USANZ 2023 Conference Review™

Making Education Easy

25-28 February 2023, Melbourne, Australia

In this issue:

Abbreviations used in this issue:

BMI = body mass index; **CT** = computed tomography; **NMIBC** = non-muscle-invasive bladder cancer; **OR** = odds ratio; **PET** = Positron Emission Tomography; **PPV** = positive predictive value; **PSA** = prostate-specific antigen; **PSMA** = Prostate Specific Membrane Antigen; **RCT** = randomised controlled trial; **TURBT** = transurethral resection of bladder tumour; **WHO** = World Health Organization.

Welcome to our review of the Annual Scientific Meeting of the Urological Society of Australia and New Zealand (USANZ), held in Melbourne in February. This internationally recognised meeting is the largest society-based annual urology meeting in the southern hemisphere and involved both local expertise within USANZ, and an exceptional line-up of international faculty. For this review, I have selected and reviewed some of the latest and most exciting developments in urology presented at the meeting.

I hope you find this review interesting reading and welcome your feedback.

Kind Regards,

Professor Eric Chung

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AstraZeneca Platinum Trophy: Named in honour of the ASM Platinum Sponsor, the Platinum Trophy is awarded for the best endeavour presented at the ASM by a Full Member of USANZ. Awarded to Professor Eric Chung

A randomised, controlled trial on the role of PDE5i drug for penile rehabilitation in Peyronie's disease surgery: Clinical outcomes and patient satisfaction rate following penile plication surgery

Authors: Chung E

Summary: This RCT assessed the effect of oral phosphodiesterase type 5 (PDE5) inhibitors to prevent or minimise altered glans sensation and erectile dysfunction after penile reconstructive surgery for Peyronie's disease (PD) in 80 males receiving "normal care" versus early PDE5 inhibitor use following penile plication surgery (≥24 hours post-operatively). There were no differences in patient demographics between groups and no intraoperative complications. Penile bruising (Clavien Dindo grade 1) did not differ between normal care and PDE5 inhibitor recipients (18 vs 19; $p > 0.05$). PDE5 inhibitor recipients reported greater sexual function (International Index of Erectile Function [IIEF-15] questionnaire) scores than normal care recipients ($p < 0.05$) with no change in penile glans sensation ($p > 0.05$). Overall patient satisfaction (≥4 on 5-point scale) was higher in PDE5 inhibitors versus normal care recipients (93% vs 70%; $p < 0.05$).

Comment: Penile reconstructive surgery for PD can often be challenging due to the complexity of penile deformity, potential surgical complications and meeting the patient's (often unrealistic) expectations. This award-winning RCT showed the early use of PDE5 inhibitors in the post-operative period can improve sexual function and overall patient satisfaction rates. Without a doubt, penile reconstructive surgery provides the fastest, most reliable, and most sustained clinical outcomes for the correction of PD. The selection of the appropriate surgical reconstruction for each patient depends on many factors, including an in-depth understanding of the state of PD; patient's expectations related to the outcomes of surgical intervention; and anticipated adverse surgical outcomes such as the risks of persistent or recurrent curvature, penile length loss, erectile (sexual) dysfunction, and/or reduced sexual sensation. The most critical part of the surgeon's role in the pre-operative stage is to set appropriate expectations for the patient, obtain adequate informed consent regarding potential surgical complications, and manage any post-operative complications judiciously.

Reference: BJU Int 2023;131(S1):4-82

Abstract

BAUS Trophy: This award was established in recognition of the Society's enduring relationship with the British Association of Urological Surgeons. It is for the best scientific podium presentation by a Full Member of USANZ. Awarded to Associate Professor Peter Chin

Varicoceles and Iliac vein compression: Understanding aetiology and treatment failure

Authors: Chin P and Villalba L

Summary: This study was undertaken to compare the incidence and severity of left common iliac vein compression (LCIVC; May-Thurner Syndrome) in 80 men with a varicocele with the published LCIVC incidence in asymptomatic men and assess the incidence of left gonadal incompetence on duplex ultrasound as an explanation for varicocele treatment failure. Overall, 91.2% had a LCIVC ≥25% versus an incidence in asymptomatic men of 29.4% ($p < 0.001$). LCIVC ≥50% (severe compression) occurred in 67.5%% versus 6.9% in asymptomatic men ($p < 0.0001$). There was no correlation between WHO varicocele grade and degree of compression. Incompetent gonadal veins were observed in 23% of men, 16% of men with varicoceles had retrograde flow through the left internal iliac vein and 8.8% had recurrent varicocele, all with severe LCIVC. Average gonadal vein size was 4.1 mm. Iliac vein stenting was undertaken in 8% of patients for severe compression and symptoms, while 75% required monitoring and were provided with information on deep vein thrombosis.

Comment: May-Thurner syndrome is a clinical sequela of LCIVC between the right iliac artery and the spine and can be responsible for lower extremity oedema, venous thromboembolism, and varicosities (varicocele in males and ovarian varicosities in females). In this award-winning study, men with varicoceles had a higher incidence of LCIVC ≥25% (significant compression) and LCIVC ≥50% (severe compression) than asymptomatic men. This high incidence of LCIVC in men with a varicocele suggests that a varicocele is an "escape" vessel for increased pelvic venous pressure since only 23% of men demonstrate gonadal vein incompetence. Published literature has highlighted several pathophysiologic mechanisms for primary varicoceles such as the dilation and reflux secondary to the angle of gonadal vein entering in and the differential venous pressure in the renal vein, as well as the presence of incompetent venous valves and variations in gonadal vein drainage. Hence, identifying the underlying causative factor for a varicocele is important to ensure the right treatment is offered to the patient to maximise the clinical success rate.

Reference: BJU Int 2023;131(S1):4-82
Abstract

Low-Arnold Award in Female and Functional Urology: This award is presented to the person with the best podium or poster presentation in the field of Female or Functional Urology by a Full Member of USANZ. Awarded to: Dr Sandra Elmer

Mesh-free surgical management of apical pelvic organ prolapse: A comparative study of vaginal sacrospinous fixation v robot assisted suture hysteropexy

Authors: Elmer S et al.

Summary: This prospective clinical audit compared robot assisted/laparoscopic suture hysteropexy and vaginal sacrospinous fixation as mesh-free techniques for managing apical pelvic organ prolapse (POP) in 115 women. Post-operative review was undertaken 736 days after suture hysteropexy and 565 days after sacrospinous fixation. There was no difference in median post-operative Pelvic Organ Prolapse Quantification (POP-Q) C point (lowest edge of the cervix or vaginal cuff; -8 vs -7 cm), nor in procedure success rate (postop C point <0; 90.2% vs 92.5%), or reoperation rates for apical recurrence (1.9% vs 6.6%; OR 0.26; 95% CI 0.03 to 2.43) between the two procedures.

Comment: It is estimated at least one-third of women will suffer POP in their lifetime. The current standard intervention for apical POP is mesh sacrocolpopexy or sacrohysteropexy. However, patients and surgeons are increasingly hesitant to use mesh given various medicolegal issues and warnings from various governmental and scientific organisations. A possible alternative is to use autologous tissue to support the vault, as a mesh-free solution and this limits the risks of "mesh-related" complications. In this award-winning study, robot-assisted/laparoscopic suture hysteropexy and vaginal sacrospinous fixation have been shown to be safe and effective to treat apical POP. While there was no difference detected in the clinical outcomes, other (equally) relevant parameters such as cost analysis, long-term durability, and return to work (or time off work) need to be factored in. At present, prospective patients should be counselled about the lack of long-term and RCT data. Accurate audit and monitoring of various outcomes are necessary to support the employment of autologous rectus fascia sheath sacrocolpopexy and sacrohysteropexy techniques in the wider primary POP population.

Reference: BJU Int 2023;131(S1):4-82
Abstract

The Keith Kirkland Award: Awarded for the best presentation by a SET Urology Trainee in the Keith Kirkland and Villis Marshall session at the USANZ ASM. Awarded to Dr Bradley Reynolds.

Outcomes of transurethral resection alone in high-grade non-muscle-invasive bladder cancer patients: Who really needs BCG?

Authors: Reynolds B et al.

Summary: This single-site, retrospective cohort analysis examined outcomes in patients with high-grade non-muscle-invasive bladder cancer (HG-NMIBC) who did (n = 69) or did not (n = 102) receive early Bacillus Calmette-Guérin (BCG) as adjuvant therapy. Over a mean follow-up of 5.6 years, recurrence rates for patients with pTa high-grade (TaHG) disease did not differ between groups. Patients with solitary TaHG disease were >3-fold more likely to remain recurrence-free (OR 3.41; 95% CI 1.498-7.748; $p < 0.05$). Recurrence-free survival at 3 years did not differ between those receiving early BCG (71%) versus no BCG (63%).

Comment: Intravesical instillation with BCG is the recommended adjuvant therapy in patients with HG-NMIBC. Although BCG is more effective in preventing tumour recurrences than intravesical chemotherapy, non-responsiveness to BCG is observed in more than 25% of HG-NMIBC patients within 5 years. This study reported that patients who did not receive early BCG appear to have superior survival outcomes compared to historical cohorts, and those with small solitary TaHG disease did not benefit from early BCG (recurrence-free survival at 3 years was 71% in early BCG vs 63% in those that avoided BCG). While the response to intravesical BCG therapy is an important prognostic factor, the landscape of therapeutic options for NMIBC is evolving with promising new agents and various delivery methods under investigation. Bladder cancer is a heterogeneous disease that poses unique challenges to the treating clinician, and risk stratification beyond traditional clinicopathologic features of the disease with the incorporation of molecular subtyping and tumour genetic sequencing data can add further diagnostic sophistication and treatment personalisation.

Reference: BJU Int 2023;131(S1):83-89
Abstract

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Villis Marshall Award: This award is given to the best presentation of a study by a SET Urology Trainee in the Keith Kirkland and Villis Marshall session at the USANZ ASM. Awarded to Dr Bashar Matti.

Predictors of testicular torsion in young males presenting with acute scrotum and external validation of the TWIST score

Authors: Matti B and Long K

Summary: This NZ study assessed clinical predictors of testicular torsion in 530 young males (median age 17 years) presenting with acute scrotum and validated the Testicular Workup for Ischaemia and Suspected Torsion (TWIST) score as a tool used to evaluate risk of testicular torsion. Multivariate predictors ($p < 0.05$) of testicular torsion were age <18 years, pain onset less than 24 hours, nausea or vomiting, scrotal swelling, testicular induration and abnormal testicular position (high riding or transverse lie). Diagnostic accuracy of the TWIST score high/low risk categorisation for positive/negative testicular torsion was high (receiver operator curve-area under the curve 0.866; 95% CI 0.819-0.913; $p < 0.001$).

Comment: Barbosa created the TWIST score based on five relevant clinical parameters, and the TWIST score is reported to have 100% negative predictive value (NPV) for low-risk group and 100% positive predictive value (PPV) for the high-risk group whereby it was suggested that Doppler is not required in low- and high-risk groups, and that patients in the high-risk group can be directly taken for surgical exploration. In this 10-year study period involving 530 young males presented to the emergency department with an acute scrotum, the diagnostic accuracy of high/low risk for positive/negative testicular torsion based on TWIST score was high (AUC 0.866). All international guidelines advocate for scrotal exploration without delay as a standard treatment for a suspected testicular torsion since the time between the onset of symptoms and detorsion is the major determinant of the early salvage rate of the testis. Nonetheless, the TWIST score can be used as an adjunct to clinical assessment of the scrotum and direct the decision between Doppler ultrasound and scrotal exploration to improve the patient's outcomes and clinician's decision-making.

Reference: BJU Int 2023;131(S1):83-89
Abstract

Machining accuracy in uro-urology diagnostics: A pilot study on the role of machine learning to diagnose penile cancer

Authors: O'Brien J et al.

Summary: This study used a machine learning algorithm to analyse 136 high quality colour images of penile lesions including 65 invasive penile squamous cell carcinomas, 44 malignancies in situ, and 27 benign lesions. Internal algorithm validation gave a sensitivity of 93% and specificity of 71%. Two penile cancer subspecialist urologists' agreement on image categorisation was 96%. Further image incorporation and validation is underway. The algorithm serves as an education, triage, and referral optimisation tool via a smartphone application.

Comment: Classical machine learning refers to the process of building algorithms that can learn from existing observations while deep learning provides additional layers of structured algorithms to create an "artificial neural network" that can learn and make intelligent decisions on its own. This interesting paper identified the (emerging) role of artificial intelligence (AI) in accurately categorising penile lesions with 96% subspecialist urologist agreement on image categorisation, while an internal validation of the algorithm demonstrated a sensitivity of 93% and specificity of 71%. While AI is proving to have high predictive accuracy, one needs to caution against the interpretability of complex conditions and the computational power of these neural networks. Nonetheless, as technology improves, it could help clinicians make more informed diagnostic decisions, while also helping patients choose suitable treatment options.

Reference: BJU Int 2023;131(S1):4-82
Abstract

A novel method to assess female voiding dysfunction: Is transpubic voiding sonography a reliable assessment of functional voiding in asymptomatic females?

Authors: Dellar B et al.

Summary: This study used concurrent uroflowmetry and ultrasound real-time imaging to assess inter- and intra-tester reliability of transpubic voiding sonography for assessment of functional voiding in 34 healthy asymptomatic women (mean age 34.5 years; BMI 24.2 kg/m^2). Static bladder neck displacement angle provided a constant point of reference during and after voiding. There were no differences in the measurements by both sonographers. Mean urethral diameter during voiding was 5.2 mm and urethral movement during pelvic floor activation (contraction angle) was 94.5°.

Comment: Clinical evaluation of patients with suspected dysfunctional voiding often includes voiding cystourethrography, some forms of imaging test, and urodynamic study (UDS). While UDS is considered the gold standard to objectively diagnose dysfunction of the lower urinary tract, it can be invasive and is associated with potential complications. Imaging studies such as ultrasound are non-invasive and may not provide a true picture (static images). In this study, transpubic voiding sonography has been shown to provide consistent and reproducible diagnostic tests with good intra- and inter-tester measure reliability in a group of healthy female volunteers. This new method can be used to provide an alternative, non-invasive and real-time evaluation of voiding dysfunction, and may serve as a useful adjunct to those who may not wish to undergo UDS.

Reference: BJU Int 2023;131(S1):4-82
Abstract

Oligometastatic prostate cancer: Evolving definitions in the era of PSMA PET

Authors: Alberto M et al.

Summary: This literature review explored definitions of oligometastatic prostate cancer (OMPC) using the search terms: prostate cancer, PSMA PET, metastatic disease, and oligometastatic. A number of definitions of OMPC have been proposed including 1-5 visceral or bone metastases. These definitions can be classified based on biology (de novo vs oligorecurrent vs oligoprogressive), location (visceral vs bone vs both) and volume/risk (low vs high). Historically, diagnosis of nodal metastatic disease was based on morphologic criteria (>10 mm) based on conventional imaging. PSMA PET allows earlier detection of OMPC through identification of lymph node metastases <10 mm. PSMA PET detection rates of OMPC are higher than with conventional imaging ($p = 0.005$) with a PPV of 95.2%.

Comment: The combination of PSMA-PET-diagnostic scan has been a diagnostic milestone in the situation of biochemical recurrence of prostate cancer and is gaining importance in those with OMPC. However, the clinical application of this method requires a comprehensive knowledge of its advantages and disadvantages, potential pitfalls and influencing factors. In this review, PSMA PET allowed earlier detection of OMPC with lymph node metastases <10 mm, while recent systematic reviews and meta-analyses have shown higher PSMA PET detection rates for OMPC compared to conventional imaging. Over the past years, a vast amount of data has been published on the diagnostic accuracy and the impact of PSMA PET/CT on patient management. However, the large heterogeneity between studies has made reaching a consensus difficult and despite our understanding of physiological and pathological PSMA expression, the immunohistochemical detection of a significant heterogeneity related to PSMA expression between the primary tumour and tumour metastases can affect the accuracy of PSMA PET/CT in metastases. Future studies should not only systematically evaluate the role of PSMA PET/CT in primary and recurrence diagnostics, but also address the use of PSMA PET/CT in the evaluation and outcome monitoring of systemic therapies.

Reference: BJU Int 2023;131(S1):4-82
Abstract

Feasibility of ethical surgical training using simulation and 3D printed synthetic organs

Authors: Costello D et al.

Summary: This study presented urological series of synthetic organ robotic procedures using 3D printing technology and hydrogel injection moulding to produce realistic synthetic models of anatomically correct insufflatable anterior abdominal wall for robotic port placement, and a robot assisted partial nephrectomy and radical prostatectomy models. Robotic surgery was performed by 16 surgeons (robot novice to expert) on five synthetic abdomens, 10 hydrogel partial nephrectomies and 20 radical prostatectomies. Clinically relevant performance metrics provided preliminary validity assessments that demonstrated face, content, construct, concurrent and predictive validity.

Comment: There is currently no standardised surgical college-accredited curriculum for robotic surgery and most hospitals have arbitrary criteria as to what constitutes adequate training. The aim of the procedural simulation is to develop surgical skills and experience prior to live surgery to optimise the surgeon's performance and minimise the patient's risks. This interesting study demonstrated the feasibility and preliminary educational validity of realistic synthetic human organ models for urological robotic surgery and proposed that these surgical models can offer a viable alternative to live animal surgery without the cost, ethical and accessibility drawbacks associated with animal training. At present, these synthetic surgical models are not mature and access to such simulation training is not readily available to everyone. Further studies are necessary to evaluate if these models can fully replace the benefits of live animals and cadaver training for surgical competency.

Reference: BJU Int 2023;131(S1):4-82
Abstract

WATIP: A pilot study of water irrigation post TURBT for preventing recurrence of NMIBC

Authors: Li M et al.

Summary: The prospective, single-arm WATIP pilot study assessed the safety and feasibility of water irrigation to prevent seeding of free tumour cells following TURBT in 30 patients (median age 67 years; 25 males) with a suspected bladder tumour (median tumour size 16 mm; 77% NMIBC). In total, 29 patients underwent irrigation, with a median post-operative duration of 3.0 hours. One grade 2 adverse event occurred, clot retention requiring irrigation. There were no differences in pre- and post-TURBT serum sodium or haemoglobin levels. Thirteen (59%) of 22 patients were recurrence free at 3-12-month surveillance cystoscopy.

Comment: Intravesical mitomycin C is considered a standard therapy post-TURBT for NMIBC in reducing the recurrence rate, but it is contraindicated when there is a concern for bladder perforation and its use is not without adverse effects. The use of water to lyse any residual floating tumour cells and prevent the re-implantation of cells into the bladder wall post-TURBT is exciting, safe, and cost-neutral. The concept of utilising irrigation for the eradication of residual tumour cells following surgery for cancer is not a new concept, nor is it limited to urology. In this WATIP pilot study, water irrigation during and for 3 hours after TURBT was associated with 59% recurrence-free rates at 12 months. NMIBC is often considered a chronic disease due to its high risk of future complications, including recurrence, which necessitates frequent monitoring and surveillance. The lifelong risk of recurrence and repeated interventions contributes to poor physician and patient compliance with published guidelines, and it significantly burdens the healthcare system from a financial standpoint. Therefore, strategies to prevent recurrence and future complications are paramount to reducing long-term morbidity and mortality as well as economic implications for the healthcare system.

Reference: BJU Int 2023;131(S1):4-82
Abstract

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Independent commentary by Professor Eric Chung

Professor Eric Chung is a consultant urological surgeon at the Andro Urology Centre for Sexual, Urinary and Reproductive Excellence and holds academic appointments at the University of Queensland (Brisbane) and Macquarie University Hospital (Sydney). He is the Leader of male LUTS and Past Chair of Andrology section in the Urological Society of Australia and New Zealand (USANZ), the Secretary-General for the Asia Pacific Society of Sexual Medicine (APSSM) and Chairperson for the Prostate Cancer Survivorship committee at the International Consultation on Sexual Medicine (ICSM). He has been invited to speak and operate at many international meetings and has authored more than 100 peer-reviewed papers and book chapters.