient underwent robotic left radical hemi-nephroureterectomy. He was positioned in a right lateral position, and the da Vinci Xi surgical system (Intuitive Surgical, Sunnyvale, CA, USA) was used via a five-port curvilinear configuration just lateral to the umbilicus with two assistant ports. Pre-operative CT angiography confirmed complex arterial anatomy with at least 4 discreet arterial branches to the kidney. These were separately clipped and divided between hemoloks. The isthmus was identified just inferior to the IMA. Intravenous ICG was administered to evaluate for a demarcation point. Perfusion was however seen throughout the entire isthmus, likely arising from an isthmic artery from the aorta. This was subsequently ligated, and the isthmus was divided between pre-placed Stratafix sutures over sliding hemoloks. Distal ureterectomy was completed using a standard extra-vesical approach. Cystorraphy was performed and Mitomycin C was instilled intravesically at the end of the surgery. Surgery was completed in 225 minutes with an estimated blood loss was 100 ml. Histology returned as multi-focal TaHG TCC of the left renal pelvis with clear margins.

**Conclusion:** We demonstrate the successful use of a robotic system to perform hemi-nephroureterectomy. The challenges of operating on a horseshoe kidney include its complex and unpredictable arterial anatomy, need for medial dissection to the level of the aorta as well as division of the isthmus. A robotic system may be useful as it allows the surgeon to tackle these hurdles minimally invasively, through improved optics and dexterity.

89

**Utility of Antegrade Flexible Cystoscopy During Posterior Urethroplasty**

Dr. Clarissa Gurbani<sup>1</sup>, Dr. Weida Lau<sup>1</sup>  
<sup>1</sup>Kho Teck Puat Hospital

**Introduction:** Intraoperative identification of the proximal limit in pelvic fracture urethral injuries (PFUI) remains challenging. Conventional technique involves dissection over the tip of a metal sound which is passed through the suprapubic tract. We report our experience with antegrade flexible cystoscopy in localizing the proximal gap.

**Methods:** The patient is a 50-year-old Malay male with a known PFUI following a road traffic accident. Antegrade flexible cystoscopy was performed via the suprapubic tract, demarcating the proximal defect on perioperative urethrogram. The patient was repositioned to lithotomy and posterior urethroplasty was performed. The proximal end of the urethral defect was identified intra-operatively by direct vision antegrade cystoscopy with the Hosseini technique. A non-beveled needle was directed toward the cystoscope light into the bladder from below, receiving a 0.018 inch wire which was railroaded via the scope through the needle to the exterior. The proximal end was then circumscribed and resized with the aid of the guidewire reflecting the true lumen.

**Results:** Total operative time was 370 minutes. Recovery was uneventful and the patient was medically fit for discharge on postoperative day 1 after drain removal. A pericatheter ascending urethrogram on postoperative day 27 demonstrated no leak, and both indwelling and suprapubic catheters were removed on the same day following a successful trial off catheter with a Qmax of 16.6 ml/s and residual volume of 0mls.

**Conclusion:** Antegrade cystoscopy is a safe and effective method in localizing the proximal gap in posterior urethroplasty, thereby reducing morbidity associated with blind manoeuvres in this critical step.

80

**Robotic-assisted Laparoscopic Non-dismembered Side-to-side Tapered Neoureterocystostomy – A Novel Technique for Maximal Ureteric Vascular Preservation**

Miss Kit Mun Chow<sup>1</sup>, Prof. John Yuen<sup>1</sup>, Dr. Kenneth Chen<sup>1</sup>  
<sup>1</sup>Singapore General Hospital

**Introduction:** Reconstructive techniques for ureteric diseases can compromise vasculature in an already altered anatomy. We present a novel technique of managing an obstructed megaureter that preserves ureteric vasculature maximally while simultaneously achieving adequate drainage.

**Materials and Methods:** Our 57-year-old patient has a history of untreated congenital left megaureter and presented with progressive left flank pain. Pre-operatively, Mag3 renogram revealed obstruction in the dilated left upper tract but preservation of left kidney function (49%). Pre-op retrograde pyelogram showed a short segment VUJ stricture. A five-port configuration triangulating to the left pelvis was used. The dilated ureter was first identified over the iliac vessels and traced distally to the stricture which was left intact. Dissection was limited to the anterior aspect of the ureter, preserving the posterior adventitia and the blood supply within. A side-to-side anastomosis between the anterior ureteric wall proximal to the strictured segment and the left lateral bladder wall was performed over a stent. Tapering of the dilated ureter is achieved via excision of the redundant anterior ureteric wall, leaving the posterior-lateral half of the ureter intact.

**Results:** Operative time was 3 hours with minimal blood loss. The patient was discharged uneventful on day2 and urinary catheter was removed on day7. Retrograde pyelogram and ureteroscopy at 6 weeks confirmed patency of the neoureterocystostomy and tapered ureter, with marked improvement of pelviclyceal dilatation.

**Conclusion:** Robotic-assisted laparoscopic non-dismembered side-to-side tapered neoureterocystostomy for megaureter is a feasible and safe option that adheres to the principle of maximal ureteric vascular preservation.

91

**Surgical Outcomes of Laparoscopic Transperitoneal Total Right Adrenalectomy for Pheochromocytoma (with video)**

Dr. Samuel Lee<sup>1</sup>, Associate Professor Lui Shiong Lee<sup>1</sup>, Dr. Thomas Chan<sup>1</sup>  
<sup>1</sup>Sengkang General Hospital

**Aims:** To demonstrate the surgical outcomes of laparoscopic transperitoneal total adrenalectomy for right sided pheochromocytomas in a single centre in Singapore.

**Methods:** All patients with histologically proven pheochromocytoma who underwent right laparoscopic adrenalectomy in Sengkang General Hospital from 2019 to 2022 were included in this study. Preoperative, perioperative and postoperative data were collected retrospectively using electronic medical records.

**Results:** 5 patients underwent laparoscopic transperitoneal total adrenalectomy during the study period. 4 patients were females (80%), mean age at surgery 48.2 ± 8.56 years, size of tumor 5.64 ± 2.65 cm. Highest PASS score of 4. All patients received preoperative alpha and beta blockade, 40% received preoperative calcium channel blockade. Mean operative time was 189 ± 49 min, mean operative blood loss was 200 ml, maximum and minimum intraoperative systolic blood pressure was 195 mmHg and 45 mmHg respectively. None of the patients had positive resection margins on final histology. All patients were admitted to high dependency for postoperative monitoring and were transferred to the general ward on postoperative day 1. The average length of postoperative hospitalization is 2.2 days. No patient had postoperative complications Clavien Dindo grade 2 and above.

**Conclusions:** Our technique of total transperitoneal laparoscopic approach for right pheochromocytomas may be considered safe, and with good outcomes for large tumors.



99

**Technical Challenges During a Heminephrectomy for a Large Neuroendocrine Carcinoma Arising from a Horseshoe Kidney**

Dr. Han Jie Lee<sup>1</sup>, A/Prof. Lui Shiong Lee<sup>1</sup>, Dr. Thomas Chan<sup>1</sup>  
<sup>1</sup>Sengkang General Hospital

We are presenting a surgical video demonstrating some technical challenges encountered during a left laparoscopic converted to open radical heminephrectomy for a male patient who presented with a large left renal tumour within a horseshoe kidney.

A 54-year-old gentleman with a smoking history of 40 pack-years presented to the emergency department with left flank pain associated with gross haematuria. Physical examination showed a large ballotable mass in the left flank. There was no associated varicocele. His pre-operative eGFR was 95 ml/min/1.73m<sup>2</sup>. A CT Thorax, Abdomen and Pelvis revealed an organ confined, 14 cm x 7 cm x 14 cm heterogeneous tumour involving the left renal moiety of a horseshoe kidney.

The patient underwent laparoscopic converted to open left heminephrectomy and hilar node dissection. The case began with standard laparoscopic transperitoneal approach and ports placement. The left renal moiety was mobilised. The isthmus of the horseshoe kidney was divided between endoscopic staples. Inferior mesenteric artery was preserved. Conversion to open subcostal approach was made for safe hilar dissection. Multiple upper pole arteries, a single renal vein and the left proximal ureter were ligated and divided between surgical clips. Left heminephrectomy was completed with left adrenalectomy.

Operative time was 6 hours 18 minutes. Estimated blood loss was 350 ml. The patient was discharged on postoperative day 7. Histopathology showed a T2b neuroendocrine carcinoma with clear surgical margin, but 3 out of 5 hilar lymph nodes showed micrometastatic disease. His latest eGFR was 60 ml/min/1.73m<sup>2</sup> and his surveillance Dotapeptide scan showed no recurrent or metastatic disease.