

BAUS Annual Meeting, 18–22 June 2007, SECC, Glasgow
Unmoderated Poster Sessions

Tuesday 19 June

- 46 Unmoderated Poster Session 1
1300–1330 Exhibition – Hall 4
Basic Science
U01 – U11

Wednesday 20 June

- 49 Unmoderated Poster Session 2
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Clinical
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Tuesday 19 June 1300–1330
Basic Science

U01

Hypoxia-Inducible Factor-1 α expression is increased in the tunica albuginea of men with Peyronie's disease—hypoxia is an aetiological factor?

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Introduction: Patients with Peyronie's Disease (PD) often have systemic vascular disease which may cause a hypoxic micro-environment leading to the up-regulation of pro-fibrotic cytokines. Hypoxia-inducible factor-1 α (HIF-1 α) is a known protein marker for tissue hypoxia and its expression in the tunica albuginea (TA) of PD has been studied to test this hypothesis.

Materials and methods: Tunical biopsies were taken from 15 PD patients [plaque TA (5), contra-lateral TA (10)] and ten controls having surgery for other penile conditions. The tissues were fixed in formalin, and the paraffin sections subjected to immunocytochemistry with an antibody against HIF-1 α . A vascular risk assessment was performed on all subjects.

Results: A positive expression for HIF-1 α was present in the TA of 12/15 (80%) PD patients compared with only 1/10 of the controls (10%) ($P < 0.05$). The expression was present in the fibroblasts and was higher if the disease duration was short and present both in plaque and Nesbit tissue ellipse.

Conclusion: The positive expression of HIF-1 α in PD plaque and Nesbit ellipses is an indication that a general local hypoxia may be present and contribute to the disease aetiology. Modulation of HIF-1 α expression may open new therapeutic avenues of treatment.

U02

Propionibacterium acnes: prostate inflammation and prostate cancer

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Introduction: Inflammation is a common finding in the prostate gland. It is impli-

ted as an aetiology of prostate cancer.

A carcinogenic infectious agent has been suggested.

Materials and methods: Prostate tissue was obtained from 34 patients undergoing radical prostatectomy for localised prostate cancer. Prostate inflammation was assessed by histology of wholemount sections. Peripheral Zone portions of prostate containing tumour were homogenised and cultured to seek variant bacterial agents.

Results: Propionibacterium acnes was detected in 35% of prostate samples. A higher degree of inflammation was seen in cases cultured positive to P.acnes ($P = 0.007$). Further investigation of P. acnes revealed three sub-groups based on surface properties, phenotype, and genetic grouping. Skin control isolates were classified as group 1 whereas prostatic isolates were found to come from groups 2 to 3.

Conclusions: P. acnes has been found in prostatic tissue in men who had undergone radical prostatectomy for localised prostate cancer. The tissue from which the organisms were detected had marked inflammatory changes. As inflammation is thought to be linked to the evolution of prostatic carcinoma, the detection of this organism with its facility to cause chronic inflammation, may provide a link to cancer evolution.

U03

The unique use of ammonium ion-selective electrodes in renal staghorn research and the validation of this technique

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Introduction: The majority of staghorn stones are composed of struvite (magnesium ammonium phosphate). Associated with UTIs, particularly urease-secreting bacteria, urea is split into ammonia. The physico-chemical basis for the formation of these stones is unclear because the concentration of the reactants in urine and the urinary chemical conditions are unknown. We have developed and validated an ammonium ion-selective electrode (ISE) which enables us to measure the urinary ammonium concentration [NH₄⁺].

Methods: Urinary [NH₄⁺] was measured using a plastic dip cast ammonium ISE. We

collected 30 urine samples from healthy volunteers and analysed them using the ammonium ISE and then by colour spectrophotometry, which is currently used for measuring [NH₄⁺] in blood.

Results: The ISE was stable at room temperature. Reproducible measurements of (NH₄⁺) were obtained between 1 and 50 mM. A strong linear correlation was found between the colorimetric and ion-selective measurement methodologies ($r^2 = 0.97$).

Conclusions: We have obtained the first ever measurements of urinary [NH₄⁺]. The ammonium ISE provides rapid reproducible measures of urinary [NH₄⁺], when compared with colour spectrophotometry, and undiluted samples of urine may be tested. Using this novel technique, we may enhance our understanding of the physico-chemical conditions which cause these stones to precipitate.

U04

The expression of Tight Junction proteins Claudins 11 and 15 in normal human urothelium and transitional cell carcinoma

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Introduction: Tight Junctions (TJ) play a crucial role in preventing the spread of cancer. There is altered expression of various claudins (Cl) in a number of cancers but little is known about them in human urothelium or transitional cell carcinoma of the bladder (TCC).

Materials and methods: Nineteen TCC (nine non-invasive and ten invasive) and ten normal urothelial samples were collected and used for reverse transcription PCR (RT-PCR) and quantitative PCR (Q-PCR), and cryosections immunohistochemically stained using Cl-11 and 15 antibodies. Intensity of staining was quantified using Optimas 6.0 image quantification software.

Results: Cl- 11 and 15 were equally expressed in normal and TCC samples at mRNA level on Q-PCR. They localized to all

layers of the urothelium, but mainly to intercellular junctions of the umbrella cells. TCC (especially invasive) samples showed decreased TJ formation and immuno-positivity. Staining intensity was greater in normal tissue than TCC [CI-11 ($P < 0.001$) and 15 ($P < 0.001$)] and in non-invasive than invasive tumours [CI-11 ($P = 0.46$) and 15 ($P = 0.10$)].

Conclusions: There is decreased expression of the TJ proteins CI-11 and CI-15 in TCC as compared to normal urothelium, which suggests that they may have a role in the progression of TCC of the bladder.

U05

Objective measurement of invasive spindle cell morphology in AY-27 bladder cancer cells

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Introduction: Epithelial to mesenchymal transition (EMT) is associated with tumour progression and the appearance of increased numbers of cells with a 'spindle' phenotype. This phenotype can be induced by transforming growth factor- β 1 (TGF- β 1) and is usually assessed subjectively which precludes meaningful comparisons. In this study we developed an objective morphometric measurement which defines spindle shaped cells in mixed tumour cell populations.

Methods: Measurements of morphological features using KS400 computer software and immunoreactivity of EMT markers, Cytokeratin 18 and Vimentin, were determined in AY-27 rat bladder cancer cells treated either with 3 ng/ml TGF- β 1 or control media. We conceptualised the spindle index, i.e. the ratio of the maximum cell length to diameter. A spindle index of >1.70 was designated as the threshold value that defined a spindle shaped cell. We benchmarked the incidence of spindle cells against scratch wound and Matrigel assays. **Results:** TGF- β 1 treated cells had a significantly greater percentage of spindles when compared to control cells ($P < 0.05$, t-test). The increased incidence of spindle cells corresponded with reduced Cytokeratin 18 expression, polarised Vimentin staining, increased cell motility and invasion.

Conclusion: The spindle cell index will be a useful objective measure of EMT invasive phenotype.

U06

Isolation and characterisation of a stem cell enriched side-population from bladder urothelium

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Introduction: Adult stem cells have been identified in many tissues and play an important role in tissue function and pathogenesis. Our group has used the Hoechst 33342 dye efflux technique to identify a side-population (SP) from renal and prostatic epithelial cells (EPC) enriched for cells with stem cell characteristics. We have, for the first time, isolated a stem cell enriched primary bladder epithelial cell SP and phenotypically characterised unexpanded SP.

Materials and methods: CD45-ve CD133+ve SP and non-SP (NSP) EPC were isolated from paired normal and malignant urothelium from consenting patients undergoing radical cystectomy for TCC. Immobilised cell populations were phenotyped with known epithelial and stem cell markers. Proliferative and differentiation potential of each population was determined by long-term culture in tissue flasks and spheroid formation in matrigel.

Results: A SP was isolated from both normal and malignant urothelium ($0.21 \pm 0.5\%$ and $0.52 \pm 0.2\%$ of all cells respectively). Preliminary characterisation demonstrates that the SP is enriched for epithelial cells with a stem cell phenotype and the ability to proliferate and differentiate into spheroids.

Conclusion: We have demonstrated for the first time that both normal and malignant bladder urothelium contains a stem cell enriched SP.

U07

The effect of NCX1102, a nitric oxide-donating derivative of sulindac, on prostate cancer cells under hypoxia

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Introduction: Nitric oxide-donating NSAIDs (NO-NSAIDs) are potentially powerful agents

against malignancy. Oxygen levels in prostate cancer (CaP) are lower than in normal tissue. The aim of this study was to assess the effect of NCX1102 on hypoxic CaP cells. **Materials and methods:** PC-3 CaP cells were treated with NCX1102 (NicOx, France), sulindac or vehicle control and incubated at 0.2–21% oxygen. Hypoxia inducible factor-1 α (HIF-1 α) was quantified by western blotting and luciferase activity of a hypoxia response element (HRE) promoter construct. **Results:** At normoxia, 50 μ M NCX1102 reduced cell survival to 19% of the control ($P = 0.02$, Mann-Whitney test), sulindac did not provide a cytotoxic effect relative to the control ($P = 0.23$). Viable PC-3 cells declined with reducing oxygen concentrations. Hypoxia reduced the cytotoxic effect of NCX1102. NCX1102 remained more cytotoxic than sulindac at all oxygen levels ($P < 0.0005$). NCX1102 reduced expression of HIF-1 α by 39% compared with sulindac or control treated PC-3 cells.

Conclusion: NCX1102 reduced the survival of hormone-insensitive CaP in a concentration-dependant manner. Hypoxia introduced chemoresistance, but NCX1102 still provided a cytotoxic effect even under extreme hypoxia. NCX1102 had an effect on the hypoxia response by reducing HIF-1 α expression. NO-NSAIDs showed effective CaP cell cytotoxic activity under normoxic and hypoxic conditions.

U08

Antibody immunity to prostate cancer specific antigen in the serum of patients having cryotherapy or brachytherapy treatment compared to healthy volunteers

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Introduction: There is little information known on the inherent immunogenicity of prostate cancer. In this study we monitored antibody immunity to PSA in patients with prostate cancer and healthy volunteers.

Material and methods: Sera were obtained from 39 patients with prostate cancer and 15 healthy volunteers and were grouped according to treatment status into three groups: (1) cryotherapy, (2) brachytherapy, and (3) healthy volunteers. Sera were drawn at pretreatment stage and at a regular

interval over 1 year. Serum was stored Frozen and patch tested for antiPSA antibodies.

Results: Antibody immunity to PSA was significantly lower in the cryotherapy and brachytherapy group compared to healthy volunteers (5.34, 5.72 and 15.19 pg/ml respectively, $P < 0.001$). There was no statistical significant difference in antibody level between group 1 and 2. There was no change in antibody level in pre and post treatment serum. Anti PSA level was significantly higher in patients with gleason score >7 while the clinical stage has no effect. PSA level has no effect on the antiPSA antibody response.

Conclusion: These findings suggest that prostate cancer is immune suppressive tumour regardless of the treatment received. We will proceed to test antibodies to other prostate cancer associated antigens.

U09

Nifedipine protects against contractile failure in a model of ischaemic priapism
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Introduction: Cavernosal smooth muscle (CSM) contractile failure is integral to the mechanisms underlying ischaemic priapism. Disordered Ca^{2+} metabolism may underlie this loss of function. This study aims to determine the effect of Ca^{2+} -channel blockade on the CSM response to ischaemia.

Methods: Guinea-pig CSM strips were superfused with a buffered solution. Agonist-induced contractures were examined by exposure to 15 μ M phenylephrine(PE). After equilibration, muscle strips were exposed to simulated ischaemia followed by return to normal conditions. Similar experiments were carried out in the presence of 100 μ M nifedipine. Data are mean \pm SD Statistical differences ($P < 0.05$) were examined with Student's t-tests.

Results: 100 μ M nifedipine significantly reduced the plateau-PE response to $84 \pm 13\%$ of control. 30 min ischaemia significantly reduced the plateau-PE contracture to $36 \pm 35\%$ of control. This agonist response recovered completely upon reperfusion. In the presence of 100 μ M nifedipine, 30 min ischaemia also significantly reduced the plateau-PE contracture ($77 \pm 21\%$ of

control). However, the reduction in tension was significantly less than that seen due to ischaemia in the absence of nifedipine. Again the agonist response recovered completely upon reperfusion.

Conclusions: Under normal conditions, a significant proportion of PE-induced tension appears to be Ca^{2+} -channel independent. However, in the presence of ischaemia, the use of a Ca^{2+} -channel antagonist confers some protection to CSM function. Dysfunction of these channels during ischaemia may contribute to the contractile failure seen in priapism.

U10

The effect of the urothelium on the spontaneous activity of the mouse detrusor smooth muscle

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Introduction: This study examined the spontaneous electrical properties and Ca^{2+} dynamics of the detrusor smooth muscle of the mouse bladder and investigated the role of the urothelium in spontaneous activity of the bladder.

Materials and methods: Muscle strips were isolated from mouse bladders. The urothelium was either kept intact or removed. Changes in membrane potential were recorded using microelectrode intracellular recording. To image Ca^{2+} dynamics, tissue strips were exposed to 10 μ M regon Green 488 BAPTA-1 am for 70 min, and then image series were acquired with a laser-scanning confocal microscope.

Results: (1) Mouse detrusor smooth muscle cells generated nifedipine-sensitive spontaneous action potentials at a low frequency (1.3 ± 0.9 min $^{-1}$, $n = 11$) in preparations with urothelium intact. This frequency increased when the urothelium was removed (7 ± 8.3 min $^{-1}$, $n = 17$) ($P < 0.05$, Student's t test). (2) Frequent ATP-mediated spontaneous depolarisations were recorded in all cells (3) Frequency of whole cell Ca^{2+} flashes of detrusor smooth muscle cells increased in preparations with urothelium removed.

Conclusions: Spontaneous activity of the mouse detrusor smooth muscles was characterised enabling future work on this popular animal model. Activity of the detru-

sor is modulated by an inhibitory agent released from the urothelium.

U11

Effect of citrate on urinary catheter biofilm development due to urease producing organisms

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Introduction: The crystalline biofilms produced by urease producing organisms complicate the care of patients undergoing long-term catheterization. The pH at which Ca and Mg precipitate to form crystals is known as nucleation pH (pHn) and increasing urinary citrate content can elevate it. The aim was to examine whether increasing the citrate content of urine modulates the rate at which crystalline biofilms develop.

Methods: Laboratory models of the catheterized bladder were infected with *Proteus mirabilis*, *Proteus vulgaris* or *Providencia rettgeri*, and artificial urine was allowed to drain at 1500 ml/24 h either at normal concentration (Control, pHn = 6.9) or with increased citrate concentration of 1.5 mg/ml (Test, pHn = 8.3). Four replicate experiments were performed for each organism.

Results: The mean times the catheters took to block under the two sets of experimental conditions are summarized in the table. Scanning electron microscopy revealed that the catheter biofilms that developed in urine containing high citrate concentration were devoid of crystalline formation.

TABLE for U11

Organism	Mean times (h) to blockage \pm SE	
	Control	Test
<i>Proteus mirabilis</i>	45.5 \pm 1.0	>168
<i>Proteus vulgaris</i>	47.4 \pm 2.2	>168
<i>Providencia rettgeri</i>	54.50 \pm 2.9	>168

Conclusion: Increased citrate concentration in urine extends the time that catheters take to block. Use of citrate drinks may provide a simple and inexpensive strategy for reducing the catheter encrustation and thus improving patients' quality of life and reducing the cost of care to the NHS.

Wednesday 20 June 1300–1330

Clinical

U12

Genitourinary cancers following renal transplantation

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Introduction: We examined the incidence of genitourinary (GU) cancers after renal transplantation at our institution, over a 22 year period.

Methods: Patients who developed GU malignancies following renal transplantation were identified, and their cases retrospectively reviewed, according to patient demographics, type of cancer, method of diagnosis, method of treatment and standardized incidence ratio (SIR).

Result: GU malignancies developed in 12 patients (1.8%). TCC was found in six patients (mean age 71 years), of which three were detected in the allograft kidney. Prostate carcinoma developed in three patients (mean age 76 years), testicular malignancy in two men (mean age 34 years) and renal cell carcinoma in one patient. The mean time after transplant to diagnosis was 10.1 years (TCC), 11.6 years (prostate), 10.0 years (renal) and 5.5 years (testis). The SIR was highest for testicular cancer (48.14). Other SIR's were 19.3 (TCC), 7.81 (renal) and 4.01 (prostate). Screening was useful in identifying half of the cases (three prostate, two with TCC and renal cancer) with the remainder developing symptoms leading to diagnosis.

Conclusion: Renal transplant recipients have markedly increased rates of GU cancer, following transplantation. Cancer screening, and close clinical follow up, should be considered mandatory in all such cases.

U13

Salvage orchidectomy may not always be required in patients undergoing primary chemotherapy for metastatic germ cell tumour of the testis

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Introduction: This study aimed to identify the incidence of viable local tumour in the

testis of patients undergoing salvage or/ chidectomy following initial presentation with advanced germ cell tumour (GCT) treated by primary chemotherapy.

Patients and methods: Thirty-three patients presenting with advanced metastatic GCT received chemotherapy without prior orchidectomy. Histological diagnosis was available from biopsy of metastases in 23 patients; treatment in the remaining ten was initiated based on a combination of elevated serum tumour markers, testicular findings and the presence of a retroperitoneal mass.

Results: Seminomatous GCT (SGCT) was diagnosed in 13 patients, non-seminomatous GCT (NSGCT) in 18 cases and mixed GCT (MGCT) in the remaining two. Following initial chemotherapy all patients with SGCT had only scar tissue in the orchidectomy specimen, with no residual tumour. Ten of 18 patients (55.6%) with NSGCT had viable tumour remaining in the orchidectomy specimen. Both cases of MGCT had persistent viable invasive malignancy. Twenty-seven patients (81.8%) were recurrence-free and alive after a median of 49 months follow-up.

Conclusion: Thirty-six per cent of patients have residual tumour locally in the testis following primary chemotherapy. However, in SGCT there was no residual tumour present. It may not be necessary to undertake salvage orchidectomy in these patients.

U14

Defining the limits. Preoperative marking of the resection limit in TURP

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Introduction: Benign Prostatic hypertrophy is a disease of the transitional zone of the prostate which surrounds the urethra and is the first area resected during TURP. Incomplete resections are associated with rebleeding, regrowth, infection and increased fluid absorption. In contrast excessive resections can lead to complications such as TUR syndrome and peri/post operative bleeding. The aim of this project was to determine whether pre-operative marking of the limit of required resection is possible.

Materials and methods: Using Radical prostatectomy specimens prior to histological analysis, we identified the plane between the transitional cell and peripheral zones using ultrasound. Methylene blue was injected into this plane under ultrasound guidance. The specimen was then analysed in cross-section.

Results: Initial results demonstrated good uptake of dye into peripheral tissue and in many sections dye remained in the peripheral zone. The process was more successful and reproducible in larger prostates.

Conclusions: Initial results suggest it may be possible to preoperatively mark the limits of the required resection with the additional possibility of a preoperative biopsy. This would be of particular benefit when performing a bloodless resection. This would improve safety and increase efficacy.

U15

Following EAU guidelines for inguinal lymphadenectomy for penile carcinoma; does it reduce the numbers of negative dissections?

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Objectives: To evaluate the outcome of modified inguinal lymph node dissection for penile carcinoma. Our centre followed the European Association of Urology guidelines for inguinal lymphadenectomy.

Patients and methods: During the period 1995–2006, 62 patients were referred to the centre with a diagnosis of penile cancer. 56 patients had partial or total penectomy and 21 had bilateral modified inguinal lymph node dissections (ILND).

Results: Histopathology of Inguinal lymph nodes showed 8 (38%) positive and 13 (62%) negative for penile carcinoma. Prior to ILND 6 (28.5%) patients had positive lymph nodes on examination, 3 (14.2%) equivocal and 12 (57%) negative. On CT scan 2 (9.5%) patients were reported lymph nodes positive, 10 (47.6%) negative, three reports were unavailable and six did not have CT scan. 4 (19%) patients had wound infections, 8 (38%) wound breakdown, 5 (23.8%) lymphocoele, 1 (4.7%) wound haemorrhage required blood transfusion and 1 (4.7%) patient developed ischemic leg and died of septicemia.

Conclusion: Although ILND has significant procedure related morbidity, prophylactic lymphadenectomy reduces the risk of recurrence. We are concerned about the large numbers of negative lymphadenectomies. In our series 62% of lymph node dissections were negative. This makes us wonder whether it is time to change the practice perhaps to sentinel lymph node biopsy.

U16

Buried penis: a simple method for surgical repair

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Introduction: Buried penis (BP) is a common, readily identifiable condition, which causes significant symptoms in infants. We describe a modified sleeve circumcision which achieves good cosmetic results.

Method: All patients with BP treated at Red Cross Children's Hospital during 2005 were reviewed retrospectively; 17 patients underwent surgery. Patients presented with various symptoms, including balanitis, urinary tract infection, painful voiding, and ballooning of the foreskin. Surgical correction developed over this short period and variations on a basic technique are now used. Our technique involves making a double incision circumcision. The first incision to the shaft skin is made proximal to the constricting annular band and then the glans is delivered and held in a stay suture. A second incision to the inner prepuce is made well proximal (2 cm) to the corona. The voluminous prepuce is excised. No attempt is made to dissect dartos from Buck's fascia. An inverted 'V' shaped wedge of inner prepuce is excised to tailor excess prepuce with shaft skin. Inner prepuce is sutured to shaft tunica albuginea using fine non-absorbable suture.

Results: At routine followup a good cosmetic result was obtained in all but two cases. These two patients were operated on early in the series and were complicated by prolonged lymphedema in one and phimosis in another, both have necessitated revision.

Conclusions: This surgical technique offers a reliable, readily reproducible solution to BP.

U17

A one stop multidisciplinary clinic for Von Hippel-Lindau disease

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Introduction: Von Hippel-Lindau disease (VHL) patients may develop cancers in many organ systems including clear cell renal carcinoma, CNS haemangioblastoma, phaeochromocytoma, retinal angioma and endolymphatic sac tumours. This presents two considerable organisational problems: the significance of disease in any organ must be placed in the context of the overall disease, and the inconvenience of multiple disjointed consultations must be minimized for each patient and their potentially affected relatives.

Methods: In 1999 a one stop multidisciplinary clinic for people with VHL and their at risk relatives was established. The clinic is held every 3 months and includes specialists from genetics, urology, nephrology, radiology, ophthalmology and neurology. Routine screening includes abdominal ultrasound, ophthalmic and neurological examination, urine catecholamine measurement and an auditory symptom questionnaire. Named co-ordinators are responsible for the clinic to improve interdisciplinary communication.

Results: A total of 274 patients belonging to 70 families are under review. 47 renal manifestations of VHL have been identified from 273 screening tests. Twenty-one patients have had radical nephrectomies and 15 have had partial nephrectomies.

Conclusions: A clinic of this design provides a single, convenient locus for management of both symptomatic patients and screening of their relatives. It should be the standard of care in this complex disease.

U18

Mucocutaneous contamination is a significant risk in endo-urology

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Introduction: Blood contamination of conjunctivae and buccal mucosa remains

a potential method of transmission of infectious disease. The perception exists that exposure has decreased due to the use of video-endoscopy. The purpose of this study was to identify the exposure of the surgeon, assistant and nursing staff to splash injuries associated with the laparoscopic and endoscopic urological caseload.

Methods: A prospective study was undertaken with the collection of standard disposable eye-shields. Over a three-month period all masks were collected, participation was voluntary and reflected the pattern of eye-shield use. The procedures studied included flexible and rigid ureteroscopy, TURP, TURBT and PCNL, along with laparoscopic nephrectomy and pyeloplasty. Masks were examined for macroscopic droplets. Microscopic droplets will be assessed with guidance from the Scottish Police Forensic Department.

Results: Eye-shields from 111 cases performed by five surgeons were assessed. Macroscopic evidence of blood contamination was identified in 25 cases (22.5%). Masks from 45% of laparoscopic nephrectomies, 25% of laparoscopic pyeloplasties, 23% of flexible ureteroscopies and 15% of cystoscopies were contaminated.

Conclusion: Splash injuries remain commonplace even with the use of video-endoscopy. Surgeons and nursing staff should be encouraged to wear eye and face protection when undertaking both endoscopic and laparoscopic urological procedures.

U19

Evidence against the validity of nitrite testing for urinary tract infection

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Introduction: Urine dipstick for nitrite is widely accepted for detecting infection but a haemocytometer detection of pyuria $\geq 10 \mu\text{l}^{-1}$ is the best validated method. In a previous study of 918 specimens from symptomatic patients, showing pyuria $\geq 10 \mu\text{l}^{-1}$, only 63 (7%) were nitrite positive. Of 278 specimens showing bacteriuria $\geq 105 \text{ cfu ml}^{-1}$, 29 (10%) were nitrite positive. The study examined fresh urine. We examined the effect of test timing on the outcome.

Patients: A total of 132 patients with symptoms of lower urinary tract dysfunction were assessed. They described various combinations of pain, frequency urgency and incontinence.

Methods: Urine was examined on collection by dipstick and by haemocytometer. The sample was stored at room temperature and regularly tested for nitrite for up to 14 days.

Results: Ninety-four of 132 became nitrite positive after a mean of 53 h (95% CI = 40, 65). Of 77 specimens without pyuria $\geq 10 \mu\text{l-l}$; 51 (66%) turned positive and Of 55 pyuric specimens 43 (78%) turned positive; an insignificant difference.

There was no difference in time to change between pyuria and clear urine samples.

Conclusion: Nitrite in the urine does not reflect infection, even given ample time for a positive result to generate.

U20

The urological cancer observatory project
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The BAUS cancer registry (BCR) has now registered almost 200 000 new Urological cancers since 1998. In addition, from 2004 'complex cancer operations' have been registered on a separate database including outcome data. The limitations of the BCR include lack of follow-up data for most tumours. Its strengths include the documentation of staging, pathological and PSA levels. In order to improve the accuracy of data extracted from the BCR a combined database has been constructed with input of cancer registry and HES data. Each database's strengths are increased by combining the three outcome data. The structure of the database will allow cohorts of patients selected from the BCR, with accurate staging and grading, to be followed through the course of their disease. The number, frequency and type of hospitals interven-

tions can be investigated as well as outcome. The database project will be presented. Examples of projects arising from the combined database will be used to illustrate its value. These include the mapping of the natural history of non-invasive bladder cancer, the impact of a diagnosis of bladder cancer on NHS resources and the number and type of hospital episodes prior to death in men with advanced prostate cancer.

U21

High Intensity Focused Ultrasound (HIFU) as a salvage treatment for recurrent prostate cancer after brachytherapy – a feasibility study

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Introduction: HIFU has been used as a minimally invasive salvage treatment for localized prostate cancer with encouraging results. HIFU allows the destruction of tissue at depth without damaging intervening structures and its favourable side effect profile offers advantages over other treatment modalities. Patients treated with low-dose brachytherapy have, to date, been excluded from clinical trials since the effects of the seeds on the HIFU treatment are not fully understood.

Methods: Laboratory studies were performed using a commercially available, trans-rectal HIFU transducer (EDAP-TMS, France) submerged in a Perspex tank of degassed water. 'Dummy' (non-radioactive) brachytherapy seeds (Nucletron-BV, Netherlands) were placed in the acoustic field and pressure measurements were made. Seeds were then implanted into *ex-vivo* bovine tissue and the volume of ablated tissue recorded and compared to control tissue containing no implanted seeds, using identical exposure parameters.

Results: Seeds lying close to the focus of the beam led to a reduction of acoustic pressure of up to 90%. The volume of

ablated tissue was reduced (17%) and displayed greater variability in magnitude with implanted seeds than found in controls.

Conclusions: Reduced predictability and extent of ablation in the presence of seeds will clearly have implications for future clinical HIFU treatments.

U22

Testicular microlithiasis: prevalence and risk of concurrent and interval development of testicular tumour in a referred population

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Aims: To identify prevalence of testicular microlithiasis on ultrasound in a referred population and risk of concurrent and interval testicular tumour development.

Methods: Retrospective review of our radiology database revealed 4363 scrotal ultrasounds were performed over a 6-year period. Ultrasound findings were correlated with our hospital pathological database. The association of intratesticular microlithiasis and confirmed testicular cancers were assessed by means of a Fisher Exact test.

Results: Testicular microlithiasis was identified in 32 of the 4259 patients (0.75% of screened population). In the same time period 83 testicular tumours were identified on initial scanning (2.00% of screened population). Three patients with tumour had co-existing microlithiasis (9.4% incidence), whilst a further two had interval development of tumour. The follow-up of the microlithiasis patients ranged from 3 to 72 months (mean 33.9 months, median 40 months).

Conclusions: Interval development of testicular tumour is a documented phenomenon. As the incidence in detection of microlithiasis increases secondary to advances in ultrasound technology, follow up becomes financially prohibitive. We advocate regular self examination as the primary follow-up of otherwise well patients with testicular microlithiasis.