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Abstracts of the BAUS 2018 Annual Scientific Meeting

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THE BRITISH ASSOCIATION
OF UROLOGICAL SURGEONS



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President's Introduction

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On behalf of BAUS Council I am delighted to welcome you to the 2018 Annual Scientific Meeting. The feedback we received about the new format for BAUS last year was excellent and 2018 sees us build on this success. The meeting programme aims to be relevant to all of us in our working lives – the subjects cover both clinical issues as well as ones that support our health and well-being.

It is the 70th anniversary of the NHS this year and we have a session on Tuesday 26 June which will mark this milestone. While those of us on the front line continue to be challenged by the resources available to us to support the delivery of care, our patients have undoubtedly benefitted from innovations in the specialty and Professor Tony Young is leading a session on this important subject. James Green's session on quality improvement continues this theme and Simon Harrison will be giving an update on the Getting it Right First Time (GIRFT) project for Urology in his JCU address.

In addition to state of the art papers we are delighted, once again, to have a number of key opinion leaders joining us for the meeting. Professor Robert Wachter (Professor and Chair of the Department of Medicine, University of California in San Francisco) will be giving the BJUI Guest Lecture. Professor Wachter chaired the National Advisory Group on Health Information Technology in England which resulted in the publication of the Wachter Review advising the National Health Service on its digital strategy – a session definitely not to be missed. We are also delighted to welcome Professor Alan Partin, the 2018 St Paul's Medal winner, and Professor Sanjay Kulkarni, who will be receiving Honorary Membership of BAUS. They will both be speakers in the 'Global Urological Practice – Similarities and Differences' session being led by Duncan Summerton as well as participating in sessions throughout the week. We are grateful to all our international speakers for taking the time to travel to Liverpool and for their contributions to the scientific programme: confirmed speakers include Professor Ben Chew (Vancouver, Canada), Dr Matt Neilsen (Chapel Hill, North Carolina, USA), Dr Andre van der Merwe (Stellenbosch, South Africa), Dr Andrea Saloni (Milan, Italy), Dr Howard Goldman

(Cleveland, Ohio, USA) and Dr Frank van der Aa (Leuven, Belgium).

Last year we had a session entitled 'When things go wrong' which focused on the impact of adverse events. This year's BAUS Guest Lecturer is Mr David Sellu who has agreed to share his experiences with us – this promises to be a very thought provoking lecture. Professor Kevin Turner then brings us a session on 'AUR – Adverse Events, Urologists & Resistance' which will be relevant to all of us in our working lives.

The Academic Urology, Andrology (AGUS) and Female (FNUU) Sections are holding their annual meetings on Monday 25 June. There will be a joint session between Andrology (AGUS) and Female (FNUU) sections on Monday afternoon. On Wednesday Dominic Hodgson (Education Lead for FYs and CTs) is convening a meeting for core trainees in urology and we will also hope to welcome our first medical student members to our Annual Meeting – this new (non-voting) membership category was agreed by the BAUS Trustees in February and we are delighted they will become part of our very special Association.

The programme of courses will run again this year and, as ever, we advise if you plan to attend a Teaching or Skills Course - please book early as places are limited; we expect they will prove to be popular. We will be introducing a new Skills Course on MRI and Target Biopsy as well as new Teaching Courses on research methodology and the Urology Finishing School.

The meeting concludes on Wednesday afternoon with a session giving updates from each of the Sections and breaking news. This is a 'must attend' session and promises to give a fantastic overview of recent publications and developments in Urology over the past year.

The main social event of the meeting will be a drinks reception held on Monday 25 June in the iconic Liver Building. This will be a great opportunity to catch up with friends and colleagues.

Our thanks go to our colleagues from the pharmaceutical and equipment companies for continuing their very generous support of the Association's educational activities,

including meetings run by the Sections and courses run by the Education Committee. I hope you will show your appreciation by visiting their stands in the Medical and Trade Exhibition during the week. We have scheduled times into the programme to allow you to visit the exhibition hall.

I would like to thank Paul Jones (Honorary Secretary) and Asif Muneer (Honorary Secretary Elect) for leading the development of an exceptional and highly relevant meeting programme. Our thanks also go to members of the Programme Committee and Section Executive Committees for their hard work in putting together excellent sessions, to our Abstract Reviewers for reading and marking all the submitted abstracts, to Mr Sam Hampson for proof reading

the abstracts, to Maelstrom, our Exhibition Managers and, most importantly, to Hannah Doyle (Events Manager) and Harry Heald (Events Co-ordinator) in the BAUS Office for the enormous amount of work they have put into planning this meeting.

‘Scouse BAUS’ always proves to be popular – and I hope you will join me for my second, and final, meeting as BAUS President. I will be handing over the Presidency to Duncan Summerton at the meeting and would like to wish him every success in this most prestigious role. I look forward to seeing you at the meeting.

Kieran O’Flynn
President, BAUS

A Series of Fortunate Events: Harold Hopkins

Jonathan Charles Goddard^{1,2}

Abstract

Harold Hopkins is known to most urologists for his innovations in the field of endourology: fibreoptics which led to the flexible cystoscopes and ureteroscopes and the rod lens system that revolutionised rigid cystoscopy and endourological surgery. Of course these inventions have benefitted many other areas of medicine such as gynaecology, orthopaedics and gastroenterology. Harold Hopkins however was an optical physicist; his genius was not limited to medical devices. Indeed he could quite easily have concentrated his skills in theoretical physics, optical theory or applied it to optics and lenses in industry. In fact, he could have become an expert linguist eschewing science altogether. As a matter of fact Hopkins did all of these things but it was a series of coincidences that led him to pursue the path of optics and that brought him together with certain doctors in need of a genius with the ability to see novel approaches to their problems.

Keywords

Harold Hopkins, James (Jim) Gow, Karl Storz, Rod lens, optics, fibreoptics

In 1957 James Gordon Gow (Figure 1), a urologist in Liverpool, was becoming increasingly frustrated by his attempts to photograph tumours inside the bladder. Gow, a keen photographer, wished to record the images he saw down his cystoscope; he felt he was seeing an increase in the number of bladder tumours in his practice and wanted to include a photographic record of them in the patient's notes.¹ This is the beginning of the story. The end of the story (so far) can be seen by walking around the exhibition at this year's BAUS annual meeting in Liverpool and looking at the most up to date endoscopic equipment on offer, which allows us to see and operate with relative ease in the urinary tract. This is a story that we see often in life, of a series of events and decisions, of coincidences and actions that could lead one down many paths. The story has been told many times before and I'm not simply going to repeat it, I want to look at the Harold Hopkins story from the point of view of these multiple coincidences, which make a remarkably fortunate tale that has benefited urology immeasurably.

A change of headmaster

Harold Horace Hopkins was born on 6th December 1918 in Leicester; his father William Hopkins was a baker. The last child of six, Harold's family struggled financially in the

hard economic times of the 1920's and 30's. His father was often out of work; his mother, Teresa worked hard to educate and bring up her children well. Harold attended the local state school and Sunday school. His mother promoted extracurricular activities and encouraged him to take up free organ lessons at Church and took him to concerts of the Leicester Symphony Orchestra. Even at this early age Harold must have made an impression, as one of his teachers said to his mother, 'Mrs Hopkins, do you realise that your son is a genius?'.² His mother's encouragement paid off as in 1929 he won a scholarship to the local technical college, Gateway Grammar School. At Gateway he excelled in languages and literature but his headmaster felt not in science and he encouraged Harold to avoid those subjects. That headmaster was Harold Collett Dent (1894 – 1995), the first headmaster of Gateway College. As luck

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Figure 1. James Gow (1917 – 2001), Image provided by The Museum of Urology, BAUS.

would have it Dent left Gateway in 1931 to become a journalist, perhaps it was unsurprising he encouraged his talented pupil to pursue a literary path; he subsequently became editor of *The Times Educational Supplement*. The new headmaster, Mr E.C. White, who had an interest in science, recognised Hopkins' abilities in Maths and encouraged him.³ This lucky change of headmaster led to another scholarship and in 1936 Harold Hopkins moved up to University College Leicester to read Physics and Mathematics graduating in 1939.⁴ (Figure 2)

A Wartime administration error

After graduating, Hopkins began working in a Leicester optics company, Taylor, Taylor and Hopson; at this time optics and lenses were an important part of the war effort and he designed bomb aimers and gun sights.² As a skilled optics engineer he was in a reserved occupation and thus escaped the draft into active service. However, as often happens in wartime and in big companies, somewhere, somehow some paperwork was not correctly filled out; Hopkins found himself drafted into the army. Although this may seem like bad luck for Hopkins and for optical research it was actually a lucky coincidence, which in the future would make a surprising difference.

Hopkins was soon promoted to Lance Corporal (temporary and unpaid as he later amusingly remarked) he wasn't destined to remain in the forces long but he did make some good friends including a fellow soldier called Nairs Craig. Whilst in the army Hopkins was required to present some of his previous research and as a serving soldier turned up to the interview in battledress. It became very apparent to the



Figure 2. Harold Hopkins at Leicester University, image provided by Mr Derek Fawcet.

committee that Hopkins was clearly in the wrong place and should not remain on active service; he was quickly brought back to civilian life and his research. Hopkins was allowed to continue studying for his PhD (away from his university under a special wartime dispensation) and began research for the Ministry of Aircraft Production. He subsequently joined W.W. Watsons and Son Ltd. another optics company in Barnet as Director of Research and Development⁵. He was awarded his PhD in 1945.

During his time at Watsons he was approached by the BBC who wanted their cameras to have the ability to zoom in from a panoramic view to a close up whilst keeping the picture in focus. Hopkins applied himself to the problem and designed the zoom lens. It was first trialled by the BBC for the Test Match at Lord's in 1948¹ and he sold the patent for £2000.² In 1947 he left industry and joined Imperial College as a Research Fellow subsequently becoming a Lecturer and then Reader³.

A dinner party

In 1951 Harold Hopkins was invited to a dinner party by Nairs Craig, his old army friend. At the dinner Hopkins found himself talking to Hugh Gainsborough (1893 – 1980) a consultant gastroenterologist at St Georges Hospital. Gainsborough was complaining about the inadequate instruments available to view the stomach lining. Rigid endoscopes could with some difficulty be used in the



Figure 3. Early glass optical fibres, Image provided by The Museum of Urology, BAUS.



Figure 4. Hopkins examines an early fibre optic scope, image provided by Mr Derek Fawcett.

upper GI tract, in the style of a sword swallower but it was clear that something more flexible was needed; the difficulty of course being the transmission of light around corners and into the dark recesses of the stomach.

Hopkins applied the principle that light shone onto the end of a glass fibre surrounded by any medium with a refractive index lower than glass (including air) will bounce down that fibre with only a small loss of light through the sides. In 1954 Hopkins and his research student Narinder Singh Kapany (b.1926) published their idea in a letter to *Nature*.⁶ It detailed how they made a bundle of 0.025mm glass fibres and produced the first legible image with their new 'Fibrescope' (Figure 3). Interestingly, in the same issue of *Nature*, there was a second letter by a Dutch researcher who also transmitted light along bundles of plastic fibres.⁷ Actually, the idea had already been patented by Logie Baird in 1927, so neither study was entirely

novel. The difference in Hopkins' article however was that he had not only conceived the idea, but he had also studied how to practically manufacture it. Sadly because of lack of backing and thus funds, Hopkins could never make the fibrescope and it was a South African, Basil Hirschowitz (1925 – 2013), who made the first flexible fibreoptic gastroscop using Hopkins' principle (Figure 4).

The practical application of fibreoptic technology was devised by Hopkins after a chance encounter with Gainsborough at a dinner party which Hopkins only attended because of a friendship with an old army friend. That friendship would never have occurred had it not been for an administration error that put Hopkins, by mistake, into brief military service.

The persistent Urologist

In 1957 Harold Hopkins was approached by Jim Gow (1917 – 2001), a urologist from Liverpool who, as we have heard, was frustrated by his inability to photograph bladder tumours via a cystoscope. Gow was a keen amateur photographer and appreciated the problem: insufficient light.

James (Jim) Gordon Gow was born in Liverpool in 1917. He studied medicine at Liverpool University and after some time in the Royal Army Medical Corps in the Second World War returned to his home city to become a consultant surgeon at Sefton General Hospital and consultant urologist at Wrightington Hospital. He developed an interest in conservative and reconstructive treatment for genitourinary TB and later in bladder cancer.

Gow's hobby of photography led to his attempt to produce endoscopic images of bladder tumours. He was using a German cystoscope with a Leitz lens (which he apparently found abandoned after the battle of El Alamein and acquired as 'spoils of war'⁸) but even with this good quality optical system the images were poor. At this time surgeons had a close relationship with instrument manufacturers and often worked with them to improve instruments to individual surgeon's specifications. It is interesting that this was not the approach Gow took.⁹ Instead, realising this was an optical and illumination problem, he contacted the physics department at the University of Liverpool. They felt the problem was beyond them and suggested he contacted Hopkins, then working in London (Figure 5).

Hopkins was 'not enthusiastic'¹ about working on a medical instrument project again. The disappointment of not being able to take his fibrescope idea through to development due to lack of British industry interest and funding had put him off. Gow however was not to be deterred. He obtained a grant from the Medical Research Council and returned to Hopkins with £3000; this worked. Hopkins began taking apart cystoscopes and looking at the problem of light transmission. He calculated that to take a colour



Figure 5. Hopkins lecturing, image provided by Mr Derek Fawcet.

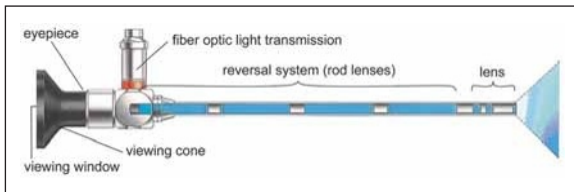


Figure 6. The Hopkins Rod Lens System. © KARL STORZ – Endoskope, Germany.

photograph with a $1/60^{\text{th}}$ second exposure the light intensity traveling to the camera would need to be increased by a factor of 50 times. He realised that this would not require merely a redesign of the cystoscope but a radical 'new idea' in optics theory; Gow, once again undeterred by this suggested Hopkins 'had a new idea'.

The new idea was actually two. Firstly Hopkins swapped round the array of glass relay lenses and air spaces in the cystoscopes such that there were now long glass rods replacing the airspaces and lens shaped air gaps. Light travels better through glass than air. A prototype of their new cystoscopic camera was demonstrated at the 1959 BAUS annual meeting in Glasgow by both Gow and Hopkins. The prototype using the new rod lenses increased light intensity by four times.

Secondly Hopkins applied an antireflective coating to the glass lenses as a proportion of light was reflected back from each lens instead of passing through it. Pass light through several lenses in a cystoscope and you can appreciate the cumulative amount of light lost. The combination of these two ideas increased the light reaching Gow's camera by 80 times¹ (Figure 6). This system was presented at the SIU meeting in Rio de Janeiro in 1961.

Once again, despite the genius of Hopkins and the determination of Gow they failed to find a British

cystoscope manufacturer to take the idea forward into production.

A talent for languages

In 1965 Harold Hopkins presented his rod lens system at the Photokina, a photographic trade fair held in Cologne since 1950. Jim Gow also presented cystoscopic photographs taken by the system. George Berci a German surgeon was at the congress and told his friend Karl Storz (1911 – 1996), an instrument manufacturer, about the new cystoscope designed by Harold Hopkins.¹⁰

Karl Storz was a precision instrument manufacturer working in Tuttlingen in Germany. Storz began by producing instruments for ENT specialists in 1945; his goal was to improve the available technology of instruments to look inside the body. At this time, illumination was by miniature electric bulbs on the end of scopes, they were notoriously fragile and emitted heat. In 1960 Storz developed a cold light source, which reflected very bright light from an external light source via a fibre optic cable into an instrument such as a cystoscope.

Storz telephoned Hopkins in London and speaking in broken English attempted to express his interest in the rod lens system. Hopkins of course had excelled in languages at school, he spoke French and German like a native and later in life learned sign language to communicate with a colleague. Hopkins was able to speak to Storz in fluent German allowing them to discuss his new invention.³ Using Hopkins' design and Storz's instrument making skills and his cold light system, they were able to launch the Rod Lens cystoscope in 1967 at the SIU in Munich. The Hopkins lens and the Storz cold light system revolutionized endoscopy and urology.

Conclusion

In a sad twist of fate, Jim Gow died of bladder cancer in 2001 and Harold Hopkins, the man who revolutionised urology, died of metastatic prostate cancer in 1994 and the professor of optical science was rendered blind by retinal haemorrhages just before his death.

Harold Hopkins, a genius in the world of optics made many major contributions to science as well as his contributions to medicine, these included the Airy disc theory, understanding of wave aberrations leading to improved lens design, early work on lasers which led to compact discs and invention of the zoom lens for TV cameras. Hopkins never thought of himself as an inventor, rather he saw himself as a physicist specialising in optics. However, he also felt his work in industry in Taylor, Taylor and Hobson and Watsons and Sons as saving him from a life in theoretical physics.³ Nevertheless, it is entirely possible that Hopkins would not have collaborated with medicine and advanced endoscopy as he did were it not for a series of fortunate events.

Conflicting interests

The author declares that there is no conflict of interest.

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Best Academic Paper Session

Monday 25 June

09:00-10:00

Room 3B

Chairs: Trinity Bivalacqua & John McGrath

1 - The utility of plasma cell-free DNA mutations in detecting metastatic recurrence in patients after radical cystectomy for bladder cancer

Khetrupal P¹, Dong L², Wong Y², Tan W¹, Rodney S¹, Lamb B¹, Briggs T¹, Thompson J¹, Sridhar A¹, Kelly J¹, Feber A¹

¹University College Hospital Urology Department, London, United Kingdom, ²UCL Cancer Institute, London, United Kingdom

Introduction and Objective: In routine practice, imaging is used for surveillance of metastatic bladder cancer for patients after radical cystectomy (RC). With the availability of high-throughput sequencing, there is a growing interest in utilising non-invasive liquid biopsy biomarkers to supplement imaging in detecting metastatic disease.

Methods: 80 patients undergoing RC were prospectively recruited under the UCL/UCLH Biobank for Studying Health and Disease (Ethics approval (NC06.11) (HTA License: 12055), and sequential blood samples were collected at baseline and 1, 3, 6 and 12 months post-RC. Post-operative CT findings for all patients were collected to monitor for metastatic recurrence. For patients with known recurrence, samples from time of recurrence and before recurrence were analysed. Cell-free DNA (cfDNA) was extracted from plasma using QIAamp Circulating Nucleic Acid Kit. Targeted amplification was performed using pre-designed dual-indexed primers, and next generation sequencing (NGS) performed using 22 bladder-cancer specific mutations.

Results: cfDNA was isolated from all collected samples, with a mean of 77.5 ng/ml and IQR 10.9-72.7 ng/ml (Qubit). Mutations were detectable in cfDNA at baseline

for all patients. Additionally, mutations became detectable in post-cystectomy samples of 5 of 6 patients who subsequently went on to develop metastatic recurrence visible on CT scanning.

Conclusions: Genomic analysis of plasma cfDNA has the potential to supplement imaging in the detection of micro-metastatic disease, and to select patients for systemic treatment. Dynamic changes in mutational burden may represent tumour heterogeneity and could have an application in tracking sub-clonal populations in metastatic disease.

2 - MIMIC Study: Does the size and location of ureteric stones have an impact on the effectiveness of medically expulsive therapy in improving spontaneous stone passage in patients presenting with acute ureteric colic?

Assaf N¹⁹, Shah T¹, Gao C¹, O'Keefe A², Manning T³, Peacocke A⁴, Cashman S¹, Nambiar A¹, Lamb B¹, Cumberbatch M¹, Ivin N⁸, Maw J⁸, Ali Abdaal C⁸, Al Hayek S⁸, Christidis D⁹, Bolton D⁹, Lawrentschuk N⁹, Khan S¹⁰, Demirel S¹⁰, Graham S¹⁰, Koschel S¹¹, Badgery H¹¹, Brennan J¹¹, Wang L¹², Nzenza T¹², Ruljancich P¹², Begum R¹³, Hamad S¹³, Shetty A¹³, Swallow D¹³, Abboudi H¹⁴, Jalil R¹⁴, DasGupta R¹⁴, Ho C¹⁵, Parwaiz I¹⁵, Davenport K¹⁵, Cameron F¹⁶, Shingles C¹⁶, Morrow J¹⁷, Curry D¹⁷, Young M¹⁷, MacKenzie K¹⁸, Reid K¹⁸, Bordenave M¹⁸, Oyekan A¹⁹, Sriprasad S¹⁹, Hayat Z²⁰, Morrison-Jones V²⁰, Laird A²¹, Sharma A²¹, Phipps S²¹, Ngweso S²², Nyandoro M²², Hayne D²², Hendry J²³, Kerr L²³, McIlhenny C²³, Harris A²⁴, Rogers A²⁴, Rodger F²⁵, Docherty E²⁵, Ng G²⁵, Seaward L²⁵, Abdelmoteleb H²⁶, Hawary A²⁶, Eldred-Evans D²⁷, Bultitude M²⁷, Stonier T²⁸, Simson N²⁸, Singh H²⁸, Hatem E²⁸, Arya M²⁸, Tregunna R²⁹, Ibrahim H²⁹, McGrath S³⁰, O'Brien J³⁰, Campbell A³¹, Cronbach P³¹, Bdesha A³¹, Tait C³², Sakthivel A³², Suraparaju L³³, O'Brien J³³, Gupta S³³, Pankhania R³⁴, Al-Qassim Z³⁴, Foley R³⁵, Akintimehin A³⁵, Khan A³⁵, Rezacova M³⁶, Edison E³⁶, Sandhu S³⁶, Nkwam N³⁷, Grice P³⁷, Khan M³⁷, Kashora F³⁸, Nehikhare O³⁸, McCauley N³⁸, Mason-

Bahr D³⁸, Bycroft J³⁸, Tailor K³⁹, Saleemi A³⁹, Luk A⁴⁰, Pearce I⁴⁰, Steen C⁴¹, Alberto M⁴¹, Rujancich P⁴¹, Olivier J⁴², Tay J⁴², Cannon A⁴², Coode-Bate J⁴³, Natarajan M⁴³, Irving S⁴³, Akman J⁴⁴, Hussain Z⁴⁴, Murtagh K⁴⁵, Carrie A⁴⁵, Miller M⁴⁵, Bedi N⁴⁶, Kavia R⁴⁶, Malki M⁴⁷, Burge F⁴⁷, Ratan H⁴⁷, Sadien I⁴⁸, Miakhil I⁴⁸, Sharma S⁴⁸, Nethercliffe J⁴⁸, Olaniyi P⁴⁹, Stammeijer R⁴⁹, Mason H⁴⁹, Symes A⁴⁹, Lavan L⁵⁰, Rowbotham C⁵⁰, Wong C⁵¹, Al-Shakhshir S⁵¹, Belal M⁵¹, Al-Dhahir W⁵², Yousif M⁵², O'Rourke J⁵², Tay L⁵³, Ward A⁵³, Parys B⁵³, McKay A⁵⁴, Graham J⁵⁴, Simmons L⁵⁵, Khadhour S⁵⁵, Cottrell A⁵⁵, Withington J⁵⁶, Ajayi L⁵⁶, Min J⁵⁷, Evans S⁵⁷, Liew M⁵⁸, Simpson R⁵⁸, Ross D⁵⁸, Cumberbatch M⁵⁹, Pang K⁵⁹, Patterson J⁵⁹, Adams R⁶⁰, Mirza A⁶⁰, Acher P⁶⁰, Tam J⁶¹, Tudor E⁶¹, Probert J⁶¹, Gallagher M⁶², Premakumar Y⁶², Ager M⁶², Ayres B⁶², Kozan A⁶³, Jaffer A⁶³, Din W⁶³, Biyani C⁶³, Matanhelia M⁶⁴, Moyles G⁶⁴, Quinlan D⁶⁴, Ness D⁶⁵, Gowardhan B⁶⁵, Bateman K⁶⁶, Wozniak S⁶⁶, Clements J⁶⁷, Hann G⁶⁷, Gilmore C⁶⁷, Gray S⁶⁷, Ellis G⁶⁷, Derbyshire L⁶⁸, Chow K⁶⁸, Mosey R⁶⁹, Osman B⁶⁹, Kynaston H⁶⁹, Yassaie O⁷⁰, Weeratunga G⁷⁰, Udovicich C⁷¹, O'Connell H⁷¹, Lee S⁷², Hussain A⁷², Goh M⁷², Mbuvi J⁷³, Stewart H⁷³, Samsudin A⁷³, Hughes-Hallett A⁷⁴, Rezvani S⁷⁴, Sheng S⁷⁴, Husain J⁷⁴, Kum F⁷⁵, Symes R⁷⁵, Frymann R⁷⁵, Ahmed I⁷⁶, Shergill I⁷⁶, Pickard R⁷⁵, Erotocritou P⁶, Smith D⁷, Kasivisvanathan V¹

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Kingdom, ⁴⁴North Manchester General Hospital, United Kingdom, ⁴⁵Northampton General Hospital, United Kingdom, ⁴⁶Northwick Park / Central Middlesex Hospital, United Kingdom, ⁴⁷Nottingham University Hospitals, United Kingdom, ⁴⁸Peterborough City Hospital, United Kingdom, ⁴⁹Princess Royal Hospital, Haywards Heath, United Kingdom, ⁵⁰Queen Alexandra Hospital, Portsmouth, United Kingdom, ⁵¹Queen Elizabeth Hospital, Birmingham, United Kingdom, ⁵²Queen Elizabeth Hospital, Kings Lynn, United Kingdom, ⁵³Rotherham General Hospital, United Kingdom, ⁵⁴Royal Alexandria Hospital, Paisley, United Kingdom, ⁵⁵Royal Devon and Exeter Hospital, United Kingdom, ⁵⁶Royal Free Hospital, London, United Kingdom, ⁵⁷Royal United Hospitals, Bath, United Kingdom, ⁵⁸Salford Royal Hospital, Greater Manchester, United Kingdom, ⁵⁹Sheffield Teaching Hospital, United Kingdom, ⁶⁰Southend University Hospital, United Kingdom, ⁶¹Southmead Hospital, Severn, United Kingdom, ⁶²St George's Hospital, London, United Kingdom, ⁶³St James's University Hospital, Leeds, United Kingdom, ⁶⁴St Vincent's University Hospital, Dublin, Ireland, ⁶⁵Sunderland Royal Hospital, United Kingdom, ⁶⁶Torbay and South Devon NHS Foundation Trust, United Kingdom, ⁶⁷Ulster Hospital, Belfast, Northern Ireland, ⁶⁸University Hospital of South Manchester, United Kingdom, ⁶⁹University Hospital Wales, United Kingdom, ⁷⁰Wellington Hospital, New Zealand, ⁷¹Western Health, Australia, ⁷²Weston General Hospital, Weston Super Mare, United Kingdom, ⁷³Whiston Hospital, Merseyside, United Kingdom, ⁷⁴Wigan Infirmary, Wigan, United Kingdom, ⁷⁵Worthing Hospital, Western Sussex NHS Trust, United Kingdom, ⁷⁶Wrexham Maelor Hospital, United Kingdom

Introduction and Objectives: There is conflicting evidence on the role of medical expulsive therapy (MET) in spontaneous stone passage in acute ureteric colic patients. However, it is unknown, whether MET has a role in aiding passage of stones of a particular size or specific ureteric position. We undertook MIMIC, a multi-centre international cohort study in 71 centres disseminated via a research collaborative to assess whether MET use improved rates of SSP adjusting for key confounders.

Methods: Multivariable mixed effects logistic regression models were created fitted for MET use, age, gender, stone size and stone position.

To explore the effect of stone size (mm) and stone position (upper, middle and lower ureter) on whether MET use had an effect on SSP, an interaction term was fitted between these variables.

Results: 4181 patients were admitted with acute ureteric colic. 75% (n=3127) were discharged with conservative management. 80% (n=2516) had a confirmed outcome of SSP and were included in the multivariable analysis. The unadjusted odds ratio for the association of MET use with SSP from univariable analysis was 1.250 (95%CI, 1.041, 1.501). However, following a multivariable mixed effects logistic regression model, there was no association of MET use with SSP in any subgroup irrespective of stone size (OR 1.085, 95%CI 0.978, 1.205) or stone position [see Table].

Conclusions: In acute ureteric colic patients who are suitable for initial conservative management, MET has no benefit in spontaneous stone passage, regardless of stone size or position.

Best Academic Paper 2: Table

Best Academic Paper 2: Table 1. Mixed Effects Multivariable Model with outcome SSP.

Variable	Odds ratio estimate (95% confidence interval)
Age (years)	1.006 (1.000, 1.012)
Gender: Male	0.869 (0.712, 1.061)
MET administered: YES	0.861 (0.521, 1.424)
Stone location: Middle ureter	0.806 (0.546, 1.189)
Stone location: Upper ureter	0.435 (0.332, 0.569)
MET Administered: Stone position: Middle ureter	0.808 (0.458, 1.424)
MET Administered: Stone position: Upper ureter	1.086 (0.716, 1.645)
Stone size (mm)	0.714 (0.666, 0.767)
MET Administered * Stone size (mm) – interaction term	1.085 (0.978, 1.205)
	Estimate (95% confidence interval)
Random Effect Variance	0.268 (0.160, 0.449)

3 - A Genome-wide association study of kidney stone disease reveals 5 novel susceptibility loci

Howles S¹, Wiberg A², Furness D², Turney B¹

¹Nuffield Department of Surgical Sciences, University of Oxford, Oxford, United Kingdom, ²Nuffield Department of Orthopaedics, Rheumatology and Musculoskeletal Sciences, University of Oxford, Oxford, United Kingdom

Introduction: Kidney stone disease is a major clinical and economic health burden with a multifactorial aetiology and a heritability of 56%. We undertook the largest genome-wide association study to date using data from the UK Biobank to identify novel genetic factors contributing to nephrolithiasis.

Methods: ICD-10 and OPCS codes were used to identify individuals with a history of nephrolithiasis and to exclude those with disorders of calcium homeostasis, malabsorption and conditions associated with kidney stone disease. All other individuals were used as controls.

Results: A total of 6537 nephrolithiasis cases and 388,509 controls were identified. Nine loci with multiple SNPs achieving GWAS significance of $p < 5 \times 10^{-8}$ were identified. Of these, 5 loci were novel: DGKD region on chromosome 2q37.1 encoding the second messenger diacylglycerol kinase delta, SLC22A1-SLC22A2-IGF2R on chromosome 6q25.3 encoding cation transporters and the insulin like growth factor 2 receptor, HIBADH region on chromosome 7p15.2 encoding 3-hydroxyisobutyrate dehydrogenase which has a role in urinary acidification, CYP24A1 region on chromosome 20q13.2 encoding cytochrome P450 family 24 subfamily A1 which inactivates 1,25-dihydroxyvitamin D, and GNAZ-RSPH14 region on chromosome 22q.11.23 encoding G-protein subunit αz and radial spoke head 14 homolog,

a protein with an undefined function. As previously reported ALPL, RGS14, DGKH and CLDN14 regions were also found to be associated with kidney stone disease.

Conclusion: These results reveal novel susceptibility loci for nephrolithiasis opening up new avenues of research into the pathophysiology of this poorly understood disorder. This will facilitate development of novel treatments for those suffering from kidney stone disease.

4 - Optimal surgical treatment of T1 renal tumours correlates with nephrectomy volume

Tran M^{1,2}, Aben K³, Neves J¹, Fowler S⁵, Sullivan M⁷, Stewart G⁶, Challacombe B⁸, Mahrous A², Patki P², Mumtaz F², Barod R², Aitchison M², Bex A^{2,4}

¹UCL Division of Surgery and Interventional Science, London, United Kingdom, ²Specialist Center for Kidney Cancer, Royal Free Hospital, London, United Kingdom, ³Netherlands Comprehensive Cancer Center, Netherlands, ⁴Netherlands Cancer Institute, Netherlands, ⁵BAUS, UK, ⁶Cambridge University Hospitals, Addenbrookes Hospital, Cambridge, UK, ⁷Oxford University Hospitals, Churchill Hospital, Oxford, UK, ⁸Guy's Hospital and King College London, London, UK

Introduction: EAU renal cancer guidelines recommend partial nephrectomy (PN) in patients with T1 tumours whenever feasible. The aim of this study was to evaluate surgical management of T1 tumours across the nation to assess EAU guideline adherence and the effects of centralization of care.

Patients and Methods: BAUS nephrectomy audit data from all T1 tumours that underwent radical nephrectomy (RN) or PN in the period 2012-2016 were analysed. We assessed: total surgical volume (RN and PN performed)

per hospital, PN rates, complication rates, and completeness of data.

Results: In total, 13045 surgically treated T1 tumours were included in the analyses. Over time, there was an increase in PNs (39.7% in 2012 to 44.9% in 2016). Missing information on post-operative complications appeared constant over the years (8.5-9%). PADUA score entry into the audit was initiated in 2016 and was included in 39% of cases recorded in 2016. A clear association was found between annual hospital volume and the proportion of T1 tumours treated with PN rather than RN (see figure 1-2), this association persisted after adjustment for PADUA complexity (figure 3a-b-c). The complication rate decreased with increasing surgical volume, for all patients as well as patients with PN (4a-b-c).

Conclusions: Probability of treatment of T1 tumours with PN increased with increasing hospital volume,

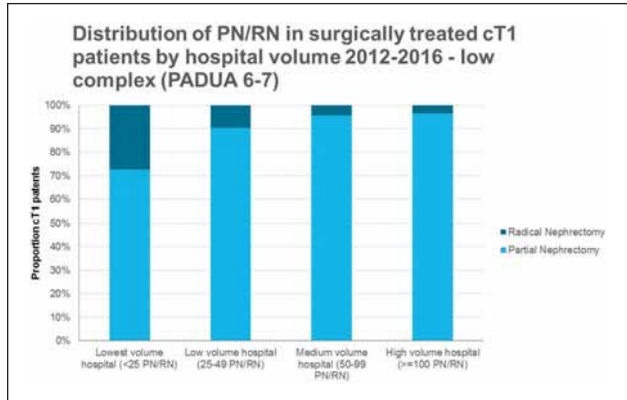


Figure 3a. Best Academic Paper 4

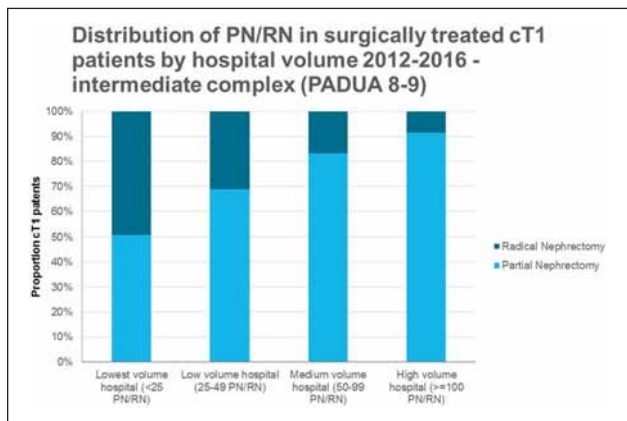


Figure 3b. Best Academic Paper 4

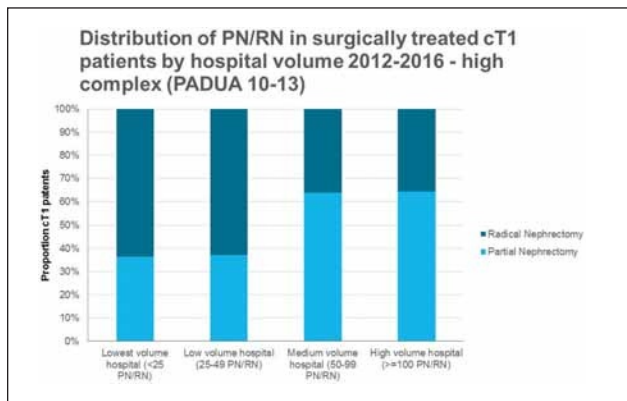


Figure 3c. Best Academic Paper 4

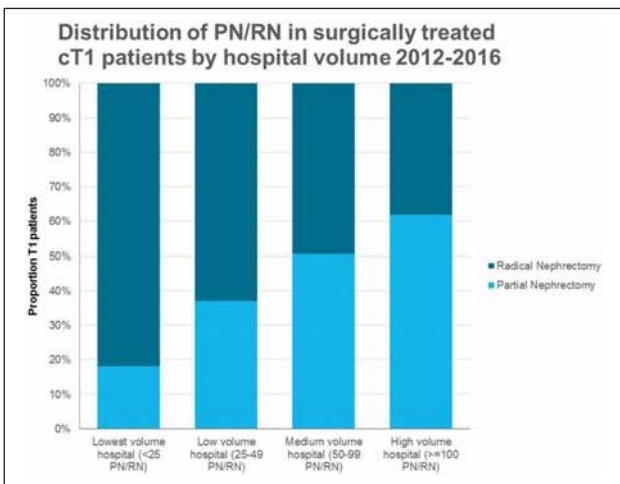


Figure 1. Best Academic Paper 4

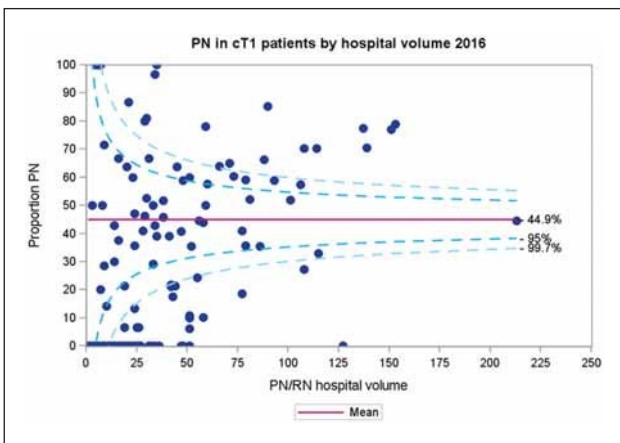


Figure 2. Best Academic Paper 4

whereas an inverse association of hospital volume with complication rate is found. These results show closer guideline adherence in higher volume centers and support the centralisation of specialist cancer surgical services to improve patient outcomes.

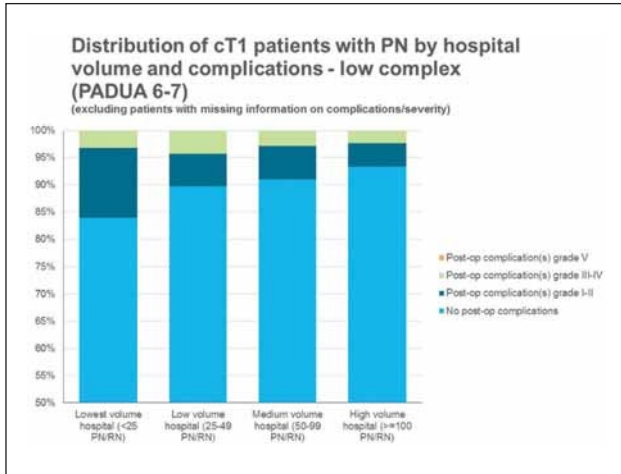


Figure 4a. Best Academic Paper 4

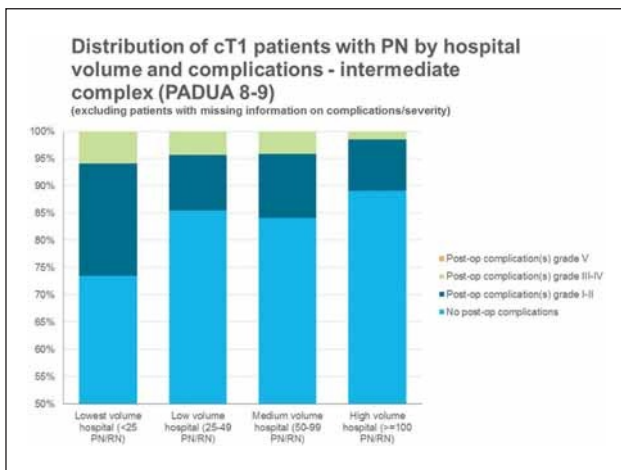


Figure 4b. Best Academic Paper 4

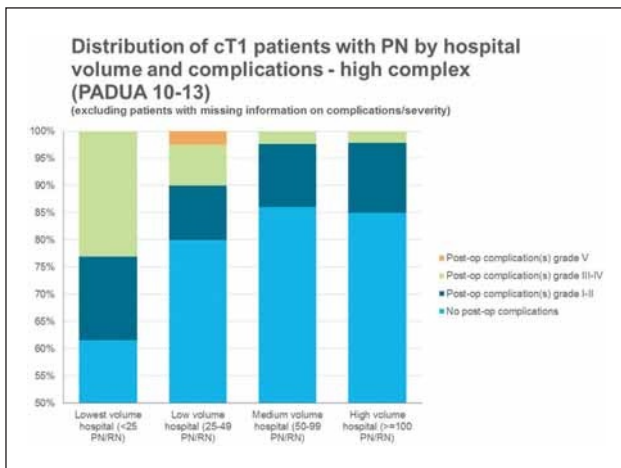


Figure 4c. Best Academic Paper 4

5 - Results of POUT - A phase III randomised trial of peri-operative chemotherapy versus surveillance in upper tract urothelial cancer (UTUC)

Birtle A¹, Johnson M², Kocklebergh R³, Keeley F⁴, Catto J⁵, Bryan R⁶, Jones R⁷, Chester J⁸, Hill M⁹, Donovan J¹⁰, French A¹¹, Harris C¹², Powles T¹³, Todd R⁹, Tregellas L⁹, Wilson C¹⁰, Winterbottom A¹⁴, Lewis R⁹, Hall E⁹
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Background: The role of chemotherapy post nephroureterectomy (NU) for UTUC is unclear. POUT (CRUK/11/027; NCT01993979) addresses whether adjuvant chemotherapy improves disease free survival (DFS) for patients (pts) with histologically confirmed pT2-T4 N0-3 M0 UTUC.

Methods: Pts (max n=345), ≤90 days post NU, randomised (1:1) to 4 cycles gemcitabine-cisplatin (gemcitabine-carboplatin if GFR 30-49ml/min) or surveillance. Primary endpoint was DFS. The trial was powered to detect a hazard ratio (HR) of 0.65 (i.e. improvement in 3yr DFS from 40% to 55%; 2-sided alpha 5%, 80% power) with Peto-Haybittle early stopping rules for efficacy & inefficacy.

Secondary endpoints included toxicity (CTCAE v4), quality of life, metastasis-free (MFS) & overall survival (OS).

Results: 261pts (127 surveillance; 134 chemotherapy) were randomised between 31/05/2012-10/11/2017, across 57 centres. In Oct 2017, independent trial oversight committees recommended POUT recruitment closed; as data collected thus far (data snapshot 05/09/2017) met early stopping rule for efficacy in favour of chemotherapy.

At time of interim analysis, median follow-up was 17.6mths (IQR 7.5-33.6). Median age 69yrs (range 36-88), 30% pT2, 65% pT3; 91% pN0. Most common grade ≥3 toxicities for chemotherapy pts during treatment were neutropenia 29% (0% surveillance) & thrombocytopenia 7% (0%). 47/123 (surveillance) & 29/125 (chemotherapy)

DFS events were reported; unadjusted HR=0.47 (95% CI: 0.29, 0.74) in favour of chemotherapy (log-rank $p=0.0009$).

Conclusions: Adjuvant chemotherapy improved DFS in UTUC. POUT was terminated early because of efficacy favouring chemotherapy; follow-up for OS continues. Results of POUT, the largest UTUC randomised trial, support adjuvant chemotherapy as a new standard of care.

6 - Is it safe to carry out flexible cystoscopy when urinary dipstick is positive for 'infection'? Results of a prospective clinical study

Trail M¹, Cullen JM¹, Dick L¹, Fulton E¹, MacGregor E¹, Clayton F¹, Kalima P², Donat R¹, Mariappan P¹

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Introduction: There is significant under-utilisation of valuable NHS resources when patients scheduled for flexible cystoscopy are cancelled consequent to positive pre-cystoscopy urinalysis, despite being asymptomatic for UTI. With our pilot evaluation (JCU 2017;10(2S):7-82) supporting a protocol avoiding automatic cancellation, we performed a larger study to primarily identify the association between the pre-flexible cystoscopy urinary Leucocyte-esterase, Nitrites, urine culture and post-cystoscopy UTI, whilst utilising this protocol.

Patients and Methods: We carried out a prospective clinical study in a high-volume UK centre, recruiting all patients undergoing flexible cystoscopy over a 6-month period. Urinalysis was carried out prior to cystoscopy in all patients. Cystoscopy was carried out regardless of the dipstick result, unless patients were symptomatic, in which case they were treated and rescheduled. Patients asymptomatic but considered 'high-risk' for UTI (on the basis of pre-determined criteria) were given prophylactic Gentamicin prior to cystoscopy. Every patient was followed up by a phone call and urine culture when applicable. We defined post-cystoscopy UTI as one that developed within 2 weeks of the procedure. Analysis of association was carried out.

Results: From over 2000 patients, preliminary results suggest that the overall risk of developing post-cystoscopy UTI in this cohort is low. While Leucocyte-esterase and Nitrite positivity appear to carry a slightly higher risk of developing a UTI, this risk was not clinically significant. The incidence of urosepsis is very low.

Conclusion: It appears safe to carry out flexible cystoscopy in asymptomatic patients with positive urinary Leucocyte-esterase and/or Nitrites, without the need for routine prophylactic antibiotics.

ePoster Session I:

Bladder Cancer

Monday 25 June

10:30 - 12:00

Room 4

Chairs: Matthew Nielsen & Alex Colquhoun

PI-1 Long term oncological outcomes following the randomised controlled cystectomy: open, robotic and laparoscopic (CORAL) trial

Omar K¹, Nair R¹, Thurairaja R¹, Rimington P², Dasgupta P¹, Khan S¹

¹Guy's Hospital, London, United Kingdom, ²Eastbourne District General Hospital, United Kingdom

Introduction: CORAL trial is the first three-arm RCT demonstrating peri-operative outcomes between the 3 techniques. We evaluate 5-year oncological outcomes.

Material and Methods: From 2009 to 2012, 60 patients requiring radical cystectomy for muscle-invasive or high-risk non-muscle-invasive bladder cancer (HR-NMIBC) were randomized. Oncological outcome at 5 years is demonstrated. The Fisher exact test, ANOVA and Kaplan-Meier used for analyses.

Results: 58 patients from the trial were followed up for a median of 65 months (range 3-98). The mean age of patients undergoing ORC, RARC and LARC was 66.6, 68.6 and 68.6yrs respectively. HR-NMIBC was 40% in ORC, 40% in RARC and 26% in LRC. Positive margin (PSM) was 10%, 15% and 5% for ORC, RARC and LRC respectively. There was no significant relationship between surgical arm and PSMs ($p=0.9$). The mean lymph node (LN) retrieval was 18.8, 16.3, and 15.5 in ORC, RARC and LRC respectively and difference was only significant between ORC and LRC ($p = 0.01$). No port-site or peritoneal metastases were observed in RARC and LRC. Five-year RFS is 71%, 53% and 60% in LRC, ORC and RARC respectively. 5-year CSS is 69%, 64% and 70% in LRC, ORC and RARC respectively. 5-year OS was 61%, 55%, 66% in LRC, ORC and RARC respectively. RFS between the 3 groups was non-significant ($p=0.87$), the difference in CSS was non-significant ($p=0.57$) and difference in OS was non-significant ($p=0.48$).

Conclusion: There were no significant differences in RFS, CSS and OS between ORC, LRC and RARC.

PI-2 Role of preoperative urinary cytology and ureteroscopy in the management of upper tract urothelial tumours treated by laparoscopic radical nephroureterectomy: a single centre experience

Panwar P¹, Thursby H¹, Kalyanasundaram K¹, Golash A¹, Fernando H¹

¹University Hospitals of North Midlands, Stoke on Trent, United Kingdom

Introduction: Diagnosis of upper tract urothelial cancer (UTUC) is currently based on combination of imaging, cytology and/ or ureterorenoscopy (URS) with or without biopsy. With the ongoing debate about routine use of ureteroscopic biopsy, cytology and radiology assume even more importance. We analyzed whether a combination of cytology and imaging can replace the routine use of URS in UTUC.

Methods: Retrospective analysis of 95 patients who underwent laparoscopic radical nephroureterectomy (LRNU) from January 2012 to June 2017 was done. 83 patients were finally included for this study. Modified Paris system for cytopathology reporting was used, with C1 being normal cytology and C5 being frankly malignant cells.

Results: 88%, 60% and 52% of C4/5, C3 and C1/2 cytology patients had high grade disease in the final histology respectively. Four patients had C4/5 cytology and equivocal radiological diagnosis had low grade UTUC. There was a strong correlation between C4/C5 cytology and high-grade disease on final histopathology ($r=0.96$). In the C3 group, 44% of patients had obvious radiological evidence of tumour, whereas 56% of patients underwent URS, which confirmed malignancy. In the C1/C2 group, 56% of patients had obvious radiological disease and rest of the patients (44%) underwent URS and biopsy.

Conclusions: This study shows that preoperative URS is not 'routinely' required in patients with C4/C5 cytology. However, in cases with equivocal imaging and C1/C2/C3 cytology, URS is necessary to ascertain the diagnosis and also grade the tumour, as in this group, finding of low grade disease offers the possibility of organ preservation approach.

PI-3 The utility of pre-operative CT urography in the diagnosis of patients with suspected upper tract urothelial cancer

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¹Department of Urology, Nottingham City Hospital, United Kingdom,

²Department of Radiology, Nottingham City Hospital, Nottingham, United Kingdom

Introduction: There is an increasing prevalence of upper tract urothelial carcinomas (UTUC), which account for 5-10% of urothelial tumours. The gold standard investigation of suspected UTUC includes urographic phase contrast CT (CTU) followed by ureteroscopic visualization and biopsy. CT has a documented sensitivity of 64-100% and specificity of 93-99% in diagnosing UTUC. This study aimed to establish whether the degree of radiological suspicion of UTUC on pre-operative CTU accurately predicted the diagnosis of UTUC on subsequent ureteroscopy and biopsy

and therefore whether ureteroscopy could potentially be avoided in some cases.

Methods: Patients undergoing diagnostic ureteroscopy for suspected UTUC between 18/05/16 - 18/05/17 in our institution were identified (n=64). The pre-operative degree of suspicion as stated in the radiology report was categorized and correlated with diagnosis of UTUC.

Results: 31 patients had a confirmed diagnosis of UTUC. 22 of these had a positive tissue biopsy, with 9 others having positive cytology from ureteric washings. Compared to the degree of pre-operative radiological suspicion, the UTUC diagnoses were distributed as follows: "Sure" only 12 out of 17 were diagnosed with UTUC, "likely" 2/6, "suspicious" 10/17, "possible" 6/16 and "unlikely" 1/8.

Conclusions: This study demonstrated poor correlation between pre-operative degree of radiological suspicion of UTUC and findings at diagnostic ureteroscopy. These results therefore support our current practice of performing diagnostic ureteroscopy in all patients suspected of having UTUC prior to a nephroureterectomy. This study has prompted other centres within the region to discuss their policies on the investigation of UTUC prior to definitive surgical intervention.

PI-4 Is it safe to proceed directly to nephro-ureterectomy without diagnostic ureteroscopy in patients with suspected upper tract urothelial cancer on CT urogram?

Trail M¹, Waheed-Rahman S¹, Broadhurst W¹, Phipps S¹, Thomas B¹, Cutress M¹, McNeill A¹, O'Donnell M¹, Leung S¹, Laird A¹

¹NHS Lothian University Hospitals, Edinburgh, United Kingdom

Introduction: Following CT urography (CTU) suggestive of upper-tract urothelial carcinoma (UTTCC), patients will often undergo diagnostic flexible uretero-rensoscopy (FURS) before proceeding to nephro-ureterectomy (NU). This can cause significant delay within the diagnostic pathway. We aimed to identify clinico-radiological markers of UTTCC to predict high-risk patients who can safely proceed to NU without the delay of FURS.

Methods: All patients undergoing FURS +biopsy or NU for suspected UTTCC between 2011 and 2017 were identified in a prospectively collected pathology database. Clinical and radiological data were collected retrospectively. Logistic regression analysis was performed in SPSS.

Results: 207 patients with suspected UTTCC were managed during the study period and 179(86.5%) underwent FURS. 185 patients had confirmed UTTCC, while 22 patients had benign pathology. The overall positive predictive value of CTU for the diagnosis of UTTCC was 89.9%.

Smoking status, history of bladder cancer and previous abdomino-pelvic radiotherapy or surgery were not predictive of a pathological diagnosis of UTTCC following abnormal CTU. A history of visible haematuria (OR 4.0 [95%CI 1.5-10.0], $p=0.003$) and appearance of a solid tumour on CTU (OR 4.2 [95%CI 1.27-13.6], $p=0.018$) were predictive of UTTCC. 67/68 (98.5%) of patients with both visible haematuria and a solid lesion on CTU had UTTCC.

Conclusion: FURS is a useful tool in the management of patients with suspected UTTCC, however it may add delay into the pathway. Risk stratification may be possible to allow high-risk patients to proceed directly to NU although consideration to streamlined pathways including FURS and/or cytology may also be appropriate.

PI-5 Results of POUT - A phase III randomised trial of peri-operative chemotherapy versus surveillance in upper tract urothelial cancer (UTUC)

Birtle A¹, Johnson M², Kocklebergh R³, Keeley F⁴, Catto J⁵, Bryan R⁶, Jones R⁷, Chester J⁸, Hill M⁹, Donovan J¹⁰, French A¹¹, Harris C¹², Powles T¹³, Todd R⁹, Tregellas L⁹, Wilson C¹⁰, Winterbottom A¹⁴, Lewis R⁹, Hall E⁹

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Background: The role of chemotherapy post nephro-ureterectomy (NU) for UTUC is unclear. POUT (CRUK/11/027; NCT01993979) addresses whether adjuvant chemotherapy improves disease free survival (DFS) for patients (pts) with histologically confirmed pT2-T4 N0-3 M0 UTUC.

Methods: Pts (max $n=345$), ≤ 90 days post NU, randomised (1:1) to 4 cycles gemcitabine-cisplatin (gemcitabine-carboplatin if GFR 30-49ml/min) or surveillance. Primary endpoint was DFS. The trial was powered to detect a hazard ratio (HR) of 0.65 (i.e. improvement in 3yr DFS from 40% to 55%; 2-sided alpha 5%, 80% power) with Peto-Haybittle early stopping rules for efficacy & inefficacy. Secondary endpoints included toxicity (CTCAE v4), quality of life, metastasis-free (MFS) & overall survival (OS).

Results: 261pts (127 surveillance; 134 chemotherapy) were randomised between 31/05/2012-10/11/2017, across

57 centres. In Oct 2017, independent trial oversight committees recommended POUT recruitment closed; as data collected thus far (data snapshot 05/09/2017) met early stopping rule for efficacy in favour of chemotherapy.

At time of interim analysis, median follow-up was 17.6mths (IQR 7.5-33.6). Median age 69yrs (range 36-88), 30% pT2, 65% pT3; 91% pN0. Most common grade ≥ 3 toxicities for chemotherapy pts during treatment were neutropenia 29% (0% surveillance) & thrombocytopenia 7% (0%). 47/123 (surveillance) & 29/125 (chemotherapy) DFS events were reported; unadjusted HR=0.47 (95% CI: 0.29, 0.74) in favour of chemotherapy (log-rank $p=0.0009$).

Conclusions: Adjuvant chemotherapy improved DFS in UTUC. POUT was terminated early because of efficacy favouring chemotherapy; follow-up for OS continues. Results of POUT, the largest UTUC randomised trial, support adjuvant chemotherapy as a new standard of care.

PI-6 Who should be investigated for haematuria? A prospective observational study of 3556 patients

Tan W¹, Feber A¹, Sapong R¹, Khetrpal P¹, Rodney S¹, Williams N¹, Brew-Graves C¹, Kelly J¹, DETECT investigators

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Background: Haematuria represents a red flag symptom associated with urinary tract cancer (UTC) risk. We determined the incidence of UTC diagnosed following presentation of haematuria and to determine how many cases of UTC would be missed if the NICE guidance was applied.

Methods: A prospective observational study (NCT02676180) recruited patients in secondary care for haematuria investigations in 40 UK hospitals. All patients had cystoscopy and upper tract imaging. Incidence of UTC in patients presenting with visible (VH) or nonvisible (NVH) haematuria, gender and age deciles, bladder cancer histology characteristics and risk classification were determined.

Results: 3556 patients underwent haematuria investigations. The incidence of UTC was 10.0% (bladder cancer: 8.0%, renal parenchymal cancer 1.1%, upper tract TCC: 0.7%). The risk of UTC was significantly higher in VH compared to NVH (13.8% vs 3.1%). Higher age, male gender and smoking history were independently associated with UTC diagnosis. NICE recommended age thresholds for VH and NVH would miss 11 UTC (10 bladder cancers, 1 upper tract TCC representing 3.5% and 3.8% of cases respectively). 70% of bladder cancers missed were intermediate or high-risk cancer. Risk stratification such as smoking history was not useful in selecting patients below the age threshold who will benefit from investigations.

Conclusions: Using the age threshold of ≥ 60 years to investigate patients presenting with NVH and ≥ 45 years for

VH will miss a significant number of UTC. We recommend that all patients presenting with VH patients and NVH patients ≥ 40 years have investigations for haematuria.

PI-7 Can CT intravenous urogram be replaced with renal tract ultrasound for non-visible haematuria?

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Background: NICE does not specify a preference for upper tract imaging modality for haematuria while the American Urology Association recommends CT intravenous urogram (IVU). We determined the diagnostic accuracy of CT IVU and renal tract ultrasound (RTU) at identifying urinary tract cancer (UTC).

Methods: The DETECT I study (clinicaltrials.gov NCT02676180) prospectively recruited patients investigated for haematuria at 40 UK hospitals. All patients had cystoscopy +/- resection of bladder tumour and CT IVU and/or RTU.

Results: 3566 patients with a median age of 68 years (IQR: 57, 76) were recruited. The overall incidence of UTC was 9.6% (bladder cancer: 7.8%, renal cancer 1.1%, upper tract TCC: 0.7%). 448 patients (13%) had both RTU and CT IVU. RTU had a sensitivity of 89% (n=8) and a PPV of 53% for identifying renal parenchymal cancers. NPV of RTU for renal cancer was >99.5%. Of the 6 upper tract TCC identified on CT IVU, RTU missed 3 cases. The incidence of upper tract TCC presenting with NVH was <0.01% (1/3566 patients). 2104 patients (59%) had RTU while 1608 patients (45%) had CT IVU. The diagnostic accuracy for URT to detect bladder cancer was: sensitivity: 66%, specificity 99%, PPV 82% and NPV 98%. CT IVU identified bladder cancer with a sensitivity of 87%, specificity of 97%, PPV of 79% and NPV of 99%.

Conclusions: CT IVU can be replaced with URT in patients presenting with NVH. CT IVU is recommended for VH due to 1% risk of upper tract TCC.

PI-8 Outpatient flexible cystoscopy and transurethral laser ablation (TULA) for urothelial tumours using the 1470 nm diode laser: Our experience so far

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Introduction: Transurethral Laser Ablation (TULA) under local anaesthesia is an effective treatment for recurrent urothelial tumours (1, 2), particularly useful in high ASA grade or anticoagulated patients. TULA is a time-efficient procedure, associated with improved haemostasis,

avoidance of the obturator-nerve-reflex and reduced risk of bladder perforation. We report our initial experience in introducing the service in our department.

Patients and Methods: We performed a prospective evaluation of the outpatient TULA flexible cystoscopy service. Patients were referred with suspicious lesions for diagnosis and treatment or known bladder cancer. Predominant referrals were for G1/2 pTa TCC recurrences, higher grade tumours were treated only on the MDT recommendation.

Results: There were 133 attendances to the TULA list between September 2016 and June 2017. TULA was performed in 81 cases: TCC (71/81), red patch (7/81), squamous metaplasia (1/81), radiation cystitis (1/81) and small cell cancer (1/81). Post-procedure one patient required hospital admission with bleeding and one patient complained of discomfort. In 10 cases, suspicious red patches were reviewed and 7 of them were treated. Other attendances revealed: normal cystoscopy (43/52), stricture (1/52) or large/multiple tumours requiring TURBT (8/52). In total 14 patients were anticoagulated (5/14 warfarin).

Conclusion: Outpatient TULA service is an effective alternative to theatre-based procedures, also enabling the treatment of anticoagulated or high ASA patients. The service reduces pressure on waiting lists and can save costs for a department.

PI-9 The value of photodynamic diagnosis (PDD) in combination with dedicated TURBT training – a controlled study evaluating outcomes

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Introduction: A good quality TURBT improves staging accuracy while reducing both recurrence and (potentially) the need for routine early re-resection. When augmented with Photodynamic diagnosis (PDD), recurrence rates have been shown to fall, consequent to improved detection and tumour clearance. As part of a series of studies on real-world experience, we evaluated the putative benefit of PDD as a training tool.

Methods: Six Urology specialist trainees participated in the study: 3 (PDD-ST group) were trained exclusively in the early phases of TURBT training using PDD while the other 3 (WL-ST group) trained using white light (WL) cystoscopy. All trainees initially carried out 50 (mandatory) 'training' operations with PDD and WL in the PDD-ST and WL-ST groups, respectively. Subsequently, trainees carried out 50 WL TURBTs each (study sample). Operations were prospectively entered into surgical logbooks. Analysis of association was carried out between each group and specific end-points including complications, specimen detrusor

muscle, early recurrence and residual disease at early re-TURBT.

Results: In all, 300 patients underwent WL TURBTs post 'training'. Patient and tumour demographics were similar in both groups with 85% being NMIBC. Detrusor muscle was detected in 133/150(88.7%) and 101/150(67.3%) in PDD-ST and WL-ST, respectively (OR=3.3, 95%CI=2.1-6.9, $p<0.01$). The recurrence rate at first check was 11/74(14.9%) in PDD-ST and 43/68(63.2%) in WL-ST (OR=9.9, 95%CI=4.3-22.0, $p<0.01$); while 12/49 (24.5%)(PDD-ST) and 27/63 (43%)(WL-ST) patients had residual cancer at early re-TURBT (OR=2.3, 95%CI=1.0-5.3, $p<0.01$).

Conclusion: Prior PDD training within a dedicated list appears to improve the quality of future white light TURBT.

P1-10 Day case primary transurethral resection of bladder tumour (TURBT) as standard protocol in a single UK centre -should this be the new standard?

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Introduction and Objectives: Transurethral resection of bladder tumours (TURBT) is an integral component of the diagnosis, staging and treatment of bladder cancer. Despite the increasing utilisation of day case surgery in many areas of surgery, HES data indicates that rates for TURBT are very low at 9.3 %.

Materials and Methods: A retrospective analysis of all elective primary TURBTs, Sept '16 to Aug '17, in a single UK centre was performed. Data were collected on tumour grade, stage, 30 day readmissions and presence of muscle in specimen and recurrence at 3 months (surrogates of resection quality).

Results: 172 were performed, all were included. 130(76%) male with median age 72 years. 138 (80%) were treated as a day-case, 11 (6%) had planned admissions, the remaining 23 (14%) were converted to an inpatient admission, the commonest reason being haematuria. 52% received Mitomycin-C immediately following the procedure. 30 day re-admission rates were 7.2% and 5.9% and muscle in specimen rates were 63% and 65% for the day-case and inpatients groups respectively.

49 (28.5%), 31 (18.0%) and 50 (29.1%) were classified as low, intermediate and high risk NMIBC respectively. MIBC was identified in 30 (17.4%) and 12 (7%) did not have urothelial carcinoma. Recurrence of NMIBC cancer at three months for patients not receiving adjuvant therapy occurred in 5 (7%).

Conclusion: This data demonstrates that day case TURBT is feasible in the majority of patients, has a low re-admission rate and good oncological outcomes. Day case TURBT should be considered as standard practice for primary TURBT.

P1-11 10-year experience of RITE thermochemotherapy for high risk non-muscle invasive bladder cancer that has failed BCG

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Introduction: Alternative intravesical treatments have been tried in patients with high risk non muscle invasive bladder cancer (NMIBC) who fail BCG. We present our 10-year experience with radiofrequency induced thermochemotherapy (RITE).

Methods: Between October 2006 and August 2017, 135 patients with high risk NMIBC who failed BCG had induction and maintenance RITE thermochemotherapy delivered using Synergo for 1 hour with 40mg mitomycin C. Data was collected prospectively and Kaplan Meier analysis was performed.

Results: 5 patients (4%) were unable to complete induction treatment due to side effects. Of the remaining 130, 114 (88%) were male and median age was 74 years (IQR 68-80). 82% had CIS with or without papillary tumours. 1-, 5- and 10-year recurrence free survival was 63%, 34% and 24% respectively. 1-, 5- and 10-year progression free survival was 92%, 71% and 62% respectively. Progression to muscle invasive disease occurred in 11 (8%), prostatic urethral stromal disease in 6 (5%) and metastatic disease in 6 (5%). 8 (6%) developed subsequent upper urinary tract recurrences. 30 patients (23%) eventually had a cystectomy for their disease. 1- and 5-year overall survival was 98% and 63% respectively. 1- and 5-year cancer specific survival was 100% and 79% respectively. Median temperature and radiofrequency power did not differ between those that recurred and those that didn't.

Conclusions: RITE thermochemotherapy has a role in the management of selected patients with high risk NMIBC who fail BCG, with a 5-year cancer specific survival rate of 79%.

P1-12 Hyperthermic intravesical chemotherapy using the combat BRS system for BCG-unresponsive non-muscle invasive bladder cancer – A multicentre study

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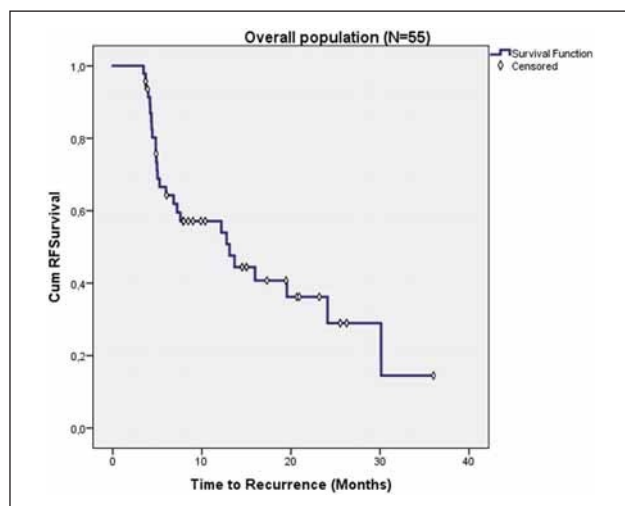
Objectives: Adjuvant intravesical instillations with bacillus Calmette-Guérin (BCG) is the recommended treatment option for patients with intermediate and high-risk

non-muscle invasive bladder cancer (NMIBC). Radical cystectomy is the Gold Standard for BCG-unresponsive NMIBC, however many patients are unfit for or unwilling to consider this option. The objective of the present study was to assess the efficacy of hyperthermic intravesical chemotherapy (HIVEC®) in this patient group.

Methods: From October 2014 to July 2017 NMIBC patients who were defined BCG-unresponsive were prospectively included at three academic institutions. All patients were planned to receive HIVEC® treatment, consisting of an induction phase followed by maintenance therapy. Only patients who had a minimum of 5 HIVEC® instillations were included in the present analysis. The primary outcome was recurrence-free survival (RFS).

Results: The study population consisted of 59 BCG-unresponsive NMIBC patients (8% intermediate- and 92% high-risk) of whom 55 underwent ≥ 5 HIVEC® treatments. The median age and follow-up was 72 years and 9.0 months [IQR 7.1 – 19.5]. The overall recurrence rate was 58% and the mean RFS was 16.6 months [SE 2.1] (Fig. 1). In patients having carcinoma in situ (n= 36), the recurrence rate was also 58% and the mean RFS was 16.2 months [SE 2.8]. Progression occurred in 3 patients and 2 patients experienced severe side-effects (CTCAE >2).

Conclusions: HIVEC® seems a valid treatment option for BCG-unresponsive intermediate- or high-risk NMIBC patients. We report a mean RFS of >1 year, potentially avoiding or postponing the need for radical surgery in these patients.



PI-12: Figure 1. Recurrence free Survival of 55 BCG-unresponsive patients who received ≥ 5 HIVEC® instillations

PI-13 Results of CALIBER: A phase II randomised feasibility trial of chemoablation versus surgical management in low risk non-muscle invasive bladder cancer (NMIBC)

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Introduction: Mitomycin C (MMC) chemotherapy has a well-defined safety profile and is used in the treatment of intermediate and high risk NMIBC. CALIBER aimed to demonstrate that intravesical MMC (chemoablation) had sufficient activity to warrant further investigation as an alternative to surgery for low risk NMIBC.

Patients and Methods: CALIBER has a Simon two stage design, incorporating a surgical control group to test feasibility of randomisation. Patients with recurrent low risk NMIBC were randomised 2:1 to chemoablation (4x 40mg weekly MMC) vs. surgery (standard of care). The primary endpoint was complete response (CR) to chemoablation by visual assessment and histological biopsy at 3 months post-treatment, aiming at excluding CR rate <45% (Stage 1). **Results:** 82 participants (54 chemoablation, 28 surgery) were recruited from 37 UK centres (28/01/2015 to 04/09/2017). Feasibility of randomisation was demonstrated with acceptance rates of 55%. The stage 1 CR criterion was not met and the trial closed to recruitment in September 2017. Estimated 3 month CR rate is 37.3% (95% CI: 24.1, 51.9) in the chemoablation group and 80.8% (95% CI: 60.6, 93.4) in the surgery group. No grade 3-4 toxicities were reported in either group.

Conclusions: Chemoablation with MMC is safe, however did not meet prespecified activity levels to warrant further investigation. Whilst surgery appears more effective in this setting, the proportion of patients with residual disease at 3 months suggests surgery alone may be suboptimal. Further research is required to determine the role of chemoablation with other agents in patients with low risk NMIBC.

PI-14 Discharge of low-risk non-muscle-invasive bladder cancer: A national survey of adherence to NICE guidelines in the UK

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Introduction: The NICE 2015 bladder cancer guidelines recommend discharging patients with low-risk non-muscle-invasive bladder cancer (NMIBC) who have no recurrence within 12 months. The level of adoption of this recommendation, and the clinical consequences of this policy, are unknown.

Materials and Methods: A national survey of BAUS and BAUN members was performed in October 2017. Members were asked whether their hospital had adopted NICE guidelines and if so, if they had encountered any adverse outcomes as a result of this. If members had not adopted the NICE guidelines, they were asked which guideline (if any) they followed. The results were then mapped against all the urology departments in the UK.

Results: 165 responses were received (120 from BAUS and 45 from BAUN members) representing 108 of 237 urology departments in the UK. 45% of departments have adopted NICE guidelines. Of these, only 8 (4.8% of the overall total) had encountered an adverse outcome – 3 patients had confirmed low-risk recurrence. Patient dissatisfaction at being discharged was the main reported adverse outcome. No respondents reported progression to a higher stage or grade. Of those who have not adopted NICE guidelines, 85% adhere to EAU NMIBC guidelines.

Conclusions: Despite a strong central recommendation from NICE to discharge low-risk NMIBC patients after 1 year, the majority of UK urology departments continue to use EAU guidelines with discharge after 5 years. In those departments who are following the NICE recommendation, after 2 years, the number of adverse outcomes is low with no reported cases of progression.

PI-15 Current radiotherapy practice of muscle invasive bladder cancer: Assessment of diagnosis and management within the UK

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Introduction: Bladder cancer survival remains unchanged over the last 30 years. Considerable variation across the NHS in the diagnosis and management of bladder cancer is thought to exist. The National Institute for Health and Clinical Excellence (NICE) guidance NG2 and Royal College of Radiology guidelines were used to assess this variation and quality of radiotherapy, to describe current UK practice.

Patients and Method: Radiotherapy departments completed one questionnaire for each patient having radiotherapy for muscle invasive bladder cancer (MIBC) within a 16 week period over 2016/2017.

Results: Sixty nine percent of radiotherapy centres returned a total of 508 proformas. Treatment intent was radical in 279 patients (56%). Muscle invasive disease was confirmed in at least 74%. Appropriate staging was performed in at least 73% of patients.

Cystectomy was discussed with 68% patients but did not proceed in 7% of patients initially planned for it. Neoadjuvant chemotherapy was administered in 43% of radical patients. The commonest radical radiotherapy schedule was 55Gy/20. Ninety two percent of patients had treatment delivered by at least a 3-D technique. Compensation for bladder motion was made using either 'plan of the day' or image guidance in 59% of radical patients. Concurrent radio-sensitisation was administered in 39% of radical patients predominantly using the BC2001, BCON or GemX protocols.

Conclusion: This is the first national audit that will define current management of patients undergoing radiotherapy for MIBC. The above data is preliminary, will be updated and linked contemporaneously with the BAUS database and national radiotherapy data set.

PI-16 British Association of Urological Surgeons (BAUS) cystectomy database 2015-2016: Pre-operative cardiopulmonary exercise testing (CPET) and its impact on cystectomy outcomes on behalf of the BAUS Section of Oncology

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Radical cystectomy (RC) carries a significant morbidity and mortality profile. CPET is used in certain settings to risk stratify patients pre-operatively by assessing physiological parameters such as anaerobic threshold (AT), with ≤ 11 mL/kg/min implying high risk. CPET has not been validated in RC patients and there has been conflicting evidence of its value.

Data were extracted from BAUS audit during 2015/2016. 3964 patients underwent cystectomy, 26% patients underwent CPET pre-operatively. Patients were categorised 'high' and 'low' risk ($AT \leq 11/\geq 11$). We report on patient demographics and selected outcomes including complication rates and 30/90 day mortality.

75% (n=755) had AT recorded. Patient demographics did not vary between groups. Patients were twice as likely to

have CPET when undergoing MIS (robotic/laparoscopic) compared to an open surgical approach. Planned admissions to HDU were higher in patients who underwent CPET (81%, 71% respectively), with no differences in unplanned admissions or between high/low risk groups. Length of stay (LOS) varied across the groups (Table 1). Patients undergoing CPET and open RC had higher rates of post-operative complications particularly if high risk (principally wound infection and prolonged ileus) with no differences in MIS. No differences in complications between high and low risk groups.

CPET was performed in 1 in 4 patients undergoing RC. It is more commonly used in centres offering MIS. AT threshold doesn't seem to be associated with post-operative complication rates. LOS varied with surgical approach and CPET category – shortest LOS in low risk MIS group. 30/90-day mortality rates were low in all groups.

PI-16: Table 1

	CPET		NO CPET	
	OPEN	MIS	OPEN	MIS
High	13.6	12.7	14.4	10.3
Low	15.3	9.1		

PI-17 British Association of Urological Surgeons (BAUS) cystectomy database 2015-2016: the impact of pre-operative renal failure (RF) and / or hydronephrosis on the outcome of radical cystectomy (RC) on behalf of the BAUS section of oncology

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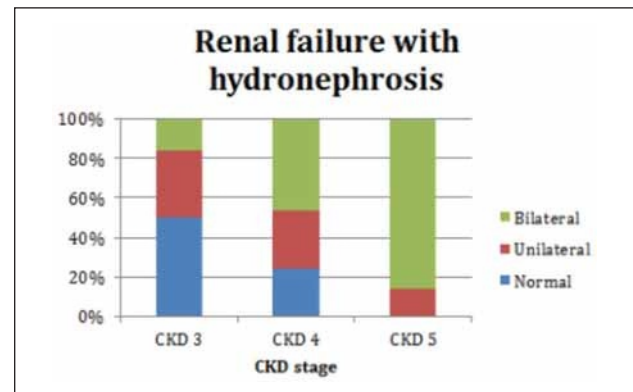
Introduction and Objectives: Published data suggests >50% of patients undergoing RC have prior RF +/- hydronephrosis and this may be a surrogate marker for poor clinical outcomes.

Materials and Methods: Data from 2015/2016 were extracted from BAUS audit dataset. 3964 patients underwent RC. CKD categories were used to stratify patients: CKD 1/2 GFR (60->90ml/min), 3a/3b (30-59), 4 (16-29) and 5 (<15). Hydronephrosis was recorded absent, unilateral or bilateral. Demographics, surgical factors and outcomes (LOS, complications, 30/90-d mortality) were compared.

Results: eGFR was recorded as >60 (72%) or <60 (28%) in 85% of patients (n=3372). Exact eGFR figures were

recorded in 905 (99.7% with an eGFR <60), 91% CKD 3 9% CKD 4/5. Patients with RF tended to be older but other demographics were comparable. Upper tract status (UTS) was recorded in 85% of patients; 15% (n=518) unilateral hydronephrosis, 6% (n=208) bilateral hydronephrosis. Of those with CKD 3 50% had normal UTS, worsening degrees of RF were associated with increasing hydronephrosis (Figure 1). RF and hydronephrosis were associated with advanced tumour stage, open rather than minimally invasive surgery (MIS) and increased intra-operative complications. Length of stay (LOS) was higher. 30/90-d mortality varied across the groups but prone to small sample size effect.

Conclusion: Approximately 1 in 4 patients undergoing RC had impaired renal function. 22% had HN. Despite small sample size, there is an association between worsening renal function and worsening UTS. RF +/- hydronephrosis is associated with advanced tumour stage, increased intra-operative complications and increased LOS.



PI-17: Figure 1

PI-18 The utility of plasma cell-free DNA mutations in detecting metastatic recurrence in patients after radical cystectomy for bladder cancer

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Introduction and Objective: In routine practice, imaging is used for surveillance of metastatic bladder cancer for patients after radical cystectomy (RC). With the availability of high-throughput sequencing, there is a growing interest in utilising non-invasive liquid biopsy biomarkers to supplement imaging in detecting metastatic disease.

Methods: 80 patients undergoing RC were prospectively recruited under the UCL/UCLH Biobank for Studying Health and Disease (Ethics approval (NC06.11) (HTA

License: 12055)), and sequential blood samples were collected at baseline and 1, 3, 6 and 12 months post-RC. Post-operative CT findings for all patients were collected to monitor for metastatic recurrence. For patients with known recurrence, samples from time of recurrence and before recurrence were analyzed. Cell-free DNA (cfDNA) was extracted from plasma using QIAamp Circulating Nucleic Acid Kit. Targeted amplification was performed using pre-designed dual-indexed primers, and next generation sequencing (NGS) performed using 22 bladder-cancer specific mutations.

Results: cfDNA was isolated from all collected samples, with a mean of 77.5 ng/ml and IQR 10.9-72.7 ng/ml (Qubit). Mutations were detectable in cfDNA at baseline for all patients. Additionally, mutations became detectable in post-cystectomy samples of 5 of 6 patients who subsequently went on to develop metastatic recurrence visible on CT scanning.

Conclusions: Genomic analysis of plasma cfDNA has the potential to supplement imaging in the detection of micro-metastatic disease, and to select patients for systemic treatment. Dynamic changes in mutational burden may represent tumour heterogeneity and could have an application in tracking sub-clonal populations in metastatic disease.

**ePoster Session 2:
Management, Governance, Education
and Quality
Improvement
Tuesday 26 June
08:30 - 10:00
Room 4
Chairs: Luke Forster & Nikhil Vasdev**

P2-1 Development, delivery and theory-driven evaluation of an evidence-based quality improvement training module for urology trainees

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Introduction: We developed and evaluated an evidence-based training module in quality improvement (QI) for urology trainees.

Materials and Methods: A half-day training module, utilising lectures and workshops, was delivered to 43 trainees from 13 LETBs. The well-validated Kirkpatrick framework was used as evaluation framework. Quantitative assessment

Pre/Post-training using validated knowledge/skills/attitudes scales was applied, including psychometric and inferential statistics.

Results: All scales showed acceptable reliability (Cronbach-alphas pre-training=0.642-0.912; post-training=0.667-0.922) except trainees' views on conducting a QI project and influencing QI at work. Objective knowledge was overall high and did not increase post-training (M-pre=5.79, SD=1.82; M-post=5.89, SD=1.46; $p>0.05$). Post-training, we found statistically significant improvements in trainees' subjective knowledge (M-pre=2.72, SD=0.78; M-post=4.09, SD=0.56), $t(38)$, $p<0.0005$; attitudes regarding conducting a QI project (M-pre=3.63, SD=XX; M-post=4.37, SD=), $z=4.882$, $p<0.001$; attitudes regarding QI at work (M-pre=3.69, SD=0.44; M-post=3.99, SD=0.49), $t(38)$, $p<0.0005$; and attitudes towards influencing QI at their workplaces (M-pre=3.54, SD=0.44; M-post=3.89, SD=0.49), $z=3.618$ $p<0.0005$. Self-reported trainee skills also showed improvement post-training: intentions to initiate or engage in a QI project in the next six months increased significantly (M-pre=3.61, SD=0.65; M-post=4.14, SD=0.59), $z=4.720$ $p<0.0005$. Eta-squared statistics for all analyses showed large effect sizes with substantial differences in the scores obtained before and after the QI intervention. We assessed trainees' overall satisfaction with course content and delivery and found they were all very high (median scores for content, delivery and global satisfaction 4 on 5-point Likert scales).

Conclusions: We have developed the first evidence-based and prospectively evaluated QI skills course for urology trainees. Larger-scale evaluation is currently underway.

P2-2 Subspecialty urology – can we predict where gaps will be in 7 years' time? Results from the BAUS workforce survey

Manson R¹, Palmer M

¹Queen Elizabeth University Hospital, Glasgow, United Kingdom, ²Glasgow Royal Infirmary, United Kingdom, ³On behalf of BAUS and the Specialist Advisory Committee in Urology

Introduction: This study aimed to establish whether or not we can identify future gaps within subspecialty urology.

Methods: All BAUS members in consultant posts in the UK and Republic of Ireland were invited by email to complete an online survey. Questions included their age; whether or not they consider themselves a general or subspecialist urologist and subspecialty activity.

Results: A total of 536 responses were gathered from the UK. This equates to approximately 50% of the UK workforce. 9% considered themselves as general urologists,

58% as general urologists with a subspecialist interest and 33% as primarily a subspecialist. In certain subspecialties there was a higher percentage of surgeons over the age of 55 years. This was particularly the case in Andrology, Reconstruction and Female urology, potentially leaving a skills shortfall within the next 7 years (one training cycle). Analysis of the results by BAUS region also has the potential to warn about regional shortfalls and compare provision between regions. However, a higher return rate from future surveys would be required to make this a truly useful tool.

Conclusions: This survey has shown that it will be possible to predict where skills shortages may be in the near future. There is a need to balance future provision with disease prevalence however and a higher response rate would make the predictions more robust.

P2-3 Urologist workload – an up to date picture. Results from the BAUS workforce survey

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²Glasgow Royal Infirmary, United Kingdom, ³On behalf of BAUS and the Specialist Advisory Committee in Urology

Introduction: This study aimed to establish the workload of urological consultants and their working practices.

Methods: All BAUS members in consultant posts in the UK and Republic of Ireland were invited by email to complete an online survey. This included questions on: programmed activities (PAs); on call activity; clinic sessions and clinic service provision.

Results: A total of 536 responses were gathered from the UK. This equates to approximately 50% of the UK workforce. Age ranged from 33 to 70 (Mean 50). Only 9% undertook less than 10 PAs per week whilst 71% carried out 11 or more. 89.4% participated within an on call rota; of whom 55% retain their normal elective activity, 18% cancel half day activity and 27% cancel all elective activity. 78% of those involved in on call rotas reported a rota intensity of 1:8 or greater. With regards to clinic activity, 46% undertake 1-2 clinic sessions per week, 50% participate in 3-4 with few attending more. 32% of consultant led clinics do not have any additional staff member. Of those clinics with at least one additional staff member only 48% had a specialist registrar in attendance. Patient numbers in clinic varied by patient type and with general/specialty.

Conclusions: The workload of a urologist remains high and the survey demonstrates that there is little spare capacity. The increasing tendency of emergency care to be consultant delivered will impact on elective activity. It can also be seen that training opportunities may be lost in the clinic setting.

P2-4 Do regional meeting presentations add value to the wider scientific community? A review of the outcomes of abstracts presented at the South Thames urology regional meeting

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Introduction: Participation in research is mandatory for urology trainees for certification of completion of training (CCT) as laid out by the Joint Committee on Surgical Training (JCST). The South Thames Urology Meeting (STM) is a bi-annual regional conference involving South London and KSS deanery trainees & provides the opportunity to present audit and research work. Our aim was to assess the publication rates, time taken to publish, and assess variables associated with publication success.

Methods: All abstracts presented at the STM between 2010 & 2016 were identified, with a minimum follow-up time of 12 months. PubMed database and Google search engines were used to identify abstracts that had achieved full-text publication by searching for authors, full titles and keywords. Published abstracts were identified and excluded. Time to publication, number of authors, study design, level of evidence, research institution and sub-speciality were analysed.

Results: Overall, 210 abstracts were presented at the STM between 2010-2016, of which 18 were published as full text articles (8.6%). The mean length of time to publication was 19.3 months (-7-48) with 2 abstracts presented from already published articles. Articles were published in 9 journals. The mean number of authors was 5.8 (3-12).

Conclusions: The STM provides trainees with a forum to present local audit and research - reflected in the lower rates of publication compared to national meetings. Bladder cancer, functional & endo-urology were the most published sub-specialities. Length of time to publication should be considered by trainees looking to meet CCT criteria.

P2-5 The urology cancer MDT: what can be improved?

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Introduction: Cancer Research UK published a 2017 report on improving the effectiveness of MDTs. We analysed urology cancer MDT members' responses to questionnaires in comparison to other specialities and identified areas they would like to improve and prioritise.

Materials and Methods: Survey invitations were sent to UK MDT members. It comprised questions about the importance of 13 areas, and the extent of implementation. Answers were provided on a six-point scale (1 = not important / never done; 6 = extremely important / always done). Data provided by urology MDT members were examined according to professional group and compared to responses from the other most prevalent cancers: breast, lung and colorectal.

Results: In total, 1759/2304 respondents completed the quantitative questions and were included for analyses, including 197 from urology MDT members. Urology MDTs rated the following as being important but not well implemented currently: prioritisation of complex patients, auditing of MDT decisions and having sufficient preparation time allocated within job plans (mean Likert scores for importance were 4.0, 4.7 and 5.4, and implementation were 2.8, 3.2 and 3.1, respectively). Different professional groups within the urology MDTs showed similar agreement on all questions. There was excellent concordance between urology and the other major tumour types for all factors considered.

Conclusions: Current practices within urology MDTs are similar to those of the other major cancers in the UK. Key areas for modernisation include how best to identify and prioritise complex cases, improve auditing of decisions, and ensuring adequate preparation time for MDT members.

P2-6 Urology low fidelity simulation teaching - clinically observed medical education training (COMET)

Megson M¹, Singh S

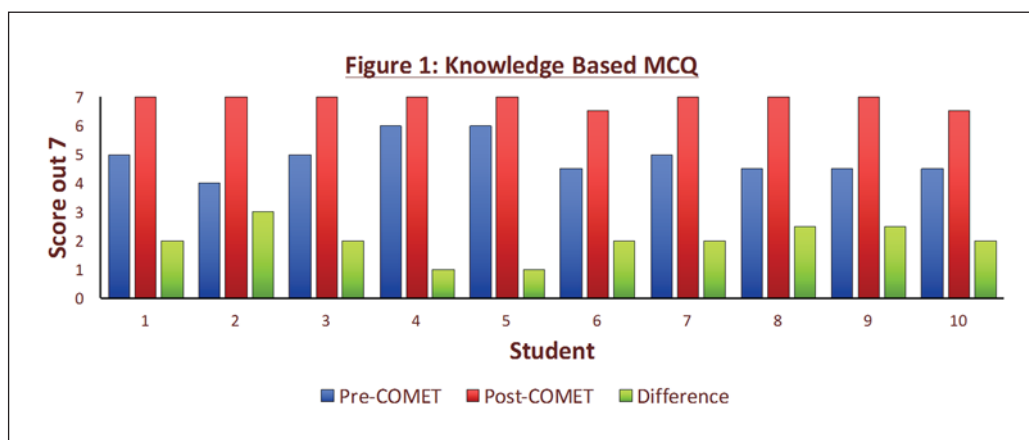
¹George Eliot Hospital, Nuneaton, United Kingdom

Introduction: COMET is a four station, case based OSCE based simulation training on a patient journey in hospital. It is a programme devised to deliver and formatively assess clinical skills and confidence levels on a case basis with an innovative approach. This project evaluates one hospital's experience of the use of simulation-based teaching in the medical undergraduate curriculum in the context of management of acutely unwell Urological patients, using a low fidelity simulator.

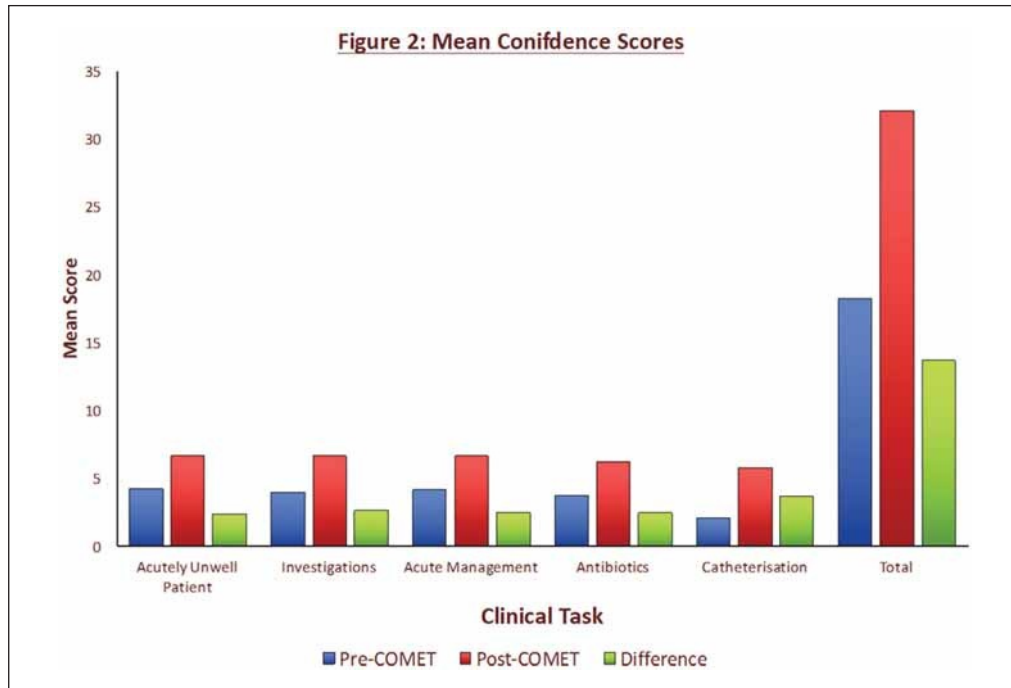
Method: The COMET comprises of 4 stations which may be either theory or practical. Each station lasts for 15 minutes, with 10 minutes for the student to fulfil the practical element and 5 minutes for station specific discussion / feedback. There is a pre session MCQs & confidence form, which the candidates repeat after the stations, then have an educational personalised debrief.

Results: All of the student improved their MCQ questionnaires, all gaining full marks on the post-COMET MCQ, showing they had learnt the desired material. Though their confidence questionnaires showed the true value of this method, as all were increased, however some as much as 300%.

Discussion: This COMET assessed the students in many areas including; an acutely ill urological patient, uro-radiology, ABCDE assessment, sepsis, prescription and catheterisation. This training shows that urological training can be taught to undergraduate medical students using COMET to not only improve knowledge but also improve confidence in the candidates, in many aspects of the urological curriculum.



P2-6: Figure 1



P2-6: Figure 2

RESULTS & STATISTICS					
Clinical Task	Pre-COMET Mean & Standard Deviation		Post-COMET Mean & Standard Deviation		p value
Acutely Unwell Patient	4.25/10	1.69	6.65/10	0.91	<0.001
Investigations	4.00/10	1.31	6.65/10	1.23	<0.001
Acute Management	4.20/10	1.46	6.70/10	0.86	<0.001
Antibiotics	3.75/10	1.40	6.25/10	0.63	<0.0001
Male Catheterisation	2.10/10	1.68	5.8/10	1.42	<0.0001
Total	18.30/50	6.31	32.05/50	3.83	<0.0001

P2-6: Figure 3

P2-7 Mobile apps for lower urinary tract symptoms

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Introduction: Lower urinary tract symptoms (LUTS) history taking can be time consuming, embarrassing for the patient and subject to recall bias. We have designed 2 mobile applications (one for men and one for women) that act as a thorough ‘symptom checker’ to be completed

by patients prior to consultation. Our aim is to improve both the accuracy and efficiency of LUTS consultations.

Materials & Methods: Symptom questions were identified by means of literature review, expert opinion and review of established evidence based scores. The applications were designed and launched on the Apple iTunes store. They are free to download and use.

Results: Within 6 months of launch, 2,500 users have downloaded the male LUTS application. The female LUTS app, has approximately 1,500 users within 2 weeks of release. Completion of the survey produces a lay summary for the patient and a clinical report for a medical

professional. User reviews suggest the applications are simple to use and produce an in-depth report that can be discussed with a doctor.

Conclusion: We have produced mobile applications that allow patients to identify their key urinary symptoms to a high level of detail improving the data gathering exercise and time efficiency. Further development of the applications includes recommendations of whether primary or secondary care assessment should be sort, translation to additional languages and an interactive bladder diary.

P2-8 A patient centred, self-management app providing digital support and follow up care for citizens with prostate cancer

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Introduction: The challenges of increasing cancer survivors, National Survivorship Programme/Recovery package and drive to stratified care combined with funding and workforce constraints require novel approaches to follow-up care.

We describe a web-based App facilitating stratified care through remote patient self-management for patients undergoing follow-up for prostate cancer.

Method: Patients with stable prostate cancer were eligible for recruitment. The App was offered as a replacement to face to face follow-up or for communication and support. App functionalities include remote follow-up, self-reporting of disease/ treatment effects, multimedia information/ sign posting and secure messaging to a clinical nurse specialist. Outcomes included up-take, use of App functionalities, number of follow-ups delivered, escalations in care and user satisfaction.

Results: One hundred and twenty patients identified were eligible for the App. Sixty five patients recruited generated 342 messages and 627 patient self-reported disease/treatment effect entry sessions providing 3036 readings. Sexual health and hormone side effects were most common reported issues. Sixty-six per cent of users were over 69 years. Forty four patients received digital follow-up over the 10 month period. Clinician concerns about disease progression or user lack of internet access or device were the principle obstacle to recruitment.

Conclusion: The App was safe and allowed patients to provide feedback upon symptoms, wellbeing and interact proactively with their healthcare team on an ad hoc basis as well as regular follow-up. This fundamental change in approach to delivery of clinical care has wider application to a range of urological conditions.

P2-9 A prospective clinical, cost and environmental analysis of a clinician-led urology virtual clinic

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Introduction: Incorporating innovative telehealth strategies such as a virtual clinic (VC) in the follow-up pathway for patients is one method to fiscally accommodate the increased service demands on urology departments. Globally, healthcare providers have been set targets to ensure the increasing implementation of eco-friendly options when delivering their services. The objective of our study was to quantify the clinical, financial and environmental benefits of our VC service.

Patients & Methods: We prospectively collected data from our follow-up VC over a continuous 4-month period between July and October 2017.

Results: In total, we reviewed 409 patients. 68.5% of our patient were discharged from further follow-up. The majority of our patients were of working age. Patient satisfaction with our service was at 90.5% and there were no reported adverse events due to our VC. NHS commissioners in total saved £19,153 with a predicted 12-month cost saving of £57,459. In total 4 623 travel miles were avoided by patients' due to our VC with an estimated avoided carbon footprint of 0.35 – 1.45 metric tonnes of CO₂e. Our predicted 12-month avoided carbon footprint is 1.05- 4.35 metric tonnes of CO₂e.

Conclusions: Our VC model has shown to deliver positive fiscal outcomes from our department without compromising on patient care and satisfaction. Our study is also the first to report and quantify the environmental benefits of a urological VC and we propose that this should be promoted as a social enterprise value when engaging stakeholders in setting up such a urological service.

P2-9: Table 1. Summary of results. VC = Virtual Clinic, CF = Carbon Footprint, mtCO₂e =metric tonnes of carbon dioxide equivalent.

Patients	Male	Female
Total no.	281	128
Median Age	60	61.5
% at working age	57.7	55.5

P2-9: Table 1. (Continued)

Clinical Outcome	Discharged 68.5%	Re-book VC 16.1%	Face-to-face clinic 13%	MDT discussion 2.4%	
Patient satisfaction	Very Happy 68.3%	Happy 22.2%	Neither happy of unhappy 6.7%	Unhappy 1.1%	Very unhappy 1.7%
Costs	VC £8250	Face-to-face clinic opportunity cost £27 403	Cost savings £19,153	Projected 12-month cost saving £57,459	
Environment	Avoided Travel Distance (miles) 4623	Avoided CF (mtCO ^{2e}) 0.35 – 1.45	Projected 12-month avoided CF (mtCO ^{2e}) 1.05 – 4.35		

P2-10 Cost benefit analysis of a disposable flexible cystoscope for ureteric stent removal

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Introduction: Ureteric stent removal is a common procedure, requiring endoscopy theatre time, a reusable flexible cystoscope and stent grasper. We evaluate the costs and benefits of Isiris™ (Coloplast, Denmark), a mobile, single use flexible cystoscope with a built in stent grasper.

Methods: A prospectively collected database was reviewed to define procedural outcomes for Isiris™ ureteric stent removal. Variables assessed included stent duration and location of removal. A cost assessment was performed evaluating the impact on costs, funding and facility utilization.

Results: 93 procedures were performed using Isiris™ between April and September 2017. The median (interquartile range) and mean time of delay was 0 (0-2) and 2 days. The procedures were performed in clinic (81.7%), emergency (2.2%), ward (6.5%), day procedure unit (3.2%) and the endoscopy suite (6.5%). 83 elective cystoscopy appointments were made available as a result of implementation. The hospital's remuneration for stent removal is £875, with disposable costs of £230 per case, resulting in a surplus £59,985 for 93 procedures. Over the previous 12 months, scope repairs/replacement cost on average £2850 per month. In the six months following implementation of Isiris™, only one scope was damaged (£3220), resulting in a surplus of £13,880 on repairs/replacements. Isiris™ implementation resulted in a net financial benefit of £73,865.

Conclusions: Isiris™ flexible stent removal offers our patients a rapid stent removal service, with low rates of removal delay. Savings have been made in scope repair costs, sterilisation and scope maintenance, as well as optimisation of theatre and procedure room space.

P2-11 A one-stop prostate cancer diagnostic clinic incorporating same-day multiparametric MRI and prostate biopsies; assessment of sustainability over a one-year period

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Introduction: Incorporating pre-biopsy multi-parametric MRI (mpMRI) to prostate cancer diagnostics may impact 31/62 day cancer target compliance. We introduced a same day service with clinical assessment, mpMRI and appropriate prostate biopsy. Initial results were positive, reducing time to diagnosis from 28 to 16 days; we aim to review whether these effects are sustainable.

Methods: We retrospectively reviewed all referrals to the prostate cancer diagnostic clinic from a period after implementation of the new service (June-November 2016) and after 1 year (June-November 2017). Clinical and MDT outcomes were used to establish; the proportion of patients undergoing same day mpMRI, subsequent biopsy (same day or delayed due to patient choice or template biopsy), and cancer diagnosis in both cohorts. The time from referral to diagnosis and proportion of patients referred for surgical management before day 38 of the 62 day pathway was also compared.

Results: Clinic attendance increased from 143 to 241 patients over the time intervals. The proportion of patients undergoing same day MRI was similar (89% vs 80%) though all scans were reported and reviewed on the same day in the latter cohort. The proportion of patients biopsied was unchanged (37% vs 36%) but more patients were discharged/started PSA surveillance in the second cohort (28% vs 57%). The time to diagnosis was similar but the proportion of patients referred for surgery before day 38 was higher in second group (70% vs 93%).

Conclusion: The same day prostate diagnostic service has improved 31/62 day target compliance. This effect is sustainable and continues to improve despite an increase in patient volume.

P2-11: Table 1

	June-November 2016	June-November 2017
No patients attended	143	241
% Same day MRI (%)	89%	80%
% Same day MRI report	72%	80%
% patients discharged /started PSA surveillance after single visit	28%	57%
No Patients biopsied (%)	53 (37%) – 12 same day	86 (36%) – 28 same day
Average time from referral to diagnosis	16 days (14 days for same day biopsy)	19 days (14 days for same day biopsy)
% patients referred for radical surgery before day 38	70%	93%

P2-12 Significant cost savings achievable with diagnostic pathway for prostate cancer based on PROMIS data

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Aim: Prostate biopsies are not widely enjoyed by patients and using MRI to reduce their number would reduce septic complications and improve patient experience. Is it cost effective? We performed an economic review of the previous local prostate cancer diagnostic pathway of biopsy followed by MRI imaging compared to the cost of the current pathway using MRI prior to biopsy, in line with PROMIS trial data.

Methods: Judgement analysis was used to produce an outcome flow chart with probability of each pathway branch occurring. Cost for each portion of the process was allocated. Costings were produced by local business intelligence unit micro analysing every step in the process, down to time spent with receptionist, to produce an average costing. National tariff data from NHS improvement website augmented this data.

Results: In the existing system of biopsy prior to MRI the average cost of the diagnostic pathway was £646.70. In the system after change, of MRI prior to prostate biopsy, the average cost was £473.35, with a cost saving per patient of £173.35.

Conclusion: We found that using MRI up front prior to biopsy can be very cost effective with a relative cost reduction of 27% versus performing the MRI following biopsy. Setting up a PROMIS trial style diagnostic pathway would be cost effective in addition to patient experience benefits.

P2-13 Is the “two-week wait” cancer pathway in urology fit for use, or open to abuse?

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Introduction: In 2000 the government introduced an initiative to expedite the review of patients with a suspected cancer diagnosis, termed the ‘two week-wait (2WW) pathway’. We evaluated the cancer detection rate for patients referred via this route to our department, to establish if this policy was still fit for purpose.

Methods: The rate of cancer detection in 9053 patients referred as ‘2WW’ between May 2012-May 2017 was established. A sub-analysis of 1054 patients referred between January 2017 -May 2017 was conducted. All patients were evaluated in a ‘one-stop’ clinic, with on-the-day access to phlebotomy, flexible cystoscopy, ultrasound, CT and MRI.

Results: 9053 ‘2WW’ patients were seen between May 2012 - May 2017. 1663 (18.4%) of these received a cancer diagnosis. 1054 patients were seen between January - May 2017. 197 (18.6%) of these had a cancer diagnosis. Non-visible haematuria yielded the lowest number of cancer diagnoses at 0.18%. 362 (34%) referrals did not adhere to the 2WW criteria, with only 20 (5.5%) of these receiving a cancer diagnosis.

Conclusions: The 2WW pathway aims to provide a timely review of patients with suspected malignancy. The incidence of cancer diagnosis at our institution in the 2WW cohort is 18% overall, but lower rates are seen in patients referred with non-visible haematuria and scrotal lumps. Cancer detection is higher when referrals adhered to national guidance. We recommend that BAUS conduct a snapshot national audit of 2WW cancer diagnoses, with subsequent review of guidelines to prevent inappropriate allocation of resources and unnecessary patient anxiety.

P2-13: Table 1. Cancer detection rate by referral type.

Reason for referral	Number of referrals (N = 1054)	Cancer diagnosis (N=197)	Appropriate referral
Raised PSA/abnormal DRE	445 (42%)	147 (33%)	350 (78%)
Visible haematuria	195 (18.5%)	23 (11.8%)	179 (91.7%)
Non-visible haematuria	136 (12.9%)	2 (1.4%)	100 (73%)
Testicular lump	105 (9.9%)	6 (5.8%)	96 (95%)
Renal mass	25 (2.3%)	7 (28%)	23 (92%)
Other (LUTS; recurrent UTI; pain)	148 (14%)	12 (8.1%)	25 (16.8%)

P2-14 Urologists beware - A study of the patterns of litigation in urology throughout the UK over the last decade

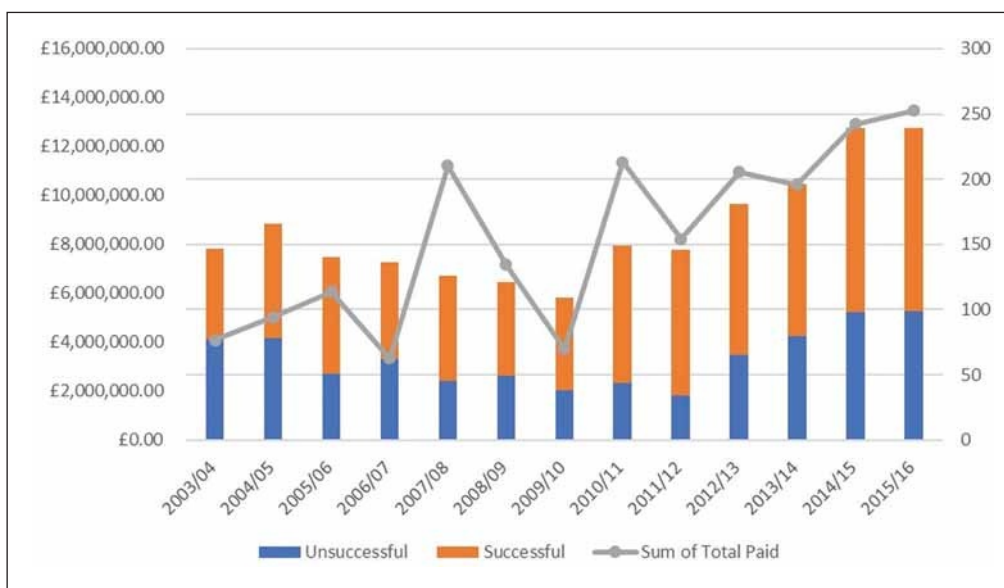
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Introduction: In an increasingly litigious society, medicolegal claims have been a significant fiscal burden on the National Health Service (NHS). In 2015-16 alone, NHS trusts paid out £1.45 billion in medical negligence claims. In this study we examine the trends in claims made against UK Urologists over the last decade and the associated costs. **Methodology:** A freedom of information request was submitted to the NHS Litigation Authority Data was analysed for all claims closed from 2003/04 to 2015/16.

Results: Over a 13-year period, 1,275 successful claims in urology were settled. The number of successful

urological claims has doubled over the studied period from 70 in 2003/04 to 140 in 2015/16. The overall success rate for claims was 60.9%, having fluctuated between 47.6% in 2003/4 and 76.7% in 2011/2. The overall sum paid to cover for damages/legal costs has been increasing significantly, even after adjusting for inflation: 2003/04 - £5,939,382; 2015/16 - £13,715,980. This is an average of £8,310,674 per year and £82,579 per successful claim. Urological litigation accounted for 1.2% of all litigation in NHS Trusts and remained stable during the studied period.

Conclusions: This study demonstrates a rise in the number of successful claims in urology since 2003/04 and an increase in settlement/legal costs. This upward trend should be a warning to urologists who should be better educated about the need for adequate medical indemnity, meticulous record keeping and appropriate precautions (e.g. chaperones).



P2-14: Figure 1

P2-15 Collaborating with geriatricians to improve care for frail patients on a urology ward

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¹Royal Derby Hospital, United Kingdom

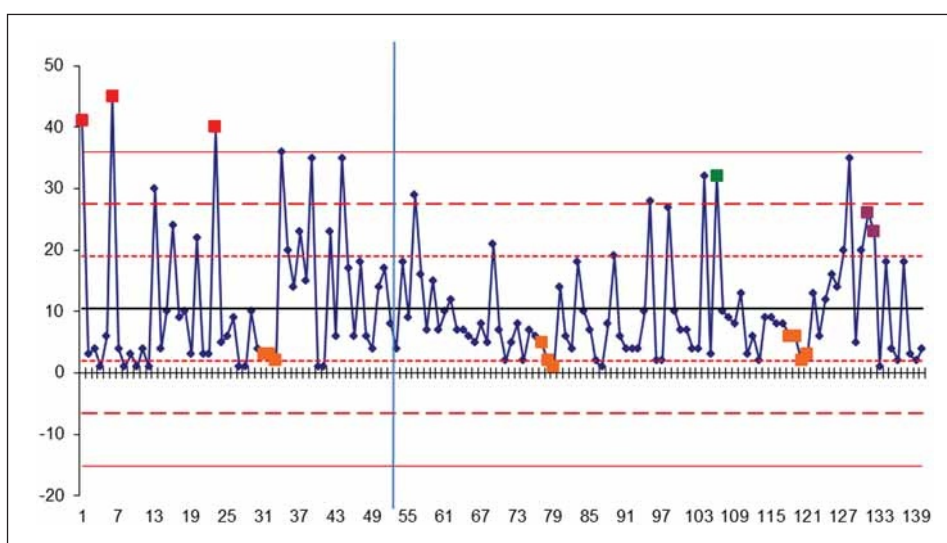
Introduction: Long term catheterisation is used when patients are too frail for intervention or medical management of retention or incontinence. By definition these therefore tend to be more frail patients with multimorbidity. Their urological problem can be quickly resolved – however, complex medical and social issues, with protracted cross-team discussions can take longer. Historically, only nine geriatric medicine referrals had been made over an 8 month period with a mean lag of 9 days from admission to referral (range 3-27).

Patients and Methods: This project involved a collaboration between geriatric and urology teams. Iterative

service design used a Plan-Do-Study-Act (PDSA) approach. Geriatricians (specialist registrar and nurse consultant) visited the urology ward daily, reviewing patients who met local frailty criteria. A subsequent PDSA cycle led to the initiation of a ward based MDT to discuss and support management of complex patients.

Results: 144 patients were seen over one year, 84% male, mean age 83. Using statistical process control (SPC) charts to analyse length of stay (LOS), a mean reduction of 1.68 days was seen. Total inpatient days saved was 148. Concurrent qualitative feedback indicated more timely resolution of medical and discharge issues through more prompt MDT discussions.

Conclusion: This collaboration shows that combining geriatric and urology teams to care for frail patients can lead to a reduced hospital stay; the historically lengthy cross team discussions have been reduced. This model has now been embedded as part of routine practice in our institution.



P2-15 Figure 1. Statistical Process Chart of length of stay (LOS) from beginning of liaison for one year.

Each patient and their LOS is represented by a dot and are plotted in order of time.

Vertical blue line represents initiation of MDT and use of local frailty criteria.

P2-16 Spare the scope. Guideline-based flexible cystoscopy safely improves capacity with cost savings

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Introduction: National guidelines provide clear indications for flexible cystoscopy (FC). We reviewed our practice against current guidelines to evaluate compliance and to enhance patient safety and capacity utilisation.

Patients and Methods: A retrospective study from September-October 2017 of our FC practice. We compiled data for indications and findings of FC using an electronic patient record.

Results: 413 FC were carried out over the study period. The most common indications were cancer surveillance (116, 28.1%) and visible haematuria (74, 17.9%). 133 (32.2%) were done for non-recommended indications. The most frequent conditions that deviated from guidelines were LUTS (48, 11.6%), UTI (36, 8.7%) and non-visible haematuria (28, 6.8%). 13 (3.2%) had repeat FC for cancer surveillance at inappropriate intervals. In all non-visible haematuria

cases and 51 (73.9%) of LUTS patients, FC was non-contributory. More than 50% of suspected stricture patients had no prior flow rate completed. Adherence to guidelines would have yielded 32% of FC slots. Based on current UK National Tariffs, cost savings would have been £195,500 annually.

Conclusions: FC is a frequent investigation within urology departments for which clear referral guidelines exist. Protocol driven FC enables appropriate use, ensures patient safety and leads to efficient utilisation of capacity with substantial cost savings.

ePoster Session 3:

Andrology, Reconstruction, Penile Cancer and Male Infertility

Tuesday 26 June

08:30 - 10:00

Room 12

Chairs: Raj Persad & Ayman Younis

P3-1 The emergency management of priapism in the United Kingdom: a survey of current practice

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Introduction: Priapism is a rare urological emergency for which prompt recognition and management is fundamental to preventing long-term complications. There are currently no UK guidelines and the state of practice remains largely unknown. The present study aimed to address this deficit.

Materials and Methods: All Full, Associate and Trainee members of the British Association of Urological Surgeons (BAUS) were invited to participate in an online survey. Questions related to frequency of encountered cases, utilisation and confidence in key management steps, access to tertiary andrology services and guideline use.

Results: 213 of 1304 (16.3%) eligible members completed the survey. The majority reported encountering one case annually (median=1, range 0 to >10). Only 7.0% reported transferring patients to a tertiary centre. Respondents were less confident in performing intracavernosal phenylephrine instillation (88.7%) compared with corporal aspiration (98.1%), with 68.5% performing the distal shunt procedure. Overall, only 155 (73.1%) were aware of the existence of guidelines, with those published by the

European Association of Urology being most popular (53.8%). 205 respondents (96.2%) expressed an interest in the development of a UK guideline, with 162 (76.4%) indicating they would use this in practice.

Conclusions: This study demonstrates that whilst access to specialist andrology support appears satisfactory, some practitioners lack confidence in important management steps. Furthermore, utilisation of current guidelines is variable with over a quarter of respondents unaware of their existence. There appears to be overwhelming support for the development of up-to-date UK specific guidelines aimed at providing standardised, high quality care across the NHS.

P3-2 How to do a circumcision, when the foreskin is welded to the glans. The ROLOCS (restoration of the lost obscured coronal sulcus) procedure

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Introduction: In patients with penile lichen sclerosus (LS), adhesions between the glans and prepuce are common. In patients, with particularly severe LS, these adhesions are difficult or impossible to separate. Our novel ROLOCS procedure uses an antegrade approach to the preputial adhesions leaving a fine layer of dartos covering the glans rather than denuding it. Residual epithelial cells in this layer are left to recover the glans over the following weeks.

Method: Over a five-year period, 22 patients with severe preputial adhesions underwent the ROLOCS procedure in two UK centres. We prospectively analysed results of the treatment and complications. 20 patients have been followed up postoperatively (two lost to follow up) for a minimum of 8 weeks.

Results: Three patients had pre or post-operatively diagnosed penile malignancy. The remaining 19 had only lichen sclerosus. In all patients glans has re-epithelialised and healed without the need skin grafting. There have been no major postoperative complications. Only one patient of our cohort has required adjuvant clobetasol treatment, one diagnosed with CIS underwent subsequent glans resurfacing procedure: in the other 18 cases the lichen sclerosus appears to be in remission.

Conclusions: The ROLOCS procedure is an effective method of circumcision for LS with severe preputial adhesions. Cosmetically, the final outcome is better than that seen with a traditional approach and subsequent grafting, or partial circumcision. Oncologically, ROLOCS is also superior to partial circumcision by providing both better treatment of the LS and an adequate histological specimen to identify underlying malignancy or CIS.

P3-3 Glanspexy for floppy glans - outcomes and patient satisfaction

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Introduction: Floppy glans is a known complication of penile implant surgery. Although glanspexy represents the only solution when vasoactive drugs are ineffective, very little is available in the literature regarding the outcomes from this procedure.

Methods: The notes of patients who have undergone penile prosthesis implantation over a five year period (2012-2016) have been retrospectively reviewed to identify the cases of true glans hypermobility who underwent glanspexy. Treatment outcomes and complications were extrapolated from patient notes and modified EDITS questionnaire. Significance was determined using an unpaired t-test.

Results: Out of 1018 patients who had previously undergone penile prosthesis implantation, 21 patients underwent glanspexy. A modified EDITS questionnaire was administered through a telephone consultation in 17 patients. Surgical outcome was extrapolated from the clinical notes in 3 patients while one patient was lost to follow up and was therefore excluded from the series. Overall, 15 of the 20 patients (75%) were satisfied at the postoperative follow up visit and had a supported glans. The EDITS questionnaire revealed that 12 patients were satisfied with the outcome of surgery, 2 were neither satisfied nor dissatisfied and 3 were dissatisfied.

Glans sensation was unchanged in 11 patients, reduced in 4 and improved in the remainder. Level of satisfaction was significantly lower ($p=0.0006$) in comorbid patients, such as severe Peyronie's disease, multiple penile implant exchanges, proximal urethroplasty, cystectomy, previous failed glanspexy, paraplegia and previous oncological treatment.

Conclusions: Glanspexy represents a safe and reproducible procedure for the management of hypermobile glans non-responsive to medical treatment.

P3-4 Oncological outcomes of 100 glans resurfacing procedures for superficial invasive penile cancer

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Introduction: Glans resurfacing (GR) involves excision of the penile glans, subcoronal epithelial and sub-epithelial tissues with partial thickness skin grafting. In our unit, GR

has also been extended to treat presumed superficially invasive squamous cell carcinoma of the penis (SCCp).

Materials and Methods: Since February 2004, 100 patients underwent GR for SCCp (34 were partial GR). Data were recorded prospectively on positive margin, early revision and local recurrence rates. Pathology was reviewed and reclassified using TNM7.

Results: The median age was 63 (IQR 54–70) years and median follow-up was 56 (IQR 32-86) months. On final histology 49% were pT1a, 24% T1b, and 27% pT2. 4/87 patients with pathologically clear margins developed local recurrence or a new primary: 2 glans recurrences (14 & 20 months) requiring glanspexy, 1 new penile shaft tumour (54 months) requiring wide local excision (WLE) and 1 new urethral primary (39 months) requiring radical penectomy. 13/100 patients had a positive margin: 10 deep, 1 urethral and 2 glans margins (all partial GRs). 3 men had early revision surgery (2 glanspexies, 1 total GR) – 2 had residual cancer and 1 PeIN. The remaining 10 men were observed and 2 developed a recurrence at median follow-up of 15 months subsequently treated with WLE or total GR. Overall recurrence and revision rate was 8%.

Conclusions: Recurrence following GR for SCCp is low if surgical margins are clear. Focal positive margins can be closely observed as many will not recur and those that do can usually be managed with WLE.

P3-5 Does the type of surgical procedure for inguinal lymph node management affect survival rates for patients with squamous cell carcinoma of the penis?

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Introduction: The surgical management of inguinal lymph nodes in patients with penile SCC depends on clinical status (cN0/cN+). Patients suitable for dynamic sentinel node biopsy (DSNB) may require a radical lymphadenectomy due to FNAC positive nodes. Whether this impacts on overall survival is unknown. The aim of this study was to compare the 5-year survival for patients undergoing DSNB, radical inguinal lymphadenectomy (RILND) for cN0 and cN+ disease.

Materials and Methods: A single centre penile cancer database reviewed a patient cohort over a 6-year period with a minimum of 2-years follow-up. Patients were divided into 3 groups according to the type of procedure and the lymph node status. Group A-negative DSNB, Group B-RILND due to positive DSNB or FNAC and

Group C-RILND due to palpable nodes. The five-year cancer-specific survival was calculated using Kaplan-Meier curves for each group. Statistical difference was calculated by the Log-rank test.

Results: The cohort comprised 262 cases. 5-year cancer-specific survival for Group A=99% (n=133), Group B=69% (n=26) and Group C=36% (n=100). $P < 0.0001$. Figure 1.

Adjuvant chemo/radiotherapy in Groups A, B and C was none, 4 (15%) and 43 (42%) respectively. Four patients with negative DSNB subsequently developed metastatic inguinal lymph nodes but were kept in Group A. Overall the 5-year CS survival was 74%.

Conclusion: Patients with cN0 disease and no metastases on DSNB have excellent 5-year cancer-specific survival rates. Despite presenting with cN0 disease, patients requiring a RILND for micrometastases still have a significantly reduced 5-year survival although better outcomes than those with palpable disease.

P3-6 Management of the clinically negative contralateral groin when the ipsilateral groin is clinically and pathologically positive in squamous cell carcinoma of the penis

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Introduction & Objectives: Management of the contralateral non-palpable inguinal basin (cN0) when the ipsilateral basin is clinically and pathologically positive (cN+/pN+) in SCC of the penis remains contentious. Our centre's practice is to perform an FNA on the cN+ groin for pathological diagnosis followed by ipsilateral radical inguinal node dissection (ILND) with contralateral dynamic sentinel node biopsy (DSNB). We aim to establish the probability of the contralateral inguinal basin being pN+ when the ipsilateral side is cN+/pN+.

Methods: We reviewed our prospective DSNB database since 2003. Patients with ipsilateral cN+/pN+ who had a contralateral DSNB were identified. All patients were reclassified according to TNM 7 and reviewed at MDT. The probability of the contralateral DSNB being positive was calculated and compared to the rate of the contralateral basin being pN+ when the ipsilateral basin is cN0/pN+. Chi squared test was used for statistical analysis.

Results: 614 patients underwent DSNB between 2003-2017. 42 patients were identified with unilateral cN+/pN+. Of these, 16 patients (38%) had pN+ disease in the contralateral groin after DSNB. In patients with bilateral cN0 groins, 84 patients (14.6%) had a positive DSNB. 52 (9%) unilaterally positive and 32 bilaterally positive (5.5%) ($p < 0.01$).

Conclusion: There is a statistically significant increased risk of the contralateral inguinal basin being involved with cN+/pN+ disease. The rate of 38% positivity however

would still support our practice of contralateral DSNB by reducing surgical morbidity in 62% of patients. We recommend using DSNB prior to groin dissection in all clinically negative groins.

P3-7 Role of modern imaging in reducing false negative rate of dynamic sentinel node biopsy (DSNB) in penile cancer- a prospective study over an 8-year period in >100 patients

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Introduction: DSNB is a standard staging technique for management of impalpable lymph nodes in penile cancer. However, studies suggest false negative rate (FNR) is around 10% (5-13%). We present our data on DSNB with radiologically enhanced inclusion criteria.

Methods: 114(228 groins) consecutive patients who had DSNB in a tertiary referral centre from Jan 2010 to 2018 were included in the study. All intermediate and high risk patients under went Ultrasound+/-FNA and MRI/ CT to stage their disease. We used combined clinical & radiological criteria (node size, architecture loss, irregular margins) to stratify patients for DSNB vs ILND (Inguinal Lymph Node Dissection).

Results: 23(20.1%) patients had Sentinel Node (SN) positive disease and 19 of them under went completion ILND. 4 patients with micro-metastatic disease, who refused ILND, are being monitored and had no recurrence so far. 81 patients had bilateral SN negative disease. 5/10 remaining patients needed ILND by radiological criteria to exclude metastasis. 5/10 patients had single sided drainage and are being monitored. With mean follow-up of 45 months (range 3-96) false negative rate for DSNB is 0%. 2 patients would have had false negative result by DSNB if only a clinical criterion is applied and 5 true negative patients had to have ILND to exclude groin metastasis.

Conclusion: Combined clinical and radiological stratification of patients achieve 0% false negative rate for DSNB at a mean follow-up of 45 months, with 5 patients (2.2%) requiring additional ILND to exclude the disease. 71% of the patients avoided the morbidity of Radical ILND.

P3-8 Bulbar urethral strictures after the treatment of prostate cancer (CaP)

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Introduction: There are few reports in the literature on isolated bulbar urethral strictures after treatment of CaP because they often merge indistinguishably with bladder

neck contractures (BNC) after radical prostatectomy or with prostatic stenoses after irradiation. We have reviewed our experience to identify such strictures, presentation and characteristics, management and outcomes, particularly distinguishing post-surgical from post-irradiation strictures.

Patients and Methods: 171 patients with isolated bulbar urethral strictures (not BNC) following CaP treatment were identified. 56 (32.7%) underwent urethroplasty; 115 (67.3%) managed by interval dilatation, self-catheterisation or indwelling catheter.

Results: 38 of 56 (67.9%) urethroplasties were in patients with post-surgical strictures. They presented 3-13 weeks after surgery with voiding difficulty in all but not retention. Stricture length ranged between 5-17mm. None were obliterative. A graft/flap repair was performed in all with successful outcome in 32 (84.2%). Post-irradiation strictures managed by urethroplasty were fewer (n=18; 32.1%), presented later (13-27 months) commonly with retention (12/18; 66.7%). They were longer (11-60mm) and 11 (61.1%) obliterative. 4 underwent EPA (3 failed) and 14 underwent flap repairs (2 failed) for a total success rate of 72%. In-patient stay was longer following irradiation (4d vs 1d); time to recovery was also significantly longer (5w vs 2.5w).

Conclusion: Only a select minority of bulbar strictures after CaP treatment are suitable for urethroplasty. The outcomes in post-irradiation strictures are less satisfactory. In these patients the stricture itself is not the only problem; the state of the bladder, bladder neck and risk of injuring the external sphincter are also important and need to be taken into consideration before considering urethroplasty.

P3-9 Evaluation of patient reported outcome methods (PROM) in patients undergoing different approaches to bulbar urethroplasty

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Introduction and Objectives: The Jackson PROMS have been validated to assess subjective outcome in patients undergoing penile/bulbar urethroplasty. This study evaluates this for the various techniques used for bulbar urethroplasty (with and without buccal grafts; transecting and non-transecting) using the said PROM.

Patients and Methods: 189 of 232(81.5%) patients undergoing excision and primary anastomosis (EPA, n=17), dorsal/ventral graft augmentation (DVP, n=126), non-transecting anastomotic (NTABU, n=23) or augmented non-transecting anastomotic urethroplasty (ANTABU, n=23) completed both pre- and post-operative (at 6 months) questionnaires between 2014-16.

Results: The results are summarised in Table 1. There is a statistically significant lower improvement in LUTS score (p=0.014; IC 95% 0.8 to 7.4) and perceived flow (p=0.0037; IC 95% 0.3 to 1.5) with EPA compared to the other treatment modalities (globally as "non-transecting"). Nevertheless, there was no significant difference in their overall health status (p=0.82; IC 95% -8.4 to 10.6) and 100% of respondents having had this procedure were satisfied/very satisfied with the surgical outcome. Comparing those having a graft augmentation (DVP+ANTABU) and those having an anastomotic procedure without graft (EPA+NTABU), there was no statistically significant difference between the two for every parameter in the PROM.

Conclusion: Overall the PROM seems to be very satisfactory but the results with EPA are clearly different. It may be due to a different aetiology – external trauma – and because most of them presented with suprapubic catheters, both of which would alter their perception compared with that of patients with non-traumatic strictures. Use of a buccal graft is not associated with a worse subjective outcome.

P3-9: Table 1

		Overall respondents	EPA	DVP	NTABU	ANTABU
Mean LUTS score (Q1-6)*	Pre-op	13.9 (n=155)	9.9 (n=11)	14 (n=103)	15.5 (n=20)	13.9 (n=21)
	Post-op	4.1	4	4.3	3.2	3.6
	Mean Difference	9.8	5.9	9.7	12.3	10.3
Perception of flow (Q8)**	Pre-op	3.4 (n=154)	3.4 (n=11)	3.4 (n=101)	3.4 (n=20)	3.3 (n=22)
	Post-op	1.9	2.7	1.8	1.8	1.8
	Mean Difference	1.5	0.7	1.6	1.6	1.5
Health Status VAS (Q10)***	Pre-op	70.4 (n=163)	69.4 (n=14)	70.8 (n=105)	72.5 (n=22)	67.4 (n=22)
	Post-op	79.6	77.5	79.3	79.6	82.4
	Mean Difference	9.2	8.1	8.5	7.1	15
Satisfaction	Satisfied/very satisfied	156 of 164 (95.1%)	14 of 14 (100%)	101 of 106 (95%)	19 of 22 (86%)	22 of 22 (100%)
	Unsatisfied/very unsatisfied****	8 of 164 (4.9%)	0	5 of 106 (5%)	3 of 22 (14%)	0

*Total LUTS scores (0–least symptomatic; 24–most symptomatic). **patient perception of flow using the Peeling voiding diagram (1 best; 4 worst). ***Health status visual analogue score (100–best imaginable health; 0–worst). ****5 were unsatisfied because the urinary condition did not improve; 3 because the urinary condition improved but there was another problem.

P3-10 Aetiology, presentation and initial evaluation of urethral disease in the United Kingdom

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Objective: To determine the volume and its complexity of urethral pathology presenting for reconstructive surgery in the UK.

Methods: Between June 2010 and the end of May 2017 4,809 men were enrolled onto a secure online data platform with surgeon entered information being collected in 252 variable fields. Data regarding patient's underlying urethral pathology, its aetiology, prior management, presenting symptoms and investigations was collected as a prelude to investigation with a view to surgical intervention.

Results: Surgeon data entry was 70.7% complete for all men in the study. 94% of patients were referred with stricture disease of which the vast majority was due to uncomplicated disease in the bulbar urethra, peno-bulbar segment or penile urethra. 26% of strictures were consequent upon either Lichen Sclerosis or previous hypospadias surgery, both of which were responsible for a large amount of revisional surgery, and physical trauma, or complex iatrogenic trauma, caused 10% of strictures and 22% of fistulae. Acute retention was a surprisingly common form of presentation, especially for men with posterior urethral or bladder neck strictures. Patients performing Clean Intermittent Self-dilatation (CISD) had a lower incidence of retention. UK compliance with guidelines about initial management of the man with a recurrent urethral stricture, and its evaluation, appears poor.

Conclusion: Online databases can provide very significant amounts of information about the aetiology and volumes of men demanding reconstructive urethral surgery. They demonstrate patterns of disease and management and indicate national compliance to accepted standards of practice for urethral reconstruction.

P3-10: Table 1. The presumed predominant underlying cause for urethral pathologies recorded in 4,398 men.

Cause of urethral problem	Incidence		
	Stricture	Fistula	Untreated hypospadias
No identified cause	39%	22.5%	
Lichen sclerosis	13.5%	1.9%	
Hypospadias/previous treatment	12.9%	50%	100%
Physical/ complex iatrogenic trauma	10.2%	21.8%	
Catheter	7.8%	1.9%	
Previous endoscopic surgery	4.6%	1.9%	

P3-10: Table 2. The incidence of presentation with recurrent stricture following previous urethroplasty in 4,032 men.

Stricture site	Cases	Previous urethroplasty
Penile	774	51.2%
Meatus & Navicular fossa	442	31.8%
Peno-bulbar	438	27.8%
Bulbar	2,153	11%
Bulbo-prostatic	191	13.6%
Bladder neck	34	2.9%

P3-10: Table 3. The aetiologies causing presentation with recurrent stricture, and their incidence of occurrence following previous urethroplasty, in 3,744 men.

Stricture aetiology	Previous urethroplasty
Hypospadias/previous treatment	77.7%
Lichen sclerosis	24.1%
Physical/iatrogenic trauma	14.3%
Catheter	12.5%
No identified cause	10.4%
Previous endoscopic surgery	6.7%

P3-10: Table 4. The sites of presentation with recurrent urethral stricture following, one (1 op) or more than one (>1op) previous urethroplasty, for lichen sclerosis associated stricture disease or previous hypospadias repair.

Stricture site	lichen sclerosis		previous hypospadias	
	1 op	>1 op	1 op	>1 op
Bulbar	14.9%	8%	7.9%	8.2%
Peno-bulbar	3%	12%	5.5%	3.8%
Penile	41.6%	72%	60.4%	75.6%
Meatus & Navicular fossa	40.5%	8%	26.2%	12.4%
Number of patients with recurrence	101	25	164	209
Overall recurrent stricture rate	19.2%	4.9%	34.2%	43.5%

P3-10: Table 5. The percentage of 4,067 men presenting in urinary retention, dependent upon stricture site, and the percentage performing self-dilatation at referral.

Stricture site	Cases	Presentation in retention	Self-dilating
Bladder neck	34	32.3%	17.6%
Bulbo-prostatic	196	72.5%	3.1%
Bulbar	2,161	20.2%	28%
Peno-bulbar	448	23.6%	33.9%
Penile	784	14.7%	32.1%
Meatus & Navicular fossa	444	7%	38.1%

P3-10: Table 6. Secondary urinary symptoms, recorded in 1,749 men with primary voiding symptoms, due to urethral stricture disease.

Secondary urinary symptom	Incidence
Post-micturition dribble	25.60%
Infective / inflammatory	23.60%
Storage urinary symptoms	17.50%
Spraying	13.30%
Pain on voiding	10.90%
Haematuria	8.20%
Asymptomatic large residual	0.90%

P3-10: Table 7. Incidence of sexual dysfunction, recorded in 982 sexually symptomatic men, with urethral stricture disease.

Sexual symptom	Incidence
Erectile dysfunction	12.40%
Ejaculatory problems	6.40%
Poor cosmesis	4.50%
Penile bend	1.20%

P3-11 Contemporary surgical management of urethral disease in the United Kingdom

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Objective: To determine the operative interventions utilised to deal with urethral stricture, fistula disease, and untreated adult hypospadias, together with their complications and subjective and objective outcomes.

Methods: Between June 2010 and the end of May 2017 4,809 men were enrolled onto a secure online platform to collect surgical and post-operative follow-up data. Data regarding patient's co-morbidity, the surgical approach, technique, peri-operative management, intra and post-op complications, post op symptoms and results of objective post-procedural investigations were collected.

Results: Mean age of patients at operation was 51.1 years and most men were ASA 2 or less. The majority of operations were performed for stricture disease of the bulbar urethra, peno-bulbar segment or penile urethra, most as a single stage procedures utilising dorsally applied buccal mucosa as an augmenting material. Follow-up data was available for 66.8% of all men with data completeness of 53.7%. The overall complication rates at follow up were 15.2% for strictures, 40% and 5.5% for posterior and anterior fistula repairs respectively and 11.8% for primary adult hypospadias surgery. Fistula and stricture recurrence rates were highest at the bladder neck and posterior

urethra, or in the distal anterior urethra after recurrent surgery for Lichen Sclerosus or following previous hypospadias repair.

Conclusion: Online databases provide considerable detail about the intra- and post-operative management of men having reconstructive urethral surgery. Analysis of complications and outcomes for individual patient groups allows definition of surgical groups dependent upon individual patient's complexity and risk.

P3-11: Table 1. The site of the urethral stricture recorded in 3,964 men.

Stricture site	Incidence
Bladder neck	0.8%
Bulbo-prostatic	5.1%
Bulbar	54.9%
Peno-bulbar	5.7%
Penile	22.5%
Navicular Fossa or Meatus	11%

P3-11: Table 2. The percentage surgical procedures performed, per stricture site, on 3,531 men.

Stricture site	Number of cases	Procedure	% repairs
Bladder neck	31	Abdominal-perineal repair	16.7%
		Anastomotic repair	72.2%
		Augmentation	11.1%
Bulbo-prostatic	188	Anastomotic repair	93.6%
		Augmentation	4.8%
		Augmented anastomotic repair	1.6%
		Augmented anastomotic repair	1.6%
Bulbar	2,024	Anastomotic repair, unspecified	17.90%
		Transecting anastomotic repair*	7.60%
		Non-transecting anastomotic repair*	4.10%
		Augmentation	65.30%
		Augmented anastomotic repair	4.20%
		Perineal urethrostomy	0.90%
Peno-bulbar	209	Anastomotic repair, unspecified	0.5%
		Transecting anastomotic repair	4.4%
		Transecting anastomotic repair	4.4%

(Continued)

P3-I1: Table 2. (Continued)

Stricture site	Number of cases	Procedure	% repairs
Penile	658	Non-transecting anastomotic repair	3.3%
		Augmentation	65.5%
		Augmented anastomotic repair	5.3%
		Perineal urethrostomy	10.5%
		Multi-stage procedure	10.5%
		Single stage augmentation	39%
		Multi-stage procedure	51.60%
		Augmented anastomotic repair	0.10%
		Perineal urethrostomy	9.30%
		Navicular fossa and meatus	421
Multi-stage procedure	75.10%		

P3-I1: Table 3. The number of cases, and reported percentage incidence of intra-operative complications, and complications noted at outpatients, dependent upon stricture site.

Stricture site	intra-op		outpatient	
	cases	complications	cases	complications
Bladder neck (BN)	30	0%	28	32.3%
Bulbo-prostatic (BP)	193	4.7%	137	23.4%
Bulbar (B)	2,108	2.1%	1,431	14.3%
Peno-bulbar (PB)	210	1.9%	123	14.6%
Penile (P)	776	0.6%	460	21.4%
Meatus & Navicular fossa (M&NF)	371	2.5%	210	14.8%

P3-I1: Table 4. The incidence of the ten commonest post-operative complications seen at outpatient review, dependent upon reconstruction site, in 2,392 men following urethroplasty.

Complication	mean incidence	BN	BP	B	PB	P	M&NF
Wound infection / breakdown	3.6%	12.9%	2.2%	2.7%	2.4%	7.8%	2.9%
UTI	3.6%	6.5%	4.4%	3.3%	3.3%	3%	2.9%
Leak/Fistula	2.3%	9.7%	4.4%	1.5%	-	4.3%	3.8%
Bleeding/haematoma	1.3%	3.2%	1.4%	1.1%	3.3%	1.7%	0.5%
Perineal/wound pain	1.2%	-	0.7%	1.5%	1.6%	0.4%	0.5%
Donor site/Mouth issues	1.1%	-	-	0.9%	2.4%	1.9%	0.5%
Inability to void	0.6%	-	2.2%	0.7%	0.8%	-	-
Obvious recurrence	0.6%	-	2.2%	-	-	1.1%	2.4%
Catheter problems	0.5%	-	1.4%	0.6%	-	0.2%	0.5%
Graft related issues	<0.1%	-	-	-	-	0.4%	-

P3-11: Table 5. The incidence of post-operative urinary symptoms in 2,496 men at follow up following urethroplasty, and the magnitude in improvement in those symptoms from the pre-operative state.

Urinary symptoms	Post-op Incidence	Improvement from pre op. incidence
Obstructive	8.7%	9 fold
Post-micturition dribble	7.5%	3 fold
Storage urinary symptoms	4.8%	4 fold
Spraying	3.2%	4 fold
Pain on voiding	0.6%	17 fold
Infective / inflammatory	1.8%	12 fold

P3-11: Table 6. The incidence of new sexual symptoms, in 1,981 men having had urethroplasty, and the magnitude in improvement in the same symptom from the pre-operative state.

Sexual symptom	Post-op Incidence	Improvement from pre op. incidence
Erectile dysfunction (ED)	5.4%	3 fold
Ejaculatory dysfunction	1.7%	7 fold
Penile cosmesis/bend	0.25%	28 fold

P3-11: Table 7. Urine flow rates, in 1,753 men at outpatients following urethroplasty dependent upon surgical site. Only 2 men having bladder neck reconstruction had a flow rate post-operatively.

Stricture repair site	Urine flow rate (mls/sec)				
	<5	6-10	11-15	16-20	>20
Bulbo-prostatic	5.4%	15.2%	15.2%	22.9%	41.3%
Bulbar	0.9%	4.2%	9.6%	18.3%	67%
Peno-bulbar	4%	8%	18.4%	23.6%	46%
Penile	1.3%	6.6%	18.3%	24%	49.8%
Meatal & Navicular fossa	0.7%	6.1%	14.6%	16.9%	61.7%
All sites	1.6%	5.6%	12.2%	19.8%	60.8%

P3-11: Table 8. Percentage of 4,091 men presenting with stricture disease having documented recurrence at follow-up.

Stricture repair site	Overall recurrence rate
Bladder neck	8.5%
Bulbo-prostatic	10.2%
Bulbar	2.2%
Peno-bulbar	4.2%
Penile	2.1%
Meatal & Navicular fossa	1.1%

P3-11: Table 9. The urine flow rates and incidence of documented recurrence in 1,763 men at outpatient review.

Peak Urine Flow rate	Number of cases	Incidence of recurrence
<5mls/sec	24	54%
6 – 10 mls/sec	99	30.3%
11 – 15 mls/sec	215	4.1%
16 – 20 mls/sec	348	0.9%
> 20 mls/sec	1,077	1%

P3-12 Is there a role for salvage or redo micro-dissection testicular sperm extraction in non-obstructive azoospermia?

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Introduction: Microdissection testicular sperm extraction (micro-TESE) is an increasingly favoured method of surgical sperm retrieval (SSR) for non-obstructive azoospermia (NOA). Increasingly, patients present for repeat SSR after previous failed or successful SSR. This study reviews the success of repeat micro-TESE and explores predictors of successful retrieval.

Patients and Methods: 153 patients underwent repeat micro-TESE. Group 1- salvage after previous failed cTESE or TESA (n=123); Group 2- repeat after previous successful cTESE or TESA (n=14); Group 3- salvage after previous failed micro-TESE (n=9); Group 4- repeat after previous successful micro-TESE (n=7). Analysis of clinical predictive factors for successful salvage or redo SSR was also performed.

Results: The mean (range) patient age was 37 (22-57). Overall repeat micro-TESE was successful in 45%. Success rates were: Group 1; 39% (48/123), Group 2; 79% (11/14), Group 3; 33% (3/9), Group 4; 100% (7/7) in Group 4. Only the presence of hypospermatogenesis was significantly associated with successful SSR in the salvage or redo setting (p=0.013). Age, serum hormones and testicular size were not statistically significant predictors of success. There were no reported cases of testicular atrophy or loss. **Conclusion:** Repeat micro-TESE is safe and the success rate of 45% is close to the reported primary SSR success rates in NOA. In the repeat setting sperm is found again in 79-100% of cases, while in the salvage setting sperm is still seen a third of cases, indicating that men with NOA could still have further SSR in carefully selected cases especially if hypospermatogenesis was seen on initial pathology.

P3-13 A UK multicentre study analysing the surgical sperm retrieval rates in men with non-mosaic klinefelter's syndrome undergoing mTESE

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Introduction: A contemporary meta-analysis (Corona et al, 2017) has demonstrated that the surgical sperm retrieval rates (SSR) in men with Klinefelter's syndrome (KS) undergoing TESE are approximately 50% worldwide. A number of confounding variables including demographic, clinical and biochemical factors may affect SSR. The aim of

this study was to assess these variables from multicenter specialist centres in the UK.

Patients and Methods: We retrospectively reviewed 1473 records and identified 73 patients with nonobstructive azoospermia and non-mosaic KS who underwent micro-TESE between 2004 and 2016, at 3 UK tertiary referral centres. All men underwent testicular ultrasound, hormonal and genetic blood testing and biopsies were sent for pathology and Johnson score evaluation.

Results: The prevalence of KS in our population of 4.96%. There was no significant difference in SSR between the Andrology centres. The mean right testicular volume 2.6cc and left testicular volume was 2.54cc. The overall SRR was 21.2% although sperm was found in 100% of testicles with hypospermatogenesis. Patient age ($p=0.42$), testicular size ($p=0.32$), serum FSH ($p=0.72$), LH ($p=0.65$), prolactin ($p=0.36$), and testosterone ($p=0.83$) had no significant impact on SSR. The age at sperm retrieval did not significantly impact on SSR. Preoperative pharmacological stimulation in 26 men did not increase the rate of SSR ($p=0.52$).

Conclusion: The SSR in this multicentre UK KS cohort study is inferior to that reported in the contemporary literature. There were no predictive or prognostic factors for SSR in this group or geographical distribution for SSR.

P3-14 Novel measures of sperm DNA damage increase its usefulness to diagnose male infertility and predict live births following both IVF and ICSI

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Introduction: The Comet assay measures DNA damage in individual sperm enabling the degree of heterogeneity of a sample to be assessed. We explored the impact of this heterogeneity and assessed diagnostic and predictive power of novel Comet parameters that quantify damage in the semen sample.

Methods: 381 men of couples attending for IVF or ICSI were recruited. Sperm DNA damage was quantified using the average Comet Score (ACS) and two novel parameters: low Comet Score and high Comet Score (LCS and HCS: % sperm with a statistically designated low and high score, respectively). Sperm from 166 men with idiopathic infertility were compared with those from 76 sperm donors, using ROC analysis. 79 IVF and 229 ICSI cycles were included to determine thresholds for each parameter using ROC analysis. Thresholds were used to compare live birth rates (LBRs) following ART.

Results: 80% of sperm from fertile men had less than 33% DNA damage. ACS, HCS and LCS were all highly predictive of male infertility ($ROC>0.9$, $p<0.0001$). IVF LBRs declined sharply once sperm DNA damage exceeded all threshold levels with HCS showing the sharpest decline. ICSI LBRs were also impacted by sperm DNA damage with highest LBRs in men whose sperm DNA approached the fertile range. Trends in IVF and ICSI differed in that IVF LBRs decreased as damage increased whereas in ICSI, LBRs decreased but then remained stable.

Conclusions: The proportion of sperm with low or high levels of DNA damage provides discriminatory information for male infertility diagnosis and treatment outcomes.

ePoster Session 4: Stones, Imaging and Upper Tract Disorders Tuesday 26 June 10:30 - 12:00 Room 4 Chairs: Ben Chew & Matt Bultitude

P4-1 Does the genotype in first-degree relatives with cystinuria relate to their phenotype?

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Introduction: There are 2 genes responsible for the different modes of inheritance of cystinuria; SLC3A1 (autosomal recessive) and SLC7A9 (autosomal dominant with incomplete penetrance). Over 150 mutations are known, hence analysing the genotype: phenotype correlation is challenging. Studying first-degree relatives in isolation may offer us a better insight.

Methods: 30 first-degree relatives, including 3 twin pairs (1 identical) were identified from our cohort of 160 cystinuria patients. Mutations were detected with DNA sequencing. Phenotypic data were collected prospectively.

Results: All first-degree relatives had the same mutation. Median age was 37years (18-73). The gender distribution was M:F 2:1, which is different from our entire clinic cohort (M:F, 1:1). There was an equal split of SLC3A1 and SLC7A9 genes, unlike the 2:1 ratio of SLC3A1:SLC7A9 seen in our clinic cohort and reported literature. Amongst a variety of mutations, c.1400T>C p.(Met467Thr) and duplication of exons 5 to 9 were the two most commonly found mutations in SLC3A1. None of the patients had the same phenotype as their relative for stone formation, medication, surgical interventions, renal function, urinary cystine or kidney loss.

Conclusion: Though it seems logical that sharing a genotype in first-degree relatives would lead to similar disease severity, we were unable to demonstrate this, even in the

identical twin pair. The complexity of multiple factors may result in the variances seen in stone formation. Further research into disease epigenetics may provide a better insight into predicting phenotypic differences. This could facilitate individualized treatment based on a prediction of patients' disease severity.

P4-2 A Genome-wide association study of kidney stone disease reveals 5 novel susceptibility loci

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Introduction: Kidney stone disease is a major clinical and economic health burden with a multifactorial aetiology and a heritability of 56%. We undertook the largest genome-wide association study to date using data from the UK Biobank to identify novel genetic factors contributing to nephrolithiasis.

Methods: ICD-10 and OPCS codes were used to identify individuals with a history of nephrolithiasis and to exclude those with disorders of calcium homeostasis, malabsorption and conditions associated with kidney stone disease. All other individuals were used as controls.

Results: A total of 6537 nephrolithiasis cases and 388,509 controls were identified. Nine loci with multiple SNPs achieving GWAS significance of $p < 5 \times 10^{-8}$ were identified. Of these, 5 loci were novel: DGKD region on chromosome 2q37.1 encoding the second messenger diacylglycerol kinase delta, SLC22A1-SLC22A2-IGF2R on chromosome 6q25.3 encoding cation transporters and the insulin like growth factor 2 receptor, HIBADH region on chromosome 7p15.2 encoding 3-hydroxyisobutyrate dehydrogenase which has a role in urinary acidification, CYP24A1 region on chromosome 20q13.2 encoding cytochrome P450 family 24 subfamily A1 which inactivates 1,25-dihydroxyvitamin D, and GNAZ-RSPH14 region on chromosome 22q11.23 encoding G-protein subunit αz and radial spoke head 14 homolog, a protein with an undefined function. As previously reported ALPL, RGS14, DGKH and CLDN14 regions were also found to be associated with kidney stone disease.

Conclusion: These results reveal novel susceptibility loci for nephrolithiasis opening up new avenues of research into the pathophysiology of this poorly understood disorder. This will facilitate development of novel treatments for those suffering from kidney stone disease.

P4-3 Renal papillary biopsy & lithogenesis - an insight

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Objective: Ever since the Alexander Randall hypothesis that deposition of calcium phosphate in interstitium lays the foundation stone. Objective of the study was to find relationship of lithogenesis with papillary appearances & biopsy in patients undergoing PCNL.

Materials and Methods: Retrospective data of 45 PCNL patients in 2016 were collected which included blood biochemistry, 24 hour urine analysis and radiological evaluation. All ipsilateral papilla were inspected for shape, colour at tip & stem, any erosion, pitting, retraction, suburothelial deposits/Randall's plaque & ductal plugging. Papillary biopsy was taken with 10F cup biopsy forceps. Biopsies taken were examined for changes in ducts, mineral deposits & any inflammatory changes. Stones were analysed by FTIR.

Results: Age ranged from 15-68 years. 64.45% showed evidence of plaque. Papillary changes other than plaques were seen in 35.55% of patients, which included collecting duct plugs & papillary erosions in 17.78% & 11.11% respectively. Pitting was seen in 6.66% of patients. When stone composition was compared with the endoscopic appearances a significant correlation between papillary changes in oxalate vs. phosphate stones (P value 0.0009) was seen. Oxalate stone formers had calcifications in interstitium without inflammatory changes in 62.22% while in non-oxalate stone formers had calcifications in collecting ducts with inflammatory changes in 26.67% (p value 0.002). No biopsy related complications were noted.

Conclusions: Our study gives clue regarding separate mechanisms in non-oxalate types of stone formation which results in characteristic papillary changes and further proves the safety and feasibility of papillary biopsy without any morbid complications.

P4-4 MIMIC Study: Does the size and location of ureteric stones have an impact on the effectiveness of medically expulsive therapy in improving spontaneous stone passage in patients presenting with acute ureteric colic?

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Ibrahim H²⁹, McGrath S³⁰, O'Brien J³⁰, Campbell A³¹, Cronbach P³¹, Bdesha A³¹, Tait C³², Sakthivel A³², Suraparaju L³³, O'Brien J³³, Gupta S³³, Pankhania R³⁴, Al-Qassim Z³⁴, Foley R³⁵, Akintimehin A³⁵, Khan A³⁵, Rezacova M³⁶, Edison E³⁶, Sandhu S³⁶, Nkwam N³⁷, Grice P³⁷, Khan M³⁷, Kashora F³⁸, Nehikhare O³⁸, McCauley N³⁸, Mason-Bahr D³⁸, Bycroft J³⁸, Tailor K³⁹, Saleemi A³⁹, Luk A⁴⁰, Pearce I⁴⁰, Steen C⁴¹, Alberto M⁴¹, Rujancich P⁴¹, Olivier J⁴², Tay J⁴², Cannon A⁴², Coode-Bate J⁴³, Natarajan M⁴³, Irving S⁴³, Akman J⁴⁴, Hussain Z⁴⁴, Murtagh K⁴⁵, Carrie A⁴⁵, Miller M⁴⁵, Bedi N⁴⁶, Kavia R⁴⁶, Malki M⁴⁷, Burge F⁴⁷, Ratan H⁴⁷, Sadien I⁴⁸, Miakhil I⁴⁸, Sharma S⁴⁸, Nethercliffe J⁴⁸, Olaniyi P⁴⁹, Stammeijer R⁴⁹, Mason H⁴⁹, Symes A⁴⁹, Lavan L⁵⁰, Rowbotham C⁵⁰, Wong C⁵¹, Al-Shakhshir S⁵¹, Belal M⁵¹, Al-Dhahir W⁵², Yousif M⁵², O'Rourke J⁵², Tay L⁵³, Ward A⁵³, Parys B⁵³, McKay A⁵⁴, Graham J⁵⁴, Simmons L⁵⁵, Khadhoury S⁵⁵, Cottrell A⁵⁵, Withington J⁵⁶, Ajayi L⁵⁶, Min J⁵⁷, Evans S⁵⁷, Liew M⁵⁸, Simpson R⁵⁸, Ross D⁵⁸, Cumberbatch M⁵⁹, Pang K⁵⁹, Patterson J⁵⁹, Adams R⁶⁰, Mirza A⁶⁰, Acher P⁶⁰, Tam J⁶¹, Tudor E⁶¹, Probert J⁶¹, Gallagher M⁶², Premakumar Y⁶², Ager M⁶², Ayres B⁶², Kozan A⁶³, Jaffer A⁶³, Din W⁶³, Biyani C⁶³, Matanhelia M⁶⁴, Moyles⁶⁴, Quinlan D⁶⁴, Ness D⁶⁵, Gowardhan B⁶⁵, Bateman K⁶⁶, Wozniak S⁶⁶, Clements J⁶⁷, Hann G⁶⁷, Gilmore C⁶⁷, Gray S⁶⁷, Ellis G⁶⁷, Derbyshire L⁶⁸, Chow K⁶⁸, Mosey R⁶⁹, Osman B⁶⁹, Kynaston H⁶⁹, Yassaie O⁷⁰, Weeratunga G⁷⁰, Udovicich C⁷¹, O'Connell H⁷¹, Lee S⁷², Hussain A⁷², Goh M⁷², Mbuvi J⁷³, Stewart H⁷³, Samsudin A⁷³, Hughes-Hallet A⁶, Rezvani S⁷⁴, Sheng S⁷⁴, Husain J⁷⁴, Kum F⁷⁵, Symes R⁷⁵, Frymann R⁷⁵, Ahmed I⁷⁶, Shergill I⁷⁶, Pickard R⁵, Erotocritou P⁶, Smith D⁷, Kasivisvanathan V¹

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Introduction and Objectives: There is conflicting evidence on the role of medical expulsive therapy (MET) in spontaneous stone passage in acute ureteric colic patients. However, it is unknown, whether MET has a role in aiding passage of stones of a particular size or specific ureteric position. We undertook MIMIC, a multi-centre international cohort study in 71 centres disseminated via a research collaborative to assess whether MET use improved rates of SSP adjusting for key confounders.

Methods: Multivariable mixed effects logistic regression models were created fitted for MET use, age, gender, stone size and stone position.

To explore the effect of stone size (mm) and stone position (upper, middle and lower ureter) on whether MET use had an effect on SSP, an interaction term was fitted between these variables.

Results: 4181 patients were admitted with acute ureteric colic. 75% (n=3127) were discharged with conservative management. 80% (n=2516) had a confirmed outcome of

SSP and were included in the multivariable analysis. The unadjusted odds ratio for the association of MET use with SSP from univariable analysis was 1.250 (95%CI, 1.041, 1.501). However, following a multivariable mixed effects logistic regression model, there was no association of MET use with SSP in any subgroup irrespective of stone size (OR 1.085, 95%CI 0.978, 1.205) or stone position [see Table 1].

Conclusions: In acute ureteric colic patients who are suitable for initial conservative management, MET has no benefit in spontaneous stone passage, regardless of stone size or position.

P4-4: Table 1

Table: Mixed Effects Multivariable Model with outcome SSP

Variable	Odds ratio estimate (95% confidence interval)
Age (years)	1.006 (1.000, 1.012)
Gender: Male	0.869 (0.712, 1.061)
MET administered: YES	0.861 (0.521, 1.424)
Stone location: Middle ureter	0.806 (0.546, 1.189)
Stone location: Upper ureter	0.435 (0.332, 0.569)
MET Administered: Stone position: Middle ureter	0.808 (0.458, 1.424)
MET Administered: Stone position: Upper ureter	1.086 (0.716, 1.645)
Stone size (mm)	0.714 (0.666, 0.767)
MET Administered * Stone size (mm) – interaction term	1.085 (0.978, 1.205)
	Estimate (95% confidence interval)
Random Effect Variance	0.268 (0.160, 0.449)

P4-5 Proximal-to-distal ureteric ratio (PDUR): a novel predictor of spontaneous ureteric stone passage

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Introduction & Objectives: Currently, stone size and location are the main predictors of spontaneous ureteric stone passage (SUSP). We studied different stone dimensions and ureteric factors including a novel ratio reflecting the degree of obstruction.

Materials & Methods: Consecutive patients with solitary ureteric stones were recruited and divided into two groups based on whether they needed intervention after 6 weeks' observation. We registered stone axial (AD) and longitudinal (LD) diameters, stone location and volume, grade of hydronephrosis (HN) and proximal-to-distal ureteric ratio (PDUR) using ureteric diameters above (PUD) and below (DUD) stones. Pelviureteric and vesicoureteric junction calculi were excluded. Logistic regression analysis and ROC curves were performed.

Results: Eighty-four patients were included of whom 53 (63%) had SUSP. AD, LD, stone volume and PDUR were significant in the univariable analysis, but only AD and PDUR in the multivariable analysis (table 1). The AUC for PDUR and AD were 0.7 (p=0.001, CI 0.59-0.81) and 0.76 (p<0.0001, CI 0.64-0.87), respectively (figures). Diagnostic accuracy of PDUR and AD are given in Table 2.

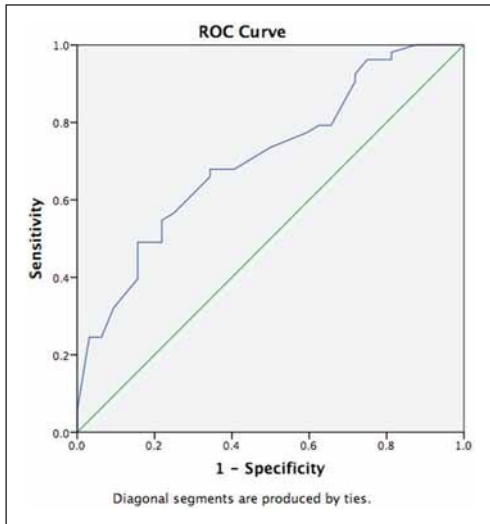
Conclusion: PDUR is a novel factor for predicting SUSP independently. Different cut-off levels of PDUR and AD could be used to predict SUSP with different sensitivity and specificity. A prospective powered study should confirm these pilot results.

P4-5: Table 1. Data summary.

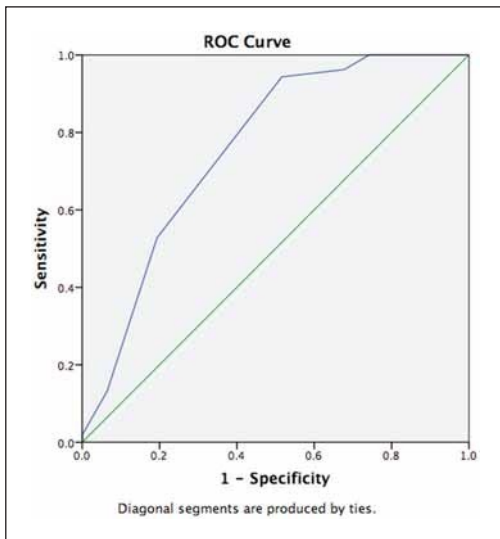
Variables	SUSP group	Intervention group	Univariable	Multivariable
	Median (range)		p, CI	
AD (mm)	3 (1-7)	5 (2-13)	<0.001	0.017, 0.3-0.89
LD (mm)	9 (3-17)	12 (3-24)	0.002	0.56, 0.85-1.34
Stone location			0.74	
Stone volume (cm ³)	0.09 (0.02-1.04)	0.19 (0.02-1.4)	0.003	0.94, 0.03-23.25
HN			0.13	
PUD (mm)	6 (3-15)	8.5 (5-20)		
DUD (mm)	5 (2-9)	5 (3-12)		
PDUR	1.4 (0.75-2.66)	1.7 (1-3.3)	0.001	0.019, 0.08-0.8

P4-5: Table 2. Sensitivity and specificity for PDUR and AD.

Variables	Sensitivity (%)	Specificity (%)
PDUR		
0.94	5	100
1.58	67	65.6
2.37	96	25
AD(mm)		
1.5	1	100
4.5	73	64.5
7.5	100	25.8



P4-5: Figure 1. PDUR ROC curve.



P4-5: Figure 2. AD ROC curve.

P4-6 Ureteric stones and acute kidney injury: What predicts progression?

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Introduction & Objectives: Acute kidney injury (AKI) in stone-related renal colic is a relative indication for urgent decompression of the obstructed urinary tract. Although rare, chronic kidney disease (CKD) may ensue and we analysed predictors for this progression.

Materials & Methods: Retrospective study of patients with ureteric stones referred to Urology from the Emergency Department, who developed AKI within 48 hours of the episode. We analysed stone characteristics and estimated glomerular filtration rate (eGFR) dynamics around the clinical event. We compared patients who recovered from those who developed CKD to find predictors. Wilcoxon and Fisher’s exact tests were used.

Results: Out of 522 patients, 49 (9.38%), including 29 men and 20 women with a mean age of 56 years had AKI. The mean eGFRs at presentation was 41.5 mL/min/1.7 m² from a baseline of 78.9 mL/min/1.7 m², and the nadir was 44.25 mL/min/1.7 m². Forty-five (91.83%) had hydronephrosis or hydroureter and 16 (32.65%) required urgent decompression in a median time of 7 (0-19) days. Five (11.3%) out of the 49 patients developed CKD. They had higher age (p=0.001) and lower eGFRs at baseline (p<0.0001), presentation (p<0.0001) and nadir (p<0.0001) compared to the recovery group. Twenty patients had kidney abnormalities including hypotrophy, cystic disease, chronic pyelonephritis or a solitary kidney, of which only the last one (p=0.04) was associated with CKD.

Conclusion: Most stone-related AKI recover after a renal colic. Higher age, lower eGFR at baseline, presentation and nadir, as well as a solitary kidney may predict progression to CKD.

P4-7 Outcomes of elective ureteroscopy and stone treatment in patients with prior urosepsis and emergency drainage

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Introduction: Urological guidelines recommend emergency drainage for urosepsis in infected obstructed kidney secondary to stone disease. However, since the fate of elective ureteroscopy (URS) in these patients is largely

unknown, we look at the outcomes of stone management in this group.

Material and Methods: Over a period of 6-years (March 2012-December 2017), we identified all patients with prior urosepsis and emergency drainage who underwent elective URS for stone treatment. They were seen in a dedicated pre-assessment clinic with antibiotics as per protocol or microbiologist.

Results: A total of 76 patients underwent 82 procedures (6 bilateral URS) with a male: female ratio of 1:2 and a mean age of 75 years (range 14-86 years). Urosepsis was diagnosed on admission with 27 (36%) admitted to ICU and a positive urine culture in 26 (34%). The mean WBC count and CRP was 14.3 (2.7-42) and 199 (1-425) respectively. Emergency drainage was achieved via ureteric stent (63, 83%) and nephrostomy (13, 17%).

The mean single and overall stone size was 8.6 mm (2-23 mm) and 10.8 mm (2-32 mm) respectively with 45 ureteric stones (59%), 17 ureteric and renal stones (22%) and 14 with multiple stones in the urinary tract (19%). With a mean operating time of 42 minutes (5-129 minutes), the stone free rate (SFR) was 97%, and 60 (79%) were discharged within same day. Three patients (4%) developed complications (urosepsis), two Clavien II that needed intravenous antibiotics and one Clavien IV that needed ICU admission and treatment, subsequently discharged home.

Conclusion: Planned elective ureteroscopy in patients with prior urosepsis and emergency drainage achieves an excellent outcome with good SFR and low complication rates.

P4-8 Urinary stones and intervention quality of life (USIQOL): Development of a new comprehensive patient reported outcome measure

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Introduction: Urolithiasis and treatments can have significant impact on patients' health-related quality of life (HRQoL). We developed Urinary stones and Intervention quality of Life (USIQoL), a new multidimensional PROM.

Methods: Adult patients with urinary stones covering all index stone categories were asked to participate in different phases (over 350 patients). Phase 1 included literature review and qualitative research that formed the foundation for the initial long draft of the USIQoL. Phase 2 included cognitive debriefing, pilot testing. Phase 3 involved RASCH analysis (partial credit model) and validity and reliability assessments to develop the final draft.

Results: Mean patient age was 51 years (range 18-92) with male patient predominance. Phase 1 studies involved 80 patients and 30 family members. The results identified significant negative QoL impact affecting pain, physical and psycho-social domains along with concerns, specific to stones and treatments. The thematic analyses formed the basis for the initial 60 item draft. Phase 2 confirmed content validity with all stakeholders. In phase 3 the RASCH polytomous analysis identified redundant items and helped develop final version with good item, personal fit and satisfactory separation index. The measure covers all relevant domains of stone and intervention specific factors. The validation studies showed questionnaire to be internally consistent (Cronbach's alpha > 0.7) and reliable (Pearson coefficient > 0.8) with satisfactory sensitivity to change (p < 0.01).

Conclusion: The new USIQoL is a comprehensive valid PROM developed using rigorous standards in measurement studies. It is expected to serve as a standard PROM to evaluate impact of stone disease and treatments.

P4-9 Outcomes of ureteroscopy (URS) for kidney stone disease (KSD) in patients with spinal cord injury (SCI)

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Introduction: The management of KSD in SCI patients is complex. Minimal data is available regarding treatment outcomes in this cohort with URS. We present the largest UK series of URS in SCI patients.

Patients and Methods: A retrospective analysis was made of all SCI patients undergoing URS and laser lithotripsy between 2005-17 at our supra-regional spinal injuries unit.

Results: A total of 41 procedures were performed in 21 patients with a mean age of 49 years (range 17-69) and a male: female ratio of 6:1. Almost a quarter had undergone previous urinary tract reconstruction. Mean total stone length was 27mm (range 5-59mm) with the majority of stones in the kidney (97%). Eleven patients (27%) had a pre-operative stent and access was achieved in 98%. An access sheath was used in 26 cases (63%) and a post-operative stent was required in 11 (27%). Mean length of stay was 2 days (median 1; range 0-9). Complications occurred in 10 cases (24%), which were all Clavien-Dindo grade II. Residual fragments were noted in 16 cases (42%). Stone recurrence occurred in 16 cases (42%); 4 within 12 months (10.5%) and 12 after a year (31.6%). Further intervention within a year was required in 11 cases (27%) excluding 7 planned multi-stage procedures. The stone-free rate at 12 months was 47%.

Conclusion: SCI patients undergoing URS for KSD have lower stone-free rates than other reported series and a

higher complication rate. Reasons for this include stone size and composition, altered physiology and previous urinary tract reconstruction.

P4-10 Calyceal diverticula (CD): diagnosis and management options in the era of non-contrast CT KUB

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Introduction: Calyceal diverticula (CD) are traditionally diagnosed by contrast studies such as IVU, CT urogram or retrograde. IVU has largely been abandoned as an imaging modality with the advent of non-contrast CT (NCCT).

Materials and Methods: We have retrospectively studied 48 patients diagnosed with CD since 2000 analysing the timing and modality of CD diagnosis, type and number of procedures, and success rate. Treatment failure was defined as the requirement for further intervention.

Results: All patients underwent a non-contrast CT at the time of presentation. Only 31% had a contrast study (IVU or CT urogram) before intervention. 52% required 1- 2 procedures before a diagnosis was established. In 27% the diagnosis was profoundly delayed, after an average of 5 interventions. The success rate for the first treatment is 69% if CD was diagnosed pre-operatively, compared to 0% if diagnosed at the time of the procedure, typically retrograde pyelography at the time of flexible ureterorenoscopy (FURS) for failed ESWL. For instance, FURS success as a first procedure with preoperative diagnosis is 50% while 0% if CD was diagnosed intraoperatively.

Conclusions: We believe that the delay in diagnosis of CD contributes significantly to the success rate and number of treatments. In the era of NCCT to diagnose kidney stones, contrast studies are essential if CD is a potential diagnosis, i.e. if NCCT raises suspicions or a stone is refractory to ESWL.

P4-11 Local anaesthetic flexible ureterorenoscopy: painful for all involved?

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Introduction: Patients unfit for general anaesthesia who present with renal tract pathology currently have limited options. Conservative management and temporising measures, such as percutaneous nephrostomy, are associated with significant morbidity. Ureterorenoscopy (URS) is a central component of the management of upper tract disease and is routinely performed under general anaesthesia. We describe our institution's

experience of ureterorenoscopy using only local anaesthetic lubricating gel per urethra.

Patients and Methods: A single centre, retrospective analysis of 59 consecutive patients was performed over a 3-year period. Surrogate markers of success were (1) tolerability (2) success of procedure without complications (3) stone free rate after first procedure.

Results: 55% of patients were male. Mean age was 71 years and mean Charlson comorbidity Index was 6.3. 40% of patients were anticoagulated. 64% of ureteroscopies were for calculi, with a mean stone size of 6.5mm (range 1-20mm), with the majority ureteric (64%). All patients were able to tolerate the procedure. Flexible ureterorenoscopy (fURS) was successful without complication in 93% of patients. There were no complications above Clavien Grade 2. The stone free rate was 78%.

Conclusions: Flexible ureterorenoscopy under local anaesthetic provides a safe and effective method to investigate and treat renal tract pathology. This approach is a useful addition to the armamentarium available to patients deemed unsuitable for general anaesthesia.

P4-12 Risk factors for blood transfusion following percutaneous nephrolithotomy in the UK

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Introduction: Percutaneous nephrolithotomy (PCNL) is routinely utilized in the management of large renal stones and staghorn calculi. PCNL is more efficacious when compared to other treatment modalities but carries an increased risk of morbidity. Vascular injury and hemorrhage are known complications of PCNL with associated risk of blood transfusion. We sought to describe procedural and patient risk factors for blood transfusion using a national prospective data registry.

Patients and Methods: Data submitted to the BAUS PCNL data registry between 2011 and 2017 were analyzed for rates of blood transfusion. We assessed risk factors for transfusion, including operator performing renal puncture (urologist versus radiologist), patient position (prone versus supine), size of renal access (6-24 French versus 25-30 French), stone size (< 2 cm versus > 2 cm), stone complexity defined by Guy's stone score (I-II versus III-IV), patient comorbidities (spina bifida, kyphoscoliosis, and spinal cord injury), BMI, and preoperative hemoglobin.

Results: Of 9,139 PCNL's, 198 patients required blood transfusion (2.2%). Significantly greater transfusion rates were observed for more complex stones, larger stones, larger renal access size, and preop Hb <120 (Table 1). Underweight patients and patients with normal BMI had higher transfusion rates when compared to overweight and obese patients. No difference was observed with

patient position, patient comorbidity, or operator performing renal puncture.

Conclusions: Risk of transfusion after PCNL increases with larger more complex stones and when larger renal access size is used. Patients with low preoperative Hb and with lower BMI may be at increased risk for transfusion.

P4-12: Table 1

	Transfusion Yes (%)	No	P value
Operator Performing Renal Puncture			
Radiology	125 (2.3%)	5428	0.5
Urology	68 (2%)	3273	
Patient Position			
Prone Position	155 (2.3%)	6539	0.12
Supine Position	36 (1.8%)	2019	
Size of Renal Access			
6-24 Fr	8 (0.8%)	944	0.001
25-30 Fr	87 (2.6%)	3304	
Stone Complexity (Guy's Stone Score)			
I-II	83 (1.7%)	4840	0.0001
III-IV	111 (2.9%)	3768	
Stone Size			
<2 cm	48 (1.5%)	3089	0.002
>2 cm	144 (2.5%)	5593	
Comorbid Conditions			
No	192 (2.2%)	8696	0.8
Yes	6 (2.4%)	245	
BMI			
<25	45 (3.6%)	1262	0.007
>25	80 (2.2%)	3717	
Pre-op Hb			
<120	16 (3.6%)	432	0.03
>120	42 (1.9%)	2131	

P4-13 Is PCNL changing in the UK – analysis of 9500 cases from the BAUS PCNL registry

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Introduction and Methods: PCNL indications and techniques evolve. BAUS developed an online-registry in January 2010 that now includes >9500 procedures. We evaluate outcomes and practices in PCNL and compare with previous analyses of the registry at 1000 and 5000 procedures to highlight significant changes in PCNL practice in the UK.

Results: 9536 procedures were available for analysis and compared with previous analyses of 1028 cases in 2011 and 5191 cases in 2015. Submission of cases has stabilised at ~2,200 cases/yr. Most PCNL is still prone, but supine continues to significantly increase from 5K analysis (22.4% vs. 16.2, p=0.0001). Access by interventional radiologist showed a small but significant decrease from 5K analysis (63.3% vs. 66.3%, p=0.0004), but not significantly different from 1K analysis. No significant changes in tract dilatation methods are seen, with balloon dilatation most popular (64.3%). Consultants increasingly perform PCNL themselves rather than their trainees (96.5% vs. 84.4% (5K) vs. 79.0% (1k), p=0.0001). Laser fragmentation usage has significantly increased (9.4% vs. 7.0% (5K) vs. 5.8% (1k), p=0.0001), with similar usage of ultrasound/lithoclast/lift

out. Sub-analysis of 4490 cases showed 25.8% of cases used multiple stone fragmentation modalities. Nephrostomy tube usage postoperatively is significantly reduced (72.6% vs. 75.6% (5k), $p=0.0001$). Intraoperatively 78.5% of patients were recorded as stone free, which was confirmed in 69.1% on postoperative imaging, similar to previous analyses. Complication rates are shown in Table 1.

Conclusions: PCNL practices continue to evolve in the UK. Continued contribution of data and subsequent careful analysis of the registry allows us a better understanding of PCNL in the UK.

P4-14 The outcomes of ureterolysis during complex rectovaginal endometriosis surgery in stented patients

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Introduction: NICE guidance recommends multidisciplinary work for patients with complex rectovaginal endometriosis. Those with ureteric involvement may require ureterolysis, including stent insertion, following complex or extensive dissection. We aimed to determine

the incidence of post-operative ureteric strictures in a 5-year endometriosis cohort.

Methods: 239 patients who underwent surgery for complex pelvic endometriosis from January 2011 to December 2015 were identified from our tertiary referral unit database. Pre-operative loin pain, hydronephrosis, intra-operative stenting and post-operative stent management were analysed. Fisher's Exact Test was used to determine significance.

Results: 85% of patients (203/239) did not require intra-operative stents. Of the 15% (36/239) who were stented, 22% (8/36) had pre-operative hydronephrosis, 22% (8/36) had loin pain and 14% (5/36) had both. There was a tendency towards a greater post-operative risk in stented patients (i.e. "high risk" intraoperative cases) compared with unstented patients ($p=0.07$), but no difference in risk in patients whose stents were removed cystoscopically or after ureteroscopic assessment ($p=1.0$).

Conclusions: These data show a low overall risk of post-operative ureteric sequelae and support the conclusion that intra-operative stent insertion for "high risk" cases allows a similar outcome to less complex patients who did not need stents at all. Pre-operative loin pain/hydronephrosis increases the likelihood of needing intra-operative stents and should be considered in operation scheduling. Post-operative ureteroscopic assessment does not appear to be needed. Instead, unless there are specific concerns, out-patient stent removal with a flexible cystoscope and early MAG3 renography seems sufficient for upper tract follow up.

P4-14: Table 1

STENT STATUS	ADVERSE OUTCOME % risk (Number affected)	DETAILS
Unstented	0.5% (1/203)	Subsequent ureteric stricture required ureteric re-implantation.
Stents removed by flexible cystoscopy	6.25% (1/16)	Bilateral nephrostomies inserted for possible obstruction on MAG3, subsequently shown to be secondary to a poorly compliant bladder with impaired upper tract drainage.
Ureteroscopic assessment for stent removal or replacement	5% (1/20)	Re-stented patient had a further ureteroscopy at 6 months, did not require another stent, and had no obstruction on follow-up MAG3 scan.

P4-15 Fate of the antegrade ureteric stent – An observational study and quality improvement project

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Introduction: Follow up of patients with antegrade ureteric stents often involves several specialties and the

potential for delayed management and forgotten stents. This study reviews indications and outcomes of antegrade stent procedures at one university hospital to provide prognostic and quality improvement data.

Patients and Methods: Retrospective analysis of 152 antegrade stent procedures in 142 patients over a 27-month period with six-month minimum follow up. Cohorts were studied according to referring specialty, underlying pathology and intended duration of stent placement. Measured endpoints were time to stent removal, stent exchange, death and forgotten stents.

Results: 130 unilateral and 22 bilateral procedures were performed with 99% overall success rate. The majority were requested by urologists (76%) and oncologists (16%). Malignancy (47%) and stone disease (35%) and were the commonest indications. Follow up data was available for 144 successful procedures in 139 patients. Overall, 31 patients (22%) died. 29 of 63 patients (46%) with malignancy died after a median interval of 3.4 months (range 6-688 days). Thirteen (15%) waited over 6 months for stent removal and five (26%) waited over 12 months for stent exchange. Nine patients (6.5%) had forgotten stents, having been in situ for over six months with no intervention planned. Of these, four were inserted for gynaecological malignancy and three for benign disease.

Conclusions: This study provides prognostic information for patients stented for malignant obstruction and highlights hazards of inadequate follow up, causing delays in stent removal and exchange, or the forgotten stent. Interventions are described to minimise these risks.

P4-16 Non-operative management of pelvi-ureteric obstruction (PUJO)

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PUJO may be discovered due to symptoms or as an incidental finding and often in the older patient. The classical treatment for adults with renographically proven PUJO is pyeloplasty with high success rates but conservative management may be considered. The indications for conservative management are not clear and guidance is variable. We reviewed the outcomes for patients managed without surgery with PUJO.

Forty-eight patients undergoing non-operative management (mean age 60y) with renographically proven PUJO were reviewed. Renographic follow up was for a mean of 1.8 years. There were a variety of reasons for conservative management including patient preference and lack of symptoms. Patients were kept under clinical and radiological review. Surgery was offered if patients became symptomatic or if there was loss of function as determined renographically. The mean relative renal function of the affected side was 44% at diagnosis and was measured at 43% after a mean follow up of 22 months. Of the 48 patients five (10.4%) eventually underwent pyeloplasty. Of the remaining patients who were considered fit for surgery and remained asymptomatic there was no loss of relative renal function nor any need for intervention.

With careful selection, PUJO can be managed conservatively with no adverse outcomes for these patients. A small fraction of patients showed renographic deterioration during surveillance and underwent surgical correction with no disadvantage.

ePoster Session 5: Female, Neurological and Urodynamic Urology I

Tuesday 26 June

10:30 - 12:00

Room 12

Chairs: Angela Birnie & Ased Ali

P5-1 Paraurethral cysts in adult women – symptoms, urodynamic findings and outcomes of complete excision

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Introduction: To review and describe the presenting symptoms, urodynamic findings and outcomes of complete excision of paraurethral cysts.

Patients and Methods: We retrospectively reviewed a prospectively collected database of 16 consecutive women of median age 35 years [range 17-54] having excision of paraurethral cyst between 2011 and 2017 for presenting symptoms, pre-operative urodynamic findings, surgical management and outcomes.

Results: 15 (93.8%) women presented with a palpable vaginal lump. Other complaints included dyspareunia, vaginal discharge and voiding difficulty. 10 (62.5%) were referred with a clinical and MRI diagnosis of urethral diverticulum. 8 (50%) had urodynamic evidence of BOO consequent to their cyst, whilst 3 (18.8%) had evidence of idiopathic detrusor overactivity (2 in association with BOO). All cysts were solitary and measured from 1.1 to 4.5cm in maximum dimension. 10 (62.5%) patients had cyst excision, 5 (31.3%) had cyst excision, repair of underlying adherent distal urethra and interposition of paraurethral tissue whilst 1 (6.3%) had cyst excision, repair of adherent mid and distal urethra and interposition of a modified Martius labial fat pad flap. The median follow-up period was 6 months (2.5-35). No complications or recurrences were demonstrated and presenting symptoms resolved in 15 (93.8%).

Conclusion: Paraurethral cysts are often mistaken both clinically and on MRI for urethral diverticulum. They cause similar symptoms and are associated with urodynamic abnormalities in > 50%. Complete excision resolves symptoms in 93.8% but may require urethral repair and tissue interposition in 37.6%.

P5-2 Is routine Martius flap interposition required in female urethral diverticula repair?

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Introduction: Urethral diverticula (UD) are rare and benign condition in female; misdiagnosis or delayed diagnosis is common. Here, we are highlighting the surgical outcome of UD repair by using three layer closures with judicious use of Martius flap interposition.

Material and Methods: Retrospective cohort studies of patients who have had UD repair were analysed with focus of imaging characteristics, intraoperative findings and surgical outcome.

Results: A total of 26 patients with mean age of 43 years underwent surgery including 4 patients (15.4%) had previous failed procedure in the period between Jan 2010 to March 2017. A few patients present with classic triad symptoms and most common videourodynamic findings was the bladder outlet obstruction. MRI reported complex UD, simple UD and others in 11 (42%), 10 (38.5%) and 5 (20%) patients respectively; UD located in the mid urethra, proximal urethra and near to the bladder neck reported in 12 (46.2%), 9 (34.6%) and 5 (19.2%) patients respectively. Only three layers closure performed in 21 (80.8%) patients and 5 (19.2%) patients received additional Martius flap interposition because UD located near to the bladder neck or previous failed procedure. There was no recurrence in patients those had Martius flap interposition and only 1 (4.8%) recurrence out of 21 patients among those repaired by only three layers closure.

Conclusion: Excellent outcomes are achievable with using three layer closure techniques without routine use of Martius flap interposition which in our opinion should be used in a limited number of patients with recurrent and very complex diverticulum.

P5-3 Percutaneous tibial nerve stimulation in overactive bladder - A prospective study

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Introduction: Percutaneous tibial nerve stimulation (PTNS) has been used to treat patients complaining of lower urinary tracts symptoms, including overactive bladder (OAB) which affects around 15% of the population. We have performed a prospective study looking at the use of PTNS for OAB at our institution.

Methods: Between 2015 and 2017 we included all men and women that had 6 sessions of PTNS at our institution. We excluded those that did not complete either an ICIQ (International Consultation on Incontinence Questionnaire) or IIQ-7 (Incontinence Impact Questionnaire) both pre and post treatment. We used a paired t-test to see whether the difference in scores was significant.

Results: 106 women and 44 men and were treated with 6 sessions of PTNS for OAB at our institution and completed pre and post PTNS questionnaires. For women the average ICIQ score pre-PTNS was 9.46 (SD±2.75) and

post-PTNS was 7.69 (SD±3.14). This was a significant decrease (P<0.001). The average IIQ-7 score for women pre-PTNS was 57.2 (SD±27.3) and post-PTNS was 48.2 (SD±29.0), this was also a significant decrease (P<0.003). For men the average ICIQ score pre-PTNS was 9.28 (SD±2.99) and post-PTNS was 7.58 (SD±2.99). This was a significant decrease (P<0.001). The average IIQ-7 score for men pre-PTNS was 51.6 (SD±31.7) and post-PTNS was 39.2 (SD±30.8), this was also a significant decrease (P<0.01).

Conclusions: In our experience PTNS seems to result in significantly lower ICIQ and IIQ-7 scores indicating improved symptoms in our patients.

P5-4 The clinical and cost effectiveness of acupuncture for symptomatic idiopathic detrusor overactivity

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Introduction: Symptomatic idiopathic detrusor overactivity (IDO) is extremely common. Adherence to pharmacotherapy is poor, and surgical interventions are costly and invasive. We have assessed the clinical effectiveness and cost effectiveness of acupuncture in the treatment of symptomatic IDO.

Patients and Methods: 30 patients having acupuncture for symptomatic IDO were prospectively evaluated using objective (frequency/volume chart) and subjective (EQ5D, ICIQ-OAB, pain scores) measures. Outcome measures were assessed at baseline and post treatment and compared for responders and non-responders.

A cost analysis was performed comparing acupuncture with mono and dual drug pharmacotherapies commonly used in OAB and conservative management methods (pelvic floor muscle exercises and bladder retraining). A cost comparison was made between all treatment options at both six weeks and six months.

Results: Patients' OAB symptoms completely resolved in 14.8%, significantly improved in 59.3% and remained unchanged in 25.9% following a 6 week course of acupuncture treatment. Responders had a significantly lower mean pre-treatment functional capacity compared with non-responders and had a significant increase in this functional capacity following treatment. No adverse events were recorded. Acupuncture carried a significantly higher cost burden at six weeks, six months and overall (£2090) compared to pharmacotherapy (£506) and conservative methods (£724).

Conclusion: Acupuncture is a well-tolerated and effective treatment with no incidence of side effects and should be part of a Urology specialist's armamentarium in a comprehensive continence service. It is significantly more

costly than conservative and maximal medical treatment – and should remain 2nd line treatment for patients failing these treatments.

P5-5 The urological assessment of patients with postural orthostatic tachycardia syndrome

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Introduction: Postural Orthostatic Tachycardia Syndrome (POTS) is a heterogeneous form of autonomic dysfunction, arising in predominantly premenopausal women. It is characterised by an increase in heart rate (≥ 30 bpm) on standing, with light-headedness and associated features of sympathetic activation. Few studies have evaluated the urological manifestations of this condition, which commonly arise prior to diagnosis.

Patients and Methods: We performed a retrospective analysis of POTS patients with lower urinary tract symptoms (LUTS) referred to our tertiary centre between November 2013 and November 2017. Patients were seen in a dedicated neuro-urology setting for clinical and urodynamic assessment.

Results: 68 POTS patients with a mean age of 28.3 (range: 16-62) were referred to the neurourology clinic over four years. There were three male patients within this cohort. Reduced sensation, urgency, incomplete emptying and

nocturia were the commonest reported LUTS. 71% (n=48) of patients had an established diagnosis of hypermobility syndrome. Almost half of all patients (n=31) had a history of recurrent UTIs prior to presentation. In those patients that underwent videourodynamic assessment (n=26) the predominant findings were: large capacity, insensate bladders with incomplete emptying and straining pattern voids. Mean first sensation was 315ml (range: 113-800ml). There was no loss of compliance, reflux, or detrusor overactivity within this cohort.

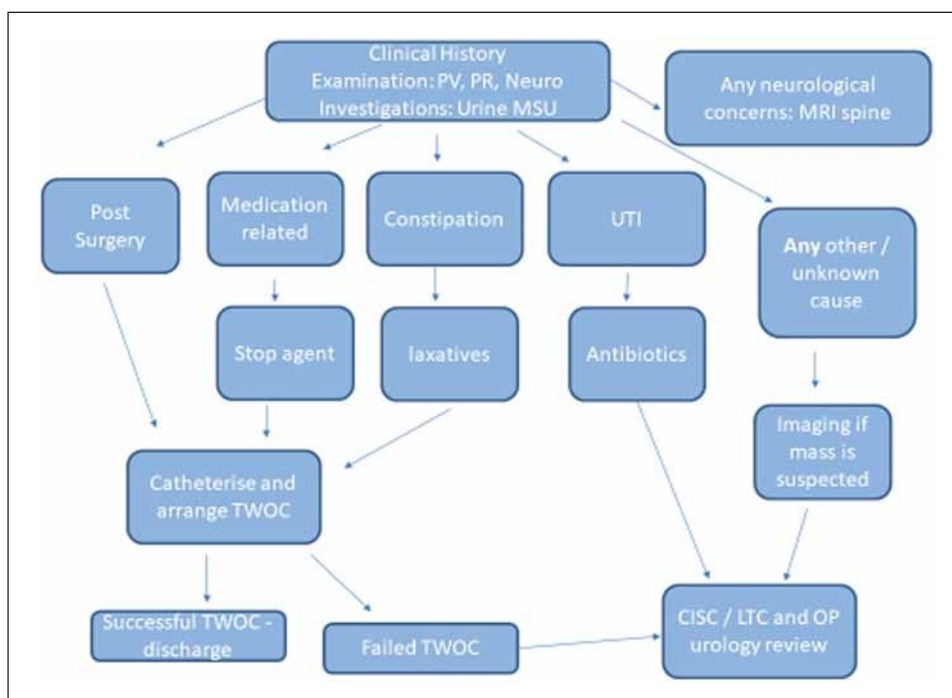
Conclusion: POTS patients are complex and require an interdisciplinary approach to management in a dedicated clinic. Early recognition of urological manifestations is key. Patients should instigate timed/double voiding with an awareness of the potential need for self-catheterisation to optimise bladder efficiency and prevent recurrent infection

P5-6 Time to re-think urinary retention in women?

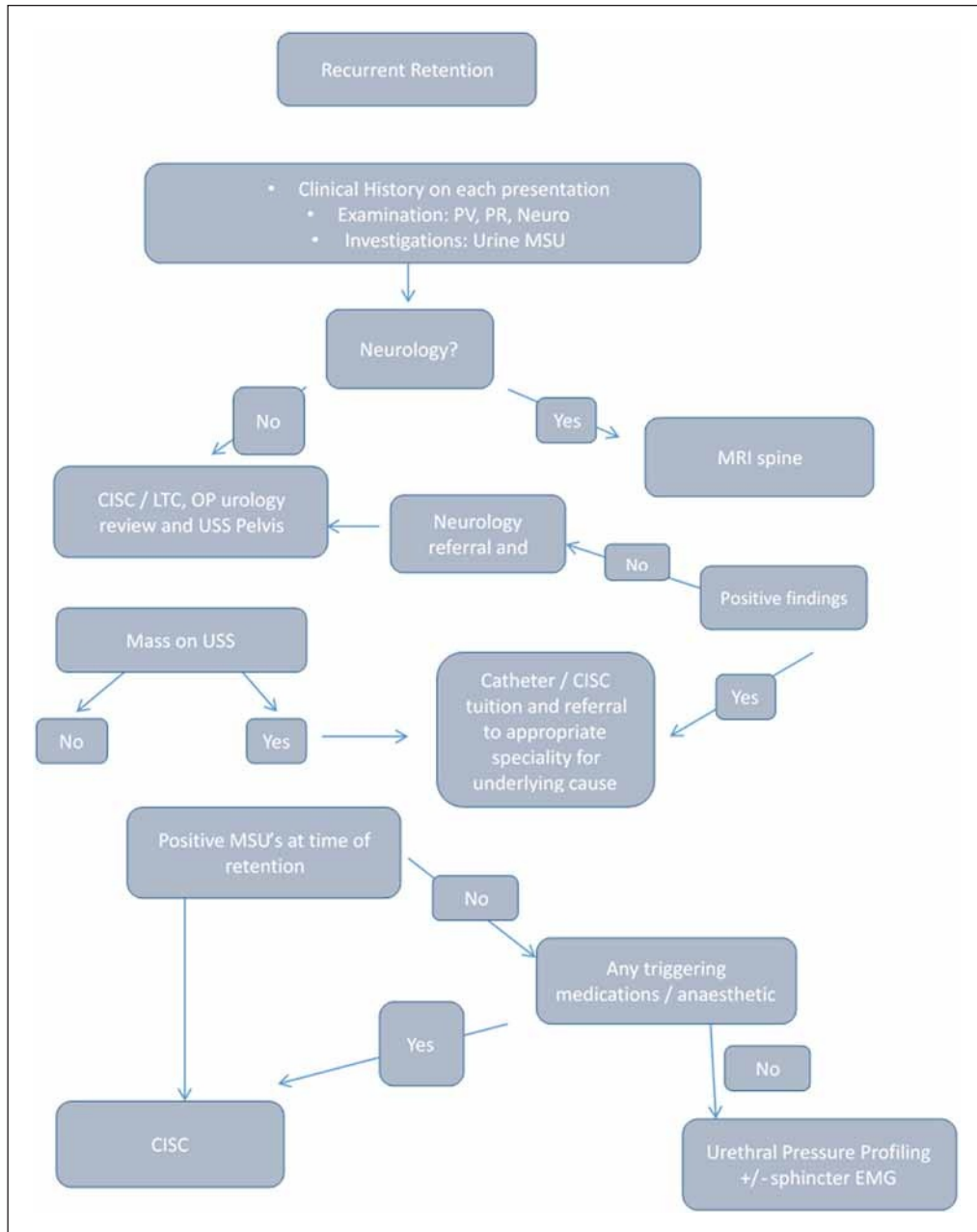
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Introduction: Female urinary retention, particularly recurring, is rare, with little standardisation into the investigation and management. Our aim was to identify common causes of retention and the best way to investigate / manage these patients.



P5-6: Figure 1. – Single / First Presentation



P5-6: Figure 2

Patients and Methods: Notes of all females coded as having retention between the period 01/10/2014 – 30/09/2016 were analysed.

Results: Single episode of retention. N=40. Most common causes are constipation, anaesthetic / medication use. 91% of these pass a TWOC on first attempt. 27 (60%) of women had imaging / cystoscopy with no findings. 3 (6%) had a pelvic mass on USS. UTI's only accounted for 3 (6%) of cases but can trigger acute on chronic retention, as can constipation. 9 women (19%) transpired to be chronic retainers, having failed their initial TWOC's. 78% of these women (n=7) had some

form of imaging in the form of an USS +/- MRI spine and 88% (n=8) had a flexible or rigid cystoscopy yielding no new information. Recurrent episodes of retention. N =20. All 20 women had an USS or MRI, 50% had both modalities with no positive findings. 50% had cystoscopy +/- urethral dilatation with no effect / positive finding. 9 (45%) of women were deemed functional retainers after investigation.

Conclusions: We propose the following algorithm for first presentation of retention: Recurrent retention - These women undergo multiple investigations without positive findings, potentially contributing to their high

DNA rate. Our results show that there is rarely a sinister cause for retention and propose the following algorithm.

P5-7 Does chondroitin sulphate play an active role in barrier formation by normal human urothelial cell cultures?

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Introduction: Chondroitin sulphate (CS) has been described as contributing to the barrier function of the urothelium by forming a thick glycosaminoglycan (GAG) layer on the superficial surface. Various papers have suggested that a defect in this layer contributes to chronic inflammatory uropathies and this forms the basis of medical device therapies.

Materials and Methods: Immunohistochemistry of human urothelium with well-characterised antibodies to CS epitopes was used to assess the presence of CS on urothelium in situ. The role of exogenous CS on barrier formation was examined during differentiation of normal human urothelial cell cultures by monitoring transepithelial electrical resistance (TEER).

Results: Immunohistochemical studies supported the presence of CS within the stroma, but not as a superficial urothelial GAG layer.

Urothelial cell cultures exposed to chondroitin 4 or 6 sulphate during differentiation formed a tighter maximum barrier compared to non-treated controls ($p=0.0087$ and $p=0.0403$ respectively, one-way ANOVA, $n=9$ in each arm, three individual cell lines). A barrier formed earlier with chondroitin-6-sulphate compared to control where, by day 3, there was a statistically significant difference in TEER readings ($p=0.0044$, one-way ANOVA, $n=6$ replicates in each arm, two individual cell lines).

Conclusion: This study has demonstrated that CS enhances barrier formation by human urothelial cells in culture. Intense labelling of CS within the stroma, with no urothelial presence suggests the mode of action is unlikely to be a simple supplementation of a GAG layer. Further studies addressing mode of action are being pursued.

P5-8 Exploring the use of patients own fat to stimulate tissue regeneration in the pelvic floor

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Introduction: Our aim is to develop a new biodegradable material consisting of polylactic acid (PLA) scaffold augmented with patients' adipose derived mesenchymal stem cells (ADMSCs). Synthetic, transvaginal mesh made of polypropylene (PPL) has been the mainstay of pelvic organ prolapse surgery but is now recognised to lead to severe complications in a significant proportion of woman. Therefore, there is an urgent need for new materials for use within the pelvic floor. An ideal material would be strong enough to provide support to prolapsed pelvic organs but not so stiff as to induce erosion through native tissues (as currently occurs with PPL). For tissue integration and remodelling of patient's tissues it should also promote angiogenesis, reduce inflammation and increase collagen production.

Materials and Methods: We used electrospun PLA which provides good mechanical support and degrades slowly without provoking a strong inflammatory response. ADMSCs have been shown to promote angiogenesis and reduce inflammation while promoting connective tissue regeneration. Using cells harvested from donated human fat, we have isolated a cell rich stromal vascular fraction (SVF) containing both ADMSCs and other progenitor cells. The SVF can be harvested both enzymatically and mechanically.

Results: We have developed a biodegradable polylactic acid (PLA) electrospun scaffold containing pockets into which ADMSCs can be placed. We report that ADMSCs attach and proliferate well within PLA pockets, remaining viable and metabolically active.

Conclusion: We report the first steps to achieving a material which can be combined with patients' cells for supporting regeneration of the pelvic floor in one single operation.

P5-9 Detailed characterisation of severe incontinence after robotic-assisted radical prostatectomy using urodynamics and patient reported outcome measures

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Introduction: Urinary incontinence after robotic-assisted radical prostatectomy (RARP) can ruin men's quality of life. Few studies have performed detailed analysis of post-RARP incontinence in men considering having surgery to improve their leakage. This study investigated the urodynamic and patient-reported outcome measure (PROM) data of men considering surgery for post-RARP incontinence in a single UK centre performing RARP and incontinence surgery.

Methods: All men referred with post-RARP incontinence to a specialist clinic between December 2012 and October

2017 were evaluated. In our institution men were routinely invited to complete the International Consultation on Incontinence Questionnaire on Male Lower Urinary Tract Symptoms Long Form (ICIQ-MLUTS) pre-RARP and at 6, 12 and 18 months post-RARP. All men underwent urodynamics. Data were analysed by paired t-test.

Results: In total 64/795 (8%) men post-RARP were referred to the specialist clinic, of these 16/64 (25%) had had salvage radiation. Median age, BMI and prostate size were: 66 years (R 52–74), 28 (R 19–35) and 45 grams (R 15–165). Urodynamics identified 41/64 (64%) had stress incontinence, 2/64 (3%) detrusor overactivity, 11/64 (17%)

mixed symptoms and 10/64 (16%) no urodynamic evidence of incontinence. After evaluation 26/64 (41%) men proceeded to undergo incontinence surgery. Table 1 illustrates the patient-reported ICIQ-MLUTS LF data pre- and post-surgery by urodynamic categories.

Conclusions: A significant proportion of men considering surgery for post-RARP incontinence had no urodynamic incontinence or mixed symptoms. The ICIQ-MLUTS LF was able to identify significant changes from baseline in men concerned about their post-RARP urinary symptoms. This study demonstrates the utility of routine collection of PROMs for counselling men post-RARP.

P5-9: Table 1. Median total ICIQ-MLUTS LF scores pre and post-surgery categorised by four urodynamic categories.

	Baseline	6-months	12-months	18-months
Stress incontinence (Median Total ICIQ-MLUTS LF score)	17 (Questionnaires returned N=36/41)	25	25	27
Detrusor overactivity (Median Total ICIQ-MLUTS LF score)	31.5 (Questionnaires returned N=2/2)	39	42	46.5
Mixed symptoms (Median Total ICIQ-MLUTS LF score)	16 (Questionnaires returned N=8/11)	30	33.5	28
No Urodynamic incontinence (Median Total ICIQ-MLUTS LF score)	27 (Questionnaires returned N=6/10)	28	29	30

P5-10 Patient global impression of change (PGIC) and ICIQ – urinary incontinence scoring systems demonstrate poor reliability of pad weight assessments following male sling surgery

Itam S¹, Seth J¹, Solomon E², Pakzad M¹, Hamid R¹, Greenwell T¹, Ockrim J¹

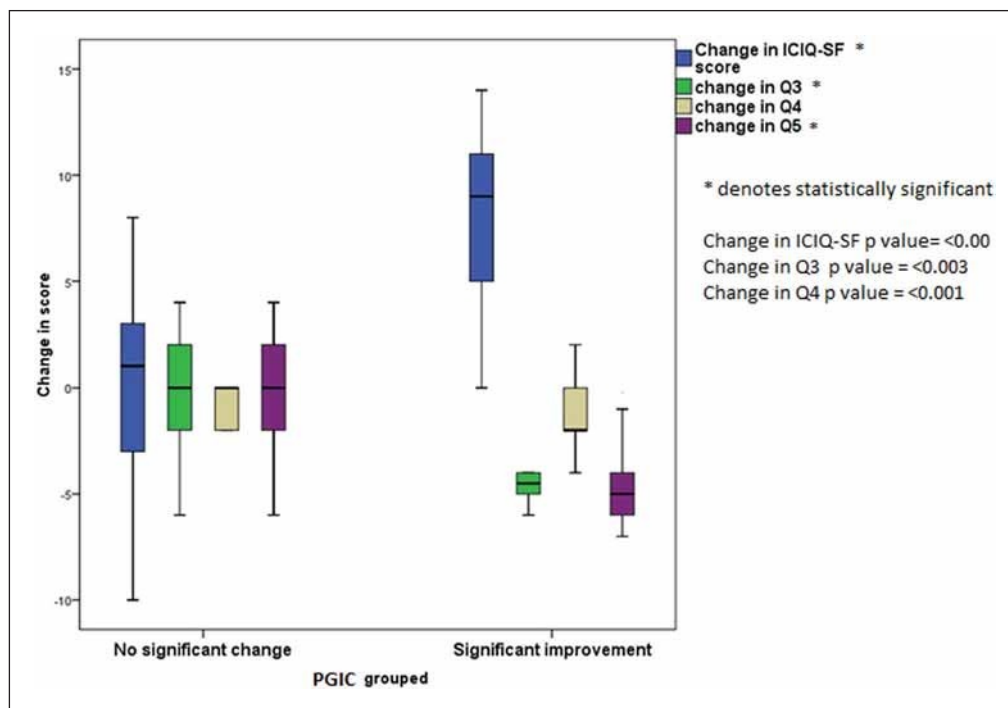
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Introduction: Stress Urinary Incontinence (SUI) following surgery for prostate cancer or benign prostate disease can be disabling for patients. The male sling can be an effective treatment option in men with SUI. The aim of this study was to assess levels of agreement between change in ICIQ-UI-SF scores and PGIC questionnaire scores. **Method:** We retrospectively reviewed our prospectively acquired database of all patients who had a male (AdVance) sling inserted between January 2012 and December 2015. Preoperative ICIQ-UI –SF questionnaires were completed

and patients were evaluated at intervals post operatively with ICIQ-UI-SF and PGIC questionnaires.

Results: A total of 37 patients underwent sling insertion with mean age 68.1 (range 57–78). The questionnaire response rate was 78%. The median length of follow-up was 33 months (range 11–70). 18 patients (64%) had significant improvement in their PGIC scores (PGIC 5–7), which correlated to a mean reduction in ICIQ-UI-SF score of 7.9 (5.7 to 10.0 95% CI); compared to 10 patients with minimal PGIC change (PGIC 1–4) in ICIQ-UI-SF score of 0.3 (-3.2 to 3.8 95% CI). In addition, there is statistically significant difference in ICIQ-UI-SF question 3 (frequency of leak) and question 5 (impact on QOL) between the two groups.

Conclusion: There is good agreement between PGIC and ICIQ-UI-SF questionnaires and both can identify patients who have improved following surgery. The subjective perception of volume of urine leak doesn't appear to be a reliable outcome measure indicative of poor reliability of pad weight testing.



P5-10: Figure 1: Boxplots of distribution of ICIQ-SF scores between the groups

P5-11 A cadaveric pilot study of bulkamid injections for the treatment of post prostatectomy incontinence

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Introduction: Postprostatectomy incontinence (PPI) is a bothersome complication of radical prostatectomy. Although most men recover from PPI, some men continue to have persistent urinary incontinence.

Treatment of small volume persistent PPI with male sling or an artificial urinary sphincter may be overly invasive and the concept of intraurethral injection is very appealing in this situation. Bulkamid® is a non-particulate polyacrylamide and water polymer gel, which is being used successfully in female stress urinary incontinence. We have assessed the feasibility and effects of a 4 point intra-urethral technique on maximum urethral closing pressure (MUCP) in male cadavers.

Materials and Methods: Urethral pressure profile (UPP) was measured twice on 2 male fresh frozen cadaver models before and after a 4 point injection of 2mls of Bulkamid® intraurethrally at sphincteric level in 0.5mls aliquots using a 7Fr flexible needle (Olympus 00126).

Results: A clear UPP trace was recordable in both cadavers. The mean MUCP at baseline was 38 cm H₂O and the

mean MUCP following Bulkamid® intraurethral injection was significantly increased to 51.25 cm H₂O (P<0.05).

Conclusions: Bulkamid® intraurethral injection in male cadavers is a simple technique, which significantly increases MUCP. This raised MUCP may allow for treatment of PPI and warrants further study in this clinical situation.

P5-12 Autologous rectus fascia pelvic organ prolapse repair: a mesh free solution for POP?

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Introduction: 40% of women suffer pelvic organ prolapse (POP) in a lifetime. The current standard intervention for vault prolapse is a mesh colposacropexy or hysteropexy. However, patients and surgeons are increasingly hesitant of the use of mesh given recent UK and FDA warnings and litigation. A possible alternative is to use autologous tissue vault support as a mesh free solution. We report a series of four patients undergoing autologous POP repair (AOPPR) using rectus fascia.

Patients and Methods: 4 patients with a mean age of 53 (38–68) years underwent AOPPR between 2014–2016. All had previous urological/gynecological surgery and declined standard mesh repairs. All had pre-op videourodynamics and defecating MRI evaluation. Mean follow-up

P5-12: Table 1. Participant characteristics of the two treatment groups.

Case	Clinical history	VCMG and MRI findings	Surgery performed	Outcome
1	Colposuspension; anterior-posterior repair x2; TAH & BSO; failed suture sacrocolpopexy Mixed pattern incontinence Grade IV vault prolapse Dyspareunia	DO Type IIB SUI MRI 4.5 cm vault descent from pubococcygeal line	Autologous-sacrocolpopexy & colposuspension Abdominoplasty	No POP recurrence DO and SUI resolved Dyspareunia resolved
2	Colposuspension Sensory urgency Grade III cervical prolapse	Stable bladder No SUI MRI 5 cm vault descent from pubococcygeal line	Autologous-sacrocolpopexy	No POP recurrence Sensory urgency persists
3	TVT excision for BOO Mixed pattern incontinence Grade III cervix prolapse	DO with leak Type IIB SUI MRI 3 cm vault descent from pubococcygeal line	Autologous-sacrocolpopexy & colposuspension Abdominoplasty	No POP recurrence 1 security pad/day Urgency resolved
4	TAH & BSO with ureter injury; Boari flap x 2; nephrectomy; sacral nerve stimulator Stress incontinence Grade IV vault prolapse	Type IIB SUI Acontractile MRI 5 cm vault descent from pubococcygeal line	Autologous-sacrocolpopexy Take down Boari, excision remaining ureter	No POP recurrence SUI cured CISC dependent

is 18 (11–28) months. The APOPR was performed using 10–18 cm of rectus sheath with similar technique to that employing mesh to support the anterior–posterior vaginal walls or encircle the cervix and secured to the sacral promontory.

Results: Results are summarized in Figure 1. All patients have durable result at last follow up.

Conclusions: This is the first description in Europe of APOPR. This series demonstrates feasibility of this technique with successful medium–term outcomes. APOPR avoids the 10–15% risks of mesh–related complications. APOPR and has the potential of a cost–effective and safe alternative for women who wish to avoid mesh. Further studies of long–term durability are needed.

P5-13 Still safe and successful? Longterm results of 100 consecutive transobturator tapes

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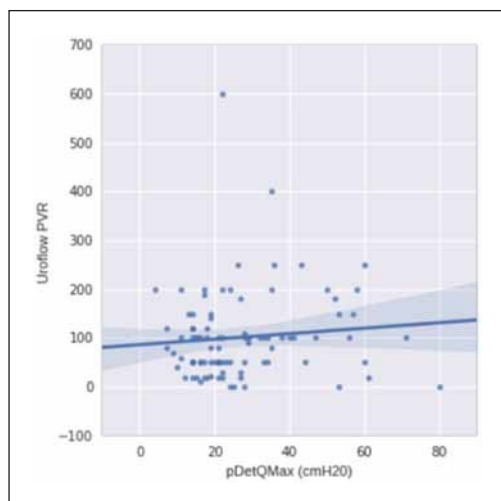
Introduction: Whilst the transobturator tape (TOT) has demonstrated good results at short term follow-up, a lack of long-term outcome data is recognised. We aimed to assess long-term outcomes of TOTs and ascertain whether preoperative urodynamics predicted outcome.

Patients & Methods: A retrospective review of 100 TOTs inserted for stress/mixed UI over a 5-year period

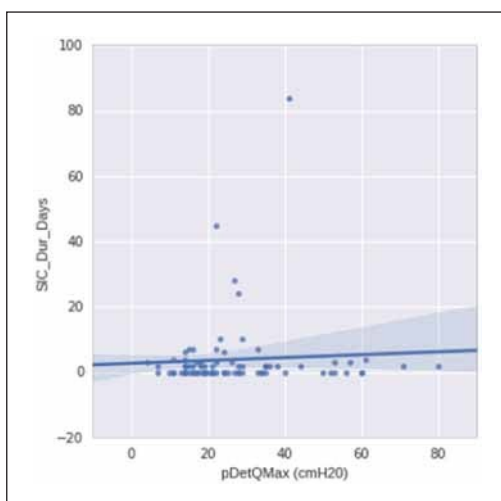
was performed. A single surgeon assessed and operated on all patients. Pre-operative investigations (uroflow, cystometrogram, cystoscopy & stress test) and post-procedure urodynamics were recorded. Patients (now >7 years post-procedure) were posted ICIQ Short-Form, PGI-S and PGI-I questionnaires for completion. Complications were recorded.

Results: 100 patients were included, mean age 51.7 years (33–75), mean follow-up 9.25 years (7.5 – 12.75). Clinically, 68/100 had mixed-UI. 32/100 had clinical pure SUI, with CMG detrusor overactivity in 8/32 (25%). Clinical and urodynamic cure/significant improvement in SUI was seen in 98/100 and 93/100 respectively. 50/68 (73.53%) mixed-UI patients reported cure/improvement of urge incontinence at 2 months. De-novo clinical urgency/detrusor instability arose in 2/100. Of contactable patients, questionnaire response rate was 60/85 (70.59%). Mean ICIQ score was 8.58 (1–20). 52/60 (86.67%) described current urinary condition as “much better” or “very much better” than prior to surgery. Grade 3b Clavien–Dindo complications occurred in 9/100; all apparent within 6 months of surgery. Correlations (Pearson *r*) between pDetQMax and post-operative uroflow/duration ISC, or between pre-operative leak-point pressures and outcome were not significant.

Conclusions: TOTs demonstrate high success rates in urodynamic and patient reported cure of stress/mixed-UI, with a low complication rate at long-term follow-up. Recent controversies surrounding use of pelvic mesh make this data particularly pertinent.



P5-13: Figure 1



P5-13: Figure 2

P5-14 Efficacy of the autologous fascial sling in the neuropathic population

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Introduction: Neuropathic stress urinary incontinence is a common and debilitating problem; particularly in severely disabled patients with sacral pressure sores. NICE recommends insertion of autologous fascial sling over synthetic tapes due to the risk of urethral erosion. We performed a retrospective review of patients undergoing AFS in a single specialised centre to assess outcomes.

Patients and Methods: 14 patients were identified with a median age of 47 (range 19-80). 11 had a spinal cord injury and 3 a supra-pontine condition. 3 patients had severe sacral pressure ulcers complicated by severe incontinence.

All patients underwent preoperative urodynamics which demonstrated SUI and completed pre- and post-op ICIQ questionnaires. 6 patients had had previous intervention for SUI and 5 were on treatment for neuropathic overactivity preoperatively.

Results: Median length of stay was 2.5 days. 7 patients had a concurrent procedure and 3 required intraoperative repositioning of sling. 1 patient returned to theatre for washout of haematoma. All patients were dependent on catheterisation as expected (4 with SPC and 7 doing ISC). 2 patients developed de novo overactivity. Mean ICIQ score decreased from 17 to 0. Mean pad usage decreased from 5 pads per day to 0 pads per day with 8 patients completely dry. The 3 patients with sacral pressure ulcers were completely dry and therefore proceeded to definitive management of their sores.

Conclusion: Autologous fascial sling insertion in our unit had excellent results with acceptable complication rates; all patients had an improvement in symptoms and a decrease in pad usage.

P5-15 Bladder neck artificial urinary sphincter (BN AUS) for recurrent urodynamically proven stress urinary incontinence and mixed urinary incontinence - outcomes of implantation

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Introduction: To assess the outcome of BN AUS insertion for recurrent or complex primary urodynamically proven stress urinary incontinence (SUI) and stress-predominant mixed urinary incontinence (MUI).

Patients and Methods: We retrospectively reviewed a prospectively collected database of women having BN AUS implantation by two surgeons for SUI and MUI. The type and aetiology of the incontinence, previous surgery, the type of procedure and the outcome in terms of cure and complications were recorded.

Results: 50 women with median age 50.5 years (range 27-69) had BN AUS implantation, as above, between 2006 and 2016. Of these, 34 had primary implants, 12 had a device replacement following mechanical failure and 4 had a new implant following previous explantation of an earlier device for erosion. The aetiology was neurological in 17, recurrent stress urinary incontinence in 16, epispadias in 6, pelvic fracture urethral injury in 4, bilateral single ectopic ureter in 3, urethrovaginal fistula in 1, augmentation urethroplasty in 1, congenital Mullerian anomaly in 1 and undiversion in 1. 43 had had previous surgery including cystoplasty, undiversion, urethroplasty, urethrovaginal fistula repair and anti-incontinence surgery. The results and complications are listed in the table below.

Conclusion: BN AUS implantation has a 6% infection/erosion rate and a 22% chronic infection erosion rate leading to device explanation. For the 78% of women with functioning devices, incontinence is cured in 85% and improved in a further 10%. Only 2 patients remain wet and both have congenital anatomical abnormalities of the lower urinary tract.

ePoster Session 6:

Prostate Cancer

Tuesday 26 June

14:00 - 15:45

Room 4

Chairs: Alan Partin & Prasanna Sooriakumaran

P6-1 An intratumoural cytotoxic immunotherapy approach in a syngeneic murine model of prostate cancer

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Introduction: The immunosuppressive prostate cancer microenvironment renders most infiltrating effector immune cells anergic or regulatory. Immunotherapeutic agents localised to the prostate can break this immune-tolerance leading to greater efficacy and less toxicity than systemically-administered drugs. We showed previously that cytotoxic modification of interleukin-15 can activate NK and CD8⁺ T-cells in the presence of prostate cancer cells. We now used this cyto-IL-15 and two immun-checkpoint blocking antibodies, which exhibited anti-tumour response in clinical trials, modified in a similar approach.

Methods: IL-15 and antibodies were modified by conjugation to a molecule that enables them to adhere to cell membranes (patents pending), and thus localize to any potential site of injection. The cytotoxically modified IL-15 and antibodies was injected intratumourally either alone (cyto-IL-15 or cyto-abs) or in combination (cyto-combo) in subcutaneous TRAMP C2 prostate tumours in C57BL/6 mice and compared with their non-modified equivalents.

Results: Intratumoural injection of cyto-IL15, combo or cyto-combo significantly delayed tumour growth at day 14 post-treatment by 45-50%. However, only cyto-IL15 and cyto-combo significantly increased median survival after treatment to 28 ($p < 0.05$) and 24 days ($p < 0.05$) respectively, compared with 17 days in the control group. Non-modified IL15 or antibodies alone had no effect on tumour growth or survival.

Conclusion: We have demonstrated that cytotoxically modified immunotherapeutic agents can lead to tumour growth delay in an in vivo murine model of prostate cancer, induce tumour cell death and increase mouse survival. This appears to be a promising novel approach for prostate cancer immunotherapy.

P6-2 White blood cells from prostate cancer patients carry distinct chromosome conformations

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Introduction: Current diagnostic blood tests for prostate cancer (PCa) are unreliable for the early stage disease, resulting in numerous unnecessary prostate biopsies in men with benign disease and false reassurance of negative biopsies in men with prostate cancer. In comparison to the imaging biomarker MRI, which identifies established and significant prostate cancer we investigate early epigenetic changes as a diagnostic biomarker.

Methods: We performed chromosome conformation screening for 14,240 chromosomal loops in the loci of 425 cancer related genes in peripheral blood mononuclear cells (PBMCs) of $n=107$ PCa patients and $n=105$ non-cancer controls. The cancer cohort consisted of all D'Amico risk groups including metastatic disease.

Results: Our data show that PBMCs from PCa patients acquire specific chromosome conformation changes in the loci of cancer-related genes. New chromosomal loops in the loci of CASP2, ETS1, SLC22A3, MAP3K14 genes were unique to the PCa cohort. Similar chromosomal conformations were identified in primary prostate tumours from these patients, but not in normal prostate tissues. Blind testing on a validation cohort of $n=10$ pts and $n=10$ controls yielded PCa detection with 80% sensitivity and 80% specificity. Surprisingly, utilising the signature to predict D'Amico low risk v high risk disease was also highly accurate (Sensitivity 84%, Specificity 89%).

Conclusions: We have identified a subset of blood chromosomal conformations that are strongly indicative of PCa presence and possibly risk of advanced disease. These signatures have a significant potential for development of a quick diagnostic blood test for prostate cancer or as a staging adjunct.

P6-3 An innovative prostate cancer screening clinic in the community

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Background: Despite being the most common male cancer, awareness and education around prostate cancer is poor. Men are also reluctant to seek medical attention and often present late. We describe the development of and outcomes of a screening activity within an environment where men are comfortable: for most men this was at our local football club, but with the Freemasons, this was at their lodges and with the African-Caribbean community, at their community centre.

Methods: We designed a 2-day, pre-booked appointment only, screening clinic where we took a history, examined the prostate and undertook a PSA test. Men with abnormal prostate examinations/ high PSA results were invited for prostate biopsy. All men were invited to complete a satisfaction survey.

Results: To date, we have held 8 community clinics and seen 578 asymptomatic men at the local football club, in their community centre or at a Freemasons lodge. The average age was 66 years (40-89), average PSA 2.45 (0.1-45.5) and 65 men had biopsies. To date 32 men have been diagnosed with prostate cancer and 4 men had metastases at diagnosis.

A satisfaction survey has consistently shown a response rate of >85% and most men prefer such clinics in the community rather than at the hospital.

Conclusions: This project has effectively raised awareness of prostate cancer amongst our local community and engaged men with regards their prostate health, in a comfortable setting. A large number of men have been diagnosed with prostate cancer, highlighting the feasibility of such community initiatives.

P6-4 Image fusion targeted prostate biopsy in 740 men at risk: a multicentre evaluation showing low diagnostic yield of significant cancer in non-targeted biopsies

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Introduction: In this large UK multi-centre, prospective series, we compared the diagnostic yield of clinically-significant prostate cancer (csPCa) in image-fusion targeted and non-targeted biopsies.

Patients and Methods: 740 men had transperineal image-fusion targeted prostate biopsies (MIM-Symphony-DXTM) between April 2014 and June 2017 by 11 urologists.

Results: Mean age, median PSA and median prostate volume were 63.2 years, 6.3ng/ml and 43cc respectively. Overall, 341 (46.1%) were diagnosed with csPCa (Gleason $\geq 4+3$ or any grade ≥ 6 mm) from the 740 men undergoing biopsy. In 378 men undergoing targeted and non-targeted biopsies, 182 (48%) had csPCa. Only 14 men (3.7%) who underwent both targeted and non-targeted biopsies were discovered to have csPCa in the non-targeted cores alone. 13 out of these 14 men had a PSA < 10 . Of these men 2 had Gleason $4+3=7$ disease and the rest were discovered to have $< 1 =$ Gleason $3+4$ disease. Insignificant cancer exclusively occurred in non-targeted prostate cores in 34 men (9%).

Conclusions: In this large multi-centre series, the added benefit of non-targeted cores is low. An image-fusion targeted-biopsy only has a high detection of csPCa and reduced over-detection of insignificant cancers.

P6-5 The PRECISION study: Prostate evaluation for clinically important disease, sampling using image-guidance or not? (NCT02380027)

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Institute of Urology, Keck School of Medicine, USA, ³⁰University College London Surgical and Interventional Trials Unit, UK, ³¹University of Birmingham, UK

Introduction: PRECISION aimed to evaluate whether multiparametric MRI and a targeted biopsy only (MRI±TB) was non-inferior to TRUS biopsy in the detection of clinically significant prostate cancer in biopsy naïve men.

Patients & Methods: PRECISION was a randomised, non-inferiority trial, carried out in 25 centres in 11 countries. 500 men were randomly allocated to 10-12 core TRUS-biopsy or MRI±TB. Men randomised to MRI±TB underwent MRI followed by targeted biopsy alone (without standard cores) if the PIRADsv2 score was ≥3. Men with a PIRADsv2 score of 1-2 were not offered biopsy. The primary outcome was the proportion of men diagnosed with clinically significant cancer (Gleason grade ≥ 3+4).

Results: One third of men avoided biopsy in the MRI arm (71/252, 28%). Clinically significant cancer was detected in 95 (38%) of 252 men in the MRI±TB arm compared to 64 (26%) of 248 men randomised to TRUS-biopsy (intention-to-treat analysis). Adjusting for centre effects, the absolute difference (MRI±TB versus TRUS-biopsy) in the proportion of men diagnosed with clinically significant prostate cancer was 11.8% (2-sided 95% CI 3.7 to 20.0; p = 0.005). The lower bound of the 95% CI for the difference is greater than -5% therefore MRI±TB was non-inferior to TRUS biopsy. Furthermore, the range of 95% CI was consistent with a claim of superiority of MRI±TB over TRUS-biopsy.

Conclusion: An MRI-targeted approach in biopsy naïve men resulted in greater detection of clinically significant disease, less detection of insignificant disease and required fewer biopsies.

P6-6 The 4Kscore predicts adverse pathology at radical prostatectomy in men diagnosed at biopsy with gleason 6

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Introduction: Men at biopsy (Bx) with Gleason 6 prostate cancer (PCa) would benefit from better understanding their risk for adverse pathology (Gleason score ≥7 or Gleason 6 with ≥pT3a). Our study objective was to determine if a preoperative 4Kscore from men with Gleason 6 could predict adverse pathology at radical prostatectomy (RP).

Methods: Serum samples from 177 men with Bx-detected Gleason 6 PCa who underwent RP at Martini Klinik (MK) from 2003 to 2013 were obtained from the MK biorepository and the 4Kscore calculated. Bx and RP

pathology were read by MK. Primary outcome was adverse RP pathology. 4Kscore and other clinical and pathologic characteristics were evaluated for their association with adverse RP pathology.

Results: 4Kscore, prostate volume, % positive cores, and total tumor length were significantly associated with adverse RP pathology (p ≤ 0.002). Total PSA, %fPSA ratio, DRE status and biopsy T stage were not associated (p ≥ 0.2). Age and no previous biopsy trended towards significance (p=0.08 and 0.07, respectively). On multivariate modelling, 4Kscore (OR=1.75 per 20% increase, 95% CI 1.19-2.57, p=0.004) and prostate volume (OR=0.67 per 20cc of volume, 95% CI 0.54-0.95, p=0.020) were independently associated. Comparing a 4Kscore cut off of 7.5% with other risk indices (NCCN, D'Amico and CAPRA) demonstrated 4Kscore had 80% sensitivity, 40% specificity, 63% PPV, and 72% NPV. 4Kscore ≥ 7.5% did not miss detection of Gleason 8 PCa and missed 7% (1 of 14) pT3a/b.

Conclusions: The 4Kscore was significantly associated with adverse pathology at radical prostatectomy in men with Bx-proven Gleason 6 PCa.

P6-7 Role of 68Ga prostate-specific membrane antigen-targeted PET/CT imaging in primary tumour assessment: improved detection of multifocal disease on whole gland histology compared to multiparametric MRI

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Introduction: Positron emission tomography (PET) for Prostate-Specific Membrane Antigen (PSMA) has emerged as a promising method for prostate cancer staging. Evidence regarding PSMA-based tumour characterisation compared to multiparametric MRI (mpMRI) is limited, hence this study sought to compare the diagnostic accuracy of 68Ga-PSMA PET/CT to mpMRI against radical prostatectomy (RP) whole gland histopathology.

Patients and Methods: A retrospective cohort study of consecutive patients who underwent pre-operative mpMRI and 68Ga-PSMA PET/CT followed by a RP was performed. We performed a "per patient" and "per lesion" analysis for imaging detection and other variables including the apparent diffusion coefficient, according to RP histopathology. Sensitivity, specificity and other measures of diagnostic accuracy were performed.

Results: 57 patients with mean age 64.8±5.9 years and PSA 11±13.6 ng/ml underwent RP (70% pT3 disease). mpMRI and PSMA PET/CT correctly identified the index lesion in 91.2% and 94.7% respectively. Considering "per lesion" analysis, 94 cancer foci were identified of Gleason grades

3+3 (5%), 3+4 (63%), 4+3 (18%), 4+4/3+5 (3%) and $\geq 4+5$ (10%). PSMA-PET/CT (80%) detected more lesions than mpMRI (66%). Considering "per patient" analysis, PSMA PET/CT (70%) correctly identified all tumour foci more reliably than mpMRI (49%) due to superior characterisation of multifocal disease in 31 patients (52% vs 19%), equating to a sensitivity/specificity of 52%/85% and 18%/81% respectively. **Conclusions:** 68Ga-PSMA PET/CT better reflects RP histopathology compared to mpMRI and may improve pre-operative characterisation of multifocal prostate cancer. These findings have implications for targeted biopsy strategies, focal therapies and surgical planning.

P6-8 Outcomes of local anaesthetic transperineal biopsies in the outpatient setting: How does this compare to conventional biopsy methods?

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Introduction: Traditionally, prostate biopsies in the outpatient department use the transrectal (TRUS) approach. The PrecisionPoint™ transperineal (TP) system facilitates freehand transperineal biopsy under local anaesthetic (LA).

Methods: 176 patients underwent freehand TP biopsies between April 2016 and September 2017. 16 (9%) were performed under LA + Sedation and 160 (91%) under LA alone. Pain scores using the validated 'Visual Analogue Score' and histological outcomes were compared with contemporary TRUS and standard transperineal template biopsies from our prospective database.

Results: Mean age was 65 years (36-83), median PSA 7.9ng/ml (0.7-1374) and mean prostate volume 45.5cc (15-157). The indication for biopsy was for primary diagnosis (88.6%). Cognitively targeted biopsies were performed in 45 (26%) patients; 40 (23%) had target + systematic biopsies; and 91 (52%) patients underwent systematic biopsies only. Of the 75 cases who had primary systematic biopsies alone, 46 (61%) were positive. This was similar to standard transperineal template (68%, 32/47, P=0.51) and TRUS biopsy (62%, 61/98, P=0.90) methods. When comparing TP freehand vs. TRUS biopsy methods, VAS scores were not significantly different for any procedural stage: Probe insertion (P=0.61), LA administration (P=0.32), Biopsies (P=0.51) and Overall (P=0.28). Pain scores were significantly less for Probe insertion in the TP freehand group (P<0.0001) vs. LA standard template biopsies, and P=NS for other stages. No patients developed urinary sepsis.

Conclusions: Prostate biopsies can be performed safely under LA using the PrecisionPoint™ system and are well tolerated. Cancer pickup rates are equivalent to conventional biopsy methods. This method has a potential to replace the TRUS approach in the outpatient setting.

P6-9 PREDICT: prostate – a novel individualised prognostic model that estimates survival in newly diagnosed primary non-metastatic prostate cancer

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Introduction: Prognostic stratification is the cornerstone of management in non-metastatic prostate cancer (PCa). However, prognostic models bespoke to an individual are unavailable. To address this, we developed a novel prognostic model which contextualises PCa-specific mortality (PCSM) against other cause mortality for an individual and estimates the survival benefit of treatment.

Methods: Using records from the National Cancer Registration and Analysis Service, data were collated for 10,089 men diagnosed with non-metastatic PCa between 2000-2010 in Eastern England. Models were developed against 10-year survival outcomes using patient, clinical and pathological parameters at diagnosis. Data were randomly split 70:30 into model development and validation cohorts. Discrimination and calibration were assessed by area under the curve (AUC) and Chi-Square goodness-of-fit respectively. A Singaporean cohort of 2546 men represented an external validation dataset.

Results: Median follow-up was 9.8-years with 3276 deaths (1030 PCa-specific). Age, PSA, histological grade group, biopsy involvement, stage and primary treatment were each independent prognostic factors for PCSM. Age and comorbidity were prognostic for non-PCa mortality. Examples are shown in Figure 1. The model demonstrated good discrimination and calibration in the validation cohort with no significant difference in observed and predicted PCSM (p=0.16) or overall mortality (p=0.46) and AUC 0.81 (95%CI: 0.78-0.83) and 0.83 (95%CI: 0.81-0.84) respectively. In the Singapore cohort (417 deaths, median f/u 5.1-years) the model again performed well with <1% differences in observed and predicted mortality and AUC of 0.91 and 0.89 respectively.

Conclusion: PREDICT: Prostate is the first individualised prognostic model for non-metastatic PCa; it has significant potential to aid treatment decision-making.

P6-10 Predicting risk for pathological stage and prognostic grade in patients undergoing robotic prostatectomy: a contemporary UK based calculator

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Introduction: Accurate risk prediction is a prerequisite for informed decision making. Current predictive models are based on American and European data.

Materials and Methods: Prospectively data from 1499 consecutive patients from the NERUS (North of England Robotic Urological Surgeons) database were used to develop a predictive calculator.

Results: The mean PSA was 8.9. 49.8% were D'Amico intermediate and 26.6% high risk. pT3a and T3b disease was noted 35.4% and 5.3% and the specimen prognostic grades ≥ 3 in 25.9%. The data was divided into training (70%) and testing (30%) to assess the performance of each model using area under the receiver operating curve (c-statistic). Age, PSA, DRE stage, biopsy prognostic grade, D'Amico risk category were co-variables assessed. Risk equations for pathological stage T2, T3a and T3b and pathological prognostic grade were developed. Discrimination (c-statistic) of 0.74 and 0.71 was noted overall for the training and testing for pathological stage and 0.73 and 0.74 for prognostic grade. The similar values in testing and training sets indicate good internal validity. Discrimination for pT3b was 0.84 and grade 5 was 0.82. A calculator was developed with 5 input data points (above) to predict pathological stage pT2, pT3a and pT3b and prognostic grades 1-5.

Conclusions: We have developed a simple excel based calculator based on a large, multi-institutional cohort of contemporary patients to predict pathological stage pT2, pT3a and pT3b and prognostic grades 1-5 in patients undergoing robotic prostatectomy. There is good discrimination and internal validation making them applicable in regular clinical practice.

P6-11 A single centre experience in treating localised prostate cancer with focal HIFU ablation over 8 years

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Introduction: With improving accuracy in diagnosis and identification of index prostate cancer lesions, focal ablation has become a more palatable approach for treating significant unilateral disease, this technique was adopted in our centre 8 years ago. Here we report our intermediate outcomes.

Patients and Methods: 149 men underwent partial gland HIFU. Diagnostics included PSA, MpMRI, mapping biopsies followed by focal ablation of significant cancer as defined by the UCL criteria. Follow-up MRI, PSA, QOL questionnaires, biopsy for cause, and redo HIFU if required as part of the treatment strategy per EAU International Multidisciplinary Consensus on Trial Design for Focal Therapy guidelines.

Results: Mean age of 66 years, 89% of subjects had intermediate/high risk disease, and mean pre-HIFU PSA was 7.4. 31% had high volume Gleason 6 disease, 55% had Gleason 3+4 disease, and 13% had Gleason 4+3 disease. 61% received a Hemi-ablation, 31% a focal ablation, and 8% a quadrant ablation. Mean follow-up was 40 months, subjects' PSA dropped to an average 70% nadir. 8% had BCR. 6% required salvage treatment (five men underwent radical prostatectomy, four with radiotherapy). Freedom from additional procedures for clinically significant recurrent disease, including redo-HIFU, was 83%. Post-operative complications included 0.6% new use of pads, 1.3% urethral stricture, 2.6% post-HIFU TURP, and new onset ED of 14%.

Conclusion: In a carefully chosen cohort of patients for focal HIFU our results suggests acceptable oncological control with minimal post-operative morbidity. Further studies are required to establish this technique as a less morbid alternative to radical therapy.

P6-12 A phase III study comparing partial prostate ablation versus radical prostatectomy (PART) in intermediate risk prostate cancer – initial data from the feasibility study

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Background: Men with intermediate-risk, localised prostate cancer (PCa) are offered radical treatments (RT) such as radical prostatectomy (RP), which can cause significant side-effects. Alternatively, partial ablation (PA) technologies are now available, which may reduce treatment burden. RT versus PA has never been evaluated in a randomised clinical trial (RCT).

Objective: To assess feasibility of a RCT of PA versus RT for intermediate risk PCa.

Design: A prospective, multi-centre, feasibility study was conducted to inform the design and conduct of a future RCT, involving a QuinteT Recruitment Intervention (QRI) to understand barriers to participation.

Participants: Men with unilateral, intermediate-risk, clinically localised PCa offered randomisation to PA (in the form of HIFU) or RP.

Results: 82 men were randomised (41 to RP, 41 to PA). The QRI study was key in identifying recruitment barriers, and enabled development of tailored strategies to optimise recruitment, which increased from 1.4 patients/month to 4.5 patients/month. The most common reason for declining randomisation was treatment preference. 51 (22%) of eligible patients declining randomisation chose RP, 27 (11%) active surveillance, 26 (11%) PA, and 21 (9%) radiotherapy. EuroQoL EQ-5D-5L utility scores were limited by small numbers but highlight potential health gains for patients receiving PA compared to RP. HRQoL outcomes relating to urinary and sexual function were better in the PA than RP group, but no significant differences were observed in overall HRQoL between groups.

Conclusions: Randomisation of men to a RCT comparing PA and radical treatment for intermediate risk PCa is feasible. A full RCT of PA versus RT is now warranted.

P6-13 Toxicity of radiotherapy following radical prostatectomy: a national population-based study evaluating the impact of timing and modality

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Introduction: Evidence exists supporting the role of radiotherapy (RT) after radical prostatectomy (RP) in high-risk prostate cancer. However, concerns remain about treatment-related toxicity and costs. Aim: To evaluate the impact of timing and modality of post-prostatectomy RT on severe genitourinary (GU) and gastrointestinal (GI) toxicity.

Methods: We performed a population-based study of all men treated with post-prostatectomy RT in England (2010-2013). A validated coding system captured severe toxicity following RT. A competing-risks regression analysis was used to estimate adjusted hazard ratios (HR) comparing toxicity between the following groups: (i) RT < 6 months after RP vs RT > 6 months after RP. (ii) 3D-conformal radiotherapy (3D-CRT) vs Intensity-modulated radiotherapy (IMRT).

Results: Men who started RT > 6 months after RP were less likely to experience GU toxicity than those who started RT within 6 months (HR: 0.72, 95% CI: 0.59-0.89; p<0.01). There was no difference in GI toxicity between IMRT and 3D-CRT groups (3D-CRT: 5.8 events/100 person years; IMRT: 5.5 events/100 person years; HR: 0.85, 95% CI: 0.63-1.13; p=0.26). GU toxicity was lower but not statistically significant following IMRT (3D-CRT: 5.4 events/100 person-years; IMRT: 3.8 events/100 person-years; HR: 0.76, 95% CI: 0.55-1.03; p=0.08).

Conclusion: Starting RT at least 6 months post-RP reduced GU toxicity. The use of post-prostatectomy IMRT compared to 3D-CRT is not associated with a statistically significant reduction in rates of severe GU and GI toxicity. We would recommend waiting at least 6 months after surgery before starting RT and caution transitioning to IMRT in the post-prostatectomy setting.

P6-14 PATCH - Prostate adenocarcinoma: transcutaneous hormones. A randomised comparison evaluating cardiovascular morbidity and mortality of transdermal oestradiol versus luteinising hormone-releasing hormone agonists in advanced prostate cancer

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Introduction: Androgen deprivation therapy with luteinising hormone-releasing hormone agonists (LHRHa) suppresses testosterone but also depletes oestradiol, leading to long-term toxicities including osteoporosis. Transdermal oestradiol (tE2) should avoid the cardiovascular (CVS) toxicity associated with oral oestrogen, while mitigating oestradiol depletion-related toxicities.

Patients and Method: PATCH is an ongoing randomised trial comparing efficacy and safety of tE2 against LHRHa (allocation ratio 2:1 < 21/2/2011, then 1:1). Men with advanced hormone-naïve prostate cancer but no significant CVS disease

are eligible. tE2 is delivered as 100mcg/24hr oestradiol patches; LHRHa administered as per local practice. The Independent Data Monitoring Committee has permitted release of the CVS morbidity and mortality data. Treatment effect on CVS risk was estimated using Cox models, stratified by recruitment before/after allocation ratio change.

Results: 1127 (621 tE2, 506 LHRHa) men recruited between 14/08/07 and 21/11/16. Baseline characteristics were similar between groups; overall median age 74 (IQR 68–79) years, PSA 39 (17–106) ng/mL, 40% metastatic disease, 59% current/previous smokers. Median follow-up was 3.2 (IQR 0.9–5.1) years. At 3 months, 94.0% of tE2 group and 93.8% LHRHa had testosterone concentrations ≤ 1.7 nmol/L. 100 CVS events were reported, 60 in 57 (9.2%) tE2 patients and 40 in 36 (7.1%) LHRHa; hazard ratio comparing tE2 vs LHRHa 1.19 (95%CI 0.78–1.81, $P=0.432$). 18/60 (30%) CVS events in tE2 group occurred >6 months after patients stopped treatment with tE2.

Conclusions: Rates of CVS toxicity were similar between tE2 and LHRHa. A tE2 arm was recently added to the STAMPEDE trial platform to speed up the efficacy evaluation on prostate cancer outcomes.

P6-15 Prospective pilot study of patient-reported fatigue, physical activity and cardiovascular status in men after robotic-assisted radical prostatectomy

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Introduction: Patient-reported fatigue after robotic-assisted radical prostatectomy (RARP) has not been characterised to date. It is commonly assumed that men undergoing RARP are active, fit and return to their pre-operative status after surgery. Fatigue after other prostate cancer treatments significantly impact on patient-reported quality of life. The aim of this pilot study was to investigate fatigue, physical activity (PA) levels and cardiovascular status in men after RARP.

Patients and Methods: Between October 2016 and March 2017, consecutive men post-RARP or on androgen deprivation therapy (ADT) attending a weekly urology clinic in a RARP centre were invited to participate in the study (NHS REC South Scotland). Men were given the Brief Fatigue Inventory, Stage of Change and Scottish Physical Activity Questionnaires to complete over a two-week period and return in a prepaid stamp addressed envelope. Data were analysed using IBM SPSS Statistics.

Results: In total 96/117 (82%) men approached consented and 62/96 (65%) returned complete questionnaire data. Table 1 summarises the results. The cohort of men who underwent RARP were overweight and had an 18.1% risk of suffering a heart attack within the next 10 years. Although all patients undergoing RARP reported fatigue, 9/42 patients post-RARP reported clinically significant fatigue. Patient-reported PA mainly consisted of walking (51.3%).

Conclusions: A significant proportion of men experience fatigue, are physically inactive and at risk of developing cardiovascular disease after RARP. Our pilot study indicates that a larger cross-sectional study of men after RARP is warranted. These men would benefit from a structured interventions to improve health after RARP.

P6-15: Table 1. Participant characteristics of the two treatment groups.

	RARP (n = 42)	ADT (Control group) (n = 20)
Months since treatment <i>mean (range)</i>	11.7 (2–115)	22.1 (2–120)
Age (years)	63.8 \pm 6.4	67.3 \pm 9.0
Body Mass Index (kg/m ²)	27.0 \pm 3.9	27.8 \pm 3.1
QRISK (%)	18.1	22.4
Stage of change (<i>number of patients</i>)		
Stage 1 - Pre-contemplation	0	0
Stage 2 - Contemplation	1	3
Stage 3 - Preparation	0	1
Stage 4 - Action	5	3
Stage 5 - Maintenance	36	13
SPAQ Total (<i>mins</i>)	658 \pm 337.6	631.9 \pm 318.5
Walking (% of total mins)	51.7	50.9
Manual Labour (% of total mins)	19	14.7
Active Housework (% of total mins)	8.7	13.1
Dancing (% of total mins)	0.5	0.1
Sport/Leisure Activities (% of total mins)	14.0	20.1
Other (% of total mins)	6.1	1.0
Brief Fatigue Inventory	1.6 \pm 1.7	2.5 \pm 1.8

Data are presented as mean \pm standard deviation unless stated otherwise. Brief fatigue Inventory presented as a global score over a two week period (range of scores reported 1–6). SPAQ – Scottish physical activity questionnaire. QRISK - the risk of developing cardiovascular disease over the next 10 years.

P6-17 Association between maximal urethral length and continence following robotically assisted radical prostatectomy

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Introduction: Incontinence is a morbid outcome of radical prostatectomy. Membranous urethral length (MUL) is a predictor of continence in previous studies. We have evaluated the association between preoperative MRI MUL and continence post Robotically Assisted Radical Prostatectomy (RARP).

Methods: We conducted a retrospective review of patients who underwent RARP by a high volume single surgeon/supervised fellows 8/2015-6/2017. Patients with prior or adjuvant treatment were excluded. Continence was defined as no pad/safety pad. MRI variables included MUL and were measured by consultants Uro-Radiologist/Urologist and uro-oncology fellow. Multivariate logistic regression analyses were performed to identify predictors of incontinence.

Results: 190 patients were included. Mean age 62 years (46-73). The mean MUL was 14.6mm (6-24). Age and MUL were significantly associated with incontinence outcome at immediate, 3, 6 and 12 months postoperatively. After age adjustment, MUL remained to be a significant predictor. The area under the ROC curve for continence based on MUL was 0.78 at 12 months. The risk of incontinence in patients with MUL of <10mm was 27.8% (13.8%, and 39.1% for patients <65 years, and ≥65, respectively). The risk of incontinence with MUL > 15mm was 2.7% (1.5%, and 4.5% for <65 years, and ≥65, respectively). < 8mm, 1% of total, complete urinary incontinence. The inter-observer concordance rate was 89% for Coronal MUL.

Conclusion: MUL predicts continence following RARP. This is important for counselling, training and commencing a service. A larger, prospective study would be required to

verify our findings. We incorporate it as part of preoperative assessment, counselling and surgical planning.

P6-18 Retzius-sparing robotic radical prostatectomy for high-risk prostate cancer

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Retzius-sparing robot-assisted radical prostatectomy (RS-RARP) produced significantly better early urinary continence than its non-RS counterpart in a randomised controlled trial. Concerns exist however that it might not allow due to its technical difficulty and the paucity of landmarks a sufficiently wide excision of the prostate when needed and might therefore be unsuitable for higher risk prostate cancers.

Of 160 consecutive patients having RS-RARP done by the same surgeon during a 16-month period, 55 had d'Amico high-risk prostate cancer. All patients had an extended pelvic lymphadenectomy. Their results were compared with a matched (for high-risk parameters) group of 55 high-risk patients operated on robotically by the same surgeon immediately prior to the adoption of RS-RARP. The mean follow-up in RS- and non-RS-RARP patients was 8 (1-16) months & 24 (16-33) months.

Patients in the 2 groups had similar age, BMI, PSA, biopsy Gleason sum, clinical stage, operating time, extent of nerve-sparing surgery, blood loss, complication rate, prostate weight, LN yield and post-op. hospital stay.

RS-RARP produces dramatically better (10x) urinary continence at 4 weeks ($p < 0.0001$) than non-RS-RARP and does not appear to negatively impact short-term indicators of cancer control in patients with high-risk prostate cancer. Earlier recovery of continence post-surgery allows this group of patients to undergo adjuvant radiotherapy as part of multimodality treatment quicker representing an underestimated benefit of the approach. Clearly, longer follow-up is needed to determine its impact on cancer control.

P6-18: Table 1

	RS	non-RS	P
n	55	55	
Op. time (min)	209 (180-300)	213 (135-300)	1.00
Catheter (days)	9 (8-9)	14 (14-14)	<0.0001
4-week pad-free	40 (73%)	4 (7.3%)	<0.0001
Clavien ≥3 complications	2 (3.6%)	2 (3.6%)	1.00
PSM			
pT2	3/13 (23.1%)	6/19 (31.6%)	0.91
pT3	14/42 (33.3%)	16/36 (44.4%)	0.44
total	17/55 (30.9%)	22/55 (40.0%)	0.43
LN yield	22 (13-47)	20 (13-30)	0.84
PSA <0.1 ng/ml	52 (94.5%)	53 (96.4%)	1.00
BCR	3 (5.5%)	3 (5.5%)	1.00

P6-19 Extended pelvic lymph node dissection: Long way to 'optimal case selection'

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Background: Extended pelvic lymph node dissection (EPLND) is performed with radical prostatectomy in patients at risk of LN metastases. This carries prognostic and therapeutic benefits, but also perioperative risks. The European Association of Urology recommends patient selection based upon a Briganti score of >5%, which predicts chance of LN metastasis. We aim to analyse the complications and histology outcomes, in patients selected for EPLND using the Briganti nomogram.

Method: Retrospective analysis of patients undergoing robotic EPLND from 2016 to 2017. Data included Briganti parameters, perioperative complications, and histology. Briganti score was calculated using both MRI and clinical T stage.

Results: EPLND was performed in 81 patients. Using D'Amico risk stratification, 88% were high, 11.1% intermediate and 1.2% low risk. Median Briganti score was 13% using clinical T stage and 18% with MRI stage. Mean LN yield was 17.7 (range 2-42). LN disease was found in 7 patients (8.6%), with Briganti scores of 9%, 23%, 49%, 60%, 22%, 75% and 66%. Intraoperatively, one patient had an external iliac vein tear repaired without consequence. 15 post-operative complications (18.5%) were identified. 5 patients developed a lymphocele (one requiring drainage), 1 pelvic haematoma, 1 deep vein thrombosis with pulmonary embolus, and 8 developed transient lymphoedema. Of these patients, two had LN positive disease.

Conclusion: EPLND is safe, with good LN yield, but is not without complications. In the absence of a randomised control trial, either a novel scoring tool or imaging with a higher specificity is required, to minimise unnecessary EPLND and its consequences

P6-20 High rate of adverse features at salvage radical prostatectomy compared to initial diagnosis in men who experience recurrence following high intensity focused ultrasound as primary treatment of localized prostate cancer

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Introduction: Our objective was to describe the pathologic recurrence patterns at salvage robot-assisted radical prostatectomy (sRARP) post-HIFU.

Patients and Methods: Retrospective analysis, 34 men who underwent sRARP after primary HIFU, single institution 2012-2017. Clinico-pathological characteristics pre-HIFU and pre-sRARP were compared against final sRARP histology. In-field recurrence (IFR), out-of-field disease (OFD), PSMs and MRI accuracy were assessed.

Results: Median age 64yrs, PSA 7.8ng/dL, ISUP 2 (70.6%), MCCL 7mm. 55.9% had multifocal disease pre-HIFU. 47.1% had known 'insignificant' cancer outside the treatment field. Median time to failure was 16 months. Oncologic indications for sRARP were IFR 55.8%, OFD 20.6%, both 23.5%. No men were suitable for bilateral nerve sparing: 16% underwent unilateral nerve-sparing, 84% bilateral wide excision. On sRARP histology, disease was multi-focal in 94.2%; most frequently apical PZ (85.3%). Significant (ISUP \geq 2) IFR, OFD or both were found in 97.1%, 81.3% and 79.4% respectively. 82.4% experienced adverse reclassification at sRARP versus pre-HIFU, 67.6% versus pre-sRARP.

The PSM rate was 38.2% (30.8% pT2, 42.9% pT3; 14.7% apical, 23.5% posterolateral), 85% were in-field or at HIFU margins, despite wide excision of the HIFU-field. The sensitivities of post-HIFU MRI for IFR, OFD and T3a/b were 81.8%, 65.4% and 10% respectively.

Conclusions: In men failing primary HIFU, rates of upgrading, upstaging and PSMs were high; nerve sparing was infrequently feasible. Disease was under-estimated by MRI/ targeted biopsy. This may inform primary treatment and sRARP counselling. The high IFR rate demonstrates HIFU occasionally fails to ablate the tumour in vivo, in addition to the risk of OFD.

ePoster Session 7:

General Urology I

Tuesday 26 June

14:00 - 15:00

Room 12

Chairs: David Thomas & Andrew Moon

P7-1 Is it safe to carry out flexible cystoscopy when urinary dipstick is positive for 'infection'? Results of a prospective clinical study

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Introduction: There is significant under-utilisation of valuable NHS resources when patients scheduled for flexible

cystoscopy are cancelled consequent to positive pre-cystoscopy urinalysis, despite being asymptomatic for UTI. With our pilot evaluation (JCU 2017;10(2S):7-82) supporting a protocol avoiding automatic cancellation, we performed a larger study to primarily identify the association between the pre-flexible cystoscopy urinary Leucocyte-esterase, Nitrites, urine culture and post-cystoscopy UTI, whilst utilising this protocol.

Patients and Methods: We carried out a prospective clinical study in a high-volume UK centre, recruiting all patients undergoing flexible cystoscopy over a 6-month period. Urinalysis was carried out prior to cystoscopy in all patients. Cystoscopy was carried out regardless of the dipstick result, unless patients were symptomatic, in which case they were treated and rescheduled. Patients asymptomatic but considered 'high-risk' for UTI (on the basis of pre-determined criteria) were given prophylactic Gentamicin prior to cystoscopy. Every patient was followed up by a phone call and urine culture when applicable. We defined post-cystoscopy UTI as one that developed within 2 weeks of the procedure. Analysis of association was carried out.

Results: From over 2000 patients, preliminary results suggest that the overall risk of developing post-cystoscopy UTI in this cohort is low. While Leucocyte-esterase and Nitrite positivity appear to carry a slightly higher risk of developing a UTI, this risk was not clinically significant. The incidence of urosepsis is very low.

Conclusion: It appears safe to carry out flexible cystoscopy in asymptomatic patients with positive urinary Leucocyte-esterase and/or Nitrites, without the need for routine prophylactic antibiotics.

P7-2 A clear history of lower urinary tract haematuria does not always require extensive radiological investigation of the upper urinary tract

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Introduction: We investigated the incidence of upper urinary tract (UUT) abnormalities in males with initial and/or terminal visible haematuria (VH) suggesting a lower urinary tract (LUT) cause. Is extensive UUT imaging really necessary?

Materials/Method: Two-armed (retrospective (n=419) and prospective (n=1173)) study of all consecutive male patients with VH over 5 years. All patients underwent flexible cystoscopy (FC) and UUT imaging (USS+/-IVU/CT urogram). Those with initial and/or terminal VH were scrutinised further.

Results: 62/419 (14.8%) of patients in the retrospective group (R-G) and 183/1173 (15.6%) in the prospective

group (P-G) presented with initial and/or terminal VH. In the R-G, FC revealed these LUT abnormalities: 4 bladder calculi; 3 bladder tumours; 1 urethral stricture. Only one UUT malignancy was identified (single case of renal cell carcinoma detected on USS and IVU). In the P-G, 129/183 patients underwent CT and 75 had an USS. 178/183 had a FC with these findings: 70 large/vascular prostates (38.3%); 25 bladder tumours (13.7%); 16 urethral strictures (8.7%); 1 bladder neck stenosis and 66 normal inspections (36.1%). UUT imaging demonstrated an abnormality in 13 (7.1%) patients (5 non-obstructing renal calculi; 4 angio-myolipoma; 2 hydronephrosis due to known bladder tumour; 1 polycystic kidney disease; 1 known/pre-existing tumour.) No new UUT malignancies were identified in 183 patients.

Conclusions: Patients with an exclusive history of initial and/or terminal VH do not require extensive UUT imaging due to the low incidence of serious UUT pathology. FC and USS (rather than CT) may suffice, also reducing inconvenience, radiation exposure and health-care costs.

P7-3 What is abnormal? The utility of C-Reactive Protein as a marker of sepsis post major urological surgery

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Introduction: Post-operative infection increases morbidity and mortality. NICE recommends CRP measurement to guide sepsis management; however, post-operatively, an infectious CRP rise may be misattributed as surgical. We evaluated the utility of CRP in diagnosing infection after major urological surgery.

Patients and Methods: All patients undergoing major urological surgery at our institution over 10 months were included. Operation, route, Charlson index, infective complications and CRP measurements for post-operative days 1-10 were recorded. Receiver operating characteristics were plotted, and procedure and patient specific risks for CRP elevation were explored.

Results: 117 patients were included. Procedural differences in post-operative CRP were statistically significant on days 1 to 3 (Kruskal-Wallis test; $p < 0.05$). Prostatectomy caused least perturbation of CRP, and retroperitoneal lymph node dissection the most. CRP performs well as a marker of infection from post-operative days 2 to 8. Discriminatory power is best for patients with septic shock, peaking at post-operative day 5 ($p < 0.0001$). In binary logistic regression, adjusting for operation, route, and Charlson Index, CRP remained a statistically significant independent marker of simple

infections from days 2 to 6, sepsis from days 2 to 6, and septic shock from days 3 to 6 (table 1). Laparoscopic route caused both lower CRP levels and lower rate of septic shock compared to open (Fisher's exact test; $p=0.012$).

Conclusions: CRP has high discriminatory power as a marker of infection from post-operative days 2 to 6. Procedure and route have a large influence on CRP from day 1 and should be considered when evaluating what is abnormal.

P7-3: Table 1. Receiver operator characteristics for CRP levels on post-operative days 1 to 10. AUC = area under curve.

Day of CRP	Infective Complication		Sepsis		Septic Shock	
	AUC	<i>p</i>	AUC	<i>p</i>	AUC	<i>p</i>
1 (n=104)	0.612	0.073	0.620	0.075	0.539	0.793
2 (n=108)	0.674	0.003	0.699	0.002	0.631	0.283
3 (n=95)	0.661	0.009	0.698	0.002	0.758	0.035
4 (n=88)	0.692	0.003	0.740	<0.001	0.874	0.002
5 (n=75)	0.669	0.012	0.731	0.001	0.942	<0.0001
6 (n=56)	0.721	0.004	0.804	<0.001	0.857	0.005
7 (n=37)	0.641	0.144	0.740	0.014	0.834	0.017
8 (n=24)	0.630	0.297	0.741	0.046	0.812	0.053
9 (n=11)	0.444	0.814	0.625	0.540	0.643	0.450
10 (n=8)	0.286	0.513	0.667	0.505	0.533	0.881

P7-4 The first experience in the United Kingdom of using the novel treatment uromune® in men with recurrent Urinary Tract Infections

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Introduction: UTIs are the most common infections worldwide, affecting significant numbers of men. Men with recurrent UTIs often rely on prolonged courses of antibiotics.

The alarming rise of antibiotic resistance (described as one of the biggest risks to global health in our lifetime) has triggered a Global Action Plan from the WHO, providing a pressing need to find viable alternatives. We present the first experience in the UK of the immunomodulating live-attenuated sublingual bacterial vaccine Uromune® in a preliminary cohort of men with recurrent UTIs.

Method: 14 men (mean: 65years, range: 44-84) with recurrent UTIs received 3 months of Uromune®. 2 men had significant PVRs, 1 had a Mitrofanoff and 1 had bladder neck stenosis post prostatectomy. All 5 perform ISC regularly. Follow-up for up to 12 months was by a specialist phone consultation and an ongoing number. No antibiotic prophylaxis was used throughout.

Results: All 14 men completed treatment. 10/14 (71%) reported no UTIs during the treatment and follow-up. Of the 4 men with recurrences, one had significant PVR and one had bladder neck stenosis. There were no reported side effects.

Conclusions: This initial cohort suggest that Uromune® is safe and effective in men with recurrent UTIs, offering a potentially viable alternative to antibiotic prophylaxis. Uromune® is effective in men with structural abnormalities, but less compared to a normal urinary tract, though the numbers are small. These preliminary results supports the creation of an international multi-centre trial to further investigate Uromune® in larger groups of men with longer follow-ups.

P7-5 The contemporary management of traumatic renal injury at a UK major trauma centre

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Introduction: With the introduction of the Major Trauma Centre (MTC) network, there has been an increased exposure to renal injury; commonly in conjunction with polytrauma. Conservative management and advances in interventional radiology (IR) methods, reduces the rate of surgical exploration and preserves injured kidneys.

Aims: To analyse the success of contemporary management of renal injury following trauma in our MTC.

Materials and Methods: The prospectively maintained Trauma Audit and Research Network (TARN) database was interrogated to identify patients with urinary tract injuries between January 2014 and November 2016.

Patients' records and imaging were reviewed to identify injury grades, interventions, outcomes and follow up.

Results: Renal injury was identified in 60 out of 78 patients with a urinary tract injury. Male to female ratio was 51:9. Average age was 37.5 ± 17.36 (1.5-94.6) years. The majority sustained blunt trauma 80% (N=48) compared to 20% penetrating (N=12). Injuries were; 12 (20%) grade 1; 11 (18.3%) grade 2; 17 (28.3%) grade 3; 12 (20%) grade 4; 5 (8.3%) grade 5 according to American Association for the Surgery of Trauma (AAST) scale. Early renal intervention occurred in 10 patients (16.6%), of which, 5 were managed with IR exclusively, 2 underwent open renal repair and 1 ureteric stenting. Emergency nephrectomy was performed in 2 patients (3.3%); both of whom died from extensive polytrauma. Overall 30-day mortality was 15% (n=9).

Conclusions: Even for haemodynamically unstable injuries, IR techniques were successful. Emergency nephrectomy remains a rare event even with polytrauma and laparotomy for associated injuries.

P7-6 Pelvic fracture urethral injury – the nature of the causative injury correlates strongly with surgical treatment and outcome

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Introduction: We have assessed the specific nature of the trauma leading to pelvic ring disruption and its relationship to the resulting urethral injury, its surgical treatment and outcome.

Patients and Methods: 106 consecutive patients were evaluated. 66 patients (62%) were involved in a road traffic accident (n=33 driver/passenger in a car), 38(36%) in work / recreational activities. 2 patients (2%) attempted suicide by jumping.

Results: Car accidents - lateral compression (LC) fractures n=27, open-book (OB) n=4; Motorcycle\bicycle accidents – LC n=16, OB n=12, vertical shear disruptions(VS) n=4; Work\recreational accidents – LC n=23, OB n=11, VS n=4. The remaining 4 were unclassifiable in this simple way.

Of 69 LC fractures, 34 were “straightforwards” (car injuries n=30, pedestrians n=2, work injuries n=2, not easily classifiable n=13) and 22 were crush injuries (car injury n=1, pedestrians n=18, work injury n=3). The other 13 were not easily classifiable.

Surgery (bulbo-prostatic anastomosis) was mobilisation and anastomosis in 15%, crural separation in 52.5%, inferior pubectomy in 15% and supra-crural re-routing in 17.5%. 60% of the pubectomy cases and 67% of the re-routing patients were crush injuries.

Conclusion: Car drivers and passengers tended to have less serious injuries and better outcome mainly because LC fractures seemed to cause less local pelvic trauma and were associated with shorter defects to bridge. Specifically there was an 88% chance that the injury would be a “straightforward” LC injury causing an incomplete rupture with a 92% chance that it can be treated by a step 1 or step 2 BPA.

P7-7 Centralisation of paediatric services: assessing impact in suspected testicular torsion

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Introduction: In our Trust, paediatric services were recently centralised to a single unit within our multi-site configuration - 17 miles from the Urology Centre. We analysed the impact of this change on the management of patients with suspected testicular torsion. We examined referral numbers, time to specialist assessment, ‘knife-to-skin’ time, surgical findings and need for orchidectomy.

Methods: Using a comprehensive electronic database we conducted a closed loop audit on suspected testicular torsion outcomes over two 12-month periods, pre and post paediatric centralisation (2015 and 2017).

Results: We observed that the total number of scrotal explorations reduced from 41 to 21 - of which 28 and 12 respectively were within the paediatric population. Median age of patients was 15 (range 4-51) vs 16 (range 4-46). There was no significant difference in time from presentation to ‘knife-to-skin’ overall: 195 mins vs 227 mins, p=0.20, or in the paediatric population: 211 vs 210 mins, p=0.95. Overall, five patients exceeded a 6-hour target of ‘knife-to-skin’ time during 2015 compared to one in 2017. There were in total 6 vs 4 confirmed torsions on exploration - all testes were viable. No orchidectomy was required in either period of analysis.

Conclusion: Since paediatric services have been centralised away from our Urology Centre there has been a reduction in patients breaching the 6-hour target. This may reflect a reduction in patient transfers, with Urological surgeons travelling to the new paediatric site. Total numbers of referrals have fallen which may indicate a shift of some patients to neighbouring units.

P7-8 A multicentre prospective study evaluating the outcomes from emergency scrotal exploration

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Introduction: We wanted to collect contemporary data on the pathway from referral to discharge in a consecutive cohort of patients undergoing emergency scrotal exploration. Secondly, we wanted to assess for pre-operative investigations that may correlate with the finding of torsion at operation.

Materials & Methods: Patients with suspected torsion were prospectively identified in different hospitals within a single region in the UK. Patient data was collected from June 2017 to November 2017.

Results: 116 consecutive patients were included in this study, median age 13 (range 0.25-68 yrs). 97% of patients presented with pain, 54% swelling, 34% skin changes, 2.5% lower urinary tract symptoms and 2% with fever. Median transfer time for Urological assessment was 45 (range 0-300 min). Median time to theatre was 90 (range 15-720 min). 42% of patients had a urinalysis prior to theatre. 22% patients had routine bloods. Eight patients had pre-operative ultrasound (US), with 100% correlation to surgical findings. Operative findings were: torsion 20%, torqued hydatid 30%, epididymo-orchitis 18%, negative findings 30% and other pathology 2%. 41% of patients had a three point orchidopexy. Four patients underwent orchidectomy. 2.5% had immediate complications. 72% of patients responded to six week follow up which identified 5% wound infection, 6% pain and 7% palpable suture. No re-explorations were performed.

Conclusions: This multicentre study has confirmed a relatively low rate of testicular torsion and short term complications. Interestingly the study highlights the need for a larger scale study to re-evaluate the role of pre-operative US in patients undergoing scrotal exploration.

P7-9 Can a virtual stone clinic improve patient care at a reduced cost?

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Introduction: Constantly increasing patient numbers create severe pressure on outpatient clinics. New patient care pathways are needed that can reduce those pressures and improve patient overall care. We set up a weekly virtual stone clinic whose aim was to ensure that all stone patients were reviewed by the stone team and triaged to the appropriate stream. All stone referrals were captured by the Stone Coordinator and reviewed in the VSC by the Stone Consultant(s), SpR, Stone Nurse and Research Nurse.

Aim and Methods: We aimed to assess the effectiveness of our virtual stone clinic in saving outpatient appointments, diverting consultant clinic appointments to nurse led consultations (in person or via telephone) and expediting patient care pathways to meet treatment target

pressures. Data were collected prospectively for 5 months from 12/12/16 to 17/5/17.

Results: The VSC reviewed 300 clinic appointment requests. Of those 65 appointments were avoided completely, 45 were changed to telephone appointments and 127 to specialist nurse appointments. In addition 178 patients were referred for opinion. In 24 the management decision was altered avoiding last minute cancellations after re-discussion with the patients. Clinic appointments were expedited in 17 cases for clinical reasons and 6 patients were admitted for urgent intervention.

Conclusion: We found that utilizing a 90 minute VSC every week has significantly reduced outpatient clinic pressures, expedited patient care in appropriate cases and prevented last minute changes to procedures or cancellations. Overall it improved patient management while saving significant resources in terms of time and money.

P7-10 Device to remotely monitor catheter output: results of a pilot trial

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Introduction & Objectives: Approximately half a million people in the UK have a long-term urinary catheter. Early recognition and intervention in catheter-associated UTI can prevent hospitalisation and decrease both morbidity and mortality. This study examines a device, invented by the author, that continuously monitors the output of a foley catheter and communicates this information wirelessly to a remote monitoring system.

Materials & Methods: The small device fits easily between the outflow of a foley catheter and the inflow of the catheter bag. It continuously monitors urine flow, temperature and concentration. It can detect the presence of blood in the urine and gauge the degree of haematuria. It additionally connects to the catheter balloon, measuring intra-abdominal pressure. The data are continuously recorded and are transmitted wirelessly via a patient's smartphone or home-router to a cloud based monitoring system. We ran various laboratory simulations to judge the efficacy of the device during its development.

Results: The device is able to determine the temperature, concentration and degree of haematuria with an accuracy similar to current 'gold standard' tests. The changes in pressure in the catheter balloon can identify early blockage of the catheter, by demonstrating rising bladder pressure. The device does not appear to block with simulated blood clots.

Conclusions: The device will require further clinical trials to determine its safety, however it has significant potential to be able to identify catheterised patients at risk of UTI, haematuria and catheter blockage.

**ePoster Session 8:
General Urology 2
Wednesday 27 June
1100-1200**

Room 4

**Chairs: Mark Speakman & Nick
Campain**

P8-1 Can a low power holmium laser enucleate large prostates? Operative & patient outcome data for 132 50-watt HoLEPs in Prostates > 75cc from a single centre

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Introduction: Most HoLEPs are performed by high powered lasers (100 & 120 Watt (W)). Many agree lower power can enucleate successfully. Debate continues on whether a 50 W laser can enucleate large prostates. We present outcome data from 132 large prostates using a low power holmium laser.

Method: Two HoLEP naïve surgeons completed 393 HoLEPs using a 50W holmium laser (Auriga XL, Boston Scientific Inc., Piranha morcellator, Richard Wolf). 132 of these were greater than 75cc (range 76-240cc). Pre and post-operative flow rate (Qmax), residual volume (RV), prostate symptom score (IPSS), quality of life score (QoL), enucleation/total operating times, hospital stay, histology, haemoglobin (Hb) and catheter times were accurately recorded.

Results: SAS statistical software v 9.3 paired t-test and non-parametric Wilcoxon signed-rank test. Mean age 72.7, mean TRUS volume 108.7cc, 64.4% retention cases. Mean enucleated weight 69.4g (95% CI 63.87, 74.86), mean operating room time (enucleation & morcellation) 109.5mins (95% CI 102.18, 116.83) with an enucleation rate of 1.01 g/min (95% CI 0.91, 1.10). Mean IPSS fell 14.26 points (95% CI -17.22, -11.30 p<0.0001), QoL scores improved 3.46 (95% CI -4.11, -2.80 p<0.0001), mean Qmax improved 20.3 ml/s (95% CI 14.41, 26.13 p<0.0001). Mean hospital stay 1.11 days (95% CI 0.97, 1.24), mean Hb reduction of 2.09 g/L (95% CI -2.30, -1.88, p<0.0001). Stricture rate 2.3%, bladder neck contracture rate 2.3%. All patients rendered catheter free. Two transfusions recorded. Cancer detection 7.6%.

Conclusion: Low power holmium lasers can enucleate large prostates with excellent clinical outcomes supporting its use as a cost-effective manner to deliver a HoLEP service.

P8-2 Rezūm water vapour thermal therapy for benign prostatic hyperplasia: early results from the United Kingdom

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Introduction: The Rezūm System is a novel minimally invasive thermal therapy for the treatment of symptomatic BPH. We evaluated this new transurethral therapy in patients with moderate to severe symptoms.

Materials & Methods: Ongoing prospective registry evaluation of the first 67 consecutive cases performed in the UK at two centres. All patients had moderate or severe symptoms. Prostate volumes ranged from 22-110mls; patients with an obstructing median lobe and those in retention were included. Pre- and post-procedure assessments included the IPSS questionnaire with quality of life (QOL), urinary flow rate (Qmax), prostate volume and indwelling catheter presence.

Results: 36 of 67 procedures were performed under local anaesthetic with sedation. At 3 months, mean IPSS was significantly improved (-13.1 points) (p<0.001) as was IPSS-QOL (p<0.001). Qmax improved by 6mL/s at 4-6 weeks, 8.4mL/s at 3 months, p<0.001 and 8.8mL/s at 6 months, p=0.002. Prostate volume was reduced by 36% at 3 months, p=0.002. After first trial without catheter, 56/67 (84%) were successful; at 3 months 65/67 (97%) were catheter free. Using the Clavien-Dindo system there were two grade II complications (UTI requiring antibiotics), three grade 3b (two patients returned to theatre for clot retention 1 month post operatively, and one had transurethral resection of infected prostate tissue at 3 weeks).

Conclusions: Preliminary results of this UK experience with the Rezūm procedure demonstrate significant improvement of LUTS. It can be performed reliably as a day case procedure. Longer term follow-up is required and will include the comparison of outcomes to standard BPH treatments.

P8-3 Prostatic artery embolisation for the treatment of lower urinary tract symptoms and catheter-dependent urinary retention in patients with benign prostatic hyperplasia

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Introduction: Medical and surgical treatments for benign prostatic hyperplasia (BPH) can be effective but are associated with limitations. We report the outcomes of an emerging technique of prostate artery embolisation (PAE).

Methods: 46 patients (mean age 74 years) with BPH treated with PAE in a single institution were analysed retrospectively (mean follow-up 18 months). All patients were evaluated by digital rectal examination, prostate-specific antigen, transrectal ultrasound (TRUS) and computed-tomography angiogram. PAE was performed using 300-500 μ m embospheres, under local anaesthesia by unilateral/bilateral femoral approach. Clinical follow-up included post-void residual volume (PVR), prostatic volume (PV) using TRUS, International Prostate Symptom Score (IPSS), quality of life (QoL) and peak urinary flow (Q_{max}) recorded at 1, 3, 6 and 12 months.

Results: Urinary retention (63.3%) and lower urinary tract symptoms (36.7%) were the most common indications for PAE. 72% of patients were catheter-free at 1 month and 67% had complete resolution of symptoms at 6 months. Bilateral PAE was performed in 83.3% of cases. The mean PVR (pre-PAE vs post-PAE 410.4ml vs 131ml; $p < 0.05$), mean PV (144.0ml vs 80.2ml, with a mean reduction of 44.3%; $p < 0.05$), mean IPSS (13.0 vs 5.3; $p < 0.05$), mean QoL (5.5 vs 1.3; $p < 0.05$) and mean Q_{max} (7.8ml/s vs 12.9ml/s; $p < 0.05$) were significantly different with respect to baseline. There were no major complications reported.

Conclusions: PAE is an effective and minimally-invasive alternative for the treatment of BPH, which should be considered in medically refractory BPH and in patients who are not candidates for transurethral resection of the prostate or prostatectomy.

P8-4 Prostatic arterial embolisation: outcomes at a UK tertiary referral centre

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Introduction: Innovation in surgery and the need for less invasive therapeutic options with reduced side effects have driven the advent of minimally invasive procedures for the treatment of benign prostatic hyperplasia (BPH). Prostatic Arterial Embolisation (PAE) has been proven to reduce prostatic volume resulting in symptomatic improvement.

Patients and Methods: We report findings from a prospective study of PAE outcomes from May 2015 to December 2017 at a UK tertiary centre. Follow up IPSS score was compared using a T-Test.

Results: 27 patients (mean age 64yrs) were analysed. Main indication was minimal invasiveness and preservation of erectile function. 25 (92%) had received maximal medical therapy. Mean IPSS and QoL scores pre-procedure were 23 and 4. Average Q_{max} was 9ml/s and mean post-void residual urine volume was 135mls. 3 patients had long term catheters. 10 patients had urodynamically proven obstruction. 24 (89%) had bilateral PAE (3 unilateral).

Follow up MRI at 3 months showed a mean volume reduction of 18% (96mls to 79mls). There have been no significant reported complications. At follow-up 70% of patients reported improvement in symptoms with a mean IPSS score 11, representing a 52% reduction ($P < 0.001$). A 50% improvement (mean 2) in QoL was also reported.

Conclusions: PAE is a safe and minimally invasive option for the treatment of BPH. 18% volume reduction is seen at 3 months on MRI. During follow up 70% of patients have reported symptom improvement with a mean reduction of 12 points (52%) in IPSS score compared to pre-procedure scores.

P8-5 Day case TURP in a stand-alone unit with no beds - is this feasible? Prospective review of the first 100 cases

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Introduction: Inpatient TURP remains the gold standard operation for BPH but advances in novel procedures increasingly allow for same day discharges. We have reviewed our new day-case TURis service in a stand-alone unit with no inpatient capacity.

Patients and Methods: 100 consecutive patients under the care of a single consultant were prospectively reviewed. Standard Trust policy for day-case surgery and <80cc prostates were intended selection criteria. Larger prostates were partially resected (middle and 1 lateral lobe). Outpatient TWOCs were performed following surgery.

Results: 53 patients underwent TURis for LUTS, 46 for retention (41 with pre-op catheter) and 2 for haematuria. Of the 63 patients who had measured prostate volumes, 17 had >80cc.

Average resection time was 38min (range 5-90min), with resected volume of 17.2g (range 1-40g). Button diathermy/ablation electrode was used in addition to the loop in 11 cases.

Only 1 patient (1%) required post-op ambulance transfer to the main hospital due to haematuria and was discharged after overnight observation.

Within the first 30 days 4 patients were readmitted: 1 with urosepsis, 1 with acute retention post-TWOC, and 2 with haematuria, of which 1 required RBC transfusion following secondary haemorrhage (1%). 18 patients attended A&E during that time: 17 with catheter-related issues and 1 with LUTS post-TWOC.

Average time to post-TURis TWOC was 5.8 days. 96 patients passed first TWOC, with 99 catheter-free at 30 days.

Conclusions: Day-case TURIS can be delivered safely and effectively in a stand-alone unit with very low rates of admission.

P8-6 Age is but a number: greenlight laser prostatectomy is a safe day surgery operation for men of 75 years and over

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The incentive to provide daycase urology, such as Greenlight XPS™ laser Prostatectomy (PVP) is growing; yet a growing elderly population leads to questions of safety and efficacy.

Method: Retrospective analysis of 254 patients undergoing 180W PVP in a single Day Surgery Unit: 2015-17.

Results: 31% patients (78/254) were 75 or over (75-92). 42% (n=33) of over 75s were pre-catheterised; under: 15% (n=27). 66% of over 75s had >60cc prostate compared to 47% of under 75s. 27% (n=21) of over 75s had ≥2 comorbidities; under: 13% (n=22). 41% (n=32) of over 75s took anti-coagulation/ anti-platelets; under: 18% (n= 31). 72% (n=56) of over 75s had daycase PVP; under: 85% (n=149). Unplanned admission was similar in both groups (4% vs 3%). Only one patient returned to theatre (85 year old on anti-coagulation). No patients required blood transfusion. There were no deaths. 8 patients overall required some electrosurgical resection due to bleeding or technical problems; 6 were over 75. 12% (n=9) of over 75s were catheter-free 'day zero'; under: 13% (n=22); both groups had similar catheter-free rate by day 5 (80%). Catheter-free status at 3 months was 99%. 14% (n=11) of over 75s re-attended hospital post-discharge from DSU; under: 11% (n=19). 3 older patients required re-admission for infection (1), symptoms (1), AUR (1); under: n=5. 3 months follow-up: mean QOL and IPSS score was the same. 65% of over 75s PVR<100ml (under: 86%) and 69% had a Qmax >12ml/s (under: 89%).

Conclusion: The majority of men over 75 can have day-case laser prostatectomy with excellent safety and efficacy.

P8-7 The WATER study clinical results – a phase III blinded randomized trial of aquablation vs. TURP with blinded outcome assessment for moderate-to-severe LUTS in men with BPH

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Introduction: Early reports of Aquablation for lower urinary tract symptoms due to benign prostatic hyperplasia suggest efficacy similar to that of TURP. We aimed to compare the safety and efficacy vs TURP (T).

Methods: In this randomized, blinded, multi-centre phase III trial, men with moderate to severe LUTS related to BPH were assigned to TURP or Aquablation. Six month outcomes are reported for critical safety and efficacy endpoints.

Results: The mean baseline IPSS score, demographic profile (Table 1), and mean prostate volume were similar in both arms.

In the Aquablation group at 6 months, 26% had a safety endpoint event; in the TURP group, 43% had an event. The difference was -17% thus demonstrating superiority of Aquablation versus TURP. For sexually active men, the anejaculation rates for TURP, Aquablation with cautery, and Aquablation without cautery were 38%, 16%, and 7%, respectively.

Mean IPSS scores decreased from 22.9 at baseline to 5.9 at 6 months in the Aquablation group and from 22.2 at baseline to 6.8 in the TURP group demonstrating non-inferiority. Men with prostate size >50 mL had superior improvements in IPSS after Aquablation compared to TURP (p=.0099).

Conclusions: In patients with LUTS due to BPH, surgical prostate resection using a robotically guided waterjet showed non-inferior symptom relief compared to TURP but with a lower risk of sexual dysfunction. This new semi-automated approach may diminish the need for substantial surgical experience to achieve optimal results.

P8-7: Table 1

	Aquablation			TURP			P value
	N	Mean	SD	N	Mean	SD	
Age	117	66.0	7.3	67	65.8	7.2	0.8596
BMI	117	28.4	4.1	67	28.2	4.5	0.7941
IPSS	116	22.9	6.0	65	22.2	6.1	0.4276
IPSS QoL	116	4.8	1.1	65	4.8	1.0	0.8009
MSHQ	108	7.4	4.1	61	8.2	4.0	0.2155
SHIM	115	13.7	8.6	64	13.4	9.4	0.8243

P8-8 Chronic urinary retention in the elderly: outcomes for surgery vs long term catheterisation

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Introduction: Urinary retention in the elderly is an increasingly common issue. This is the first comparative study reviewing outcomes for elderly patients treated with long term catheters (LTC) or surgery for chronic urinary retention (CUR) that is refractory to medical management.

Methods: Patients presenting from January to December 2016 were identified from prospectively collected emergency and elective databases. Catheterised patients over 80 years with >300mls residual volumes who were refractory to medical treatment and those with high pressure chronic retention were included.

Results: 48 patients with a mean age of 86 years were followed up for an average of 19 months. 26 patients were treated with LTC and 22 patients underwent bipolar trans-urethral resection of the prostate (TURP). The average hospital stay for surgery was 3.5 days. The complication rate after TURP was 45%. 19/22 were voiding at late follow up, 2 of whom required intermittent self-catheterisation (ISC). 17/26 of the LTC group had emergency hospital admissions for urological issues, compared to 6/22 of the surgery group ($p=0.04$). The mean number of days spent in hospital due to urological issues was 20 following LTC and 2.3 following TURP ($p=0.03$). 9/26 of the catheter group died during follow up, 3 from catheter associated urosepsis. There were 2 deaths in the surgery group, both from metastatic prostate cancer.

Conclusion: Elderly patients who are catheterised for CUR who undergo surgery are likely to spend significantly less time in hospital due to urological complications than those who are treated with long term catheters.

P8-9 3 years follow up results of MediTate® temporary implantable nitinol device (TIND) implantation for the BPH related bladder outlet obstruction treatment

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Objectives: To report 3 years outcomes of a prospective study on Temporary Implantable Nitinol Device (TIND - Meditate®) implantation for the treatment of lower urinary tract symptoms (LUTS).

Methods: The TIND, in its expanded configuration, exerts radial force producing incisions of the bladder neck. Thirty-two patients with LUTS were enrolled. Inclusion criteria: age >50 years, IPSS scores of ≥ 10 , urinary peak flow (Qmax) < 12 ml/sec, prostate volume < 50 cc. TIND was implanted under light sedation using a rigid 22F cystoscope and removed 5 days later in an outpatient setting.

Demographics, perioperative, functional results, complications and quality of life (QoL) were evaluated. For the purpose of this study 12, 24 and 36 months postoperatively results are reported.

Results: Patients' mean age was 69.4 years, mean prostate volume, median IPSS score, median QoL and mean Qmax were 29.5 cc, 19, 3, and 7.6 ml/sec respectively. No complications were recorded during implantations and retrievals. After 12 months, IPSS score, QoL and Qmax

were 9, 1 and 12 ml/sec respectively. When comparing pre- and 1 year postoperative results were statistically different for all variables.

After 24 months IPSS score, QoL and Qmax were 10, 2, and 13.7 ml/sec respectively, while after 36 months IPSS score, QoL and Qmax were 12, 2 and 13 ml/sec. After 3 years, mean variation with respect to baseline conditions in term of Qmax was +71%.

Conclusion: TIND implantation seem to be an effective minimally-invasive option for the treatment of LUTS even after 3 years of follow up.

P8-10 Pilot trial of a device to remotely monitor and asses voiding

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Introduction: SonoUroFlowmetry (SUF), though not as accurate as conventional UroFlowmetry, does have the advantage of being able to be carried out numerous times a day in the patient's own home. Studies have shown that SUF is approximately 70-80% accurate in estimating Qmax, total voiding time and voided volume.

Methods: This study examines a device, invented by the author, that records a patient's SUF curve whenever they pass urine in their own bathroom. The data are then anonymously transmitted via a patient's smartphone or home router to a cloud-based monitoring system where they are analysed. The reports can be then accessed by the patient's Urologist or Family Doctor. We examined whether the device was able to accurately differentiate between SUF curve and background noise- and compared the curve to conventional UroFlowmetry.

Results: The device was successful in differentiating between the sound of voiding and background noise, with recording being triggered by a motion sensor. SUF accuracy when compared to conventional UroFlowmetry was similar to previously published literature.

Conclusion: SUF has the advantages of being able to identify trends in UroDynamics as well as being carried out in a more comfortable and familiar setting. By combining multiple SUF curves over time, this system can build up an accurate, 'time-stamped' voiding diary that can be used by the Urologist to direct and asses the effect of future treatments.

P8-11 Greenlight XPS laser photoselective vapourization of prostate (PVP) in high risk patients

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Introduction: Recent NICE guidance supports greenlight XPS P.V.P. as being at least as effective as TURP in

non-high risk patients but notices there is insufficient high quality comparative evidence to support the routine adoption of XPS laser P.V.P. in high-risk patients. NICE identifies high-risk patients as:

- High risk of bleeding
- Prostate > 100 mls
- Urinary retention

Methods: This retrospective study reviews a single surgeon's experience of treating high risk patients with XPS PVP. All patients had laser PVP while taking anti-coagulants, anti-platelet agents or both.

Patients:

- n= 374 were treated
- n = 91 had urinary retention (AUR)
- n = 103 age > 80 years
- n = 54 had prostates > 80mls
- Mean age = 71 years (44-96 yrs)
- Haematuria from BPH = 40
- Troublesome L.U.T.S. = 243
- 54% were classed ASA III
- 5.4% were classed ASA IV

Results: There were no perioperative blood transfusions.

- n = 301 were managed with Bananno supra-pubic catheter (SPC) (proxy for no haematuria)
- n = 40 Bananno SPC & temporary haematuria (UC 1-2 hours)
- n = 25 U.C. on irrigation overnight
- n = 270 Discharged Day 1 post-op
- n = 10 Re-admitted with clot retention
- n = 12 Re-admitted with recurrent retention

Conclusion: This retrospective study shows that in experienced hands XPS laser PVP is a safe and effective treatment in patients with one or more high-risk factors. Despite all patients having significant co-morbidities the incidence of cardiovascular and haematological complications were less than those reported for TURP in non-high-risk patients.

ePoster Session 9:

Renal Cancer and Testis Cancer

Wednesday 27 June

12:00 - 13:30

Room 4

Chairs: David Nicol & Archie Fernando

P9-1 Benign testicular tumour in non-palpable scrotal lesions in patients with abnormal testicular ultrasound

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Introduction: Radical orchidectomy may represent a life changing experience for patients. Clinicians strive to accurately diagnose testicular malignancy through careful scrotal examination and testicular ultrasound prior to surgery. Nevertheless, no investigation is 100% accurate. We aim to find out the occurrence of benign testicular tumour in men without palpable scrotal lesions but with abnormal testicular ultrasound.

Methodology: All pathological outcomes of orchidectomies from Jan 2011 to Dec 2016 were retrospectively analysed.

Results: 220 orchidectomies were performed during this period. 146 patients with a mean age of 44 years old underwent radical inguinal orchidectomies for possible malignancies due to abnormal testicular ultrasound findings with or without palpable lesions. 115 of these patients had palpable scrotal lesions. 101 (88%) of these men had malignant tumours on histopathology. 31 patients had no palpable scrotal lesion but had abnormal testicular ultrasound findings that are suspicious of a testicular tumour. Of these patients, 15 (48%) had malignant tumours while 16 patients (52%) had benign testicular tumours.

Conclusions: 88% patients with clinically palpable scrotal tumour and ultrasound abnormality were found to have malignant tumour. In contrast, only 52% patients were found to have malignant tumours with ultrasound abnormality without a palpable lesion. Whilst this may not change the need for surgical excision, it is an important consideration in the pre-operative counseling of these men and offer ultrasound surveillance in these men.

P9-2 Outcomes of testes-sparing surgery for the treatment of testicular masses: a multi-centre study

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Introduction: Treatment of testicular masses by inguinal orchidectomy (IO) can have psychological and functional morbidity. This study evaluated the outcomes of testes-sparing surgery (TSS) in the treatment of testicular masses.

Methods: Between 2007 and 2017, 90 cases of TSS were performed with Frozen section analysis (FSA) in 85 men. Patients with testicular cancer, were followed-up with post-operative ultrasound (US). Data were retrospectively analysed from 3 tertiary centres.

Results: Mean age was 34 years (range 17-76). Of the 90 specimens from TSS, 54 were benign and 36 were malignant on FSA. Mean tumour size on US was 9.13mm (1.9-33.0) for benign lesions and 13.2mm (3.7-44.0) for malignant lesions. 47 (87.0%) of the benign lesions, were managed with TSS only, and 7 (13.0%) underwent delayed IO. Of the 36 malignancies, 17 (47.2%) were managed with TSS only, in patients with a solitary testis, bilateral tumours or those refusing IO. 19 (52.8%) malignancies were managed with an additional IO. There was recurrence of 4 (23.5%) malignancies managed by TSS alone. Mean time to recurrence was 31 months (range 2-72 months). All recurrences were safely managed by further surgery. Overall, the testis-sparing rate was 87% for benign pathologies and 38.9% for malignancies.

Conclusions: TSS is an effective treatment option for benign lesions. It may also be offered to manage testicular cancers in selected cases; however, a vigorous post-operative US programme must be followed due to the relatively high rates of recurrence.

P9-3 A comparison of robotic and open retroperitoneal lymph node dissection in a centralised single surgeon post-chemotherapy surgical practice

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Aims: To compare the outcomes of patients undergoing robotic retroperitoneal lymph node dissection (RPLND) to patients who had an open RPLND in a predominantly post-chemotherapy single surgeon surgical practice.

Methods: We compared the peri-operative and pathological outcomes of all patients undergoing post-chemotherapy open RPLND (55 patients) and robotic RPLND (10 patients) by a single surgeon. A matched pair analysis of patients who had an open RPLND (20 patients) for the same inclusion criteria for robotic RPLND was performed.

Results: 65 of 67 patients had a post-chemotherapy RPLND. Ten patients had a robotic RPLND and 55 patients had an open RPLND. There were significant differences in median operative duration (150 vs 240 minutes $p < 0.0001$), estimated blood loss (50 vs 1000mls, $p < 0.0001$) and length of stay (1 vs 6 days, $p < 0.0001$) in favour of robotic RPLND. There were no conversions in the robotic RPLND group. A matched pair analysis of 20 patients who had an open RPLND showed median operative duration (153 vs 195 minutes, $p < 0.0001$), estimated blood loss (50 vs 400mls, $p = 0.03$) and length of stay (1 vs 5 days, $p < 0.0001$) were all reduced in patients having robotic RPLND.

One patient in the robotic RPLND group and two patients in the open RPLND group had chylous ascites requiring percutaneous drainage and dietary modification.

Conclusion: Robotic RPLND may have a role in selected patients with retroperitoneal disease, including in the post-chemotherapy setting. There are potential benefits with operative duration, length of stay and blood loss with the robotic approach.

P9-4 9p chromosomal deletion on array-based copy number analysis predicts recurrence in non-metastatic clear cell renal cell carcinoma (ccRCC) following surgical resection

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Background: Copy number variations (CNVs) affect biological and clinical behaviour of cancers. The aim of this study was to assess CNVs in tumour tissue of a historic group of patients with clear cell RCC.

Methods: 38 consecutive ccRCC cases with median follow up of 81.5 months were identified from Tayside Tissue Bank archive. Histology was confirmed by specialist uropathologist. DNA extracted from Fresh frozen samples in 33 cases was analysed with CytoChipOligo™ BlueGenome (Illumina®). Affymetrix OncoScan® FFPE assay was employed to analyse highly degraded DNA extracted from 5 FFPE samples. Nexus software (Biodiscovery®) version 7.5 was used to analyse array based data. Cox-proportional hazard survival analysis for recurrence-free survival (RFS) was performed.

Results: Mean age of cohort was 65 years. Loss of 3p was detected in 95% of the tumours. Other common chromosomal CNVs detected were deletions of 4q (34%), 9p (34%), 14q (34%) and 18q (34%). Common gains included 5q (50%) and 7q (23%). Only 9p deletion was associated with high grade tumours. Ten out of 32 cases with localised ccRCC at diagnosis developed recurrence, with a median follow up of 86.5 months. Out of all clinico-pathological and CNVs, somatic deletion of chromosome 9p was the only significant predictor of recurrence ($p = 0.002$; Hazard ratio: 8.8).

Conclusion: The study confirms that 9p deletion is one of the most common CNVs in ccRCC. Moreover, this is the first array based analysis study, with follow up exceeding 7 years, showing that 9p deletion is associated with higher of recurrence in non-metastatic ccRCC.

P9-5 Change in nephrometry scoring in small renal masses (<4cm) on active surveillance: observations from tayside active surveillance cohort (TASC) study

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Objectives: Prediction of growth, in particular knowing possibility of aggressive cancer in small renal masses on active surveillance remains poorly understood. The study was designed to determine whether serial nephrometry score measurements could predict possibility of aggressive malignancy (grade of cancer) in patients with small renal masses (SRMs) opting for active surveillance initially.

Patients and Methods: One hundred sixteen patients between January 2000 and December 2016 undergoing partial nephrectomy were analyzed using different nephrometry scoring systems. Measurement of nephrometry scores (RENAL, PADUA, C-Index) was performed by two researchers. Amongst the patients opting for partial nephrectomy, 40 were on active surveillance for at least 12 months (mean 32; 12-60 months) prior to partial nephrectomy. CT scan images of these patients were retrieved and analysed including comparison with histopathology.

Results: Nephrometry scores measured on serial CT scan images showed a significant correlation between change in score and grade of cancer on multivariate analysis (p-value 0.001). Addition of multivariate analysis to nomogram based on change in size alone improved predictive value of AUC from 0.58 to 0.65.

Conclusions: Change in nephrometry scoring measurements can accurately predict presence of malignancy and grade of cancer in patients opting for active surveillance.

P9-6 Active surveillance of sporadic renal masses: experience from a single tertiary centre

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Objective: We report on the natural history of renal lesions under active surveillance at a tertiary high-volume referral centre in the UK.

Methods: Retrospective analysis of cases with suspected renal cell carcinoma (RCC) at diagnosis under active surveillance from 2012 to 2017. Patients with confirmed hereditary syndromes were excluded.

Results: 286 patients (62.9% male, median age at diagnosis 71 - IQR 18) with 350 lesions were reviewed. Median lesion size was 24.5mm (IQR 20): 291 (83.1%) under 4cm (small renal mass, SRM) and 17 (4.6%) above 7cm. 56 lesions were excluded due to lack of follow-up imaging at date of analysis. Median follow-up was 12 months (IQR 20). Histology was known for 135 lesions (45.9%): 73 were RCC, 40 oncocytomas, 9 oncocytic, 10 angiomyolipomas, 2 papillary adenomas, and 1 angiofibroma. During follow-up 156 (53.1%) lesions remained stable, 21 (7.1%) reduced

size and 117 (39.8%) increased in size. Increasing lesions grew a median of 4mm/year (IQR 6.6). Focusing on SRM, the median growth was 2.6mm/year (IQR 4.2), and 16 (6.6%) went over the 4cm threshold. 31 (10.8%) patients changed management after a period of surveillance (17 surgery, 14 percutaneous cryoablation). One patient developed metastasis (cT1b clear cell RCC on a patient unfit for intervention). No cancer specific deaths occurred, but there were 10 non-cancer specific deaths. Study limitations include retrospective nature, lack of central radiological review, and short follow up period.

Conclusions: While our SRM median yearly growth rate is comparable to previous reports, a higher proportion of cases breached the 4cm threshold. Notwithstanding, metastasis-free and cancer-specific survival were close to 100%.

P9-7 Staging CT chest is not required in the diagnostic evaluation of patients with cT1a renal cell carcinoma

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Introduction: Approximately 1/3 of patients with renal cell carcinoma (RCC) have metastases at diagnosis, with the most common site being pulmonary. As a result the European Association of Urology recommends staging CT chest for patients diagnosed with RCC and this has been adopted as a quality performance indicator in Scottish Cancer Networks. This may be associated with excess radiation exposure for some patients. Recent research has identified clinico-pathological parameters, which are predictive of risk of pulmonary metastases at diagnosis, with the aim of stratifying the use of CT chest. We aimed to validate these parameters and determine whether CT chest could be omitted in patients with cT1a RCC.

Methods: Patients with cT1 RCC diagnosed at a single institution between January 2012 and December 2016 were identified from a prospectively collected database. Baseline patient demographics, clinical and pathological TNM stage and treatment type were collected. Symptoms and blood results at presentation and follow-up were collected retrospectively.

Results: Of 383 patients diagnosed with cT1 RCC during the study period, 225 patients had cT1a tumours. 3 (1.3%) patients had metastatic disease at diagnosis. Only 1 (0.4%) patient had lung metastases, while all 3 had visceral abdominal metastases. All 3 patients were symptomatic of systemic disease and two had an abnormal full blood count.

Conclusion: Isolated lung metastases are rare in patients with cT1a RCC. In patients with cT1a RCC without additional predictive indicators, it may be safe to omit staging CT chest. We have initiated a Scottish national audit to validate these findings further.

P9-8 Introduction of robot assisted nephroureterectomy: The potential for improved initial perioperative outcomes over a conventional laparoscopic approach

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Introduction: Robot assisted nephroureterectomy (RNU) for the management of upper tract urothelial carcinoma may be used as an alternative minimally invasive approach to laparoscopic nephroureterectomy (LNU). We asked whether introduction of RNU was associated with improved perioperative outcomes when compared to LNU at our high-volume kidney cancer centre.

Methods: Perioperative outcome data from a longitudinal cohort of RNU and LNU performed at a single institution

over a 22 month period (Aug '16 – Oct '17) was retrospectively analysed. RNU was introduced to our service on acquisition of a DaVinci Xi Surgical System midway through the study period. In this period both LNU and RNU were performed according to surgeon preference.

Results: 51 patients underwent RNU, and 34 LNU. As can be seen in Table I the RNU cohort had a significantly shorter length of catheterisation, days to mitomycin C, and length of stay. In addition, there was a reduction in the use of post-operative cystograms, radiological bladder leak and post-operative haemoglobin drop.

Conclusions: This retrospective study shows improved peri-operative outcomes for RNU over LNU in this cohort. With a reduction in bladder leak, need for cystogram, length of post-operative catheterization, and LOS in the RNU group. In addition, the procedure allows for closer recapitulation of open surgical principles for the distal ureter, with primary bladder closure and leak test achieved in 98% patients in the RNU cohort.

P9-8: Table I. All values are medians unless otherwise stated.

	Robot (n)		Lap (n)		p-value
		IQR		IQR	
Number	51	-	34	-	-
Gender (% male)	50.98 (26)	-	82.35 (28)	-	0.03
Age	70.63	16.15	70.83	14.42	0.92
LOS	3	3	6 (2)	2	<0.01
Right side (%)	47.06 (24)	-	44.12 (15)	-	0.70
Console Time	180	62.25	-	-	-
Operative Time	220	74.5	180	37.5	<0.01
EBL	50	117.5	100	225	0.10
Hb drop (g/l)	13	10.5	21	13	<0.01
Cre Increase	36	49.5	55.17	41.75	0.20
Pre op eGFR <60 (%)	35.29 (18)	-	35.29 (12)	-	0.92
Post op eGFR <60 (%)	74.51 (38)	-	73.53 (25)	-	0.98
Transfusions (%)	1.96 (1)	-	5.88 (2)	-	0.35
Conversion to open	3.92	2	2.94	1	0.37
Days to TWOC	5	3	10 (0)	0	<0.01
Mitomycin given (%)	70.59 (35)	-	41.18 (21)	-	0.20
Days to mitomycin	5	3.72	10	0	<0.01
Cystogram (%)	1.96 (2)	-	79.41 (27)	-	<0.01
Bladder closure w/ cuff %	98.04 (50)	-	5 (2)	-	<0.01
Leak rate %*	1.96 (1)	-	14.71 (5)	-	0.01
Complications (Clavien-Dindo III and above) %	1.96 (1)	-	0 (0)	-	0.21

*Radiological or clinical presentation

P9-9 Can we select patients with upper tract Urothelial Carcinoma suitable for neoadjuvant chemotherapy (NAC) from preoperative data?

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Introduction: NAC is standard before cystectomy but not nephroureterectomy (NU) due to lack of evidence. Obstacles for NAC include risk of overtreatment based the limits of clinical staging and lack of biopsy; poor eGFR; and performance status (PS). Adjuvant chemotherapy, recently shown by the POUT study to be effective, may be compromised by post-operative reduction in eGFR but is only given for pathologically-proven invasive disease.

Methods: We examined the BAUS data from 2014-16 for NU patients with UTUC, comparing clinical to pathological stage, preoperative biopsy; renal function; and PS.

Results: Of 2217 with clinical and pathological staging, the percentage pT2+ increased with increasing clinical stage: cT1/a = 34.8%; cT2 = 67.8%; cT3 = 84.2%; and cT4 = 96.9%. Biopsy grading was reported in 1047 cases: G1 in 157; G2 in 477; G3 in 407 and G4 in 6. Combining G3 biopsy and cT2+ predicts pT2+ in 85%. eGFR was greater than 60 ml/min in 39.8%; 40-60 in 47.3%; and less than 40 in 12.9%. The median eGFR was 58. PS was 0 in 41.3%; 1 in 43.6%; 2 in 13.5%; and 4 in 0.1%.

Conclusions: NAC is feasible in terms of preoperative PS and eGFR. The accuracy of clinical staging alone is inadequate but is improved by G3 biopsy. Biopsies are currently performed in the minority of patients. Improvements in imaging and tissue sampling are needed to improve clinical staging accuracy.

P9-10 The continuous evolution of robotic assisted partial nephrectomy in complex renal tumours: a selection rather than a learning curve

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Introduction & Objectives: Robotic assisted partial nephrectomy (RAPN) is the predominant method to treat small renal masses. We analysed our results looking at casemix with disease parameters and pertinent outcomes of both operative and oncological variables.

Methods: We reviewed our prospectively collated database of 352 RAPN performed sequentially between 2010 and 2017. Cases were divided into 3 cohorts. Variables included age, BMI, ASA, estimated GFR (eGFR), tumour size, PADUA score, operative time, blood loss, warm ischemic time (WIT), volume of healthy renal parenchyma loss and length of stay (LOS). The renal Trifecta was defined as WIT ≤25 minutes, negative surgical margins and absence of Clavien ≥3a complications. Pentafecta was defined as achievement of Trifecta with addition of over 90% eGFR preservation and no chronic kidney disease (CKD) stage upgrade. Results were analysed using non-parametric analysis.

Results: 300 cases were included (with full data) with clinical features below (Table 1). There was a steady increase in patient and tumour complexity while our Tri and Pentafecta rates increased over the cohorts.

Conclusion: Despite performing RAPN on more comorbid patients with greater BMI, poorer renal function, who have larger more complex lesions, the Trifecta and Pentafecta rates have climbed. LOS is shorter, renal function is maintained without a concomitant increase in WIT. In our experience this affirms the safety and feasibility of RAPN in more complex patients with more complex pathology.

P9-10: Table 1

Table 1. Clinical features of the population

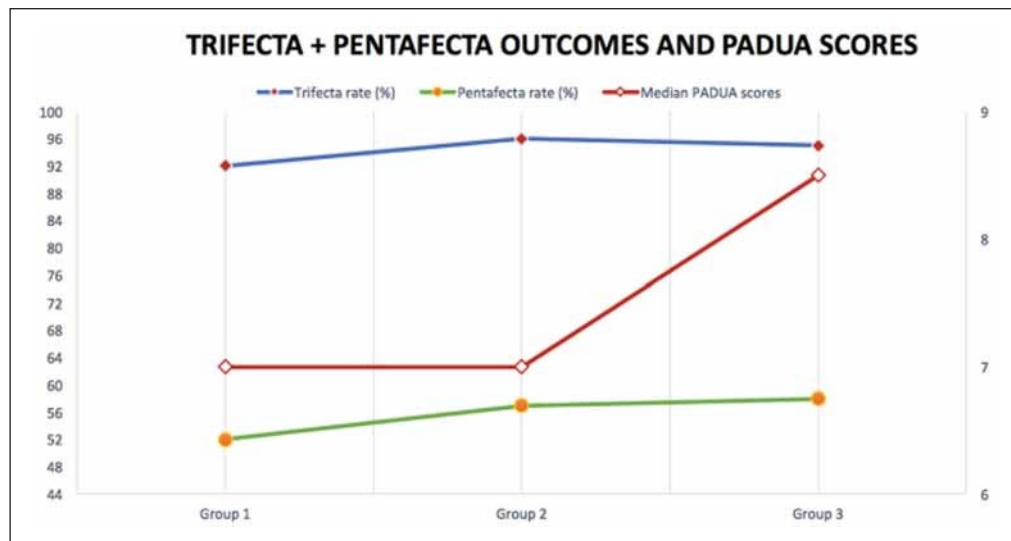
Cohort	1	2	3	P value*
No	100	100	100	
Age, yrs	58,07	58,23	60,38	0,502 _a
Male (%)	73	58	61	0,075 _a
Female (%)	27	42	39	0,075 _a
ASA score category (%)				
1	27,3	35	21,3	0,009 _a
2	69,1	45	69,3	0,009 _a
3	3,6	20	9,3	0,009 _a
Median BMI, kg/m ²	28,01	29,5	29,4	0,303 _b
Pre-op CKD ≥ 3 (%)	3,6	12,4	18,6	0,008 _a
eGFR decrease %	8,23	7,28	4,31	0,033 _b
Median Hb Diff, g/L	7,8	13,9	10,8	0,972 _b
Median Tumour size, cm	3,01	3,29	3,92	0,002 _b
pT1a (%)	89	85	77	0,065 _a
≥pT1b (%)	11	15	23	0,065 _a
Median PADUA	7	7	8,5	0,002 _b
Median WIT (min)	18	16	18	0,071 _b
Median Op Time, (min)	177	159	167	0,002 _b
Median EBL, mL	167,5	194,5	225,0	0,009 _b
Median LOS	3	2,5	2	<0,001 _b
Healthy renal tissue Loss (Volume cm ³)	11,13	12,43	11,15	0,290 _b
Recurrence (n)	3	1	0	-

*Statistical tests undertaken: a= chi-squared test for proportions, b=ANOVA

P9-10: Table 2

Cohort	1	2	3	p-value*
WIT < 25, n (%)	95	98	99	0,216 _a
No complications, n (%)	97	99	97	0,557 _a
Clear margins, n (%)	98	98	98	1,000 _a
Trifecta rate (%)	92	96	95	0,445 _a
% change of GFR < 10%, n (%)	47	57	67	0,192 _a
No CKD upgrade, n (%)	88	90	94	0,624 _a
Pentafecta rate (%)	52	57	58	0,364 _a
Median PADUA scores	7	7	8,5	0,002 _a

*Statistical tests undertaken: a= chi-squared test for proportions, b=ANOVA



P9-10: Figure 1

P9-11 Retroperitoneal robotic partial nephrectomy for T1b and larger tumours

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Objectives: To determine the operative outcomes of retroperitoneal robotic-assisted partial nephrectomy (RRAPN) for T1b and larger tumours.

Subjects and Methods: A prospective database of all renal surgery is kept at our institution which was examined retrospectively to obtain relevant data.

Results: 337 RAPN were performed between June 2010 - July 2017. 56 (17%) had tumours >40mm and 52 underwent RRAPN. 20 were female and 32 male. Mean age was 60 years (SD ± 12.7), mean BMI was 30 (SD ± 6.9), median ASA grade was 2 and mean tumour size was 50mm (SD ± 9.9). Operative time averaged 154 minutes (SD ± 37.8).

Mean warm ischaemia time (WIT) was 24 minutes (SD ± 9.5). Median estimated blood loss (EBL) was 50ml (0-2000). 3.8% had positive margins.

2 procedures were converted to radical nephrectomy (robotic) and 1 each were converted to open partial nephrectomy and open radical nephrectomy. 4 patients received blood transfusions. 2 patients had Clavien-Dindo Grade 3 complications. Median postoperative length of stay (LOS) was 2 days (1-12).

Compared to patients undergoing RRAPN for T1a tumours, there were statistically significant differences in operative time (125 vs 154 mins, p<0.01), WIT (21 vs 24 mins, p=0.01), EBL (40 vs 200ml, p<0.01) but no difference in LOS. There was a lower positive margin rate of 1.4% in the T1a group.

Conclusion: RRAPN can be safely utilised for suitable T1b and larger renal tumours with few complications and rapid recovery. Resection of T1b tumours may be more challenging than T1a tumours.

P9-12 Nephron sparing surgery (NSS) in single kidneys: perioperative, functional and oncological outcomes

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Introduction: A mass in a single kidney is the classic imperative indication for NSS but questions remain as to how often the twin goals of long term cancer control and freedom from dialysis are achieved.

Methods: Retrospective analysis of open NSS in single kidneys in a single centre (2000-2017). Outcomes addressed: technical success; dialysis; cancer recurrence and mortality. Median follow-up 3years.

Results: 89 patients. Median age 63years. Female 31%. Median pre-operative eGFR: 60 (26-108). Median tumour size: 50mm (15- 110mm). Median PADUA score: 11 (6A-14A). 27% multiple tumours. 7% VHL. Reason for single kidney: cancer nephrectomy 49/89 (55%); benign nephrectomy 17/89 (19%); congenital 23/89 (26%) including horseshoe (n=10); transplant kidney (n=2). NSS successful in 86/89 (97%). Complications \geq Clavien 3: 27/86 (31%); including secondary haemorrhage: n=7 (8%); urine leak: n=7 (8%). Overall survival 69/86 (80%). 75/86 (87%) malignant histology; 21/75 (28%) \geq T2. Cancer-specific survival 65/75 (80%). 6/75 developed local recurrence; 3/6 had positive margin. 15/75 developed metastases. Of these: 8/15 had multiple tumours; 5/15 \geq T3 disease. 7/15 had undergone contralateral RCC nephrectomy <18 months previously. 10/15 died from metastatic RCC, 80/86 (93%) patients are dialysis-free. 12/86 dialysed post-op; Risk factors: PADUA>11; multiple tumours; \geq Clavien 3b complication; 1/12 remained dialysis-dependent. 5/86 required late dialysis; 4/5 anephric from treatment of intra-renal recurrence.

Conclusion: NSS for complex tumours in single kidneys is challenging but worthwhile with excellent cancer-specific and dialysis-free survival. The strongest risk factor for long-term dialysis is intra-renal recurrence requiring treatment; and for metastatic disease is multiple tumours or recent contralateral cancer nephrectomy.

P9-13 Optimal surgical treatment of T1 renal tumours correlates with nephrectomy volume

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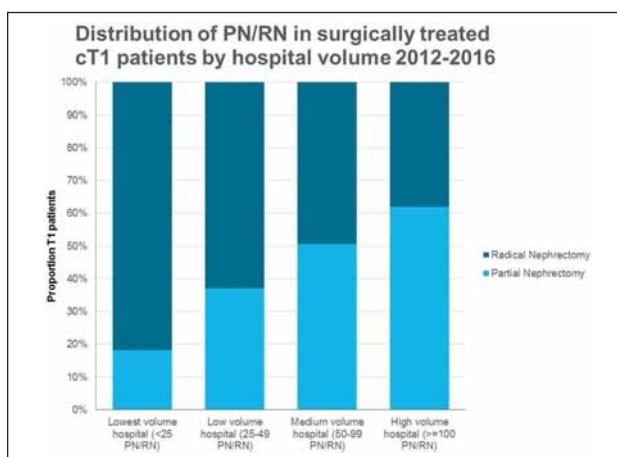
¹UCL Division of Surgery and Interventional Science, London, United Kingdom, ²Specialist Centre for Kidney Cancer, Royal Free Hospital, London, United Kingdom, ³Netherlands Comprehensive Cancer Centre, Netherlands, ⁴Netherlands Cancer Institute, Netherlands,

⁵BAUS, UK, ⁶Cambridge University Hospitals, Addenbrookes Hospital, UK, ⁷Oxford University Hospitals, Churchill Hospital, UK, ⁸Guy's Hospital and King College London, UK

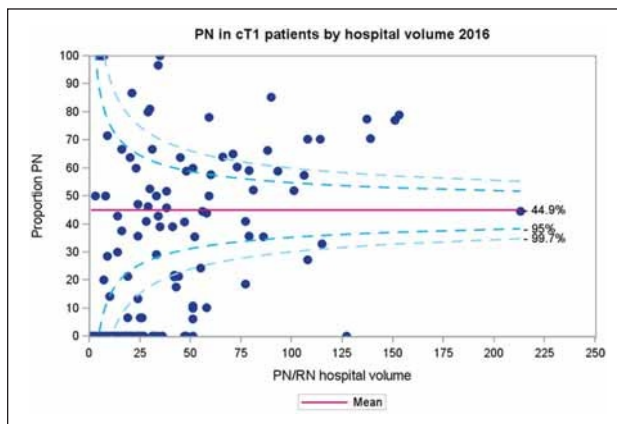
Introduction: EAU renal cancer guidelines recommend partial nephrectomy (PN) in patients with T1 tumours whenever feasible. The aim of this study was to evaluate surgical management of T1 tumours across the nation to assess EAU guideline adherence and the effects of centralization of care.

Patients and Methods: BAUS nephrectomy audit data from all T1 tumours that underwent radical nephrectomy (RN) or PN in the period 2012-2016 were analysed. We assessed: total surgical volume (RN and PN performed) per hospital, PN rates, complication rates, and completeness of data.

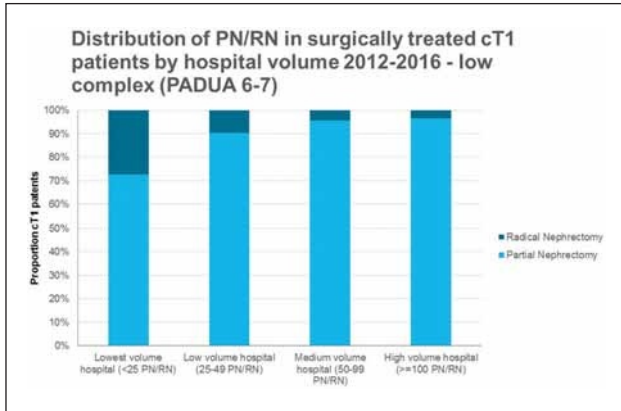
Results: In total, 13045 surgically treated T1 tumours were included in the analyses. Over time, there was an increase in PNs (39.7% in 2012 to 44.9% in 2016). Missing information on post-operative complications appeared



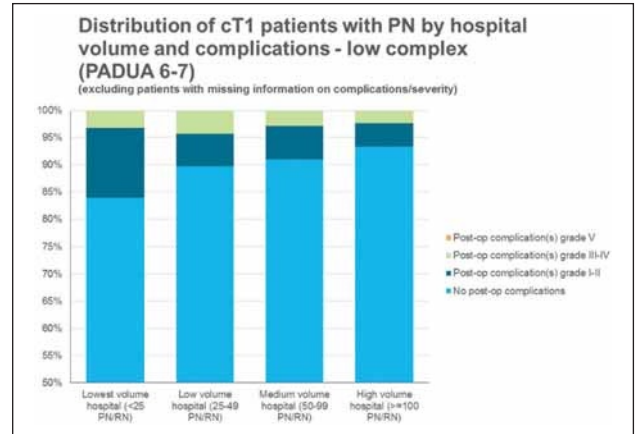
P9-13: Figure 1



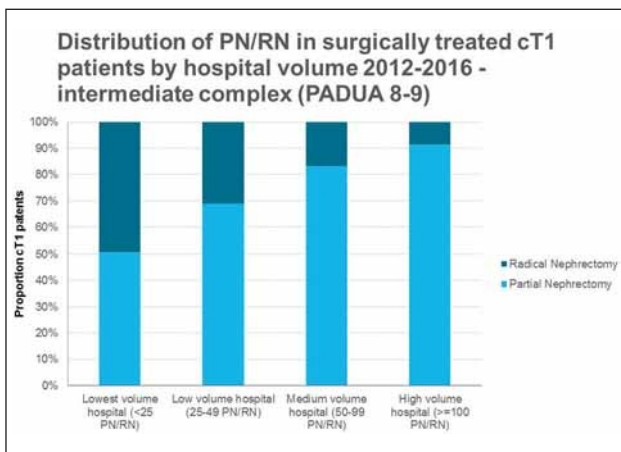
P9-13: Figure 2



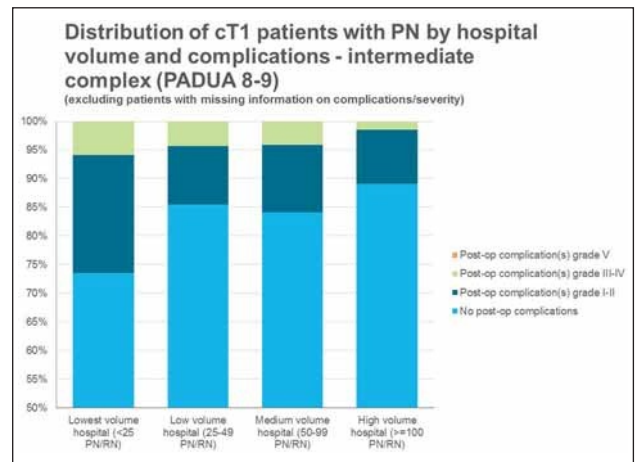
P9-13: Figure 3a



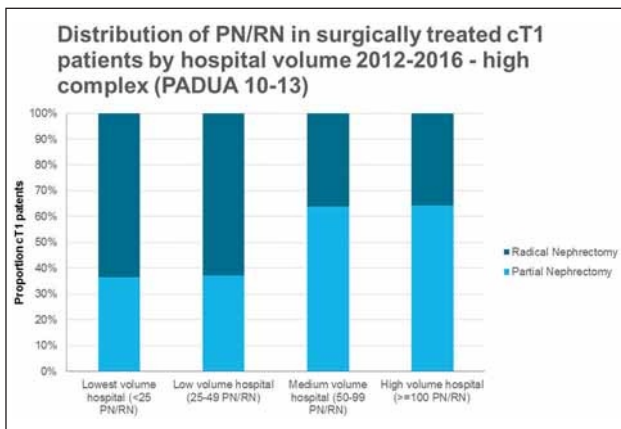
P9-13: Figure 4a



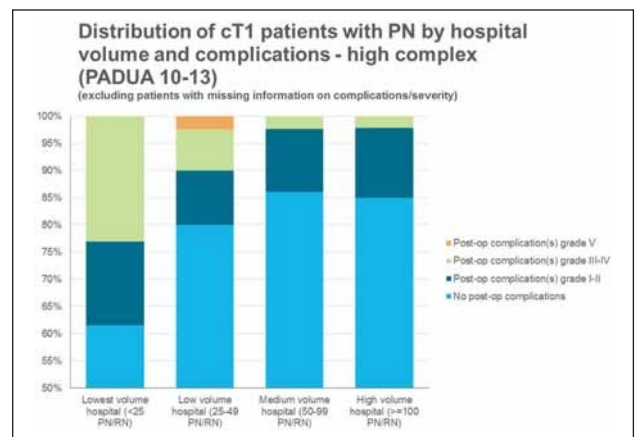
P9-13: Figure 3b



P9-13: Figure 4b



P9-13: Figure 3c



P9-13: Figure 4c

constant over the years (8.5-9%). PADUA score entry into the audit was initiated in 2016 and was included in 39% of cases recorded in 2016. A clear association was found between annual hospital volume and the proportion of T1 tumours treated with PN rather than RN (see figure 1-2),

this association persisted after adjustment for PADUA complexity (figure 3a-b-c). The complication rate decreased with increasing surgical volume, for all patients as well as patients with PN (4a-b-c).

Conclusions: Probability of treatment of T1 tumours with PN increased with increasing hospital volume, whereas an inverse association of hospital volume with complication rate is found. These results show closer guideline adherence in higher volume centers and support the centralisation of specialist cancer surgical services to improve patient outcomes.

P9-14 Outcomes in an octogenarian cohort - a retrospective analysis of 15 years of laparoscopic nephrectomies within a regional centre

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Introduction: Laparoscopic nephrectomy is the gold standard for renal malignancies not amenable to nephron sparing surgery. With an ageing population and increased use of imaging modalities, the incidence of renal malignancies detected in the elderly has risen. Yet most cohort studies only represent a small number of octogenarians. We aimed to report our fifteen-year experience of performing laparoscopic nephrectomy in the elderly (≥ 80 yrs) and compare their morbidity to younger patients.

Patients and Methods: All laparoscopic nephrectomies performed across three institutions in a regional centre over 15 years from 1/06/2001 to 31/6/2016 were identified through medical coding. Chart reviews were completed with documentation of age, BMI, operative details including indication, blood loss and operative time. Post-operative complications were graded according to the Clavien system. We excluded pyeloplasties, partial, open or those converted to open nephrectomies.

Results: We identified 388 patients of median age 65 yrs (IQR 53-74), of which 48 were octogenarians (≥ 80 yrs). No patients underwent renal mass biopsy. The numbers of benign pathologies were not different between the two cohorts. Aside from age, no differences were apparent in BMI (28 vs 28). Renal mass biopsies were not performed on any patients. No statistically significant differences were identified between octogenarians and non-octogenarians in operative length (197 mins vs 200), blood loss (197 vs 200 mLs), complication rates (56% vs 38%, $p = 0.011$) and length of hospital stay (5 vs 5 days).

Conclusions: Our findings suggest that when octogenarians undergo laparoscopic nephrectomy, operative characteristics, length of stay and complications rates are comparable to their younger counterparts.

P9-15 Simultaneous cardiac and renal surgery for renal and retroperitoneal tumours invading the right atrium & peridiaphragmatic inferior vena cava: oncological outcome & long-term survival

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Introduction: Simultaneous cardiac and renal surgery for tumours invading the inferior vena cava up to the right atrium is feasible but high risk. Given the risk and changing landscape of systemic therapy in renal cell cancer (RCC) it is important to know contemporary oncological outcomes.

Methods: Retrospective cohort study of patients referred for simultaneous cardiac and renal surgery for renal and retroperitoneal tumours. Cases identified from a prospective database collected 2007-2017. Perioperative data and oncological follow-up were extracted from electronic patient records. For patients lost to follow up, survival data was obtained from GPs. We used Kaplan-Meier curves to estimate overall and disease-free survival.

Results: 54 cases identified, 47 of whom underwent surgery. Mean age at operation 63 years (range 17-95). Neves-Zincke classification of IVC thrombus: 62% level 4 (intra-atrial), 34% level 3 (hepatic veins), 4% stages 1&2. 12/47 had radiological evidence of metastasis at presentation. 3/47 patients (6%) died in the peri-operative period and were excluded from further analysis. Histology confirmed 33 clear cell RCCs, six papillary cell RCCs and five non-RCCs. Median post-operative survival was 30 months (interquartile range 14.9 - upper quartile not reached). Of the 12 who underwent cytoreductive surgery median post-operative survival was 16.1 versus 32.7 months for those treated with curative intent. Disease free survival was 10.4 months (IQR 5.9 - 38.8) in those treated with curative intent.

Conclusions: Median postoperative survival of 2.5 years and relief of circulatory symptoms appears to justify surgery in patients with renal and retroperitoneal tumours invading the heart.

P9-16 Investigation of the IMDC prognostic model as a predictor of outcome from cytoreductive nephrectomy in metastatic renal cell carcinoma

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Introduction: Selecting patients with metastatic renal cell carcinoma (mRCC) for cytoreductive nephrectomy (CN) can be difficult. The International mRCC Database Consortium Prognostic Model (IMDC-M) aids stratification

of patients for systemic therapy and has been shown to be prognostic in patients presenting initially with mRCC. We aimed to determine if the IMDC-M predicts outcome following CN.

Methods: Clinical data from 250 patients presenting with mRCC between 2001-2017 were collected retrospectively. IMDC-M stratification was calculated for each patient, when sufficient data was available. Comparisons and survival analysis was performed using SPSS.

Results: Sufficient data was currently available for 215 patients (86 (40%) IMDC-M intermediate risk [IR] and 129 (60%) IMDC-M poor risk [PR]). CN was performed in 110 (51.1%) patients and was performed more commonly in IR patients than PR patients (65% and 42%, $p < 0.001$). While there was a greater overall survival (OS) in patients undergoing CN with IR compared to PR ($p < 0.001$), there was significantly improved median OS in those patients undergoing CN compared to those without CN in both IR (28 months and 12 months, $p < 0.001$) and PR (14 months and 3 months, $p < 0.001$) patients. IMDC-M, and CN were both predictive of OS on multivariate cox regression analysis.

Conclusion: We have validated the prognostic utility of the IMDC-M in patients presenting with mRCC, which may prove useful for counseling patients. However, this prognostic tool should not be used alone for predicting outcome after CN, as CN may have an OS benefit in all risk groups. Further work investigating additional predictive parameters of outcome from CN is ongoing.

**ePoster Session 10:
Female, Neurological and
Urodynamic Urology 2
Wednesday 27 June
11:00 - 12:30
Room 12
Chairs: Shahzad Shah & Neil Harris**

P10-1 OnabotulinumtoxinA injection to the external urethral sphincter for voiding dysfunction in females: a tertiary centre experience

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¹University College London Hospital, United Kingdom

Aims: Treatment options for voiding dysfunction in females are limited. The aim of this study was to examine the functional outcomes of onabotulinumtoxinA injections into the external urethral sphincter (EUS) for voiding dysfunction in females.

Methods: A retrospective analysis of a prospective database was performed. Cases were performed from 2015 to

2017. Patients were evaluated with pre-operative videourodynamic study and urethral pressure profilometry.

Results: 10 female patients with mean age 45.5 years (18-80years) were identified. 4 had urodynamic evidence of bladder outflow obstruction (2 had detrusor sphincter dys-synergia), and 6 had an acontractile detrusor. The mean pre-op mid-urethral closure pressure (MUCP) was 93.3cmH₂O (mean expected MUCP was 45). 6 had failed previous Sacral Nerve Stimulation. 4 women were voiding pre-onabotulinumtoxinA, 4 were performing clean intermittent self-catheterisation (CISC), and 2 had an indwelling suprapubic catheter (SPC). After onabotulinumtoxinA, 6 were voiding, 2 were performing CISC, and 2 remained with an SPC. Median pre-op QMax improved from 8.5ml/s to 12.5ml/s, and mean post void residual volume decreased from 244mls to 94mls. 4 patients reported quality of life improvement after treatment, however 1 reported short lived benefit lasting less than 3 months. 2 patients went onto repeat treatments. There were no significant adverse events. 1 patient developed transient stress urinary incontinence.

Conclusion: OnabotulinumtoxinA to the EUS, is a valid treatment in females with voiding dysfunction, where therapeutic options are limited. The results can be short lived and patients must be made aware. Further study is required, with longer term follow up.

P10-2 Intravesical botulinum toxin-A injection for the treatment of overactive bladder in anticoagulated patients – Is it safe?

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¹Morrison Hospital, Swansea, United Kingdom

Introduction: Intravesical Botulinum Toxin A (BoNT-A) injections are an effective treatment of overactive bladder refractory to medical therapies.

Currently there is a lack of evidence surrounding the risk of haemorrhage to anticoagulated patients receiving this treatment. This patient group was either excluded from clinical trials prior to publication of data or their anticoagulation was reversed prior to treatment.

The aim of this single centre study was to identify the rate of haematuria as significant adverse events (SAE) to this patient group.

Methods: Retrospective analysis of 353 procedures of intravesical BoNT-A using patient records over a 4 year period in a single centre.

SAE were defined as visible haematuria requiring admission.

Results: 353 procedures; Male (n = 75) Female (n = 278), mean age 60.7 years. 68 procedures recorded with patients receiving anticoagulant(AC)/Antiplatelets (AP) therapy (19.3%). Warfarin was the most commonly encountered anticoagulant (57.9%).

Of the patients taking AC/AP therapy SAE rate = 5.9% (n= 4) in comparison to 0% on those who were not on AC/AP.

None of these patients required further surgical intervention. No mortalities associated with treatment.

Conclusions: Since licensing of intravesicle BoNT-A injection in 2012 the decision to discontinue antiplatelet / anticoagulant therapy has been subject to local guidance and risk/ benefit consideration for the individual patient with the aim of reducing the risk of bleeding.

This study shows that rates of haematuria are higher in patients taking antiplatelet/ anticoagulant therapy however the outcome of treatment is unaffected and there is no risk of serious morbidity or mortality.

Total of 353 procedures carried out over a 4 year period. Mean age 60.7 years old (range 22-91) Male = 75 Female = 278

P10-2: Table 1

19.3% were receiving antiplatelet (AP) or anticoagulant (AC) therapy (68/353) (Table 1)

Indication for AP/AC medication Table 2

3.4% total procedures with a SAE (12/353) (Table 3)

Table 1. Single AP therapy n=44, Dual AP therapy n=4, Warfarin n=11, LMWH n=4, NOAC n=5.

Class of AP/ AC

Category	Type of Anticoagulant/ Antiplatelet	No. of Patients	Total
Single AP	Aspirin	36	
	Clopidogrel	8	44
Dual AP	Aspirin + Clopidogrel	3	
	Aspirin + Ticagrelor	1	4
Warfarin	Warfarin	11	11
LMWH	Enoxaparin	2	
	Tinzaparin	2	4
NOAC	Apixaban	2	
	Rivaroxiban	1	
	Dabigatran	2	5

P10-2: Table 2. IHD/ACS = 11.7% (n=8) AF = 17.6% (n=12) TIA/CVA = 19.1% (n=13) VTE = 8.8% (n=6) valvular pathologies = 2.9% (n= 2) other = 4.4% (n=3) Not stated = 35.3% (n=24).

Indication for AP/AC medications

Indication for AP/ AC medication	Type of AP/AC medication	No of patients	Total
Ischaemic Heart Disease/ Acute coronary syndrome	SAP	3	
	DAP	4	
	Warfarin	1	8
Atrial fibrillation	SAP	1	
	NOAC	3	
	Warfarin	8	12
Transient Ischaemic attack/Cerebrovascular accident	SAP	11	
	DAP	1	
	LMWH	1	13

P10-2: Table 2. (Continued)

Indication for AP/AC medications

Indication for AP/ AC medication	Type of AP/AC medication	No of patients	Total
Venous Thromboembolism	SAP	1	
	DAP	1	
	Warfarin	1	
	LMWH	1	
	NOAC	2	6
Valvular Pathologies	SAP	1	
	Warfarin	1	2
Other (migraine, retinal artery occlusion, postoperative)	AP	2	
	DAP	1	3
Not stated	AP	22	
	LMWH	2	24

P10-2: Table 3. total number of significant adverse events over 4 years (n=353).

Complication	No of patients
Haematuria	4
AUR	1
PVR>150ml requiring CISC	4
UTI	0

2. 8% procedures with SAE in patients not receiving AP/AC therapy (8/285)

5. 9% procedures with SAE receiving AP/AC therapy (4/68)

All complications involving patients taking AP/AC medications led to significant haematuria (4/68)

¹patient deaths during data collection period – none attributed to intravesicle injection of BoNT-A.

P10-3 Mid-urethral tape procedures; 10-year experience of insertion and removal

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Introduction: The recent media attention towards vaginal mesh procedures has put their complication rate under greater scrutiny. Data to date have been sparse regarding the long-term outcomes of mid-urethral tape procedures (MUT). We present our experience of MUT performed over a 10-year period.

Methods: All patients who underwent MUT insertion or removal between October 2007 and January 2018 were retrospectively analysed.

Results: 737 MUT procedures were performed in 731 women. Of these, 23 patients required tape removal surgery giving an excision rate of 3.1%. 24 tape removal procedures were performed for women who had MUT

surgery elsewhere. For the patients who had excision surgery the average time between insertion and removal was 16 months (range 0-72). The number of tape removal procedures performed doubled in 2017 compared to that of 2016 and 2015.

Conclusion: Mid urethral tape procedures in our series had an excision rate of 3.1%. The number of tape removal procedures performed per year at our trust appears to be increasing. Nearly half of the patients, who had tapes removed at our trust, had had their initial tape insertion surgery in another unit. Therefore, the true incidence of tape removal remains uncertain. We look forward to long-term data from national audit projects and welcome the involvement of other allied specialties in the formation of more powerful data.

P10-4 Management of urological complications of mid urethral tape within a centralised centre: analysis of surgical management 2016-2018

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Introduction: The Independent Review of transvaginal mesh implants was set up by the Scottish government in 2015 to assess the evidence relating to surgery using synthetic mesh implants for the treatment of stress urinary incontinence (SUI) and pelvic organ prolapse (POP). The final review in 2017 recommended the management Mid Urethral Sling (MUS) complications be centralised as a result.

Methods: A review and analysis logbooks, theatre log and multidisciplinary team (MDT) discussion identified patients who underwent surgical management of International Continence Society (ICS)/International Urogynaecological Association (IUGA) category 4 complications (urinary tract).

Results: From January 2016 to January 2018, 20 patients with category 4 complications underwent surgical management. All patients presented within the T4 category (over 12 months) ranging from 2000 to 2012 with 90% (18/20) being inserted by gynaecologists compared with 10% (2/20) of urologists. 70% (14/20) of complications were urethral perforations with 86% (12/14) being treated with fistula repair and the remaining cases with LASER (with 3 of the surgical cases haven previously undergone a total of 10 LASER procedures previously). The remaining 30% (6/20) were bladder perforations with 66.6% (4/6) being surgically repaired and 33.3% (2/6) undergoing LASER. Post-operatively, 15% (3/20) patients were completely dry and did not require any further intervention, 60% of patients (12/20) had mild – moderate OAB incontinence treated by physiotherapy, 10% (2/20) have undergo further anti-incontinence surgery and 15% (3/20) are awaiting review.

Conclusion: MUS insertion complications should be classified appropriately and managed in a dedicated, centralised reconstruction unit to ensure long-term satisfactory outcomes.

P10-5 Outcomes of bladder neck closure for intractable stress urinary incontinence

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Introduction: Bladder Neck Closure (BNC) is an infrequently performed for intractable urinary incontinence as a 'last resort', in patients whom other options have been exhausted. Two main approaches -Transabdominal and Transvaginal are described. We have assessed the outcomes of these different techniques.

Methods: We retrospectively examined 38 patients who had BNC performed between 1995 and 2016 in a single unit. Examined were demographics, underlying diagnosis, technique and whether concurrent bladder augmentation or urinary diversion was performed. Outcomes included success of procedure, continence at one year and need for revision; analysed using Fisher's Exact Test.

Results: Results are shown on table I. The Transabdominal route was the most frequently employed (73%, n=19), often concurrent to Augmentation Cystoplasty and either Mitrofanoff (95%) or SPC (5%). Success rate was 72% at one year. Transvaginal approach was used in 27% (n=7) with a Martius fat pad employed in 83%. The success rate for transvaginal approach was 57% (n=4). There was no significant difference demonstrated between the two routes with regards to success of closure, continence at one year or the need for revision.

Conclusion: Bladder neck closure results in a 76% success rate. There was no statistical difference in outcome between the two approaches, and the best technique remains dependent on the indications for BNC and the ability to access the bladder neck from above or below the pelvis.

P10-5: Table I

	Successful	Not successful
Transabdominal	15	3
Transvaginal	4	3
P=0.29		
	Revised	Not revised
Transabdominal	3	15
Transvaginal	2	5
P=0.59		

P10-6 Lower urinary tract symptoms and urodynamic findings before and after urethral diverticulum excision

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Introduction: Many textbooks describe the triad of dysuria, dyspareunia and dribbling as pathognomonic of urethral diverticula (UD). We describe the rate of pre and post-operative lower urinary tract symptoms (LUTS) associated with UD in a large series.

Materials and Methods: A prospectively acquired database of all 100-patients (mean age 45.8years) having excision of UD at a tertiary centre since 2004 with a minimum follow-up of 6 months (6-112) was reviewed. Videourodynamics was performed in all pre-operatively and in those with symptoms post-surgery.

Results: Pre and post-surgical symptoms are shown in Table 1. Of those patients with pre-existing voiding symptoms all but 3 (15%) resolved by 12 months post excision. Of those with persistent/de-novo voiding symptoms (N=6) at 12 months post excision; 1 had urethral dilatation (UDn) with temporary SPC, 2 had UDn alone, 2 had sacral neuromodulation (SNM) for high-tone non-relaxing sphincter, and 1 had a urethroplasty for stricture with symptomatic resolution in all. Storage symptoms persisted post excision in 9 (24%) and had de novo onset in 7 (11%). Storage LUTS resolved by 12-months with conservative treatment in 11 (69%). 5 (31%) progressed to further treatment; 4 with intra-vesical onabotulinumtoxin A, and 1 with SNM.

Conclusion: The relationship between the presence of a UD, LUTS and urodynamic findings is complex. 76% of pre-existing storage and 85% of voiding symptoms settle following excision of UD. New onset storage and voiding symptoms occur in 11% and 4% of patients. By 12-months post UD excision storage and voiding symptoms remained in only 6% and 5% of patients.

P10-6: Table 1. Storage and voiding symptoms and urodynamic findings pre and post-operatively.

	Pre-surgery	Post-surgery	
		Persistent	New
Storage symptoms (frequency-urgency)	37 (37%)	9/37 (24%)	7/63 (11%)
Urodynamic DO	15 (15%)	5/12 (41%)	7/21 (33%)
Voiding symptoms (poor flow)	20 (20%)	3/20 (15%)	3/80 (4%)
Urodynamic BOO	37 (37%)	8/10 (80%)	1/23 (4%)

P10-7 Circumferential and dorsal urethral diverticula: a contemporary experience of the most challenging group of diverticula

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¹University College London Hospital, United Kingdom, ²University College London Hospital, United Kingdom, ³University College London Hospital, United Kingdom, ⁴University College London Hospital, United Kingdom, ⁵University College London Hospital, United Kingdom, ⁶University College London Hospital, United Kingdom

Introduction: The surgical excision of urethral diverticula (UD) carries quantifiable risks of urodynamic stress urinary incontinence (USUI) and urethro-vaginal fistula (UVF). The most challenging group for surgical excision are the dorsal (often misnamed anterior) diverticulum and the circumferential diverticulum. We examined the outcomes of this highly challenging group of patients at a national referral centre.

Patients and Methods: A retrospective review of a database of patients treated between 2002-2017. All patients were pre-operatively assessed with videourodynamics and T2-weighted pelvic MRI.

Results: 30 patients, with mean-age 46.2yrs (28-77), and mean follow-up of 24months (7-42) had ventral origin circumferential (27) or dorsal origin (3) UD. Pre-operatively, 29 (97%) had at least one urinary symptom, 15 (50%) had lump symptoms, 2 (7%) had USUI and 17 (57%) had evidence of bladder outflow obstruction. On MRI all circumferential UD had 360° involvement around the urethra, whilst the 3 dorsal UD had a mean of 180° involvement. 29 (97%) were excised fully and 2 (7%) had malignant histology. 7 (23%) developed de novo USUI which resolved by 12 months in 4 (57%). 8 (27%) required further surgery; 3 for persistent USUI, 2 for symptomatic high tone non-relaxing sphincter, 1 for vesicovaginal fistula, 1 for urethral stricture and 1 completion urethrectomy, cystectomy and ileal conduit for cancer.

Conclusion: This group of UD are surgically challenging. Within this group 7% had malignant histology, suggesting a higher chance of sinister pathology. There is also a relatively high rate of de-novo USUI and other complications in this group.

P10-8 Increasing vaginal repair of vesicovaginal fistulae does not affect outcome

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Introduction: Traditionally urologists have repaired vesicovaginal fistula (VVF) abdominally and gynaecologists vaginally. We have reviewed the routes of repair in a 2 surgeon series of VVF managed at a tertiary referral centre between 2000 and 2017 to see if this is still the case.

Materials and Methods: Review of a prospective database for all patients with VVF for details of all patients with VVF from 2000. Data on patient demographics, fistula aetiology, route of repair and final outcome was recorded for each consecutive 5 year period.

Results: 139 patients of median age 50 years (range 21-88) were referred with VVF during this period. 155 VVF repairs were performed in these women; 62 via the abdominal route and 93 via the vaginal route. Absolute indications for abdominal repair are considered to be requirement for simultaneous ureteric reimplantation and/or clam cystoplasty, or early repair following abdominal procedure. Absolute indications for abdominal repair were present in 9 women; the remaining 53 women had abdominal repair due to surgeon preference or access difficulty. The details of route of VVF repair, time period and outcomes are shown in Figures 1 and 2.

Anatomical closure was achieved in 97% overall – with no significant difference between abdominal or vaginal closure routes ($P > 0.05$).

Conclusion: Vaginal repair of VVF has become increasingly common in urologist's hands with excellent fistula outcomes and should be the route of choice if there are no absolute indications for abdominal repair.

P10-9 The outcomes of urethrovaginal fistula repair

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Introduction: Urethrovaginal fistulae (UVF) are rare in the developed world. We report the outcomes of our cohort undergoing UVF repair at a genitourinary fistulae specialist centre.

Patients and Methods: A prospectively acquired database of patients with genitourinary fistulae was analysed. 24 patients had surgical repair of UVF over 11 years (2004-2015). Median age was 53.3 years (range 26-78). All patients had pre-operative cystourethroscopy and videourodynamics (VUDs), except 2 with concurrent vesicovaginal fistulae (VVF). Post-operative urinary incontinence (UI) was investigated with repeat VUDs.

Results: Aetiology of UVF is outlined in Table 1. 23 (95.8%) patients underwent transvaginal repair of UVF with Martius fat pad interposition. Successful anatomical closure was achieved in 100%. Pre-operative VUDs revealed 13.7% (3/22) had stress UI (SUI) and 13.7% (3/22)

had mixed UI (MUI) - all had persistent post-operative UI. Persistent MUI was successfully managed with rectus fascial sling (n=3) and intravesical botulinum toxin (n=2) or sacral neuromodulation (n=1). Persistent SUI was treated successfully with rectus fascial sling (n=2). 1 patient had a TVT-O which failed. Of the remaining transvaginal repair cohort, 2 patients had new-onset post-operative SUI treated successfully with laparoscopic colposuspension. The final patient had a complex urethra-vesico-vaginal fistula and underwent clam ileocystoplasty, bladder neck closure and mitrofanoff channel formation. Continence and channel function are preserved after 13 years.

Conclusion: UVF are rare with varying aetiology including MUT insertion. Vaginal repair of UVF is feasible for the majority of cases. Persistent and new-onset UI occurs in 34.8% and requires surgical treatment with success rates of 87.5%.

P10-9: Table 1.

Aetiology of UVF	Number of patients (%)
Mid-urethral tape (MUT) for Stress UI (SUI)	12 (50)
Excision of urethral diverticulum	4 (16.7) *
Untreated urethral diverticulum	2 (8.3)
Excision biopsy of vaginal tumour	2 (8.3)
Cystoscopy	1 (4.1)
Excision of ectopic ureter	1 (4.1)
Bladder neck reconstruction	1 (4.1)
Obstructed labour	1 (4.1) **

* n=1 concomitant vesicovaginal fistula (VVF)

** n=1 concomitant VVF

P10-10 A prospective study of the safety and outcomes of robotic-assisted laparoscopic ureterolysis including a comparative analysis with open ureterolysis in patients with ureteric obstruction from retroperitoneal fibrosis (RPF) managed in a Specialist RPF Centre

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Introduction: Controversy exists around the optimal management of ureteric obstruction caused by retroperitoneal fibrosis (RPF). Ureterolysis offers patients the opportunity to have optimal ureteric drainage without the need for long term stents. However, patients can be reluctant to undergo major open surgery despite the advantages of ureterolysis. We commenced a robotic ureterolysis program in January 2016 in an effort to deliver similar outcomes to open surgery with potentially less morbidity.

Methods: 200 patients with RPF managed by a multi-disciplinary RPF team since January 2012. 90 patients have undergone ureterolysis. Prospective analysis of 40 patients who underwent robotic-assisted laparoscopic ureterolysis (January 2016 and September 2017), compared with 50 patients who underwent open ureterolysis (Feb 2012 and January 2016). Data on patient demographics, operative details and outcomes collected prospectively.

Results: 40 patients underwent robotic ureterolysis, 26 (65%) bilateral, 7 (17.5%) unilateral + contralateral nephrectomy for non-function, 7 (17.5%) unilateral,

Male=28 Female=12. Median age 58.2 years (range 52-78), All operations completed robotically. See Table I for comparison of indication, operative details, complications and outcomes between open and robotic ureterolysis.

Conclusion: Robotic-assisted laparoscopic ureterolysis in a high volume RPF centre appears to be feasible and safe, with low risk of intra and peri-operative complications. Early stent free rates and renal function are excellent with reduced blood loss and reduced lengths of stay compared to open ureterolysis. Prospective follow up is ongoing to determine long term outcomes.

PI0-10: Table I. Comparison of indication, operative details, complications and outcomes between open and robotic ureterolysis.

	Robotic (N=40)	Open (N=50)
Bilateral ureterolysis	26 (65%)	26 (52%)
Unilateral ureterolysis	14 (35%)	24 (48%)
Indication		
Nephrostomy-dependent	8 (20%)	5 (10%)
Stent failure	13 (32%)	20 (40%)
Stent symptoms	15 (38%)	22 (44%)
Pre-emptive / patient choice	4 (10%)	3 (6%)
Operative details		
Median Operative time in mins (range)	200 (90-340)	200 (120-300)
Median blood loss in mls (range)	40 (10-200)	390 (20-1200)
Post-operative stay in days (range)	2 (1-10)	8 (3-21)
Additional procedures		
Contralateral Nephrectomy for non- function	N=9 7 (18%)	N=11 7 (14%)
Abdominal aortic aneurysm repair	-	1 (2%)
Uretero-ureterostomy	2 (5%)	1 (2%)
Boari flap	-	1 (2%)
Ureteric re-implant	-	1 (2%)
Complications		
	N=5 (12%)	N=13 (26%)
Clavien I	1 (2%)	1 (2%)
Clavien II	2 (4%)	6 (12%)
Clavien III	2 (4%)	4 (8%)
Clavien IV	0 (0%)	2 (4%)
Outcomes		
Median follow up in months	8 (3-22)	26 (20-66)
Nephrostomy free	8/8 (100%)	5/5 (100%)
Stent free	38/40 (96%)*	47/50 (94%)
Median % change in GFR	+10% (-14 to + 38)**	+6% (-4 to +22)

PI0-11 The long-term outcome of mitrofanoff in adults

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Introduction: Outcomes in adult Mitrofanoff patients are largely unknown. Revision rates of up to 50% have been reported in children and 85% in adults.

Patients and Methods: We performed a retrospective case note review of 176 consecutive adult patients (median age 42 years) having Mitrofanoff channel formation a median of 142 months (range 54-386) ago. We evaluated

outcome in terms of continued use, continence, stones, need for endoscopic and / or open revision. We correlated these outcomes with indication for Mitrofanoff formation. Statistical analysis was by Chi Squared analysis.

Results: The 176 patients had a median of 51.5 months (range 2-293) follow-up (FU) available. Outcomes at last FU are listed in Table I.

Conclusion: Mitrofanoff formation was successful (used by patient and continent) in 77% of adult patients at the expense of stone development in 19%, a 49% endoscopic and a 39% open revision rate. Stone development rate was highest in patients with congenital aetiology whilst revision rates were highest in patients with complex incontinence aetiology. Persistent usage was lowest in patients with neuropathic aetiology.

P10-12 Appendix or ileum – which is the best material for mitrofanoff channel formation?

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Introduction: The appendix is reported to have better outcomes when used as a Mitrofanoff channel than ileum in children. Outcomes in adult Mitrofanoff patients are largely unknown.

Patients and Methods: We performed a retrospective case note review of 176 consecutive adult patients (median age 42 years) having Mitrofanoff channel formation a median of 142 months (range 54-386) ago. We evaluated outcome in terms continued use and continence for each type of material used for channel formation. Ileal channels were evaluated both as one type of channel material and separately as single and double ileal channels. Statistical analysis was by Chi Squared analysis.

Results: The 176 patients had a median of 51.5 months (range 2-293) follow-up (FU) available. At time of this review 89 (51%) patients were alive. At time of last FU 77% of channels were in use and 77% were continent. Outcomes at last clinic FU are listed in Table I.

Conclusion: There was no significant differences in outcomes in terms of usage at last follow up between any of the material used to make Mitrofanoff channels. Patients were significantly more likely to have continence issues if channels were made out of ileum. Appendix should be the first choice for Mitrofanoff channel formation in adults.

P10-12: Table I

Channel	N (%)	Median Age (Range)	Median FU (Range)	In Use at Last FU	Dry at Last FU
Appendix	81 (46%)	36 (14-73)	57 (2-238)	65/81 (80%)	65 /81 (80%)*
Ileum (Single + Double)	71 (40%)	45 (15-71)	60 (2-234)	50/71 (68%)	47/71 (64%)
Single Ileum	33 (19%)	45 (18-71)	66 (4-234)	23 /33 (70%)	25/33 (76%)
Double Ileum	38 (22%)	43 (15-68)	56 (2-232)	28/38 (74%)	23/38 (61%)*
Ureter	7 (4%)	42 (35-60)	175 (14-293)	6/6 (100%)	6/6 (100%)
Other	10 (6%)	42 (23-60)	65.5 (51-150)	6/10 (60%)	8/10 (80%)
Unknown	7 (4%)	49 (23-60)	50 (40-122)	5/6 (83%)	5/6 (83%)

•P < 0.05

P10-13 Outcomes of surgery for treatment refractory bladder pain syndrome / interstitial cystitis

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Background: Bladder pain syndrome/interstitial cystitis (BPS/IC) is a chronic debilitating condition with the majority of treatment options medical. Surgery is reserved for treatment refractory patients however the optimum procedure is not defined. We describe the outcomes of reconstructive surgery for BPS/IC in our centre.

Patients and Methods: A retrospective review of prospective data on patients undergoing surgery for BPS/IC in

a single tertiary referral centre from 2007-2017 was performed. Data collected included preoperative investigations/treatments, surgical approach, complications and outcomes.

Results: 34 patients were identified (15 male, 19 female). Median age was 50. Mean pre-operative symptom duration was 6.4 years and all were considered treatment refractory. Median nocturia episodes was 6 and median daytime frequency was 1 hourly. Mean pre-op maximum anaesthetic bladder capacity was 483.3ml. 23 patients underwent cystectomy & ileal conduit formation (67.6%), 4 cystectomy & neobladder formation (11.8%) and 7 subtotal cystectomy & ileocystoplasty (20.6%). Clavien-Dindo grade III-V complications occurred in 4 patients (10.8%) with 1 90-day mortality. Median follow-up was 32 months. 22 patients (64.7%) were considered cured i.e. no pain.

32.3% had continued pain following surgery: 28.6% (2) had undergone subtotal cystectomy & ileocystoplasty, 30.4% (7) total cystectomy & ileal conduit and 50% (2) total cystectomy & neobladder formation.

Conclusion: Reconstructive surgery can result in resolution of BPS/IC symptoms but should be considered a last resort due to the potential morbidity and risk of persistent symptoms in just over a third of patients. There is a need to identify preoperative factors that may predict a poor outcome.

P10-14 Is obstruction of ileal conduit after parastomal hernia repair with porcine derived tissue matrix Strattice™ a valid concern?

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Introduction and Objective: Parastomal hernia occurs in 17% of patients with ileal conduit and recurrence following repair occurs in 27-50%. The introduction of the porcine derived tissue matrix Strattice™ showed promising results in colorectal practice. We have reviewed repair of ileal conduit para-stomal hernias to compare outcomes in urological practice.

Methods: We retrospectively reviewed notes of 57 patients (18 men) of mean age 56 years (range 33-78) with ileal conduits having repair of hernia with Strattice™ mesh. Data collected included type of hernia repair (incisional or parastomal) and possible mesh related complications. All repairs were performed by 4 consultant surgeons utilising conduit pull through and intra-peritoneal lateral mesh fixation to the anterior abdominal wall.

Results: Of the 57 patients included, 34 had incisional hernia repair (mean age 60 years, range 41-77, 9 men) and 23 had para-conduit stoma hernia repair (mean age 54 years, range 33-71, 6 men). Complications are detailed in table 1.

Conclusion: 9 (39%) of 23 patients having repair of their ileal conduit parastomal hernia with Strattice™ mesh developed obstructive complications whilst the parastomal hernia recurred in only 6/23 (26%). The rate of obstructive complications is higher than expected and warrants further close follow-up and study in prospective series. It may be that success in para-stomal repair is at the expense of obstructive complications.

P10-14: Table 1

Complication	Number	%
Conduit obstruction at level of mesh	7	30
Stomal retraction with shortening and subsequent obstruction	2	9
Recurrence of parastomal hernia	6	26
Seroma	1	4

P10-15 The incidence of pyocystis following ileal conduit urinary diversion for benign aetiology and subsequent requirement for remnant bladder cystectomy

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Introduction: Pyocystis of a remnant bladder following ileal conduit urinary diversion can be difficult to treat conservatively and often requires remnant bladder cystectomy. We sought to assess the incidence, risk factors and need for subsequent cystectomy in patients with pyocystis of defunctionalised bladders following ileal conduit urinary diversion for benign causes.

Patients and Methods: Patients undergoing ileal conduit urinary diversion (benign aetiology) over a 17 year period (1997-2004) were identified and records analysed. Data retrieved included patient demographics and comorbidities, indications for urinary diversion, development and treatment of pyocystis and the need for subsequent cystectomy. Mean age was 46 years (range 2-78) and mean follow-up 49 months (range 6-252 months).

Results: 66 (81%) female and 15 (19%) male patients were included in the analysis. Indications for conduit formation included: end-stage complex urinary incontinence, bladder pain syndrome, atonic bladder and Fowler's syndrome. Treatment options utilised for patients with pyocystis included: antibiotics, remnant bladder intermittent self-catheterisation, remnant bladder washout and simple cystectomy. Risk factors for pyocystis and the incidence of cystectomy are detailed in Table 1. 18 patients with pyocystis (95%, p<0.01) required eventual cystectomy. The remaining patient with pyocystis was not medically fit for further surgery. There were no correlations between aetiology and subsequent development of pyocystis.

Conclusion: Following ileal conduit diversion for benign aetiology 24% of patients developed pyocystis. Conservative

P10-15: Table 1.

	Pyocystis	No Pyocystis
Number of patients (%)	19 (24)	62 (76)
Mean Age In Years (Range)	45.76 (25-67)	46.39 (2-78)
Male (%)	6 (31.6)	9 (14.5)
Female (%)	13 (68.4)	53 (85.5)
SPC prior to conduit (%)	9 (47)	17 (27)
No SPC prior to conduit (%)	10 (53)	45 (73)
Subsequent Cystectomy (%)	18 (95)*	0 (0)

* P <0.01

treatments have been shown to be ineffective in this cohort and 95% require simple cystectomy. This study suggests male gender and prior SPC insertion may be risk factors for developing pyocystis.

Unmoderated ePosters

UI Rising to the occasion: evolution of the vacuum erection device

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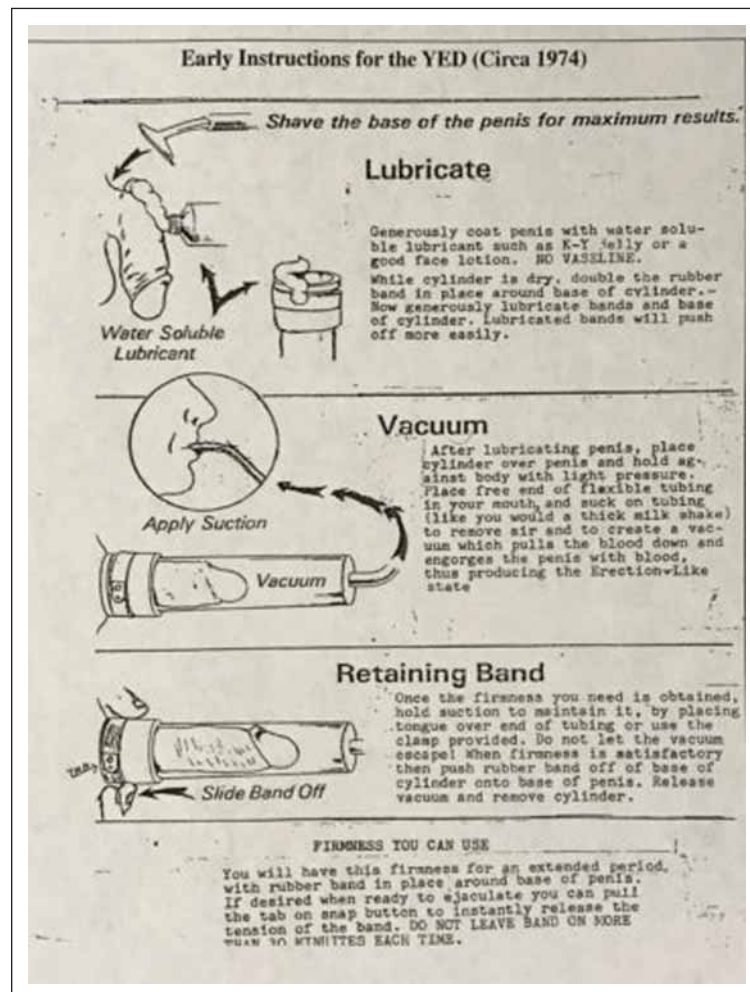
Vacuum Erection Devices (VEDs) have become the mainstay non-invasive mechanical therapy for erectile dysfunction. Although John King is widely credited with the original publication describing VED ('the glass-exhauster'; 1864) in his book 'The American Physician/Domestic Guide to Health', it was French physician Vincent Marie-Mondat who actually published first.

In 'On Sterility in the Male & Female' (1843), Marie-Mondat described his 'Congester'; an open-ended cylindrical device with an exhaustive-pump at one end, which drew

blood into the corpora to stimulate an erection. He described four individuals who were unable to attain erections and claimed that with use of his device, they achieved erections of maximal length and girth.

Professor Zabudowski subsequently described use of abdominal massage with the addition of a pyriform glass-vessel similar to that described by King (1908). Significant outcomes were reported. However, all these devices were unable to maintain erection once removed. Austrian Otto Lederer resolved the issue when he patented a device that used a constriction ring along with drawing pressure to engorge the penile vessels and keep tumescence (1917).

Design barely altered until 1974, when Geddings Osbon, an automotive worker, marketed his 'youth-equivalent device'. After losing intimacy with his wife, he spent 20 years using his knowledge of vacuums from retreading tyres to perfect and refine VED design. Due to safety concerns, it was not until 1982 that the FDA granted permission to market his VED as a prescription-product. Subsequent work by Witherington, Nadig and then Lue helped the device gain medical recognition, and ultimately AUA recommendation for organic erectile dysfunction treatment.



UI: Figure 1

U2 Urologists to the desert rats – serendipitous skills of the World War II urologists

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The defining skills of the early urologists were those of endoscopy. On the outbreak of World War II British doctors of all grades, specialities and skills were mobilised into the Royal Army Medical Corps (RAMC) and deployed to all theatres of war. Two of these doctors were Urologists and were both sent to the desert war of North Africa.

George Young Feggetter specialised in Urology having worked under Canny Ryall and Terence Millin who were pioneering TURP prior to World War II. The majority of his wartime operating was trauma, although his skills as a Urologist bore fruit as a significant increase in stone disease in the hot climate meant his cystoscopy and retrograde studies coupled with his ability to manipulate ureteric stones were of significant value.

Denis Smith Poole-Wilson was a Urologist in Manchester before joining the war in the same campaign. In Naples, and subsequently Rome, he set up his own 100-bed hospital colloquially known as 'Poole's Piss Palace' where he cared for open bladder and urethral injuries as well as the heavy workload of stone disease. Like Feggetter, he was a founding member of the British Association of Urological Surgeons, serving as president from 1965-1967.

During World War II, cystoscopy was a specialist skill that could only be provided by Urologists which proved to be of huge importance on a high risk group of stone formers. Feggetter and Poole-Wilson were already specialists in stone disease and it was serendipitous that both were posted in the same war.

U3 The pioneers of evidence-based radical cystectomy with pelvic lymph node dissection

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Introduction and Objectives: Since the first radical cystectomy was described in the 1800s, multiple alterations to surgical technique have emerged. Herein we describe the major contributions by Willet F. Whitmore and Victor F. Marshall to an early evidence base for this major yet potentially curative operation.

Methods: A detailed Google and Pubmed search was undertaken.

Results: Cystectomy is reported as first being performed in Cologne, Germany by Bardenheuer in 1887. However, Whitmore and Marshall, working out of Cornell University, New York, are credited with the first description of the operative technique and long-term outcomes for radical

cystectomy with bilateral pelvic lymph node dissection (PNLD).

Marshall and Whitmore first advocated for PNLD during cystectomy in 1949. They then published outcomes on their first 100 patients in 1956. However, it wasn't until 1962 that they published what is now seen to be a seminal paper in the evidence regarding improving mortality for invasive bladder cancer with radical cystectomy and PNLD. They reported a 5-year survival rate of 21-49% despite a perioperative mortality rate of 10%. Furthermore, of the 55 patients were found to have lymph node-positive disease, they were unaware of any patient who survived >5 years unless a lymphadenectomy was performed.

Conclusions: There were others describing similar techniques for the above procedure around a similar time as Marshall and Whitmore. However, as Bernard Fischer, a similar surgical pioneer in breast cancer, fittingly commented decades later with respect to surgical research: "In God we trust. All others must have data."

U4 What is Greek and Latin in urology?

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Introduction: Urology is no different from medical specialities in having a large number of terms derived from Greek or Latin. However, what significant impact has Greek and Roman mythology had on urology? This study explores the impact of the languages Ancient Greek and Latin on common urological terms, and the influence of classical mythology. This influence is worth exploring to fully grasp the meanings of commonly used words in urology.

Aims: Our aim is to explore the language of urology focusing on Latin and Greek derivatives. Our aim is to explore the influence of classical mythology on common urological terms in detail.

Methods: We reviewed historical and medical literature to identify associations between urological terms and ancient Greek mythology. We focussed on art, architecture, museums and mythological texts. From this we report the most interesting and relevant history that has led to terms commonly recognised in urology, as well as their significance and impact.

Results: Many commonly recognised terms in urology have a significant mythological background. These include 'priapism' from 'Priapus', 'veil of Aphrodite' from the 'Aphrodite', 'Proteus' from 'Proteus', Hermaphroditism from 'Hermaphroditus', morphine from 'Morpheus', hygiene from 'Hygeia', 'hymen' from 'Hymenaios' there is also reference to common urological conditions in Greek mythology including testicular torsion.

Conclusion: Ancient Greek and Latin has influenced the names of common urological terms with much of the

Greek influence being through the existence of Latin. It is clear from these examples that Greek mythology has had a significant impact on common urological terms.

U5 When in Rome: the reversal of circumcision described by Aulus Cornelius Celsus (c. 25 BC – c. 50 AD)

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Introduction: The ancient Roman celebration of the naked human body is still apparent today, but the appearance of an uncovered glans was treated with distaste or amusement in contemporary writings. Encyclopaedist Aulus Cornelius Celsus (c. 25 BC – c. 50 AD) described two techniques for prepuce reconstruction, which he referred to as “decircumcision” in his work *De Medicina*.

Methods: A non-systematic search of electronic journals and online archives regarding Celsus and his writings on surgery.

Results: Celsus' descriptions of decircumcision required circumferential degloving and advancement of the penile skin. The first technique was recommended for ‘children or those with congenitally shortened foreskin’. An incision at the base of the penis is made and penile skin advanced distally and stretched over the glans, creating a double layered prepuce. The distal skin is then ligated to prevent retraction.

In the second approach for ‘intentionally circumcised adults’, a coronal incision is made around the glans deep to the dartos fascia into an avascular plane, and the skin is dissected off the length of the penis. The free skin is pulled distally and a non-adherent dressing is applied between the glans and the penile skin until epithelisation occurs. Celsus gave instruction for making the non-adherent dressing dressings which contain lead oxide to prevent inflammation.

Food was withheld for days postoperatively in the belief that a weak and hungry state prevents erections.

Conclusion: Celsus' description of preputial restoration gives insight into the development of urological surgery in antiquity and the cultural attitudes towards circumcision.

U6 Henry Hugh Clutton: of stones and bones

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Henry Hugh Clutton was born on July 12th 1850 at Saffron Waldon. He attended Marlborough College before being admitted to Clare College, Cambridge. From 1872 he studied at St Thomas's Hospital where he became a full surgeon in 1891. An avid and enthusiastic teacher, he was

notorious for his style of describing surgical practice in terms of pathology rather than anatomy.

Eponyms: In 1886, the *Lancet* published “Symmetrical Synovitis of the Knee in Hereditary Syphilis”, in which Clutton detailed 11 cases of affected children. He correctly predicted that in time, evidence would demonstrate that the condition affected many joints, not limited to the knees, and in subsequent literature this is now well documented. In time this symmetrical hydrarthrosis came to be known as ‘Clutton Joints’. Clutton Sounds were introduced to England by Clutton, but in fact their initial designs hail from Fessendon Nott Otis, an American surgeon. The extent of Clutton's contribution to the design and distribution of these instruments remains unclear.

The final of the Clutton eponyms is the Clutton curve introducer. A direct link to Clutton himself remains unlikely as Frederic Foley described his catheters over 20 years after Clutton's death, but the shape of the introducer undoubtedly mimics Clutton's hockey shaped urethral dilators.

Other pursuits and ill health: Outside of practice, Clutton took on a number of roles, including that of the last president of the Clinical Society. His health remained frail throughout his life and he subsequently died at home aged 59 after a prolonged illness.

U7 Mastering stones and bones: Henry Jacob Bigelow (1818 – 1890)

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Introduction: In the early 19th century ‘lithotrity’ emerged as the treatment for bladder calculus and an alternative to the then much feared ‘cutting for the stone’ of lateral-perineal or supra-pubic lithotomy. Lithotrity was then performed in multiple sessions, causing complications as stone fragments were left to pass. Henry Jacob Bigelow (HJB), a Professor and surgeon at Harvard University, augmented lithotrity pioneering a new procedure known as ‘litholapaxy’.

Methods: A non-systematic search of the literature of electronic journals, books and online archives was performed pertaining to HJB's urological research.

Results: HJB wrote his seminal paper ‘lithotrity in a single setting’ in 1878. Building on the work of Sir Philip Crampton and Dr Joseph Clover, HJB challenged the view at that time that extreme brevity was required in stone surgery, born from the misinterpretation of data relating to post-instrumentation sepsis. HJB took the opinion that all stones should be cleared in a single session under general anaesthetic irrespective of operating time. HJB made three distinctive changes: i) increasing the evacuating tube

calibre ii) shaping the scope to depress the bladder floor
 iii) using an elastic and glass bulb to evacuate stone fragments. HJB presented excellent morbidity data for his trial series with no mortality. HJB went onto perform the first hip joint excision and described the 'y' or iliofemoral ligament.

Conclusion: HJB was a pioneering surgeon and eminent engineer of surgical appliances. Endourology owes a debt to this orthopaedic surgeon whose single session litholapaxy remains the basis of our current practice.

U8 Francis Seymour Kidd (1878 – 1934) – urologist and co-founder of British Journal of Urology (BJU)

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Introduction: Widely known as the co-founder of the British Journal of Urology (BJU) in 1929, we present Kidd's passions and contributions to urology.

Method and Materials: A systematic search of online and published material relating to the subject was carried out.

Results: As the founder of the genitourinary department at The London Hospital, Kidd believed that no urologist could hope to be successful or even competent unless he was fully acquainted with venereal diseases of the urethra. He also knew the might of the pen and contributed frequently to journals. Kidd wrote 4 major books in which his best-known work was on the Common Diseases of the Male Urethra. It was a guide written for the inexperienced but showed him best as a clinician and a teacher. He was a skilled surgeon and designed Kidd's Ball, for endoscopic fulguration of bladder tumours. Unfortunately ill-health forced him to resign in 1920. Despite this, he continued to contribute immensely, helping to establish the urological section of Royal Society of Medicine (RSM) and lecturing in USA and Europe.

Without doubt, Kidd's greatest achievement was the creation of the BJU. Despite criticism from colleagues during its infancy, he persevered and through his passion, it is

now world renown and official journal for 6 international societies.

Conclusions: Francis Kidd's work in BJU and enthusiasm in writings created a foundation of shared evidence-based medicine and remains an inspiration to those who have dedicated themselves to the world of urology.

U9 John Wickham (1929-2017): a celebration

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Introduction: John Wickham is arguably, the British Urologist who has had most influence over the development of medicine beyond our specialty. Following his death last year, now is an opportune time for us to reflect on his contribution both to Urology and minimally invasive therapy.

Methods: One of the authors had interviewed John in 2009. The transcript from this, John's autobiography and writings, his obituaries and contributions to a blog in his honour formed the sources for this presentation.


Results: After training in London and the United States, John was appointed as a consultant at "Bart's" (his Alma Mater) in 1968. He was horrified by the brutality of some of the operation that he witnessed and his drive to innovate came from a desire to lessen the harm that patients suffered from conventional surgery. He experienced considerable resistance from many contemporaries, but also support at home and internationally from within and beyond Urology and he was central in establishing links between these enthusiasts, and indeed, it was John who coined the phrase "minimally invasive surgery". He was the first in the UK to introduce lithotripsy, laparoscopic nephrectomy and PCNL, but perhaps his most significant contribution was the development of the autonomous prostate resecting "probot" – an achievement preceding contemporary robots by 20 years.

Conclusions: John was able to achieve what he did, firstly, from a belief that he was doing the right thing by his patients, and secondly, by his ability to share his enthusiasm with others to drive innovation forward.

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