Moderated Poster Session 1: Penis, Testis, Urethra
Monday, November 2
10:45-12:15

MP-01.01
Penile Fracture: Long Term Outcome of Immediate Surgical Intervention
Ibrahie M E, El-Tholo H, El-Assmy A, Hekal I, Molsen T
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Introduction and Objective: To present the long term outcome of immediate surgical intervention.

Materials and Methods: Between 1986 and 2008, 159 patients 18 to 72 years old (mean age 34 at presentation) were evaluated after blunt trauma to the erect penis. The interval from injury to presentation was between 1 and 96 hours. Immediate Surgical intervention used in 155 cases intraoperative evaluation of the corpora and urethra by radiography or saline injection (exclude 4 patients) were treated conservatively for presumed penile fracture. Those patients were contacted by mail or phone and re-evaluated. All patients re-evaluated sexual history and local examination. Patients with erectile dysfunction were evaluated by color duplex Doppler ultrasonography.

Results: Eighty-two patients were injured during sexual intercourse and 77 injured during penile manipulation and direct trauma injury involved unilateral and bilateral corporal rupture in 139 and 3 cases, respectively, and urethral injury in 14. At follow-up 112 of the 141 patients available reported no complications at all, while 29 patients reported complications: painful erection in 2 patients, penile deviation in 5 patients, both in 1 patient, erectile dysfunction in 11 patients, palpable plaque in 14 patients.

Conclusions: Vigorous sexual intercourse was found to be the most common cause of penile fracture whatever the geographical distribution. Immediate surgical intervention has good long term outcome regarding low morbidity, short hospital stay, and rapid functional recovery and not associated with serious complications.

MP-01.02
A Comparative Study of Buccal Mucosa Graft and Penile Pedicle Flap for Reconstruction of Anterior Urethral Strictures
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Introduction and Objective: To retrospectively compare the outcome of buccal mucosa graft and penile pedicle flap for substitution urethroplasty.

Materials and Methods: Between January 2002 and December 2006, 116 male patients with anterior urethral strictures underwent substitution urethroplasty. The length of stricture ranged from 2 cm to 12 cm (mean 6.1). The mean age of the patients was 45 (rang 17−80) years. Eighty-two patients were treated with buccal mucosa graft substitution urethroplasty, and 34 patients were applied with penile pedicle flap substitution urethroplasty. Stricture recurrence and the complications associated with each technique were compared.

Results: The patients had a mean follow-up of 38 months (14−54). The overall success rate was 82% (95 of 116). Stricture recurrence was noted in 15 patients of the buccal mucosal graft (18.3%) and 6 patients of the penile pedicle flap (17.6%). Postvoid dribbling, flap/graff pseuodiverticulum and ejaculatory dysfunction occurred in 9 (64%), 2 (14%) and 2 (14%) in the ventral onlay, and 12 (12%), 4 (4%) and 2 (2%) in the dorsal onlay. (P=0.01). There was no significant difference in fistula and erectile dysfunction among the various techniques.

Conclusions: There was no significant difference in stricture recurrence with two kinds of substitutional material. In postvoid dribbling, flap/graff pseudodiverticulum and ejaculatory dysfunction, dorsal free graft/flap onlay urethroplast gives better results than ventrally placed free grafts/flaps. Dorsal onlay buccal mucosal urethroplasty is a versatile procedure and associated with fewer complications than other substitution methods.

MP-01.03
The Long Term Results of Modified Plication of the Tunica Albuginea in the Congenital Penile Curvature
Jung G., Park S., Ye J
Smile Jung's Urology, Busan, South Korea

Introduction and Objectives: To determine the long term effectiveness of modified plication technique performed under PGE1 induced erection in correcting congenital penile curvature. We had evaluated patients who were at least one year past their last operation.

Materials and Methods: Charts and telephone interviews were conducted on 126 consecutive patients from 15 to 36 years old (average: 27.5) who underwent modified penile plication between March 1997 and March 2007. The operation was performed under local anesthesia and PGE1 induced erection. Parallel incision 5 mm apart and about 8 mm long were made through tunica albuginea. Then outer edges of incisions are approximated with sutures using 2-zero absorbable monofila-ment polyglyconate and 3-zero absorbable polypropylene in way that buries knot.

Results: Preoperative complaints included difficult intercourse in 81 (64.3%), poor self-image in 24 and partner discomfort in 21. Curvature ranged from 35 to 80 degree (average: 63.5). Postoperatively, 120 of 126 cases (95.2%) had a successful outcome, based on the self-documentation of a straighter penis. Three patients were undercorrected and 2 were overcorrected. All 5 patients were re-corrected within 1 month. As time went on, 11 (8.7%) patients had reoccurred, of which 6 patients had their first re-operation, 3 patients had second re-operation, and 2 patients had third re-operation to resolve the reoccurrence. One year after the last operation, 95% of patients reported straight erections and 5% reported almost straight, but acceptable, erections.

Conclusions: Modified penile plication is a simple, safe method and also, as seen in the reoccurrence, it is efficacious in the operation and superior on the treatment. In long term results, we think that it is a good method to correct congenital penile curvature.

MP-01.04
Management of Chronic Orchialgia: Let's Keep It Simple
Khanna S
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Introduction and Objectives: Chronic orchialgia is defined as continuous or intermittent unilateral or bilateral testicular pain of one month or longer duration necessitating the patient to seek medical advice. Chronic testicular pain is an interesting and not an uncommon urological problem. Although the causes of acute scrotal pain have been thoroughly reviewed in the literature, not much is written about chronic orchialgia. The help of urodynamics has been taken to diagnose such patients who indeed have bladder neck obstruction and who suffer from referred pain to the testicles from the bladder neck.
Materials and Methods: Between July 1999 and Dec 2008 a total of 500 patients with chronic orchialgia were seen. The youngest was 18 years and the oldest was 61 yrs. Sixty-seven percent were married. Years of suffering was noted; 212 patients suffered for less than a year and 32 had suffered for more than 4 years. Detailed history of LUTS was taken and individuals symptoms have been quantified. Urine routine, Ultrasound Examination of kidneys, ureter and bladder with residual urine and for B/L hemiscrotum and X-ray KUB was done in all cases. MCU, CMG and pressure flow studies were done in first 50 cases. Patients with torsion, hernia urederic stones and epididymo-orchitis were excluded. Patients were put on an increasing dose of Alpha blockers and result evaluated. Patients who did not respond to drugs were subjected to bladder neck incision.

Results: They were diagnosed to have bladder neck obstruction in all cases. There were 93.4% of patients who responded to alpha blockers. Those who did not respond to drugs were subjected to bladder neck obstruction in all cases.

Conclusion: Pain sensation from the testis is sub served by sympathetic fibers with cells stationed at T10 – L1 level the same level as of the bladder neck. The latter is rich in alpha receptors. Even anti-biotics and anti-inflammatory drugs administered in large doses fail to provide any relief in majority of the patients. Local examination in most of these patients is normal; thus, mere awareness about bladder neck obstruction makes the hole management of testicular pain a very sample affair. How miraculously the alpha blockers offer rapid relief and patients become pain free is a subject to be tried and believed.

MP-01.05
Organotypic Mouse Genital Tuber culture as a Model for the Investigation of the Effect of Estrogen on Fetal Penis and Urethral Development
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Introduction and Objective: The genital tuber (GT), an anlage of the external genitalia, differentiates into the penis in males and the clitoris in females. Estrogen plays an important role in the development and differentiation of various organs that are hormonally sensitive. Maternal exposure to synthetic estrogen has been shown to disrupt urethral seam closure in male offspring, causing hypospadias. The purpose of this paper was to develop an organotypic genital tubercle culture system in vitro and to use it to investigate the direct effects of hyperestrogenic state on fetal mouse penile and urethral development.

Materials and Methods: Genital tubercles were dissected from E14.5d C57Bl/6 male mouse fetuses and cultured using an air-liquid interface on a microporous membrane support soaked in synthetic medium. Cultures were separated into four groups. Groups 1–3 were supplied with 10 nM dihydrotestosterone, estradiol, and 10 nM dihydrotestosterone plus estradiol, respectively. Group 4 was cultured in hormone-free medium. After culture for 36–72 hours, morphological, histological, proliferation, apoptosis, androgen signaling and activating transcription factor 3 analyses were performed.

Results: The physiological concentration of 10nM DHT is essential for genital tubercle growth in vitro. Androgen-induced growth and urethral development was significantly suppressed by high-dose estrogen. Concurrently, we observed increased apoptosis and decreased proliferation in the mesenchyme. Meanwhile, androgen signaling was disrupted and activating transcription factor 3, a factor related to hypospadias genesis, was upregulated.

Conclusions: High-dose estrogen suppressed male genital tubercle development in vitro. In addition, we showed that the organotypic genital tubercle culture system in vitro consisting of both urethral epithelium cells and mesenchyme cells can recapitulate the hormonal sensitivities of fetal penile and urethral development. This method is potentially useful for studying the effects of various factors, particularly endocrine disruptors.

MP-01.06
Long Term Follow Up of IFN-A2b Effects for Mumps Orchitis
Soonchunhyang University Hospital, Urology, Cheonan, South Korea

Introduction and Objective: Mumps orchitis occurs in 20 to 35% of cases of mumps in adolescent boys and young men. The most common complication of mumps orchitis is testicular atrophy and accompanied infertility. Several studies show that treatment with Interferon-alpha2b appear to be effective, but they are usually short-term results. We analyzed effectiveness and safety of Interferon-alpha2b, retrospectively.

Materials and Methods: We studied 20 patients who had been treated with IFN-a2b and followed up for more than 5 (5-18) years from January 1990 to December 2003. There were 10 patients of control group. All patients were received systemic treatment with IFN-a2b (3 × 106 IU per day) for 6 days. The patients’ medical history, therapeutic measures and clinical outcomes were reviewed, and scrotal color doppler ultrasonography, semen analysis and paternity were investigated at follow up. The criteria for testicular atrophy have been set according to the contralateral testicular volume reduction of 20%.

Results: All acute symptoms of IFN-a2b treated group disappeared earlier than control group, within 3 to 4 days of treatment. Asthenosperma were likely to occur in control than IFN-a2b treated group. No incidence of testicular atrophy and adverse effects of IFN-a2b treated group were observed, but 2 patients in control group found to be testicular atrophy. The paternity was possible in 2 of 3 married men, compared to no paternity in control group.

Conclusions: Our results show that systemic treatment with IFN-a2b is effective and safe in symptomatic treatment and testicular atrophy after mumps orchitis.

MP-01.07
Microvascular Autotransplantation for Patients with Intra-Abdominal Testis and the Evaluation on their Psychological Condition
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Introduction and Objective: The operative management of high intra-abdominal testes is controversial, largely because there is no method of orchiopexy that can reliably produce good results.

Materials and Methods: We performed 9 cases microvascular autotransplantation. The patients ranging in age from 3.5-16 years (mean age 8.5 years) were high in intra-abdominal testes. All had good results (100% success) in 3 months, follow-up. Eight of 9 cases were followed up for 8-10 years (mean 8.9 years); 11 testes of 8 patients were usually short-term results. We analyzed effectiveness and safety of Interferon-alpha2b, retrospectively.

Materials and Methods: We studied 20 patients who had been treated with IFN-a2b and followed up for more than 5 (5-18) years from January 1990 to December 2003. There were 10 patients of control group. All patients were received systemic treatment with IFN-a2b (3 × 106 IU per day) for 6 days. The patients’ medical history, therapeutic measures and clinical outcomes were reviewed, and scrotal color doppler ultrasonography, semen analysis and paternity were investigated at follow up. The criteria for testicular atrophy have been set according to the contralateral testicular volume reduction of 20%.

Results: All acute symptoms of IFN-a2b treated group disappeared earlier than control group, within 3 to 4 days of treatment. Asthenosperma were likely to occur in control than IFN-a2b treated group. No incidence of testicular atrophy and adverse effects of IFN-a2b treated group were observed, but 2 patients in control group found to be testicular atrophy. The paternity was possible in 2 of 3 married men, compared to no paternity in control group.

Conclusions: Our results show that systemic treatment with IFN-a2b is effective and safe in symptomatic treatment and testicular atrophy after mumps orchitis.
are palpably normal and in satisfactory scrotal position. Their psychological conditions were evaluated by the self-report symptom inventory checklist 90. A group of normal males were evaluated as a control group. The scores of two groups showed non-significant difference (P > 0.05, t-test). Our result of this procedure was beneficial for the patients' psychological development and probably prevents psychological disorder caused by anochia or testis atrophy after orchiopexy. Successful rates of several surgical operations about cryptorchidism were compared.

**Conclusions**: Autotransplantation was suitable for high intra-abdominal testis with short vascular pedicle.

**MP-01.08**
Effect of Korea Red Ginseng on Testicular Tissue Injury after Testicular Torsion and Detorsion
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**Introduction and Objective**: Testicular torsion is a urologic emergency. A testis injury produced by reperfusion can be more severe than that induced by ischemia. The reperfusion component typically involves the generation of toxic reactive oxygen species (ROS) with the return of blood following a period of ischemia. The present study was designed to determine whether KRG protected the rat testis against dysfunction and oxidative stress induced by IR injury.

**Materials and Methods**: Six-week-old male Sprague-Dawley rats were randomly divided into four group: Sham operated group (C), sham operated and KRG-treated group (K), 2 hours torsion and detorsion group (T), 2 hours torsion and detorsion and KRG-treated group (T+K). The C and T groups were fed tap water while the K and T+K groups were fed water with KRG for 4 weeks. After 4 weeks, the K and T+K groups were fed water with KRG for 4 weeks. After 4 weeks, the rats were anesthetized and the left testis was removed. We measured the testis weight, hormonal level (FSH, LH, testosterone) from left renal vein. Blood testis weight, hormonal level (FSH, LH, testosterone) from left renal vein. Blood.

**Results**: There are significant differences in the testicular weight between groups T and T+K. There are no significant differences in the hormonal level between the 4 groups. The mean level of Fort showed a marked increase following T compared with the C group (p < 0.05). KRG administration removed the increase in testis Fort level (p < 0.05). The basal testis superoxide was significantly increased in the T group (p < 0.05). The superoxide level was significantly decreased by treatment with KRG (p < 0.05). In the histologic evaluation, T group shows cellular disarray lack of cellular cohesiveness, degenerative change in the germinal cells and lessen distinct in the seminiferous tubule but T+K group show germinal epithelial layer looks nearly normal.

**Conclusion**: The protective effect of KRG on testis function is due to its antioxidant activity. The present study demonstrated that KRG recovered the testis dysfunction caused by ischemia and the subsequent reperfusion in the rat testis through the suppression of superoxide production.

**MP-01.09**
Epidemiology of Male Urethral Stricture Disease: Evaluation of a Contemporary Cohort of Patients
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**Introduction and Objective**: To evaluate the socio-demographics and etiology of male urethral strictures in a contemporary cohort of patients.

**Materials and Methods**: From April 2007 to March 2008, 145 men with proven urethral strictures attending our hospital were interviewed to obtain socio-demographic data. Written informed consent was obtained from all subjects. Additional information about stricture etiology and management was obtained from the medical records. The data were compared to the findings in a previous study of 120 men with strictures evaluated in the same clinic from January to December 1991 (Steenkamp JW. S Afr Med J 1994;84:267-28).

**Results**: Patient age: mean 50.5, range 12-89.2 years. Occupation: pensioners 38%, labourers 33%, unemployed 13%, current prison inmates 7%, professionals 6.5%, previously prison inmates 38%. Years at school: median 8, range 0-14 years; total schooling 0-5 years = 29%, 6-10 years = 73%, >10 years = 28%. Marital status: currently married 51%, never married 27%, divorced 10%, widower 8%. Number of children: median 3, range 0-10. Age at start of sexual activity: median 17, range 11-41 years. Number of sex partners: median 4, range 1-85. Previous circumcision 31%, previous pulmonary tuberculosis 17%, syphilis serology positive 10%, HIV positive 6.5%. Smoking 55%, alcohol use 50%, drug use 22%. Etiology of stricture: catheterization 50%, urethritis 28%, straddle injury 7%, pelvic fracture 3%. Time from catheterization to diagnosis of stricture: mean 9.6, median 5.1, range 1-37.5 years. Time from urethritis to diagnosis of stricture: mean 15.6, median 13.2, range 1-46.7 years. Part of the urethra involved by stricture: membranous 22%, bulbar 76%, penile 35%, external meatus 10% (more than one part was involved in some patients).

**Conclusions**: Differences between the 1991 versus 2007-08 cohorts include: occupation: labourer 53% vs 33%; schooling 6-10 years 39% vs 73%; divorced 5.5% vs 10%; drug users 10% vs 22%; etiology urethritis 45% vs 28%, mean time from urethritis to stricture diagnosis 21.4 vs 15.6 years; catheterization 10% vs 30%, mean time from catheterization to stricture diagnosis 7 vs 9.6 years. These data provide unique information on the evolution of socio-demographic and etiological factors in urethral stricture disease over time.

**MP-01.10**
Hydrostatic Pressure of Idiopathic Testis Hydrocele in Adults as a New Success: Parameter of Sclerotherapy about 90 Controlled Cases
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**Introduction and Objectives**: Sclerotherapy is a mini-invasive and an effective method of treatment of idiopathic testis hydrocele (ITH). Even with the new sclerosing products, recurrences are not exceptional and they make a real problem for the patient and the urologist. The purpose is to compare the effectiveness of sclerotherapy with Povidone iodine (Betadine) versus Polidocanol 3% (Aetoxisclerol) in the treatment of ITH and evaluate a new parameter: intravaginal hydrostatic pressure on the risk of recurrence.

**Materials and Methods**: From May to October 2007, a total of 90 adult patients with ITH were treated by sclerotherapy. The mean age was 53.1 years (17-85). Pre-operative physical examination was performed by a single urologist in the ambulatory setting. All patients underwent a scrotal ultrasonography to confirm the
diagnosis and determine any associated pathology (testis cancer). Hydrocele was bilateral in only 13 cases. Patients were randomized into two groups:

- Group I: instillation of 5 ml of Povidone-iodine (44 patients).
- Group II: instillation of 2 ml of Atoxicisclerol for every 100 vaginal liquid aspirated (46 patients).

Before hydrocele drainage a spinal manometer was used to measure hydrostatic pressure in the hydrocele. A complete evacuation of the hydrocele was performed under ultrasonographic control. Clinical and ultrasonographic controls were conducted at 1, 3, 6 and 12 months. In cases of early recurrence a second sclerotherapy cure was indicated.

**Results:** The two groups were comparable in age, hydrocele side, hydrocele volume and hydrostatic pressure of the hydrocele (table).

<table>
<thead>
<tr>
<th>Group I (44)</th>
<th>Group II (46)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age (years)</td>
<td>51 (17-85)</td>
</tr>
<tr>
<td>Hydrocele side (R/L/Bilat)</td>
<td>15/23/6</td>
</tr>
<tr>
<td>Volume (cm)</td>
<td>280 (19-533)</td>
</tr>
<tr>
<td>Hydrostatic pressure (cm H2O)</td>
<td>18.6 (2.5-55)</td>
</tr>
<tr>
<td>Recurrence at 1 month</td>
<td>20.5%, n = 9</td>
</tr>
<tr>
<td>Overall success rate</td>
<td>81.8%, n = 36</td>
</tr>
</tbody>
</table>

**Conclusion:** The sclerotherapy for ITH with Aetoxisclerol is more effective than Betadine. Hydrostatic pressure of ITH in case of early recurrence is more effective than Betadine, hydrostatic pressure remains high. Atoxicisclerol may be an alternative to Betadine. Hydrostatic pressure of ITH is strongly correlated to the risk of recurrence and failure.

**MP-02.01 Cetorexil Inhibits Contraction of Prostate Strips from Benign Prostatic Hyperplasia (BPH) Patients Induced by the Alpha, Adrenoceptor Agonist Phenylephrine**

**Fensterle J1, Engel J2, Behr-Roussel D2, Comperat E3, Droupy S3, Valibre P4, Giuliano F5**

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**Introduction and Objective:** In Phase II trials, the luteinizing hormone releasing hormone (LHRH) antagonist cetorexil improved symptomatic BPH with a rapid onset of action and a prolonged activity. Recently we have demonstrated LHRH receptor expression in prostatic tissue which suggests that cetorexil might have direct effects on prostatic tissue. To investigate the effect of cetorexil on alpha1 adrenoceptor mediated tissue contraction, we assessed its inhibitory activity on phenylephrine-induced contraction of human prostate strips from BPH patients.

**Materials and Methods:** Human prostate samples were obtained from BPH patients undergoing adenomectomy (average age 76 +/- 4 years). From each donor, eight strips were excised from the prostatic sample and mounted to force transducers. The cut-off value of pressure was 19 ± 1.2 cm H2O. In case of recurrence hydrostatic pressure remains high.

**Conclusion:** The sterotherapy for ITH with Atoxicisclerol is more effective than Betadine. Hydrostatic pressure of ITH is strongly correlated to the risk of recurrence and failure.

**MP-02.02 Role of Luteinizing Hormone Releasing Hormone (LHRH) in Calcium Signaling in the Prostate: the LHRH Antagonist Cetorexil Modulates Noradrenaline Induced Alpha1-Adrenoceptor Signaling**

**Oliver V1, Fensterle J2, Engel J2, Haynes J1, 1Monash University, Parkville, Australia; 2Aeterna Zentaris GmbH, Frankfurt, Germany**

**Introduction and Objectives:** Luteinizing hormone releasing hormone (LHRH) receptor antagonists, such as cetorexil, improve symptoms in patients suffering from benign prostatic hypertrophy (BPH). The long lasting effect and the immediate onset of action with respect to symptom relief implies that the mechanism of action of cetorexil goes beyond the partial and transient testosterone suppression and reduction of prostate volume (Debruyne et al., Eur Urol 2008). As increased prostate contractility significantly contributes to BPH, this study investigated the effect of cetorexil on intracellular calcium ([Ca2+]i), an important determinant of prostatic contractions, which are primarily regulated by noradrenaline acting at alpha1-adrenoceptors ([Ca2+]i elevation) and at adenylyl cyclase-coupled beta-adrenoceptors ([Ca2+]i, inhibition) (Michel et al., Br J Pharmacol 2006).

**Materials and Methods:** Human cultured prostatic stromal cells (HCPSC) were employed for calcium imaging microscopy, where changes in basal [Ca2+]i over a 9 min time frame in response to noradrenaline (30 μM) were recorded in the presence or absence of modulators of adenylyl cyclase, beta-adrenoceptors and LHRH receptors.

**Results:** In our cultures, the [Ca2+]i, [alpha1-adrenoceptor ligand noradrenaline (30 μM) did not result in an increase of [Ca2+]i, Coincubation with the beta3-adrenoceptor antagonist, atenolol (1 μM), the adenylyl cyclase inhibitor MDL 12350A (20 <113M), but not the beta3-adrenoceptor antagonist ICI 118551 (100 nM), restored noradrenaline induced increase of [Ca2+]i, suggesting that noradrenaline induced alpha1-adrenoceptor signaling suppresses
MP-02.03  
**The LHRH Receptor Antagonist Cetrorelix Exhibits Agonistic Activity Against the Orphan GPCR Mrgx2: A Novel Mode of Action?**

Aicher B, Schmidt P, Engel J, Guenther E  
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**Introduction and Objective:** The luteinizing hormone releasing hormone (LHRH) receptor antagonist Cetrorelix improves the symptoms of benign prostatic hyperplasia (BPH) in a rapid and persistent manner, suggesting that not only mild and transient testosterone suppression is the underlying mechanism of action. In this study we have profiled Cetrorelix against a broad panel of G protein-coupled receptors (GPCRs) to identify other targets than the LHRH receptor, which may contribute to the beneficial clinical activity of Cetrorelix in BPH patients.

**Materials and Methods:** A panel of 132 diverse GPCRs has been screened for Cetrorelix agonistic and antagonistic activity followed by dose response analysis. A positively identified receptor has been analysed for expression in prostate samples from 15 BPH patients and 5 controls by immunohistochemistry.

**Results:** Comprehensive GPCR specificity profiling identified submicromolar agonistic activity of Cetrorelix for only one orphan receptor, i.e. the MAS-related GPCR, member 2 (MrgX2), with an EC50 value of 210 nM. Analysis of MrgX2 expression by immunohistochemistry of prostate samples revealed in normal prostate most prominent staining for MrgX2 in glandular epithelium, whereas fibromuscular stroma stained only faintly. In contrast, BPH tissue showed slightly more prominent staining in glandular epithelium in hyperplastic samples and very prominent staining in fibromuscular stroma.

**Conclusions:** GPCR specificity profiling confirmed that Cetrorelix is a highly specific LHRH receptor antagonist. Agonistic activity of 210 nM EC50 has been obtained only for the orphan receptor MrgX2. The recent identification of the putative MrgX2 ligands Cortistatin and PAMP20 as well as MrgX2 tissue distribution point to an involvement of this receptor in diverse processes like nociception, catecholamin secretion and inflammation. Here we show that MrgX2 is expressed in normal prostate most prominent in glandular epithelium. Interestingly, the MrgX2 expression in BPH tissue is significantly increased in fibromuscular stroma, suggesting a disease-dependent regulation of MrgX2 expression. Since inflammation is an important disease parameter linked to BPH, experiments are under way to evaluate an anti-inflammatory action of Cetrorelix via the receptor MrgX2. Such effects may contribute as novel mode of action to the beneficial effects of Cetrorelix in BPH.

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MP-02.04  
**Reduction in Prostate Size after Treatment with Cetrorelix in a Rat Model of Benign Prostatic Hyperplasia (BPH)**

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**Introduction and Objective:** Various clinical trials have documented that therapy with LHRH antagonist cetrorelix causes a marked and long lasting improvement in lower urinary tract symptoms (LUTS) without impairment of gonadal function in men with symptomatic BPH. An explanation for the long lasting effects of cetrorelix could be the downregulation of mRNA levels with various growth factors in the prostate which was inhibited by the LHRH antagonist cetrorelix (1 μM). These results indicate that LHRH modulates HCPSC to amplify the response to noradrenalin, indicating that cetrorelix interferes with adrenoceptor signaling which might contribute to immediate symptom relief in BPH.

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MP-02.05  
**Cold Stress Stimulation Induced Urinary Frequency Is Triggered by Skin Transient Receptor Potential Melastatin (TRPM) 8, and Suppressed by Intravenous Alpha, Adrenergic Antagonists in Normal Conscious Rats**

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**Introduction and Objective:** We sometimes experience that cold stress causes urinary frequency; however, the mechanism is not clear. Recently, TRPM (transient receptor potential melastatin) 8, activated by menthol or cool temperature (<25°C), was reported to play important roles in micturition reflex. So we investigated if the sudden cold stress induced the urinary frequency, the relationship between stimulation of TRPM8 and detrusor overactivity, the expressions of TRPM8 in the several parts of rat skin, and this frequency could be suppressed by alpha 1 adrenergic antagonists.

**Materials and Methods:** Continuous cystometry was performed in conscious rats at room temperature (RT, 28±2°C) and for 40 minutes at cold temperature (CT,
Patients undergoing total cystectomy for BPO (n = 16). All of the patients with DO/BPO had detrusor overactivity and bladder outlet obstruction according to video-urodynamic studies or ambulatory urodynamic studies done before surgery. Detrusor muscle strips were mounted in 10-ml organ baths containing Krebs solution, and concentration-response curves (CRCs) for carbachol were obtained in the presence of various antagonists (toloferoline, solifenacin, trospium, propiverine, oxybutynin, and imidafenacim) or vehicle.

Results: Carbachol caused concentration-dependent contraction of normal detrusor, with a mean pEC50 value and maximum response of 6.56 ± 0.18 and 9.55 ± 0.72 g, respectively. Carbachol also induced concentration-dependent contraction of DO/BPO detrusor, with a mean pEC50 and maximum response of 5.75 ± 0.04 and 9.79 ± 1.7 g, respectively. All antimuscarinic agents competitively antagonized CRCs to carbachol with high affinities in normal bladder. The rank order of mean pA2 values was as follows: trospium (10.1), imidafenacim (9.3), solifenacin (8.8), toloferoline (8.6), oxybutynin (8.3), and propiverine (7.7). The effects of these antimuscarinic agents did not change when tested with DO/BPO detrusor, suggesting that each antimuscarinic agent has a similar effect in this condition. Schild plots showed a slope corresponding to unity, except for propiverine with DO/BPO detrusor.

Conclusions: All of the antimuscarinic agents tested could inhibit detrusor contraction induced by muscarinic receptor stimulation with same affinity in both the normal state and in DO/BPO.

MP-02.07
Effects of Antimuscarinic Agents on Carbachol-Induced Contraction of Normal Human Detrusor and Overactive Detrusor Associated with Benign Prostatic Obstruction
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Introduction and Objectives: The present study was performed to investigate whether the antagonist effect of various antimuscarinic agents on carbachol-induced contraction differed between normal human detrusor muscle and detrusor overactivity (DO) in patients with benign prostatic obstruction (BPO).

Materials and Methods: Samples of human bladder muscle were obtained from patients undergoing total cystectomy for bladder cancer (normal bladder, n = 16), and those undergoing retropubic prostatectomy (n = 16). All of the patients with DO/BPO had detrusor overactivity and bladder outlet obstruction according to video-urodynamic studies or ambulatory urodynamic studies done before surgery. Detrusor muscle strips were mounted in 10-ml organ baths containing Krebs solution, and concentration-response curves (CRCs) for carbachol were obtained in the presence of various antagonists (toleratdine, solifenacin, trospium, propiverine, oxybutynin, and imidafenacim) or vehicle.

Results: Carbachol caused concentration-dependent contraction of normal detrusor, with a mean pEC50 value and maximum response of 6.56 ± 0.18 and 9.55 ± 0.72 g, respectively. Carbachol also induced concentration-dependent contraction of DO/BPO detrusor, with a mean pEC50 and maximum response of 5.75 ± 0.04 and 9.79 ± 1.7 g, respectively. All antimuscarinic agents competitively antagonized CRCs to carbachol with high affinities in normal bladder. The rank order of mean pA2 values was as follows: trospium (10.1), imidafenacim (9.3), solifenacin (8.8), toloferoline (8.6), oxybutynin (8.3), and propiverine (7.7). The effects of these antimuscarinic agents did not change when tested with DO/BPO detrusor, suggesting that each antimuscarinic agent has a similar effect in this condition. Schild plots showed a slope corresponding to unity, except for propiverine with DO/BPO detrusor.

Conclusions: All of the antimuscarinic agents tested could inhibit detrusor contraction induced by muscarinic receptor stimulation with same affinity in both the normal state and in DO/BPO.

MP-02.06
Effects of Antimuscarinic Agents on Carbachol-Induced Contraction of Normal Human Detrusor and Overactive Detrusor Associated with Benign Prostatic Obstruction
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Introduction and Objectives: The present study was performed to investigate whether the antagonist effect of various antimuscarinic agents on carbachol-induced contraction differed between normal human detrusor muscle and detrusor overactivity (DO) in patients with benign prostatic obstruction (BPO).

Materials and Methods: Samples of human bladder muscle were obtained from patients undergoing total cystectomy for bladder cancer (normal bladder, n = 16), and those undergoing retropubic prostatectomy for BPO (n = 16). All of the patients with DO/BPO had detrusor overactivity and bladder outlet obstruction according to video-urodynamic studies or ambulatory urodynamic studies done before surgery. Detrusor muscle strips were mounted in 10-ml organ baths containing Krebs solution, and concentration-response curves (CRCs) for carbachol were obtained in the presence of various antagonists (toleratdine, solifenacin, trospium, propiverine, oxybutynin, and imidafenacim) or vehicle.

Results: Carbachol caused concentration-dependent contraction of normal detrusor, with a mean pEC50 value and maximum response of 6.56 ± 0.18 and 9.55 ± 0.72 g, respectively. Carbachol also induced concentration-dependent contraction of DO/BPO detrusor, with a mean pEC50 and maximum response of 5.75 ± 0.04 and 9.79 ± 1.7 g, respectively. All antimuscarinic agents competitively antagonized CRCs to carbachol with high affinities in normal bladder. The rank order of mean pA2 values was as follows: trospium (10.1), imidafenacim (9.3), solifenacin (8.8), toloferoline (8.6), oxybutynin (8.3), and propiverine (7.7). The effects of these antimuscarinic agents did not change when tested with DO/BPO detrusor, suggesting that each antimuscarinic agent has a similar effect in this condition. Schild plots showed a slope corresponding to unity, except for propiverine with DO/BPO detrusor.

Conclusions: All of the antimuscarinic agents tested could inhibit detrusor contraction induced by muscarinic receptor stimulation with same affinity in both the normal state and in DO/BPO.

MP-02.07
A Retrospective Study on Prostatic Histological Inflammation of 1257 Benign Prostatic Hyperplasia Cases and the Correlation with Serum Prostate-Specific Antigen
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Introduction and Objective: We attempted to (1) determine the characteristic of the histological inflammation in BPH; (2) identify the parameters of BPH histological inflammation that correlate with pre-surgery serum prostate-specific antigen; (3) reveal all the possible factors that correlate with pre-surgery serum PSA; and (4) identify the possible contribution of BPH histological inflammation to the symptoms and the total prostate volume of BPH.

Materials and Methods: Patients undergoing surgery at the Urology Department of West China Hospital of Sichuan University from January 2002 to July 2007 were retrospectively studied. All the histological section of prostate biopsies were reviewed in a blinded fashion and classified by histopathological characteristics of the prostatic histological inflammation infiltration. Then all the data was analyzed by a software SPSS13.0 on a computer.

Results: (1) We enrolled 1257 cases in total, the mean age is 69.2 ±7.3; the mean serum PSA concentration is 7.51 ±0.24 ng/ml. There were 454 cases that underwent TRUS before surgery, and the mean prostate volume is 53.90 ±26.68m3. (2) The periglandular inflammation was the most common pattern (96.5%). (3) Single regression analysis demonstrated that the PMNC infiltration at gland, degree of glandular inflammation, periglandular inflammation, stromal inflammation and total prostate volume correlated with serum PSA significantly (P<0.001). (4) Multiple regression analysis revealed that total prostate volume, PMNC infiltration at gland, degree of glandular inflammation correlated significantly with serum PSA concentration (P<0.05). (5) The Logistic regression analysis demonstrated the degree of glandular inflammation was the only parameter that could increase the risk of acute urinary retention by 2.71 fold; still we revealed that the cases which suffered hematuria had a bigger total prostate volume (P<0.05). (6) A significantly bigger total prostate volume in the group with PMNCs infiltration or epithelium disrupted was revealed (P<0.05).

Conclusions: (1) Histological inflammation is extensive in the biopsies of BPH. The periglandular inflammation was the most common pattern. (2) Multiple regression analysis revealed that total prostate volume, PMNC infiltration at gland and degree of glandular inflammation were the parameters correlated significantly with serum PSA concentration. (3) The theory of leakage may be the most reasonable mechanism to reveal the relationship morphologically. (4) Age correlated significantly with total prostate volume. (5) A greater total prostate volume in the group of PMNC infiltration at gland or prostatic glandular epithelium disruption was identified. (6) We found no parameter had an effect on nocturia. (7) A greater total prostate volume may be a risk factor for the incidence of hematuria. (8) Logistic regression analysis revealed that glandular inflammation may be a risk.
factor for increasing the incidence of acute urinary retention by 2.71 fold.

MP-02.08
The Differential Expression of Proteins in the Rat Urinary Bladder Following Partial Bladder Outlet Obstruction (PBOO)
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Introduction and Objective: We used proteomic approach as a tool to detect protein biomarkers in the urinary bladder of PBOO model rat, which may provide some insights into pathophysiological mechanism for benign prostatic hyperplasia (BPH).

Materials and Methods: Eight-week-old female Wistar rats weighting 160-180 g were anesthetized with 2% halothane to create PBOO. Twenty-four rats were divided into 3 groups (Sham, n=8; PBOO, n=8; PBOO removed, n=8) to investigate the urine output and mean bladder voided volumes in metabolic cage connected with a scale and a personal computer every week after BOO. Bladder tissues were harvested after 4 weeks of obstruction, and the differentially expressed proteins in 3 groups were identified by MALDI-TOF MS following 2-dimensional electrophoresis and DIGE.

Results: Total urine output over 24 hours does not change in 3 groups with increasing age, but that bladder voided volumes following PBOO decreased significantly (p<0.01), and recovered after removal of PBOO. MALDI-TOF and database searching allowed the identification of 11 differentially expressed proteins between Sham and PBOO group, but we have not found any differential protein spots between Sham and PBOO group, but we have not found any differential protein spots between Sham and PBOO group, but we have not found any differential protein spots between Sham and PBOO group, but we have not found any differential protein spots between Sham and PBOO group. Among these 11 proteins, 7 proteins showed marked up-regulation, and 4 proteins showed marked down-regulation following PBOO. Especially, the two proteins spots, the one is high homology to desmulin, and the other is high homology to a kind of ATP/GTP binding protein, is expected to be investigated further.

Conclusions: Using metabolic cage connected to a digital scale and PC every ten minutes during 24 hours is a more accurate method to monitor the micturition status of PBOO rat. Proteomic technologies have provided a valuable tool for discovering and inferring disease-associated biomarkers. By using this technology, we demonstrated that two proteins, one is probably a candidate for myopathies in PBOO, another is related to ATP/GTP binding. More comprehensive studies are being conducted to identify the two differential proteins.

MP-02.09
The Effects of 3 Types Of Alpha1-Adrenoceptor Blockers on Lower Urinary Tract Symptoms and Sexual Functions in Men with Benign Prostatic Hyperplasia
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Introduction and Objective: Lower urinary tract symptoms (LUTS) are a known risk factor for erectile dysfunction (ED). It is reported that successful treatment of LUTS with alpha-1 adrenoceptor blockers (α1-blockers) is associated with improvement of ED. On the other hand, ejaculatory disorder has attracted clinical attention as an adverse reaction to these drugs. In this study, we explored the effects on LUTS, ED, and ejaculatory functions of 3 types of α1-blockers.

Materials and Methods: One hundred thirty-seven male LUTS patients with over 50 to 80 years of age, and I-PSS > 8 were enrolled in this study. They were divided into 3 groups with respect to pre-administration severity of urinary disturbance and erectile function as assessed by I-PSS and IIEF-5. Group A; to receive naftopidil (α1D selective) 0.2mg once a day. Group B; to receive tamsulosin (α1A selective) 0.2mg once a day. Group C; to receive alfuzosin (α1D selective) 50mg once a day. Group A, B, and C were administered with Silodosin (α1-A super-selective) 4mg twice a day. Evaluations included clinical determination of I-PSS, quality of life indexes (QOL), IIEF-5, ejaculation questionnaire, Qmax, and post-void residual urine volume (PVR) detected by ultrasonography before, 1, and 3 months after treatment had ended.

Results: The mean I-PSS score improved from 7.4±7.8 to 11.7±6.9 (p<0.001) at 1 month, to 10.4±7.5 (p<0.001) at 3 months (group A), from 16.3±5.9 to 11.4±5.7 (p<0.001) at 1 month, to 10.5±6.5 (p<0.001) at 3 months (group B), from 18.4±5.2 to 14.1±5.9 (p<0.001) at 1 month, to 13.2±7.0 (p<0.001) at 3 months (group C). There was no significant difference among 3 groups. The mean IIEF-5 score changed from 6.4±6.5 to 6.3±6.9 (p=0.84) at 1 month, to 5.4±6.2 (p=0.34) at 3 months (group A), from 7.2±7.2 to 7.4±7.2 (p=0.04) at 1 month, to 7.6±7.6 (p=0.08) at 3 months (group B), from 6.0±5.2 to 5.5±4.8 (p=0.08) at 1 month, to 5.0±4.1 (p=0.22) at 3 months (group C). Group B improved significantly after 1 month treatment. The mean maximum flow rates improved from 8.5±3.4 ml/s to 11.4±4.9 ml/s (p<0.001) at 1 month (group A), from 8.7±3.6 ml/s to 11.3±5.7 ml/s (p=0.004) at 1 month (group B), from 9.0±3.9 ml/s to 10.9±5.2 ml/s (p=0.010) at 1 month (group C). There was no significant difference among 3 groups. According to the questionnaire regarding ejaculation, 35.4% of patients had sexual behaviors within 1 month before treatment. After alpha blockers treatment, 2.7%, 2.7%, and 38.2% of patients complained ejaculatory discomfort (total absence of ejaculation or reduced ejaculate volume) in group A, B, and C, respectively.

Conclusions: After 3 types of alpha1-blocker therapy, LUTS significantly improved subjectively as well as objectively. However, ED did not improve after treatment except group B. High percentage of ejaculatory discomfort was observed after treatment of group C. We should consider the characters of drugs when we administer α1-blockers.

MP-02.10
Micturating Echo Urethrography
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Introduction and Objective: Urethral stricture takes the second place after prostate glands that are the reasons of obstructive urination abnormality of men. Traditional X-ray diagnosing, aimed at precise localization, spread and urethral stricture patency is, currently, not enough for clinical practice determination. We studied the possibilities of micturating urethrography with the usage of modern ultrasonic technologies while estimating the character of the urethral stricture.

Materials and Methods: According to the results of the retrograde echo urethrography, 115 men with the urethral stricture of different parts were subjected to micturating echo urethrography. On the first stage of urethra X-ray diagnosing,
all the patients had micturating dynamic echo urethrography from transrectal approach. We estimated the back urethra lumen, determined occurrence, localization, the number and length of the stricture. The results of these ray-tracing methods of diagnosing were juxtaposed with the results of urethroscopy and operations. This study was accepted by the local bioethics committee.

**Results:** At retrograde urethrography in all the 115 cases of anterior urethra stricture we succeeded in getting the exact information about localization, length and degree of stricture manifestation. However, in localization of the stricture proximally of the diphtheritic part, the results of the retrograde urethrography in most cases did not repulse true changes of the back urethra. In the stricture of intramural, prostatic and membranous parts and the ability to miction, the micturating echo urethrography was of a big diagnostic value. The patients were also subjected to X-ray angiography of the spongy body of urethra, which gave us the chance to find out the length of the sclerotic changes of periureteric tissue. We got the full information about the degree of spongy body vascularization, the length and severity degree of sponge fibrous. The use of different methods of echo urethrography in all the cases let us to get the real information about the depth and stricture intensity. Apart from this, when analyzing the images we received the true data about the depth and intensity of periureteral fibrosis, confirmed by the results of histomorphological research. At echo urethrography there were found, so to say ‘false passages’, which had not been diagnosed according to X-ray urethrography. Their length was determined precisely. That was confirmed at urethroscopy further. The use of energy Doppler mapping let us to reveal existence of great vessels in the area of supposed operation.

**Conclusions:** Micturating echo urethrography is a modern high-quality time method of diagnosing the strictures of urethra. The particular value of this method is in determination of localization, the quantity, length, the degree of a stricture and cicatricial-sclerous process in the area of the stricture in paraurethral tissues with determination of the character of their blood supply. On the basis of the received information, it is considerably easy to choose the tactics of treatment in most cases of a big category of urological patients with favourable prognosis in postoperative period.

**MP-02.11 Understanding Chinese Patient Attitudes Toward BPH AND BPH Treatment: Results from PHELP 2006 Study**

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**Introduction and Objective:** A large-scale nationwide questionnaire survey was performed during PHELP (prostate Health Education Launch Programme 2006) to describe patient attitudes towards benign prostatic hyperplasia (BPH), BPH-related complications and treatment options.

**Materials and Methods:** A questionnaire was distributed to 17 big cities in China during PHELP 2006 which was organized by Chinese Urological Association. This analysis included men with a history of low urinary syndrome who were at least 50 years old. Interviews were conducted face-to-face for 10 minutes using a self-administered questionnaire, including the American Urological Association Symptom and Bother indexes. The survey also included questions on the perceptions and attitudes held by BPH patients and to identify their perception of, and preference for, treatment options based on patients’ personal experience. Responses were analyzed by factor and cluster analysis.

**Results:** The responses from 2878 subjects (mean age 65 years) were analyzed. Urinary frequency (28%) was the most common reason for seeking treatment for BPH, followed by straining (20%), routine medical checkup (18%). Most patients sought treatment from a Urologist (89%), or primary care physicians (11%). The prevalence of nocturia occurring 1 and 3 or more times/night was 71% and 15%, respectively. Nocturia was most frequently (45%) reported to have the greatest impact on quality of life. The risk of developing acute urinary retention and requiring prostate-related surgery was a concern for 70% of patients. Furthermore, 25% of patients feared that their symptoms might be due to cancer. Of those who considered their daily life to be affected by LUTS, only 40% sought medical care.

**Conclusions:** Moderate-to-severe LUTS is common in Chinese BPH patients.Urinary frequency is the most common reason for seeking treatment for BPH. Nocturia is the most common syndrome of BPH patient and has the greatest impact on quality of life. Greater awareness and understanding of LUTS is needed to manage symptoms and their consequences appropriately.

**MP-02.12 Benign Prostate Hyperplasia and Metabolic Syndrome**


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**Introduction and Objective:** To evaluate the relationship between anthropometric and metabolic factors and benign prostate hyperplasia (BPH) in patients with metabolic syndrome (MS) and to identify clues to the etiology of BPH.

**Materials and Methods:** We divided 287 consecutive patients, over 45 years, with metabolic syndrome, into 2 groups: group A – 202 patients with BHP and, group B – 85 patients without BPH. The diagnosis for MS was made according to International Diabetes Federation. Body weight, waist circumference (WC), hip circumference (HC), blood pressure (BP) was determined. Body mass index (BMI) was calculated. Biochemical analyses including fasting plasma glucose (FPG), HbA1c, total cholesterol (TC), triglycerides, high-density lipoprotein (HDLc), fasting plasma insulin (FPI), adiponectin, leptin, TNF alpha, IL-6 and prostate-specific antigen (PSA) were performed. Insulin resistance was assessed by the HOMA-IR index (homeostasis model assessment). The prostate gland volume was measured using transrectal ultrasound.

**Results:** Men without BPH, were younger (58.05 ± 9.1 vs. 57.91 ± 7.58 years p = 0.02). Body weight, WC, HC, BMI, BP don’t differ between groups (all p>0.05). Patients with BPH have FPG, HbA1c, total cholesterol and triglycerides significantly higher (all p<0.05). HOMA-IR, TNF-alpha, leptin levels in subjects with BPH are higher. PSA level was correlated positively with age (r=0.89, p=0.005), BMI (r=0.92, p=0.03), triglycerides (r=1, p=0.03), TC (r=0.82, p=0.09), and FPI (r=0.96, p=0.06) in BPH group. Prostate gland volume was correlated positively with age (r=0.49, p=0.005), BMI (r=0.92, p=0.0007), triglycerides (r=0.85, p=0.001), FPI (r=0.82, p=0.001), HOMA-IR (r=0.71, p=0.00), PSA level (r=0.95, p=0.01) and negatively with HDLc (r= -0.87, p=0.05), adiponectin level (r= -0.79, p= 0.005) in both groups.

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Conclusions: PSA level is influenced by age and metabolic syndrome. Obesity, elevated level of triglycerides, total cholesterol, fasting plasma insulin, HOMA-IR are associated with BPH. The findings generate a hypothesis of a causal relationship between high insulin levels and the development of BPH. Further epidemiological studies are needed to elaborate the causal relationship of insulin resistance and cytokine profiles to the development of benign prostatic hyperplasia.

MP-02.13
Does Inflammation Make BPH More Progressive?
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Introduction and Objectives: The aim of this study is to find out the role of inflammation in BPH progression.

Materials and Methods: Between 1997 and 2008, a total of 1189 patients were reviewed. Tissue samples were collected from biopsy, transurethral resection or open surgery. Clinical information such as patient’s age, prostate volume, prostate specific antigen (PSA) and history of retention was collected. The patients were divided into two groups, ≤ 65 years old (Group A) and > 65 years old (Group B). The samples were analyzed to define the microscopic structure of the BPH and to detect a Prostatic Intraepithelial Neoplasia, Atypical Stromal Actinic Proliferation, Atypical Acinar Hyperplasia or prostate cancer which was an exclusion criterion in our study. The grade of inflammation was mild, moderate or severe depending on number of inflammatory cells. Prostate volume is taken as define as BPH progression.

Results: There were 806 (67.8%) samples with mild, 146 (12.3%) with moderate and 620 (19.9 %) with severe inflammation. Due to small number of sample with moderate inflammation, this group was added to severe inflammation group. PSA in moderate/severe inflammation (median=10.3ng/ml) was higher than in mild group (median=6.8 ng/mL) (p=0.000). Prostate volume in moderate/severe inflammation (median=49.9 gr) was larger than in mild group (median=45gr) (p=0.009). There were 664 (55.8%) patients with acute urinary retention. Moderate/severe inflammation group had more retention cases (37.5%) than in mild group (25.9%), (p=0.000). There were 569 patients were in Group A and 415 patients were in Group B. In Group A, there was a difference in prostate volume between mild (median=43gr) and moderate/severe inflammation (median=47.7gr) (p=0.041). In Group B there was no significant difference of prostate volume at all in the group.

Conclusion: Inflammation has a role on progressivity of BPH, especially in younger age.

MP-02.14
Chronic Kidney Disease among Men with Lower Urinary Tract Symptoms due to Benign Prostatic Hyperplasia
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Introduction and Objectives: Currently, a paucity of information exists on chronic kidney disease in benign prostatic hyperplasia (BPH) patients with wide spectrum of severity. Controversy still continues on whether to implement routine screening of serum creatinine level to identify those with chronic kidney disease among men presenting with lower urinary tract symptoms (LUTS) secondary to BPH. Thus, we analyzed potential association of various clinical characteristics of BPH with chronic kidney disease among men presenting with LUTS secondary to BPH of varying severity.

Materials and Methods: We reviewed data of 2741 patients who presented to our clinic from May 2006 to April 2008 with LUTS secondary to BPH. For our analysis, chronic kidney disease was defined as having serum creatinine level ≥ 1.5 mg/dl. Univariate and multivariate logistic regression analyses addressed associations of chronic kidney disease with various clinical characteristics of subjects.

Results: Among our subjects, 5.9% (161 of 2741) were observed to have elevated serum creatinine level and classified as having chronic kidney disease. In multivariate analysis, peak flow rate (p = 0.001) along with history of hypertension and/or diabetes (both p < 0.001) were observed to be significantly associated with chronic kidney disease, whereas subjects’ age, body mass index, PSA level, prostate volume, postvoid residual, or total score from International Prostate Symptom Score (IPSS) questionnaire were not. When individual symptoms from IPSS were analyzed, only weak stream (p = 0.041) and hesitancy (p = 0.048), both obstruction-related, were observed to be significantly associated with chronic kidney disease status in age and comorbidity-adjusted analyses rather than irritative symptoms.

Conclusions: Our results show that bladder outlet obstruction and history of hypertension and/or diabetes are significantly associated with chronic kidney disease in men seeking management for LUTS from BPH of varying severity. Although prevalence of chronic kidney disease may be considered relatively low among these men with BPH, possibility of chronic kidney disease should be considered in those who demonstrate decreased peak flow rate, obstructive urinary symptoms, or have comorbidities such as hypertension and diabetes.

MP-02.15
Safety and Efficacy of PKRP and TURP in the Treatment of BPH: A Systemic Review
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Introduction and Objective: Benign prostatic hyperplasia (BPH) is a common problem for older men. The golden standard treatment is transurethral resection of the prostate (TURP). Bipolar plasmakinetic resection of the prostate (PKRP) is one of the alternatives that have been de-
Developed recently for curing BPH. Our study is to assess the therapeutic efficacy and safety of bipolar plasmakinetic resection technique for treating men with BPH.

Materials and Methods: We searched the Cochrane Library, MEDLINE, EMBASE, CNKI, VIP, CBM, Sichuan university library, reference lists of articles, books and abstracts and experts opinion to identify relevant randomized controlled trials. All randomized controlled trials (RCT) evaluating PKRP treatment versus traditional TURP for men with BPH were included in our study. All clinical controlled trials and retrospective study were excluded. Data extraction and assessment of methodological quality against four criteria (allocation concealment, blinding, intention-to-treat and completeness of follow-up) was performed independently by two reviewers.

Information on study design, history and treatment characteristics, urinary symptoms and urinary flow, surgery outcome and adverse events were extracted.

Results: A total of 1445 patients were randomized in the 11 trials, including 718 in PKRP group, 727 in TURP group. Nine trials were carried out by Gyrus Plasmakinetic Tissue Management System, 1 trial was carried out by Olympus TURIS System and 1 trial was carried out by Vista Controlled Tissue Resection System. All of three systems took the same mechanism of plasmakinetic resection with some design differences. The international prostate symptom score (IPSS) and quality of life score (QOL) had improved significantly in the postoperative period without difference in either group in long time follow-up. The maximum flow rate (Qmax) had also increased significantly postoperatively, and showed no statistic difference in either group in the early period but PKRP group improved more at 12 month follow-up. Residual urine decreased more in PKRP group at 12 month follow-up. The incidence of TUR syndrome and clot retention, the decreasing of hemoglobin during 24h postoperative and patients need for transfusion were significantly reduced by PKRP technique. Furthermore, PKRP technique was less likely to have shorter catheterization days. Moreover, PKRP technique was less significantly reduced by PKRP technique. Furthermore, PKRP technique was less likely to have shorter catheterization days. Furthermore, PKRP technique was less likely to have shorter catheterization days.

Conclusions: Both PKRP and standard TURP are effective alternatives for treatment of Benign prostatic hyperplasia. PKRP technique showed more effective in improving maximum flow rate in the long time follow-up (12 months) and should be safer in preventing TUR syndrome and better for decreasing bleeding. These conclusions need more high quality multicenter clinic randomized controlled trial proved.

MP-02.16
A Retrospective Study: Correlation of Histological Inflammation In Biopsy Specimens of Men Who Underwent Surgery for Benign Prostatic Hyperplasia with Serum Prostate Specific Antigen
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Introduction and Objective: We attempted to find out the correlation between BPH histological inflammation and serum PSA concentrations, and to reveal the possible mechanism.

Materials and Methods: Patients who underwent surgery at the Urology Department of West China Hospital of Sichuan University from January 2005 to July 2007 were retrospectively studied. Preoperative serum PSA and TRUS were measured. According to the histopathological classification system for chronic prostatic inflammation proposed by the CPCRN and the IPCN, we classified the histological sections of prostatic biopsy into glandular, periglandular and stromal inflammation by the anatomical location of inflammation infiltration. Then the glandular inflammation was graded from 0 to 3 according to the inflammatory aggressiveness. The periglandular and stromal inflammation were graded from 0 to 3 according to the inflammatory density. The correlation between histological inflammation and serum PSA was studied by multiple regression model in conjunction with age and total prostatic volume.

Results: A total of 454 patients with exclusively BPH were analyzed. The periglandular inflammatory infiltration was the most common pattern (96.5%). Single regression analysis revealed that total prostatic volume, the aggressiveness of glandular inflammation, the intensity of periglandular and stromal inflammation were correlated with serum PSA. But the multiple regression analysis revealed only the total prostatic volume and the aggressiveness of glandular inflammation were correlated significantly with serum PSA (R = 0.389, 0.289, P = 0.000), while the other parameters were not.

Conclusions: The aggressiveness of glandular inflammatory infiltration in BPH is a significant contributor to elevated serum PSA levels, while the inflammatory infiltration in periglandular or stromal was not. The theory of leakage may be the most reasonable mechanism to reveal the relationship morphologically. We should take this issue into consideration when interpreting the abnormal elevating of serum PSA levels.

MP-02.17
Changes in Serum-Prostate Specific Antigen Following Suprapubic Prostatectomy in Patients with Benign Prostate Hyperplasia
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Introduction and Objective: Suprapubic prostatectomy is performed widely as much as transurethral resection of prostate in developing countries. The aim of this study to evaluate how suprapubic prostatectomy for patients with benign prostate hyperplasia (BPH) affected the serum prostate-specific antigen (PSA) levels. Furthermore, we determined a baseline PSA level for prostate cancer screening whom underwent suprapubic prostatectomy for BPH.

Materials and Methods: During last 4 years, in 82 patients who underwent suprapubic open prostatectomy for BPH in our centre, serum total and free PSA levels were measured before and three, six, and twelve months after the operation.

Results: The mean age of patients was 68.3 years (range 52 to 86) and the average weight of prostatic tissue removed at surgery was 78.3 g (range 52 to 212). While the average preoperative total PSA level was $7.33 \pm 4.67$ ng/mL, the average preoperative free PSA level was $1.61 \pm 0.96$ ng/mL; the average postoperative total PSA level was $1.1 \pm 0.8$ ng/mL, the average postoperative free PSA level was $0.26 \pm 0.02$ ng/mL, twelve months after surgery. We did not detect any prostate cancer on prostate biopsy in the patients who had increased serum PSA before surgery. There was a statistically significant difference between preoperative and postoperative total and free PSA ($p < 0.001$). Of the 82 patients, 56 had serum PSA level > 1.1 ng/dL (range 1.2 to 3.5) at three months. Twelve patients (33.3%) showed increase on serum total PSA levels on the follow-up period. These patients underwent transrectal prostate biopsy and 4 of them were detected prostate cancer.

Conclusions: There is a decrease of baseline average total PSA levels to 1.1 $\pm 0.8$
ng/mL and baseline average free PSA levels to 0.2 ± 0.2 ng/mL after suprapubic prostatectomy. This PSA level might be taken as a reference range for patients who underwent suprapubic prostatectomy if they are suspected to have prostate cancer.

MP-02.18
How Safe Is TURP in Surgical Treatment of Large BPH?
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Introduction and Objectives: Open prostatectomy (either suprapubic transvesical or retropubic) is actually considered as treatment of choice for large prostate adenoma especially when prostate weight exceeds 60 grams or the expected time of resection would exceed 60 minutes. Despite this, there are urologists who prefer TURP, which could be an alternative if performed using an appropriate technique. The aim of our study is to compare the safety of open prostatectomy with those of TURP in large BPH.

Materials and Methods: We retrospectively evaluated charts of 314 patients admitted in our clinic with large BPH, who underwent open or transurethral surgery (resected or enucleated weight being over 60 grams). These cases were divided in three groups: group A (included patients treated by open surgery - suprapubic transvesical or retropubic prostatectomy) - 119 cases, group B (patients treated by TURP, with resected tissue between 60 and 80 grams) 120 cases and group C (patients treated by TURP, with the weight of resected tissue over 80 grams) - 75 cases. Intraoperative, postoperative complications and length of postoperative hospitalization has been compared.

Results: There were no significant differences concerning the mean age in the three groups. The mean weight of BPH removed by enucleation or resection was: 115 grams (group A), 67 grams (group B) and 103 grams (group C). Mean time of surgical procedure was: 80, 90 and 105 minutes, respectively. Intraoperative complications were noted as follows: 2 cases (1.7%) in group A, 14 cases (12%) in group B and 14 cases (18%) in group C. Postoperative complications was noted as follows: in group A 18 cases (15%), group B - 25 cases (21%) and group C - 19 cases (25%). Redo TURP was necessary in 11 cases: 6 in group B vs. 5 in group C. No mortality has been noted in these groups. Length of postoperative hospitalization was: 16 days (group A), 4.5 days (group B) and 5 days (group C).

Conclusions: When performed by experienced urologists, TURP can be safe enough to replace open surgery for large BPH. The appropriate technique with the two endpoints - resection in hypopressure (either by frequent emptying of the bladder or using of suprapubic catheter) and carefully haemostasis – could offer good conditions of resection and avoid complications. There are no significant differences concerning significant intraoperative and postoperative complications but the length of hospitalization are shorter in case of TURP compared with open surgery. Further studies have to compare the long term efficacy of the two methods, especially the need for second TURP after few years from first resection in case of large BPH.

Moderated Poster Session 3: Transplantation
Monday, November 2
13:30-15:00

MP-03.01
Fallacies of 16-multidetector CT Angiography in the Preoperative Evaluation of Vascular and Ureteral Anatomy of Donor Nephrectomy
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Introduction and Objective: The diagnostic tool, 16-multidetector Computed Tomography (CT) angiography has won acceptance for the vascular evaluation of living renal donor (LRD) candidates. Our aim was to prospectively assess the accuracy of 16 - sections multidetector CT ((MDCT) angiography in the evaluation of renal transplant donors when scans are compared with actual intraoperative vascular and ureteral findings.

Materials and Methods: This was a prospective study evaluating 56 consecutive renal donors (41 men and 15 women) from January 2008 to October 2008 who underwent 16-MDCT angiography followed by donor nephrectomy. The arterial, nephrographic and excretory phases were acquired with no overlap and 1.0 mm reconstruction in all phases after 80-100 ml iohexol was injected at 4 mL/sec. On a 3D workstation, images were evaluated by the radiologist and the urologist with respect to the number and branching pattern of renal arteries, major and minor renal veins and ureteral anatomy. These CT angiography results were compared with surgical findings.

Results: Mean age of donors was 28.5 years. Of the 56 donors, 16-slice multidetector CT angiography was accurate in detecting: number of arteries in 52/56 (92.8%), branching of arteries in 55/56 (98.2%), number of veins in 54/56 (96.4%), complex lumbar and/or gonadal venous anatomy in 46/56 (82.1%) and ureteral anatomy in 56/56 (100%). The overall sensitivity and specificity of multidetector CT angiography compared to surgical identification were 95% and 90%, respectively. Positive and negative predictive values and accuracy were 89%, 96% and 92%, respectively. The presence of fallacies did not affect clinical outcome of transplantation in all cases. The major fallacies of 16-multidetector CT angiography were noted in identifying minor venous anatomy. On the other hand, intraoperative surgical distress was noted due to failure in identifying multiple major renal veins in 2 cases.

Conclusions: In the pre-operative evaluation of live renal donors, 16-multidetector CT angiography is a good modality. However, it still provides suboptimal information on renal vascular anatomy particularly complex minor venous patterns. Surgeons should not rely fully on pre-operative CT angiography while performing donor nephrectomies. There is still a need for improving pre-operative imaging of live donor nephrectomy.

MP-03.02
Results of Surgical Treatment of Late Urological Complication after Kidney Transplantation (Single Center Experience)
Department of Urology, Imam Reza Hospital, Mashhad University of Medical Sciences, Mashhad, Iran

Introduction and Objectives: The aim of this study was to evaluate outcome of surgical treatment of late urological complications (U.C) after kidney transplantation (KTX) in a single center.

Material and Methods: Between 1980 and 2007, 1400 recipients received a kidney transplant (1230 from living and 170 from cadaveric donor). Urological complications occurred 3 months after KTX retrospectively assessed. In total (n = 35, 2.5%) late U.C were recorded: ureteral
stensia (n = 26, 1.8%), symptomatic vesicoureteral reflux (n = 3, 0.25%), urinary calculi (n = 6, 0.4%). Ureteral stenosis was corrected surgically by ureteroneocystomy, ureteropelostomy, epispinal pyelo-pelostomy and contralateral native pyelo-pelostomy. Urinary calculi treated by ESWL or Endourological procedures.

**Results:** No peri or post operative complications or recurrence or graft loss were seen after these interventions. Late urological complication rates in recipients with living comparison to cadaveric donor were 1.7% versus 2.9% (P = 0.072). There was no significant different of graft survival between recipients with and without late U.C (P > 0.06).

**Conclusion:** A late urological complication must be recognized by careful assessment and what can be surgically corrected should be aggressively treated by an experience surgeon to prevent any morbidity and mortality.

**MP-03.03**

**Endourological Procedure for the Management of Urinary Calculi in Transplanted Kidneys**


Urological and Renal Transplantation Department, Imam Reza Hospital, Mashhad University of Medical Sciences, Mashhad, Iran

**Introduction and Objective:** Progressed development of endourological procedures has revolutionized the management of urolithiasis in transplanted kidneys. In this article we report our experience in endourological procedures for treatment of calculi in transplanted kidneys.

**Materials and Methods:** Between 1989 and 2008, 1300 renal transplantation were performed in our center. 18 cases (14 adults and 4 children) with calculi (6 pelvic and 12 ureteric stone) were treated by ESWL, TULP followed PCNL. We followed up with the patients by ultrasonography every 3 months for 2 years and then once yearly.

**Results:** Incidence of calculi in transplanted kidney in our center is 1.3%. Kidney stone size varied between 12-18 mm and in ureter 6-10 mm. Success rate of becoming stone free by ESWL was 75% (4/6) by PCNL 100% (3/3) and TUL 80% (8/10). Three patients required several modalities for treatment. In these patients at first we performed TUL and pushed the stone into the pelvic and then performed ESWL. Two of them didn’t respond to this treatment so they were treated by PCNL. At a mean range follow up of 58 months all cases were stone free. Three cases lost their graft due to chronic rejection but in 15 cases renal function was good and no recurrence of urinary calculi was reported.

**Conclusion:** Although urinary tract calculi in transplanted kidney is rare but must be considered in follow up of recipients. Endourological procedures for treatment of calculus in transplanted kidney are safe and effective and preclude the need of open surgery.

**MP-03.04**

Kidney Transplantation In Patients with Augmentation Cystoplasty: Early and Long Term Results

Mahdavi Zafarghandi R, Taghavi R, Darabi MR, Mahdavi Zafarghandi M, Shakibi M

Department of Urology, Imam Reza Hospital, Mashhad University of Medical Sciences, Mashhad, Iran

**Introduction and Objective:** Low complian, high pressure bladder is unsuitable for renal transplantation (RTX). Thus augmentation cystoplasty recommended for these cases before or after renal transplantation. In this study we assessed the early and long term results of kidney transplantation in recipients with augmentation cystoplasty.

**Materials and Methods:** During 18 years (1989 -2007) 1550 renal transplantation were preformed in our center. Twenty-one cases of these recipients due to low compliance, high pressure bladder with median age 14 years (range 6 – 35) underwent augmentation cystoplasty, 5 to 6 months before renal transplantation. The etiology of bladder dysfunction included: Neurogenic bladder (15 cases), posterior urethral valve (4 cases) contracted bladder due to tuberculosis (2 cases). For augmentation, detubularized ileal segment was used in 14 cases (In 5 of boys we transfer appendix as metriñafon proceure) and detubularized one or both ureters were used in 7 cases. We evaluated early and late complications after RTx and graft and patients survival in these cases who undergone augmentation cystoplasty.

**Results:** Mean follow-up is 108 months (12–216), all patients are continent and 9 cases (40%) were readmitted in the first year after RTX due to urosepsis. Rupture of augmented bladder in one case and bladder stone in another case recorded. One paraplegic cases with functioning graft died due to urosepsis and chronic rejection was the causes of graft loss in 4 case. Thus, the patient and graft survival in 1, 3, 5 years after RTX is 100, 93%-95%, 89%-95%, 82%, respectively.

**Conclusion:** Augmentation cystoplasty before renal transplantation is a safe and effective procedure of restoring lower urinary tract in recipients. Although the patient and graft survival is acceptable but there is high incidence of urosepsis; thus, meticulous observation is needed.

**MP-03.05**

The Explorative Study of siRNA Prevention Rats Chronic Allograft Nephropathy and Renal Graft Ischemic Reperfusion Injury

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Department of Urology, West China Hospital, Sichuan University, Chengdu, China

**Introduction and Objective:** CAN has become the most important cause of allograft failure. Connective tissue growth factor (CTGF) is a matricellular protein which plays an important role in pathological fibrosis. Nowadays, small interfering RNA (siRNA) has become an effective tool to silence fibrosis gene expression. Intercellular adhesion molecule 1 (ICAM-1), plays an important role in IRI of renal transplantation. We anticipate that the discovery of new siRNA delivery way could be potent strategies, which may lead to improved graft survival in recipients of organ transplants.

**Materials and Methods:** 1. NRK-52E cells undergoing anoxia were divided into siRNA, DMEM and control siRNA group, and then siRNA was transfected into cell by liposome transiently. The expressions of CTGF “E-cadherin α-SMA” collagen type I and collagen type IV in NRK-52E cells were detected. 2. Establishment of Fisher to Lewis rat allograft models. At 6w post transplantation, the recipients were divided into siRNA, normal saline (NS) and control siRNA groups, and either siRNA-targeting CTGF, or NS or a control siRNA were given by caudal vein injection. Recipients are sacrificed 4w, 6w or 8w post transplantation, then serum and kidney allografts are harvested. 3. Establishment of Fisher isograft rat renal transplantation models. Before transplant, ICAM-1siRNA, NS or control siRNA was infused kidney through the renal artery with the renal vein clamped ex vivo. siRNA delivering was observed through Light tools and fluorescence microscope in vivo.
Results: 1. The expressions of CTGF mRNA and protein were up-regulated since 6h and type I, IV collagen and α-SMA were all up-regulated except for E-cadherin loss. The transfection efficiency in siRNA group was found over 85%. CTGF siRNA have prevented the expression of CTGF in NRK-52E cells exposed anoxia. 2. The classic fibrosis was observed in renal allograft at 8w after transplantation. CTGF, α-SMA, collagen I and IV were positively expressed in the tubular epithelial cells renal graft except for E-cadherin loss during the whole experiment period. CTGF siRNA has prevented the expression of CTGF, and improved the structure and function of recipients, effectively prevented graft fibrosis. 3. There was observed the expression of ICAM-1 in glomerulus and nephric tubule of isografts. siRNA was infused successfully glomerulus and nephric tubule of graft through the renal artery. The values of Scr and the expression of ICAM-1 in the transplant model were down-regulated exposed infusion ICAM-1 siRNA, and the tubular necrosis and inflamed cells infiltration were less severe in the cold ischemia injury model.

Conclusion: CTGF played an important role in fibrosis process in NRK-52E cell, siRNA CTGF has the potential to be a novel strategy for anti-CAN. CTGF siRNA could be considered as a novel inhibitor for preventing renal allograft fibrosis and provide a promising therapeutic strategy in CAN. ICAM-1siRNA can protected the rat recipients from lethal IRI with survival rates.

MP-03.06
Urological Complications after Simultaneous Pancreas-Kidney Transplantation
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Introduction and Objective: Simultaneous pancreas-kidney transplantation reduces long-term morbidity and mortality in patients with diabetic nephropathy when compared with dialysis. Pancreas transplantation requires bladder or enteric drainage of pancreatic exocrine secretion. Bladder drainage is associated with a higher frequency of urological complications. In the present study, we evaluated the incidence of urological complications after simultaneous renal and pancreatic transplantation.

Materials and Methods: The urological complications following 107 simultaneous kidney-pancreas transplantations performed at our institution, between March 1995 and June 2008, were retrospectively reviewed. Urological complications were related to the pancreatic transplant or to the renal transplant. There were 46 women and 61 men of mean age 37.8 years (range 25-66). The mean duration of diabetes mellitus was 23.0 years (range 9-48) and the mean duration of dialysis was 19.9 months (range 0-70). The exocrine pancreatic secretions were drained to bladder in 58 cases, and the enteric drainage was used in 49 patients. The mean follow-up was 51.7 months.

Results: The most frequent urological complications were urinary tract infections, reported in 63.8% patients (42 bladder-drained and 25 enteric-drained, p=0.01). Hematuria occurred in 13 patients (12.5%), 12 bladder-drained and one enteric-drained (p=0.002). Five patients with bladder drainage developed bladder calculus. Out of 58 bladder-drained patients, reflux pancreatitis occurred in 28 patients and urine leaks related to the pancreatic graft occurred in 7 patients. Conversion of exocrine secretions from bladder to enteric drainage was required in 6 patients. Urological complications related to the renal transplant included haematoma following surgery in 5 patients, obstructive uropathy in 6 patients and lymphocele in 3 patients. One-year and three-year patient survival rates were 92.7% and 89.1%. Moreover, one-year and three-year kidney graft survival rates were 90.6% and 84.4%, and pancreas graft survival rates were 78.1 and 70.3%, respectively.

Conclusions: Simultaneous kidney-pancreas transplantation with bladder drainage is associated with high frequency of urological complications, especially urinary tract infections, reflux pancreatitis and urine leaks. Appropriate treatment can resolve most of these complications. In our opinion, both enteric and bladder drainage are reasonable and safe alternatives to manage the pancreatic exocrine secretions.

Introduction and Objective: This study was designed to further evaluate the role of monoclonal antibody blocker injection (daclizumab) in early and late kidney graft survival and prevention of graft loss.

Materials and Methods: From 2007 to 2008, 57 kidney transplant recipients were enrolled prospectively in this case-control study at our center. Twenty-three patients (cases) received 1 mg/kg daclizumab (24 hours before and 14 days after transplantation) while 34 patients (controls) did not receive daclizumab. The same immunosuppressive protocol (oral prednisolone, mycophenolate mofetil and cyclosporine A) was administered for all participants. The evidence of delayed graft function (DGF), acute rejection, therapeutic pulse of prednisolone and/or anti-thymoglobulin(ATG), cytomegalovirus (CMV) infection, urinary tract infection (UTI) as well as early and late graft function were evaluated and compared between two groups.

Results: The mean age in case and control groups was 59.7 (range 18-61) and 37.1 (range 13-60) years, respectively. The evidence of DGF was 4% vs. 3%, reversible acute rejection was 16% vs.14.5%, irreversible acute rejection was 0% vs. 9% (p-value<0.05) in case and control groups, respectively. Therapeutic ATG used in 21% vs. 23%, and pulse prednisolone 26% vs.20% respectively. The average follow-up period was 9.5 months. In case and control groups, the mean creatinine level was 1.4 (range 0.9-4) mg/dl vs. 1.35 (range 0.5-3.5) mg/dl at discharge, while in the last follow-up session, it was 1.35 (range 1-2) mg/dl vs. 1.2 (range 0.5-2.7) mg/dl, respectively. CMV infection occurred in 30% vs. 35%, and UTI was observed in 17% vs. 19% of the cases and the controls, respectively.

Conclusions: The prophylactic administration of daclizumab has an effective role in the improvement of early graft survival and the prevention of irreversible acute rejection. Moreover, acute rejection might be handled better by using daclizumab.
MP-03.08  
Effect of Donor Bone Marrow Cells Infusion on Alloimmunization in Kidney Allograft Patients  
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Introduction and Objective: The aim of this study was to investigate the role of donor bone marrow cells infusion in post transplantation anti-HLA antibody induction and outcome of kidney allograft patients.  

Materials and Methods: Between June 2006 and May 2007, a total of 40 living donor kidney transplants: 20 recipients with Donor Bone Marrow Cells (DBMC) infusion (2.1×10^9±1.5×10^9 MNCs/body including 3.5×10^9±1.6×10^9 CD34+ progenitor cells) and 20 without infusion as control, were entered into study and followed prospectively for one year. Both groups received the same baseline immunosuppressant consisting of triple drug regimen. WBC cross match, Panel Reactive Antibody (PRA) and HLA-DNA typing were performed for all patients. Pre and post transplant (days 14, 30, and 90) sera samples were screened for the presence of anti-HLA antibodies, and subsequently antibody identification was determined for positive patients by ELISA method.  

Results: Incidence of acute rejection (AR) was 30% (6/20) in controls versus 15% (3/20) in DBMI patients. Almost all patients with AR had a pretransplant anti-HLA antibody in both groups; 55% in DBMC and 30% in controls had pretransplant antibodies, but without acute rejection. In controls, 2 patients with AR and 2 without AR were positive for both Donor Specific Antibody (DSA) and non DSA. All 3 patients with AR in DBMI showed non DSA post operatively, but with a lower strength to HLA antigens. Mean percentages of post transplant PRA was 16.5% vs. 38.5% in controls. The lower titer of antibodies and lower average serum creatinine (2.25±0.07 vs. 2.85±1.2, P=0.0001) were found for patients with AR in DBMI compared to controls.  

Conclusions: Infusion of DBM mononuclear cells was perfectly tolerated, but the descending rate of creatinine level was slower than control group. The absence of GVHD and lower percentages of PRA in DBMI group are possible manifestations of functional immune modulation achieved by the DBMC infusion protocol.

MP-03.09  
Neoplasia In Renal Transplant Patients: Risk Factors and Comparison with General Population  
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Introduction and Objectives: In renal transplant patients, tumour-originated death is the third most important cause of death. Most studies describe the different histological types individually, being that this approach is a methodological limitation for the global comprehension of the problem. We considered making a 25-year search to look for new appearance of tumours and possible triggering factors with our hospital’s transplant renal patients.  

Materials and Methods: A retrospective research of the transplant renal patients has been made between 1980 and 2004. A univariate and multivariate analysis of the neoplasia appearance and its risk factors were made. The neoplasia appearance risk on Murcia’s general population was also calculated.  

Results: Our series concerns 553 transplanted patients, 528 men (59.31%) and 225 women (40.69%). Fifty-six patients diagnosed with neoplasia (10.126%) were detected. Thirty seven of them had cutaneous nature, in which predominated epidermoid carcinomas over basocellular. The number of neoplasia increased together with the monitoring time: 7.60% after five years and 10.93 after ten. The risk in renal transplant patients over the general population in Murcia is double for neoplasia appearance and six times higher for cutaneous tumour appearance. Regarding the possible risk factors for neoplasia appearances, we have only found the receptor’s average age at the implant time and the immunosuppressed total time. The presence of disease due to cytomegalovirus reduces the appearance time in a statistically significant way (logrank test). Along the research of proportional Cox risks, only two variables reached statistical test.  

Significance: the patient’s age when the first implant was made and the immunosuppressed total time.  

Conclusions:  
1. 10.126% of our renal transplant patients suffered from some type of neoplasia, mostly cutaneous.  
2. The risk of neoplasia appearance in our patients doubled from the general population, being six times higher in cutaneous neoplasia.  
3. The age when the first transplant was made and the immunodepression total time were the risk factors in the appearance of neoplasia.  
4. The disease due to cytomegalovirus is the only modifying factor in the neoplasia appearance time.

MP-03.10  
Renal Transplant in Extremely Old Receptors  
Hospital Universitario 12 De Octubre, Madrid, Spain

Introduction and Objective: Renal allografts from elderly donors have poorer survival than the ones from younger donors. However, this survival may be enough for an old receptor. In the last years good results have been communicated about several “old to old” transplant programs, but very little has been reported about grafts from extremely old donors. We present our series compared to a random group of transplanted patients from our service.  

Materials and Methods: At our institution 700 renal transplants have been performed from January 2001 to November 2007. Forty-three (6%) were receptors older than 75 years old. We compare these old patients (group A) to another group formed by the anterior and posterior patients of each patient of group A (group B).  

Results: See table.  

Conclusions: Our series confirm that the results of kidney transplants from extremely old donors in extremely old receptors are comparable to a group of younger receptors, at least 19 months of follow-up. Extremely old patients can have a successful transplant from old donors, avoiding competition with younger patients from the transplant waiting list. The inclusion of these extremely old recipients in the kidney transplant waiting list may increase the number of old do-
nors and diminish the number of rejected kidneys from old donors.

**MP-03.11**

**Retroperitoneoscopic Live Donor Nephrectomy (RLDN): Evaluation of the Perioperative Data and Quality of Life after 184 Operations**


*University Hospital Basel, Department of Urology, Basel, Switzerland*

**Introduction and Objectives:** RLDN is our standard surgical procedure since November 2001. After 184 consecutive operations we evaluate perioperative data and quality of life based on questionnaires.

**Materials and Methods:** From November 2001 to September 2008, 184 live donors with an average age of 53 years (27-79) were operated. Operations were performed by a retroperitoneoscopic access technique. Questionnaires were sent to all donors from November 2001 till October 2007 (n=158). Unfortunately, home address of 33 donors wasn’t available because of moving within the follow-up. Of those donors, who received the questionnaire (n=125), 64% (n=80) responded. The average follow-up was 38 months.

**Results:** Average operating time was 145 (55-300) minutes, warm ischemia time was 154 (30-280) seconds, blood loss was 161 (0-600) ml. In 2 cases (1.1%) a conversion to open surgery was necessary. Re-operation rate was 3.3% (n=6). Questionnaire results: Average follow-up was 38 months (7-76). 95% (n=76) were satisfied with the cosmetic results after surgery. Only 2.5% (n=2) reported “the scar is really too long”. 21.3% (n=17) expressed persistent pain in the operation area. However, concerning the VAS-pain scale the majority reported 1-3 points. 78.7% (n=63) expressed no pain in the surgical scar region. 65% (n=52) regarded the “perioperative time-period” as a “no” or “only little painful event” in their life. Average duration of recovery until preoperative performance was 6 weeks. Only 2.5% (n=2) would not give their kidney any more and only 2.5% (n=2) would not choose the same operating technique anymore. 87.5% (n=70) thought to know the donated kidney works well, 7.5% (n=6) thought to know the donated kidney does not work well, 2.5% (n=2) did not have any idea about this issue. 21.3% (n=17) felt a change of their overall awareness of health. 16.3% (n=13) had the impression to consult more often a medical practitioner since they have donated, but only 2.5% (n=2) felt being ill more often since the donor nephrectomy. 92.5% (n=74) regarded their general state of health as good, very good or excellent.

**Conclusions:** Perioperative results prove RLDN to be a safe operating technique for the donor. Questionnaire-based long term cosmetic results and donor satisfaction are excellent after RLDN.

**MP-03.12**

**Laparoscopic Donor Nephrectomy: Introduction into a Transplant Program with a Safe, Reproducible Technique**

**Van Der Merwe A, Heyns C**

*Stellenbosch University, Cape Town, South Africa*

**Introduction and Objectives:** Up to 40% more family related donors can be expected once a transplant team introduces LDN as an option to prospective donors. The transition from open donor nephrectomy (ODN) to LDN is difficult and the risk of severe hemorrhage or complete loss of function (due to increased warm ischaemic time) is real. We present a reproducible stepwise technique to retroperitoneoscopic LDN, as proposed by Bachmann (Transplantation 2004).

**Materials and Methods:** Seventeen consecutive cases were performed. With this technique of LDN the patient is placed in the same extended flank position as with ODN to facilitate conversion if deemed necessary. A 3 port extraperitoneal approach is used to mobilise the kidney inside Gerota’s fascia and dissect the renal vessels free to clearly visualize the large vessels. Surgical adhesive film (as a cost cutting alternative to a hand port) is wrapped around the wrist of the surgeon and a small muscle-splitting incision is made suprapubically. The hand is placed around the kidney and the vessels clipped and stapled under camera vision. The kidney is immediately removed by hand to be processed as per normal protocol prior to implantation. Warm ischaemic time, operating time, blood loss, hospital stay, graft survival, early and late complications were recorded prospectively.

**Results:** There were no mortalities and no conversions to open surgery. The mean surgical time 155 minutes (range 115–240) and the warm ischemic time mean 180 seconds (range 110–210). The average blood loss was less than 100 ml and the patient was discharged on the third postoperative day in the majority of cases. One graft was lost in the early post operative period due to a leg DVT on day 2. Six grafts had ATN transiently in the early post operative period. One donor was re-admitted on day 11 with acute gastritis that was treated with medication (PPi).

**Conclusion:** Our results show that LDN should be introduced with caution in a transplant program. In developing countries ODN should still be seen as a good option in transplant programs. The proposed technique of LDN is easy to learn for the more experienced laparoscopic surgeon and, once adopted, may cause more donors to come forward, with beneficial effects on transplant waiting lists.

**MP-03.13**

**Laparoscopic Donor Nephrectomy Perioperative Results and Graft Outcome: A Comparison with the Open Approach**

**Tsu J, Ho K, Au W, Chu S, Tam P**

*Division of Urology, Department of Surgery, The University of Hong Kong, Hong Kong, SAR*

**Introduction and Objective:** We compare the perioperative results and graft outcome after open and laparoscopic live donor nephrectomy (LLDN) in one single centre.

**Materials and Methods:** Between January 1997 and March 2009, 20 kidney donors underwent open donor nephrectomy and 17 donors underwent LLDN. Median age of open and laparoscopic donors

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**Table**

<table>
<thead>
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<th>Parameter</th>
<th>&gt;75 y.o.</th>
<th>&lt;75 y.o.</th>
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<tr>
<td>Number patients</td>
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<td>96</td>
<td></td>
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<tr>
<td>Mean receptor age</td>
<td>77±2</td>
<td>51±14</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Mean donor age</td>
<td>74±5</td>
<td>49±19</td>
<td>&lt;0.001</td>
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<td>Non functioning graft</td>
<td>2 (5%)</td>
<td>3 (5,5%)</td>
<td>NS</td>
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<td>Delayed function</td>
<td>24 (56%)</td>
<td>52 (60%)</td>
<td>NS</td>
</tr>
<tr>
<td>Acute rejection</td>
<td>5 (12%)</td>
<td>10 (12%)</td>
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<td>Patient survival</td>
<td>41 (95%)</td>
<td>85 (99%)</td>
<td>NS</td>
</tr>
<tr>
<td>Graft survival</td>
<td>39 (91%)</td>
<td>78 (91%)</td>
<td>NS</td>
</tr>
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<td>Mean serum creatinine (mg/dl)</td>
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<td>Mean follow-up (m)</td>
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<td>18±23</td>
<td>NS</td>
</tr>
</tbody>
</table>
were 33 (range 22 to 52) and 43 (range 22 to 59) respectively (p=0.001). Apart from age, the two groups of donors were comparable in other aspects. Data was retrieved retrospectively by review of case notes.

**Results:** Median operative time was longer in the laparoscopic group (302 minutes, range 195 to 378) but blood loss was less (175 ml, range 30 to 1200). Median first warm ischaemia time in the laparoscopic group was 4 minutes (range 2 to 7) and was similar to that in the open group. Two (10%) donors in the open and one (5.9%) donor in the laparoscopic group experienced intraoperative complications. One (5.9%) laparoscopic donor required conversion to open. After the operation, the donors in the laparoscopic group resumed diet, ambulated and were discharged earlier than those in the open group (p=0.001). Two (10%) donors in the open group and two (11.8%) donors in the laparoscopic group experienced post-operative complications. There were no late donor complications. Nadir serum creatinine in the recipients and the time necessary to reach this nadir were similar across two groups. One (5%) recipient in the open group experienced delayed graft function and one (5.9%) in the laparoscopic group developed urine leakage. Serum creatinine levels in recipients at regular intervals after transplantation were comparable in other aspects. Data was retrieved retrospectively by review of case notes.

**Conclusions:** LLDN is a safe and effective technique for live donor graft procurement. Whilst providing recipients with similar graft outcome to the traditional open approach, it offers donors faster post-operative recovery. It has now become our approach of choice for live graft kidney procurement.

**MP-03.14**
Cardio-Renal Combined Transplant: Results of Our 13 Years Experience

**Introduction and Objective:** Progress in immunosuppressive therapy and surgical practice experience in combined transplants has made possible that cardio-renal transplants (CRT) a successful option for treating patients that suffer from terminal heart disease and chronic renal failure. The aim of this study is to review the results of CRT in our center.

**Material and Methods:** From January 1995 to June 2008, 18 patients had CRT, 17 men and 1 woman, with a mean age of 55.4 years (between 42 and 69 years). The causes for cardiac transplants was ischemic heart disease in 9 patients (50%), dilated cardiomyopathy in 4 cases (22.2%) and restrictive cardiopathy in 1 (5.6%). Re-transplantation because vascular graft disease happened in 4 patients (22.2%). The causes of renal failure was unknown in 5 cases (27.8%); 4 (22.2%) had multifactorial causes; 2 (11.1%) patients had nephroangiolescerosis; 2 (11.1%) nephrotoxicity mediated by immunosuppression; 1 (5.6%) patient had focal glomerulosclerosis; 1 (5.6%) chronic segmentary glomerulosclerosis; 1 (5.6%) Wegener's granulomatosis; and 1 (5.6%) had rapidly progressive glomerulonephritis. The surgical technique for the renal transplant (RT) was heterotopic placement of the graft in lower right quadrant. The average cold ischemia time was 198.25 minutes.

**Results:** With a mean follow-up of 67.3 ± 53.75 months (0-156), of the 18 transplanted 6 patients died; 4 in the first 30 postoperative days, and only one because of direct complications from the RT (bleeding). The other 2 patients died over a year after surgery for mesenteric ischemia and neoplasia. The rest of the patients are with functioning renal graft at the moment, with mean serum creatinine of 1.47 mg/dl (1,1-2,1). Immunosuppression therapy consisted in induction with a calcineurin inhibitor therapy, with steroids, azathioprine or mycophenolate mofetil, and either no additional prophylaxis or prophylactic dose (P-dose) (40%), or unfractonated heparin (UFH) (P-dose) (2.9%). Case 2: No anticoagulation therapy (54.3%), calcium heparin (P-dose) (51.4%), or UFH (P-dose) (5.7%). Case 2: (a) Interruption of aspirin (65.7%), and either no anticoagulation therapy (21.7%) or substitution of aspirin by calcium heparin (P-dose) (56.6%) or by UFH (P-dose) (8.7%). (b) No interruption of aspirin (34.5%), and either no additional prophylaxis (58.3%) or calcium heparin (P-dose) (33.3%). Case 4: Woman, 63 years old, with history of myocardial infarction. On aspirin therapy. Nephroangiosclerosis and diabetic nephropathy. Peritoneal dialysis since 6 months. Case 4: Woman, 63 years old. Atrial fibrillation on vitamin K antagonists therapy. Lupus nephritis without antiphospholipid syndrome. Hemodialysis since 12 months.

**Results:** The treatments proposed by the centers (%) were: Case 1: No anticoagulation therapy (57.1%), calcium heparin at a prophylactic dose (P-dose) (40%), or unfractionated heparin (UFH) (P-dose) (2.9%). Case 2: No anticoagulation therapy (34.3%), calcium heparin (P-dose) (51.4%), or UFH (P-dose) (5.7%). Case 3: (a) Interruption of aspirin (65.7%), and either no anticoagulation therapy (21.7%) or substitution of aspirin by calcium heparin (P-dose) (56.6%) or by UFH (P-dose) (8.7%). (b) No interruption of aspirin (34.5%), and either no additional prophylaxis (58.3%) or calcium heparin (P-dose) (33.3%). Case 4: Vitamin K antagonists were interrupted in all centres (100%), and retaken within D5 and D30. UFH at a curative dose (68.6%), UFH (P-dose) (14.3%), or calcium heparin (P-dose) (11.4%).

**Conclusions:** Practices varied widely in the absence of studies of a sufficiently high level of evidence. The post-operative anticoagulation after renal transplantation resulted as a local dogma rather than evidence-based medicine. Guideline recommendations and standardized protocols including a preoperative classification according to the thrombotic and hemorrhagic risks for the use of anticoagulation agents were proposed by the centers. The authors have proposed an antithrombotic therapy based on the patients' clinical conditions, taking into account the results and recommendations of the literature and their own experience.
after kidney transplantation should be developed.

Moderated Poster Session 4: Adrenal, Kidney, Ureter Monday, November 2 13:30-15:00

MP-04.01
One-Step Percutaneous Nephrostomy in Patients with a History of Open Nephrolithotomy: Comparison with the Fascial Dilator System
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Introduction and Objective: A percutaneous nephrostomy (PCN) done on the same side as a previous open nephrolithotomy is always technically challenging. A novel one-step PCN tube that allows the puncture and placement of a drainage tube to be done in a single step has been developed. The hydrophilic coating on the tube’s surface significantly reduces friction and allows easier insertion. We evaluated the tube’s efficiency and safety compared with the traditional fascial dilator system.

Materials and Methods: Sixty-five patients with a history of open nephrolithotomy were randomly allocated (with the aid of a computer-derived assignment number) into two groups to have PCN performed in one step or multiple steps. In the one-step group, a new type of PCN tube was used. In the multistep group, fascial dilators were used serially prior to tube insertion. The two groups were similar in terms of mean age, width of target calix, and baseline serum creatinine and hemoglobin concentrations. The operating times, intubation rates, and complications in the two groups were compared.

Results: The mean number of attempts required to access the collecting system was 1.1 ± 0.6 in the one-step group and 2.3 ± 1.2 in the multistep group (P = 0.002). The successful intubation rate was 96.9% v 78.8% (P = 0.012), the mean operating time was 10.2 ± 2.4 minutes v 25.6 ± 2.8 minutes (P = 0.029), and the rate of intraoperative and postoperative complications was 3.1% v 15.2%, respectively (P = 0.019). No major complications occurred in the one-step group.

Conclusions: The one-step PCN tube is a convenient and efficacious method for accessing an anatomic region where open nephrolithotomy was done previously and is a simple method for nephrostomy tube placement.

MP-04.02
The Influence of Retroperitoneal Artificial Pneumoperitoneum to the Renal Function and Cellular Structure
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Introduction and Objective: To evaluate the effect of the pneumoperitoneum performed in the retroperitoneal laparoscopy on the renal function and cellular structure.

Materials and Method: Forty kidney neoplasms, adrenal adenoma and renal cyst patients who need operations were enrolled into the experiment; 20 of them were assigned to retroperitoneal laparoscopic nephrectomy, the other 20, open nephrectomy. Levels of B2-microglobulin(B2-MG) in the urine and serum were measured at baseline before operation and at the time of sugery termination were recorded to evaluated the funtion of glomerular filtration function, tubular reabsorption function. The renal tissues that obtained from kidney puncture after operation were viewed under electro-microscopic visualization to understand whether the organelle is injured.

Results: The open and retroperitoneal laparoscopic groups were similar in age, body mass index (kg/m²), operative time, and intraoperative fluid administered. According to our experiment result, the difference of open group was about 0.109 ± 0.379 mg/L, while that of retroperitoneal laparoscopic group was 0.106 ± 0.445 mg/L. There was no significance differences between two groups (t = 0.023, p > 0.25). As for the B2-MG in the urine, difference in the first group was 0.019 ± 0.069 mg/L, and it was -0.017 ± 0.079 mg/L in the other group. By our statistical analysis, there was still no significance between two groups (t = 1.532, p > 0.1). After the operation, the renal organelle in both groups didn’t appear injured under the light microscope and the electro-microscopic visualization.

Conclusion: Retroperitoneal route laparoscopic nephrectomy performed under the pneumoperitoneum pressure of 13~15mmHg have no effect to the glomerular filtration function, tubular reabsorption function and cellular structure. Retroperitoneal route laparoscopic nephrectomy is safe and feasible.

MP-04.03
Anatomical Retroperitoneoscopic Adrenalectomy: Initial Experience in 60 Cases
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Introduction and Objective: Since professor Xu Zhang first reported the technique of anatomical retroperitoneoscopic adrenalectomy (ARA) in 2007, it has been widely used for its advantages in feasibility, efficacy and safety. Here we report our experience of 60 ARAs in our institution by one surgeon.

Materials and Methods: From July 2007 to March 2009, 60 retroperitoneal laparoscopic adrenalectomies were performed, including 50 partial adrenalectomies and 10 total adrenalectomies. The patients were preoperatively diagnosed according to clinical presentations, endocrine tests and imaging: Cushing syndrome in 8 cases, primary aldosteronism in 20 cases, pheochromocytoma in 8, adrenal hyperplasia in 2, renal cyst in 10, non-functional adenoma in 10 and myelolipoma in 2. All operations were performed according to the standard technique of ARA introduced by Zhang. Briefly, the adrenal gland was identified first in the bloodless plane between anterior renal fascia and perinephric fat, and then in the second plane between the posterior renal fascia and perinephric fat, and the third plane between the adrenal and upper pole of the kidney. The adrenal vein was treated on the final stage.

Results: All operations were completed successfully and no conversion was done. The mean operative time was 45 min and the mean intraoperative blood loss was 30 ml. The following factors significantly increased the operative time, including tumor size (>6 cm), too much adherence with adjacent structure, and tumor location especially close to renal pedicle. The time of recovery to oral nutrition and ambulation was 2 days and 2 days after surgery, respectively. Subcutaneous emphysema were seen in 14 patients. No ecchymosis and wound infection and major complications occurred. The clinical manifestations were relieved or disappeared after surgery during followup.

Conclusions: Anatomical retroperitoneoscopic adrenalectomy can provide definite dissection planes and clear operative field with less blood loss, so it is a safe, effective, and technically efficient procedure for surgical adrenal diseases.
**Introduction and Objective:** To introduce our experience of how to reduce the renal warm ischemia time for laparoscopic nephron-sparing surgery (LNSS).

**Materials and Methods:** Fifteen LNSSs were performed via retroperitoneal approach, which consisted of 10 cases of renal carcinoma with mean size of 4.0cm in diameter and 5 renal angiomyolipomas of mean 3.8cm. After blocking the renal artery temporarily using a bulldog clamp, renal tumors were removed by scissors. The renal defects were closed with interrupted 8-figure stitches with 2 hem-o-loks locked on the two ends of suture. For the tumor located near renal pedicle in 2 cases, the ice slush was injected into the retroperitoneal space to reduce the renal parenchymal temperature via the 12mm trocar.

**Results:** All operations were done successfully. The mean operative time was 90min, and the mean blood loss was 75ml. The mean renal warm ischemia time was 24min. No major complications occurred and no transfusion was needed. The mean hospital stay was 5.6d. During mean 6 months follow-up, no recurrence was found for the malignant tumors.

**Conclusion:** The operative time for important steps of LNSS can be shortened by technical improvements, so the renal warm ischemia time can be reduced to protect the remnant renal function at most.

**MP-04.05**

**Extraperitoneal Laparoscopic Surgery for the Treatment of Lower Ureteral Disease**


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**Introduction and Objective:** Laparoscopic surgery has been widely used to treat the lower urinary diseases. However, most surgeons prefer to the transperitoneal approach for them for easy performance and remarkable anatomical remarks. In open surgery, extraperitoneal approach is often used for ureteral reimplantation and lower ureteral stone. Here we introduce our experience of extraperitoneal laparoscopic surgery for the treatment of lower ureteral disease.

**Materials and Methods:** From October 2007 to March 2009, 5 patients (4 female and 1 male, average age 25) were performed with extraperitoneal laparoscopic approach for the treatment of lower ureteral disease, including ureterovesical junction stricture (UBJO) in 3 and lower ureteral stones in 2. Operative methods: The pre-peritoneal working place is created routinely and three trocars are placed. The peritoneum is isolated mediately and the ureter round ligament should be transected for the isolation of lower peritoneum. For male, the vas duct should be kept. The ureter can be identified at the site of crossing iliac vessels by its appearance and peristalsis. The ureter artery should be preserved as possible. For ureteral stone, cut the ureter wall above the stone and remove the stone, and then place a JJ stent antegrade following by interrupted suturing to close the incision. For UBJO, excise redundant extended ureter and then spatulation was made for ureterovesical anastomosis, about 1-2cm ureter is embedded subcutaneously by reapproximating the bladder muscle. Double J stent is placed routinely and removed 4-6 weeks after surgery.

**Results:** All operations were performed successfully. The mean operative time was 120 min and the mean intraoperative blood loss was 30ml. No intraoperative complications occurred and no urine leakage was experienced in all patients. No reflux was witnessed 6 months after surgery.

**Conclusion:** Laparoscopic surgery via extraperitoneal approach is feasible and safe for the treatment of lower ureteral disease. It mimics the fashion of open surgery thus avoids cutting into peritoneal cavity and the complications in combinations with peritoneal organs.

**MP-04.06**

**Treatment of Malignant Ureteral Obstruction with Ureteral Stents Offers a High Risk for Microbial Device Colonisation**

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**Introduction and Objective:** Malignant ureteral obstruction (MAO) is associated with renal failure, pain and infectious complications. Current management involves - amongst others – internal drain-age with ureteral stents (DJs). DJs offer an ideal surface for microbial adherence and consecutive biofilm formation. The colonisation could lead to overt urinary tract infection and sepsis. The aim of this study was to assess the frequency of microbial colonisation in patients with MAO by sonication. The results were compared with sonicate fluid culture obtained from DJs inserted due to ureteroscopy (URS). Furthermore, the value of conventional urine culture in identifying colonizing microorganisms in comparison to sonicate-fluid culture was evaluated.

**Materials and Methods:** A total of 101 patients undergoing removal of a ureteral stent were enrolled. Conventional urine culture was obtained prior to stent removal. The stents were removed under aseptic conditions and divided in small parts. These were placed in sterile tubes and transported immediately to the microbiology laboratory for sonication. In the microbiology laboratory Ringer’s solution was added aseptically. Sonication was performed in an ultrasound bath to dislodge adherent bacteria. The resulting sonicate-fluid was cultured and microorganisms identified. Microbial growth of ≥ 10^2 colony forming units per ml defined significant stent colonisation.

**Results:** The incidence of microbial colonisation in patients who underwent DJ placement due to MAO (n = 11/20, 56%) was significantly higher than in patients with URS (n = 17/81, 21%). Sonicate-fluid culture resulted in significant higher detection rate of stent colonisation (28%) as compared to conventional urine culture (14%, p < 0.001). In male patients colonisation was detected in 20% (n = 15/75) while in females in 50% (n = 13/26). The most common isolated microorganisms were Coagulase-negative staphylococci, Enterobacteriaceae and organisms of the vaginal flora. A positive correlation between significant ureteral stent colonisation and indwelling time (median time 39 days, range 2-200) was not observed.

**Conclusions:** MAO is associated with a higher risk of device colonisation compared to DJs placed due to URS. Therefore, patients with MAO should be monitored carefully for infectious complications. Culture of samples obtained by sonication is more sensitive than conventional urinary culture for the diagnosis of DJ colonisation.

**MP-04.07**

**The Long Term Outcome of Management of Renal Angiomyolipoma (AML) with Selective Renal Arterial Embolization (SAE)**
Conclusions: We reviewed the long term outcome of SAE in treating AMLs in both elective and emergency situations.

Materials and Methods: Between Oct. 1988 and Sep. 2008, 27 patients (28 kidneys) (6 males and 21 females, mean age 6.31years (0.58-20.45y)) were treated primarily with SAE either on emergency basis for 15(53.6%) bleeding AMLs or electively for 13(46.4%) asymptomatic (>1cm) AMLs. They were followed for a mean period of 6.31years (0.58-20.45y) for: recurrence of symptoms/ bleeding, need of re-embolisation or surgical inter-vention. Kaplan-Meier analysis was used to estimate the nephrectomy / partial nephrectomy sparing rate and primary successful rate (without significant symptoms/the need of further embolization). Univariate analysis of variables (gender/ bleeding vs asymptomatic AMLs/ Unilaterality vs Bilaterality of AMLs/ Tumour size>10 cm Age/ Solitary vs Multicentric AMLs) was performed to evaluate the association with the outcomes using Logrank test. Statistical significance was taken to be p< 0.05. All reported p-values were 2-sided.

Results: Mean size of AMLs was 10.9 cm(4-50cm). Eight (29.6%) patients had bilateral and 19 (70.4%) had unilateral AMLs. 17 (60.7%) kidneys had solitary AMLs; 11 (39.2%) kidneys had multicentric AMLs. 12 (80%) patients having bleeding AMLs required blood transfusion. Four (14%) patients required re-embolization treatment. One (3.7%) patient had minor bleeding with haematuria following the primary SAE but she could be managed conservatively without further intervention. Three (11.1%) patients subsequently needed total nephrectomy and one(3.7%) underwent partial nephrectomy to resect the AML. By Kaplan-Meier analysis, the overall renal surgery sparing rate at 5 years is 85.7%(95%CI:71.6-99.8%) while the primary successful rate at 5 years is 59.5%(95%CI:37.5-81.5%). No patients required renal replacement therapy. No patients died during follow-up. Of all the variables, only AML size > 10 cm is significantly associated with the subsequent need of renal surgery (p=0.03).

Conclusions: SAE is effective in preventing large AMLs from bleeding, treating AMLs presented with bleeding and sparing the need of renal surgery.

MP-04.08
The Evaluation of Imaging Diagnosis of Adrenal Tumors: Report of 872 Cases
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Introduction and Objective: To estimate the clinical diagnostic value of imaging for adrenal tumors so as to improve the imaging diagnostic capacity on adrenal tumors.

Materials and Methods: Eight hundred and seventy-two patients (385 male and 489 female) with clinically diagnosed adrenal tumors underwent ultrasonography, CT scanning, IVU (676 cases), MRI (425 cases), Doppler ultrasonography (63 cases), DSA (20 cases), MRA (28 cases), CTA (136 cases), PET (13 cases) and MIBG (98 cases). Biopsies under CT direction were performed on 10 patients.

Results: The localization and qualitative accuracies with different diagnostic imaging on adenoma of aldosteronism, adeno-ma of Cushing syndrome, pheochromocytoma and myelolipoma were 92.7%, 88.3%, 100.0%, 100.0% and 83.2%, 86.7%, 83.4%, 100.0%, respectively. The localization accuracy and the qualitative accuracy with CT scanning were 98.2%, 98.7%, 100.0%, 100.0% and 90.5%, 92.3%, 83.4%, 100.0%, respectively. The localization accuracy and the qualitative accuracy with MRI were 90.4%, 96.5%, 100.0%, 100.0% and 72.8%, 93.5%, 85.8%, 100.0% respectively.

Conclusions: The overall data of imaging are valuable in the diagnosis of adrenal tumors. Correct localization of the tumors can lead to a suitable choice of surgical treatment.

MP-04.9
Retroperitoneoscopic Surgery for Adrenal Lesions Close to Vena Cava
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Introduction and Objective: Surgical techniques for adrenal lesions close to vena cava can be challenging for its characteristics and difficulties. In an attempt to present our experiences in the retroperitoneoscopic adrenalectomy for adrenal lesions close to vena cava.

Materials and Methods: We retrospectively reviewed the records of 389 consecutive retroperitoneoscopic adrenalectomies from September 2005 to March 2009; 15 of them were adrenal tumors close to vena cava. All the lesions were located in the right side. CTA were performed in all the 15 cases preoperatively. All the procedures were done retroperitoneoscopically. During surgery, the internal part of the adrenal gland closing to the retroperitoneum was liberated firstly, and the whole adrenal gland was dissected along the inferior vena cava completely. For partial adrenalectomy, harmonic scalpel was used to transect the tumor together with part of the normal adrenal tissue; for total adrenalectomy, the adrenal vein was ligated by ‘Hem-o-lock’ clips.

Results: Mortality was zero. There were no obvious perioperative complications except 1 case of perforation of the retroperitoneum intraoperatively in the case of pheochromocytoma. Adrenal tumors averaged 3.6cm (range 1.25-6.5cm) including 10 cases of primary hyperaldosteronism (8 adenomas; 2 Hyperplasia), 2 nonfunctional adrenal adenomas, 2 Pheochromocytoma, 1 Cushing syndrome. The mean operative time was 75min (35-145min), mean estimated blood loss was 100ml (50-250ml), mean postoperative hospital stay was 4d(3-7d). The mean follow-up was 25months(3-8months), there was no recurrence.

Conclusion: CTA or MRA should be performed preoperatively to evaluate the whole blood supply of the adrenal tumor. If local invasion was detected by the preoperative imaging studies, laparoscopic treatment is no longer a preferred option. The adrenal tissue close to vena cava must be dissected with extreme care, and a laparoscopic vascular clamp must be ready for emergency lateral clamping of the vena cava, and also prepare sufficiently in case of the conversion to open surgery.

MP-04.10
Retroperitoneoscopic Pyeloplasty (RP) for Ureteropelvic Junction Obstruction (UPJO): Evaluation of the Perioperative Data and Patients Satisfaction after a Maximum of 6.75 Years Follow-Up
University Hospital of Basel, Basel, Switzerland

Introduction and Objectives: RP has become the standard surgical procedure for symptomatic UPJO since 2001. We
present our perioperative data and communicated patients satisfaction with a maximum follow-up of 6.75 years.

Materials and Methods: Eighty-five patients (f48, m37) were operated from July 2001 to July 2008. The operating technique was in the common retroperitoneoscopic matter with hyperextended lateral position. An Anderson-Hynes pyeloplasty was performed in 80 cases (94.1%). 5 patients received a Fenger-pyeloplasty. Postoperatively, we sent a questionnaire to 82 patients which was answered by 52 patients (63.4%).

Results: Average follow-up was 28 months (range 0-81), average operating time was 156 minutes (60-360), average blood loss was 123ml (0-600). In 2 (2.4%) cases a conversion to open surgery was necessary. Minor postoperative complications occurred in 5.9% (n=5). A clinical re-obstruction was diagnosed in 3.5% (n=3), one with unsuccessful endopyelotomy before. Questionnaire: Only 2 (5.3%) out of 38 patients having preoperative pain had persistent pain, one therefore received an endopyelotomy. Forty patients (77%) regarded the perioperative time as not or only a little painful. Average duration of recovery until preoperative performance was 4.7 weeks. Concerning questions about cosmetic results, 42-50 patients were very satisfied. Average scar length after completely retroperitoneoscopy procedures was 4.6 cm. Preoperative skeptic patients were noticeable more often less content. In the area of the scars, 35 patients had no pain at all; maximum pain was indicated with 5 points at the VAS pain scale; 46 patients (88.5%) defined it as "no pain".

Conclusion: Long term functional and cosmetic results and patients’ satisfaction of retroperitoneoscopic pyeloplasty (Anderson-Hynes) are excellent and this procedure should be chosen by experienced surgeons.

MP-04.11
Abdominal Pheochromocytoma: Clinical Manifestation and Multiphasic Spiral CT Scanning Features: Report of 70 Cases
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Introduction and Objective: The purpose of this study was to assess the imaging characteristics of abdominal pheochromocytoma in multiphasic spiral CT scanning, and to determine whether these characteristics aid in differentiating pheochromocytoma from other kinds of tumors.

Materials and Methods: Multiphasic spiral CT scanning imagings were retrospectively reviewed on seventy-nine pheochromocytoma in seventy patients (28 male and 42 female; age range, 17-77 years; mean age, 45.8 years) confirmed by pathology.

Results: There were 41 symptomatic patients and 29 incidental patients, including 15 cases of latent and 14 cases of nonfunctioning, on the basis of clinical presentation. Tumors of 60 cases located in adrenal gland, of 8 cases in retroperitoneal space, and the other 2 cases were both of the above. The tumors of sixty cases were benign, and of the other 10 cases were malignant or recurrences after operation. Forty-one tumors were located in the right adrenal gland, 28 in the left adrenal gland and 10 in other positions of retroperitoneal space. The average size of the tumor was 5.8 cm. Seventy-seven lesions have well defined boundary, but two bigger lesions with unclear margins proved to be malignant. Homogeneous enhancement was found in six lesions with diameter no more than 4 cm. Blood sinus were found in twenty-five lesions. Hemorrhage, necrosis, and cystic change were found in 48 lesions, among which nine lesions have fluid-fluid level. Blood supplies were found to be rich in sixty-five lesions and medium in fourteen ones.

Conclusions: Approximately half of the abdominal pheochromocytomas are incidental. However, they have CT characteristic features: small tumors are homogenous and hypervascular, while bigger ones with rich or medium blood supply have hemorrhage, necrosis, and cystic change, approximately half of them demonstrate blood sinus or fluid-fluid level. Small lesion with medium blood supply should be differentiated with adrenal adenoma, whereas bigger lesions with medium blood supply should be differentiated with other malignant tumors. Part of the malignant pheochromocytoma is hard to differentiate with benign one.

MP-04.12
Adrenocortical Adenoma: Analysis of CT Features: Report of 100 Cases
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Introduction and Objective: The purpose of this study was to assess the value of CT multiphase scanning in diagnosing and differentiating adrenocortical adenoma.

Materials and Methods: Clinical and CT (plain scan, arterial phase, parenchymal phase, delay phase) data were reviewed on 110 adrenocortical adenoma in 100 patients (34 male and 66 female; age range, 17-77 years; mean age, 47.9 years) proved by surgery and pathology.

Results: Ninety-three patients had single lesion and 7 patients had multiple lesions in this group. Sixty lesions located in the right side, and 50 in the left. Eight tumors were cortisol-secreting neoplasm, 40 aldosteronoma, and 62 nonfunctional adenoma (including 4 oncocyto). The masses were round or oval in shape, 1-7 cm in the greatest diameter (mean 2.3cm). In CT plain scanning, 101 masses were homogenous, comparing with nephritic tissue. 91 masses were low density or iso-density; 10 masses were slightly high density (including 7 of nonfunctional adenoma, 2 of cortisol-secreting neoplasm and 1 of aldosteronoma); 9 cases of non-functional adenoma were inhomogenous or mix density. In arterial and parenchymal phase of enhancement scanning, 77 masses were homogenous or relatively homogenous mild enhancement, and 22 were homogenous or relatively homogenous moderate enhancement (including 10 of nonfunctional adenoma, 7 of cortisol-secreting neoplasm and 5 of aldosteronoma); 11 masses were inhomogenous mild/moderate enhancement (all being nonfunctional adenoma). In delay phase, the enhancement degree of 97 masses was inferior to normal adrenal tissue.

Conclusions: The most of adrenocortical adenoma had characteristic manifestation in CT: Lesions were smaller, homogenous or relatively homogenous low density in plain scanning, homogenous or relatively homogenous mild/moderate enhancement in enhancement scanning. The most of cortisol-secreting neoplasms were moderately enhancement in enhancement scanning. Part of nonfunctional adenomas were inhomogenous or mix density in plain scanning, inhomogenous mild/moderate enhancement in enhancement scanning. Most oncocyto were inhomogenous in plain or enhancement scanning. Masses less than 2cm in greatest diameter should use thin-slice scanning and MPR (multi planar reconstruction). Some non-functional adenomas which had abnormal
appearance, such as large mass, hemorrhage, necrosis, inhomogenous moderate enhancement, relapse should be differentiated with pneumochromocytoma, adrenocortical carcinoma and metastatic tumor.

**MP-04.13**
**Reconfigured Anti Reflexive Ileal Ureter for Bridging Long Ureteral Defects: Long Term Follow Up**
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**Introduction and Objective:** The long-term results of ileal replacement of the ureter using the new technique based on the Yang-Monti principle are presented.

**Material and Methods:** Between March 2001 and November 2005, the procedure was performed in 17 patients with long and/or multiple ureteric strictures. The technique involved isolation of 5 to 7.5 cm. ileal segment with further subdivision into 2 or 3 equal parts, paramesenteric incisions, unfolding and tubulization resulting in a 12 to 18 cm. ileal tube. The latter was implanted into the bladder by ileovesicostomy utilizing Lig-Gregoir anti-reflux technique in 14 patients. Patients were followed regularly for morphological and functional outcome.

**Results:** One patient died 15 months after the operation from fulminant hepatitis. For the remaining patients, mean follow-up was 68 months (range 50 - 86). Mean serum creatinine pre-operatively and at last follow-up remained stable in all patients (1.2±0.3 and 1.1±0.3 respectively) (p 0.9). Split kidney function (mercapto-acyetylglucine clearance) remained stable in 7 cases, improved in 6 and decreased in 4. The decrease of the split function in the latter cases was not statistically significant (p 0.07). Mean pre-operative renographic clearance of the corresponding kidneys was 35.2±16 mL/min, rose at last follow up to 36.6±24 (p 0.5). Reflux was noted in only 2 cases. Magnetic resonance urography showed decompression of the system in 9 patients, while 8 showed static hydrenephrotic changes.

**Conclusions:** In the long run, the advantages offered by the new technique (short bowel segment, low metabolic complications and feasibility of antireflux ileovesicostomy) are maintained. In addition, kidney function is maintained or improved in the majority of cases.

**MP-04.14**
**Evaluation of Haemostatic Sponge (Tachosil®) for Sealing of the Renal Collecting System in a Porcine Laparoscopic Partial Nephrectomy Survival Mode**
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**Introduction and Objective:** To evaluate the efficacy of Tachosil® (Nycomed Ltd, Oxford, UK), a haemostatic sponge, to seal major collecting-system injuries (in addition to providing an adjunct to haemostasis) following laparoscopic partial nephrectomy (LPN) in a porcine chronic survival model.

**Materials and Methods:** Upper-pole LPN was performed in 10 juvenile pigs (<40 kg). Following hilar clamping an energyless incision was made at a point halfway between the hilum and the upper pole of the kidney and the collecting system opened widely. Tachosil® was applied to cover the defect, after which the hilar clamp was removed, haemostasis confirmed, and the port incisions sutured. The animals were closely monitored for haematoma and urinoma formation. Four weeks postoperatively the pigs were euthanased. Assessment included body mass, blood pressure, blood loss, mass of the nephrectomy specimens, presence of urinary leakage on retrograde urography, and histopathologic examination of the kidneys. Statistical analysis was performed using Student’s t-test for parametric data and Spearman’s rank test for correlation analysis. All values are expressed as mean ± standard deviation.

**Results:** All pigs survived. Mean warm ischaemia time was 19.6 ± 3.6 minutes, Tachosil® application time was 15.2 ± 4.9 (range 10-23 minutes), blood loss 95 ± 49.7 ml, resected kidney mass 13.7 ± 5.0 gm. Mean haemoglobin level increased significantly on day 1 (10.7 gm/dl) compared to day 0 (9.8 gm/dl), but returned to baseline by day 5. Mean serum urea increased significantly on day 1 (4.0 mmol/L) compared to day 0 (1.5 mmol/L) but returned to baseline on day 3. Mean serum creatinine was significantly higher on days 1 (135.9 µmol/L) and 3 (121.7 µmol/L) compared with day 0 (96.4 µmol/L) but on day 5 it returned to baseline. There was no evidence of leak on retrograde urography performed at autopsy on day 28. Histologically, nonspecific changes were noted in all specimens, which included dystrophic calcification, scarring and areas of fibrosis at the hemi-nephrectomy surgical margin.

**Conclusions:** Tachosil® seals the collecting system following LPN in a porcine chronic survival model, in addition to providing an adjunct to haemostasis. More studies are warranted to evaluate this observation further.

**MP-04.15**
**Laparoscopic Cyst Decortication with Capsule Exfoliation in Polycystic Kidney Disease**
Xia Q, Jiang S, Zhao Y, Sun P, Jin X, Wei C, Zhang Q
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**Introduction and Objectives:** To investigate the methods and clinical value of laparoscopic cyst decortication with capsule exfoliation for the therapy of ADPKD.

**Materials and Methods:** From February 2004 to November 2007, 238 ADPKD patients with chronic pain(N=131), hypertension(N=154), and renal insufficiency(N=85) underwent 263 LCD with capsule exfoliation procedures. The mean age of the patients was 46 years old (range 28–62 years). All these cases treated with transperitoneal laparoscopy were reviewed retrospectively.

**Results:** All cases underwent LCD with capsule exfoliation were treated successfully with the mean operating time was 2.6 hours (range 1.6–7.3 hours) and mean estimated blood loss was 153ml (range 60–1205ml). An average of 239 cysts (range 178–482) were treated per patient. The mean follow-up time was 33.5 months (range 27–48 months). The average postoperative hospital stay were 6.5 days (range 4–23 days). The percentage of patients with pain relief was 80% and 76% at 12 and 24 months respectively. The percentage of hypertension symptom improvement was 77% and 64%, at 12 and 24 months respectively. The percentage of patients of the operated renal GFR improvement was 66% and 57%, at 12 and 24 months respectively. The percentage of patients of the operated renal GFR improvement was 66% and 57%, at 12 and 24 months respectively. The percentage of patients of the operated chronic kidney disease deterioration was 66% and 57%, at 12 and 24 months respectively.

**Conclusions:** Laparoscopic cyst decortication with capsule exfoliation offers the potential benefits of pain relief rate, blood pressure improvement, while renal function remained largely unchanged over the follow-up period compared with single cyst decortication. For ADPKD patients with debilitating pain, laparoscopic cyst decortication with capsule exfoliation has been shown to be safe and efficacious.
**Moderated Poster Session 5: Oncology/Miscellaneous**
**Monday, November 2**
**15:15-16:45**

**MP-05.01**

**Radio-Frequency Ablation (RFA) for Post-Chemotherapeutic Metastatic Germ Cell Tumors as Minimally Invasive Salvage Therapy**

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**Introduction and Objective:** Radio-frequency ablation (RFA) is an effective and established minimally invasive treatment option for liver tumors. Recently, the therapeutic target of RFA has been expanded to primary small kidney cancer and also lung metastasis for salvage surgery. The aim of this preliminary study is to assess the efficacy of RFA against post-chemotherapeutic metastatic germ cell tumors as salvage therapy.

**Materials and Methods:** RFA was performed for 41 tumors (18 patients) with 31 lung tumors (13 cases) and 10 liver tumors (6 cases) and with tumor marker normalization (12 tumors, 8 patients) or persistent high tumor marker (29 tumors, 10 patients). The median age was 55 years old (range 20-53). The electrosurgical generator delivered radio frequency energy through a 17 gauge Cool-tip single straight electrode. Thermal ablation was performed under venous sedation or local anesthesia, guided and monitored with computed tomography (CT) and CT fluoroscopy. Successful ablation was denoted by the development of ground glass opacity for lung tumors and the determination to be 60°C within the tumors for liver tumors. Follow-up enhanced CT scans were evaluated 1 month after RFA and then every 3 months. Complete response was designated as no tumor enlargement in lung tumor or no enhancement of liver tumors in 1 months-after CT.

**Results:** The median tumor size was 9mm (range 5-20mm) in curative setting and 15mm (5-40mm) in desperate setting. Median number of RFA was once (range 1-5 times). Successful ablation was obtained in 82.3% tumors. Complete response was observed in 100% of curative setting group and 72.7% of desperate setting group. Three cases of pneumothorax with intubation and one case of ARDS were observed. The minor complications indicated small pneumothorax and bleeding around the ablation sites. The clinical outcome is as follows: no evidence of disease is observed in 8 patients (100%) of curative setting group, and 2 patients (20%) are alive with disease and 8 patients (80%) died from metastasis of desperate setting group, during a median follow-up of 20 months (range 1-35 months) after RFA.

**Conclusions:** RFA would be a safe and effective treatment option for post-chemotherapeutic metastatic lesion of GCT.

**MP-05.02**

**Expression of N-Cadherin in Yolk Sac Tumor of the Testis**

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**Introduction and Objective:** More than half of adult testicular germ cell tumors consist of more than one cell type. Appropriate medical management depends on accurate pathologic diagnosis and tumor classification. Yolk sac tumor (YST) is present in approximately 40% of mixed germ cell tumors but may be difficult to recognize because it displays several microscopic patterns. In about 75 to 90% of cases -fetoprotein can be detected in the serum or by positive staining in the tumor. The focal positivity can make it difficult to identify and differentiate the YST component. As such, additional markers of endoderm differentiation would be beneficial for the diagnosis and classification of these tumors. N-cadherin is a member of the cadherin gene family that encodes the N-cadherin protein, which mediates cell adhesion. Aberrant expression of N-cadherin by cancer cells, e.g. prostate cancer, can contribute to local invasion and metastasis. The purpose of this study was to determine the presence and distribution of this protein in germ cell tumors.

**Materials and Methods:** Thirteen mixed germ cell tumors containing YST components were stained for N-cadherin utilizing monoclonal antibody (Dako North America, Inc., CA, USA) at a dilution of 1:120

**References:**

for 1 hour, followed by 30 minutes in biotinylated horse antimouse (Vecto-Burlingham, CA) at a dilution of 1:400, and ABC (Vector, Burlingham, CA) Vector VIP was used as chromogen.

**Results:** All YST components stained positive for N-cadherin. Ten of the 13 were extensively positive, 2 were 3+ positive and 1 tumor had only weak positivity. In contrast, of the 12 tumors containing teratomas, 11 were weakly positive for N-cadherin and 1 was negative. Twelve tumors contained embryonal carcinomas none of which expressed N-cadherin. Eight of the mixed germ cell tumors contained syncytiotrophoblasts cells, none of which stained positive for N-cadherin. Similarly, none of the 6 areas of seminoma expressed N-cadherin.

**Conclusions:** N-cadherin is a useful marker for YST and provides a novel method of identifying the presence of YST component within mixed germ cell tumors, allowing differentiation from seminomas, embryonal carcinomas, and teratoma.

**MP-05.03**

Bilateral Segmental Testicular Infarction: Two Cases of an Extremely Rare Condition, with a Review of the Literature

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**Introduction and Objective:** Segmental testicular infarction is extremely rare. It is usually unilateral, and very rare in children. A recent report claimed to be the first bilateral case.

**Materials and Methods:** We describe two cases of bilateral segmental testicular infarction, one in a child. (1) A 9-year-old boy presented with a 3-month history of fever, poly-arthritis and skin rash. He suddenly developed bilateral testicular pain. With a presumptive diagnosis of testicular torsion, emergency scrotal exploration was performed. Both testes were dark blue (gangrenous) but both epididymes appeared well vascularized. Left orchidectomy and right orchidopexy were performed. Histology showed focal testicular infarction with severe vasculitis. Subsequently a diagnosis of systemic lupus erythematosus (SLE) was made. (2) A 40-year-old man known with SLE presented with left testicular pain. Ultrasound revealed a hypo-echoic testicular lesion on the left, with a normal right testis. He was treated with a fluoroquinolone antibiotic and non-steroidal anti-inflammatory. Three days later he developed severe right testicular pain. Ultrasound showed hypo-echoic lesions in both testes. Histopathological examination of testicular needle biopsies showed focal infarction, compatible with vasculitic infarction. In response to these cases we conducted an extensive literature review on segmental testicular infarction.

**Results:** The condition is extremely rare (0.3% of focal intra-testicular lesions visualized on ultrasound) with <50 case reports in the literature. It is extremely rare in children. Three recent case series (total = 55 patients) included only 3 bilateral cases (aged 30, 38 and 51 years). Most cases are idiopathic. Known causes include polycythemia, sickle cell anemia, acute epididymo-orchitis, hypersensitivity angiitis, arterial intimal fibroplasia, previous surgery and trauma. As hypo-echoic lesion on ultrasound it may be confused with testis cancer, but distinctive features on imaging have been described in recent publications.

**Conclusions:** Bilateral segmental testicular infarction should be considered in the differential diagnosis of scrotal pain and testicular mass lesions. It can be reliably diagnosed on ultrasound and magnetic resonance imaging, and can be managed conservatively, avoiding unnecessary orchidectomy.

**MP-05.04**

The Natural History of Small Incidental Testicular Masses in Infertile Men: Is Surveillance the New Standard of Care?

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**Introduction and Objective:** With the widespread use of scrotal ultrasound in the evaluation of male infertility, the incidence of small, incidentally detected testicular masses is increasing. Ultrasound follow-up has been proposed as an alternative to surgery. We review our management to date of small, non-palpable, incidentally detected testes masses, and document the natural history of these lesions.

**Materials and Methods:** We reviewed the records of patients seen at the Mount Sinai Hospital Fertility Clinic from 2001-2008. Patients with one or more testicular lesions fitting all of the following criteria were included in the study: intratesticular, hypoechoic, diameter < 1 cm, non-palpable. We assessed patient age and semen parameters, the size and growth of the lesion on serial ultrasounds, need for surgery, and pathologic diagnosis.

**Results:** Of 4418 patients evaluated, 46 met the inclusion criteria. Mean age was 35. Semen analysis showed azoospermia, oligospermia, and normospermia in 15, 18, and 7 patients respectively, and was unavailable in 6 patients. Mean ultrasound follow-up interval was 253 days, and mean number of ultrasounds was 2.8 (range 1-7). Mean lesion diameter was 4.3 mm (range 1-10 mm). Growth over time was seen in 19 patients, in which the mean growth was 1.2 mm (95% CI 0.7-1.2 mm). Of the 46 patients, 38 had serial ultrasound follow-up only, 3 had immediate surgery, and 5 had surgery following a period of ultrasound follow-up. Indications for surgery were interval growth in 2 and patient choice in 6. Larger size and vascularity were associated with intervention. One patient had radical orchietomy for pure seminoma identified due to interval growth from 3 mm to 6 mm at the 3 month ultrasound. He remains recurrence free. The other 7 lesions excised by partial orchietomy were benign (Leydig cell tumor in 5, unspecified in 2).

**Conclusions:** We present the largest series to date of incidental hypoechoic testicular masses. The vast majority of lesions were safely followed with serial ultrasound and did not show significant growth or require surgical removal. Serial ultrasound follow-up of small, non-palpable, hypoechoic testicular masses detected incidentally during work-up for infertility appears to be a safe alternative to immediate surgical removal.

**MP-05.05**

Surgical Management of Low and Medium Risk Penile Cancers, with Isotope Guided Sentinel Lymphnode Biopsy Technic

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**Introduction and Objectives:** Consistently persist over the therapeutic approach to low and medium risk penile carcinoma, particularly in patients with clinically negative inguinal lymph nodes. Inguinal lymphadenectomy is associated with a high morbidity rate, and in the vast majority is unnecessary. Dynamic scintigraphy for the identification of a sentinel node and screening of subclinical metastasis seems to be a safe and reliable method according to data published recently. The
MM-05.06
Telemedicine in Rural Urology Practice: A Northern Ontario Experience
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Introduction and Objectives: Found in several locations across Northern Ontario, Ontario Telemedicine Network (OTN) is Canada’s busiest and most comprehensive telemedicine program. We reviewed the role of telemedicine in the management of urology patients in rural and remote Northern Ontario communities.

Materials and Methods: Application to the Ontario Telemedicine Network (OTN) to build an office-based studio was approved. Urotelehealth Studio #0285 was certified in November 2006. The Clinic was planned to operate 4 hours/month. The OTN staff received referrals and scheduled these every 15 minutes. A schedule was faxed to the urologist 24 to 48 hours early. Patients were seen in hospital-based studios run by OTN nurses. Primary health care providers and family were welcome to attend. The urologist’s and OTN records were reviewed to determine the number of clinics, patient encounter and type of clinical encounter. Patient demographics, diagnoses and time utilized were studied.

Results: There were 22 clinics between 2006 and 2008. A total of 389 patients: 276 males and 113 females between 3 and 96 (mean 64) years. Patient encounter included: counselling (35), consultation (85), and follow-up to review test results and surgical outcomes (269). There was a wide range of urological diagnoses. The time logged was 7.1 hours, average 3.2 hours/month. The average time per encounter was 11 minutes. Cancellation due to a technical problem occurred once.

Conclusions: Telemedicine resulted in rapid follow-up and review of test results and surgical outcomes. Counselling of patients and families enhanced care. Time management for the urologist was efficient exceeding the goal of 352 encounters by 37. Travel time for both the urologist and patient was greatly reduced.

MP-05.07
Applying Bipolar Electrocautery for Sealing of Lymphatic Vessels in Laparoscopic Retroperitoneal Lymph Node Dissection: A Preliminary Report
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Introduction and Objective: To evaluate the outcome of laparoscopic retroperitoneal lymph node dissection (LRPLND) using bipolar electrocautery instead of clipping the lymphatic vessels.

Materials and Methods: From August 2002 to April 2008, a total of 13 patients (mean age, 24.2 years; range, 19-39) underwent transperitoneal LRPLND for non-seminomatous germ cell tumor of testis were included in this study. In this experience, in contrast to other techniques, we did not use clips for ligation of the lymphatic vessels, instead, we used bipolar cautery for coagulation of the lymphatic and blood vessels. We followed up the patients for lymphocele formation or lymphatic leakage.

Result: Six tumors were on the left side and 7 were on the right side. Pathological stage was I in 12 patients and Ila in 1. The mean follow-up period was 29.9 months (range, 3-70 months). No reoperation was required. There was no prolonged lymphatic leakage or lymphocele formation during the follow-up period.

Conclusion: Our study suggests that using bipolar electrocoagulation instead of clips (as a foreign body) for sealing of lymphatic vessels during LRPLND does not seem to have deleterious effects on the outcome of the procedure. This should be further evaluated in randomized clinical trials with more cases.

MP-05.08
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Introduction and Objective: The treatment of testicular cancer requires the collaboration among urologists and oncologists. The resection of residual retroperitoneal masses after chemotherapy should form a fundamental part in the management of most of these patients. We present our series of residual retroperitoneal mass surgery after chemotherapy. We evaluated the possible preoperative parameters that can predict the retroperitoneal mass histology.

Materials and Methods: In this study, we reviewed 60 resections of residual retroperitoneal masses of testicular tumors after chemotherapy performed at our department between 1995 and 2007. We evaluated the relationship between the histology of the retroperitoneal mass and the possible risk factors, such as the outcomes after the chemotherapy, which was evaluated as changes in the size of the retroperitoneal mass, and neovascularization of serum tumour markers, alpha-fetoprotein (AFP) and human choriongonadotropin (hCG). We also evaluated the histology and size of the primary testicular cancer.

Results: The histology of retroperitoneal masses was necrosis or fibrosis in 41.7% cases, teratoma in 48.3% and viable tumour in 10%. Repeated resections of retroperitoneal masses were required in four patients. The size of the retroperitoneal mass diminished after the chemotherapy.
in 62.1% cases, moreover negative serum tumour markers were found in 86.7%. The absence of response after chemotherapy was no related to the presence of viable tumour in the histology of the retroperitoneal mass. The mean size of the retroperitoneal masses which contains viable tumour was higher; however, the difference was not statistically significant. Finally, the size and the histology of the primary testicular cancer were not statistically related to the histology of the retroperitoneal mass.

**Conclusion:** The resection of residual retroperitoneal residual masses in metastatic testicular tumour is a useful alternative to the classic retroperitoneal lymph node dissection. The resection of retroperitoneal masses alone is associated with less morbidity. However, we can not determine preoperative parameters that predict the histology of retroperitoneal masses. Therefore, the resection of residual retroperitoneal masses after chemotherapy in testicular cancer must be performed.

**MP-05.09 Salvage Retroperitoneal Lymphadenectomy (RPLA) in Chemorefractory Nonseminomatous Testicular Germ Cell Tumours (NSGCT)**

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**Introduction and Objective:** We reviewed our experience with RPLA after multiple cisplatin (CDDP)-based chemotherapy (CT) regimens in patients (pts) with NSGCT and specifically evaluated the clinicopathologic and treatment trend in addition to potential predictors of survival.

**Materials and Methods:** Forty-one pts with NSGCT underwent their RPLA after > 2 regimens of CT. Before 2nd line CT, 32 pts (78%) failed to achieve a CR to 1st line treatment and 9 (22%) had achieved CR followed by disease (ds) recurrence/progression at median free interval (MFI) at 28 months (m). 13 pts (32%) necessitate redo-RPLA, accompanied with nephrectomy in 6 pts. 13 Extra-retroperitoneal (ERP) resections were performed in 11 pts (27%), including pulmonary (7), neck (4) and liver (2) sites.

**Results:** Thirty pts (73%) are rendered grossly free of ds and 26 (65%) obtained serologic remission. Alive and free of ds (AFD) are 19 pts (46%) at MFU of 131 m. Studies of RT pathology demonstrated the presence of fibrosis in 15%, teratoma in 39% and vital GCT in 46%, with AFD in 67%, 56% and 32%, respectively. On univariate analysis, survival was worse in pts with RP masses > 5 cm (p < 0.04), elevated AFP (p < 0.05) or HCG (p < 0.007), ERP resection (p = 0.01) and vital GCT (p < 0.004). On multivariable analysis, a RP mass > 5 cm (p < 0.03) and vital GCT (p < 0.005) predicted a worse prognosis. Vital GCT either in the RP or in ERP sites predicted worse prognosis (p = 0.001). Although it was not statistically significant, there was trend toward improved survival in pts who had RP masses < 5 cm (p = 0.14) and in pts who had fibrosis or teratoma in RP (p = 0.07).

**Conclusions:** Our data support the continued use of salvage RPLA in 3 separated groups of pts: 1. Pts who achieved a CR on 2nd line CT and have no radiologic evidence of ds should undergo RPLA; 2. Pts who achieved a PR to CT should undergo RPLA with ERP surgery, as indicated; 3. Highly selected pts with residual masses and elevated serum tumor markers, particularly AFP, after CT may be candidates for desperation surgery.

**MP-05.10 The Long Term Side Effects of Adjuvant Radiotherapy (RTX) vs Carboplatin (CBDCA) Chemotherapy (CT) in Clinical Stage A (CS-A) Seminomatous Testicular Tumours (STT)**

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**Introduction and Objective:** RTx is associated with increase of 2nd cancer and cardiovascular disease (ds). Because of difficulties in detecting recurrence on surveillance which can occur to out 10 years (y), this institution has introduced CBDCA CT as the treatment of patients (pts) in CS-A STT and this study analyze late events in these 2 cohorts of pts.

**Materials and Methods:** Between 1982 and 2005, 545 pts in CS-A STT were randomized to receive either RTx (n = 315) (TD 30 Gy) (Arm A) or 2 cycles of CBDCA CT (400 mg/ sqm/q3w) (Arm B) (n = 222).

**Results:** Arm A- overall relapse rate (ORR) occurred in 13 pts (14.1%) with late relapse (LR) in 4 pts (1.3%) with CR following applied therapy in 3 pts (75%). Ten pts (3.2%) developed metachronous GCTT. Late sequel were observed in 23 pts (7.3%): gastric ulcer (5), gastritis (3), ileus (2), dyspepsia (2), myelopathy (1), myelosuppression (1) cardiovascular disturbances (2) and fibrosis in irradiated fields (7). Six pts (1.9%) developed 2nd malignancy within MFI of 5 y: lung cancer (2), lung cancer / non-Hodgkin lymphoma (1), gastric cancer (1), thyroid cancer (1) and bladder cancer (1). At MFI of 12 y DSS is achieved in 95.2% pts. Overall mortality rate was 4.5% (1.3% from GCTT, 1.6% from 2nd malignancy and 1.6% from other causes). Arm B- ORR was 2.6% with LR in 2 pts (0.9%) with universal CR following salvage CT. Metachronous GCTT occurred in 4 pts (1.7%). At MFI of 7 y (38 > 10 y, 134 > 5 y), DSS was 100%; 1 pt died from lung cancer at 28 m and 1 pt died of cardiovascular disorders at 45 m. The late side effects from pts managed with RTx were slightly more pronounced with higher level of moderate to severe lethargy (24% vs 7% for pts receiving CBDCA CT) 4 weeks after starting treatment.

**Conclusions:** The numbers of cases are too small to be absolutely confident of these figures. However, this data strongly suggests that there are no excess of cancer and cardiovascular deaths in the CBDCA CT cohort.

**MP-05.11 Strategy to Interest Women Medical Students in Urology: Proposal of the Society of Female Urologists in Japan (SFUJ)**

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**Introduction and Objective:** The number of women doctors is increasing progressively; however, there are very few female urologists in Japan. We know from clinical experience that more female urologists are needed, particularly as some women would only consult a female doctor. As a result, the SFUJ has performed a preliminary study to determine 1) why most women students do not want to specialize in urology and 2) what can be
done to raise the proportion of women urologists in Japan.

Materials and Methods: Three-page questionnaires were designed and mailed to 11 medical schools to which members of the SFUJ steering committee belong. Questions focused on the determinants of selection of field as a career. Comparisons between urology applicants and non-applicants were evaluated by the chi-square test.

Results: We obtained 168 responses from women medical students in their 5th or 6th year. As working conditions, 44% hoped for full time work with no night duty. The five most frequently selected determinants of field selection were “interest” (89%), “mentorship” (73%), “challenging career” (71%), “dependable postpartum policies in training programs” (59%) and “compatibility of career with family life” (58%). The most frequently cited positive and negative images of urology were, respectively, “interesting” (31%) and “most of the patients are male” (57%). Although six (4%) students answered that urology would be their career of choice, ninety-eight (58%) would not choose urology as their career. Of the urology applicants, 83% reported that urology was “interesting”; by contrast, less than 15% of the non-applicants found urology “interesting” (p<0.05). The perception that “most of the patients are male” was cited by 3% of urology applicants, whereas 62% of the non-applicants felt this way. Twenty-three (14%) of the students were unaware of the field of “female urology”.

Conclusion: To recruit female medical students, it is important to help the students to develop a realistic perception of the urological field that includes female urology and removes the negative image that “most of the patients are male”. The creation and enforcement of maternity policies in training programs will also encourage female medical students to enter a career in urology.

MP-05.12
Three-Stage Training Model for Laparoscopic Nephron-Sparing Nephrectomy
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Introduction and Objectives: To introduce the three-stage model designed for urologists without laparoscopic experience to master laparoscopic nephron-sparing surgery (LNSS).

Materials and Methods: The first stage is initiated on the box trainer. The second stage is scheduled to perform on pig model developed according to the standard method of LNSS. The third stage is in the operating room, including initial assisting the laparoscopic surgeries, then 7-9 relative simple laparoscopic procedures performed by trainees, finally LNSS performed by them. Mentor-initiated model is applied during the operations.

Results: Four trainees finished all three stages of training successfully. The mean cumulative time spend on the box trainer was 70 hours, and they mastered the basic laparoscopic skills including sewing and knotting after the first stage training. Every trainee performed 20 LNSs on pig model which consisted of 6 cases of semi-nephrectomy. The operative time for LNSS located on the renal poles decreased from the initial 120±10.9min to 69±5.2min for the 14th LNSS (p<0.001). When the 4 trainees successfully performed 7-9 relatively simple laparoscopic operations including retroperitoneoscopic renal cyst unroofing and upper ureterolithotomy and anatomic adenectomy, they were evaluated objectively and subjectively by the mentor, and then were permitted to perform 3 LNSs under the supervision of mentors. No complications occurred. The mean operative time for LNSS was 87 min, and the mean warm-ischemia time was 25 min.

Conclusion: The three-stage model is effective and feasible for the surgeons to master the advanced LNSS which can reduce the complications and improve the curative effects remarkably.

MP-05.13
Descriptive Analysis of Urological Cancers, Komfo Anokye Teaching Hospital Oncology, Ghana
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Introduction and Objective: We describe urological cancers diagnosed and treated at KATH Oncology. Urological cancers are usually referred to the director for management. The center also caters for patient from the middle and northern belts of the country.

Materials and Methods: Retrospectively, 212 urological cancer cases data were extracted from the Komfo Anokye Teaching Hospital Oncology departmental-based cancer registry. The data collected between 2004 and 2008 based on an analytic case-finding reportability method was coded using ICD-0-3 and FIGO staging scheme. The data was analyzed and results presented. Unknown variable values were excluded in the analysis in order to present the true picture of the situation.

Results: There were higher number of male cases (n=167) than in females (n=45). This is due to higher number of prostate cases which accounted for more than 60% of the overall cases, but higher number of females (n=45, 62.5%) than in males (n=27, 37.5%) for bladder, kidney and renal pelvis cancers. The mean ages per disease are: prostate (n=129, 60.8%), 69; bladder (n=60, 28.3%), 56; kidney (n=11, 5.2%), 37; testis (n=8, 3.8%), 32; penis (n=3, 1.4%), 59; and renal pelvis (n=1, 0.5%), 73. The basis of diagnosis were 28% clinical and 72% histology verified of which all 91 histology verified prostate cases were adenocarcinoma, 56% (n=24) transitional cell carcinoma in bladder, 100% (n=5) renal cell carcinoma in kidney, 50% (n=3) seminoma in testicular cases, 100% (n=5) squamous cell carcinoma in penile cancers, and the only renal pelvis case was transitional cell carcinoma. When these cancers are grouped according to the cell types, there were 7% grade I, 11% grade II, 15% grade III and 67% grade IV. Only 41 cases were staged, of which 2% were stage II, 27% stage III and 71% stage IV. 41% of the cases were farmers and traders, and another 41% were public servants and pensioners.

Conclusion: Unusually there was higher percentage of transitional cells in bladder cancers. There is an urgent need of population-based cancer registry and primary prevention of these cancers in the region to reduce late stage diagnosis.

MP-05.14
Robotics in Urology: Comparison of International Practice Patterns
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Introduction and Objective: To determine the current status of urologic laparoscopic and robot-assisted surgery (RAS) globally.

Materials and Methods: There were 291 surveys completed by urologic staff and trainees at various national and international conferences in 2008. The 58-item questionnaire assessed the individual and institutional practice patterns of minimally
invasive surgery (MIS) with a focus on RAS. Domain specific sections of the survey examined RAS practice on the prostate, bladder, and kidney. Surveys from Europe and North America (ENA) were compared to surveys from the Middle East and Asia (MEA).

**Results:** There were 166 (57%) surveys completed by urologists in ENA and 125 (43%) from urologists in MEA. There were 153 (54%) respondents who were urologic staff and 103 (36%) respondents were in training. 80% of respondents performed MIS with 64% having prior formal training. Respondents in ENA were more likely to have had formal training in RAS and performed more RAS cases (p<.01). Sixty percent of urologists in both groups planned to perform RAS in practice. More than 75% of all respondents felt RAS training was either beneficial or required for their practice. Sixty percent of those surveyed from ENA had used robotic consoles in training courses compared to only 20% in MEA (p<.01). Dedicated RAS support teams were far less common in MEA (p<.01). Respondents in ENA performed more robot-assisted radical prostatectomy (RARP), robot-assisted radical cystectomy (RARC), and robot-assisted nephrectomy (RAN) in comparison to MEA respondents. Contrastingly, MEA respondents were more likely to believe RARP, RARC, and RAN to be the gold standard of care (p<.05).

**Conclusions:** Robot-assisted urologic surgery continues to develop and expand around the world. Despite less exposure, training, and access, more urologists in the Middle East and Asia considered RAS to be the surgical standard for prostatectomy, cystectomy, and nephrectomy.

**MP-05.15**
International Support to Scale up Male Circumcision for HIV Prevention: Operation Abraham Model for On Site Training and Service Delivery by Specialized Urologists
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**Introduction and Objective:** In light of compelling evidence from controlled randomized trials demonstrating the effectiveness of foreskin removal in reducing HIV transmission to heterosexual men, training of surgeons in mass male circumcisions (MC) in Africa was required. Our group is the first to develop a comprehensive model of on-site training of medical circumcisers.

**Materials and Methods:** Responding to a request from Swaziland (HIV prevalence 38.8%, circumcision prevalence < 10%) the Jerusalem AIDS Project-Operation Abraham Collaborative (JAIP/OAC) sent three training delegations to a community level clinic in Mbabane. Following intensive preparations and orientation of a cadre of Israeli Jewish and Muslim surgeons three teams were deployed. Two expert surgeons and one public health specialist. During their 14-day mission the teams effectively transferred JAIP/OAC MC delivery systems to the host organization – FLAS. Each delegation performed: 1) on-site, hands-on, training of local doctors and nurses in mass MC; 2) education sessions for the larger health community on MC benefits; 3) consultations with policy developers and implementers. As a group, we worked on the development of a system to recruit, deploy and monitor the engagement of international surgeons and urologists in future similar delegations for Africa and the Caribbean.

**Results:** A pioneer pilot training project in Swaziland, collaboration between JAIP/OAC, Hadassah Medical Organization (Israel) and FLAS demonstrated the acceptability and applicability of international medical circumcisers in support of MC scale up in priority countries.

**Conclusion:** A model for recruitment, orientation and deployment of international surgeons to be effective in on-site training of African doctors in mass MC for HIV prevention has been developed, tested and evaluated. Expansion to future delegations with a focus on SIU members will be presented and discussed.

**MP-05.16**
Should Experienced Open Prostatic Surgeons Convert to Robotic Surgery? The Real Learning Curve for a Single Surgeon
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**Introduction and Objective:** To prospectively compare the clinico-pathological outcomes of RRP to RALP in a single-surgeon series of 714 consecutive prostatectomies over 3 years.

**Materials and Methods:** From February 2006 to December 2008, 502 patients underwent RRP and 212 underwent RALP by a single urologist. The study was a prospective comparison of baseline patient and tumor characteristics (age, serum PSA level, clinical stage and Gleason score), intraoperative parameters (operative time, blood loss, transfusion), postoperative parameters (hospitalization duration, catheter duration, complications), urinary functional outcomes measured by the Expanded Prostate Cancer Index Composite (EPIC) questionnaire and histopathologic parameters in the two groups.

**Results:** The patients in both groups were similar with respect to age, pre-operative PSA level, and prostatic volume. However, there were significantly more high stage (T2b and T3, P=0.02) and grade (Gleason 9, P=0.01) tumours in the RRP group. The mean operating time was 147 min [100-185] for RRP and 157 min [120-294] for RALP. Ninety-six percent of RALP patients had <500mls blood loss compared with 69.7% of RRP patients (P<0.0001). The mean hospital stay was 2.8 days in RALP group and 5.5 days in RRP group. There were no conversions in the RALP group. Major complications (Clavien’s classification grade 3 and 4) were 2% and 1.5% for RALP and RRP respectively. Positive surgical margins status for pT2 and pT3 patients were comparable in RALP and RRP groups (10.5% vs 10.1%, P=0.97; 40.5% vs 28.8%, P=0.06). Both groups achieved equal late continence using the EPIC questionnaire. The learning curve showed that it required approximately 20 cases for 4 hours proficiency, 50 cases for safety, 50 cases for pT2 surgical margin control, 100 cases for pT3 surgical margin control and 150 cases to improve early continence (6 weeks).

**Conclusions:** Our series has shown that certain components of the learning curve for an experienced open surgeon in trans-
ferring his skills to the robotic platform take different times and this should prompt a selective introduction of these variables to maximize safety and outcome, as well as to provide appropriate, informed consent.

MP-05.17
**Time for Change?**
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**Introduction and Objective:** The substantially higher incidence of urological cancers amongst tobacco smokers is well established, and smoking cessation forms a crucial part of long-term management. Clinicians also risk stratifying patients for conditions with strong hereditary components such as prostate cancer, routinely asking screening questions to determine relevant family history. Radiation from medical sources, which carries significant lifetime risk of fatal cancer especially in diseases such as urolithiasis where computed tomography is gold standard; it is however, poorly comprehended by doctors and patients alike. This is an important issue both of patient safety and clinical governance. We determine baseline radiation knowledge in a range of junior doctors and radiation exposure to patients presenting with urolithiasis.

**Materials and Methods:** A retrospective study of 65 patients presenting with first episode of renal colic. All relevant radiation exposing events from initial presentation and for the subsequent 1 year relating to their underlying urolithiasis were recorded. Estimated one-year effective radiation doses received by individual patients were calculated using accepted published data. Forty junior doctors across a range of specialties completed a questionnaire evaluating baseline knowledge of radiation use. Statistical evaluation using unpaired t test and ANOVA where appropriate.

**Results:** Only 85% of doctors were aware radiation carried potential oncogenic risk, 70% were unaware that there is no annual limit in the UK for medical radiation exposure and worryingly 17.5% were unable to recognize that ultrasound and magnetic resonance imaging did not involve ionising radiation. There was no significant effect on increasing seniority. Mean radiation exposure was 10.5 millisieverts (range 2.5-42.9) with no significant difference between men and women. 47.7% of patients received a radiation dose in just one year of >10 millisieverts which corresponds in a lifetime fatal risk of cancer of 1:1000.

**Conclusion:** In one year and one disease entity, 47.7% of our urolithiasis patients received more than 10 mSv. Radiation knowledge amongst junior doctors is appalling and has patient safety and clinical governance implications as it is likely to result in excess medical radiation induced cancers. We suggest it is time to adopt a simple tariff system for radiological procedures, making their oncogenic potential clear to patient and clinician.

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**Moderated Poster Session 6: BPO/LUTD 2**
Monday, November 2
15:15-16:45

MP-06.01
**Comparing Outcomes and Complications of Transvesical Prostatectomy Versus Transurethral Resection of Prostate**
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**Introduction and Objective:** Open transvesical prostatectomy (OP) and transurethral resection of prostate (TURP) have been done for decades. But their comparison has been based on open, non-randomized or retrospective studies. There has been lack of good quality or unbiased evidence for the presumed superiority of TURP. We compared OP with TURP in a comparative non-randomized controlled trial.

**Materials and Methods:** There were 100 patients who were candidates for prostate surgery with prostates between 30 to 70 g who underwent OP or TURP, alternatively. Complications were compared at operation, early postoperative period and in follow up. The primary endpoint of interest was improvement in urinary peak flow rate (PFR). Secondary endpoints included improvement in international prostate symptom score (IPSS) and residual urine volume and surgical complications.

**Results:** Fifty patients underwent OP and 50 patients underwent TURP. Median (IQR) of maximal urinary flow (PFR) improvement was 11.1 (7.6-14.2) and 8.0 (2.2-12.6) in OP and TURP groups (p = 0.02) and was not associated with prostate size. Mean ± SD of IPSS improvement was 22.3 ± 7.4 and 20.4 ± 8.3 in OP and TURP groups (p > 0.05). Re-operation due to residual prostate lobe, urethral stricture and urinary retention was performed in 8 patients in TURP group versus no patients in OP group (p = 0.006). Dysuria was more frequent in TURP patients (p = 0.001). Transfusion rate and time to urethral catheter removal was not different between treatment groups. Hospitalization duration was slightly longer in OP patients (p = 0.04).

**Conclusion:** OP is an acceptable operation for prostates sized 30-70 g. Higher PFR improvement and less frequent dysuria and re-operation has made OP a suitable option for discussing with patients parallel with TURP.

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**MP-06.02**
**Transurethral Suspendplasma Resection of Prostate for Treatment of BPH Patients**
Song X, Zhou P, Zhang S, Gong M
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**Introduction and Objective:** To discuss the efficacy and safety of transurethral suspendplasma resection of prostate (SPRP).

**Materials and Methods:** A total of 216 patients with BPH aged 57-92 years (mean 69.6 years), including 72 patients older than 80 years. Twelve cases were recurrent lesions after TURP. All the patients had lower urinary tract obstruction symptoms due to BPH lasting 6 months to 28 years (mean 5.2 years). One hundred and twenty-seven patients had urinary retention episode. The mean baseline prostate volume was (52.6 ± 12.7) ml. The concomitant diseases were diabetes (62 cases), cardiovascular diseases (83 cases). Nineteen cases were implanted with pacemakers. All the patients were treated by SPRP. We observed the operative time, blood loss and whether transurethral resection syndrome or obturator nerve reflex occurred. International prostate symptom score (IPSS), quality of life (QOL) and maximum urinary flow rate (Qmax) were compared pre and post operation.

**Results:** All 216 patients were successfully treated by SPR-TURP. Operative time was (53 ± 11), Blood loss was (89.2 ± 23.8) ml. The resected tissue was (39.5 ± 8.3) g. No transurethral resection syndrome or obturator nerve reflex occurred. In 12 cases urethral stricture occurred and was cured by urethral dilatation. All the patients were followed up for 3-32 months postoperatively. The IPSS decreased from 24.6 ± 5.9 to 8.4 ± 3.9 and the QOL decreased from 5.7 ± 0.6 to 2.0 ± 0.5. Residual urine volume decreased from 73.6 ± 19.5 to 16.5 ± 8.6 ml.
The peak flow rate increased from 7.9±4.3 to 19.2±6.3 ml/s.

Conclusions: SPRP is a safe and effective method for transurethral resection of prostate with fewer complications. It is a promising technique in clinical practice.

MP-06.03
Greenlight PV 80W vs. HPS 120W: Does More Power Provide Better Results?
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Introduction and Objective: The prospective study compares perioperative parameters and functional outcome of 2 matchable patient (pt) groups treated with the Greenlight PV or HPS laser system for symptomatic benign prostate hyperplasia (BPH).

Materials and Methods: The last 80 consecutive pts treated with KTP laser at 80W (group A) were compared with the first 80 pts treated with the HPS Greenlight laser system (80-120W – group B).

The pts preoperatively underwent standard urological evaluation and were assessed again after 1, 3, 6, and 12 months for changes.

Results: Preoperative pt characteristics were comparable in both groups. With HPS 43.6% more laser energy (160,666J vs. 230,700J) was emitted in a similar median operative time (53.5 vs. 55.4 min; +3.6%). Neither was there a sign of TUR syndrome nor was a blood transfusion required (B: 1,49). Patients in group B reported a higher rate of patients who have to undergo change to conventional TURP due to intraoperative bleeding. Eleven (A) vs. 5 (B) pts (72.7%) had to carry a catheter when discharged. Patients in group B reported a slightly higher portion of dysuria after 1 and 3 months (A: 15 vs. B: 22 pts and A: 4 vs. B: 6 pts respectively) while there were 36.9% and 42.9% less urinary tract infections in this group, but there was almost no dysuria after 6 (1 vs. 0 pt) and 12 months (2 vs. 0 pts) in both groups at all. After 12 months maximum urinary flow rate (Qmax) was 20.2% (20.8 vs. 25.0ml/s) higher in group B, international prostate symptom score (IPSS) was 7.5 in group A and 6.0 in B respectively (-17.8%) and quality of life (QoL) was 16.3% lower in B than in A (A:1.7 vs. B: 1.49).

Conclusion: PVP with both systems is known as a safe and effective procedure. Applying more energy in a comparable operative time provides more efficient tissue ablation which in this study results in more favourable functional results after 12 months.

MP-06.04
Long-Term Results of Laser Vaporization of the Prostate with the 80-W KTP-Laser
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Introduction and Objective: Laser vaporization of the prostate with the 80-W KTP-laser has emerged as an alternative for the treatment of bladder outlet obstruction due to prostate enlargement. Despite the widespread use of the technique, long-term results are scarce.

Materials and Methods: Sixty-one consecutive patients with a minimum follow-up of 48 months, who underwent 80-W KTP-laser vaporization of the prostate at our institution between September 2002 and April 2004 were retrospectively analyzed. Postoperative complications, rate of reoperation, evolution of micturition parameters (maximum urinary flow rate [Qmax], PVR volume), and voiding symptoms (International prostate symptom score [IPSS], quality of life [QoL]) were evaluated.

Results: Mean follow-up was 58.1±6.9 months, mean patient age at surgery was 69.0±8.9 years, mean preoperative prostate volume was 56.3±26.7 ml and mean preoperative PSA was 3.8±3.7 μg/L with 32.8% of patients having an indwelling catheter. At 48-month follow-up IPSS decreased from 18.4±10.1 preoperatively to 8.5±7.5 (p<0.001), QoL decreased from 3.9±2.3 to 1.6±1.5 (p<0.001), Qmax increased from 7.5±4.3 ml/sec to 15.8±9.0 ml/sec (p<0.005) and PVR decreased from 128.6±119.4 ml to 28.2±41.2 ml (p<0.001), respectively. PSA decreased from 3.8±3.7 μg/L to 2.6±2.9 μg/L (ns). During the follow-up, recatheterization was necessary in 8.1% of patients. Adenocarcinoma of the prostate was diagnosed in 3 patients. Reoperation was necessary in 47.6% of the patients due to recurrent/persistent adenoma (29.5%), bladder-neck sclerosis (6.6%), and urethral stricture (11.5%).

Conclusions: Our long-term data show a long-lasting and significant improvement of micturition parameters and voiding symptoms with 80-W KTP-laser vaporization of the prostate. However, there is a high rate of patients who have to undergo reoperation during follow-up. Larger patient cohorts will be necessary to finally evaluate the longevity of the technique.
in each group had urethral stricture and 1 in each group required re-TURP.

Conclusions: PVP was found to be effective and safe treatment modality for patients with BPH. Ongoing anticoagulation did not influence the results or the complications rate.

MP-06.06
A Prospective Randomised Study between Transurethral Vaporisation Using Plasmakinetic Energy and Transurethral Resection of Prostate: Long Term Follow-up
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Introduction and Objectives: A prospective randomised study was conducted to evaluate the safety and efficacy of Plasmakinetic™ energy that produces vaporisation of tissue immersed in isotonic saline against standard transurethral resection of the prostate.

Materials and Methods: Randomisation was commenced in October 1998 with ratio of 2:1 (Plasmakinetic: TURP). Seventy-six (22 with retention of urine) so far has been enrolled in this study. Fifty-one patients underwent vaporisation and 25 treated by standard transurethral resection. Intra operative parameters were operating time, blood loss, fluid absorption during TURP, serum sodium and haemoglobin.

Results: Operative duration was similar in both the groups. There was no significant difference in pre and post-operative sodium and creatinine. Mean blood loss in plasmakinetic group was 251ml (range 49-1000) and TURP group 497ml (range50-1750). Fluid absorption in TURP group was <500ml. One patient in plasmakinetic group had prolonged catheterisation for 5 days; 3 patients had mild stress incontinence lasting three months and 2 patients required TURP (4%) in 7 years. Eleven people had died due to other medical illness and 3 had developed malignancies and 2 were lost to follow up. In the TURP group 1 patient required TURP (4%) in 7 years.

Conclusions: Plasmakinetic vapourisation produced reduced intra operative bleeding and has no risk of TUR syndrome due to saline irrigant.

MP-06.07
Comparison of Outcomes between Potassium-Titanyl-Phosphate PhotoselECTive Vaporization of the Prostate (PVP) and Holmium Laser Enucleation of the Prostate (HoLEP): An Interim Analysis
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Introduction and Objectives: We evaluated the clinical outcomes after potassium-titanyl-phosphate photoselECTive vaporization of the prostate (PVP) or holmium laser enucleation of the prostate (HoLEP) in men with lower urinary tract symptoms (LUTS/benign prostatic hyperplasia (BPH)).

Materials and Methods: A total of 105 men (mean age 67.6) with LUTS/BPH were analysed in the retrospective study. PVP and HoLEP were performed on 60 and 45 men, respectively. After the HoLEP, all retrieved tissue was collected and weighed. As for the PVP, the vaporized volume was calculated as the preoperative volume minus the immediate postoperative volume plus the volume defect using the TRUS. The efficacy was assessed at 1-, 3-, and 6-months postoperatively using the International Prostate Symptom Score (IPSS), uroflowmetry, post-void residual urine volume (PVR), and 3-day frequency-volume charts (FVC).

Results: There was no significant difference between the two groups regarding the baseline parameters except for the serum PSA. For the PVP and HoLEP group, mean preoperative total prostate were 58.2 ± 24.4 g and 50.1 ± 16.5 g, respectively. There was no significant difference in the removed proportion (vaporized volume or enucleated5 weight/total prostate volume) between the PVP and HoLEP groups (30.2 ± 9.7% vs. 26.0 ± 14.8%, p = 0.024). The catheter time and hospitalization were significantly longer in the HoLEP group than in the PVP group (p < 0.001). According to the IPSS, FVC and uroflowmetry with PVR, the symptom parameters improved significantly after the operation in both groups (p < 0.05), which was not significantly different between the two groups during the entire period of follow-up (p > 0.05). Complications such as bladder neck contracture or urethral stricture occurred in 6.7% of the PVP group and 7.0% of the HoLEP group.

Conclusions: Both PVP and HoLEP appear to be equally effective in improving micturition. The catheter time and hospital stay were longer in the HoLEP group, but there was no difference in the morbidity such as complication between the two. HoLEP as well as PVP may be a potential replacement of the transurethral resection of the prostate, the gold standard for managing patients with LUTS/BPH.

MP-06.08
120W Greenlight Laser Prostatectomy: Results from an Ongoing Prospective Worldwide Multicentre Study
1Department of Urology, University Hospital Basel, Basel, Switzerland; 2Department of Urology, Westmead Hospital, The University of Sydney, Sydney, Australia; 3Institute of Advanced Urological Surgery, Madrid, Spain; 4California Urological Services, San Francisco, USA; 5Department of Urology, Academic Medical Center, University of Amsterdam, The Netherlands; 6Department of Urology,
Introduction and Objectives: To evaluate the safety and efficacy of 120W HPS Greenlight laser vaporization in men suffering from LUTS due to BPH in a worldwide prospective multicentre trial.

Materials and Methods: Since starting of the prospective data collection of the independent IGLU-group in July 2007, data of n=765 consecutive patients available in January 2009. Patients were treated with the 120W HPS (AMS) according given EUA or AUA guidelines in 9 centers worldwide (Europe n=5, US n=3 and Australia n=1). Because of the mixture of different centre settings (University or private practice, experts, novices) and socio-political differences (inpatient treatment, outpatient treatment) this study comprises many issues of our daily practice and can be considered as a reference for HPS Greenlight laser prostatectomy.

Results: Data presented as means (range). Follow-up was 16 (1-37) months, age was 69 (44-99) years, preoperative prostate volume was 63 (12-270) ml and preoperative PSA-value 6 (0.1-286) ng/ml. Preoperative subjective and functional parameters were as follows: International prostate symptom score (IPSS) 22 (3-35); maximum urinary flow rate (Qmax) 9 (0-15ml) and residual volume 233 (0-3000)ml. Overall 275 kJ were applied during Greenlight laser prostatectomy, operating time was 66min for a prostate size of 65ml on average. In 23% preoperative prostate size was over 80ml. An additional fiber was used in 38% of the procedures. Functional parameters Qmax, IPSS and residual volume increased dramatically just after catheter removal. During the follow-up overall complication rate was low. Most frequently bleeding leading to an impaired intraoperative visibility was observed in 7% and retention during hospital stay in 7%. Mild dysuria was observed in 13% up to 2 weeks, 12% up to 3 months and 4% up to 6 months postoperatively.

Conclusions: 120W HPS Greenlight laser prostatectomy is safe and effective and associated with a low perioperative complication rate. Longer follow-up is necessary to draw a final conclusion about reoperation rate.

MP-06.09
Ultrasound Assessment of Treatment Cavity Size after Greenlight Laser Prostatectomy vs. TURP
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Introduction and Objectives: Greenlight laser prostatectomy is rapidly gaining status as an effective alternative to TURP in the management of Benign Prostatic Hyperplasia. We sought to evaluate the size of treatment cavity produced after this form of therapy in comparison to that apparent after conventional electrocautery TURP.

Materials and Methods: A consecutive series of patients were treated either by TURP or by Greenlight laser prostatectomy. Routine demographic data, symptom scores, TRUS prostate volumes and voiding function study results were collected pre and post surgery. Preoperatively all patients underwent ultrasound volumetric assessment of treatment cavity, and these results were compared to the symptomatic improvements after surgery.

Results: TRUS prostate volumes were similar for both treatment groups. Significant improvements in symptom scores and voiding flow rates were noted following treatment by both surgical means (p<0.05). There was no statistically significant difference in outcomes between either treatment group. Ultrasound assessed treatment cavity size however was substantially larger in the cohort treated by TURP than in the Greenlight laser subgroup (p<0.05), in spite of there being apparently adequate clearance of obstructing adenomatous tissue at cystoscopy after both TURP and Greenlight laser prostatectomy.

Conclusions: The symptomatic improvements seen with Greenlight laser prostatectomy do not appear to be dependent upon the production of an ultrasound detectable large prostatic cavity defect as is routinely seen after TURP. This raises issues as to the nature of the effect by which Greenlight laser results in relief of symptomatic voiding dysfunction. To date symptomatic benefit of therapy appears similar more than 6 months out from treatment. Detailed video-urodynamic evaluation of voiding function in patients after Greenlight laser prostatectomy may provide some insight into the means by which improved voiding function ensues.

MP-06.10
Antegrade Dissection Holep: A Modification to Protect the Urethral Sphincter
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Introduction and Objective: The prevalence of transient stress incontinence (SUI) after holmium laser enucleation of the prostate (HoLEP) has been reported as high as 44%. A modified HoLEP procedure was developed to protect the urethral sphincter and therefore lower the incidence of SUI. The modified procedure is named antegrade dissection HoLEP. We conducted this study to determine the incidence of SUI following antegrade dissection HoLEP.

Materials and Methods: From January 2008 to December 2008, 68 consecutive patients with benign prostatic hyperplasia underwent HoLEP combined with mechanical morcellation. The first 31 cases (group 1) underwent HoLEP according to Kuo’s method. In the next consecutive 37 cases (group 2) underwent antegrade dissection HoLEP. During this procedure, apical dissection of the gland is performed antegrade to the surgical capsule. The antegrade movement of the cystoscope allows the apex of the gland to be removed from the sphincter with no damage. Surgical quality indices that were compared between the two groups included change in hemoglobin, operating time, and resected prostate volume. All patients were assessed at preoperative and 2 weeks postoperatively for clinical SUI severity, international prostate symptom score (IPSS), quality of life index (QoL) and peak urinary flow rate (Qmax).

Results: Patient characteristics and surgical quality indices did not differ between the two groups. Clinical SUI was found in 25.2% cases of group 1. On the other hand, only 2.7% of cases in group 2 had SUI. IPSS, QoL and Qmax were significantly improved postoperatively in both groups. However, at 2 weeks the mean QoL of group 2 was significantly improved compared to that of group 1 (SD 1.5 vs. 2.4 (SD 1.0), p=0.02). The mean Qmax of group 2 was also significantly higher than that of group 1 (19.8 ml/s (SD 8.4) vs. 13.0 ml/s (SD 4.7), p=0.02).

Conclusions: These results indicate that our antegrade dissection HoLEP is a promising procedure to avoid postoperative SUI and improve QoL.
**MP-06.11**

Photoselective Vaporization of the Prostate (PVP): Prospective Analysis of a Series of 245 Austrian Patients after 3 Years

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**Introduction and Objective:** The prospective study has the aim to investigate efficacy, safety and durability of photoselective vaporization of the prostate (PVP) for symptomatic benign prostate hyperplasia (BPH) after 3 years.

**Materials and Methods:** From May 2005 to April 2009, 245 men were treated with PVP at a wavelength of 532nm. The patients preoperatively underwent standard urological evaluation and were assessed again after 1, 3, 6, 12, 24 and 36 months for changes.

**Results:** There were 59 patients (24.1%) with a median age of 71.2 (48.9-89.6) years who had an indwelling catheter because of urine retention; median prostate volume was 46.3 ml (14-130). 35.9% of patients (n=88) were classified as ASA 3 and/or were on anticoagulants. In an average lasing time of 58 min, 224.228J (15.000-588.755) were applied. There were only minimal changes in haemoglobin (<7.0%) and electrolytes (sodium -0.4%); neither was there a sign of TUR syndrome or capsular penetration nor did any patient require a blood transfusion. In 94.1% the indwelling catheter was removed successfully on postoperative day 1 and 2 (median duration 30.2 hours), 22 men (9.0%) had to carry a catheter when discharged for a short time. After 12, 24 and 36 months mean peak urinary flow rate (Qmax) was increased from 8.9 ml/s to 22.8ml/s, 20.2ml/s and 20.1ml/s (+156.2%, +127.0% and +125.8%), post voiding residual volume was decreased from 200.4ml to 19.7ml, 17.1ml and 16.8ml (-90.2%, -91.5% and -91.6%). International prostate symptom score (IPSS) was 66.4%, 63.5% and 63.1% lower than preoperatively (20.3, 6.8, 7.4, 7.5), resulting in an improvement of Qol (Quality of life score) from 4.3 to 1.6, 1.7 and 1.5 (61.9%, 60.5% and 65.1%). PSA fell from 3.0ng/ml before PVP to 2.15ng/ml, 2.28ng/ml and 2.43ng/ml (-28.3%, -24.0% and -19.0%). After a median observation time of 8.8 months 20 patients had to have reoperation (3 Re-PVP, 8 TURP, 8 bladder neck incision, 1 urethral incision), which seems partly to be due to the learning curve.

**Conclusion:** PVP is known as a safe and effective procedure with reproducible and durable results after 3 years.

**MP-06.12**

Clinical Outcomes of GreenLight HPS™ Laser Photoselective Vaporization Prostatectomy (PVP) for Benign Prostatic Hyperplasia (BPH)

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**Introduction and Objectives:** GreenLight HPS™ laser PVP is a relatively new technology for the treatment of lower urinary tract symptoms (LUTS) secondary to BPH. We review our experience using the GreenLight HPS™ laser system.

**Materials and Methods:** We prospectively evaluated our experience with GreenLight HPS™ laser PVP. All patients who failed medical therapy or surgery underwent GreenLight HPS™ laser PVP by a single surgeon. All had American Urological Association Symptom Score (AUASS), Sexual Health Inventory for Men (SHIM) score, American Society of Anesthesiologists (ASA) risk score, serum prostate specific antigen (PSA), maximum flow rate (Qmax) and post void residual (PVR) determinations and volumetric measurements with transrectal ultrasonography.

Transurethral PVP was performed using a GreenLight HPS™ side-firing laser system. Laser and operative times and energy usage were recorded. Voiding trials were performed 2 hours post surgery; if unable to void, a urethral catheter was replaced. AUASS, SHIM, Qmax and PVR were evaluated 1, 4, 12 and 24 weeks and 12 and 18 months post surgery.

**Results:** There were 169 consecutive patients identified, having a mean age of 68.9 years. The mean prostate volume was 70±41 ml and the mean AUASS score was 2.3±0.7. Mean laser time, operating time and energy usage were 13±10 minutes, 32±24 minutes, and 90±68 kJ, respectively. All were outpatient procedures with 93 (55%) patients catheter-free at discharge. Fifteen patients required catheter drainage for one week. Nine patients developed a urinary tract infection. Fourteen patients had persistent nonsignificant hematuria >1 week. No urethral strictures or urinary incontinence were noted. All patients were able to discontinue their prostate medications following surgery.

Mean AUASS decreased from 23 to 8, 6, 5, 4 and 3 (p<0.05) at 1, 4, 12 and 24 weeks and 12 and 18 months, respectively. Qmax values also showed statistical significant improvement (p<0.05) during the follow-up period. The SHIM score did not change postoperatively.

**Conclusions:** Our results suggest that GreenLight HPS™ laser PVP is safe and effective for the treatment of LUTS secondary to BPH. Continued follow-up is in progress.

**MP-06.13**

PRX302 is a Transperineally Administered, PSA-Activated Protoxin that Produces Symptomatic Relief in Men with Moderate to Severe BPH

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**Introduction and Objective:** PRX302 is a protoxin modified for activation by PSA. Here we report results of Phase I and Phase II studies of transperineal intraprostatic administration of PRX302 in men with moderate to severe BPH.

**Materials and Methods:** A Phase I dose-escalation and Phase II volume-escalation study was performed in men with BPH. Patients received a transperineal injection of PRX302 into the transition zone on each side (3 or 4 deposits/side) of the prostate under TRUS guidance.

**Results:** In the Phase I study 15 patients (5 cohorts of 3 patients; mean-age 64.8, prostate volume 45.3 cc) received increasing concentrations (0.75, 2.25, 7.5, 10.5 microgram/ml) of 0.25 ml/deposit while one cohort received 1.33 ml/deposit at 0.75 microgram/ml. International prostate symptom score (IPSS) decreased in all cohorts from 19.2 ± 4.6 at screening to 9.9 ± 5.4 at 3 months (p<0.01) and 12.7 ± 4.6 one year post-treatment (p<0.01). There was a sustained decrease in quality of life (Qol) scores from 4.6 ± 1.0 at screening to 2.1 ± 1.7 at 3 months (p<0.01) and was sustained to 2.6 ± 1.6 at one year (p<0.01). The MTD was not achieved despite a 14-fold dose escalation. In the Phase II study, 18 patients (3 cohorts of 6 patients; mean-age 66.1 yrs, prostate volume 49.2 cc) were treated with PRX302 (3 microgram/ml) at volumes equivalent to 10%, 20% and 30% of the total prostate volume. Mean IPSS decreased from 20.2 ± 4.7 at screening to 12.2 ± 7.6 at 3 months post-treatment (p<0.01) and Qol scores decreased from 4.5 ± 1.1 at screening to 2.4 ± 1.5 (p<0.01). Mean prostate volume decreased to 37.8 ± 15.0 cc (23.2%) at 3 months. Patients receiving >1 ml per deposit on average experienced >11 point drop in IPSS. PRX302 was well tolerated in both studies with no serious or drug-
related Grade 3 or higher adverse events. Most adverse events were mild to moderate and transient and no effect on erectile function was observed.

**Conclusion:** PRX302 was well-tolerated and easily administered in the outpatient setting via transperineal injection into the prostate. PRX302 also provided sustained symptomatic relief and, therefore, constitutes a promising new treatment for patients with BPH.

**MP-06.14**

**Effects on Prostate Size and Voiding Symptoms in Men with Late-Onset Hypogonadism (LOH) Using Gel Testosterone Replacement Therapy (TRT): A One-Year Follow-Up**

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**Introduction and Objective:** To study if long term gel TRT in men with LOH will affect prostate size measured by TRUS and voiding symptoms assessed by International Prostate Symptom Score (IPSS).

**Materials and Methods:** Men with diagnosed LOH were at the initiation of treatment with gel TRT (Tostrex®) assed by TRUS-volume of the prostate, IPSS-score, PSA and total-testosterone (T-s-T). The same assessments were repeated at follow-up. The study-group was compared to an age-matched control-group without LOH, who do annual health check-ups of prostate.

**Results:** Study group: At treatment initiation the 50 men (mean age 60 years) had an average prostate-volume of 51 cc (20-53 cc), a mean IPSS-score of 10.0 points (0-30), a mean S-PSA 1.4 ng/ml (0.2-7.2) and mean T-s-T of 9.4 nmol/l (5-12). At follow-up after 13 months (10-19 months) the mean prostate-volume increased with 5.5 cc (20-58), the mean IPSS-score decreased with 2 points to 8 (1-28), the mean S-PSA increased to 2.1 ng/ml (0.3-13.8) and mean T-s-T increased to 21.1 nmol/l (13-36.8). Control group: Initially the 41 men (mean age 60 years) had an average prostate-volume of 41 cc (21-70), a mean IPSS of 8.0 (0-22), a mean PSA 2.1 ng/ml (0.2-6.0) and a T-s-T of 16.9 nmol/l (12.4-30.5). At follow-up after 14 months (10-24 months) the TRUS-volume increased with 3 cc (21-90), the mean IPSS-score with 0.3 points to 8.3 (0-19) and mean S-PSA to 2.3 ng/ml (0.4-7.5).

**Conclusion:** In men with LOH, therapeutic TRT with gel (Tostrex®) after one year or more, tends to increase prostate size more than the controls, without negative effect on voiding symptoms. PSA increased by 50% in the treatment group.

**MP-06.15**

**Discontinuous Alpha Blocker Therapy is a Feasible Strategy in Patients with LUTS that Leads to Cost Saving: An Important Issue in Developing Countries**

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**Introduction and Objective:** Alpha blockers are established therapy in patients (pts) with LUTS secondary to Benign Prostatic Obstruction (BPO) but are NOT curative. The exact duration of treatment and the need for continuous therapy, as mono-therapy, has not been thoroughly studied. This point is important as far as compliance, in men already on multiple medications, and COST especially in less wealthy developing countries. This study addresses the need for continuous alpha blocker therapy in pts with LUTS once response is established.

**Materials and Methods:** One hundred pts ages between 47 and 76 years with bothering LUTS secondary to BPO were started on alpha blockers (Doxacoxin or Alfusosin or Tamsulosin) as mono-therapy. If within 2 weeks of treatment pts experienced significant improvement, they were instructed to stay on it for 3 months then stop the medication. Following that pts were instructed to stay off therapy as long as they were not bothered OR to resume it as soon as their bothering symptoms recur. All pts were re-evaluated at 6 months from start of treatment.

**Results:** Eighty-four pts responded to alpha blockers within 2 weeks of therapy and continued treatment for 3 months then stopped it. 34/84 pts (40%) did not feel the need to resume treatment for 3 months after stopping it while 50/84 pts (60%) felt the need to resume treatment at variable time intervals (between one to 24 days) after stopping. This was independent of the size of the prostate, PSA level and type of alpha blocker but older pts and pts with severe LUTS tend to need treatment in a more continuous fashion.

**Conclusions:** Alpha blockers therapy need NOT be continuous in pts with LUTS secondary to BPO. A trial of withholding therapy is warranted as long as pts are not bothered. The cost saving (40-50% per month) in men already on multiple medications, specially developing less wealthy countries is obvious.

**MP-06.16**

**Combination of Alfuzosin XL and Tadalafil Is Superior to Monotherapy in Treating Erectile Dysfunction and Lower Urinary Tract Symptoms**

**Jung G, Park S, Ye J**

*Smile Jung’s Urology, Busan, South Korea*

**Introduction and Objective:** The potential role of PDE-5 inhibitors in treating voiding dysfunction and alpha blockers in enhancing erectile function is fertile area of research. This study was designed to ascertain the safety and efficacy of the combination of an alpha blocker, alfuzosin XL and a PDE-5 inhibitor, tadalafil on LUTS and ED versus monotherapy.

**Materials and Methods:** There were 151 consecutive men with previously untreated LUTS and ED who were randomized into 3 treatment groups. A group (n=50) was alfuzosin XL (10mg qd) monotherapy, B group (n=52) was tadalafil (20mg 3 times a week) monotherapy and C group (n=49) was combination of alfuzosin XL and tadalafil for a 3 month trial. We included men with ED and BPH who scored ≤16 on the international index of erectile function-5 (IIEF-5) and an international prostate symptom score (IPSS) ≥8. The IIEF-5, International Prostate Symptom Score (IPSS), quality of life (QoL), maximum urinary flow rate (Qmax), and global assessment question (GAQ/ED), LUTS were assessed. Data was analyzed using the paired t-test for statistical validation.

**Results:** At 3 months, the improvements of IIEF-5 scores in each group were +2.9, +8.1, and +10.4 (p<0.0001 vs A, p<0.005 vs B) compared to the baseline, respectively. IPSS in each group were reduced -3.5, -2.1 and -4.2 (p<0.005 vs A, p<0.001 vs B) compared to the baseline, respectively. QoL in each group were reduced -1.1, -0.8, and -1.3 (p<0.005 vs A, p<0.001 vs B) compared to the baseline, respectively. Qmax in each group were increased +3.4, +2.1, and +4.1 (p<0.005 vs A, p<0.001 vs B) compared to the baseline, respectively. ED GAQ in each group was 76%, 59% and 84%, respectively.

**Conclusions:** Treatment with a combination of an alpha blocker and a PDE-5 inhibitor was the most effective therapy to enhance both voiding and erectile function in men at risk. Larger scale, placebo controlled studies are needed to further elucidate the role of combination therapy to treat these two conditions.
Efficacy and safety of dutasteride, tamsulosin and the combination in Asian men: 4-year results from the randomised, double-blind, CombAT trial

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Introduction and Objective: CombAT investigated the efficacy of dutasteride/tamsulosin and the combination in men with moderate-to-severe BPH.

Materials and Methods: In this international, randomised, double-blind, parallel-group study, men ≥50 years with BPH (IPSS ≥12, total prostate volume [PV] ≥30 cc, serum PSA 1.5–10 ng/ml, Qmax 5–15 ml/s) received dutasteride 0.5 mg/day, tamsulosin 0.4mg/day, or the combination for 4 years. The 4-year primary endpoint was rate of AUR or BPH-related surgery; secondary endpoints included clinical progression rate (one of IPSS deterioration ≥4 points, BPH-related AUR, incontinence, renal insufficiency or recurrent UTI), change from baseline in IPSS, Qmax, Qnu and BPH impact index (BII).

Although CombAT was not powered to detect treatment differences in subpopulations, Asian men represented a large subgroup (n=325), and a post-hoc analysis of the 4-year CombAT data for Asian men is presented.

Results: At 4 years, the proportion of subjects with AUR or surgery was 6.5% for combination, 1.9% for dutasteride, and 10.7% for tamsulosin. There was a trend for less clinical progression with combination (18.7%) versus tamsulosin (35.0%, p=0.016), but not versus dutasteride (17.9%). Mean change in IPSS from baseline was significantly greater with combination (-6.4) versus tamsulosin (-2.3; p<0.001), but not versus dutasteride (-4.9, p=0.14). Mean change in PV was significantly greater with combination (-13.5 cc, -29.9%) versus tamsulosin (-3.6 cc, +0.7%; p<0.001) but, as expected, not different to dutasteride (-12.8 cc, -30.2%). Significant improvement in BII was observed with combination (-2.6) versus tamsulosin (-0.9; p<0.001) but not versus dutasteride (-2.1). Incidence of adverse events (AEs) was similar with combination (89%), dutasteride (82%) and tamsulosin (88%). Drug-related AEs were more common with combination (32%) versus dutasteride (11%) or tamsulosin (18%). Rates of withdrawal due to any AE were similar (9%, 12%, 8%, respectively).

Conclusions: Combination treatment provided significantly superior and sustained improvements in symptoms, flow rate, and quality of life versus tamsulosin monotherapy in Asian men, in line with results in the overall population. Reduction in AUR/surgery risk with combination versus tamsulosin was in line with the overall population, although larger numbers would be needed to achieve statistical significance.

Moderated Poster Session 7:
Stones 1
Monday, November 2
15:15-16:45

Renal Histological Changes after Roux-En-Y Gastric Bypass Surgery in a Diet Induced Obese Rat Model

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Introduction and Objective: Roux-en-Y gastric bypass (RYGB) surgery is the most common surgical intervention for long-term weight loss in morbidly obese patients. As popularity and demand for this therapy has expanded, renal manifestations such as oxalate nephropathy and nephrolithiasis appear to be increasing in this patient population. With the intention to develop a murine model of bariatric surgery induced calcium oxalate nephrolithiasis, we performed RYGB in obese rats on a high fat, normal oxalate diet and tested whether the RYGB surgery causes detrimental renal injury and mineral deposition.

Materials and Methods: Sprague-Dawley rats, fed a high-lard diet to induce gross obesity, were randomized to RYGB (n=6). GI-intact sham-operated obese controls (Controls, n=4), or GI-intact sham-operated obese pair-fed rats (PF, n=8). Daily body weight and food intake were recorded for 40 days. Food efficiency was calculated. Rats were sacrificed and renal tissue was obtained for protein and immunohistochemical analysis. Stained sections were imaged using an imaging microscope and image-analysis software (Axioplan 4.1). Osteopontin (OPN) stain was estimated based on percentage of stained area compared to the kidney section size. ED-1 (macrophage-derived mononuclear cell stain) was estimated on the number of counted cells in each field divided by the number of fields examined. Data were compared using ANOVA and t-test.

Results: RYGB vs. PF control rats had significant reductions in body weight and food efficiency (p<0.001) and significantly greater renal tubule mineralization and basophilia, patchy interstitial nephritis, and glomerular changes by H&E staining. The inner medulla of the RYGB rats stained stronger for osteopontin (70% vs. 45%, p=0.01) while the outer medulla of the RYGB rats stained stronger for ED-1 (39 cells/10x field vs. 11 cells/10x field, p=0.05).

Conclusions: In this rat model, RYGB surgery is associated with significant weight loss, decreased food efficiency, renal mineral deposition, and insidious, chronic renal interstitial cellular damage. Osteopontin is up-regulated within the tubular lumen and urinary space, likely due to oxalate mineralization. ED-1 positive cells are attracted to the interstitium around the thin loop of Henle, suggesting that the injurious mechanisms provoked by mineralization involve not only inflammation but also antigen presentation and fibrogenesis.
Materials and Methods: Animal model of nephrolithiasis was established in adult male Sprague-Dawley rats by intragastric administration of 2.5% ethylene glycol +2.5% Ammonium Chloride 2ml twice daily, with restriction on intake of drinking water (20ml /per rat daily) for 4 weeks. Simultaneous treatment with taurine (2.0% mixed with the chow) was performed. At the end of the study, indexes of OS and renal injury were assessed. Renal tubular ultrastructure changes were analyzed under TEM. Crystal deposition in kidney was scored under light microscopy. Expression of NADPH oxidase subunit p47phox protein and mRNA in kidney were localized and evaluated by immunohistochemistry and real time-PCR respectively. Angiotensin II in kidney homogenates was determined by radioimmunoassay method.

Results: Compared with the control, oxidative injury of kidney occurred in rats induced nephrolithiasis. Hyperplasia of mitochondria developed in renal tubular epithelium. The activities of SOD and GSH-Px in mitochondria decreased significantly and the mitochondrial membrane showed oxidative injury. Taurine treatment significantly alleviated oxidative injury of kidney and its mitochondria, re-stored SOD and GSH-Px activities, with lighter morphological changes and lesser crystals deposited in kidney. We could not detect statistical changes in the renal p47phox mRNA expression, as well as the renal angiotensin II in those rats.

Conclusions: Results suggest that mitochondria but not NADPH oxidase account for the OS in kidney, taurine protected the kidney from oxidative injury by the mitochondrial-linked pathway in this rat model.

MP-07.03
Percutaneous Nephrolithotomy in Kidneys with Rotation and Fusion Anomalies: CT Versus IVU Planned Accesses

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Introduction and Objectives: Percutaneous nephrolithotomy in anomalous kidneys is challenging. The present study was designed to compare the multiphase CT-planned versus IVU-planned accesses in kidneys with rotation or fusion anomalies.

Materials and Methods: This prospective randomized study included 58 patients (60 renal units) with stones in kidneys with rotation or fusion anomalies. All were treated by PCNL. Patients were randomly divided into 2 groups. Group A (30 patients) and 30 units; PCNL access was planned pre-operatively based on IVU. In group B (28 patients) with 30 renal units; PCNL access was planned pre-operatively based on multiphasic CT scan. CT was done in prone position and in full inspiration. CT provided detailed information about topography of the collecting system, orientation of the calyces in relation to the horizontal plane and their relations to each other. In addition, renal vascular supply and the proximity to nearby organs were clearly delineated. The target calyx, sites of skin entry and the angle of the puncture needle were all defined based on this information.

Results: Patients' demographic data and overall stone burden were comparable in both groups. There were a total of 80 access tracts in these 60 units. Seven of these 80 tracts were not planned preoperatively and all were in the IVU group. Eight tracts were difficult to establish and all were in IVU group. Intra-operative measurements matched CT measurements except in 5 occasions where the depth was underestimated. PCNL accesses planned on CT scan were significantly easier to establish and more suitable for stone retrieval. Mean operative times and the need for blood transfusion were comparable in both groups. Post-operative drop in hemoglobin was significantly less in group B than in group A. CT-planned accesses group had a better stone free rate at discharge and less need for auxiliary procedures. At discharge, complete stone removal was achieved in 83.33 % in renal units (76.66 % in group A, and 90% in group B). Fewer patients in group B required auxiliary procedures than in group A.

Conclusions: CT assisted access planning for PCNL is an objective, reproducible technique in kidneys with fusion and rotation anomalies.

MP-07.04
Does Open Surgery Have a Role in the Management of Multiple and Staghorn Kidney Stones in the Era of Minimally Invasive Techniques?

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Introduction and Objective: The use of minimally invasive techniques in the treatment of staghorn and multiple renal stones have overshadowed the open techniques in the past 2-3 decades in this study we reevaluate the role of open techniques in the management of these conditions. We compared the role of open versus combined PCNL and ESWL in the management of staghorn and multiple renal stones.

Materials and Methods: Between 1999 and early 2005, a total of 208 patients have been operated upon with open techniques in 111 patients with 118 renal units versus 97 patients that have been operated upon using the combined PCNL and ESWL in 106 renal units. Operative time, operative cost, blood loss, stone free rates, use of single or multiple sessions, hospital stay, complications, total cost and time to return to ordinary activities were calculated and plotted in a data base, statistically analyzed and compared for the 2 groups of patients.

Results: Operative time for the open group is significantly less than the PCNL group as most of the latter needed multiple sessions of PCNL and ESWL that raised both the hospital stay and the operative and total hospital cost. 89.8% were stone free in a single session and only 10.2% needed eswl sessions in the open group in comparison with PCNL group that yield 83% of the patients stone free with statistical significance but the time needed for convalescence was significantly less for the PCNL group. Comparing the complications rate for both groups in table (2), we found that the open group has less incidence of colonic injury, AV fistula and urinary leakage that reflects on the hospital stay and cost, but had more incidence of blood loss and pneumothorax with comparable incidence of sepsis with more time to return to ordinary activity compared with the PCNL group.

Conclusions: Open techniques for the management of complex multiple and staghorn renal stones still a viable option that should be considered in treating patients with such conditions, especially regarding the cost benefit in the face of limited resources in developing countries.

MP-07.05
Indications of Bilateral Ureteroscopy: Experience in 83 Cases

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Introduction and Objectives: Ureteroscopy evolved spectacularly during the last decades. Bilateral same-session ureteroscopy became a feasible procedure. We evaluated the safety and efficacy of same-
Introduction and Objective:

Romania Department of Urology, “Saint John” Geavlete P

Ureteroscopy in Proximal Ureteral Calculi: the ureteroscopic technique allows the urologist to proceed endourologically in another session. In patients with ureteral stenosis, the ureteroscopically assisted JJ stenting was successful on both sides in 8 cases and on one side in 5 cases. The intraoperative complications’ rate was 3.6% (1 case with ureteral perforation and 2 cases with mucosal abrasions). The postoperative complications’ rate was 6% (2 cases with fever, 1 with prolonged hematuria and 2 with vesico-ureteral reflux).

Conclusion: In our experience, mastering the ureteroscopic technique allows the urologist to proceed endourologically with minimum morbidity. Bilateral ureteroscopy is a safe and efficient technique, thus avoiding multiple procedures.

MP-07.06

Ureteroscopy in Proximal Ureteral Calculi: Experience on 1238 Cases

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Introduction and Objective: In the past 25 years, the treatment of proximal ureteral lithiasis evolved from uroterolithotomy to extracorporeal shockwave lithotripsy and/or ureteroscopy. Our objective was to analyse, in a significant series, the results of retrograde ureteroscopy in proximal ureteral lithiasis.

Materials and Methods: Between June 1994 and February 2009, 5102 patients underwent retrograde ureteroscopy (5534 ureteroscopic procedures). We performed bilateral ureteroscopy in 83 cases. The indications were represented by bilateral ureteral lithiasis (65 cases), bilateral malignant extrinsic ureteral stenosis (15 cases) and bilateral hematuria (3 cases). We used semirigid (75 procedures) or flexible ureteroscopes (8 procedures).

Results: The success rate in patients with bilateral lithiasis was 96.9%. In 2 patients, the ureteral calculus from one side ascended during lithotripsy. In 18 of these cases with obstructive anuria, bilateral ureteroscopy was preceded by ureteral JJ stenting in another session. In patients with ureteral stenosis, the ureteroscopically assisted JJ stenting was successful on both sides in 8 cases and on one side in 5 cases. The intraoperative complications’ rate was 3.6% (1 case with ureteral perforation and 2 cases with mucosal abrasions). The postoperative complications’ rate was 6% (2 cases with fever, 1 with prolonged hematuria and 2 with vesico-ureteral reflux).

Conclusion: According to our experience, ureteroscopy represents a valuable option in proximal ureteral lithiasis treatment with high stone-free rates and minimum morbidity.

MP-07.07

Hand Assisted Ureteroscopy in Ureteral and Pyelic Stone Treatment

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Introduction and Objective: Successful ureteroscopic procedures sometimes require various tricks such as hand-assistance. The aim of this study was to determine de value of manual maneuvers applied in order to facilitate the ureteroscopic approach of upper urinary tract lithiasis.

Materials and Methods: Between June 1994 and February 2009, 5102 patients underwent retrograde ureteroscopy (5534 ureteroscopic procedures). The retrograde approach was applied in 1238 cases with proximal ureteral lithiasis and 47 cases with pyelic stones. Hand assisted ureteroscopy was necessary in 362 cases.

Results: The success rate in patients with proximal ureteral stone was 86.5%, the approach of the calculus being impossible in 5.2% of cases. The hand assisted ureteroscopy was necessary in 338 cases with proximal ureteral lithiasis. In 285 of these cases, the procedure was applied in order to facilitate the passage of the ureteroscope through the tortuous segments of the ureter, with a 78.5% success rate. In the other 53 cases with proximal ureteral lithiasis as well as the 24 cases with pyelic lithiasis, the manual assistance facilitated efficient lithotripsy by optimizing stone position and energy appliance.

Conclusion: According to our experience, hand assistance may facilitate retrograde ureteroscopic approach, thus improving the stone-free rates. This maneuver proved to be extremely efficient and provided the advantage of not raising the costs of the procedure.

MP-07.08

A Randomized Controlled Trial of Nephrostomy Placement Versus Totally Tubeless Percutaneous Nephrolithotomy in Elderly Patients

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Ministry of Health, Kecioren Training and Research Hospital, Department of Urology, Ankara, Turkey

Introduction and Objective: Tubeless percutaneous nephrolithotomy (PCNL) is performed widely in adult patients. We evaluated the safety, effectiveness, and feasibility of totally (tubeless) and stentless) tubeless PCNL in elderly patients.

Materials and Methods: From November 2006 to March 2009, a total of 60 patients with renal stones were enrolled in this study. The mean age of the patients at receipt of the surgical procedure was 66.8 years (range, 60–77 years). Patients were randomized to either a totally tubeless approach (group 1, 30 patients) or placement of an 18F nephrostomy tube (group 2, 30 patients). Patients were considered uncomplicated and suitable for randomization at the end of the operation if there was no significant bleeding or residual stone and the pelvicaliceal system was intact. The incidence of complications, hospital stay, analgesic requirements, and stone-free rates were compared in two groups.

Results: The mean stone size was 25.6 mm vs 22.3 mm and stone-free rate was 96% vs. 91% for group 1 and 2, respectively. None of the patients demonstrated urinoma in postoperative renal ultrasonography. No transfusions was needed in two groups. The mean hospitalization time was 1.5 days for group 1 and 3.2 days for group 2 (p<0.05). The mean analgesic requirements were 25 mg and 75 mg of pethidine, respectively (p<0.05). There were no differences in hemorrhage and infection.

Conclusions: Totally tubeless PCNL is safe and effective procedure even in elderly patients with renal stones. The hospitalization and analgesic requirements are less than standard PCNL. However, the
tubeless decision should be taken intraoperatively in selected patients.

**MP-07.09**  
**Percutaneous Antegrade Treatment of Large Upper Ureteral Calculi**  
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**Introduction and Objective:** The treatment of large upper ureteral calculi continues to be controversial. In this study, we evaluated the safety and efficacy of antegrade percutaneous nephrolithotomy (PCNL) in patients with upper ureteral calculi ≥ 1.5 cm.

**Materials and Methods:** From November 2006 to March 2009, we enrolled in the study 42 patients with upper ureteral stones who were referred our centre. We included patients with a stone size ≥ 1.5 cm in the greatest diameter. The stone size was determined by measuring largest diameter of the stone on preoperative plain film. Ultrasonography (USG) and intravenous urography (IVU) were performed for all patients before surgery. After operation, plain films, USG and IVU were done. The success rate, operating and scopy time, and hospital stay were assessed retrospectively.

**Results:** Mean patient age was 42.5 years (range 42 to 66) and mean stone size was 2.2 cm (range 1.5 to 2.8). In 40 patients (95.2%), the stones were fragmented and removed in a single session through a single tract. Blind access was achieved from the lumbar notch area in 8 patients (19%). A double-J stent was inserted in 4 patients (9.5%) intraoperatively because of minimal mucosal lesion of pelvicacalcalic system. Open ureterolithotomy was performed in 2 patients because of a fixed angulation above the calculus that precluded identification and reaching the stone by rigit and flexible nephroscope. The mean operating time, mean scopy time, and hospital stay were 47 minutes (35 to 65), 2.3 minutes (1.6 to 3.5) and 2.8 days (1 to 4), respectively. In follow-up, plain films, USG and IVU showed complete clearance in these patients. The mean follow-up was 12 months. There were no significant postoperative complications.

**Conclusions:** Antegrade PCNL is safe and effective valuable options for large upper ureteral calculi larger than 1.5 cm, and achieves higher stone free rate.

**MP-07.10**  
**Safety and Outcome of Percutaneous Nephrolithotomy in Infants and**

**Preschool Children: Retrospective Comparison to Adult Patient Group**  
Unsal A, Resoru B, Kara C, Bozkurt O, Ozyuvalli E  
Ministry of Health, Kecorent Training and Research Hospital, Department of Urology, Ankara, Turkey

**Introduction and Objective:** Percutaneous nephrolithotomy (PNL) for renal stones in children may present problems because of small size, mobility of the pediatric kidney and the small size of the collecting system. In this study, we present our experience with PNL for management of large renal calculi in children less than 7 years old, and determine its safety and efficacy.

**Materials and Methods:** Between November 2006 and March 2009, 14 boys and 3 girls aged 9 months to 7 years underwent PNL for renal calculi. All procedures were performed with the patient in the prone position after retrograde catheterization with a 5F ureteral catheter. The nephrostomy tract dilated up to 12 to 20F. Then a 11 and 15.9F pediatric rigid nephroscope was used and stones were fragmented with a pneumatic lithotripter. Flexible nephroscopy was used as an adjunct where necessary. We reviewed stone clearance with PNL, ancillary procedures used, complication rates and follow-up status of the children.

**Results:** The mean stone size was 32.4 (21-52) mm and average operative time was 94.4 (47-180) min. A single tract was made in 16 patients; in only 1 patient were two tracts made. We used the infracostal approach in 16 (88.9%) patients and the supracostal approach in 2 (11.1%) patients. Stones were completely cleared in 82.4% of patients, which increased to 94.1% with adjunctive shockwave lithotripsy and ureterorenoscopy. There was no major complication and mean hospital stay was 6.14 (3-13) days. The hemoglobin drop ranged from 0.3 to 1.8 g/dL, and one child (5.9%) received a blood transfusion. In the majority of patients, the drop in the hemoglobin level was less than 1 g/dL. Pyrexia occurred after PNL in 2 children but none had any abnormality detected in blood or urine studies. Stone analysis in all patients revealed calcium oxalate, uric acid, cystine, and ammonium content.

**Conclusions:** We achieved a complete clearance rate of 82.4% with PNL monotherapy and an overall clearance rate of 94.1% with acceptable morbidity, which is as good as the results achieved in adults in most contemporary series. In conclusion, PNL is a safe and effective method for renal stones, with no limitations to age.

**MP-07.11**  
**The Role of Percutaneous Nephrolithotomy in the Management of Medium Sized (1-2 cm) Lower-Pole Renal Calculi**  
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**Introduction and Objective:** The treatment of lower pole renal calculi is one of the more controversial topics in endourology. The objective of this study was to determine the efficacy (defined by stone-free rates) and safety of percutaneous nephrolithotomy (PNL) in the treatment of medium sized (1-2 cm) symptomatic lower pole renal calculi, and establishment of the short-term morbidity.

**Materials and Methods:** We performed a retrospective analysis of 60 evaluable patients who had undergone PNL for 1 to 2 cm diameter lower-pole (LP) stones between November 2006 and March 2009 and compared these results with other treatment modalities in published literature.

**Results:** In all cases, stones were located in the lower calix. Thirty-six procedures were performed on the left side, and 24 were performed on the right side. The mean time to access the collecting system was 20.4 minutes (range 8.70 min) and mean operative time was 62.2 minutes (range 13-155 min). Abdominal radiography performed on postoperative day 1 demonstrated a stone free status in 56 (93.3%) patients. However, 4 patients (6.7%) required ancillary procedures (secondary PNL in 1, retrograde intrarenal surgery in 1, and SWL in 2). After this secondary procedure, a complete stone-free status was achieved in 98.3% of patients. The morbidity of patients undergoing PNL at our hospital was minimal, with a mean hospital stay of 3.7 days. No intraoperative complications or complications arising from renal access performed by the urologist occurred. There were no mortalities. The only major complication involved a woman in whom a nonfatal pulmonary embolus developed. A urinary tract infection developed in three patients who did not have general symptoms. Transient fever was recorded in three patients without any laboratory signs of urosepsis. A postoperative decrease in the Hb concentration, requiring blood transfusion, occurred in only one patient.

**Conclusions:** We demonstrated that PNL...
is a safe and effective method for medium sized (1 to 2 cm) lower pole renal calculi and percutaneous removal should be considered the primary approach for lower pole stones greater than 10 mm.

**MP-07.12 Outcomes of Percutaneous Nephrolithotomy in Obese Patients**

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**Introduction and Objective:** Obesity has been associated with increased surgical morbidity. We reviewed our experience with percutaneous nephrolithotomy (PCNL) in patients with a body mass index (BMI) greater than 30.

**Materials and Methods:** From November 2006 to December 2008, the charts of 288 patients who underwent PCNL procedures were reviewed retrospectively. Patients were divided into 2 groups on their BMIs: < 30 kg/m² and ≥ 30 kg/m². We compared groups with regard to perioperative outcomes including operative time, number of access, hospital stay, decrease in haemoglobin concentration, stone-free and complication rates.

**Results:** The study included 141 men and 147 women with a mean age of 54.1. Of the 288 patients, 74 (25.69%) were obese or morbidly obese. Mean stone size was 24 mm. Staghorn calculi were present in 9 obese patients (12.16%), while in 23 (10.74%) non-obese patients. There was no significant difference among the groups for any of the outcome measures except that the obese group had a long anaesthesia time which was seen because of prolonged preparation and positioning time (table 1).

**Conclusions:** Several difficulties are generally encountered with ESWL or open surgery in the management of renal stones in obese patients. BMI had no impact on efficacy or complication rates of PCNL. Therefore, PCNL is considered as a first line treatment alternative for renal stones in obese patients.

**MP-07.13 Extraperitoneal Laparoscopic Ureterolithotomy for Impacted Ureteral Stone: Surgical Technique and Results**

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**Introduction and Objective:** Since the introduction of laparoscopy in urology, transperitoneal and laparoscopic approaches have been developed to treat a wide variety of pathologies. Considering its reduced perioperative morbidity, the extraperitoneal laparoscopic (lumbo) extraction of impacted ureteral stones is a good alternative to traditional open surgery for cases that have failed endoscopic management or extracorporeal shock wave lithotripsy (ESWL). We report our initial experience in a consecutive series of patients that underwent lumbo- soscopic extraction of impacted mid-ureteral stones refractory to first line treatments.

**Materials and Methods:** A total of 24 consecutive patients underwent the procedure between July 2006 and June 2008. All calculi were placed in the mid ureter with an average size of 14 mm (range 6 to 25 mm). Fifteen patients had previously undergone ESWL and 9 showed renal exclusion in renogram. Calculi were on the right and left ureter in 13 and 11 cases respectively. All patients underwent lumbo- scopy using 3 access ports. Access was performed placing the first trocar over the iliac crest at the posterior axilar line, digital dissection was performed without the need of a balloon dilator. Ureterotomy was performed with a laparoscopic cold knife. In the first 6 cases a double J stent was ascended prior to ureterotomy, this maneuver was abandoned after ureteral suturing was mastered. Finally, a Hemodialysis drain was left in all procedures.

**Results:** After surgery, all patients were stone-free. Mean operative time was 110 minutes (range 35 to 210 minutes). There were no intraoperative complications or conversion to open surgery. Average hospital stay was 2.4 days (range 1 to 4 days). Only one patient required double J stenting for a persistent urine leak after post-operative day 4.

**Conclusion:** Lumboscopic ureterolithotomy is a valid and effective alternative for the management of impacted mid-ureteral stones that are refractory to endoscopic procedures or ESWL. This is a simple, safe and minimally invasive procedure that is well tolerated and is associated with low perioperative morbidity.

**MP-07.14 Tubeless Mini-Percutaneous Nephrolithotomy (Report of 114 Cases)**

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**Introduction and Objective:** To evaluate the feasibility and safety of tubeless mini-percutaneous nephrolithotomy (tubeless MPCNL).

**Materials and Methods:** The data of 114 cases received tubeless mini-percutaneous nephrolithotomy (tubeless-MPCNL) was summarized retrospectively. Of them, 13 cases were performed bilateral simultaneous tubeless MPCNL. The study group cases were no stones residual (<0.3cm). The study results were compared with the control group cases received traditional mini-percutaneous nephrolithotomy with placement of a nephrostomy tube contemporaneity. Indexes including the degree of hydronephrosis, infection or not, renal function, operative time, hemoglobin level dropping, transfusion requirement, analgesia requirement, hospital stay time, complications, stone free rate and cost were analyzed.

**Results:** Tubeless mini-percutaneous nephrolithotomy were performed successfully in 114 cases and 11 cases received totally tubeless MPCNL. The difference in the mean drop in hemoglobin, transfusion requirement and complications between the two groups was not statistically significant. The patients of study group required less analgesia and were discharged earlier than those in the control group. All the
patients were no obviously urinous infil-
tration and perinephric urinary cyst dur-
ing follow-up.
Conclusions: Tubeless mini-percutaneous nephrolithotomy appeared to be a feasi-
bile, safe, and effective method for the
indication patients. Compared to the tradi-
tional mini-percutaneous nephrolithotomy,
it showed some clinical advantages.

Conclusions: Tubeless mini-percutaneous nephrolithotomy appeared to be a feasible, safe, and effective method for the indication patients. Compared to the traditional mini-percutaneous nephrolithotomy, it showed some clinical advantages.

MP-07.15
The Effect of Shock Wave Delivery Rate on Patient: Renal Injury and Analgesic Consumption
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Introduction and Objective: Studies have demonstrated that stone fragmentation is improved by slower shock wave delivery rate. However, the in vivo effect of SW delivery rate to the patient, in term of renal injury and procedure tolerance, was not known. Therefore, we would like to investigate the degree of renal injury and consumption of patient-controlled analgesic (PCA) at different SW delivery rate during extracorporeal shock wave lithotripsy (SWL).

Materials and Methods: Adult patients with radio-opaque renal stones of size 5-20mm were randomized to receive SWL at either 60 SWs/min or 120 SWs/min. Urine samples were collected a day before SWL (baseline), immediately (post-treatment), 2 days, 7 days and 4 weeks after SWL for the measurement of neutrophil gelatinase-associated lipocalin (NGAL) & urinary Interleukin-18 (IL-18). Meanwhile, PCA alfentanil was given during SWL. Pain was assessed using numeric rating scale (NRS) scores (0-10). PCA demand were recorded at every 250J until the end of treatment (1000J) or stone completely fragmented. The results of the two groups are then compared.

Results: There were 46 patients recruited, with 22 patients randomized to receive SWL at 60 SWs/min, and 24 patients at 120 SWs/min. Both urinary IL-18 level and NGAL were increased significantly at immediate post-treatment when compared to baseline levels. There were significant higher IL-18 level at immediate (p<0.01) and day 2 (p<0.05) after SWL in the 60 SWs/min group. However, there was no significant difference in the NGAL level observed between the two groups at all time points. For 41 patients with completed PCA usage record, PCA demands over time were consistently higher in 60 SWs/min group (13.79±21.71) than 120 SWs/min group (6.58±8.85) with significant different in overall PCA demand (p<0.05). Interestingly, there is no significant difference in NRS scores between the two groups and the patterns of pain score in both groups were consistent.

Conclusions: A delivery rate of 60 SWs/min may increase both in vivo renal damage and analgesic demand than that caused by 120 SWs/min. Further study will be needed to assess the overall effects of different shockwave delivery rate to both the patients and stones.

MP-07.16
Open Renal Stone Surgery in the Era of Minimally Invasive Surgery in a University Teaching Hospital
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Introduction and Objectives: To critically analyze indications, preoperative and postoperative data and results of open renal stone surgery (ORSS) in a urology service where all stone treatment modalities are available.

Materials and Methods: Hospital records of 3502 cases (aged 2.5-71 years, mean 42) that underwent treatment for renal stones in the period from January 2003 through December 2007, at Al-Azhar University Hospitals, Cairo, Egypt were retrospectively studied. Those cases that underwent ORSS were particularly analyzed for patient characteristics, preoperative and operative data, stone features, indications and type of stone surgery, operative and postoperative results.

Results: A total of 4110 procedures for renal stone removal or fragmentation were done in 3502 patients. SWL represented the majority of cases (78%), followed by PNL (11%) while ORSS accounted for only 9% or 36 cases as renal impairment (n = 16), ipsilateral obstruction (n = 15), and perinephric infection (n = 3) and pyonephrosis (n = 2). At discharge from hospital: stone free rate was 71% with clinically significant residual fragments (CSRF) in 24%. Stone free rate at follow-up 3 month after surgery was 84.5%.

Conclusions: Despite emphasis placed on minimally invasive stone treatments; ORSS maintains a small but continued role in treatment of patients with renal calculi especially in the training setting of a university hospital. Although ORSS is attended with a high complication rate in this cohort, yet it may be the first line of treatment in selected cases of complex stone burden, and after failures of SWL/PCNL.

Moderated Poster Session 8: Minimally Invasive Surgery
Tuesday, November 3 10:45-12:15

MP-08.01
Can Hounsfield Units on CT Predict Stone-Free Rate of Upper Urinary Calculi after Extracorporeal Shockwave Lithotripsy and Stone Composition?
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Introduction and Objective: To determine whether the Hounsfield Units (HU)
measured on pretreatment noncontrast helical computed tomography (NCHCT) could used to predict the fragility and clearance of upper urinary calculi in vivo after ESWL and stone composition. **Materials and Methods:** Between September 2004 and December 2006, 151 patients with a solitary upper urinary tract stone who undergoing ESWL participated in this prospective study. The clinical data on each patient, including age, sex, stone location, stone size, body mass index, stone staying time, stone CT value, number of shock wave, were recorded. All 151 patients were treated in situ with a third generation electrohydraulic lithotriptor (Modulith SL20, Storz) by one same urologist, without stenting or general anesthesia. A KUB and B mode ultrasonography were obtained 1 day after treatment to assess the degree of stone fragmentation and the complications. Stone clearance was documented by a KUB or B mode ultrasonography 2 week, 4 weeks, 3 months after ESWL. All patients were categorized into a stone-free or residual stone group. The patients with the residual fragments less than 3mm in size were categorized into the stone-free group. **Results:** All 151 consecutive patients with a follow-up of 3 months. One hundred and seven of the 151 patients were categorized into the stone-free group (70.9%) and 44 of the 151 were categorized into the residual stone group (29.1%). The Hounsfield units on CT of the stone-free group was 642.56±181.53, significantly lower than that of the residual stone group (1064.56±207.97, P<0.001). The number of shock wave of the stone-free group was 1514.11±711.73, significantly lower than that of the residual stone group (2654.55±486.78, P<0.001). The OR values for the HU and number of shock wave were 0.999(95% CI:0.997-0.999) and 0.998(95% CI:0.997-0.999). Of the 151 patients, stone composition results are available on 116. The number of patients in calcium oxalate, calcium phosphate, struvite, and uric acid is 78, 15, 15, 8, respectively. The average CT value for calcium oxalate calculi ranges from 848 to 1220 HU(mean 962±117HU), calcium phosphate ranges from 979 to 1403 HU(mean 1184±141HU), struvite ranges from 562 to 849 HU(mean 691±595HU), while for uric acid it ranges from 362 to 520 HU(mean 420±55HU). There was a significant difference in HU values of each stone composition (P<0.01). **Conclusions:** The HU value on pretreatment NCHCT of the upper urinary tract stones can be used to predict the stone-free rate after ESWL. ESWL is not indicated to the patients of upper urinary tract stones with high values of HU, especially for stones greater than 1000HU. The HU value also can predict the most common types of calculi of uric acid, struvite, calcium oxalate and calcium phosphate in spite of some overlap in the absolute CT values of calculi.

**MP-08.02 Carcinoma Recurrence Rate after Laparoscopic Nephroureterectomy in Patients Who Undergo Transurethral Incision of the Ureretal Orifice and Open Excision of Bladder Cuff**


Department of Urology, Beijing Friendship Hospital, Capital Medical University, Beijing, China

**Introduction and Objective:** To compare oncologic efficacy of transurethral incision of the ureteral orifice and open excision of bladder cuff in retroperitoneal laparoscopic nephroureterectomy (LNU) for patients with upper tract urothelium carcinoma. **Materials and Methods:** Hospital records were reviewed retrospectively on the patients who underwent laparoscopic nephroureterectomy in our department. 53 patients underwent transurethral incision of the ureteral orifice (TUIUO). Coagulation of the ureteral orifice were performed prior to resection. Thirty-three patients were treated by means of open excision of bladder cuff. Oncologic efficacy of LNU were compared between TUIUO and OC. **Results:** In all the specimens, the coagulation of distal ureter could be seen. To check pressure of distal ureter in 25 specimens proved that the ureter were sealing. Distal ureter was leaking at the centimeters of water pressure 135cm, 167cm, 175cm of two, but the others were not leaking at 197 cm H2O. There was recurrence of bladder tumor in 13 patients after TUIUO and in 8 patients after OC (P<0.05). A local recurrence developed in stage pT4aN0M0 8 months later. **Conclusions:** If coagulation of the ureteral orifice prior to resection, the distal ureter will be sealing during laparoscopic nephrectomy in LNU. As compared with OC in laparoscopic nephroureterectomy, TUIUO don’t increase the rate of neoplasms recurrence.

**MP-08.03 2 Micron Continuous Wave Laser Vaporesection for Treatment of Large Volume Benign Prostatic Hyperplasia**

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**Introduction and Objective:** 2 micron laser vaporesection for the treatment of BPH is a new minimally invasive technique developed recently with the advantages of delicate operation, little hemorrhage and fast postoperative recovery. Proper incision sequence and enucleation technique can improve the efficiency and safety of excision. Forty-five patients with large BPH (>80g) were treated with 2 micron laser transurethral treatment during May 2007-February 2008 in our hospital, and good clinical effects were obtained. Our objective is to evaluate the safety and clinical effect of the RevoLix 70 Watt 2 micron continuous wave laser vaporesection for treatment of large volume benign prostatic hyperplasia (>80g). **Materials and Methods:** We treated 45 patients with obstructive BPH between May 2007 and February 2008. The ages ranged from 57 to 88 years with a mean of 68.6 years. Prior to laser treatment patients were examined, 16 patients had acute urinary retention. Mean prostatic volume was (95.8±13.2) ml (from 80 to 128ml). All cases were successful using epidural anesthesia. At the beginning of the operation, the distal resection border close to the verumontanum was marked and laser incisions were performed in 5 and 7 o’clock lithotomy position. Firstly, median lobe was vaporesected closely along capsule from bladder neck to verumontanum. Secondly, prostate at 12 o’clock was vaporesected until the capsule was reached, and both lateral lobes was dissected downward. Thirdly, the apical position was enucleated by sheath, then prostate was vaporesected from the tissue in 12 o’clock position to the tissue in 6. It was important to follow the two principles: inner to extra_up to down. Measured outcomes were decrease in transfusion rate, resection time, catheter-time, improvement in urinary flow rate (Qmax), international prostate symptom score (IPSS) and quality of life (QoL). All cases were followed up for 3–12 months. **Results:** All cases were successful using peridural anesthesia. Average vaporesection time was (103.5±11.5) min. Transfusions were not necessary in any patients. Catheter-free time was in 48 hours to 72 hours. All patients satisfied with voiding outcome, none had incontinence. Mean Qmax increased from (3.3±3.1) ml/s pre-
operatively to $(16.5 \pm 1.5)$ ml/s postoperatively. IPS and QoL-Score improved from 28.6$\pm$ 5.5 to 8.3$\pm$ 2.3 and 4.5$\pm$ 0.4 to 2.7$\pm$ 0.2 respectively ($P<0.05$).

**Conclusions:** RevoLix 2 micron continuous wave laser vaporesection for treatment of large volume benign prostatic hyperplasia is a safe and effective relief from obstructive BPH with minimal morbidity and rare bleeding, and that, in combination with enucleation, may improve the efficiency of vaporesection.

**MP-08.04**

**Six-Step Training Program for Residents to Perform Anatomic Retroperitoneoscopic Adrenalectomy: A Safe Approach to Learning**

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**Introduction and Objective:** To establish a training program for residents with no previous laparoscopic experience to perform anatomic retroperitoneoscopic adrenalectomy (ARA) and evaluate its safety and efficiency.

**Materials and Methods:** Based on the six segments of key techniques of ARA, a teaching schedule was designed. Thus we established a six-step training program where the residents learned the procedure in a mentor-initiated approach. Five residents with no previous laparoscopic experience joined the program. On intensive laboratory training received or not before the program, they were classified into group A (no) and group B (yes). During the training, the trainees acted as camera holder firstly. Subsequently, they repeatedly performed each step in the schedule, which was assisted by the mentor who performed the remaining steps of the procedure. Only when their performance satisfied the mentor, could they do the next step. Finally, they performed 30 procedures independently by supervision of the mentor.

**Results:** The mean total repeats required by group A was more than group B ($41.4$ vs. $30$, $P=0.03$). The mean operative time (OT), estimated blood loss and complications of the 30 procedures were not significantly different among group A, B and the mentor. Though the OT of the second 15 procedures of group A and B were longer than that of the mentor ($P=0.035$, $p=0.049$, respectively), there was a still steeper learning curve compared with the mentor.

**Conclusions:** The six-step training program was efficient to transfer the key techniques of ARA to the trainees without compromising patient care.

**MP-08.05**

**Tips and Techniques in the Treatment of Major Vessel Injury in Laparoscopic Surgery**


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**Introduction and Objective:** Major vessel injury is a severe complication in laparoscopic surgery. An important lesson for any laparoscopic surgeon should be how to prevent and treat it. Here we introduce our experience in the treatment of major vessel injury in urinary laparoscopic operations.

**Materials and Methods:** From October 2005 to March 2008, 4 patients had the complications of major vessels laceration in the laparoscopic surgery, including 2 cases in retroperitoneal laparoscopic radical nephrectomy (about 0.2cm and 0.5cm-long laceration in the anterior wall of IVC), 1 in laparoscopic renal pedicle lymphatic duct ligation (two 0.1cm lacerations in the junction between renal vein and IVC), and 1 in right adrenalectomy (about 0.3cm-long split in IVC adjacent to liver). The injuries occurred in combination with the existence of severe adherence in the operative field. Under the CO$_2$ pressure of 12-15mmHg, little vascular injury with little bleeding could be closed with 8 figure suture, and the injury with significant bleeding should be pressed with gauze ball and sutured while exposing the laceration by and by.

**Results:** Only 1 was converted to open surgery because of large laceration (0.5cm in size) in the anterior wall of IVC and un-controlled bleeding in radical nephrectomy. Other 3 intracorporal vascular laceration repairs were completed successfully. During more than one year follow-up, the 4 patients recovered evenly.

**Conclusions:** When performing in laparoscopic surgery, gentle and meticulous dissection should be preceded in clear operative fields in certain anatomic planes, especially near the major vessels. Once major vascular injury occurred incidentally, the surgeons should keep calm and perform intracorporal suturing and knotting to close the splits. If necessary, conversion should be done immediately without any doubt.

**MP-08.06**

**Laparoscopic Technique Training Program in Urology**

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**Introduction and Objective:** To validate a new standardized training program for urologic surgeon to improve their laparoscopic skills.

**Materials and Methods:** The laparoscopic training program was carried out on a traditional mechanical simulator and some animal models. Thirty three trainees participated in the urologic laparoscopic training program. The novices was arranged to practise basic laparoscopic skills step by step in the simulator with fixed trocar positions at first; they could perform simulation training on the animal models after a period of basic training.

**Results:** All trainees (33/33, 100.0%) participated were able to perform all basic steps skillfully and complete laparoscopic anastomosis accurately after training. The time required for performing the partial nephrectomy, dismembered pyeloplasty and ureteral reimplantation on the animal model declined from (64.0$\pm$ 18.4), (127.5$\pm$ 17.5) and (75.8$\pm$ 11.6)min initially to(50.9$\pm$ 3.8), (65.2$\pm$ 7.5) and (37.7$\pm$ 7.2)min after the trainees had performed these surgery eight times ($P<0.01$). They could grasp the main points of the laparoscopic operating procedure after six to eight special training on the animal models. Fifteen trainees (15/33, 45.5%) had carried out laparoscopic surgery after our training program.

**Conclusions:** Our program enabled the participants increase their performance in complicated laparoscopy. And the results indicate that the challenging parts of reconstructive laparoscopy such as laparoscopic dismembered pyeloplasty can be taught by animal models. This experience could be incorporated easily by every department developing a laparoscopic training program.

**MP-08.07**

**The Effect of Multiple Renal Arteries on the Outcomes of Laparoscopic Living Donor Nephrectomy**

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**Introduction and Objective:** Renal transplantation has progressively become a well-established therapy and represents the best therapeutic option for patients with end-stage renal disease. Laparoscopic procurement of donor kidneys are advantageous compared to traditional open methods for live donors. Donor kidneys with multiple renal arteries vessels are usually avoided. Nevertheless, bilateral multiple arteries are sometimes encountered. Reconstruction can be undertaken during hypothermic conditions to simplify the final in-situ anastomosis.

**Materials and Methods:** From March 2005 to June 2007, over a period of 18 months, a total of 44 laparoscopic live donor nephrectomies were performed at our institution. A retrospective review of both the donor and recipient outcomes were carried out. Outcomes between those who had single renal artery were compared to those with multiple vessels.

**Results:** There were 7 patients (15.9%) with two renal arteries and 37 patients (84.1%) with one renal artery. All transplants had a single vein. The left kidney was harvested in all cases. Multiple arteries were associated with longer operation times of 197.8 mins (standard deviation 48.1 mins). Mean operative time for single artery transplant was 166.6 mins (standard deviation 38.1 mins). In general, neither multiple arteries nor vascular reconstructions influenced recipient creatinine clearance or ureteral complication rate.

**Conclusions:** Therefore, laparoscopic living donor nephrectomy for grafts with multiple renal vessels is safe. Outcomes are comparable to those grafts with single renal artery.

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**MP-08.09**

**Percutaneous Suprapubic Stone Extraction for Urethral Stones in Children: Efficacy and Safety**

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**Introduction and Objective:** Transurethral endoscopic lithotripsy has been the standard for management of urethral and bladder stones in adults. However, due to narrow caliber of pediatric urethra and to minimize urethral manipulations, we evaluated the use of percutaneous suprapubic stone extraction (PSPSE) for pediatric urethral stones.

**Materials and Methods:** Thirty-five male patients presenting with acute urinary retention due to urethral stones underwent PSPSE between July 2007 and January 2009. The age ranged from 8 to 180 months (mean 66.9 months). The stone size ranged from 0.8 to 1.9 cm. The procedure was done under general anesthesia, and a 7Fr urethroscope was used to push-back the urethral stone to the bladder. A 3 mm suprapubic puncture was performed with a scalpel and followed by introduction of a straight narrow hemostat through the puncture aided with cystoscopic guidance. The stone was grasped with the hemostat in its narrowest diameter and was extracted suprapubically (after widening the puncture site as indicated) or crushed if it was friable. The puncture site (the skin and subcutaneous tissue) was closed with a single 4-0 Vicryl suture. The procedure was done without fluoroscopy. A urethral catheter was left in for 48 hours.

**Results:** Stone retrieval was achieved in 31 patients and the stone was crushed into minute gravels in 4 cases. One patient developed intra-peritoneal extravasation that required open surgical intervention. This was attributed to high level of suprapubic puncture. Operative time ranged from 12 to 40 minutes (mean 22 minutes). The average hospital stay was <1 day. Patients were followed up from 1 to 16 months with complete resolution of symptoms and stone clearance.

**Conclusions:** PSPSE provides a minimally invasive approach for urethral and bladder stones extraction in pediatric population. The use of a straight hemostat for suprapubic stone extraction or crushing is a good alternative to suprapubic tract dilatation with minimal morbidity.

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**MP-08.10**

**Ureterorenoscopic Incision with Holmium: YAG Laser for Treatment of Ureteral/Ureteropelvic Junction Obstruction**

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**Introduction and Objective:** To investigate the efficacy and safety of retrograde ureterorenoscopic incision with holmium: YAG laser for treatment of ureteral/ureteropelvic junction obstruction.

**Materials and Methods:** A total of 68 patients (57 with ureteral obstruction, and 11 with ureteropelvic junction obstruction) were treated with retrograde ureterorenoscopic incision using holmium: YAG laser from May 2003 to February 2009. All procedures were performed using a 8F/9.8F semirigid ureterorenoscope with a 365μm holmium:YAG laser fiber. A ureteral stent was left in place for 3-6 months. Follow-up was obtained with ultrasound, intravenous urography or scintigraphy.

**Results:** Successful laser incision in a single session was performed in 64 patients (53 with ureteral obstruction (UO), 11 with ureteropelvic junction obstruction...
Fourteen patients with an obstruction, the success rate was 73.4% (47/64). With a median follow-up of 5.8 months (range 1-12 months) in 64 patients postoperatively and were managed with anti-infectious therapy. Conclusions: Retrograde ureterorenoscopic incision with holmium: YAG laser is an effective, safe and minimally invasive therapy for patients with ureteral/ureteropelvic junction obstruction (≤2cm).

Conclusions: Holmium: YAG laser lithotripsy with semirigid ureterorenoscope for treatment of ureteral calculi. Materials and Methods: A total of 1398 patients with ureteral calculi underwent holmium: YAG laser lithotripsy with a semirigid ureterorenoscope from September 2002 to February 2009. The stones were located in the upper ureter in 372 patients, the mid ureter in 338, and the distal ureter in 688. Results: The overall successful fragmentation rate for all ureteral stones in a single session achieved 93.0% (1300/1398). The successful fragmentation rate stratified by stone location was 79.8% (297/372) in the upper ureter, 93.5% (316/338) in the mid ureter, and 99.9% (687/688) in the distal ureter. Six intraoperative perforations were encountered during the procedures. Ureterorenoscopy access failure was happened in 5 patients. Twenty-one patients complicated with urinary tract infection including 6 with infective shock postoperatively were successfully managed. Two weeks–6 months (with a mean of 3.6 months) follow-up revealed that the overall stone-free rate for all ureteral stones achieved 95.2% (1219/1280). Conclusions: Holmium: YAG laser lithotripsy with semirigid ureterorenoscope is a highly effective, minimally invasive and safe therapy for ureteral calculi. It should be indicated as a first choice of treatment for patients with ureteral calculi, especially for the ones in midureter and distal ureter.
spaces is the first and key step of the laparoscopic surgeries of retroperitoneal approach and that carbon dioxide leakage around primary trocars results in reduction or loss of the working spaces and are common problems encountered during retroperitoneoscopic surgeries. To prevent the leak and keep adequate working spaces, authors invented peritrocar sealer of retroperitoneoscopy (Patent No: ZL02279046.2). Satisfactory results are obtained.

**Materials and Method:** A peritrocar sealer of retroperitoneoscopy is fashioned from a sterile surgical glove. It consists of an airbag and an air valve. The airbag is hollow cylinder. Its internal diameter is equal to the external diameter of a trocar. Its height is about three quarters of that of a Trocar. There are two to three ring-like skirts and a few semicircular papillae attached on external wall of the airbag. A trocar is covered by the sealer before it is placed in extraperitoneal space. When imbued with air, (about 15ml) the airbag expands outward to press and fix tissue round them, sealing the peritrocar space and preventing carbon dioxide leakage. Skirts and papillae enter into spaces between tissue, strengthening the fixation and seal. In the meanwhile, the airbag expands inward to hold the trocar and makes it not to slip.

**Results:** Adopting the peritrocar sealer of retroperitoneoscopy, authors have obtained the satisfactory results not only in simulated tests but also in clinical surgeries and achieved the goals of saving time and operational simplicity.

**Conclusion:** Retroperitoneoscopic procedures were already being performed in the late 1970s. Inadequate pneumoretroperitoneum and working space limited the minimally invasive procedures. In 1992, Gaur’s balloon-dissecting technique brought about clinical breakthrough of retroperitoneoscopic procedures. The core of this technique is creating a workable space and providing a good laparoscopic view of retroperitoneum, leading to wide acceptance of retroperitoneoscopic application. However, incisions of the skin and fascia are not airtight around the subsequently placed trocars, which causes leak of carbon dioxide and the loss of pneumoretroperitoneum. There were main three ways to solve the problems. 1. Increase the filling volume of carbon dioxide per minute. This way wastes material and poses the risk of infection. 2. Stitch the incisions. The disadvantage of his method is that seal is not very effective and takes time and energy. 3. Use a type of trocar with a fascial balloon and an external adjustable foam cuff. This kind of trocar is too expensive for developing countries. Adopting the peritrocar sealer of retroperitoneoscopy that authors invented enables us to seal peritrocar space, minimize carbon dioxide leakage and avoid some infections. In addition, it is easy to perform and economically viable. Therefore, it is worth it to spread.

**MP-08.15**

**A Comparison of Robotic Assisted versus Pure Laparoscopic Radical Prostatectomy: A Single Surgeon Experience**

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**Introduction and Objective:** We compared a single institution experience with radical prostatectomy using a pure laparoscopic technique vs. a robotically-assisted technique with regard to preoperative, intraoperative or postoperative parameters.

**Materials and Methods:** From May 2006 to December 2008, we reviewed 70 consecutive patients who underwent robot assisted radical prostatectomy and compared them to 70 match-paired patients treated with a pure extraperitoneal laparoscopic approach. The patients were matched for age, body mass index, prostate specific antigen, pathological stage and Gleason score. Preoperative, peroperative and postoperative data, including complications and oncological results, were analyzed between the 2 groups.

**Results:** The 2 groups were statistically similar with respect to age (p=0.31), body mass index (p=0.34), prostate specific antigen (p=0.21), Gleason score and clinical stage (p=0.19). The group of robotic surgery showed statistical differences in regarding operative time (p=0.001), estimated blood loss (p=0.03), bladder catheterization (p=0.002) than laparoscopic surgery group. The transfusion rate was 5.7% and 0% for laparoscopic radical prostatectomy and robotic assisted laparoscopic prostatectomy, respectively (p=0.02). The percentage of major complications was 17.0% vs. 5.7%, respectively (p=0.62). The overall positive margin rate was 27.4% vs. 22.8% for laparoscopic radical prostatectomy and robotic assisted laparoscopic prostatectomy, respectively (p=0.38).

**Conclusions:** We demonstrated that the robot-assisted laparoscopic radical prostatectomy is superior to laparoscopic radical prostatectomy with respect to operative time, operative blood loss, and length of bladder catheterization.

**Moderated Poster Session 9: Male and Female Sexual Health 1**

**Tuesday, November 3 13:30-15:00**

**MP-09.01**

**The Science of Penile Rehabilitation after Radical Prostatectomy with Vacuum Erectile Device**


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**Introduction and Objective:** Vacuum erectile device (VED) has been used as a rehabilitation tool after radical prostatectomy (RP). However, its benefits and underlying mechanism for recovery of erectile function is elusive. This study was designed to explore the molecular mechanism of VED in improving erectile function after bilateral cavernous nerve crush (BCNC) in rats.

**Materials and Methods:** Adult Sprague-Dawley rats were randomly assigned into three groups. Group 1, sham surgery, no BCNC; Group 2, BCNC, without any therapy; Group 3, BCNC, with VED therapy. On day 40, intracavernosal pressure (ICP) and mean arterial pressure (MAP) were measured with cavernous nerve stimulation (CNS) under anesthesia. The penile length of rats with BCNC was compared to sham group to determine the changes in penile size. The penis was processed for histo- or immunohistochemistry with quantitative image analysis for: HIF-1α, eNOS, TGFβ1, α-smooth muscle actin (ASMA), smooth muscle/collagen, and TUNEL (apoptotic index). Total collagen content was also determined by hydroxyproline assay.
Results: 1. Over 10% shrinkages of penile length and girth after 4 weeks were observed in rats with BCNC. 2. The newly-designed rat-specific VED therapy was effective to prevent penile shortening induced by BCNC. 3. The ICP/MAP was dramatically increased with VED therapy in BCNC rats. 4. HE staining showed BCNC decreased fibroblast numbers in penile tunica albuginea. VED therapy can reverse it. 5. VED therapy decreased HIF-1α, TGFβ, and collagen; in the meantime, increased eNOS, ASMA. 6. TUNEL assay showed fibroblast cells apoptosis were dramatically increased in penile tunica albuginea. VED therapy relieved the apoptosis. 7. EM revealed BCNC induced collagen disorganization, VED therapy significantly reversed it.

Conclusion: VED therapy improves erectile function and preserves penile size in rats with BCNC via anti-hypoxic, anti-apoptotic mechanism. This study provides scientific evidence for VED therapy in penile rehabilitation after radical prostatectomy. This scientific evidence may motivate physicians' recommendation and improve patients' compliance.

**MP-09.2**
Mechanical Reliability of the Newly Enhanced AMS 700CX Penile Implants

Salem E1, Wilson S2, Neeb A2, Dek J2, Cleves M2

**Introduction and Objective:** Parylene coating was added to the silicone layers of the AMS 700 CX penile prosthesis cylinders in January 2001. The coating was placed on non-tissue contacting silicone surfaces to increase lubricity, reduce friction and silicone wear. We compare mechanical reliability of the original and Parylene coated AMS 700 CX in a large single surgical group series.

**Materials and Methods:** Seven hundred and seventy-five consecutive patients receiving the AMS 700CX penile prosthesis cylinders were followed for 3 years. Four hundred and fourteen received the non-coated model and 361 received the Parylene coated device. Revision-free survival was estimated using the Kaplan-Meier product limit method and compared using the log rank test.

**Results:** For the entire series (virgin + revised) the 3-year revision free survival for any cause improved from 78.6% for non-coated to 87.4% for the Parylene coated implants. Freedom from mechanical breakage showed similar improvement from 89.2% for the non-coated to 97.5% for enhanced models.

**Conclusion:** To our knowledge, this is the first study objectively comparing erect penile length with ICI to that of the IPP. We found a significant decrease in erect penile length after IPP. However, this did not affect the effectiveness of IPP in treating ED when SHIM was used for evaluation.

**MP-09.04**
The Role of Vasoactive Peptides in the Control of Human Vaginal Smooth Muscle Tone: A Molecular Biology and Functional Study

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**Introduction and Objectives:** Vasoactive peptides, such as vasoactive intestinal polypeptide (VIP), C-type natriuretic peptide (CNP) and bradykinin (BK), have been suggested to play a role in the female sexual arousal response through stimulation of respective receptors and the production of cyclic nucleotides, thereby exerting relaxation of clitoral, labial and vaginal vascular and non-vascular smooth muscle. Up to date, the effects of these peptides have mainly been investigated in male erectile tissue. The aim of the present study was to investigate by means of molecular biology the expression of messenger ribonucleic acids (mRNAs) encoding for VIP, CNP and BK receptors and elucidate the effects of VIP, CNP and BK on the tension induced by endothelin-1 (ET-1) of isolated human vaginal wall, as well as on levels of intracellular cyclic adenosine monophosphate (cAMP) and cyclic guanosine monophosphate (cGMP) in the tissue.

**Materials and Methods:** Human vaginal wall tissue was obtained from 32 women who had undergone colporrhaphy surgery for correction of vaginal prolapse. Expression of mRNA encoding for VIP, CNP and BK receptors was analyzed by reverse transcriptase polymerase chain reaction (RT-PCR). Using organ bath technique, the
effects of VIP, CNP, and BK (1 nM to 1 µM) on the tension induced by 0.1 µM ET-1 of human vaginal wall strip were investigated. The accumulation of cAMP and cGMP in response to drug exposure was determined by means of radioimmunoasay.

**Results:** mRNA-transcripts encoding the VIP, CNP and BK receptors were detected in the vaginal tissue. The tension induced by ET-1 was reversed by the peptides in a dose dependent manner with the following rank order of efficacy (R_max): BK (22%) > VIP (21%) > CNP (15%). The relaxation observed was paralleled by a 4.8-fold and 5-fold increase in cAMP (VIP) and BK.

**Conclusion:** Vasoactive peptides can partly inhibit in vitro the ET-1 induced contraction of human vaginal wall, probably through binding to respective receptors and stimulation of cyclic nucleotides production. These findings might have significance with regard to the determination of new therapeutic avenues for female sexual arousal disorder.

**MP-09.05**
**Prediction of Sperm Retrieval with Artificial Neural Network**
Renji Hospital, Shanghai Jiao Tong University, Shanghai, China

**Introduction and Objective:** Follicle stimulating hormone (FSH), Inhibin B, seminal plasma biochemistry and leptin have been used to predict the outcome of sperm retrieval directly or indirectly, but there isn't any marker can be very reliable. Our aim is to predict sperm retrieval results with artificial neural network (ANN).

**Materials and Methods:** Data from 66 patients with azoospermia within the FSH range 1.3 to 23.6 mIU/ml and testis volume>=5ml were analyzed. All the patients underwent multiple bilateral testicular biopsies. Factors including 1) FSH, 2) serum leptin, 3) semen volume, testis volume, PH, seminal plasma fructose and 

**Results:** Of the 132 patients, 73 (55.3%) can retrieve spermatozoa. ANN2 had the largest area under the curve (AUC), ANN4 second, then ANN1, S1 and ANN3, the sensitivity is 94%, 83%, 83%, 85%, 61%, respectively, the specificity is 93%, 93%, 90%, 68%, 90%. The AUC of ANN2A (0.97) was significantly greater than those of S1 (0.88, P<0.05), ANN1 (0.90, P<0.05) and ANN3A (0.84, P<0.05).

**Conclusion:** Any one of the factors as a single parameter didn’t have a desirable accuracy, which can only be improved by combined use with artificial neural network. At 90% and 95% sensitivity, combined use of leptin and FSH had the best specificity.

**MP-09.06**
**Molecular Cloning and Characterization of Lactoferrin Receptor (LfR) on Human Spermatozoa**
Laboratory of Reproductive Medicine, Department of Urology, The First Affiliated Hospital of Nanjing Medical University, Nanjing Medical University

**Introduction and Objective:** The high concentration of lactoferrin (Lf) in human semen and its capacity to bind to the sperm surface demonstrate that it maybe has the lactoferrin receptor (LfR) on the surface of human spermatozoa. LfR has been reported in lymphocytes, liver and intestine. LfR may also be involved in different functions in different cell types, but little is known about its sperm distribution and function. We therefore find it important to determine the characteristics of the LfR, to explore the mechanism of Lf transport mediated by the LfR, and to clarify the biological significance of this mechanism [1,2]. We searched for homologues on the expressed sequence tag (EST) database and designed gene-specific primers based on human EST homologues to the determined peptides. We cloned a LfR cDNA by PCR from human testis cDNA library and then expressed a recombinant LfR(LfR) in vitro. LfR has the activity to bind Lf. In vivo we also found LfR on the surface of the spermatozoa and it is glycophosphatidylinositol (GPI) anchored protein. It can be cleaved by Phosphatidylinositol-Specific Phospholipase C (PI-PLC) and analyzed by Western blot.

**Results:** The recombinant LfR molecular weight is 34kDa. The native human sperm LfR is a 156kDa. It can be cleaved from sperm surface by PI-PLC.

**Conclusions:** LfR is a glycoprophatidylinositol (GPI) anchored sperm membrane protein. It may regulate lactoferrin function and play important role for sperm signaling transduction and fertility.

**MP-09.07**
**Expressions of SK3 and IK1 Channel Proteins in Cavernous Tissue of Rat Models of Diabetes Mellitus**
Nanjing First Hospital Affiliated To Nanjing Medical University, Nanjing, China

**Introduction and Objective:** Endothelial-dependent hyperpolarization factor (EDHF) is involved in the relaxation of the vascular smooth muscle cells in penile arteries. So, we hypothesize that EDHF-mediated relaxation is impaired in penile arteries from diabetic patients with ED. Because Ca2+-activated K+-channels (KCa), in particular SK3 and IK1 are key players in EDHF mediated relaxation in small arteries, we detected the expression of SK3 and IK1 channel proteins.

**Materials and Methods:** The diabetes model was induced in 8-week-old male SD rats by a single administration of streptozotocin (60mg/kg intraperitoneal injection) dissolved in citric 2 mM acid-trisodium citrate buffer, pH 4.0. After 72 h, blood samples were obtained and the glucose concentration was measured using a one-touch glucometer. Induction of diabetes was considered successful when the glucose level was higher than 16.6 mM (300 mg/dl). Nondiabetic control rats were injected with vehicle solution alone and kept under identical conditions. Eight weeks later, Control rats with glucose higher than 11.1 mM (200 mg/dl) were excluded from the study. Erection function of rats was examined by apomorphine injection (80ug/kg, neck and nape hypodermic injection), observe 30 min-
utes and record whether the penis erection and the number of penile erection. Rats were anesthetized and isolated penile tissue and the penis were store in liquid nitrogen. The expressions of SK3 and IK1 were measured by RT-PCR and Western blot, respectively.

**Results:** Compared with the control group, the erection function significantly decreased in the DM group (p<0.05). Expression levels of both mRNA and protein of SK3 were significantly reduced in cavernous tissue of diabetic rat compared with the control group. Relative mRNA and protein expression levels of IK1 also were significantly reduced in cavernous tissue of diabetic rat.

**Conclusion:** Diabetes obviously inhibits SK3 and IKCa channel proteins mRNA and proteinum expression. The decrease of SK3 and IK1 channel proteins mRNA and protein expression in the cavernous tissue might play a key role in the development of ED in diabetic rats. These findings emphasize the importance of EDHF pathways for normal erectile function. Suggesting that enhancement of EDHF pathways could be necessary to treat ED in many diabetic men by increasing SK3 and IK1 channel proteins expression.

**MP-09.08**

**Scrotal Temperature, Spermatogenesis and In Vivo Fertility: An Experimental Study**

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**Introduction and Objectives:** The aim of this study is the evaluation of the effect of scrotal acute thermal stress upon spermatogenesis and in vivo fertility of experimental mice.

**Materials and Methods:** We used 60 males and 30 females Swiss Albino mice 8-12 weeks old. The males were anesthetized with intraperitoneal xylasine-ketamine. The acute scrotal thermal stress was induced by immersion of the scrotum in water at 42 degrees Celsius for 30 minutes. Thirty males (5 males at each time-point) were killed at 6 hours, 7, 14, 21, 28 and 40 days respectively after the scrotal thermal stress. Seminal fluid was sampled at the level of the tail of the epididymis. The concentration, viability and motility of the spermatozoa were assessed using SpermaCue hemocytometry, histological evaluation and microscopic examination. The remaining 30 males were mated with the females that had pharmacologically-induced poliovulation at the same time-points. The number and gender of the offsprings were recorded. The results were compared with those of non-exposed males.

**Results:** All the study parameters were below normal levels after thermal exposure. Minimal spermatozoa concentration and viability levels were recorded at 28 days (7.5 x 10³/ml, 38.8%), while the minimal motility was recorded at 21 days (8.6% mobile spermatozoa). The fertility rate was low at 7, 14, 21 and 28 days after the scrotal thermic stress (only 40% of the females were pregnant, with the number of embryos per pregnant female down by 75%). The male-to-female ratio among the offsprings was 3:1. Forty days after exposure (i.e. after the completion of a spermatogenesis cycle) all the study parameters were back to normal.

**Conclusion:** The acute scrotal thermal stress causes decreased levels of concentration, viability and motility of the spermatozoa during a complete spermatogenesis cycle in mice. The in vivo fertility is also diminished. During this period the male-to-female ratio of the offspring is modified. The changes are reversible. Our results suggest that the semen analysis should not be performed within 74 days after an acute febrile illness in human subjects.

**MP-09.09**

**Results of Redo Vasoperididymostomy after Failed Previous Vasoperididymostomy and Percutaneous Epididymal Sperm Aspiration**

Nguyen N

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**Introduction and Objective:** Some patients with failed previous vasoperididymostomy and one or more cycles of intra-cytoplasmic sperm injection with percutaneous epididymal sperm aspiration, requested a second anastomosis if possible. This study is to report our results of redo vasoperididymostomy for these patients.

**Materials and Methods:** There was a clinical retrospective analysis of these patients, admitted at Binh Dan hospital from October 2005 to April 2008. The two-suture microsurgical invagination technique was performed, if possible, with each suture on each side of the transversal opening of the epididymal tubule. The potency and pregnancy rates were assessed.

**Results:** Eleven patients were recruited for this study. Vasoperididymostomy could not be performed in 1 of 11 patients (9%) due to complete damage of the epididymal tubules. For 8 patients with previous bilateral vasoperididymostomy, the technique could be done bilaterally for only 6 of 8 patients (75%). While previous vasoperididymostomy at the head of the epididymis was done in 1 of 11 patients (10%), the redo vasoperididymostomy at this site happened in 5 of 10 patients (50%). Six of 10 patients (60%) had sperm return. Five of 10 patients (50%) had natural children.

**Conclusions:** Redo vasoperididymostomy is possible and makes new hope for patients with failed previous vasoperididymostomy and percutaneous epididymal sperm aspiration.
3 months' follow-up one patient had the stent encrusted and removed. Three patients suffered from migration, one of them underwent re-insertion of the stent with successful outcome, and the other one underwent re-insertion of the stent followed by removal of the stent due to re-migration. At 6 months another two had intraluminal encrustation of the stent and the stent was removed. Five patients completed one year follow-up without complications. All failures occurred in the first 6 months.

Conclusions: Urethral stents with Nickel Titanium alloy can be an acceptable procedure for patients with frustrating recurrent bulbar urethral strictures. However, it has limitations. The search for an ideal urethral stent continues.

MP-10.02
Two-Stage Tissue Transfer Using Buccal Mucosal Graft in Penile Urethra
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Introduction and Objectives: To investigate the efficacy of using two-stage buccal mucosal graft for replacement of the penile urethra.

Materials and Methods: Twenty patients underwent two-stage urethroplasty in the period between January 2006 and January 2009. Eight patients had previously failed proximal hypospadias repair and twelve patients had long segment penile urethral stricture (>3cm). The mean age at surgery was 27 years (range of 18 to 45). Buccal mucosal graft was harvested from the inner cheek, defatted and applied over the tunica albuginea of the corpora cavernosa as a first stage. The second stage was done after 6 months by reconstruction of the graft. Patients were followed up for 6 months after the urethroplasty.

Results: No complication related to the site of buccal mucosa harvesting. One patient required another graft from the opposite cheek after 3 months to lengthen the graft to the whole planned neourethra. Three patients developed urethrococytaneous fistula after the second stage which closed successfully after 3 months. Up to the 6 months follow-up period, all patients had good urine stream.

Conclusions: Buccal mucosal graft appears to be an optimal substitute for long segment of diseased penile urethra.

MP-10.03
Hanged Ventrall Buccal Mucosa Graft in Urethral Stricture Repair after Failed Hypospadias
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Introduction and Objectives: Urethral stricture is one of the most common complications after severe hypospadias repair. Usually, two or more procedures are needed to its correction due to a lack of available material after previous repair. We evaluated one stage urethral reconstruction using ventral buccal mucosa graft.

Materials and Methods: In period from August 2002 to September 2008, 12 patients, aged 9 to 27 years, underwent urethral stricture reconstruction after failed hypospadias repair. Periurethral tissue was dissected and preserved completely. Urethra was opened ventrally at the stricture level and buccal mucosa graft with appropriate size was placed to augment the urethra. Graft was hanged on surrounding urethral tissue by several U sutures. This way, good covering of the graft and prevention of its folding with retraction were achieved. Associate chordee (10 patients) and secondary vesicoureteral reflux (3 patients) were corrected simultaneously.

Results: Mean follow-up was 34 (7–71) months. A successful result was confirmed in all patients by urethrography and uroflowmetry. One urethral fistula was corrected three months later. Recurvation did not occur in this group. There was no recurrence of the reflux in endoscopically treated patients.

Conclusions: Ventral buccal mucosa grafting presents simple and safe variant for urethral stricture repair. Hanging of the graft is very important for its survival and prevention of its folding with retraction.

MP-10.04
Treatment of Iatrogenic and Postoperative Traumas of Urinogenital Organs
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Introduction and Objectives: One of the most important problems of modern urology is intraoperational iatrogenic damages of ureters and bladder when carrying out various surgical, urological, obstetric and gynecologic interventions, while the quantity still remains at high level. The objective of our observation is to optimize methods of surgical treatment of complications mentioned above.

Materials and Methods: Results of complex clinical inspection and surgical treatment of 219 patients with urinogenital fistulas, iatrogenic damages, obliterations of various parts of ureters, postoperative strictures of pelvic-ureteric segment, post beam strictures of ureters and the combined damages of urinogenital organs were analyzed.

Results: For 115 patients with vaginovesical fistulas fistuloplastics were made using transvesical access, for 42 patients of them "TachoSil" was applied in order to provide hermetic sealing and strengthening of seam of vagina wall. In 46 cases of ureterovaginal fistulas and strictures of pelvic part of ureters, ureterocystoneostomies were made using Politano-Leadbetter's method with additional antireflux mechanism of Ricard and further installation of stent. There were 11 patients out of 25 hospitalized with postoperative strictures of pelvic-ureteric segment; repeated plastics were made using Hainz-Andersen-Kucher's method with internal drainage; for another 5, ureterocystoneostomies were applied, and balloon dilatation was executed in the last 9 cases. For 6 patients with the occasion of postoperative nonstroctured strictures of ureters, ureteroureterocystoneostomies was executed. For 6 patients with the occasion of stretched (more than 10 sm) strictures of ureters' pelvic part, ureterocystoneostomies was made with reconstruction of wall of bladder in distal part of ureters. Palliative installation of stent-catheters was made for 16 out of 21 patients, with post-beam strictures of pelvic part of ureters, and in 5 cases, nephrofix was applied. Conclusions: Executed reconstructive-plastic and restoration interventions using various techniques have allowed us to eliminate iatrogenic and postoperative traumas in cases observed. The absence of serious complications in postoperative period and also successful long-term results of executed operations testify and confirm the clinical efficiency of our treatment tactics.

MP-10.05
Grafts Urethroplasty for Urethral Stricture Therapy: Ventral Onlay vs. Dorsal Onlay
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Introduction and Objective: To compare and assess the efficacy of the ventral/dorsal onlay graft urethroplasty for urethral stricture therapy.

Materials and Methods: We searched pertinent English literature via the databases MEDLINE, the Cochrane Library, and EMBASE Drugs and Pharmacology regarding the use of ventral/dorsal graft urethroplasty in the reconstruction of urethral defect associated with urethral stricture. Data were extracted by two reviewers independently and analysed by SPSS 13.0 software.

Results: In total, 50 studies involving 1264 patients were included. Ventral onlay graft urethroplasty was used in 751 patients with a success rate of 82.6%, while dorsal onlay graft urethroplasty was used in 513 patients with a success rate of 86.9% (ventral vs. dorsal, χ²=4.432, p=0.035). Oral mucosa graft has the highest success rate (88.1%) of all grafts, and the success rate of free skin graft onlay urethroplasty is associated with the location of graft placement (ventral vs. dorsal, p=0.016). Concerning the location of stricture, the urethroplasty for bulbar urethral stricture achieves the best result, with a success rate of 87.7%, which is also associated with the location of graft placement (ventral vs. dorsal, p=0.025).

Conclusions: Dorsal onlay graft urethroplasty is better than ventral onlay. It is better to place the free skin graft in the dorsal placement. Bulbar urethral stricture is more suitable for graft onlay urethroplasty than penile urethral stricture.

MP-10.06
Urethral Reconstruction Using Oral Keratinocyte-Seeded Bladder Acellular Matrix Grafts (BAMGs)
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Introduction and Objective: To investigate the feasibility of urethral reconstruction using oral keratinocyte-seeded bladder acellular matrix grafts (BAMGs).

Materials and Methods: Autologous oral keratinocytes were isolated, expanded and seeded onto BAMGs to obtain a tissue-engineered mucosa. The tissue-engineered mucosa was assessed using morphology and scanning electron microscopy. In 24 male rabbits, a ventral urethral mucosal defect was created. Urethroplasty was performed with autogenic oral keratinocyte-seeded BAMGs (12 rabbits; experimental group) or with BAMGs with no cell seeding (12 rabbits; control group). Retrograde urethrography were performed at 1, 2 and 6 months after grafting. The urethral grafts were analyzed grossly and histologically.

Results: Oral keratinocytes had good biocompatibility with BAMGs. Rabbits implanted with oral keratinocyte-seeded BAMGs voided without difficulty. Retrograde urethrography revealed no sign of strictures at 1, 2 and 6 months. In the control group, the urethra of repaired defects was accompanied by strictures. Histological examination showed that grafts seeded with oral keratinocytes formed a single-layer structure by 1 month, and at 2 and 6 months the keratinocytes formed multilayers. There was an evident margin between graft oral keratinocytes and host epithelium. The oral keratinocytes of basilar layers of the grafts expressed P63 shown by immunocytochemistry. In the control group, histopathology demonstrated that no single-layer or stratified epithelium cells had developed at the sites of the repaired defects, whereas an inflammatory reaction was found in 2 rabbits.

Conclusions: Oral keratinocytes had good biocompatibility with BAMGs. Urethral reconstruction with oral keratinocyte-seeded BAMGs was better than with BAMGs alone.

MP-10.07
Antireflux Ureteral Substitution by an Isolated Ileal Segment
'St. Marina' University Hospital, Varna Medical University, Varna, Bulgaria

Introduction and Objective: Pelvic surgery and irradiation of the pelvis are both associated with increased risk of iatrogenic damage of the ureter(s). With an aim to provide an optimal solution for the management of large defects of the distal ureter(s) we developed an antireflux technique of ileal ureteral substitution. We report herein our 5-year clinical experience with this technique.

Materials and Methods: Between 2004 and 2009 the method was applied in 14 female patients (mean age 49.4 years, range 29 - 56 years) with iatrogenic injuries to the distal ureter(s) that occurred as a complication after total hysterectomy, with or without pelvic irradiation, for gynaecological malignancies. Reconstrucive surgery was done, and the damaged ureter(s) was (were) replaced by an isolated ileal segment. The uroterioal anastomosis was created in an antireflux manner by the implementation of the serous-lined extramural tunnel technique, originally described in orthotopic bladder substitutes. To avoid mucus retention, the distal end of the isolated ileal segment was widely anastomosed with the bladder.

Results: Surgery was performed with limited rate of complications. The follow-up ultrasound and radiological studies confirmed that the procedure efficiently provided a nonobstructed unidirectional flow of urine. Optimization of the renal function and restoration of the previous patient quality of life were recorded in all cases treated by the new technique. Unlike the good functional results observed, the oncological outcome was poor: the malignant disease progressed in seven patients, three of whom died with distant metastases in spite of the adjuvant treatment applied. Conversion to ileum conduit, with (1) or without (2) concomitant cystectomy was done in three patients, due to pelvic recurrences invading the bladder.

Conclusions: Ureteral substitution by an isolated ileal segment via antireflux ureteroileal and reflux ileovesical anastomosis could be an option when large defects of the distal ureter are encountered.

MP-10.08
Anastomotic Urethroplasty for Posterior Urethral Trauma, Surgical Steps and Results in a Multicenter International Study with 200 Patients
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Introduction and Objective: A retrospective study of the steps and results of anastomotic urethroplasty or posterior urethral trauma.

Materials and Methods: Six surgical steps are required for anastomotic urethroplasty. Step 1-Bulbar urethral mobilization, Step 2-Crural separation, Step 3-Inferior pubectomy, Step 4-Supracrural rerouting of the urethra, Step 5-Total pubectomy, Step 6-Omental wrap. In total, 200 patients were analyzed. In India, 172 patients were operated on over 10 years. There were 100 patients (58%) who required inferior pubectomy and 28 patients (17%) needed inferior pubectomy. In Italy, 18 patients were operated on in 1 year. Only 4 patients (22%) patients required inferior pubectomy.

Results: The success rate was 91% for primary repair and 87% for redo repair in India; whereas in Italy, the success rate was 95%.

Conclusions: There is a significant differ-
ence in the steps required to achieve tension free anastomosis between Italy and India.

**MP-10.09**

**Double J Stenting: Initial Management of Injured Ureters Recognized Late after Gynecologic Surgery**


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**Introduction and Objective:** Ureretal injuries detected intraoperatively during gynecologic surgery can be managed by simultaneous repairs in most cases. However, injured ureters detected postoperatively used to remain prolonged morbidity. We evaluated whether double J stenting could be an initial procedure to manage ureteral injuries detected postoperatively.

**Materials and Methods:** From 2002 to 2007, 8 patients tried double J stenting, primarily among patients that injured ureters were diagnosed after gynecologic surgeries were included in the study. Medical records and radiologic findings were investigated retrospectively.

**Results:** Median age of the patients on which double J stentings were tried was 48.6 years old. Seven patients were unilateral (right-4, left-3) and 1 patient was bilateral ureteral injuries (total 9 ureters). The time between gynecologic surgery and double J stenting was 1 week in 2, 2 weeks in 2 and 4 weeks in 4 patients. Gynecologic diagnoses were uterine myoma in 4, cervical cancer in 4 and types of gynecologic surgeries were simple hysterectomy in 2, radical hysterectomy in 4 and laparoscopic hysterectomy in 2 patients. Double J stenting was successful in 4 ureters on outpatients basis. Failed 4 ureters were tried by ureteroscopy under anesthesia. Only 2 ureters were successful. In 6 ureters that double J stenting were successful, 3 ureters were recovered but 3 ureters remained strictures. 3 ureteral strictures were managed by ureteral dilation with repeated double J stenting. 2 of 3 ureteral stricture had no more additional dilation, but 1 stricture was lost at follow up schedule.

**Conclusions:** Although our data have limitation (that cases were 9 ureters) double J stenting alone could avoid invasive urological surgery in damaged ureter detected after gynecologic surgery. Therefore, it is justifiable to attempt double J stenting before doing open surgery.

**MP-10.10**

**Tuberculous Ureretic Strictures: Diagnosis and Outcomes of Treatment**

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**Introduction and Objective:** Diagnose early the tuberculous ureteric strictures using the combination of AFB in urine, urine culture in Lowenstein-Jensen medium, PCR (polymerase chain reaction) of urine for diagnosis of genitourinary tuberculosis (GUTB) and combination of IVU and fluoroscopic retrograde pyelography (C-arm) for diagnosis of ureteric strictures. Estimate the role and efficacy of antituberculous drugs, corticosteroids, endoscopic ureteral dilations, and reconstructive surgery for management of this sort of complication.

**Materials and Methods:** Fifty patients with 59 strictured ureters were seen from January 1998 to January 2005 in our center. Patients’ mean age: 42.5 (25-62), with 12 males (24%) and 38 females (76%). One patient (1%) had concomitant pulmonary TB, 3 patients (6%) had concomitant epididymal TB. Diagnosis of GUTB primarily based on urine examination using the combination of detection of AFB in urine (3 consecutive morning samples), urine culture in Lowenstein-Jensen medium (3 consecutive morning samples), and PCR (IS6110 reaction, one morning sample) for isolation of M.tuberculosis. Diagnosis of ureteric strictures primarily based on IVU and fluoroscopic retrograde pyelography. Management by staged regiment starting with antituberculous drugs, in addition with corticosteroids (prednisolone 60 mg per day) after 3 weeks in case of no improvement, in addition with endoscopic ureteral dilations after another 4-6 weeks, and finally, in addition with reconstructive surgery, if required. All patients were followed up at regular time intervals (3 months, 6 months, 1-2 years) after treatment with IVI and/or retrograde pyelography for assessing radiographic and functional outcomes. The role and efficacy of each interventional means were calculated accordingly.

**Results:** Urine examinations with the combination of AFB, culture and PCR diagnosed 47/50 GUTB patients (94%). The sensitivity of the PCR using the IS6110 reaction was only 45.2-73.7%. Retrograde pyelography with dynamic study of ureter was indicated in nearly half of cases (52% of patients, 46% of ureters). Medical treatment brought in satisfactory outcomes only in case of mild hydrenephrosis (11/12 ureters, 91.7%) with overall satisfactory outcome of 26.8% (11/41 ureters). The role of corticosteroids was not statistically significant with satisfactory outcomes of 41.5% (17/41 ureters) (p=0.162). Thirty-three patients (66%) with 36 ureters (61%) were managed endoscopically (1-4 dilatations per ureter, mean of 1.47). Endoscopic dilatations ranged from placement of a DJ stent (6 ureters) to balloon or catheter dilatations (14 ureters) and to endo-incision of ureter (10 uraters). Failure rate of endoscopic dilatations were 16.7% (6 ureters). The role of endoscopic ureteral dilatations was statistically significant with satisfactory outcomes of 65.9% (27/41 ureters) (p=0.0267). Of the 36 ureters managed by endoscopic dilatations, 13 uraters had encouraging outcomes (36.1%). Six out of 10 urers (60%) with the length of the stricture ≤ 1 cm had encouraging outcomes. Eighteen patients (36%) with 21 uraters underwent surgical reconstruction: 1 UPJ reconstruction (Hynes-Anderson), 17 ureteral reimplantations (Lich-Grégoir: 12, LeDuc:1, Politano:1, Boari: 3), 2 placements of DJ stent, 1 augmentation ileocystoplasty for contracted bladder associated with ureteral reimplantation. Surgical reconstruction had the rate of encouraging outcomes of 85% (17/20 uraters, one ureter was lost of follow-up). Grossly, with the staged regimen of management for these 50 patients, the rate of encouraging outcomes was 79.3% (46/58 ureters), one patient with one ureter was lost on final follow-up IVU), failure rate was 10.2% (5/49 patients), the theoretical nephrectomy rate was 10% (5/50 patients).

**Conclusions:** Urine examinations with the combination of AFB, culture and PCR can make a diagnosis of GUTB in a vast majority of cases. Retrograde pyelography with dynamic study of ureter is a demand in nearly half of cases. It helps to make a precise diagnosis of ureteric strictures. Medical treatment is efficacious solely in case of mild hydrenephrosis. Role of corticosteroids is not statistically significant. Endoscopic ureteral dilatations had moderate success rate. Surgical reconstruction remains the last resort to keep the success rate acceptable.

**MP-10.11**

**Evaluation of Supracrural Rerouting Success Rate as a Technique for Resolution of Posterior Urethral Disruption Defects**

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Introduction: Selection of an acceptable method to the treatment of posterior urethral disruption defects would be highly desirable if a comparable surgical outcome could be achieved. We tried to determine the efficacy and success rate of some techniques such as supracrural rerouting for removing of these defects among our population.

Materials and Methods: In a case series study, 200 consecutive male patients treated with anastomotic urethroplasty for traumatic posterior urethral strictures were prospectively and retrospectively reviewed at our teaching hospital. Prior treatments, surgical approach and ancillary techniques required during reconstruction were compiled.

Results: Success rate due to posterior urethral reconstruction was achieved in 78% of cases. Supracrural urethral rerouting was performed in only 11 patients (5.5%), of whom, 7 sustained recurrent stenosis requiring intervention. The highest success rate of defect resolving was reported in urethral mobilization (92.4%).

Conclusion: Supracrural rerouting is not an acceptable technique and can be resulted in postoperative complications such as recurrent stenosis in most of the patients with posterior urethral disruption defects.

MP-10.12 Complex Urethroplasties Using Combinations of Free Tissue Grafts
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Introduction and Objective: The frequency of cases with severe complex diseases of the urethra (hypospadias, strictures, fistulae) has significantly risen in the past decades, most likely as a result of the broad usage of different instrumentalations of the urethra, both in congenital and acquired diseases. These serious, very often crippled cases necessitate the usage of more refined, complex and individually tailored forms of urethroplasties. One of the most attractive options is the usage of combination of several different tissue grafts. The objective of this study is to present our mid-term experience with using combined free tissue grafts in complex cases of urethroplasty.

Materials and Methods: Our series consists of twenty-nine patients, aged 12 to 68 years, subjected to urethroplasty with combined free tissue graft. The mean period of observation is 25 months (ranging from 6 to 47 months). In 21 (72%) the indication for application of this technique are recurrent urethral fistulas and deformity of glans penis after surgery for hypospadias – “crippled” hypospadias, and in 4 (13.7 %) case patient with an advanced form of BXO, and in another 4 cases (13.7%) – result from an previous extensive manipulation of the urethra. We use combinations of graft material from buccal mucosa and retroauricular skin and in the last year – lingual mucosa graft. The buccal and lingual mucosa graft was used for correction of the stricture of the anterior urethra, and the retroauricular skin – for meatoanuloplasty.

Results: In 18 (62%) of the cases, we achieved very satisfactory results, consisting of: 1. Full patency of the urethra; 2. Definitive closure of the fistula; 3. Satisfactory correction of the deformity of glans penis. In 3 (10.3%) cases we observed recurrence of the fistula, in 4 (13.7 %) - re-stricture, and in another one (3.4%) – formation of new fistula with full patency of the urethra. Morbidity and complications from the graft site had not been observed in this series.

Conclusion: Complex urethroplasties with combined usage of several types free tissue grafts is one of the most attractive options in complicated cases of urethral reconstruction, especially in cases with “cripped” hypospadias and with severe forms of Balanitis Xerotica Obliterans (BXO).

MP-10.13 Urethroplasty with Usage of Lingual Mucosa Free Graft: Single Centre Initial Experience and Early Results
Slavov C, Popov E, Venkov G, Tzvetkov M
UMHAT “Alexandrovska” Medical University, Sofia, Bulgaria

Introduction and Objective: The usage of lingual mucosa graft (LMG) represents an interesting novelty in the field of urethral surgery, enabling the surgeon with alternative site for graft harvesting. From the initial results of its usage, it seems that LMG can prove to be a viable and safe alternative of buccal mucosa graft. The objective of this study is to present our initial experience and early results with the usage of LMG.

Materials and Methods: For a period of 14 months (1.2008 - 4.2009) 17 patients with urethral strictures were diagnosed, operated and followed using LMG. All of them have stricture of the anterior urethra with mean length of 3.6 cm (ranging from 1.8 to 5 cm). We have used our standard operative techniques, used in anterior urethroplasties with BMG.

Results: In our series we haven’t observed late and early postoperative complications from the graft site - bleeding, signs of infection, abnormalities of healing, deformations, paresthesias, changes in the salivary function or strictures of the duct of the sublingual gland. In all our patients we harvest LMG from the ventrolateral surface of the tongue with mean length of the graft 3.7 cm (2 to 5.3 cm) with a width of approximately 2 cm. We have used only unilateral lingual mucosa graft. The harvesting was performed by an urologist, without the need for oral surgery. The success rate of LMG urethroplasty is comparable with the usage of BMG at our institution – 14 cases (82.3 %) of full success (full patency of the urethra, without any need for further manipulations of the urethra), 3 cases with recurrent short mild strictures (17%), managed by DVIU.

Conclusion: The introduction in practice of the lingual mucosa graft urethroplasty enriches the options for treatment of urethral strictures. LMG is more thin and fragile than BMG, so the cheek remains irreplaceable grafting site for urethral reconstruction. Nonetheless the tongue is clearly a feasible and safe alternative with comparable results in patients when cheek harvesting is not possible or sufficient, or in cases when thin and gentle grafts are preferred (e.g. cases of dorsal inlay urethroplasty of the anterior urethra).

MP-10.14 Endourological Management of Open/ Laparoscopic Iatrogenic Injuries of Upper Tract
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Introduction and Objective: Iatrogenic surgical complications, apart from being uninvited and catastrophic for the patient, are of great psychological and legal concern to the operating surgeon. Successful correction of these complications with minimal endourological intervention is therefore a most rewarding experience for the patient, operating surgeon and the endourologist.

Materials and Methods: A total number of 29 cases with upper tract iatrogenic injuries were included in this study.
Renal Injury: 15-Year Experience

MP-10.15
Renal Injury: 15-Year Experience

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Introduction and Objective: To classify the data of renal trauma in the Emergency Center and to analyze the type and severity of the trauma, method of treatment and the treatment outcome.

Material and Methods: From 1994 to 2008, 11,167 patients with multiple organ blunt traumas were admitted to the Emergency Center of the Clinical Center of Serbia in Belgrade. Total of 1221 patient (10.9%) had urogenital trauma. All patients underwent routine diagnostic work up and radiological imaging including computerized tomography (CT) when it was possible.

Results: From the total number of 1221 urological injuries, 321 patients (26.3%) had severe urogenital trauma after traffic accidents and required hospitalization. Renal trauma was found in 290 patients (93%). There were 251 male patients (87%) with renal trauma and 39 females (13%). The majority of the patients belonged to the second decade of life. Total of 259 patients (89%) had minor renal trauma and required conservative treatment, while 31 patient (11%) had major renal trauma and required surgery. Nephrectomy was the most common treatment and it was done in 25 patients (80.6%). Six patients (19.4%) underwent conservative surgical treatment: haemostatic sutures in four cases and partial nephrectomy in two cases.

Conclusion: The majority of the patients with blunt renal trauma required conservative treatment, while only about 10% of patients required urgent surgery. High percentage of nephrectomies (over 80%) can be explained with the presence of other life threatening injuries and lack of proper preoperative contrast renal imaging, due to emergent abdominal surgery.

Conservative Management in Pediatric Renal Trauma

Yu J, Sung L, Noh C, Chung J

Inje University, Sanggye Paik Hospital, Seoul, South Korea

Introduction and Objective: Urinary stent (US) is a fundamental part of many urological procedures. The severe encrustation may cause obstructions and threaten the renal unit. And endourological and some additional procedures could be needed to manage them. We tried to provide our clinical experiences and management of encrusted US.

Materials and Methods: A retrospective analysis was performed on all patients with stents in our departments between 1997 and 2007. A total 975 patients had stents inserted for the treatment of urinary calculi, malignant ureteral obstruction after percutaneous nephrolithotomy, pyeloplasty, or injury to the ureter and kidney etc. The stents were encrusted in 34 (3.5%) patients: 28 men and 6 women. The stents were inserted in 29 patients due to stone disease and in 5 patients for the malignant obstruction. The US used in this series was made of polyurethane manufactured by Cook®. Anatomical abnormality, presence of encrustation on the stent and associated stone burden were evaluated using plain radiography and intravenous pyelography. Treatment decisions were made based on the clinical presentation and image findings of each patient.

Results: The average duration of stent placement was as follows: stone disease 8.5±1.7 months (1.25–11 months) versus malignant obstruction 13.7±2.4 months (4–16 months). In 29 patients, cystoscopic stent removal was failed and additional procedures were needed. A total of 42 sessions of additional procedures were required to render patient stent free. Most patients (25 patients, 85.3%) were made stent free in single additional session, the others required more than one session. Additional procedures were as follows: SWL (23, 54.7%), ureteroscopy (URS) with forceps retrieval (7, 16.6%), URS with intracorporeal lithotripsy (10, 23.8%) and open surgical removal (2, 4.9%). All patients were eventually rendered stent and stone free.

Conclusions: Most forgotten stents are expected to have severe encrustation. Patient with stone disease developed encrustation on the stent in shorter period than those with other disease. To prevent the forgotten stent, we are planning to provide detailed patient education and develop computerized tracking system.

Clinical Experience and Management of Encrusted Ureteral Stent

Yu J, Sung L, Noh C, Chung J

Inje University, Sanggye Paik Hospital, Seoul, South Korea

Introduction and Objective: Ureteral stent (US) is a fundamental part of many urological procedures. The severe encrustation may cause obstructions and threaten the renal unit. And endourological and some additional procedures could be needed to manage them. We tried to provide our clinical experiences and management of encrusted US.

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Conclusions: Most forgotten stents are expected to have severe encrustation. Patient with stone disease developed encrustation on the stent in shorter period than those with other disease. To prevent the forgotten stent, we are planning to provide detailed patient education and develop computerized tracking system.

Conservative Management in Pediatric Renal Trauma

Yu J, Sung L, Noh C, Chung J

Inje University, Sanggye Paik Hospital, Seoul, South Korea

Introduction and Objective: The management of pediatric renal trauma are substantially derived from the results of adult trauma patient. But children are at increased risk of renal injuries from blunt trauma because of the own anatomical properties. The current study attempts to determine whether the expectant conservative management can be effective and safe in children of blunt renal trauma.

Materials and Methods: Retrospective analysis was made of 45 patients with renal trauma between 1995 and 2007 (male 32 patients, female 13 patients). The following parameters were reviewed: the mechanism of injury, assigned grade of renal injury, indication of surgery, and the outcome. Injuries were graded according to the American Association for the Surgery of Trauma Organ Injury Scale.

Results: The mechanisms of injury were as follows: pedestrian traffic accident (14, 31.1%), fall (11, 24.5%), slip down (10, 22.2%) and sports injury (10, 22.2%). All
patients of grade I–IV were treated conservatively at the beginning. However, two patients of grade IV needed delayed operation. One of them underwent delayed nephrectomy because of persistent anemia and hypotension and the other one needed nephrectomy for persistent fever and worsening abdominal pain with significant urinary extravasation. All patients of grade V needed nephrectomy owing to hemodynamic unstable state.

Conclusions: Except in case of grade V injury, initial conservative management is effective and recommendable, if the hemodynamic state is stable.

MP-10.18 Disorders of Sexual Development: Managing Some Adults in a Nigerian Centre
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Introduction and Objective: Disorders of sexual development (DSD) usually present in the neonatal period. This paper reviews management and preliminary surgical outcomes of adults with DSD. Intersex surgery was hitherto not available in the region. The challenges of managing such cases with limited resources and the influence of social and cultural background in final gender assignment are also discussed.

Materials and Methods: We studied 9 adults out of a total of 32 intersex patients treated between January 2005 and December 2008 in our centre. All the patients are being followed up.

Results: All 9 patients were adults between 18–60 years of age and presented due to social embarrassment and functional failure in the assigned sex. Eight were female pseudohermaphrodites (PPH) raised as males. They were phenotypically females with full secondary sex characteristics and six of these “males” menstruated regularly. They wore special, individualized chest casings that concealed their breasts. One had history of sexual assaults in his school. The 9th patient was a male pseudohermaphrodite (FPH) raised as a female. All insisted in maintaining their sex of rearing due to family, social and cultural pressure to remain so. Also, it is a very strong taboo to change sex of rearing in adulthood. Gonadectomy, hysterosalpingectomy and reduction mammoplasty were performed on 4 PPH in one stage, with a plan to male genitoplasty in the second stage. The remaining 3 PPH could not afford surgery and lifelong hormonal therapy, so they are waiting. None of the 4 operated cases had requested male genitoplasty. The only FPH raise as a female had gonadectomy, phallic reduction and colovaginoplasty, and was placed on oestrogen therapy. She is now sexually active.

Conclusion: There is a tendency to name and raise patients with genital ambiguity as males. In Nigerian society failure to function in the assigned sex is very devastating to the patient and his family. A new reconstructive urology service in developing world should expect adults with DSD. Delay in presentation, limited resources, staging of procedure, unaffordability of hormonal therapy for life and cultural taboos make the management of these patients very challenging.

Article I.

Moderated Poster Session 11: Male and Female Sexual Health 2
Tuesday, November 3
15:15-16:45

MP-11.01 The Serum and Seminal Plasma Leptin Levels in Athenospermia
Fan YP, Chen B, Wang HX, Lu YN, Hu K
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Introduction and Objective: To analyze the differences of serum and seminal plasma leptin levels between those with athenospermia and control, and to explore the relationships between leptin and sperm motility.

Materials and Methods: Thirty-four men assessed for athenospermia and 15 men as control were enrolled for this study. All of those with athenospermia were undergone a thorough investigation of clinical history, physical examination, and accessory examinations necessary. All the participants were confirmed without definite cause such as chronic prostatitis or varicocele. After sexual abstinence for 2–7 days, each participants provided a semen specimen into a sterile plastic container by masturbation. The diagnosis standard of the athenospermia was according to the standard of WHO. The semen speci-
unteers served as controls. All subjects provided a medical history and underwent complete physical and routine semen analysis. Two blood samples were drawn from each participant at 15-min intervals for the determination of the resting levels of the following hormones: luteinizing hormone (LH), follicle-stimulating hormone (FSH), prolactin (PRL), testosterone, estradiol (E2), and sex hormone binding globulin (SHBG). The hypothalamus-pituitary-testis (HPT) axis was assessed using gonadotropin releasing hormone (GnRH) test. All participants also received an injection of human chorionic gonadotropin (hCG) and serum testosterone was determined before the hCG injection and on the third day afterwards. Conventional karyotype analysis and triple-color fluorescence in situ hybridization (FISH) for chromosomes X, Y and 18 were conducted in all patients and controls.

Results: The mean basal serum levels for LH, FSH, and testosterone in hepatitis C patients was significantly lower than the mean for normal controls (P = 0.01). The injection of GnRH analogue did not yield a significant increase in FSH and LH levels in the hepatitis C patients (P = 0.001). In patients with chronic hepatitis C, the semen parameters was significantly lower than in controls (P = 0.001). There was a significant increase in the frequency of disomy in men with chronic hepatitis C compared with controls for chromosomes 18, X, and Y (P = 0.01).

Conclusions: Patients with chronic hepatitis C are at risk of showing Hypogonadotropic hypogonadism and sperm chromosomal abnormalities, the incidence of which is higher in patients with more advanced disease.

MP-11.03
Midodrine for the Treatment of Organic Anejaculation but Not Spinal Cord Injury: A Prospective Randomized Placebo-Controlled Double-Blind Clinical Study
Safarinejad M
Urology and Nephrology Research Center, Shahid Beheshti University (MS), Tehran, Iran

Introduction and Objective: Anejaculation is a rare cause of infertility and adversely affects the general sense of well being and perception of sexual life satisfaction. Evidence to support effective and noninvasive treatment for this ejaculatory disorder is lacking. The present study aimed to evaluate the efficacy and safety of midodrine (α1-adrenergic receptor agonist) for the treatment of organic anejaculation but not spinal cord injury (SCI).

Materials and Methods: A total of 128 patients were randomly assigned to oral midodrine 7.5-15 mg/day in a stepwise approach (group 1, n = 64), or similar regimen of placebo. They underwent a complete physical examination, echocardiography, 12-lead electrocardiogram, transrectal ultrasonography, complete blood count, and blood chemistry. Hormonal assays included serum levels of luteinizing hormone (LH), follicle-stimulating hormone (FSH), prolactin, and testosterone (T). To rule out other sexual dysfunction, patients also completed the International Index of Erectile Function (IIEF) questionnaire. Psychiatric disorders were excluded by appropriate tests. Outcome measures were reversals of the anejaculation.

Results: None of the patients in placebo group achieved antegrade or retrograde ejaculation. At the end of study, antegrade, retrograde, and antegrade + retrograde ejaculation occurred in 18 (29.5%), 8 (13.1%), and 9 (14.8%) of patients in midodrine group, respectively (all P = 0.01). The most and least favorable responses were among patients with multiple sclerosis and bilateral sympathetic respectively. Midodrine improved ejaculation function in a dose dependent manner. Four participants (6.3%) in midodrine group discontinued this study by reason of adverse events.

Conclusions: In patients with organic anejaculation, but without SCI, midodrine can reverse anejaculation in more than 50% of patients. Further studies are needed, however, for the evaluation of different treatment regimens in anejaculation therapy.

Materials and Methods: A total of 218 women (25-45 years old) with SSRI-induced SD were randomized to receive 12 weeks of double-blind fixed dose treatment with bupropion sustained release (SR) 150 mg b.i.d (n = 109) or placebo (n = 109). Sexual function was assessed with use of the sexual function domains of the Female Sexual Function Index (FSFI) (primary efficacy outcome measure) and Clinical Global Impression Scale adapted for sexual function (CGI-SF) (secondary efficacy outcome measure). End point treatment satisfaction was assessed using Visual Analog Scale (VAS).

Results: The bupropion SR was significantly superior to placebo for the FSFI domains (P = 0.001), CGI-SF scale (P = 0.001) and overall satisfaction with sexual experience (P = 0.001). At the end of trial the mean scores for desire (P = 0.001), arousal (P = 0.01), lubrication (P = 0.001), orgasm (P = 0.001), and satisfaction (P = 0.001) were significantly higher in bupropion group. The highest improvement was observed in sexual desire followed by lubrication. Compared to baseline, desire and lubrication domains increased by 86.4% (95% confidence interval (CI): 64.9 to 102.2%, P = 0.001) and 69.2% (95% CI: 44.7 to 82.6%, P = 0.001) in bupropion group.

Conclusions: Adjunctive treatment with bupropion SR during a 12-week period significantly improved key aspects of the sexual function in women with SSRI-induced SD.

MP-11.05
A Randomized, Double-Blind, Placebo-Controlled Study on Efficacy and Safety of Bupropion for the Treatment of Hypoactive Sexual Desire Disorder in Menstruating Women
Safarinejad M
Urology and Nephrology Research Center, Shahid Beheshti University (MS), Tehran, Iran

Introduction and Objective: Hypoactive sexual desire disorder (HSDD) is a major problem for women. The lack of established, clinically efficient treatments for HSDD is evident. Our aim was to compare the efficacy of sustained-release bupropion to placebo in treating HSDD in menstruating women.

Methods and Materials: Following a 1-week, placebo lead-in phase, 232 treatment seeking women with regular menstrual cycles were randomly assigned to bupropion sustained release 150 mg daily (n = 116) or placebo (n = 116) for 12 weeks under double-blind conditions. Effi-
cacy was assessed with the Brief Index of Sexual Functioning for Women (BISF-W), the Personal Distress Scale (PDS), the global efficacy question (EQ: ‘Did the treatment you received during the 12 weeks meaningfully improve your sexual desire?’) and overall patient satisfaction question (‘Are you satisfied with the efficacy of your treatment?’).

**Results:** The mean (±SD) composite score on the BISF-W, increased from 15.8±2.6, and 15.5±2.2 at baseline to 33.9±2.7, and 16.9±2.6, in bupropion and placebo groups, respectively (P=0.001). The odds ratio for response in the bupropion treatment group relative to placebo was 3.2 with a 95% confidence interval of 2.1-6.3. The thoughts/desire score showed a greater than twofold increase in patients treated with bupropion (P=0.001). At the 12-week evaluation point, reduction in PDS scale was 29.4% in bupropion group and 4.7% in placebo group (P=0.01). In response to the EQQ, of patients in bupropion and placebo groups, 65.3%, and 4.3%, responded ‘Definitely yes’, respectively (P=0.001). Of patients in bupropion and placebo groups, 65.3%, and 4.3%, were definitely satisfied with the efficacy of their treatment respectively (P=0.001). After 12-weeks of treatment, 82 women (78.1%) in bupropion group and 5 (4.9%) in placebo group were willing to continue therapy (P=0.001).

**Conclusions:** The results from this study indicate that bupropion sustained release is an effective and well-tolerated treatment for HSD in menstruating women. Further controlled trials are warranted.

**Materials and Methods:** Eighty-seven males, mean age 58 (28-83) with diagnosed LOH (2 morning T-sT of ≥ 12 mmol and at least 2 positive answer on the ADAM-questionnaire) received GTRT and were monitored every 3 months regarding T-sT levels, hematocrit, haemoglobin, side effects and S-PSA. At the time of initiation and at 12 months; the results from the self-administered ADAM-questionnaire, BMI and Waist circumference were recorded. Reason for GTRT abortion Reactions for GTRT abortion were continuously monitored and recorded.

**Results:** The one year compliance to GTRT was 85% with a mean increase in T-sT of 21.1 mmol/ml (15.3-18.9). Nine percent aborted treatment due to side effects, 1% to lack of efficacy, 2% due to inability to adhere to the treatment regime and 3% for various reasons. Those who still continued treatment showed a reduction of mean Waist circumference of 4.3cm (from 102.7cm to 98.4cm), a reductuion in absolute average answers in the ADAM-questionnaire from 4.5 to 0.9 and a minor fall in mean BMI from 28.1 to 27.6. There was no significant change in mean S-PSA; however, 2 patients did have a significant rise in S-PSA (over 4ng/ml) in both an early prostate cancer was diagnosed.

**Conclusion:** In clinical practice long-term LOH treatment with GTRT is well tolerated, with few side effects, has high compliance and appears to have positive effect both on the symptoms as reflected in the ADAM-questionnaire and waist circumference.

**MP-11.08 Erectile Dysfunction Severity as a Surrogate Marker for Coronary Artery Disease**

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**Introduction and Objective:** Erectile dysfunction (ED) is now regarded as an early manifestation of subclinical coronary artery disease (CAD). Our aim was to further evaluate whether ED is a predicting factor for CAD while adjusting for other common risk factors.

**Materials and Methods:** One hundred and eighty-three patients with documented CAD and 134 participants without CAD were enrolled in this case-control study. The prevalence of ED and the distribution of CAD risk factors (age, smoking, lipid profile, hypertension, obesity and diabetes mellitus) were evaluated. The IIEF-5 was used to evaluate the presence and the severity of ED. Uni and mul-
tivariate logistic regression analysis were performed to assess the effect of classic risk factors and ED severity on CAD; calculating odds ratio (OR) and 95% confidence interval (CI). Adjustments were made for potential confounding factors including age, obesity, hypertension, diabetes, dyslipidemia and smoking. Results: The mean age and prevalence of ED in CAD positive and negative groups were 60.3±6 vs. 45.3±5 and 88.5% vs. 64.2%, P<0.05 respectively. A statistically significant difference was found for all risk factors (except total cholesterol and LDL levels) and also ED prevalence between studied groups. Adjusted OR for age, diabetes, hypertension, hypercholesterolemia, and smoking demonstrated a significant confounding effect. We also found a significant association between severe ED and CAD (OR: 2.22, 95% CI: 1.11-6.03; P=0.05). Furthermore, the findings demonstrated that patients suffering from ED for a longer period of time were at the greater risk of subclinical CAD.

Conclusions: This study suggests that ED could be considered as a surrogate marker which can predict the occurrence of CAD. Moreover, severe ED could be mentioned as an independent risk factor in addition to the established ones. However, further cohort studies are warranted to test this hypothesis.

MP-11.09
Application of Androgel During Androgen Deficiency in Aging Male
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Introduction and Objective: It should be considered that deficiency of testosterone and metabolic disorders may occur in men of any age. Our treatment is to achieve content blood plasma of testosterone gel in men of various ages.

Materials and Methods: We have conducted studies over 52 patients between 45-56 with clinical and laboratorial implications of androgen deficiency in aging male (from 2.0 up to 2.2, nmol/l).

Heavy somatic pathology has not been observed in all patients. Androgel 5g was prescribed for all patients (in recalculation 50mg T per day). Androgel estimation efficiency has been conducted through all case records of 52 patients. Appreciable effect has been observed in 52 men (61, 5%), moderate in 12 men (23%), minor in 4 patients (7, 7%), improvement has not been noted in 4 patients (7, 7%). Thus, efficiency of Androgel has been observed in 48 patients (92%). However, it should be emphasized that increase of general testosterone level was in all patients. All 52 case records were chosen for efficiency of evaluation degree. Primarily, the change of testosterone level was estimated after applying the product. Upon 30 days of studies patients were divided into groups “successful” and “failed”, and were used such criteria as compliance of averaged serum concentration of T and minimal serum concentration of hormone to normal standard (from 12 up to 35nmol/l).

Results: Successful result has been indicated in 42 (81%) patients, failure in 10 (19%) of patients, we have to point out that in four of them levels of T were higher than standard diapason. On 3rd day (the 7th day after cancellation), normal diapason has been maintained in 12 patients (23%). At rank analysis of “International Indices of Erectile Function” before the start of the study total index in average was equal to 59.5 (min.48, max.65). Consequently, average total score of erectile function increased almost up to 6 points that it is considered as significant, taking into consideration question formulation by rank.

Conclusions: We would like to emphasize that products of short-term effect for treatment patients with androgen deficiency in aging male have to be more preferable in comparison with the long lasting depot-products.
Materials and Methods: Between January 2006 and February 2009 we have treated a number of 45 male patients diagnosed with idiopathic male infertility. The median age was 33.4 years (25-38). We have excluded from the treatment group the patients with a large varicocele, and those with chronic UTI, prostatitis. The therapeutic protocol included a number of 10 to 15 acupuncture sessions at an interval of 2-3 days. The needles were introduced into the selected points, then mobilized until the deqi sensation was elicited and then left in place for half an hour. From each patient two spermograms were obtained; one just prior to the beginning of the treatment and one to two to three weeks after its conclusion. Acupuncture points that we have used with predilection were mostly from the Kidney, Liver, Spleen, Urinary Bladder, DuMai and RenMai meridians – respectively Lv3, Sp6, Sp8, Sp9, Ren2, Ren3, Ren4, Du4, Ub23, Ub52 and Ub31, Ub32.

Results: We have seen a marked increase in all of the followed parameters. The overall sperm count/ejaculate has risen three to ten fold. The functional sperm/ejaculate rose 2.5 to 3 times. The percentage of mobile sperms increased 3-4 times. The percentage of normal sperm morphology has risen from a median value of 3% to 12%.

Conclusion: We consider these results to be of significance. The present study needs to be continued with a complete hormonal workup before and after the treatment. In some of the presented cases that we could investigate, we have observed a decrease of the prolactine levels and an increase in the testosterone levels. We strongly believe that in selected cases, acupuncture is a valuable treatment of the male infertility, with high success rates. We have noted 12 pregnancies with subsequent child birth in the couples of the patients included in this study.

Moderated Poster Session 12: Pediatric Urology
Tuesday, November 3
15:15-16:45

MP-12.01
Comparison between Vertical Preputial Island Onlay Flap and Tubularized Incised Plate (TIP) in Repair of Proximal Penile Hypospadias
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Introduction and Objective: To evaluate the results of a newly designed vertically oriented preputial flap compared with TIP in management of proximal penile hypospadias.

Materials and Methods: Retrospective chart review of 82 boys who had surgery between 2002 and 2008 for proximal penile hypospadias. All were non-circumcised patients, who had not had reconstruction before. Depending on surgeon choice they underwent TIP (n:35), or vertical preputial flap (n:47). Mean patient age was 21 months (12-50). For the vertical flap, after the circumcising incision was done, the prepuce was divided in the midline. One side was rotated to form the onlay flap, the skin of its outer layer was removed. The other side of the prepuce was de-epithelialised and rotated opposite to it for skin coverage, and to prevent penile rotation. An 8 Fr stent was left for 7-10 days.

Results: Mean postoperative follow up was 20 months (6-38). Meatal stenosis, fistula formation, wound dehiscence, urethral stenosis, and flap necrosis were seen in 4,1,2,0, and 1 patient(s), respectively, treated with the vertical flap technique and in 3,3,0,1, and 0 patients, respectively, treated with the TIP procedure. No case had penile rotation. Cosmetic appearance of the meatus was satisfactory in both groups in successful cases. Postoperatively, fistula and urethral stenosis were more frequent after TIP, the later required flap onlay urethroplasty.

Conclusions: The vertically oriented flap design offers some advantages, particularly extra coverage of the neourethra, which seems to be an effective method to reduce the fistulous complication rate. It also prevents penile rotation. Use of flap augmentation particularly in proximal hypoplasias provides a wider neourethra caliber thus less incidence of urethral stenosis. In this series the overall success rate was similar for both techniques 80% for tubularized incised plate and 82% for onlay urethroplasty. Longer follow up may be required before embracing the vertical flap or TIP technique for proximal hypoplasias.

MP-11.12
Antegrade Scrotal Sclerotherapy for the Treatment of Varicocele in Adults: Long Term Results About 178 Controlled Cases
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Introduction and Objectives: We evaluated long term effectiveness of antegrade sclerotherapy (Tauber’s procedure using Polidocanol 2%) of idiopathic varicoceles in adult patients.

Materials and Methods: From June 1999 to March 2005, we realised 178 antegrade embolisations of varicoceles. Minimal time of follow-up was 28 months (up to 52 months). Patient’s mean age was 28.4 years (20-41). All of them had one-side left varicocele. The criteria of success rest on the lack of venous flow-back during clinical examination, and improvement of semen examination 3 months after treatment.

Results: There was 85% of patients who had a grade III left varicocele and 15% a grade II left varicocele. Clinical success was obtained in 87% of cases and the doppler control was normal in 80% of patients. We have 9% minor complications [scrotal haematoma (3 cases), chemical orchitis (3 cases), chronic scrotal pain (2 cases) and hydrocele (6 cases)]. Testicular atrophy was observed in only one patient.

Conclusions: These data confirm that antegrade scrotal sclerotherapy for the treatment of varicocele as described by Tauber is easy to perform, safe, economical, and with excellent and durable results.
and length and complication rate was performed.

**Results:** Mean follow up was 3 years. Success rate was 90% and 69% for the anterior and midpenile hypospadias, respectively (p=0.037). Complications developed in 11 patients (13.8%) in the form of fistula in 8, dehiscence in 2 and meatal stenosis in 3. On univariate analysis, the technique of suturing, the depth and length of urethral plate, width after incision and presence of hypoplasia had no impact on the occurrence of complications. However, urethral plate width before incision had a significant relation with the occurrence of complications (p<0.048).

**Conclusions:** Suturing technique has no influence on the outcome of TIP urethroplasty. Urethral plate characters do not affect the complication rate except the plate width which significantly affects the outcome. An adequate urethral plate width (≥8mm) is essential for successful TIP repair. Further randomized studies are needed to validate this finding.

**MP-12.03**

**Early Versus Late Primary Valve Ablation: Does it Affect the Prognosis in Children with Posterior Urethral Valves**

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**Introduction and Objective:** To report the complications which may happen during or after primary ablation of posterior urethral valve (PUV) in a large number of cases treated using different modalities.

**Materials and Methods:** We retrospectively reviewed data base of 291 patients with PUV treated by primary valve ablation from two separate centers between 1987 and 2006. Primary valve ablation was performed in all patients regardless of serum creatinine level or upper tract configuration. A hot loop resectoscope was used in 122 patients, cold knife urethroscopy in 108, a hook diathermy electrole in 18, a diathermy coagulation bugbee in 20, while stripping using Fogarty catheter was performed in 23.

**Results:** The follow up duration ranged from 1.5 to 20 years (Median 4.5). Renal insufficiency developed at the end of follow up in 55 patients (30%); 17 (18%) in group 1 and 38 (41%) in group 2 (p<0.05). The mean nadir serum creatinine was 0.6 and 0.8 mg/dl in group 1 and 2, respectively, while the mean final serum creatinine was 0.9 and 1.7 mg/dl in both groups, respectively (p<0.05). Persistent upper tract dilatation was noted in 43% and 69% of patients in groups 1 and 2, respectively (p<0.05).

**Conclusions:** Our data confirm the high prognostic value of early valve ablation in children with PUVs. Significantly better prognosis was associated with boys diagnosed and treated in their first year of life compared to those detected afterwards in respect to renal function and upper tract dilatation.

**MP-12.04**

**Complications of Posterior Urethral Valve Ablation: 20 Years Experience**

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**Introduction and Objectives:** To report the complications which may happen during or after primary ablation of posterior urethral valve (PUV) in a large number of cases treated using different modalities.

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**Conclusions:** Our data confirm the high prognostic value of early valve ablation in children with PUVs. Significantly better prognosis was associated with boys diagnosed and treated in their first year of life compared to those detected afterwards in respect to renal function and upper tract dilatation.

**MP-12.05**

**Enuresis in Children Before and After Adenotonsillectomy**

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**Introduction and Objective:** Enuresis originally meant incontinence of urine, but usage has caused the term to be restricted to bedwetting after 3 years. Enuresis could be one of the symptoms of severe upper airway obstruction in children, which leads to abnormal ADH secretion due to abnormality in REM sleep. Relative upper airway obstruction could change sleep patterns and affect normal ventilation in sleep. Adenotonsillar hypertrophy is one of the most common causes of upper airway obstruction in children. Prevalence of enuresis is about 4% - 7% among children with adenotonsillar hypertrophy, which has been reported to decrease after adenotonsilectomy, especially in secondary type enuresis. So we designed a study to evaluate the association between adenotonsillar hypertrophy and enuresis in Iranian children.

**Materials and Methods:** This study was performed on 100 children (3 to 12 years) with adenotonsillar hypertrophy admitted in Azar Hospital for adenotonsilectomy. Then data collection was done by asking parents to fill a questionnaire, examination of tonsil size and lateral neck X-ray. Urine analysis was done for children with enuresis. Information contributing to our database was acquired by interviewing parents 1 and 3 months after surgery.

**Result:** Our study consists of 100 children between 3-12 years old (mean 7.68 years), 49 males and 51 females. Nine cases had enuresis with mean age 8/88 years (3 females and 6 males). One month after adenotonsilectomy, there was complete improvement of enuresis in 2 patients and decreased enuresis in another 3. No changes in enuresis were encountered among the last 4 patients. Three months after surgery, enuresis stopped in 3 pa-
patients, decreased in 2 patients and no change was seen in 4 patients.

Conclusion: Prevalence of enuresis in our study is less than others, but improvement of enuresis after adenotonsillectomy is good. In contrast to previous studies, we didn’t find a statistically significant association between adenotonsilar hypertrophy and enuresis.

MP-12.06
Technical Modifications to Facilitate Retroperitoneal Laparoscopic Dismembered Pyeloplasty in Infants and Children

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Introduction and Objectives: To present our modified techniques and experience with retroperitoneal laparoscopic dismembered pyeloplasty for ureteropelvic junction obstruction (UPJO) in infants and children.

Materials and Method: A total of 60 pediatric patients (44 boys and 16 girls) with UPJO underwent laparoscopic Anderson-Hynes dismembered pyeloplasty. A three-port, lateral retroperitoneal approach was used. The retroperitoneal space was created by finger and balloon dissection. The key technical improvement was the renal pelvis was partially divided to keep the most lateral extent of renal pelvis undismembered before the completion of the first corner stitch, which was placed from most dependent portion of pelvis to apex of spatulated ureter. All anastomoses were completed with free-hand intracorporeal suture techniques. Follow-up studies were performed with intravenous urography and renal ultrasonography.

Result: A total of 58 patients (60 sides) successfully underwent laparoscopic surgery and only the first 2 cases were converted to open surgery for the difficulties in developing the retroperitoneal space. The average operative time was 70 ± 12.6 min (range 55–130 min), the mean estimated blood loss was 10 ± 2.2 ml (range 5–20 ml) and the mean postoperative hospital stay was 7 ± 1.3 days (range 3–15 days). Aberrant artery vessel was intraoperatively noted in 7 patients. Urinary leakage occurred in 2 patients after the surgery and disappeared spontaneously on the 6th and 11th day, respectively. One of them underwent open surgery for recurrent UPJO at 8 months of follow up. Radiographic assessment by intravenous urography showed good results in all cases with an average 24-month follow-up except the patient who received later open surgery.

Conclusion: Our experience has demonstrated this modified technique is safe, effective and time-saving in retroperitoneal laparoscopic Anderson-Hynes pyeloplasty in infants and children.

MP-12.07
Molecular and Toxicologic Research in Hypospadiac Male Rats Following Utero Exposure to Di-n-butyl Phthalate (DBP)

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Introduction and Objective: The objective of this study was to evaluate the developmental abnormalities and firstly carry out the molecular analysis of external genitalia in hypospadiac male rat induced by maternal exposure to DBP.

Materials and Methods: Timed-pregnant rats were given DBP by gastric intubation at doses of 750 mg/kg body weight (bw)/day from gestation day (GD) 14 to GD18 to establish a hypospadiac rat model. Anatomy examination is done on postnatal day (PND) 1 and 7, some necessary genes for genital tubercle (GT) formation such as Shh, Ptch1, Bmp4, Bmp7 were tested in the GT of hypospadias by qRT-PCR.

Results: On postnatal day (PND) 1 and 7, the bodyweight and the ratio of anogenital distance (AGD)/bodyweight in hypospadiac male rats were significantly decreased. On PND7, general image and transverse serial histological analysis of genitalia of hypospadiac male rats confirmed the malformation. Significantly reduced expression of important genes necessary for genital tubercle (GT) formation such as Shh, Ptch1, Bmp4 and Bmp7 were first detected in the GT of hypospadias.

Conclusions: These results show that the development conditions were damage by DBP. The DBP maternal exposure directly disturbed those signaling pathways orchestrated the normal genital development, which may lead to hypospadias.

MP-12.08
Laparoscopic Management of Ureteropelvic Junction Obstruction in Pediatric Patients Using Different Techniques: Introduction of a New Approach to Accessory Vessels: Division of Vein and Upward Transposition of the Artery

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Introduction and Objective: To demonstrate the role of laparoscopic approach for management of primary ureteropelvic junction obstruction using (UPJO) two different techniques (Dismembered pyeloplasty and modified Hellstrom technique) in pediatric age group.

Material and Methods: From April 2005 to Oct 2008, 63 pediatric patients underwent treatment of primary UPJO through laparoscopic approach. Dismembered pyeloplasty was elected in 54 patients while 9 patients were managed by upward transposition of accessory renal artery after division of accessory renal vein and no double J stent was required in any patients in the latter group.

Results: Mean age of patients was 61 (2-180) months. Mean operative time was significantly lower in those managed by transposition of aberrant vessels compared with dismembered pyeloplasty (112.22 min vs. 153.77 min, P = 0.004). The mean hospital stay was 6.47 (2 to 14) days in dismembered technique and 2.1 (1 to 4) days in vascular transposition approach. Significant improvement of obstruction was happened in all of the patients who underwent modified Hellstrom technique and in 92.81% of the dismembered pyeloplasty group. No conversion to open surgery was made.

Conclusion: Laparoscopic transperitoneal management of UPJO even by dividing accessory vein using transposition of accessory renal artery without violating collecting system could be well extended to pediatric age group with excellent outcomes.

MP-12.09
The Experience of Mini Percutaneous Nephrolithotomy in Treatment of Upper Urinary Calculi in Infants

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Introduction and Objective: To evaluate the efficacy of mini percutaneous nephrolithotomy in treatment of upper urinary calculi in infants. We retrospectively reviewed the treatments and outcomes of 30 cases with upper urinary calculi between Nov. 2007 and Jan. 2009.

Materials and Methods: There were 30
infants (male/female: 17/13) aged 10 to 36 months (mean 21.2±11.5). Mean stone size was 1.82±1.1 cm². Hydronephrosis and/or hydroureterosis appeared in all patients. These infants underwent MPCNL under general anesthesia, an ureteral stent was placed to the patient by cystoscopy. With the prone position, percutaneous access was established by placement of an access needle into the intended calix under fluoroscopic guidance. Pneumatic or ultrasonic probes were used through ureteronephroscopy for lithotripsy. The ureteral stents and nephrostomy tube were placed at the end of procedure.

Results: The MPCNL operations were performed successfully in all patients. No major complications like hemorrhage, perforation and organic injury were noted. The mean operation time was 38±21 min. The postoperative hospital stays were 3 to 9 days. All cases were followed up for 1 to 12 months. The stone-free rate in all was 96.7% (29/30). Calculus had no recurrence. Hydronephrosis and hydroureterosis disappeared or lightened. Growth and development were normal.

Conclusions: Minimally invasive PCNL was safe and effective treatments for upper urinary calculi in infants, applicable in calculi with urinary obstruction especially.

MP-12.10
The Effect of Orchiectomy on Contralateral Testicular Injury after Torsional Torsion in the Rat
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1 Konkuk University Medical Center, Seoul, South Korea; 2 Seoul National University Hospital, Seoul, South Korea

Introduction and Objectives: We investigated the effects of the unilateral orchiectomy compared with the detorsion on the contralateral testicular damage in unilateral testicular torsion of the rat.

Materials and Methods: Eight-week-old SD rats were divided into 7 groups of 7 rats each; Sham, 1 hr torsion-orchiectomy (T/O), 4 hr T/O, 24 hr T/O, 1 hr torsion-detorsion (T/D), 1 hr T/D and 24 hr T/D. The contralateral testes were taken 4 weeks after surgery. The mean seminiferous tubular diameter, Johnsen score and mean number of spermatid per tubule were determined as histological examinations. Testicular apoptosis was assessed by means of the TUNEL method.

Results: Contralateral testicular damages occurred in unilateral testicular torsion and these damages increased as the duration of torsion was increased. Unilateral orchiectomy showed significant protective effects on the contralateral testes compared with the detorsion in the unilateral testicular torsion of the rat. However these effects occurred only within 4 hr after unilateral testicular torsion.

Conclusions: Unilateral orchiectomy seems to have protective effects on the contralateral testes compared with the detorsion in the unilateral testicular torsion of the rat.

MP-12.11
Can Rigid Ureteroscopy be Used as a First Line Treatment for the Management of Ureteral Calculi in Children?
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Introduction and Objective: Treatment of pediatric urinary stones with a minimally invasive method is extremely important in our country where urolithiasis is a common entity. We evaluated the safety and efficacy of rigid ureteroscopy for the treatment of ureteral stones in children.

Materials and Methods: The record of 21 male and 14 female (totally 35) children with a mean age 5.5 years (range 9 months to 14 years) treated with rigid ureteroscopy between November 2005 and March 2009 were retrospectively evaluated. All patients underwent initial cystoscopy to place a guide wire. A 7.9/11.5 F semirigid pediatric ureteroscope and pneumatic lithotriptor were used in all patients under general anesthesia. Complete disappearance of the stone considered as success.

Results: Stones were located in the proximal ureter in 5 case (14.2%) ; 7 (20%) in mid-ureter and 23 (65.7%) in lower ureter. The mean stone size was 7.5 mm (range 5 to 13). Six patients (17.1%) required balloon dilatation of the ureteral orifice. Mean follow-up was 10.3 months (1 to 37). Stone free rate after single ureteroscopy with pneumatic lithotripsy was 94.2%, with all distal and mid ureteral stones successfully treated. Two patients with proximal ureteral stones that migrated up to the kidney required a secondary procedure (repeat ureteroscopy in 1 and shock wave lithotripsy in 1) to become stone-free. There were no major intraoperative complications, although 2 patients with distal ureteral stones required stent placement for mucosal laseration of ureter.

Conclusions: Ureteroscopy with pneumatic lithotripsy is an excellent first line treatment for children with stones especially those with distal and mid ureteral stones. Patients with proximal ureteral stone likely will require a secondary procedure to become stone-free.

MP-12.12
A Randomized, Controlled Trial Comparing the Efficacies of Alarm Treatment and Behavioural Modification in Enuresis
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Introduction and Objectives: The efficacy of alarm treatment was evaluated in comparison with behavioural therapy including bladder training (holding exercise) or fluid balance therapy for the treatment of enuresis.

Materials and Methods: There were 66 patients (56 males, 10 females) with enuresis (6-21 years old, median 8 years old) who were randomly assigned to treatment with alarm and behavioural therapy. Thirty-eight patients had nonsymptomatic enuresis (MNE) and 28 had non-MNE.

Alarm therapy was performed using Wetstop 2™ or Wetstop 3™ during sleep. Behavioural therapy included bladder training (holding exercise) for patients with low bladder capacity and fluid balance therapy for patients with nocturnal polyuria. The efficacy of the therapy was evaluated at 3 months of treatment.

Results: There was no significant difference in baseline characteristics between the two groups. 29 and 28 patients completed the alarm and behavioural therapy for 3 months, respectively. After the alarm therapy, enuresis was cured and improved (incidence of enuresis decreased >50%) in 1 (3%) and 10 (34%) patients respectively. After the behavioural therapy, enuresis was cured and improved in 7 (25%) and 14 (50%) patients respectively. There was a significant difference in terms of cured patients in favour of the behavioural modification group compared to the alarm group (p=0.0192), but no significant difference was noted in terms of the number of improved patients between the two groups. No adverse events were found in the two groups.

Conclusions: In the short-time therapy (3 months), behavioural modification appears to be more effective in terms of the cure rate than alarm treatment.
MP-12.13
Outcome of Bilateral Laparoscopic Fowler-Stephens Orchiopexy for Bilateral Intra-Abdominal Testes
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Introduction and Objective: Laparoscopic diagnosis has been the standard for the diagnosis of impalpable testes. This can be combined with laparoscopic orchiopexy for intra-abdominal testes. We evaluate the outcome of bilateral laparoscopic Fowler-Stephens orchiopexy (BLFSO) for bilateral intra-abdominal testes.

Materials and Methods: Patients’ charts were reviewed for age, procedure whether single stage or staged Fowler-Stephens, intra-operative and postoperative complications and follow up results.

Results: BLFSO was performed in a total of 40 testes in 20 boys with a median age of 31.6 months (range 12 to 150). All procedures were performed on an outpatient basis. Of the 40 testes, 12 were managed with a single stage Fowler-Stephens orchiopexy. The remaining 28 testes were managed with staged Fowler-Stephens orchiopexy. Testicular position after laparoscopy was the mid lower scrotum in 35 testes, the remaining five testes retracted to the inguinal canal in three (required redo orchiopexy) and to the neck of scrotum in two. No testicular atrophy was encountered in any patient with a follow-up of one year postoperatively. There were no complications or hospital admissions.

Conclusions: Outpatient single stage or staged BLFSO resulted in viable testes and were successful in achieving scrotal position in the majority of boys with bilateral intra-abdominal testes.

MP-12.14
Antegrade Endopyelotomy in Childhood with Isotope Scan DMSA Before and After Operation
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Introduction and Objective: Ureteral pelvic junction obstruction is one abnormality in the kidneys that results in hydronephrosis. This abnormality can be treated with open surgery or minimally-invasive surgery. Our experience in the endopyelotomy initially started in adults and then in children also.

Materials and Methods: From 2001 to 2008, 28 patients with UPJO treated with antegrade endopyelotomy. The youngest patient was 55 days old and the oldest 7 years. All patients evaluated with sonography, IVP and Doppler sonography for evaluative purposes and DMSA scan for evaluation damage of parenchyma before and after antegrade endopyelotomy. With general anesthesia after insertion 4F ureteral catheter the patients in prone position with fluoroscopy the middle colix was punctured and the tunnel was dilated to 26 F and then with Hook electrocautery in the dorsolatereal all layers of upjo were cut. Finally inserted a 4/7F JJ catheter for 12 weeks and nephrostomy tube for one week.

Results: From 28 patients, five repeated endopyelotomy and two patients had to perform open pyeloplasty because the pelvis were huge and urine drainage to ureter was very late. DMSA scan before and after endopyelotomy for all patients reveal no any parenchymal damage. Average hospitalization was 2/5 days.

Conclusion: In our experience, antegrade endopyelotomy is a safe and effective method for the treatment of UPJO in childhood and no damage to parenchyma. And if failed, we can repeat, and hospitalization is very short. Endopyelotomy in children is better than in adults.

MP-12.15
Ureteroscopic Lithotripsy for the Treatment of Urinary Calculi in Infants and Young Children
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Introduction and Objective: To evaluate the clinical efficacy and safety with ureteroscopic lithotripsy for the treatment of urinary calculi in infants and young children.

Materials and Methods: We retrospectively reviewed the clinical data of 21 cases with urinary calculi from November 2007 to February 2009. These infants and young children underwent ureteroscopic lithotripsy with Holmium:YAG laser lithotripter or pneumatic lithotriptor. Mean patients age was 18 months (range 8 to 48) and male to female ratio was 2:1. Left-side ureteral calculi were found in 9 cases and right-side in 8. Bilateral ureteral calculi and bladder calculi were found in 2 cases, respectively. The positions of ureteral calculi were in lower ureter. All the urinary calculi were confirmed by B-ultrasound examination and spiral CT scan. In 12 patients of the total were caused by milk products tainted with melamine.

Results: The operations were performed successfully in all patients. The stone free rate was 100%. Mean operative time was 36 minutes (range 25 to 60). No major complications like hemorrhrea, perforation and organic injury were noted. The urethral catheters were pulled out after 3 to 5 days. The postoperative hospital stays were 4 to 8 days. All cases were followed up for 3 to 18 months. Calculus had no recurrence. Hydronephrosis and hydroureteros disapeared or lightened. Growth and development were normal.

Conclusions: Ureteroscopic lithotripsy for the treatment of urinary calculi was safe and effective in infants and young children.
Methods and Methods: Peripheral blood DNA was prospectively obtained from 99 high risk superficial bladder cancer patients, who underwent post-resection intravesical regimes of BCG (81mg, n=50 or 27mg, n=19) or BCG (27mg) with interferon alpha (IFNa) (n=30), and followed-up for a mean of 4.5 years. The (GT)n and D534N polymorphisms in the NRAMP1 gene, and the Pro198Leu polymorphism in the hGPX1 gene were tested with restriction fragment length polymorphisms and DNA sequencing following PCR amplification. Data was analyzed using Chi-square analysis, multiple logistic regression and Kaplan–Meier curves.

Results: The (GT)n 2-3 genotype of the NRAMP1 gene had higher recurrence and shorter recurrence-free survival (p=0.002) in BCG only treated patients and overall. The presence of allele 3 in the (GT)n gene polymorphism was found to correlate with shorter recurrence-free survival (p=0.024) and progression-free survival (p=0.005) in patients treated with a combination of BCG and IFNa. The D534N G:G genotype was found to have higher recurrence and shorter recurrence-free survival (p=0.033) in BCG only treated patients, while the A:G genotype was protective. Overall, the D534N G:G genotype had increased cancer-specific death (p=0.036). Overall, the hGPX1 CC genotype was shown to be protective, while the variant CT genotype (Pro/Leu) was associated with increased bladder cancer recurrence and decreased time to recurrence (p=0.03) after BCG therapy. The hGPX1 CT genotype was also had shorter recurrence-free survival (p<0.001), progression-free survival (p<0.001) and associated with higher cancer-specific mortality. In patients treated with a combination of BCG and IFNa.

Conclusion: Our findings suggest that polymorphisms in the NRAMP1 and hGPX1 genes correlate with response to BCG therapy in bladder cancer patients. They may serve as molecular markers to predict BCG failure and cancer recurrence.

MP-13.03
ZEB1 and SIP1 Expression in Human Bladder Cancer and their Prognostic Value Following Radical Radiotherapy
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Introduction and Objectives: Loss of E-cadherin in cancer is associated with epithelial-mesenchymal transition, and the acquisition of invasive and migratory properties. E-cadherin function can be inhibited by several mechanisms including transcriptional repression. Studies evaluating the prognostic value of E-cadherin expression in bladder cancer have been contradictory. However, the role of E-cadherin transcriptional repressors has not been fully investigated. We evaluated for the first time co-immunorepression of E-cadherin and the E-cadherin transcriptional repressors, SIP1 and ZEB1 in a panel of human bladder cancer specimens.

Materials and Methods: Paraffin-embedded sections from 134 patients with transitional cell carcinoma (TCC) of the bladder were studied. Seventy-seven samples were muscle invasive (12 grade 2, 65 grade 3) and 57 non-muscle invasive (41 pT1, 16 pTa, all grade 3). Cancer-specific survival was available in 76 muscle-invasive cancers, which were all treated with external beam radical radiotherapy. Immuno- staining was performed using an anti-E-cadherin monoclonal mouse antibody (Zymed), a novel highly specific anti-SIP1 antibody and an anti-ZEB1 polyclonal rabbit antibody (SC Biotech). Two independent assessors, with the aid of an image analyser, performed stained evaluation.

Results: E-cadherin staining was absent in 6/134 (4%) tumours, absent in 81 (60%) and positive in 47 (35%). Reduced E-cadherin expression correlated with muscle invasion (T2 v T1/Ta, p=0.014; Chi-square test). Only 10 (7%) tumours displayed strong ZEB1 nuclear expression (5 diffuse, 5 focal). ZEB1 expression inversely correlated with E-cadherin (p<0.0001, r=0.369, Spearman correlation). SIP1 staining, which was feasible in 128 sam-
samples. Thirty-one (24%) displayed strong/very strong SIP1 nuclear staining, which also inversely correlated with E-cadherin negativity (p=0.03, Fisher’s exact test). SIP1 intensity correlated with ZEB1 extent (p=0.027, r=0.196, Spearman correlation). Cancer-specific survival was predicted by SIP1 positivity [strong/very strong expression] (p=0.005, Log rank test) but not ZEB1 or reduced E-cadherin expression.

Conclusions: Immunoeexpression of SIP1, ZEB1 and E-cadherin has never previously been addressed in a single study. We show that both ZEB1 and SIP1 expression correlate with down regulation of E-cadherin in human bladder cancer. Our results suggest that SIP1 immunoeexpression is a potential independent biomarker of biological aggressiveness in patients with TCC.

MP-13.05
The Prognostic Value of Cell Cycle Regulation Proteins and Apoptosis in Urothelial Carcinoma of the Bladder
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Introduction and Objective: In the present study, the expression patterns of cell cycle regulation proteins and apoptosis related proteins were investigated in urothelial carcinoma and the prognostic value of these markers for tumor progression was evaluated.

Materials and Methods: Eighty patients with urothelial neoplasm of the bladder were included in the study. Grading and staging were assessed according to 1998 WHO-ISP and 2004 TNM classification. Fourteen (17.5%) cases were classified as Ta, 46 (57.5%) as T1 and 20 (25%) as T2. Tumors were classified as papillary neoplasm of low malignant potential (PUN-LMP) in 14 (17.5%), low-grade papillary carcinoma in 38 (47.5%) and high-grade papillary carcinoma in 38 (47.5%). We examined cyclin D1, cyclin E, p21, p27 and LMP130 expression immunohistochemically in transurethral resection of 80 cases with urothelial neoplasms. The expressions of the markers were correlated with tumor stage, grade and clinical outcome.

Results: Low cyclin D1 expression was significantly associated with advanced pathological stage (p=0.001). p21 expression was significantly lower in T2 tumors compared with T1 tumors (p=0.01). Low cyclin D1 expression was significantly associated with low expression p21 in T2 tumors (p=0.004). However no significant correlation was found between cyclin D1, p21 and other parameters. Our findings suggest that in urothelial carcinoma, loss of both cyclin D1 and p21 expressions are related to tumor progression and furthermore evaluation of cyclin D1 and p21 may help to identify high-risk patients with urothelial carcinoma. Patients with tumors displaying high p27 expression had fewer recurrence (p=0.001). There was no significant correlation between p27 and tumor grade, stage. These finding support that p27 may represent an independent prognostic factor in urothelial carcinoma. Cyclin E immunoreactivity was not associated with any pathologic characteristic and clinical outcomes. Advancing tumor grade (p=0.01) and stage (p=0.01) were accompanied by an increase in survivin expression. These findings support a role of survivin in urothelial carcinoma progression.

Conclusions: Our findings support a role for cyclin D1, p21 and survivin as strong markers for predicting the biological potential of bladder tumors and identifying those tumors most likely to progress to muscle invasive disease. Furthermore, the expression of p27 protein may be a useful prognostic marker to evaluate the recurrence of urothelial carcinoma.

MP-13.05
Antitumoral Properties of a Cyclooxygenase-2 Inhibitor and Immunosuppression Agents on Rat Urinary Bladder Carcinogenesis
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Introduction and Objective: Bladder tumors are associated with high recurrence and progression rates despite treatment options. Pharmacological prevention could be an effective way to decrease the significant morbidity and mortality associated to this cancer.

We investigated the anti-carcinogenic effects of a cyclooxygenase-2 inhibitor (Celecoxib) and immunosuppression drugs (Sirolimus and Cyclosporine) on a rat urinary bladder carcinogenesis model with N-butyl-N-(4-hydroxibutil)nitrosamine (BBN).

Materials and Methods: Male Wistar rats (six week old) were divided in several groups:

A) Carcinogenic model: BBN 0.05% in drinking water (n=20), from week 1 to week 8.
B) Sirolimus 1 Group: BBN 0.05% + Sirolimus 1 mg/kg/day (n=12);
C) Sirolimus 2 Group: BBN 0.05% + Sirolimus 2 mg/kg/day (n=8);
D) Cyclosporine A Group: BBN 0.05% + Cyclosporine 5 mg/kg/day (n=10);
E) Celecoxib Group: BBN 0.05% + Celecoxib 10 mg/kg/day;
F) Control groups: Sirolimus 1 mg/kg/day (n=6), Celecoxib 5 mg/kg/day (n=4), Celecoxib 10 mg/kg/day (n=4).

At week twenty, the rats were killed. The number and size of tumors were recorded. The bladders were stained for Gross Tumor and Controls 0 0 0

<table>
<thead>
<tr>
<th>Group</th>
<th>% Rats with Gross Tumor</th>
<th>Mean Number Tumor/rat</th>
<th>Mean Tumor Volume/rat (mm³)</th>
</tr>
</thead>
<tbody>
<tr>
<td>BBN</td>
<td>65</td>
<td>0.75</td>
<td>89.96</td>
</tr>
<tr>
<td>Sir 1mg</td>
<td>91.7%</td>
<td>2.5%</td>
<td>35.02</td>
</tr>
<tr>
<td>Sir 2mg</td>
<td>37.5%</td>
<td>0.38%</td>
<td>0.11%</td>
</tr>
<tr>
<td>CsA</td>
<td>56.3%</td>
<td>0.87</td>
<td>20.26</td>
</tr>
<tr>
<td>Celecoxib</td>
<td>12.5%</td>
<td>0.50%</td>
<td>1.37%</td>
</tr>
<tr>
<td>Controls</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
</tr>
</tbody>
</table>

*p <0.05 vs BBN group.

Results: In our study, there was a statistically significant reduction in the incidence of bladder tumors in rats treated with Sirolimus 2 mg/kg/day and with Celecoxib 10 mg/kg/day (table 1), with less aggressive histological changes. Rats in these two groups had lower levels of TGF-β and a higher anti-oxidant status (MDA/TAS). Sirolimus 1 mg/kg/day induced a higher number of tumors. Cyclosporine showed
and 5 underwent retrograde peritoneum detachment (AD) from the bladder. Five underwent ante-grade peritoneum detachment (RD). Informed consent was obtained. From the operation video for each patient, AD operation time and RD were calculated. The operations were performed by a single surgeon (SH).

**Results:** Mean time and range of AD and RD were 25 minutes, (22-33 minutes) and 15 minutes, (11-17 minutes), respectively (p<0.01). Operation time requiring peritoneal detachment from the bladder with RD was clearly shorter than that with AD.

**Conclusion:** Bladder preservation using chemotherapy and or radiotherapy is frequently followed by bladder cancer at another site over long time followup. Therefore, a bladder preserving approach is not recommended even for elderly patients. Radical extraperitoneal cystectomy is appropriate for elderly patients and can be done without major complications. A weakness of retrograde peritoneum-preserving radical cystectomy is the overlooking of peritoneal infiltrating cancer. If peritoneal infiltration is suspected, a small peritoneal incision is made while looking over the site of original peritoneal-bladder adhesion site from the inside of the peritoneum. Usually, peritoneal infiltration can be detected by bladder tumor palpation during pelvic lymph node dissection.

**Introduction and Objectives:** Radical cystectomy is the gold standard for invasive bladder cancer treatment. Improvements in surgical anesthetic techniques, as well as perioperative care, have reduced the mortality rate of radical cystectomy to 1% to 3% in most contemporary series. However, for elderly patients over 70 years old, the mortality rate in the perioperative period is reported to be 8.8% (AU006-Abstract No. 51). The most common postoperative complication is prolonged ileus. If radical cystectomy could be performed completely extraperitoneally, the benefit would be immeasurable and we could reduce the morbidity rate and mortality rate. For elderly patients, we select completely extraperitoneal cystectomy, and single stoma bilateral ureterocutaneostomy using the Toyoda technique. At first, the prostatic deep vein ligation was clearly shorter than that with cystectomy by open surgery. Mean patient age was 68.0 +/- 9.0 years. Median preoperative American Society of Anesthesiologists score was 1.74 (range 1 to 3) in both groups.

**Results:** Intraoperative blood loss and transfusion rate were significantly lower in the laparoscopic surgery group. Postoperatively the incidence of minor complications and mortality were also significantly lower. Postoperative opioid consumption was significantly less in the laparoscopic surgery group in amount and duration. Resumption of oral fluid and solid intake as well as return to normal bowel function were significantly more rapid in the laparoscopic surgery group, and mean hospital stay was significantly shorter. Mean patient followup was 30.5 +/- 17.2 months.

**Conclusions:** Laparoscopic radical cystectomy for bladder cancer has a lower morbidity rate than cystectomy by open surgery. It allows more rapid resumption of oral fluid and solid intake as well as return to normal bowel function and shorter hospital stay.

**MP-13.06**

**Peritoneum Preserving Retrograde Radical Cystectomy for Elderly Bladder Cancer Patients**

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**Introduction and Objectives:** Radical cystectomy is the gold standard for invasive bladder cancer treatment. Improvements in surgical anesthetic techniques, as well as perioperative care, have reduced the mortality rate of radical cystectomy to 1% to 3% in most contemporary series. However, for elderly patients over 70 years old, the mortality rate in the perioperative period is reported to be 8.8% (AU006-Abstract No. 51). The most common postoperative complication is prolonged ileus. If radical cystectomy could be performed completely extraperitoneally, the benefit would be immeasurable and we could reduce the morbidity rate and mortality rate. For elderly patients, we select completely extraperitoneal cystectomy, and single stoma bilateral ureterocutaneostomy using the Toyoda technique. At first, the prostatic deep vein ligation was clearly shorter than that with cystectomy by open surgery. Mean patient age was 68.0 +/- 9.0 years. Median preoperative American Society of Anesthesiologists score was 1.74 (range 1 to 3) in both groups.

**Results:** Intraoperative blood loss and transfusion rate were significantly lower in the laparoscopic surgery group. Postoperatively the incidence of minor complications and mortality were also significantly lower. Postoperative opioid consumption was significantly less in the laparoscopic surgery group in amount and duration. Resumption of oral fluid and solid intake as well as return to normal bowel function were significantly more rapid in the laparoscopic surgery group, and mean hospital stay was significantly shorter. Mean patient followup was 30.5 +/- 17.2 months.

**Conclusions:** Laparoscopic radical cystectomy for bladder cancer has a lower morbidity rate than cystectomy by open surgery. It allows more rapid resumption of oral fluid and solid intake as well as return to normal bowel function and shorter hospital stay.

**MP-13.07**

**Radical Cystectomy for Bladder Cancer: Morbidity of Laparoscopic Versus Open Surgery**


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**Introduction and Objectives:** We compared the morbidity and mortality of laparoscopic vs. open surgery in radical cystectomy for bladder cancer.

**Materials and Methods:** This prospective, nonrandomized study was conducted between January 2003 and July 2007 in 68 patients (7 women and 61 men) who underwent radical cystectomy for bladder cancer. A total of 38 cystectomies were performed laparoscopically and 30 by open surgery. Mean patient age was 68.0 +/- 9.0 years. Median preoperative American Society of Anesthesiologists score was 2 (range 1 to 3) in both groups.

**Results:** Intraoperative blood loss and transfusion rate were significantly lower in the laparoscopic surgery group. Postoperatively the incidence of minor complications and mortality were also significantly lower. Postoperative opioid consumption was significantly less in the laparoscopic surgery group in amount and duration. Resumption of oral fluid and solid intake as well as return to normal bowel function were significantly more rapid in the laparoscopic surgery group, and mean hospital stay was significantly shorter. Mean patient followup was 30.5 +/- 17.2 months.

**Conclusions:** Laparoscopic radical cystectomy for bladder cancer has a lower morbidity rate than cystectomy by open surgery. It allows more rapid resumption of oral fluid and solid intake as well as return to normal bowel function and shorter hospital stay.

**MP-13.08**

**Quality of Care Indicators for Muscle-Invasive Bladder Cancer**

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**Introduction and Objective:** To provide optimal quality of care (QoC) for patients with muscle-invasive bladder cancer, quality of care indicators (QI’s) should be used. The purpose of this study was to test QI’s and after adjustments in treatment protocol, to measure the aimed improvements in QoC.

**Materials and Methods:** A multidisciplinary project group formulated QI’s according to existing studies and guidelines. 26 QI’s were defined over four categories: Care Management (basic care like informed consent), Accessibility and Time management (waiting periods for diagnostic tests, treatments, communication of the results), Professional competence (mortality, complications, length of stay, lymph node dissection, positive margins) and Patient factors (psychosocial screening). A retrospective study was performed to stipulate the result of each QI and to compare with a predefined norm. Afterwards adjustments were made in the treatment protocol and the QI’s were prospectively measured.

**Results:** In 52 patients after cystectomy the QI’s were retrospectively measured (+4 men). 52% of the patients had complications, 15% had major and 50% had minor complications. Mortality rate 5.8%. For 22 indicators the score was too low. Adjustments were made: e.g., establishing a standardized multidisciplinary consulta-
Life satisfaction was compared in different patients who underwent radical cystectomy (RC) and evaluated morbidity, survival, general health and functional status of the patients who underwent radical cystectomy for muscle-invasive bladder cancer. Retrospectively the QI’s-results were tested against a norm. After making adjustments in treatment protocol, a prospective study showed a higher score reached in 17 QI’s, implying an increase in quality of care. These improvements are partly the result of prospective registration and partly the effect of a better treatment protocol.

**Results:** There were 251 patients (mean age: 62.1 (37-82) years; Male/Female: 24/227) studied. Bladder reservoir construction technique was orthotopic neobladder in 155, ileal conduit in 57, continent pouch (appendix diversion) in 16 and ureterosigmoidostomy in 5 patients, also 18 patients had undergone cutaneous ureterostomy. Repeat exploration was necessary in 55 patients and the most common causes were continuous leakage from abdominal drain or suture line and incisional hernia. Ten patients presented with different types of fistula and 7 patients needed a surgery for its management. During a follow up duration of 6 to 91 months, 57 patients had died and follow up information was available for 62 patients. There was no statistically significant difference for life satisfaction between different types of urinary reservoir reconstruction techniques, but patients with ureterosigmoidostomy had lower overall satisfaction. Dependency rate for personal activity was lower in orthotopic neobladder than other urinary reservoirs. Prostate sparing orthotopic ileal pouch had the highest continency and potency rate.

**Conclusion:** This data from a large number of patients with invasive bladder cancer reveal that the patients experience a high complication rate. It seems that life satisfaction is independent of the type of urinary reservoir but patients’ and their families’ acceptance for orthotopic neobladder is higher.

**Materials and Methods:** We collected and pooled a database of 2287 patients who have undergone radical cystectomy between 1993 and 2008 in 8 different centers across Canada. At time of cystectomy, 135 patients were found to have pT0N0 bladder cancer. Variables analyzed included patient age, clinical stage, nodal status, histologic type, previous history of superficial TCC and CIS, use of neoadjuvant chemotherapy, type of pelvic lymph node dissection (none, standard, extended). Survival data were analyzed using Kaplan-Meier method and Cox proportional regression analysis.

**Results:** Median age of patients was 66 years with a mean follow-up time of 42 months. Clinical stage distribution was Tcis 10%, T2 2%, T1 24%, T2 52%, T3 6%, T4 5%. There were 24% who had a history of concomitant CIS with 35% of patients with a history of previous superficial TCC. Pelvic lymph node dissection was performed in 94% of patients with 65% following standard template and 35% with extended template. There were 8% of patients who received neoadjuvant chemotherapy prior to cystectomy. The 5-year recurrence-free survival, disease-specific survival, and overall survival was 85%, 96%, and 88% respectively. The 10-year recurrence-free survival, disease-specific survival, and overall survival was 66%, 92%, and 70% respectively. There were 85% of patients with TCC as primary pathology. On Cox proportional regression analysis only patient age correlated to overall survival.

**Conclusions:** These results indicate that the finding of pT0 is a predictor of superior outcomes from cystectomy with a high 5 and 10 year recurrence-free survival, disease-specific survival, and overall survival. It should be noted however that pT0 is not a guarantee of recurrence free survival as there is still a substantial risk of tumor recurrence in this patient population. With increasing utilization of neoadjuvant chemotherapy prior to cystectomy it is likely that increasing pT0 rates will be encountered and the outcomes of this specific group of patients will need to be independently analyzed. As clinical stage was not a prognostic factor, achieving pT0N0 at cystectomy can be used as a surrogate endpoint for survival.
Introduction and Objectives: The prognostic significance of preoperative hydronephrosis after radical cystectomy has been investigated in other studies with conflicting results. We investigated whether the presence and severity of preoperative hydronephrosis has prognostic significance in patients who underwent radical cystectomy for invasive bladder cancer.

Materials and Methods: Between 1986 and 2005, medical records of 406 patients who underwent radical cystectomy were reviewed retrospectively. According to the Society for Fetal Urology grading system, patients were divided into low (grade 1 and 2) and high grade (grade 3 and 4) hydronephrosis groups. The clinicopathologic factors associated with preoperative hydronephrosis were evaluated and survival was calculated by Kaplan-Meier method.

Results: Of a total of 406 patients, unilateral hydronephrosis was found in 74 (18.2%) patients, bilateral hydronephrosis in 11 (2.7%), and no hydronephrosis in 321 (79.1%). Low grade hydronephrosis was found in 57 (12.2%) patients and high grade hydronephrosis in 28 (6%). Preoperative hydronephrosis was related to higher pT stage. LN invasion, positive surgical margin and higher tumor grade. In univariate analysis, patient age, presence of hydronephrosis, hydronephrosis grade, T stage, N stage, tumor grade, surgical margin, number of retrieved nodes, CIS, and lymphovascular invasion were significant prognostic factors after radical cystectomy. In multivariate analysis, age, bilateral hydronephrosis (HR 7.16), high grade hydronephrosis (HR 2.2), pT stage, LN invasion, positive margin and number of retrieved nodes were significant independent risk factors for cancer specific survival.

Conclusions: Bilateral hydronephrosis and high grade hydronephrosis predict poor outcomes after radical cystectomy. Preoperative hydronephrosis could be useful for selecting patients and determining the efficacy of adjuvant chemotherapy strategies.

MP-13.12
Comparison of Hand Assisted Laparoscopic and Open Radical Cystectomy for Bladder Cancer
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Introduction and Objective: To present our experience of hand-assisted laparoscopic radical cystectomy (HALRC) and compare it with open radical cystectomy (ORC).

Materials and Methods: During the period of May 2004 and November 2007, 31 patients underwent HALRC and 39 patients underwent ORC for bladder cancer. The patient demographics, intraoperative variables, postoperative outcomes were compared retrospectively.

Results: There was no statistically significant difference with regard to age, sex, body mass index, urinary diversion and tumor stage in the two groups. The HALRC group had decreased blood loss (250.9 vs. 812.8cc, P<0.001) and lower rate of transfusion (9.7% vs. 76.9%, P<0.001), but similar mean operative time (365.7 vs. 362.6minutes, P=0.862). Time to liquid diet was significantly less in the HALRC group vs. the ORC group (4.3 vs. 6.3days, P<0.001). The median number of lymph nodes were similar between the HALRC and ORC groups (14 vs.15, P=0.377). All margins in both groups were negative. Six patients developed perioperative complications in the HALRC group and 12 patients had complications in the ORC group (19.4% vs. 30.8%, P=0.278). Late complications occurred in three patients (two parastomal hernias and one ureterocentral stricture) in the HALRC group.

Conclusions: Compared with ORC, HALRC had decreased blood loss, less transfusion requirements and quicker intestinal recovery than ORC. Long term follow-up in a larger cohort of patients is needed to assess long-term oncological and functional outcomes.

MP-13.13
Reducing Intraoperative Blood Loss and Transfusion Requirements during Radical Cystectomy: A Comparative Analysis of Three Different Approaches
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Introduction and Objective: To compare intraoperative blood loss and transfusion requirements in patients undergoing radical cystectomy using the clamp-and-tie technique, Ligasure versus hand-assisted laparoscopy.

Materials and Methods: Eighty-seven bladder cancer patients were enrolled in this study between January 2003 and October 2007. Patients were divided into 3 groups: radical cystectomy using the clamp-and-tie technique (CLAMP group, n=32), radical cystectomy using Ligasure (Ligasure group, n=24) and hand-assisted laparoscopic radical cystectomy (HALRC group, n=51). The serum hematocrts were obtained preoperatively and 24 hours postoperatively in all patients. The intraoperative blood loss volume and transfusion requirements were recorded.

Results: The three groups were similar in age, sex, body mass index, previous abdominal surgeries, the number with anemia, urinary diversion or tumor stage. The Ligasure group had less blood loss (604.2 vs. 835.9ml, P<0.05) and lower transfusion rate (66.7% vs 93.8%, P<0.05) than the CLAMP group. Compared with the CLAMP group and Ligasure group, the HALRC group had less blood loss and lower transfusion rate (P<0.001).

Conclusions: The use of Ligasure is equally as safe and effective at vessel division and hemostasis as the clamp-and-tie technique, with a statistically significant decrease in blood loss and transfusion rate. Hand assisted laparoscopic radical cystectomy results in decreased blood loss and less transfusion requirements than the two open radical cystectomies. The Ligasure has a good effect in hemostasis, and it is also an effective instrument for separation during laparoscopic radical cystectomy.
Introduction and Objective: Radical cystectomy with extended pelvic lymphadenectomy (EPL) is widely used for treatment of muscle invasive bladder cancer. Therapeutic and prognostic value of EPL is still controversial. Recent studies have demonstrated a better prognosis after EPL. To examine total number of lymph nodes removed, number and location of positive nodes and their relation to location of primary carcinoma in the bladder, standardization of EPL.

Materials and Methods: Forty-eight radical cystectomies with EPL were performed at our institution from 1999 to 2008. All operations were done with curative intent on patients with muscle invasive tumors (T2-T4). Mean age of patients was 68 years (41-71). Male to female ratio was 45/5. Borders of EPL were: cranially - origin of inferior mesenteric artery, laterally - linea terminalis, caudally - fossa obturatoria. Removal of lymph nodes was carried out separately from 12 anatomic areas.

Results: Distribution of patients according to pathological staging was: pT2B - 11 patients (22.9%), pT3A - 16 (34.3%), pT3B - 6 (11.4%), pT4a - 12 (25.5%), pT4b - 3 patients (5.7%). N0 - 27 patients; N1 - 10 patients; N2 - 11 patients. Grade of differentiation in 12 patients was moderate (G2) and in 36 cases cancer had poor differentiation (G3). Combination with cis was found in 26 (54.3%) cases. Transitional cell carcinoma was diagnosed in all 48 patients. Total amount of removed lymph nodes was 1632; mean 34 lymph nodes per patient was 20. In 8 (17.1%) cases positive node was found on central lateral side. 66 (69.6%) lymph nodes were found in standard lymphadenectomy region. There were found 8 (7.8%) positive lymph node metastasis above aortic bifurcation and 28 (30.4%) positive lymph nodes up to iliac bifurcation.

Conclusion: Without EPL about 31% of positive lymph nodes would never be detected and hence would never be excised. In case of urinary bladder cancer, metastases are not always ipsilateral, so bilateral lymphadenectomy is recommended for all patients undergoing radical cystectomy for curative intent.

MP-13.15
Seminal Vesicle(s) Sparing Cystectomy Combined with Ileal Orthotopic Bladder Substitution Allows for Good Functional Results

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Introduction and Objective: Seminal vesicle(s) sparing cystectomy aims to better preserve the autonomic nerves and hence achieve better functional outcomes. In this study, we review the functional and oncologic outcomes of our patients with seminal vesicle(s) sparing cystectomy.

Materials and Methods: Between May 2003 to April 2009, 31 patients with a median age of 61 years (30 to 77 years) underwent seminal vesicle(s) sparing cystectomy for transitional cell carcinoma (TCC) of the bladder. Surgical technique involved radical cystectomy with preservation of the seminal vesicle(s) and the neurovascular-bundle(s). All the patients were followed up prospectively and were monitored for local tumor recurrence and distant metastasis by both clinical and radiological examinations. They were also assessed on their continence and potency outcomes using validated questionnaires.

Results: Pre-operatively, all patients were continent, and 23 patients (74%) were potent and sexually active. Seventeen patients (55%) underwent unilateral and 14 patients (45%) underwent bilateral seminal vesicle(s) sparing cystectomy. The pathological stage were as follows: 15 patients (48%) had pTa/ pt1 disease, 9 patients (29%) had pt2 disease, 2 patients (7%) had pt3 disease and 5 patients (16%) had pt2-4 pN1 disease. Incidental prostate adenocarcinoma was found in 13 patients (42%). The median follow-up length was 14 months (1 to 63 months). At 6 months, 22 of 27 patients (81%) were continent during day-time, and 12 of 27 patients (44%) were continent during night-time. At last follow-up (median 14 months), 22 of 24 patients (92%) were continent during day-time and 16 of 24 patients (67%) were continent during night-time. As for post-operative potency, 14 of 18 (78%) evaluable patients remained potent with or without oral medical therapy. Pelvic recurrence was present in 1 patient (3%) and distant metastases were present in 4 patients (13%). One patient (3%) died from metastatic TCC during the study period.

Conclusion: Seminal vesicle(s) and nerve sparing cystectomy in this series of 31 patients results in a high probability of preserving potency, at least with medical assistance despite removing the prostate. Its results on continence, and preliminary oncologic outcomes appeared to be at least equivalent to conventional radical cystectomy.

MP-13.16
Impact of Vessel Sealing Device on Outcome of Radical Cystectomy

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Introduction and Objective: To evaluate the role of an electrothermal bipolar coagulator (Biclamp) on the performance and outcome of open radical cystectomy in comparison with conventional methods of dissection.

Material and Methods: Over a 1-year period, a prospective study was carried out in patients undergoing open radical cystectomy and urinary diversion for muscle invasive carcinoma bladder employing either conventional ligation/clip in the control group (n = 22) or Biclamp device in the study group (n = 25). Biclamp was used to divide the posterior and lateral pedicles of bladder. Outcome measures evaluated were estimated blood loss (EBL), transfusion requirement, operating time (total/cystectomy) and postoperative variables such as analgesia requirement, time to drain removal, duration of hospital stay and incidence of complications in both the groups.

Results: Both groups were similar with regards to age, sex, BMI, associated comorbidity and clinical stage of the disease. Mean EBL and transfusion requirement in study and control groups were 408 and 719 ml (p = 0.03) and 1.6 and 2.9 units (p = 0.04), respectively. Mean cystectomy and total operating time were 75 and 110 minutes (p = 0.02) and 298 and 314 minutes (p = 0.76) in study and control groups, respectively. There was no significant difference in respect to analgesia requirement, drain removal, duration of hospital stay and incidence of complication between the groups.

Conclusion: Use of Biclamp in radical cystectomy reduces blood loss, saves operating time and is particularly useful in dividing vessels deep in the pelvis where it acts as a viable alternative to hemostatic clips and sutures.

MP-13.17
The Incidence of Prostate Cancer and Urothelial Cancer in the Prostate In Cystoprostatectomy Specimens

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Introduction: The current gold standard for muscle invasive bladder cancer is radical cystectomy with removal of the prostate and seminal vesicles. Potential functional consequences of this radical procedure include compromised potency and continence. A growing interest in
prostate/sexuality sparing cystectomy in orthotopic neobladder candidates with either partial or total sparing of the prostate and neurovascular bundles has emerged, although recent evidence suggest only a marginal functional benefit. Our objective is to determine the incidence of occult prostate cancer and urothelial cancer of the prostate in cystoprostatectomy specimens conducted for muscle invasive bladder cancer.

Materials and Methods: A retrospective review of 83 male patients who underwent radical cystoprostatectomy for muscle invasive bladder cancer between April 2004 and March 2007 was conducted. The median age of our study group was 71 years. Pathologic findings of prostate/urothelial cancer in the prostate were identified. Clinically significant prostate cancer was defined as Gleason score > 6, tumor volume >0.5cc, extracapsular extension or perineural invasion.

Results: Our review yielded a 30% (± 10%, 0.95 CI) rate of prostate cancer, with 19% (± 8.5%, 0.95 CI) of total specimens being positive for clinically significant prostate cancer. Urothelial cancer in the prostate was identified in 16% (± 8.5%, 0.95 CI) of patients, with an overlap with prostate cancer in 2 patients. The overall rate of an underlying cancer within the prostate of our cystoprostatectomy specimens was ~46% (± 10.7%, 0.95 CI).

Conclusion: These findings suggest that the oncological risk of leaving behind residual cancer may not justify the practice of prostate sparing cystectomies.

Honey is compatible with urine, i.e. there is no precipitation, reaction or marked pH change. Its viscosity permits easy handling at dilutions of 1.5 w/v or greater. Rat bladder explants show good morphological characteristics and urothelial viability for more than one week in culture. At any stage, clinical grade manuka honey (Medihoney®) diluted between 1:5 and 1:50 w:v in phosphate buffered saline. Viability of the urothelium was assessed by confocal microscopy. Explants were also subjected to routine histology. Explants were also damaged by exposure to hydrochloric acid (0.1-0.01M) alone or after pretreatment with 1:10 w:v honey and assessed for urothelial viability. Honey was also applied to a chemiluminescent mast-cell degranulation assay.

Results: Honey preparations are well tolerated in this model system and show some evidence suggesting that they may be bioactive. In vivo studies are warranted.

MP-13.18
Honey: A Potential Intravesical Therapeutic
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Introduction and Objective: Honey has a long history of use as protecting against infection and promoting healing when applied topically to superficial wounds. Mechanisms involved include peroxide mediated bactericidal activity mediated by glucose oxidase and other non-peroxide related toxicities. There are particularly strongly represented in honey from flowers of the Manuka bush, currently marketed by several commercial outlets. It has also been shown to influence angiogenesis and its hypertonicity promotes transudation out of the lesion. As with skin lesions, bladder urothelium can be compromised as an interstitial cystitis or by infections associated with long-term catheter use. It is essentially a barrier organ, like the skin, situated on the outside of the body proper and accessible to topical treatment. We aim to assess its tolerance by urothelium in a rodent explant culture model.

Materials and Methods: The viscosity of aqueous honey dilutions was assessed, as was their compatibility with urine, when mixed. Rat bladder urothelial explants were prepared and cultured in 35mm diameter petri dishes. They were exposed to clinical grade manuka honey (Medihoney®) diluted between 1:5 and 1:50 w:v in phosphate buffered saline. Viability of the urothelium was assessed by confocal microscopy. Explants were also subjected to routine histology. Explants were also damaged by exposure to hydrochloric acid (0.1-0.01M) alone or after pretreatment with 1:10 w:v honey and assessed for urothelial viability. Honey was also applied to a chemiluminescent mast-cell degranulation assay.

Results: Honey preparations are well tolerated in this model system and show some evidence suggesting that they may be bioactive. In vivo studies are warranted.

Moderated Poster Session 14: Kidney Cancer
Wednesday, November 4
10:45-12:15

MP-14.01
Aberrant Methylation of DLEC1: A Candidate Tumor Suppressor in Renal Cell Carcinoma and its Relationship to Clinicopathological Features
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Introduction and Objective: Identification of tumor suppressor genes (TSG) silenced by methylation uncovers mechanism of tumorigenesis and identifies new epigenetic tumor markers for early cancer detection. Aberrant methylation of DLEC1 (Deleted in lung and esophageal cancer), a recently identified TSG located at 3p22.3, has been reported in several tumors. To gain insight into the role of epigenetic silencing of DLEC1 in the tumorigenesis of renal cell carcinoma (RCC), we investigated the methylation status of DLEC1 and its relationship with clinicopathologic features of RCC.

Materials and Methods: Genomic DNA and/or total RNA were extracted from six RCC cell lines and 81 primary samples of RCC with their corresponding normal renal tissues. Expression of DLEC1 was analyzed by semiquantitative reverse-transcription PCR. Promoter methylation status was analyzed by methylation-specific PCR and bisulfite genomic sequencing. Finally, monolayer colony formation assay was performed to examine the effect of DLEC1 re-expression on the tumor cell clonogenicity of RCC.

Results: DLEC1 downregulation and methylation were detected in all six RCC cell lines. Treatment with 5-aza-2′-deoxycytidine resulted in DLEC1 demethylation and re-expression, indicating methylation directly mediates its silencing. Moreover, aberrant methylation was detected in 31% (25/81) of primary RCC tumors. In contrast, only one of the 53 (2%) non-malignant renal tissues had methylation. DLEC1 methylation status was significantly associated with TNM classification (p = 0.004, chi-square) and Grade stages (p = 0.014, Chi-square) of RCC patients. Furthermore, ectopic expression of DLEC1 in silenced tumor cells resulted in substantial inhibition of tumor cell clonogenicity.

Conclusions: DLEC1 is a candidate TSG that plays an important role in the development and progression of RCC. Tumor-specific methylation of DLEC1 might serve as a biomarker for early tumor detection and prognosis prediction.

MP-14.02
Clinical Characteristics of Renal Cell Carcinoma in Young Adult
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Introduction and Objective: Renal cell carcinoma (RCC) is rare in patients younger than 40 years old. Here we present our institutional experience with young adult patients treated for renal cell carcinoma during the past decade.
Materials and Methods: Between Jan 1999 and May 2008, a total of 134 patients younger than 40 were treated in our institution. We retrospectively analyzed the clinical presentation and pathological characteristics of these patients.

Results: The mean age of 134 young adults was 35.0 years (range 22 to 40). The male/female ratio was 3:1. Tumors were discovered incidentally in 99 (73.9%) and symptomatic in 35 patients (26.1%), with the main symptom being flank pain in 18 of 35 followed by hematuria in 11 of 35. Of the 134 patients, 109 (81.3%) were treated by radical nephrectomy and 21 (15.7%) by partial nephrectomy. 2 patients with bilateral RCC underwent partial nephrectomy on one side and a staged contralateral radical nephrectomy. The 2 patients with huge tumors were treated by artery embolism. The mean diameter was 5.3±3.4cm. The postoperative report identified clear cell tumors in 112 patients (84.8%), chromophobe tumor in 14 patients (10.6%), and papillary tumor in 6 patients (4.5%). Among the 112 clear cell carcinomas, 23 (20.5%) were G1, 70 (62.5%) were G2, and 19 (17%) were G3. Of the 134 patients, 95 (70.9%) had pT1 tumors, 26 (19.4%) had pT2 tumors, 10 (7.5%) had pT3 tumors, 3 (2.2%) had pT4 tumors, and 5 (3.8%) had M+ disease. Two patients presented with renal vein tumor thrombus.

Conclusions: In young RCC patients, the adults are more likely to be male, and asymptomatic RCC is still more predominant. The main complaints of those symptomatic patients are flank pain and hematuria. While the clear cell RCC is the most common pathological type, younger patients were more likely to have chromophobe tumor. RCC patients in young adults have a higher incidence of low grade and stage tumors. Partial nephrectomy may be a good choice for appropriate patients.

MP-14.03
The Natural History of Incidentally Discovered Renal Cell Carcinomas (RCCs)
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Introduction and Objective: We investigated the natural history of incidentally discovered renal cell carcinomas (RCCs), and we evaluated growth rate and the correlation between age, histological type, histological grade and tumor size at the beginning of observation.

Materials and Methods: A total of 32 patients with incidentally discovered renal masses were delay treated in our hospital between 1990 and 2007. After at least 12 months of observation, 20 of them were extirpated and verified RCC. The clinical documents were reviewed retrospectively. The period of observation ranged from 13 to 144 months (median 55.7). Median patient age was 53 years, ranging from 30 to 74 years old. Annual tumor growth rate was calculated from diameter obtained from computerized tomography or MRI. We analyzed the relation between average tumor growth rate and age, histological type, histological grade and tumor size at the beginning of observation.

Results: Average tumor growth rate was 0.69 cm per year, range from 0.18 to 3.73 cm per year. Of the 20 tumors 4 were grade 1, 11 were grade 2 and 5 were grade 3. The growth rate of grade 3(1.04cm per year) was faster than grade 2(0.67/cm per year) and grade 1 (0.34/cm per year), but had no significant difference. 17 tumors were clear cell carcinoma, 3 tumors were papillary cell carcinoma. Clear cell carcinoma (0.77/cm per year) tended to grow faster than papillary cell carcinoma (0.29/cm per year), and also had no significant difference. Multiple linear regression revealed tumor growth rate and age, histological grade, histological type, tumor size at the beginning of observation were not correlated.

Conclusions: The growth rate of RCCs tended to correlate with grade. Most incidentally found RCCs are slow growing. However, some of them can grow rapidly. More attention should be given to the observation of incidentally discovered renal masses.

MP-14.04
Trends of the Histopathology of Renal Masses in a Contemporary Cohort
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Introduction and Objective: With improvement and availability of CT scanners, there has been an increase in the incidence of small renal masses and a corresponding rise in both the overall number of nephrectomies and the number of partial nephrectomies. Several recent studies have characterized the histopathology of these masses, however, no study has tracked the change in these masses over time, specifically whether more lower grade and benign renal masses are being detected and removed and whether there is a proportional change in their histopathology.

Materials and Methods: Patients who underwent surgery for renal masses between 1998 and 2006 in tertiary referral center were identified by CPT code. Records were retrospectively reviewed for patient demographics, surgical technique, and tumor pathology.

Results: There were 1064 nephrectomies performed between 1998 and 2006. A total of 675 radical and partial nephrectomies were available for analysis. Populations of patients undergoing nephrectomy were comparable for the years 1998 to 2006 with respect to age (62.5 +/- 2.28 years) and gender (57.8% male, 42.1% female). Significant linear trends toward partial nephrectomy (8.8% to 52.4%, p<0.001) and minimally invasive surgery (52.9% to 83.5%, p<0.001) were noted, comparable to trends seen in similar tertiary care centers. No significant change was noted in the size or the pathologic stage of the tumors of those undergoing partial nephrectomy. The percentage of benign disease has remained stable (15.6%); however, there was a significant difference among tumors removed by partial (23.9% benign) and radical (14.4% benign) nephrectomy (p<0.01). There was no significant difference in the histopathology of these masses by year. There was a small but statistically significant correlation between year and tumor grade with lower grade tumor seen in more recent years (p<0.02). Among partial nephrectomies, however, tumor grade was comparable for each year.

Conclusions: In a contemporary population of patients undergoing surgery for renal masses within a single tertiary care center, there has been a recent increase in the number of nephrectomies and in the proportion of partial nephrectomies performed by year. There has been no increase in the overall percentage of benign renal masses being removed over that time period. Although we have not been able to demonstrate a trend toward smaller renal tumors, there does appear to be a trend toward lower grade tumors. There has also been no change in the histopathology of these masses.

MP-14.05
Erectile Function in Male Patients with Adrenal Tumors
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Introduction and Objective: Despite the opinion that almost all extragonadal endocrinopathies may have a greater or lesser effect on sexual function, the data evaluate the sexual function in patients with adrenal tumors are rather scarce. The purpose of this study is to evaluate the erectile function in male patients with adrenal tumors, and to investigate the possible mechanisms.

Materials and Methods: From December 2006 to December 2007, 25 male patients suffering from adrenal tumors were enrolled into this study with a mean age of 46±11 years, 15 with primary hyperaldosteronism, 5 with pheochromocytoma, 5 with Cushing’s syndrome, 3 with adrenal malignant tumor and 1 with nonfunctioning adenoma. All patients were evaluated by sex-hormone status (LH, FSH, estrogen, total and free testosterone) before the surgery. Erectile functions were evaluated before and 3 months after the surgery using International Index of Erectile Function (IIEF-5) questionnaire.

Results: Patients with all kinds of adrenal tumors had a decrease in the IIEF scores, especially patients with adrenal malignant tumors (Mean IIEF score was 5±2). Patients age≥50 years had a increase in the IIEF scores 3 months after surgery, especially those age≥40 years (Mean IIEF score before and 3 months after surgery were 20±3 and 22±2, respectively). IIEF scores were lower in patients with normal or mild hypertension than in those with moderate to severe hypertension(Mean IIEF scores were 17±4 and 11±7, respectively). Patients with severe complication, such as cerebrovascular accident had a severe decrease in the IIEF scores, and no increase were observed 5 months after surgery. The total testosterone value was normal in each age group. The free testosterone value was lower in the ≥60 age group and normal in other groups. No correlate was observed between androgen value and IIEF scores in this study.

Conclusions: Our research showed that adrenal tumors have effect on erectile function, and it is more severe at those patients who associate hypertension, and it is most severe at those patients who have severe complications for no improvement were observed after surgery. The changes of erectile function in patients with adrenal tumors may not induced by androgen value alteration.

Introduction and Objective: Complete urinary tract extirpation (CUTE) involves bilateral nephroureterectomy and cystectomy or cystoprostatectomy. We retrospectively analysed the cases performed at our institution.

Materials and Methods: We identified all patients who underwent CUTE at our institution between 1999 and 2008. We retrospectively analysed the patient data including pre- and postoperative status, perioperative morbidity and mortality, pathology and final outcome.

Results: CUTE was performed in 17 patients. In 12 patients this was done as a one stage CUTE, whereas 5 patients underwent 2 separate procedures over time. The median patient age was 66 and 13 patients were male. Two patients had cardiac and 3 patients had renal allorafts in the past medical history. Transitional cell carcinoma was identified in all patients except one diagnosis of urachal carcinoma and bilateral reflux nephropathy. Incidental prostate cancer was found in 1 patient. During the first 90 days after surgery, 3 patients died of complications, including 1 patient after CUTE combined with resection of a chronically rejected kidney transplant and 1 patient with a cardiac transplant. Major non mortal early complications were identified in 4 other patients, including prolonged ileus, sepsis, pneumonia and reintubation after over dosage of opioids for pain management. The mean follow up was 39 months. A transplantectomy due to TCC in the transplant ureter was performed in 1 patient 1 year after CUTE, he developed metastatic disease 20 months after CUTE and died after 22 months. A second tumour recurrence occurred in another renal transplant patient 12 months after CUTE but disease has stabilised after systemic therapy after a follow up of 16 months. There was no tumour recurrence in any other patients. During follow up, kidney transplantation was performed on an ileal conduit in 4 patients.

Conclusions: To our knowledge, this is the largest case series of patients undergoing CUTE. CUTE is a procedure that can be performed for complex urogenital conditions. Good cancer control can be obtained. Nevertheless, it has significant perioperative mortality and morbidity.

Introduction and Objectives: Numerous studies have demonstrated that African Americans (AA) have a higher incidence and mortality rates from renal cell carcinoma (RCC) as compared to other ethnic groups. However, it is unclear which RCC histological subtypes are contributing to this disparity. In this study, we evaluated the patterns of disease presentation and outcomes among both AA and Caucasians with a papillary RCC diagnosis.

Materials and Methods: We retrospectively reviewed the charts of 1802 patients who were diagnosed with RCC between 1980 and 2007. We analyzed race, age, gender, stage at diagnosis differences on the incidence and survival among 103 patients (55 Caucasians, 68 AA) with papillary RCC. Incidence trends were analyzed by linear regression models and Cox proportional hazard models was used to determine overall survival of patients by race, gender and stage.

Results: AA presented with higher incidence of localized disease (85% vs. 45.7%) and better overall survival (55.9% vs. 42.8%) as compared to Caucasians (p<0.05). Among patients with regional and distant disease, overall survival was poor for both ethnicities. The incidence of papillary RCC was higher among males in both ethnic groups as compared to females (p<0.01). Localized disease was the predominant stage at presentation for both AA males and females as compared to their Caucasian counterparts (p<0.01). This was associated with an improved survival for AA males and females over Caucasian males and females with localized disease (p<0.05).

Conclusion: Higher localized papillary RCC incidence rates and better overall survival rates were observed for African Americans compared to Caucasians. While AA males accounted for the higher proportion of localized disease at presentation and better overall survival, female AA patients also had better overall survival as compared to Caucasians. This data suggest that the poorer mortality rate seen among AA with RCC is not due to the papillary RCC histology.

MP-14.08 Analysis of Operative Outcomes in 100 Hand-Assisted Laparoscopic Radical Nephrectomies (HALRN)
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Introduction and Objectives: There are 3 major advantages of hand-assisted laparoscopic radical nephrectomy (HALRN). The first one is to get a tactile sensation of renal and perirenal spaces including internal organs with 3 dimensional perception. The second one is to get a cancer control with pathologic specimen. The third one is to improve the quality of life including reducing pain and skin incision. The aims of this study are to present the clinical outcomes of 100 patients who underwent HALRN and to evaluate the efficacy of HALRN.

Materials and Methods: HALRN was performed for 100 cases of cT1-T2N0M0 renal tumors from Jan. 2001 to Mar. 2008. We evaluated the operation time, blood loss, transfusion episode, severity of pain, difference of pain control method, hospital stay, diet resumption, complications and recurrences of tumors. HALRN was done by transperitoneal hand assisted laparoscopic approach. The resected specimen was extracted transperitoneally through the same midline or parambilical skin incision.

Results: See table.

Conclusions: During follow-up periods, we had no recurrent cases. We had excellent surgical outcomes performing HALRN procedure. We suggested that HALRN is good indicated at T1-T2 renal tumors, and that we could achieve the goals of cancer control, as well as improving the quality of life.

MP-14.09
The Relationship between Nuclear Grade of RCC and the Degree of Enhancement in CT
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Introduction and Objective: Fuhrman nuclear grade is an important prognostic indicator for the patients with renal cell carcinoma (RCC). The degree of CT enhancement is associated with the amount of microvascularity and necrosis. We investigated the relationship of nuclear grade of RCC and the degree of enhancement in CT.

Materials and Methods: We retrospectively evaluated 46 patients, who were surgically treated for conventional type RCC between Jan 2006 and Jun 2008. We also evaluated for their clinical and pathologic information: TNM classification, the nuclear grade, etc. All CT were performed on a Toshiba® Aquilion 64 CT. All images were reviewed for the degree of CT attenuation value of homogenous tumor lesions: the peak tumor enhancement (A), the average tumor enhancement (B), the average tumor necrosis enhancement (C), the lowest tumor necrosis enhancement (D) if it exists. The value of CT attenuation was measured in corticomedullary phase using region of interest (ROI) without knowledge of the histologic results.

Results: The CT attenuation value of A and B was significantly related with nuclear grade in the conventional type RCC (A: Spearman correlation coefficient, r = -0.490, p = 0.0006, 95% CI: -0.6854 to -0.2302, B: Spearman correlation coefficient, r = -0.320, p = 0.0321, 95% CI: -0.5909 to -0.02924). The amount of CT attenuation of C and D was also significantly related with nuclear grade (C: Spearman correlation coefficient, r = -0.381, p = 0.0414, 95% CI: -0.6559 to -0.01684, D: Spearman correlation coefficient, r = -0.461, p = 0.0112, 95% CI: -0.7099 to -0.1176).

Conclusions: The degree of CT attenuation value of A, B, C and D in the corticomedullary phase is significantly related with nuclear grade in the conventional type RCC. The degree of CT attenuation value in the corticomedullary phase will help to predict nuclear grade in the conventional type RCC.
Introduction and Objective: In Brazil, data regarding the epidemiology of renal cell carcinoma (RCC) on a national scale are currently scarce. The aim of this study was to describe the demographic, clinical, and pathologic characteristics of RCC diagnosed and treated by members of the Brazilian Society of Urology (Sociedade Brasileira de Urologia-SBU).

Materials and Methods: Data were collected for this cross-sectional study between May 2007 and May 2008 through an online questionnaire available to around 3,700 urologists affiliated with the BSU. Participants collected data on demographic, clinical and pathological characteristics from patients with RCC in their practice. TNM 2002 staging was used, and tumor histology was classified according to the Heidelberg system. In addition to descriptive statistics, exploratory analyses were performed for comparisons between groups of patients.

Results: A total of 508 patients were enrolled by physicians from 50 different institutions. Mean patient age was 59.8 years, 58.9% were male, and 78.9% were white. Hypertension was the most prevalent risk factor for RCC (46.1%), followed by a body mass index above 30 kg/m² (17.9%), and history of smoking (14.8%). The main diagnostic methods were abdominal ultrasound and computed tomography. Three-quarters of patients had localized disease (i.e., TNM stage I and II), and in virtually all cases, nephrectomy was used for RCC management. Five histological subtypes of RCC were reported: clear-cell (73.6%), chromophobe (9.1%), papillary (6.5%), collecting-duct (0.4%), and unclassified carcinomas (10.2%). Hematuria (42.9%) and flank pain (41.3%) were the most frequent signs/symptoms at presentation, whereas only 4.5% of patients presented the classic triad of hematuria, flank pain and palpable flank mass. Metastases were detected in 9.5% of the patients. In comparison with private institutions, stage IV disease was less frequent among patients treated at public health services (P=0.033). In other exploratory analyses, no associations between TNM stage and patient or tumor-related characteristics were found in this study.

Conclusions: This study represents the largest series of RCC in Brazil so far and shows that a national registry of this disease is feasible and may provide valuable information for the health care system.

MP-14.12 Renal Laparoscopic Radical Nephrectomy and Regional Clearance of Lymph Nodes
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Introduction and Objective: To probe the safety and efficacy of retroperitoneal laparoscopic radical nephrectomy and regional clearance of lymph nodes.

Materials and Methods: A total of 40 patients (22 males and 18 females; age range, 23 – 70 years; mean age, 53 years) underwent retroperitoneal laparoscopic radical nephrectomy and regional clearance of lymph nodes from January 2002 to July 2006. Of the 40 cases, 32 were detected by B-ultrasound during physical examination and the rest 8, when visiting doctors due to painless hematuria. The masses by B-ultrasound was on average 4.0 cm (range, 1.5 – 7.0 cm) in diameter, with 16 masses at the upper pole of the kidney, 10 at the middle and 14 at the inferior pole. CT scan was performed on all the 40 cases and MRI on 31. The tumor size detected by CT and MRI was consistent with that by B-ultrasound. Preoperatively, 9 cases had the tumors of clinical stage T1N0M0, 25 of T2N0M0 and 6 of T3N0M0.

Results: The operative time was 80 – 180 min (mean, 120 min), and blood was 20 – 300 ml (mean, 50 ml). Of the 40 cases, none required conversion to open surgery. The postoperative intestinal functional recovery time was 12 – 36 h (mean, 24 h), and the postoperative hospital was 5 – 9 d (mean, 7 d). Pathology showed that 33 cases were of renal clear cell carcinoma, 4 of cystic renal cell carcinoma, 2 of hamartoma and 1 of oxyphil cell tumor. Of the 40 cases, 4 were reported positive lymph nodes. During the follow-up of 6-36 months (mean, 12 months), 40 patients survived; no local recurrence and distal metastasis was detected.

Conclusions: Retroperitoneal laparoscopic radical nephrectomy and regional clearance of lymph nodes was effective and safe for small renal tumors.

MP-14.13 Clinical Evaluation of Zoledronic Acid on Bone Metastases Lesions of Advanced Renal Cell Carcinoma
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Introduction and Objectives: Bone lesions associated with renal cell carcinoma (RCC) are typically osteolytic. That is the reason of important insight into skeletal morbidity and treatment benefits in this setting. The aim of this study is to assess the efficacy and safety of zoledronic acid (ZA) in patients with bone metastases secondary to RCC.

Materials and Methods: A retrospective subset analysis of 13 patients of metastatic RCC with bone metastases enrolled. ZA was infused (4 mg as a 15-minute infusion) with or without concomitant antineoplastic therapy every 4 weeks for at least 3 months. The primary endpoint was an objective response of bone metastatic lesions, evaluated at 36 months based on CT of the osteolytic lesions. Secondary analyses included skeletal-related events (SRE), skeletal morbidity rate and disease progression. A complete remission (CR) was defined as the disappearance of osteolytic bone lesions, and a partial response (PR) as > 50% calcification of osteolytic bone lesions and/or shrinkage of bone lesions.

Results: In this subset of 13 patients with bone metastases, two cases (15.4 %) were defined as PR, and six cases (46.2 %) showed NG. ZA was found to stabilize the progression of bone metastases. Similarly, ZA reduced the mean skeletal morbidity rate and extended the time to the first SRE. ZA appeared to be well tolerated; the most common adverse events in all treatment groups included bone pain, nausea, anemia, and emesis. Also, we experienced two cases (15.4 %) of ESRD, already introduced to hemodialysis (HD). Both cases maintained stable disease not only on the bone metastases but also for the systemic condition without any organ failure. One of these two cases developed low-concentration of serum calcium (Ca) due to ZA infusion. On this case, tetanic symptom and low-Ca concentration was well managed by calcium infusion and intermittent HD. This is the first case report of the zoledronic acid for bone metastases from advanced renal cell carcinoma with maintenance hemodialysis.

Conclusion: Zoledronic acid demonstrated significant clinical benefit in patients with bone metastases from RCC, suggesting that further investigation of zoledronic acid in this patient population is warranted.

MP-14.14 Pneumovescicum Approach for En-Bloc Laparoscopic Nephroureterectomy with Bladder Cuff Excision for Upper Tract Urothelial Cancer: The Mid-Term Oncological Result
Complete Protocol Based Treatment Carcinoma: Reasons for Failure to MP-14.15

Introduction and Objective: While there are many approaches for the en-bloc excision of distal ureter and bladder cuff during laparoscopic nephroureterectomy (LNU), the pneumovesicuim (PV) approach is one of the latest techniques for the purpose and with encouraging early result. Therefore, we would like to review the mid term oncological result of a series of patients with upper tract urothelial cancer.

Materials and Methods: From July 2004 to March 2009, all patients diagnosed to have upper tract urothelial cancer and received PV assisted LNU were reviewed. The initial pathology, the follow up information was collected for analysis.

Results: During the study period, 9 patients (8 male and 1 female) with mean age 71 (47 - 82) years old received the operation. Six of them had renal pelvic tumour, 2 had upper ureter and 1 with mid-ureter tumour. For the final pathology, there were 5, 2 and 4 patients with T1, T2 and T3 diseases respectively. Except for 1 patient with grade 3 disease, all the other patients had grade 2 disease. The median follow up is 36 months (17-53 months). There were 3 patients noticed to have bladder tumour recurrence and all were only superficial. However, one of these three patients with 3 times bladder recurrence developed distal metastasis and required chemotherapy. There was no reported mortality in this group of patients. The bladder recurrence and systemic recurrence rates were 33% and 11% respectively, and were comparable to the other reported techniques of en-bloc bladder cuff removal.

Conclusions: From the mid-term follow-up information, the pneumovesicuim approach for en-bloc laparoscopic nephroureterectomy with bladder cuff excision for upper tract urothelial cancer provide an oncological result comparable to the other techniques of en-bloc excision of bladder cuff.

MP-14.15 Cytoreductive Nephrectomy in Patients with Metastatic Renal Carcinoma: Reasons for Failure to Complete Protocol Based Treatment

Introduction and Objectives: Cytoreductive nephrectomy (CN) combined with immunotherapy is an accepted multimodality treatment for metastatic renal cell cancer (RCC) with survival advantage. However, patients’ fitness and rapid disease progression remain the major challenges for the completion of this planned treatment. This audit reports experience of a tertiary Scottish centre of cytoreductive nephrectomies over a period of 8 years.

Materials and Methods: Patients who undertook cytoreductive nephrectomy as a part of multimodality treatment for RCC at Western General Hospital Edinburgh between January 2001 and January 2009 were reviewed through case notes and hospital electronic database for demographic characteristics, site of metastatic disease, type of surgery (laparoscopic or open nephrectomy); follow-up immunotherapy (yes/no); reasons for failure to start or complete immunotherapy; response to immunotherapy and finally, any survival advantage.

Results: Forty patients with mean age of 60 (range 41 - 77) underwent cytoreductive nephrectomy for metastatic RCC between January 2001 to January 2009. Out of these 16/40 (40%) patients received post-surgery immunotherapy (interferon-alpha or IFNalpha + IL-2 + 5-FU in 14 and tyrosine-kinase-inhibitor in 2). Of those who were offered immunotherapy 9/16 (56%) patients completed immunotherapy treatment. Five patients showed rapid progression of disease despite immunotherapy or severe levels of toxicity and treatment was discontinued. Reasons for patients not receiving immunotherapy (24/40; 60%) were: poor performance status (rapid deterioration of health due to disease progression) in 12; site of metastases (bone) in 4; change in decision in 8 patients (following discussion with patients and stable disease). The mean follow-up was 23 months. Mean survival after CN with immunotherapy was 26 months and without immunotherapy 22 months (p=0.187).

Conclusion: Majority of the patients in our experience failed to complete multimodality treatment following cytoreductive nephrectomy for metastatic renal cell carcinoma; most commonly due to rapid progression of disease. Careful assessment and additional prognostic factors are required for better selection of patients for this multimodality approach in the future.

MP-14.16 Sunitinib Therapy for Patients with Advanced Renal Cell Carcinoma (ARCC): Analysis for Safety and Activity on Single Institution Experience: Favourable Overall Survival According MSKCC-Group Risk

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Introduction and Objective: Sunitinib is a tyrosine kinase VEGFR and PDGFR inhibitor recently approved by the FDA for the treatment of aRCC. We reviewed all the record of pts enrolled in clinical trials, access programs and post-approval indication.

Materials and Methods: Pts with RCC histology, confirmed metastatic disease, PS: 0-3, adequate organ function and informed consent were analysed. Pts received treatment in repeated 6-wk cycles of 50 mg/day orally for 4 wks, followed by 2 wks of treatment. (at least complete 1 treatment-cycle for analysis).

Efficacy was assessed by RECIST.

Results: Data for 84 pts were analysed, and the baseline characteristics are: PS 0: 1-83%; PS 2-3: 17%, median age 57 years (27-86); nephrectomy: 85%; clear-cell 84%, papillary-cell 9%, chromophobe-cell 5%. 2 or 3 mts sites: 87%. MSKCC 0: 47%, 1: 38%, 2: 15%. Previous treatment: 64 pts citokine refractory (30 pts chemo and citokine refractory), 10 pts citokine-intolerance, 10 pts naive. Median number of cycles was 7 (1-22+). The most important toxicity (NCIC 3.0, all pts) was g3-4 thrombocytopenia in 14 %, g3-4 neutropenia in 7 % and g3-4 anemia in 5% of pts. Non-hematological toxicity was g3 astenia 11%, g3 mucositis 8%, g3-4 hypertension 5%, g3 hand-foot 5%. Dose-adjusted was performed in 29% of pts. Of 62 assessable pts, the overall response rate was 38.0% with 1 CR, 27 PR, 2 minorPR, 32 SD and 18 PD. The median duration of response was 12.9 months (95% CI: 9.2-16.2). With a median follow-up of 22 months the median PFS was 12.7 mo (95% CI: 9.5-18.3) and the OS was 23.6 mo (96% CI: 18.2-33.7). The PFS by group-risk were: MSKCC 0: 15.8 mo; MSKCC 1: 10.2 mo; MSKCC 2: 4.8 months.

Conclusion: In our experience, Sunitinib a 50 mg/d 4 wks on/ 2 wks off, is well-tolerated with a prolonged overall survival in this population. Further analysis of prognostic factors, cost effectiveness and cytokine-naive RCC will be presented.
Moderated Poster Session 15: PCA, Basic Science Wednesday, November 4 10:45-12:15

MP-15.01

Differential Expression of Steroid 5α-Reductase Isozymes 1 & II and Their Association with Androgen Receptor, Vascular Endothelial Growth Factor & Serum Prostate Specific Antigen Level Predict Their Biological Role in Prostate Cancer

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Introduction and Objective: Androgens and angiogenic factors play important roles in the pathogenesis and vascularization of prostate cancer (PC). However, the relationship between hormonal components and angiogenic factors, that form the basis for the treatment of PC patients, is not clearly understood. We investigated the expression of hormonal components i.e. 5α-reductase types I and II (SRD5A1 & SRD5A2) and androgen receptor (AR), and the key angiogenic growth factor i.e. vascular endothelial growth factor (VEGF), in prostate tissues and examined the effect of 5α-reductase inhibitor on their expression levels.

Materials and Methods: Tissue microarray cores from 62 PC and matched benign prostatic hyperplasia samples were examined for protein expression of SRD5A1, SRD5A2, AR and VEGF by immunohistochemistry and the findings were correlated with the clinico-pathological features of the patients. The expression of the proteins in prostate cancer cell lines, LNCaP and PC3 and a benign cell line RWPE-1 following exposure to different doses of the 5α-reductase inhibitor, Finasteride, was also examined.

Results: Expression of these proteins was observed more frequently in tumors compared to benign tissues although only SRD5A1 and AR expression was statistically significant. Expression of SRD5A1 was significantly associated with higher cancer stages, higher Gleason scores and higher pre-operative serum prostate specific antigen (PSA) levels. VEGF expression was strongly associated with cytoplasmic expression of AR and SRD5A2. Introduction of Finasteride to the PC and benign cell lines inhibited the expression of SRD5A1 at higher doses of the compound and also stimulated the expression of VEGF in these cells.

Conclusions: The significant association of SRD5A1 with patient clinico-pathological parameters is suggestive of the role of this enzyme in disease progression. Dose dependent inhibition of SRD5A1 and stimulation of VEGF by Finasteride is indicative of its effect on the vascularization of the tumor as VEGF is an important factor in this process.

MP-15.02

Insights into the Pathogenesis of Prostate Cancer: Role of the Transcription Repressor, Slug

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Introduction and Objective: This study investigated the expression of the epithelial-mesenchymal transition (EMT) regulator and zinc-finger transcription factor, Slug, and determined its relation to E-cadherin in human prostate tissues to elucidate its role in the pathogenesis of CaP. We hypothesized that over expression of Slug down regulates cell adhesion molecules while up regulating cell de-differentiation and migration.

Materials and Methods: Prostate tissue was obtained from a random selection of CaP samples, while benign cell lines inhibited the expression of AR and SRD5A2. Introduction of Finasteride to the PC and benign cell lines inhibited the expression of SRD5A1 at higher doses of the compound and also stimulated the expression of VEGF in these cells.

Conclusions: The significant association of SRD5A1 with patient clinico-pathological parameters is suggestive of the role of this enzyme in disease progression. Dose dependent inhibition of SRD5A1 and stimulation of VEGF by Finasteride is indicative of its effect on the vascularization of the tumor as VEGF is an important factor in this process.

MP-15.03

EP4 is a Novel Potential Target for the Treatment of Androgen-Independent Prostate Cancer

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Introduction and Objective: Effective therapeutic modalities for androgen-independent prostate cancer (AIPC) are extremely limited and it is strongly desirable to explore new therapeutic strategies based on detailed molecular mechanisms in their progression to AIPC. For this purpose, we established a novel prostate cancer (PC) xenograft model, KUCaP/WT. Importantly, this xenograft tumors regress soon after castration, featuring its androgen dependency, but certainly restore their ability to proliferate after 2 months, resembling the clinical behavior of AIPC.

Materials and Methods: Xenograft tumor tissues were collected during various stages, namely androgen-dependent (AD), androgen-depletion-related regression, and AI regrowth stages (n=4, respectively). Total RNA was isolated from xenograft tissue and changes in gene expression were examined by DNA microarray analysis. Its expression in human PC tissues was analyzed with Immunohistochemistry (IHC). The function of a candidate gene associating with AI growth was analyzed by introduction of the gene in LNCaP cells.

Results: There were no mutation and no over-expression in AR at any stages of KUCaP/WT. In DNA microarray analysis, the expression of prostaglandin E receptor 4 (EP4) was up-regulated approximately 16 times at AI regrowth stage compared with AD growth stage. IHC indicated that EP4 expressions were higher in HRPC (n=31) compared with homo-naïve prostate cancer (n=27) (p=0.0001). EP4 over-expressing LNCaP (LNCaP-EP4) proliferated and produced PSA without androgen in its expression in human PC tissues.

Conclusions: This is the first study that provides evidence suggesting Slug/E-cadherin expression may be a more sensitive marker of human prostate cancer. Our results concur with the accumulating reports on the role of Slug in tumor invasion. Further elaboration of its expression in the genetic architecture of the prostate and the molecular repercussions therein, could possibly identify causative/susceptibility mechanisms and new therapeutic targets.
vitro and in vivo. AI growth of LNCaP-EP4 was suppressed when AR expression was knocked down using RNA interference technology, revealing that EP4 stimulated AR activation and induced AI development. A specific EP4 antagonist ONO-AE3-208 decreased intracellular cAMP and suppressed PSA production of LNCaP-EP4 in vitro and decelerated tumor growth of LNCaP-EP4 and KUCaP/WT at AI regrowth stage in vivo.

Conclusions: In this study using KUCaP/WT, EP4 over-expression was suggested to be one of mechanisms of acquiring androgen-independence in PC through AR activation. EP4 can be a novel therapeutic target against AIPC.

MP-15.04
Body Mass Index and Serum Lipid Profile Influence Serum Prostate-Specific Antigen in Chinese Men Younger than 50 Years of Age
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Introduction and Objective: To assess the potential factors that could affect the serum prostate-specific antigen (PSA) level in healthy younger men.

Materials and Methods: We evaluated the association between age, body mass index (BMI), serum lipid profile and serum PSA level in 6774 cases of Chinese men (aged 20-49 years) who received a routine health examination. Eligible men were classified into age groups spanning 5 years. BMI was categorized as underweight (BMI<18.5), normal (BMI 18.5–22.9), overweight (BMI 23.0–24.9), obese (BMI 25.0–29.9), and very obese (BMI ≥30) according to the redefined World Health Organization (WHO) criterion for the Asia Pacific Region.

Results: In Pearson correlation coefficients univariate analysis, PSA was found to have mild but significant correlation with age (r=0.070), BMI (r=0.084), triglycerides (TG, r=0.030) and high-density lipoprotein (HDL, r=0.042, all P<0.01). No difference could be found between PSA and serum cholesterol (CHO, r=0.000, P=0.998). When divided into age or BMI groups, serum PSA levels increased with age and decreased with BMI. Only 20-24 years group and 45-49 years group had significantly different PSA levels with other groups. Whereas only the PSA levels in BMI≥30 group had significant difference with other groups.

Conclusion: Our study demonstrates that age, BMI, TG and HDL influence the PSA level in men younger than 50 years of age.

MP-15.05
Phosphorylation of Bcl-2 and Activation of Caspase-3 via the c-Jun N-Terminal Kinase Pathway in UrsoIC Acid-Induced DU145 Cells Apoptosis
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Introduction and Objective: There is currently no successful therapy for androgen-independent prostate cancer. Ursolic acid (UA), a pentacyclic triterpenoid compound, has been demonstrated the anti-proliferative effect on various tumors including prostate cancer cells. We investigated the molecular mechanisms underlying the apoptosis of human hormone refractory prostate cancer cell line DU145 cells induced by UA.

Materials and Methods: The effects of UA on cell viability, apoptosis in DU145 cells were measured by using MTT and Annexin V-FITC/propidium iodide flow cytometric analysis. Activation of mitogen activated protein kinase kinase and Bcl-2, activated caspase3 and phosphorylation of Bcl-2 protein levels were analyzed by Western blot. Caspase3 Activity was assayed using a caspase3/cPP32 fluorometric assay kit.

Results: UA induced apoptosis and activation of caspase3 in DU145 cells. UA resulted the apoptosis of DU145 cells. UA resulted in apoptosis via activation of c-Jun N-terminal kinase (JNK), but not extra cellular regulated protein kinases (ERK1/2) and p38 kinase (p38). UA-induced JNK activation could provoke Bcl-2 phosphorylation in DU145 cells, and the phosphorylation of Bcl-2 may be one of the molecular mechanisms via which it induces apoptosis.

Conclusions: UA induced apoptosis via activation of JNK in androgen independent human prostate cancer cell line DU145 cells. UA might be regarded as an effective anti-proliferative molecule, thus providing a useful tool for the treatment of prostate cancer.

MP-15.06
Enhancement of FCYttk-Armed Prostate-Restricted Replicative Adenovirus Effect with Prodrugs Gancyclovir and 5-FC In Prostate Cancer
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Introduction and Objective: We have generated a prostate-restricted replicative adenovirus (PRRA) armed with a fusing suicide gene, FCYttk [FCY, a yeast cytosine deaminase, and ttk, improved thymidine kinase (TK)]. We investigated in vitro and in vivo effects of prodrugs to enhance the killing efficacy of PRRA using an androgen-independent (AI) human prostate cancer.

Materials and Methods: Dose- and time-dependent in vitro cell killing assay and prodrugs sensitivity assay were performed in PSA/PSMA-positive cell lines and AI, PSA/PSMA-negative cell lines. Anti-E1a and anti-TK Western blot assays were performed. A total of 34 subcutaneous prostate cancers were induced in athymic nude mice. Three treatment groups were randomly assigned: a control group (n=9), PRRA-FCYttk virus only group (n=15), and prodrugs plus virus group (n=12). On days 2 and 10 following tumor establishment the mice were intratumorally injected with PRRA-FCYttk. The prodrugs were injected intraperitoneally on days 5 to 15. Tumor volume was measured biweekly for 8 weeks.

Results: In vitro, significant growth inhibition and cytotoxicity were observed in CWR22rv cells by treatment with PRRA-FCYttk plus GCV and 5-FC compared to virus only group. Furthermore, a large amount of E1a and TK proteins were detected in CWR22rv cells. PRRA-FCYttk plus prodrugs were more effective in inhibiting the growth of androgen independent CWR22rv tumors compared to virus alone.

Conclusions: Combination of GCV/5-FC prodrugs enhanced the PRRA-FCYttk anti-tumor effect against androgen-independent prostate cancer. This combination approach can be used as a novel treatment strategy in prostate cancer patients.
MP-15.07
Comprehensive Analyses of Genetic Predisposition for Prostate Cancer in Japanese Men
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Introduction and Objective: Single nucleotide polymorphism (SNP) arrays provide a high-resolution platform for describing several types of genetic changes simultaneously. With the resolution of these arrays increasing exponentially, they are becoming powerful tools for describing the genetic events underlying cancer.

Materials and Methods: We have genotyped more than 50 non-synonymous Missense-SNPs of cancer-related genes in 162 prostate cancer patients and 135 matched healthy males in Japan.

Results: Twelve SNPs of 10 genes were significantly associated with the incidence of prostate cancer. These genes included 2 of DNA-repair genes, 5 of tumor suppressor genes, 1 each of metabolizing enzyme gene, chromosome-segregation gene and apoptosis regulator gene. Cancer-associated of these 9 of 12 SNPs was a novel finding and 9 high-risk and 2 protective associations were detected. The odds ratio (OR) of the associations ranged between 0.42 - 12.2, and an average statistic power by the Cochran-Armitage formula was 96% and 88% at the 0.05 and 0.01 significance level, respectively.

Conclusions: Thus, our novel way of combining the risk factors by using the statistically significant SNPs would be useful for predicting prostate cancer predisposition in Japanese. We believe that it contributes for prevention and early detection of the disease in clinical field. This strategy can be also applied for other malignancies and for other ethnic populations by choosing proper SNPs combinations.

MP-15.08
Detection of TMPRSS2–ERG Fusion Gene in Urine and Blood of Prostate Cancer Patients
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Introduction and Objective: Since prostate cancer cells can be detected in the urine and in blood of men with prostate cancer, urine or blood based diagnostic tests have been tested using prostate cancer cell specific markers. Reports in the last years have shown that PCs frequently over-express the ETS family members ETV1 and ERG and that as many as 70% of such PCs have chromosomal rearrangements that lead to the fusion of the 5' end of the anrogen regulated serine protease TMPRSS2 (21q22.2) to the 3' end of either ERG (21q22.3) or ETV1 (7p21.3), ETV4.

The ability to detect these fusion genes in urine/blood of PCa patients was also examined as an aid in diagnosis. In this study we tested the ability to detect the fusion genes in urine and blood specimens of PCa patients employing a nested RT-PCR and direct sequencing approach.

Materials and Methods: Urine and blood samples were collected from each patient following a digital rectal exam before either needle biopsy or radical prostatectomy. Total RNA was isolated using an RNA extraction kit (Macherey-Nagel) according to the manufacturer’s instructions. The RNA samples were processed for cDNA synthesis using SuperScript II reverse transcriptase (Invitrogen) and random hexamers. Nested-PCR and Real-Time PCR approaches were used for TMPRSS2-ERG and ETV1 detection, as previously described.

Results: Transcripts for TMPRSS2-ERG were found in 4 of the 15 urine samples, whereas among the 19 blood samples, 5 were found positive for the same fusion transcript. Both urine and blood tested positive in only one case. In all other fusion positive cases, chimeric transcripts detected either in urine or in blood. No association was found with disease stage and Gleason scores.

Conclusions: In previous studies the detection of fusion genes in urine sediments was found to aid non-invasive diagnosis. Here we show that TMPRSS2-ERG fusion gene can be detected in urine and blood samples of prostate cancer patients with the Nested PCR approach. The correlation of blood fusion gene detection with the disease course should further investigated.

MP-15.09
Functional Analysis of a Novel Soft Tissue Sarcoma Metastasis-Associated Molecule in Prostate Cancer
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Introduction and Objective: To identify a molecular target for therapy in spindle soft tissue sarcoma, we performed cDNA microarray using 65 clinical sarcoma samples. When disease-related death and occurrence of distant metastases were defined as endpoints, we found a novel molecule, hereafter named C7059, was significantly up-regulated in event-positive groups. This time we investigated whether C7059 is also associated with metastatic progression in prostate cancer, as well as in soft tissue sarcoma.

Materials and Methods: We checked C7059 expression in prostate cancer cell lines and created PC-3 cells in which C7059 was knocked down by RNAi. Matrigel chambers were used to see their invasive ability in vitro study. To evaluate their invasiveness in vivo, these cells were inoculated in testes of six week old nude mice (N=8) and, after an observation period of two months, mice were sacrificed to measure the volume of the tumor at the primary and the metastatic sites. We also performed an immunohistochemical study with C7059 expression in prostate biopsy specimens (N=47) to evaluate the relationship between C7059 expression and clinical state of disease retrospectively.

Results: Among prostate cancer cell lines, highly invasive PC-3 and DU145 were positive, whereas less invasive LNCaP was negative in C7059 expression. Knocking-down its expression in PC-3 cells showed reduced invasiveness in Matrigel invasion assay. Also in vitro study using nude mice, these cells showed decreased tumor volume both at the primary and the metastatic sites compared to the control. An Immunohistochemical study in prostate biopsy specimens revealed slight, but gradually increasing ratio of C7059 positive staining according to the stage progression: 2/6 (33.3%), 5/9 (55.7%) and 15/25 (55.0%) cases were C7059 positive in stage B, C and D. As a conclusion, C7059 is a novel molecule that is associated with metastatic progression in pros-
tate cancer as well as in soft tissue sarcoma.

**MP-15.10**

**Effect of Endothelin-1 on Cyclooxygenase-2 Expression in Human Hormone Refractory Prostate Cancer Cells**


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**Introduction and Objective:** To explore the effects and possible mechanism of recombinant human endothelin-1 (ET-1) on cyclooxygenase-2 (COX-2) expression in human hormone refractory prostate cancer cells.

**Materials and Methods:** PC3 cells were treated with 100 nmol/L ET-1 for indicated hours (3, 6, 9, 12, 24 h) and the indicated concentration (0.1, 1, 10, 100 nmol/L) for 24 h. Besides, 100 nmol/L ET-1 were used to treat PC3 cells alone or in combination with BQ-123 (endothelin receptor A antagonist, ETAR antagonist, 1 μmol/L), BQ788 (endothelin receptor B antagonist, ETBR antagonist, 1 μmol/L), COX-2 mRNA and protein expression in PC3 cells was detected by reverse transcription-polymerase chain reaction (RT-PCR) and Western blot analysis.

**Results:** ET-1 can significantly induce time-dependent up-regulation of COX-2 mRNA in PC3 cells. RT-PCR analysis indicated that the steady-state COX-2 mRNA levels increased in ET-1-treated cells compared with control by 2, 2.3, 2.6, 3 and 2.9-fold at 5, 6, 9, 12 and 24 h, respectively. Moreover, ET-1 treatment evoked a time-dependent increase in COX-2 protein levels. Western blots exhibited low expression of COX-2 proteins in untreated PC3 cells but showed a 1.5-fold increase in COX-2 protein by 3 h and a 1.9, 2.2, 2.5, 2.3-fold increase in COX-2 protein after 6, 9, 12 and 24 h of ET-1 stimulation, respectively. ET-1 also increased COX-2 mRNA and protein levels in a dose-dependent fashion. Treatment of PC3 cells with 0.1 and 1 nM ET-1 for 24 h revealed 1.5 and 2-fold increases in COX-2 protein expression respectively, and reaching maximum responses (2.5-fold) at 10 and 100 nM ET-1. COX-2 mRNA levels increased 1.2-fold at 0.1 nM ET-1, reaching maximum levels (2.1-fold) at 100 nM ET-1. Moreover, BQ123 was able to completely block ET-1-induced COX-2 expression, whereas BQ 788 did not.

**Conclusion:** ET-1 could induce the up-regulation of COX-2 in PC3 cells. The possibility of blocking their activity may have relevant implication in the prevention and treatment of this malignancy. Targeting COX-2 and related signaling cascade via ETAR blockade may be therapeutically advantageous in the treatment of HRPC. In this regard, combination treatment with COX-2 inhibitors and ETAR antagonist may be warranted to design newer therapeutic approaches to HRPC.

**MP-15.11**

**Mitochondrial Defects and Their Role in Prostate Tumours**

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**Introduction and Objective:** Markers of cancer development include the accumulation of genetic alterations in the mitochondrial and nuclear genomes. Damage to mitochondria affects energy metabolism, generation of reactive oxygen species, apoptosis, cell growth and other processes that contribute to the neoplastic process. The goal of the work was to study the activity of Mitochondrial respiratory chain enzymes-succinatedehydrogenase (complex II) and cytochromoxidase (complex IV) in patients with prostate tumours.

**Materials and Methods:** Prostate tumour tissue samples of patients with benign hyperplasia of prostate (BHP), BHP with PING *(S, P)*2 regions and prostate adenocarcinoma (CaP) served as material for the studies. Patients’ ages were 60–75 years and each group consisted of 15 men patients. Mitochondrial suspension was obtained by differential centrifugation method in sucrose gradient (14 000g). Enzymes’ activity was measured spectrophotometrically. Succinatedehydrogenase activity was measured on 600 nm wavelength, and cytochromoxidase activity was measured on 510 nm wavelength.

**Results:** Our investigation has revealed sharply increased activity of mitochondrial respiratory chain enzyme succinatedehydrogenase (complex II) and insignificant change in activity of the other mitochondrial enzyme cytochromoxidase (complex IV) in epithelial cells of malignant prostate tumour. The activation of the mitochondrial antioxidant system has also been revealed. This fact indicates on the reinforcement of malignant cells’ protective ability toward the oxidative stress.

**Conclusions:** The above-described alterations in mitochondrial enzymes activity reflect the change in mitochondrial metabolism. These alterations also indicate the increased resistance of malignant cells and intensification of their proliferative potential.

**MP-15.12**

**Inhibition of COX-2 Expression by Topical Diclofenac Enhanced Radiosensitivity in Human Prostate Adenocarcinoma Xenograft Model**

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**Introduction and Objectives:** COX-2 inhibitors have an antitumor potential and have been verified by many researchers. However, adverse events such as cardiovascular dysfunction cannot be ignored by long-term treatment of COX-2 inhibitors. In this study, we tested if topical diclofenac administration rendered prostate tumour cells radiosensitized without any adverse events.

**Materials and Methods:** LNCaP-COX-2 and LNCaP-Neo cells were treated with 0 to 500 μM diclofenac and a dose response curve was generated. A clonogenic assay was performed in which cells were subjected to irradiation (0 to 6 Gy) with or without diclofenac. COX-2 protein and other relevant proteins were measured by immunohistochemistry Western blot analysis after irradiation and dicrofenac treatment. In addition, we assessed the tumor volumes of xenograft LNCaP-COX-2 cells or LNCaP-Neo cells treated with topical diclofenac alone or plus radiotherapy.

**Results:** The 2 studied cell lines experienced cytotoxic effects of dicrofenac in a dose related manner. Clonogenic assays demonstrated that LNCaP-COX-2 cells were significantly more resistant to radiation than LNCaP-Neo cells. Furthermore, the addition of diclofenac sensitized LNCaP-Neo and LNCaP-COX-2 cells to the cytotoxic effects of radiation. In addition, tumor volumes of xenograft LNCaP-COX-2 cells or LNCaP-Neo cells treated with dicrofenac alone or plus radiotherapy was >3-fold higher than in mice treated with combined diclofenac and radiation (*p* = 0.0001). Moreover, COX-2 over expression was associated with the over expression of pAkt and carboxic anhydrase. In this cell line, irradiation alone was associated with increased expression of COX-2 and carboxic anhydrase. Combination therapy with irradiation and diclofenac down-regulated...
**MP-15.13**

**Influence of Adipocytes on Prostate Cancer Epithelial Cells**

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**Introduction and Objective:** Adipose tissue is present in the periphery of the prostate and also at the most frequent metastatic sites. We examined the influence that soluble factors secreted by adipocytes have on parameters associated with metastasis in LNCaP (androgen-dependent) and PC3 (androgen-independent) PCA cell lines.

**Materials and Methods:** We collected conditioned media (CM) of preadipocytes cell line 3T3-L1 (CMpreA) and preadipocytes obtained from primary culture of periprostatic adipose tissue of a patient with PCa (Gleason 6, pT3aNxM0) (CMpreA2). Preadipocytes were differentiated into adipocytes and CM was also collected (CMA1 and CMA2, respectively). We incubated LNCaP and PC3 with CMpreA and CMA and analyzed cell proliferation (MTS assay), migration (wound healing) and metalloproteinases activity (zymography).

**Results:** CMA1 stimulated proliferation of LNCaP at 24 h and 48 h (40% and 87%, P<0.001 vs control) and the effect was stronger than CMpreA1 at the same times (P<0.01). Similarly, CMpreA2 and CMA2 promoted LNCaP proliferation at 24 h (21% and 11%, P < 0.001 and P < 0.05 vs control, respectively). Incubation of PC3 with CMpreA1 and CMA1 also stimulated proliferation but only at 24 h (41% and 44%, P < 0.001 vs control). Meanwhile, CMpreA2 and CMA2 stimulated proliferation after 48 h of exposure (13% and 22%, P<0.05 and P<0.001 vs control, respectively). PC3 exposure to CMA1, CMpreA2 and CMA2 resulted in an enhanced migration (42%, 33% and 46%, P<0.001 vs control). Moreover, high levels of pro-MMP9 activity were detected in CM derived from PC3 cultured with CMpreA1, CMA1, CMpreA2 or CMA2 (32%, 51%, 50% and 97%, respectively, P<0.05 (CMpreA) and P<0.001 (CMA) vs control. Surprisingly, neither migration nor metalloproteases activity was observed in LNCaP with any of the CM assayed.

**Conclusions:** Our results provide evidence that soluble factors secreted by preadipocytes at various stages of differentiation modulate several steps of the metastatic cascade in a differential manner. The differential response of both cell lines could represent either an intrinsic characteristic of the cells or reflect the different stages of the disease, starting as hormone-dependent and continuing towards a hormone-independent, more adipose-responsive, metastatic fashion.

**MP-15.14**

**Elevated Secreted Protein, Acidic, and Rich in Cysteine (SPARC) Expression in Prostate Cancer Correlates with Tumor Metastasis after Radical Prostatectomy**

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**Introduction and Objective:** Comparative gene expression signatures of well-differentiated and poorly-differentiated prostate cancer (CaP) along with knowledge-based gene analysis, highlighted alterations of SPARC, and genes linked to it, in poorly differentiated CaP. Quantitative determination of SPARC gene expression levels in prostate tumor cells has been associated with an increased risk of PSA recurrence, with poorly differentiated carcinoma with overall Gleason score 8-9. We hypothesized that determination of SPARC protein expression levels in prostatectomy specimens by immunohistochemistry (IHC) may have the potential to predict aggressive clinical behavior in post prostatectomy patients.

**Materials and Methods:** Fifty-four prostatectomies matched by Gleason grade and pathologic stage were studied. Twenty-seven patients with metastasis (N+ or M+) after the surgery were compared to 27 without metastasis. All specimens were processed as whole mounts and stained for SPARC by immunohistochemistry. The sections were incubated with anti-SPARC mouse monoclonal antibody (Zymed Laboratories, Inc., CA, USA) at a dilution of 1:160 for 1 hour, followed by 30 minutes in biotinylated horse antimouse (Vecto, Burlingham, CA) at a dilution of 1:400, and ABC (Vector, Burlingham, CA) Vector VIP was used as chromogen. SPARC expression was scored by % of tumor cells positive on a scale of 1-4, staining intensity on a score of 1-3, and a combination of both. These scores were correlated with clinical-pathologic features.

**Results:** Higher SPARC protein expression was significantly associated with metastases compared to non-metastasis group after the prostatectomy by using Fisher exact test (p=0.0076) and ROC (AUC=0.789). SPARC protein expression was able to predict the development of metastases.

**Conclusions:** High SPARC expression in CaP is associated with an increased risk of tumor metastasis in this patient cohort. Quantitative determination of SPARC protein expression levels in radical prostatectomy specimens may have prognostic utility and may help stratify and treat patients with locally advanced CaP.

**MP-15.15**

**Hedgehog Signaling Promotes Androgen-Independent Growth of Prostate Cancer Cells through Modulation of Androgen Receptor**

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**Introduction and Objective:** The aim of this study is to identify if hedgehog (Hh) signalling is involved in the development of androgen independent prostate cancer (AIPC), and further to understand the hindering molecular mechanism by which Hh signaling promotes androgen independent growth of prostate cancer.

**Materials and Methods:** Firstly, we observed that Hh signaling transcriptional factor Gli1 mRNA expression is higher in an-
Hedgehog signaling maybe a better treatment candidate bicalutamide, in prostate cancer. Gli1 siRNA have additive antitumor effects. In addition, exogenous Gli1 increased AR transcriptional activity, as evidenced by androgen response element-luciferase construct and PSA in LNCaP and 22Rv1 supernatants. Furthermore, we showed that Gli1 promoted AR translocation to nucleus, while Gli1 siRNA prevented this translocation. Finally, we investigated whether inhibition of Hh signaling using Gli1 siRNA affects the antitumor effect of a nonsteroidal antiandrogen, bicalutamide. Cotransfection of Gli1 siRNA plasmid reduced the viability of LNCaP and 22Rv1 cells exposed to bicalutamide.

**Results:** Our data show that Hh signaling is involved in the development of androgen independent prostate cancer through modulation of AR. Transcriptional factor Gli1 increases AR expression and activity and promotes ligand independent activation of this receptor. In addition, Gli1 promoted AR translocation to nucleus, which may contribute to the transition of prostate cancer to the androgen independent state. Blockade of Hh signaling by using Gli1 siRNA have additive antitumor effects, when in combination with AR antagonist bicalutamide, in prostate cancer cells.

**Conclusions:** Our data suggest that combination therapy targeted at AR and Hedgehog signaling maybe a better treatment modality for AIPC, and deserve intensive research in the future.

**Moderated Poster Session**

**16: PCA, Localized**

**Wednesday, November 4**

**10:45-12:15**

**MP-16.01**

**Effect of the Number of Biopsy Cores on the Risk of Gleason Upgrading and Pathologic Overstaging after Radical Prostatectomy: Results with 18 Cores Needle Prostate Biopsy**

**MP-16.02**

**Surgical Treatment of Male Stress Incontinence after Radical Prostatectomy and its Impact on Quality of Life**

**MP-16.03**

**The Accuracy of Partin Tables Derived from United States to Predict Pathological Features of Chinese Prostate Cancer**
Introduction and Objective: As the accurate determining early disease spread for prostate cancer is difficult, how to predict the pathologic features before radical prostatectomy become a key question to choose the best candidate for surgery. The Partin tables, which derived from U.S., are the most widely used pathological stage predicts tools for PCs. Although the Partin tables had been validated in different clinical scenarios, whether they can be applied in China remains a question because there are many differences in biological characters of prostate cancer between the United States and China. The purpose of this study is to provide a validation using a database from a single Chinese center to assess whether Partin tables would be accurate when applied to these patients.

Materials and Methods: A cohort of 167 patients who underwent radical prostatectomy for clinically localized prostate cancer between June 2000 and December 2005 at Changhai hospital was evaluated. Predictions of organ confinement (OC), extraprostatic extension (ECE), seminal vesicle invasion (SVI) and lymph node involvement (LNI) were made with Partin tables using pretreatment PSA, biopsy Gleason score and clinical stage, and compared with actual pathologic features. The predictive accuracies of Partin tables were assessed by receiver operating characteristic (ROC) analysis.

Results: The area under the ROC (AUC) for organ-confined disease was 0.713. The AUC for established capsular penetration, seminal vesicle involvement and lymph node involvement were 0.665, 0.810 and 0.768 respectively. Only the prediction of ECP was not accurate enough for clinical practice.

Conclusions: Despite apparent differences in pretreatment variables and pathologic features distribution of our patients compared to the derivation cohort, the Partin tables were able to accurately predict the pathologic features in our study population, especially for the predictions of OC, SVI and LNI. Our inter-racial external data validation and comparative study confirmed good predictive accuracy of Partin tables in Chinese prostate cancer.

Introduction and Objective: To investigate the usefulness of neoadjuvant androgen suppression (NAS) in high intensity focused ultrasound (HIFU) therapy for the treatment of clinically localized prostate cancer.

Materials and Methods: A total of 88 patients underwent HIFU for the treatment of clinically localized prostate cancer. Among them, 51 (57.9%) had received NAS and 37 (42.1%) had not. We compared the overall HIFU failure free survival rates between two groups. And to know whether the prostate volume affects the effectiveness of NAS, we divided all the patients into two groups according to the prostate volume (Group A: <50cc or more vs. Group B: less than 30cc), and compared the PSA failure rates, respectively. HIFU failure was defined as increase of 2ng/ml or more above the PSA nadir and/or a positive biopsy and/or salvage therapy induction.

Results: The mean follow up period was 35.6 (7.2-58.7) months. There were no significant differences in the patient’s mean age, mean serum PSA level and mean prostate volume between NAS group and non NAS group. Overall 3 year HIFU failure free survival rate was 62.1 %. The 3/year HIFU failure free survival rate was significantly higher in NAS group (>77.1% vs 54.0%)(p=0.0588). When we compared the treatment failure rates according to the prostate volume, there was no significant difference between NAS group and non NAS group in the small prostate volume patients (Group B). But in group A, NAS showed higher HIFU failure free survival rate than non NAS 71.4% vs 55.6%(p=0.059).

Conclusion: In this unrandomized comparison between NAS and non NAS before HIFU for clinically localized prostate cancer, NAS improved HIFU failure free survival rate significantly, especially in large prostate volume patients.

Introduction and Objective: Despite apparent differences in pretreatment variables and pathologic features distribution of our patients compared to the derivation cohort, the Partin tables were able to accurately predict the pathologic features in our study population, especially for the predictions of OC, SVI and LNI. Our inter-racial external data validation and comparative study confirmed good predictive accuracy of Partin tables in Chinese prostate cancer.

Conclusions: Urinary incontinence and sexual dysfunction remain significant concerns among prostate cancer treatment patients. The techniques that are used to treat these complications have satisfactory results with no significant side effects.
MP-16.06
Is Body Mass Index (BMI) Related to Pre-Therapy Testosterone and the Prognosis of Prostate Adenocarcinoma? 
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Introduction and Objective: Body mass index (BMI), calculated as weight in kg divided by the square of height in m, is used as an indicator of obesity. Testosterone is one of the most important hormones, which is also related to obesity. This study analyzed the relationship of BMI with the prognostic factors of prostate adenocarcinoma, the relationship of BMI and pre-therapy testosterone is also assessed.

Materials and Methods: A total of 256 cases of prostate adenocarcinoma were retrospectively studied. Age, height, weight, pre-therapy prostate specific antigen, pre-therapy testosterone, size of prostate, percentage of positive biopsies (PPBs) at diagnosis of prostate adenocarcinoma were analyzed, results of radical prostatectomy such as positive edge. Gleason score of surgical specimen and lymph node metastasis were also analyzed. Classified all the cases into different categories according to the pathological features and clinical classification respectively, then compared the difference of BMI among the categories and analyzed the relationship of BMI with the prognostic factors of prostate adenocarcinoma.

Results: 1. The BMI of this study was higher than normal (24.10±2.81), and the pre-therapy testosterone differed significantly from each other. When adjusted by age, there was no significant difference in BMI among different clinical stages (ANOVA, P>0.05), but significant among 4 pathological categories (ANOVA, P<0.01), especially the category of Gleason 8-10 was higher than the other categories (P<0.01). Between BMI≥24 group and BMI<24 group, there was significant difference in PPBs (Wilcoxon test, P<0.05) and rate of positive edge (Chi-square, P<0.05). 3. BMI was negatively related to pre-therapy testosterone with significant difference, the correlation coefficient was -0.252 (P<0.01).

MP-16.07
Comparative Analysis between Robotic Assisted Laparoscopic Prostatectomy and Open Radical Prostatectomy: Defining the Initial Learning Curve

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Introduction and Objective: Robotic Assisted Laparoscopic Prostatectomy (RALP) is becoming an increasingly popular minimally invasive treatment for patients with localised prostate cancer. We present an early experience of the clinicopathological outcomes in patients undergoing RALP and open radical prostatectomy (ORP). We also aim to identify issues an experienced urologist may face when transferring skills from ORP to RALP.

Materials and Methods: Between 2006 and 2008 in a single surgeon series, 712 consecutive patients with clinically localised prostate cancer were treated with radical prostatectomy, RALP in 222 and ORP in 490. Prospectively collected clinical and pathological data were analysed.

Results: Preoperative characteristics were similar between the 2 groups, mean age 60.6±6 years, PSA 8.1 ng/ml, prostate weight 52.7±7 grams and tumour volume 1.9±0.3 cm3 in the entire cohort. There were no conversions to open surgery, no bowel injuries, no blood transfusions and no deaths in the RALP cohort. 98% of RALP patients had <500mLs of blood loss compared with 63% (p<0.001) of open radical prostatectomy (ORP) patients. In the ORP group 2% of patients required transfusion. Median hospital stay was 3 days vs. 6 days, and mean operating time was 200 vs. 144 minutes for RALP and ORP patients respectively. The RALP learning curve to a 4 hour proficiency was 20 patients. Overall positive surgical margin status for pathological stage T2 were comparable in the 2 groups: 9% vs. 8%, RALP vs. ORP, p=0.9 but significantly different in pT3 patients: 40% vs. 26%, RALP vs. ORP, p=0.02. There was a significant decrease in overall positive surgical margin status from 40% in the first 20 consecutive patients treated with RALP to 14.6% for patients treated thereafter (p=0.005). This indicates a short learning curve in achieving adequate tumour resection in robotic prostatectomy.

Conclusions: Robotic assisted laparoscopic prostatectomy provided comparable pathological outcomes compared with open radical prostatectomy after the initial short learning curve. Favourable short-term operative outcomes for RALP include less blood loss, a lower transfusion requirement, shorter hospital stay and less major complications.

MP-16.08
Outcome of Radical Retropubic Prostatectomy in Patients with Total Prostate-Specific Antigen Value Less Than 2.5 ng/ml
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Introduction and Objective: The detection of prostate cancer (PCa) in patients with total PSA value less than 2.5 ng/ml is a relatively rare event in a routine practice. The aim of our study was to assess the outcome of radical retropubic prostatectomy (RP) in men with PSA <2.5 ng/ml and to evaluate clinical and postoperative pathological features of these patients.

Material and Methods: We retrospectively analyzed the results of RP in 58 men with a preoperative PSA level <2.5 ng/ml operated between 2001 and 2007. Indications for prostate biopsy in these patients were abnormal digital rectal examination (DRE) (n=26; 44.8%), abnormal transrectal ultrasound (n=3; 5.2%), hematospermia (n=4; 6.9%), increased PSA velocity (n=5; 8.6%) etc. In 8.6% of patients (n=5) the PCa was diagnosed after transurethral resection (TUR) of the prostate. The mean total PSA value was 1.6 (0.4-2.4) ng/ml.

Results: The rate of detection of Gleason score (GS) of 7 or more in biopsy and RP specimen, as well as mean RP tumour volume were significantly higher in patients with abnormal DRE compared to those with normal DRE (see table). There was a
Characteristics of Pt0 Prostate Cancer

MP-16.09
Preoperative Clinical and Pathological Characteristics of Pt0 Prostate Cancer in Radical Prostatectomy

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Introduction and Objective: The aim of our study was to analyze the preoperative clinical and pathological characteristics associated with pt0 prostate cancers. Materials and Methods: We retrospectively reviewed 702 patients who underwent radical prostatectomy (RP) for prostate cancer between January 2004 and July 2008 at our institution. No evidence of residual tumor in the pathological specimen of the prostate was defined as pt0. Patients with pt0 disease were compared with a control group of patients operated during the same period.

Results: Overall, 9 (1.3%) patients were diagnosed as pt0 on pathologic examination. Between the pt0 group and the control group, there were significant differences in the biopsy Gleason score (p=0.015). However, the two groups displayed no difference in the mean preoperative prostate-specific antigen levels. In this study, cutoff values predictive of pt0 tumor were defined as biopsy Gleason score ≤6, number of positive biopsy cores ≤2, tumor length on biopsy ≤2mm and prostate volume >30cm³. While all these characteristics were present in 8 of the 9 (88.9%) pt0 patients, they were observed in only 55 of the 638 (8.6%) control patients. The combination of these features offered a sensitivity of 87.5% and a specificity of 93.1%. During the mean follow-up period of 23.6 months, none of the pt0 patients experienced biochemical recurrence.

Conclusion: In our study, the rate of pt0 prostate tumor on RP was 1.3%. The combination of clinicopathological features—biopsy Gleason score, number of positive biopsy cores, tumor length on biopsy and prostate volume—could help predict pt0 stage on RP.

MP-16.10
Cancer Control Following Radical Perineal Prostatectomy

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Introduction and Objectives: Cancer control is the single most important outcome measure after radical prostatectomy. Few large contemporary series of radical perineal prostatectomy (RPP) have published oncological outcomes, since the landmark study of Iselin et al in 1999. We evaluated cancer control in a large cohort of men after RPP over a 13 year period.

Materials and Methods: Between January 1996 and December 2008, we prospectively acquired data on 1400 consecutive RPP’s (stage CT1 to 2 N0M0) performed by two surgeons, at two centres. An intention to treat analysis was performed with outcome evaluated by determining time to biochemical failure (PSA ≥0.2 ng/ml). Statistical analysis was performed with StatsDirect™ software.

Results: There were 1320 patients with a minimum follow-up of 12 months included. Mean follow up was 61 ± 40 months (Range 12-157). At the time of the analysis 1270 patients were alive and recurrence free. Overall, 9 (1.3%) patients were diagnosed as pt0 on pathologic examination. Between the pt0 group and the control group, there were significant differences in the biopsy Gleason score (p=0.004), number of positive cores on biopsy (p=0.018), tumor length of positive core (p<0.001) and prostate volume (p=0.015). However, the two groups displayed no difference in the mean preoperative prostate-specific antigen levels. In this study, cutoff values predictive of pt0 tumor were defined as biopsy Gleason score ≤6, number of positive biopsy cores ≤2, tumor length on biopsy ≤2mm and prostate volume >30cm³. While all these characteristics were present in 8 of the 9 (88.9%) pt0 patients, they were observed in only 55 of the 638 (8.6%) control patients. The combination of these features offered a sensitivity of 87.5% and a specificity of 93.1%. During the mean follow-up period of 23.6 months, none of the pt0 patients experienced biochemical recurrence.

Conclusion: In our study, the rate of pt0 prostate tumor on RP was 1.3%. The combination of clinicopathological features—biopsy Gleason score, number of positive biopsy cores, tumor length on biopsy and prostate volume—could help predict pt0 stage on RP.
tive hernia occurred in ERP compared to 5 cases in TRP. In both groups, there were no inadvertent organ injury during trocar placement and conversion to open surgery, whereas 1 case of lymphocele in ERP was recovered with conservative care.

Conclusions: ERP showed similar perioperative outcomes and lower pain and no hernia occurring compared to TRP. Considering the potential risk of bowel injury in TRP and reduced peritoneal irritation in ERP, ERP may be alternative in robotic radical prostatectomy.

MP-16.12 Survival Free of Disease and Chronic Toxicity for Localized Prostate Cancer Treated with Low Dose I 125 Permanent Prostate Brachytherapy Rodriguez Antolin A1, Duarte Ojeda J1, Romero Otero J1, Medina-Polo J1, Castellano D1, Ots A2, Cabello E2, Lanzos E3, Cabeza M3
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Introduction and Objective: I 125 permanent prostate brachytherapy is accepted to treat confined tumor to the gland. For patients treated at our institution and at least two years of follow up, the oncological results and chronic toxicity are analyzed

Materials and Methods: One hundred and fifty patients treated with I 125 permanent prostate brachytherapy implant (June 2003-September 2006) with a minimum follow up of 2 years are evaluated. Cases of clinical-biological failure and/or deaths are excluded. The dose administered was 145 Gys. Mean age was 67 years (50-70). The stadium distribution was: 88% T2a, 7% T2b, 5% T2c. The Gleason grade was: 97% ≤6, 3% =7. PSA values were: 88% ≤10 ngr/dl, 11% 10-20 ngr/dl and 1% ≥20 ngr/dl. The mean period of neodyuvant treatment was 6 months (6-9). Biochemical failure was defined following Phoenix criteria. Chronic toxicity was measured with CTCAEv3.0. scale. Mean follow up was 49 months (5-62). Kaplan Meier method was employed to evaluate survival.

Results: The 5 year probability of being free of biochemical failure was 92% (IC 95%, 88-96). Three patients suffered biological failure. The prostate biopsy showed tumor remaining in one of them. Twenty-six months after a second brachytherapy to treat the dumb area, the patient presents biochemical control. The 5-year global survival was 94%. Four patients dead, 3 due to a secondary tumor (2 lung and 1 renal tumor) and 1 secondary heart disease. Neither urethral stenosis nor urinary incontinence was evidenced. Urinary toxicity was grade 1 in 8%; no patients showed grade ≥2. Three percent of the patients presented rectal bleeding and/or endoscopic study. Grade 1 in 1 patient and grade 2 in 2 patients: one solved with topical treatment and the other being studied. Pretreatment, the 78% of patients had normal-partial erectile function. The 5-year sexual function preservation was 60%.

Conclusions: I 125 permanent prostate brachytherapy offers excellent clinic-biological control for localized prostate cancer when evaluated in a short-medium period of time. Chronic toxicity is acceptable. The urinary, rectal and sexual spheres are well maintained. It should be considered as a treatment choice for low and selected medium risk disease.

MP-16.13 Vascular-Targeted Photodynamic Therapy Using WST11 in Patients with Localized Prostate Cancer Arumainayagam N1, Moore C1, Sahu M1, Govindaraju S1, Pendle D2, Ahmed H1, Mosse A1, Allen C2, Bown S1, Emberton M1
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Introduction and Objectives: The aim of this study is to determine the optimal treatment conditions to achieve prostate cancer tumour ablation and to assess the effects of WST11 mediated vascular –targeted photodynamic (VTP) treatment in patients with localized prostate cancer. We report the results of 21 patients treated so far as part of a multi-centre, phase II, dose-escalation study.

Materials and Methods: The procedure is performed under general anaesthesia. WST11 mediated VTP consists of the combination of a single IV administration of WST11 at doses of 2, 4 or 6 mg/kg, using 753 nm laser light at a fixed power (150 mW/cm), and energy at 200 J/cm fibre, delivered through transperineal interstitial optical fibres. The fibres are introduced into transparent needles that are positioned in the prostate under ultrasound image guidance (using a brachytherapy-like template). The tumour location is established prior to the procedure using transrectal biopsy and magnetic resonance imaging. The number of fibres and the total light energy will be adapted to each patient, taking into account the tumour localisation and the volume of the prostate.

Results: There have been 21 patients treated so far. The procedure has been well tolerated with good necrosis volumes seen with 4mg/kg and 200/cm energy, using multiple laser treatment fibres. At a WST-11 drug dose of 4mg/kg the volume of necrosis produced equates to approximately 1cm³ per 1cm of laser fibre. We have been able to produce focal, hemi-gland and whole gland ablation in patients with minimal toxicity observed thus far. One patient has required re-insertion of a urinary catheter after the procedure. The others have been discharged the day after the procedure catheter-free.

Conclusions: VTP using WST-11 has great potential to be used in the treatment of localized prostate cancer.

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Introduction and Objectives: In our centre, Endoscopic Extrapertoneal Radical Prostatectomy (EERPE) has been offered to patients with localized carcinoma of prostate over the past three years. The data presented here highlights the early outcomes and analysis of the learning curve during establishment of the services.

Material and Methods: Two hundred and fifty patients underwent EERPE between January 2006 and March 2009 by a single surgeon following a mentored training. The data was collected prospectively and included demographic details, perioperative outcomes and follow-up for functional and oncology outcomes. The learning curve was analyzed using dichotomous (complications) and continuous variables (operative time, blood loss, hospital stay etc.) for the five consecutive chronological groups (50 in each).

Results: The mean operation time was 161 minutes (range, 100-310). The average intra-operative blood loss was 229 mls (range, 20-1000). There was no conversion to open surgery and no patient required intra operative blood transfusion. Only 1/250 (0.4%) patient’s required post-operative blood transfusion. The mean
hospital stay was 2.8 days (range 2-20) and the median catheterisation time prior to cystogram was 9 days. The logistic regression analysis of the procedure number found significant evidence of a trend (0.98 odds ratio 95% CI (0.97, 0.99) p-value 0.002) with probability of a complication being decreasing from 26% for the first to 1% for the 250th procedure. CUSUM plot for complication rate showed the classic \( r \) shape expected for a downward trend. Crude group analysis of the other outcomes, however, did not show any statistical significance. The continence rate and biochemical recurrence free rate at a minimum follow up of one year for the first 100 patients was 89% and 94% respectively. None of the patients with biochemical relapse achieved a nadir PSA of less than 0.01 following EERPE.

**Conclusions:** The results from this series suggest that the benefits of minimally invasive surgery for localized prostate cancer (EERPE) can be replicated following mentored fellowship training of a surgeon. The analysis of learning curve using CUSUM methodology permits quality control during the early phase of service establishment for laparoscopic radical prostatectomy.

**MP-16.15**

**Analysis of predictors of serious toxicity induced by 3D conformal radiotherapy in prostate cancer patients**

**Introduction and Objective:** After external radiotherapy of prostate cancer, patients can suffer from acute and long-term urinary and rectal toxicity. The aim of our study was to verify the applicable predictors of the serious chronic toxicity in relation to the irradiation schedule.

**Materials and Methods:** There were 220 patients with stages T1-T3, N0-N1 prostate cancer treated with three-dimensional conformal radiotherapy (3D-CRT). The technique and the dose of the radiation was designed according to the dose volume histogram analysis and the rectum and bladder volume. Post treatment toxicities were all graded according to the RTOG and WHO combined questionnaire. Non serious toxicity was defined as Grade 0–1, and the serious toxicity as Grade 2–4. Selected patients were examined for the phenotype and the functional activity of NK cells using flow cytometry and standard \( ^{51} \text{Cr} \)-release assay.

**Results:** The serious chronic RCT was preceded in 52.2% of patients suffering from non serious acute urinary toxicity and in 47.8% patients with serious acute toxicity. There was a clear relationship between the grade of the acute toxicity and the volume of the rectum of patients obtaining the dose of 40, 50 and 60 Gy. The relevant predictor of the chronic toxicity was the volume of the rectum obtaining the dose of 40 Gy only. Increased NK cell-mediated cytotoxicity \((215 \pm 52.6 \%)\) correlated both with the acute and the chronic toxicity after 3D-CRT. On the other hand, non-serious toxicity was accompanied by down-modulation \((58 \pm 6.7 \%)\) of NK cells number and effector function.

**Conclusions:** The rectal and bladder volume and acute toxicity may serve as suitable predictors of chronic toxicity of 3D-CRT, the changes in NK cell activity are promising as well.

**MP-16.16**

**Determining Follow Up after Radical Prostatectomy: A Predictive Model to Improve Efficiency and Improve Patient Care**

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Duke University Medical Center, Chapel Hill, USA

**Introduction and Objective:** To predict patients who do not need follow up two years after radical prostatectomy in a tertiary medical center.

**Materials and Methods:** A cohort of 3146 patients who underwent radical prostatectomy from 1988 to 2003 was retrieved from the Duke Prostate Center database. Patients were stratified into three groups by year of surgery (1988-1994, 1995-2002 and 2003-2008) and differences in risk factors including: age, race (African American (AA), non-AA), diagnostic PSA, BMI (<25, 25-30, >30), surgery type (retropubic, perineal, and robotic), pathological tumor stage (pT2, pT3/4), pathological Gleason sum (<7, 7, >7), extracapsular extension, seminal vesicle invasion, prostate weight, tumor volume, and tumor percent underwent univariate and multivariate analysis. The year of surgery groups then underwent Kaplan Meier analysis in regards to PSA recurrence (PSAR) and metastasis.

**Results:** Over the past two decades, younger patients (66.2, 63.4, 60.1) that are increasingly overweight (BMI >30: 20.4%, 28.0%, 27.8%) are undergoing radical prostatectomy. The surgery performed has changed over time (1988-1994: retropubic 7.5%, perineal 92.5%; 1995-2002: retropubic 33.1%, perineal 66.9%; 2003-2008: retropubic 48.9%, perineal 12.3%, robotic 38.8%). Diagnostic PSA (9.4, 6.4, 5.4), advanced pathological tumor stage (pT3/4: 61.4%, 42.1%, 22.2%), and tumor volume (6.0, 4.7, 3.6) have decreased over the past two decades. The year of surgery showed a significant difference in PSAR and metastasis \((p<0.05)\).

**Conclusion:** Over the past two decades, prostate cancer continues to be diagnosed and treated in earlier stages in younger men in the PSAR free group had better distant metastasis and disease specific death rates than those in the PSAR 2-5 group.

**Conclusions:** Men in the PSAR free group had lower risk disease and better survival than those in the PSAR 2-5 group. The DICE score can identify patients who do not need follow up two years post radical prostatectomy in a tertiary medical center.

**MP-16.17**

**Radical Prostatectomy over the Past Two Decades: Duke’s Experience in 4196 Cases**

Moul J, Sun L, Caire A, Ferrandino M, Albala D
Duke University Medical Center, Chapel Hill, USA

**Introduction and Objective:** To analyze the epidemiology of prostate cancer over the past two decades at the Duke Prostate Center.

**Materials and Methods:** A cohort of 4196 patients who underwent radical prostatectomy from 1988 to 2008 was retrieved from the Duke Prostate Center database. Patients were stratified into three groups by year of surgery (1988-1994, 1995-2002 and 2003-2008) and differences in risk factors including: age, race (African American (AA), non-AA), diagnostic PSA, BMI (<25, 25-30, >30), surgery type (retropubic, perineal, and robotic), pathological tumor stage (pT2, pT3/4), pathological Gleason sum (<7, 7, >7), extracapsular extension, seminal vesicle invasion, prostate weight, tumor volume, and tumor percent underwent univariate analysis. The year of surgery groups then underwent Kaplan Meier analysis in regards to PSA recurrence (PSAR) and metastasis.

**Results:** Over the past two decades, younger patients (66.2, 63.4, 60.1) that are increasingly overweight (BMI >30: 20.4%, 28.0%, 27.8%) are undergoing radical prostatectomy. The surgery performed has changed over time (1988-1994: retropubic 7.5%, perineal 92.5%; 1995-2002: retropubic 33.1%, perineal 66.9%; 2003-2008: retropubic 48.9%, perineal 12.3%, robotic 38.8%). Diagnostic PSA (9.4, 6.4, 5.4), advanced pathological tumor stage (pT3/4: 61.4%, 42.1%, 22.2%), and tumor volume (6.0, 4.7, 3.6) have decreased over the past two decades. The year of surgery showed a significant difference in PSAR and metastasis \((p<0.05)\).
and more obese patients. PSA and metastatic rates have improved over the years.

MP-16.18
Real-Time Personalized Medicine for Prostate Cancer: Duke's Experience
Sun L, Caire A, Polascik T, Lack B, Ferrandino M, Albala D, Moul J
Duke University Medical Center, Chapel Hill, USA

Introduction and Objectives: To develop a system that automatically integrates data, prediction models, and prognostic results for real-time clinical decision making.

Materials and Methods: A complete field-driven database was developed that included demographic, laboratory, biopsy, previous treatment, pathologic, follow-up, quality of life, and survival information. Two web applications were created, one for patients to enter data before his clinical visit (https://DukeEurologyPortal.duhb.duke.edu) and one for medical staff to generate clinical documents (http://DukeEurologyClinic.duhb.duke.edu). To accommodate those who preferred a paper form, scanable clinical forms and an automatic data capture system were established.

Results: The database contained more than 75,000 urological patients associated with more than 2 million records. Among them, 169,129 men were diagnosed with prostate cancer. PSA results and patient’s clinical visit schedules were uploaded to the database on a daily basis. Models predicting biopsy Gleason score undergrading, disease risk, positive surgical margin, and PSA recurrence were published and implemented into the database. Patients entered their date of registration, review of systems and chief complaint through either the Internet or paper form. Clinical staff completed the forms of physical exam and assessment. A summary integrating all the data was then generated for the clinician prior to patient evaluation.

Conclusions: Real-time personalized medicine was needed, implementable, and beneficial to improving the quality of patient care. This system will decrease data discrepancy, redundancy, and errors in patient's medical records.

MP-16.19
High Dose Rate Brachytherapy Compared to Open Radical Prostatectomy for the Treatment of High-Risk Prostate Cancer: 10 Year Biochemical Relapse-Free Survival
Savdie R1, Yuen C2, Stricker P3, Macek P4, Jagavkar R5, Pe Benito R1, Haynes A1
1Garvan Institute of Medical Research, Sydney, Australia; 2St. Vincent’s Hospital Department of Urology, Sydney, Australia; 3St. Vincent’s Hospital Department of Radiation Oncology, Sydney, Australia; 4General University Hospital, Prague, Czech Republic

Introduction and Objectives: Management of patients with high-risk disease remains controversial due to a lack of critical analysis with long term follow up of radiotherapy (dose escalation and androgen deprivation) compared to surgery. We present 10 year biochemical relapse-free survival (BFS) in three groups treated with open radical prostatectomy (RP) and High Dose Rate Brachytherapy (HDRB).

Materials and Methods: A retrospective analysis of prospectively collected data on 392 patients who underwent RP during 1990-1994 and 1998-2000 and patients who underwent HDRB (HDRB + EBRT +androgen deprivation) between 1998 and 2000 at a single centre was performed. Inclusion criteria were: Clinical Stage T2b, or Gleason Score ≤ 8, or PSA > 20. Groups were appraised using the Kattan Nomogram for surgery to calculate progression free probability (PFP). Results: For RP 1990-1994 group, 151 patients were followed for a median of 132 months. Median PSA was 16 and median age 64.7 years. 28 Patients received adjuvant therapy. Median 5 year PFP after RP was 65%. Ten year BFS was 36.7% with a mean time to recurrence of 27.5 months. For RP 1998-2000 group, 153 patients were followed for a median of 95 months. Median PSA was 8 and median age 62.2 years. 27 patients received adjuvant treatment. Median 5 year PFP after RP was 66%. Ten year BFS was 63.4% with a mean time to recurrence of 31.0 months. For HDRB 1998-2000 group, 88 patients were followed for a median of 94.5 months. Median PSA was 13 and median age 67.6 years. Eighty-one patients received adjuvant hormonal therapy. Median 5 year PFP after RP was 38%. Ten year BFS was 54.5% with a mean time to recurrence of 38.9 months. HDRB had significantly improved 10 year outcomes compared with the RP 1990-1994 (54.5% vs. 36.7%, log rank test p< 0.001).

Conclusions: The HDRB group had better long-term outcome compared to the pre-HDRB era surgical group despite worse tumour characteristics and predicted outcome. A case matched comparison or randomized control study would be helpful to confirm these findings.

MP-16.20
The Safety and Usefulness of Concomitant Prostate Biopsy with Transurethral Prostatectomy in Patients with Gray Zone PSA
Lee J1, Lee S2, Cho J3, Kim H4, Park S2, Kang J1, Yoo T1
1Eulji University College of Medicine, Seoul, South Korea; 2Hanyang University College of Medicine, Seoul, South Korea

Introduction and Objectives: There are several causes of gray zone PSA in the elderly males. When we consult patients with gray zone PSA and other highly suspicious benign causes of PSA elevation such as big adenoma or urinary retention, the justification of concomitant prostate biopsy with transurethral prostatectomy (TURP) has not yet been decided. Here, we focused on the safety and usefulness of biopsy just before TURP in these patients.

Materials and Methods: A total of 78 patients with gray zone PSA (4-10ng/ml) were enrolled prospectively from January 2004 to September 2008. All patients got full explanation about the possible risks and agreed to undergo these procedures. Thirty-nine patients were admitted with acute urinary retention and 58 patients showed bigger than 60gm of prostate. Age, PSA level and prostate size were 69.8±8.2 years, 7.8±1.7ng/ml, 75.6±27.4gm, respectively. The results of final pathology were analysed. And the safety profiles such as development of fever, hemopermia and epididymitis were checked also. High fever was defined as over 38.5°C. All patients were given intravenous antibiotics pre and postoperatively.

Results: Seven patients (9%) suffered from high fever not lasting 24 hours on the 1st day. No patients complained persistent hemopermia, epididymitis after discharge from hospital. Eighteen patients (23%) were diagnosed as prostate cancer. While nine patients were diagnosed only in the resected transition zone tissues and five patients in biopsy and resected tissues, the remaining four patient’s cancer were diagnosed in transrectal biopsy specimen only.

Conclusions: Prostate biopsy and transurethral prostatectomy can be safely done at the same time in the patients with gray zone PSA and other highly suspicious benign causes of PSA elevation. And we think it can also help to diagnose substan-
Introduction and Objective: To evaluate the effect of periurethral injection of insulin-like growth factor-I on the expression of organic IGF-I and IGF-II mRNA during regeneration period following urethral sphincter muscle injury in female rats.

Materials and Methods: Model of urethral sphincter muscle injury was made in female virgin SD rats (n = 50) by intravaginal balloon inflation. Then group was divided randomly into 2 subgroups: 25 rats underwent periurethral injection of 1.0μg human IGF-I to the middle urethral muscle and the other 25 rats as control group underwent saline injection. Five rats in each group were killed at 2, 4, 6, 8, 14 day respectively and the whole urethra specimens were processed for reverse transcription (RT) and polymerase chain reaction (PCR). A control group (n = 5) underwent the same procedure without intravaginal balloon inflation and injection.

Results: After IGF-I injection, the expression of IGF-I mRNA increased significantly at all time points, with a peak on day 8. Compared with saline control group, the difference was significant on day 4, 14 (P < 0.01), and day 8 (P < 0.05). No expression on day 2 was noted in saline control group. The expression of IGF-II mRNA in experiment group increased on day 4, 6, 8, 14. Compared with saline control group, the significant difference noted on day 4 (P < 0.01). No expression on day 14 was noted in saline control group.

Conclusion: The expression of organic IGF-I and IGF-II mRNA was improved by periurethral injection of IGF-I during regeneration period following urethral sphincter muscle injury in female rat. Our findings suggest that IGF-I facilitates the regeneration of the urethral muscles and may play a role in treatment of stress urinary incontinence induced by urethral sphincter muscle dysfunction.

Introduction and Objective: Sacral neuromodulation has become an increasingly popular means of treating refractory urinary urgency and frequency, urgency incontinence, and non-obstructive urinary retention. Several modifications have been made to the technique in the decade since it received FDA approval. These include implantation posteriorly, initial implant of a more permanent “tined” lead, and upgrades to the stimulator itself. These improvements have led to improved rates of success overall, and better conversion rates from temporary implant to permanent implant.

Materials and Methods: We have implanted 243 Interstim® devices at the University of Missouri from October 2000 to December 2008. There were 170 women and 73 men with age ranges from 18 to 92 and a median of 49. All were implanted by a single supervising surgeon along with fourteen different resident surgeons.

Results: To achieve this rate, 276 were given the test stimulation with the tined lead, for an implantation rate of 88%. Subsequent removal occurred in 11 patients for infection (4.52%), in 14 patients, for reduced efficacy (5.76%) and in 2 patients for pain (0.8%). The stimulator was replaced in 10 patients for technical problems (2.4%) and was replaced with a second Interstim or Interstim II in 19 patients for other concerns. Reprogramming occurred in all but 8 patients (97%). Satisfaction and efficacy rates are 88% and 84% respectively.

Conclusions: Interstim implantation continues to be a viable therapy for urgency/frequency, urgency incontinence, and non-obstructive urinary retention. Infection rates are higher that desirable and are likely due to the two-staged, tined lead approach. Modifications to this method should lead to a lower infection rate. The high rate of permanent implant as well as the high satisfaction rate might lend one to propose a single stage implant as a cost saving maneuver. If this might also reduce the infection rate, an added benefit would be realized.

Introduction and Objective: The purpose of the study was to evaluate the prevalence of voiding symptoms in the epileptic patients compared with their normal peers.

Materials and Methods: This stratified cross-sectional study was conducted on all epileptic patients referred to the neurology clinic of Sina Hospital with urologic complaints during the years 2003 to 2005. An age and sex matched comparable group was selected from the healthy people with no history of seizure or urogenital diseases. The voiding complaints were gathered for both groups and analyzed by using chi-square and independent sample t-test.

Results: Forty-five of the 115 (39.1%) studied epileptic patients were reported to suffer from at least one of the voiding symptoms. The symptoms were more common in the patient’s group compared with the normal group. Incontinence, frequency, urgency, retention and hesitancy were reported in 28 (24.3 %), 14 (12.2%), 19 (16.5%), 10 (8.7%) and 8 (7%) of the patients, respectively. In the non-seizure group, incontinence, frequency, urgency, retention and hesitancy were documented in 3 (2.6%), 11 (9.6%), 11 (9.6%), 5 (2.6%) and 5 (4.3%) of the subjects, respectively. The voiding complaints were more frequent in the patient’s with partial seizure. Except for urgency, there was no statistically significant difference between the two groups.

Conclusions: With respect to the relatively higher prevalence of the voiding dysfunction in the epileptic patients, questioning for urinary problems during history taking, urinary care and treatment seems to be a requisite in this group of patients.
MP-17.04
Catheterizable Laparoscopic Appendicovesicostomy: First Ever Report Using the Unaltered Appendix
Shadpour P, Etemadian M, Magsudi R, Sajedi B
Iran University of Medical Science, Hasheminejad Kidney Center, Tehran, Iran

Introduction and Objective: Traditionally open procedures are now being performed either by laparoscopy or robotically. In this paper we present the first-ever report of a purely laparoscopic pedicled unaltered appendix being transposed to the neurogenic bladder to form a continent catheterizable stoma.

Materials and Methods: The patient was a 28 year old female, a known case of multiple sclerosis (MS) and severe areflexic neurogenic bladder with questionable intact sensation and moderate trabeculation. She was unable to void spontaneously and had difficulty in performing clean intermittent catheterization (CIC) because of short stature and obesity and repeated crises of MS causing progressive decrease in dexterity. She developed incontinence and azotemia when she couldn’t do CIC, and febrile urinary tract infections when on Foley drainage. Laparoscopy through two 10 and one 5 mm trochar in the mid abdomen proceeded by classic appendectomy preserving one of two vascular pedicles followed by mobilization of the ileocolic region to bring the proximal end adjacent to a juxtacutaneous detrusor myotomy for appendico-vesicostomy by continuous 3-0 polydico-vesicostomy by continous 3-0 mono-crist over a 10F nelathon and brought through the subumbilical skin for Y-V cutaneous anastomosis.

Results: She is completely continent (no pads) by the urethra and stoma with detrusor pressure below 10cm H2O and per-pads) by the urethra and stoma with detachable anastomosis.

Conclusion: an anatomy are stable. She is completely continent (no pads) by the urethra and stoma with detachable anastomosis. She was unable to void spontaneously and had difficulty in performing clean intermittent catheterization (CIC) because of short stature and obesity and repeated crises of MS causing progressive decrease in dexterity. She developed incontinence and azotemia when she couldn’t do CIC, and febrile urinary tract infections when on Foley drainage. Laparoscopy through two 10 and one 5 mm trochar in the mid abdomen proceeded by classic appendectomy preserving one of two vascular pedicles followed by mobilization of the ileocolic region to bring the proximal end adjacent to a juxtacutaneous detrusor myotomy for appendico-vesicostomy by continuous 3-0 polydico-vesicostomy by continous 3-0 mono-crist over a 10F nelathon and brought through the subumbilical skin for Y-V cutaneous anastomosis.

Conclusion: an anatomy are stable.

MP-17.05
Comparing the Success Rate of Mature Human Bladder Smooth Muscle Cells Culture on Two Different Kinds of Matrix: Human Amniotic Membrane and Collagen
Sharifiaghdas F1, Mahmoudnejad N1, Moghadasali R2, Baharvand H2, Hosseini Moghadam SM1
1Department of Urology, Shabid Labbafinejad Hospital, Shabeed Beheshti Medical University, Tehran, Iran; 2Department of Stem Cells, Royan Institute, Tehran, Iran

Introduction and Objective: Our goal in the present study is evaluating and comparing the natural behaviors, growth pattern, morphology and specific features of human bladder smooth muscle cells (HBSMCs) on two different matrix including human amniotic membrane (HAM) and collagen.

Materials and Methods: Our candidates for obtaining HBSMCs were six children with primary vesicoureteral reflux undergoing open antireflux surgery. HBSMCs were obtained from anterior wall of the bladder. After processing, they were cultured on a sheet of cells. On Collagen matrix, cell migration from explant culture took place as rapidly as third to forth day of culture. All the cells were placed at the same direction and in some parts formed multilayer. After about 35-40 days, confluency rate was 75% and we had a well designed sheet of cells. On Collagen matrix, cell migration from explant culture took place as rapidly as third to forth day of culture. On the 30th-40th day, the same direction and in some parts formed multilayer. After about 35-40 days, confluency rate was 75% and we had a well designed sheet of cells. On Collagen matrix, cell migration from explant culture took place as rapidly as third to forth day of culture. On the 30th-40th day, the same direction and in some parts formed multilayer.

Results: On HAM, very few HBSMCs slowly migrated from explant tissue on 7th day of culture. All the cells were placed at the same direction and in some parts formed multilayer. After about 35-40 days, confluency rate was 75% and we had a well designed sheet of cells. On Collagen matrix, cell migration from explant culture took place as rapidly as third to forth day of culture. On the 30th-40th day, the same direction and in some parts formed multilayer.

Conclusion: Undoubtedly, further clinical studies should be performed to prove our claim.

MP-17.06
A Prospective, Randomized Comparative Study of ‘U’ and ‘H’ approach of TVT-SECUR Procedure for the Treatment of Female Stress Urinary Incontinence: One-Year Outcomes
Lee KS1, Kim JJ1, Lee YS1, Cho MS2, Choi HY1
1Department of Urology, 2Samsung Medical Center, Sungkyunkwan University School of Medicine; 3Asan Medical Center, University of Ulsan College of Medicine, Seoul, South Korea

Introduction and Objective: To compare outcomes of ‘U’ and ‘H’ approach of TVT-SECUR for the treatment of female stress urinary incontinence (SUI).

Materials and Methods: From March 2007 to June 2008, women with SUI underwent TVT-SECUR by single surgeon. Patients were randomly assigned to either ‘U’ or ‘H’ approach. After 1 year, postoperative changes in Incontinence Quality of Life (I-QOL), Bristol Female Lower Urinary Tract Symptoms Scored Form (BFLUTS-SF), Incontinence Visual Analogue Scale (I-VAS), voiding diary, and Sandvik severity index were evaluated. Postoperative patients’ satisfaction was assessed. Cure was regarded when patient reported as no symptoms in 6 months follow up. Renal function and anatomy were stable.

Conclusion: A well-designed growth pattern of HBSMCs, on HAM with abundant cell to cell adhesions may encourage us to use it as a competent tissue for reconstruction of relatively damaged or diseased bladders. A well-designed growth pattern of HBSMCs, on HAM with abundant cell to cell adhesions may encourage us to use it as a competent tissue for reconstruction of relatively damaged or diseased bladders.

MP-17.06, Table. Comparison of postoperative change between ‘U’ and ‘H’ approach

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MP-17.06
A Prospective, Randomized Comparative Study of ‘U’ and ‘H’ approach of TVT-SECUR Procedure for the Treatment of Female Stress Urinary Incontinence: One-Year Outcomes
Lee KS1, Kim JJ1, Lee YS1, Cho MS2, Choi HY1
1Department of Urology, 2Samsung Medical Center, Sungkyunkwan University School of Medicine; 3Asan Medical Center, University of Ulsan College of Medicine, Seoul, South Korea

Introduction and Objective: To compare outcomes of ‘U’ and ‘H’ approach of TVT-SECUR for the treatment of female stress urinary incontinence (SUI).

Materials and Methods: From March 2007 to June 2008, women with SUI underwent TVT-SECUR by single surgeon. Patients were randomly assigned to either ‘U’ or ‘H’ approach. After 1 year, postoperative changes in Incontinence Quality of Life (I-QOL), Bristol Female Lower Urinary Tract Symptoms Scored Form (BFLUTS-SF), Incontinence Visual Analogue Scale (I-VAS), voiding diary, and Sandvik severity index were evaluated. Postoperative patients’ satisfaction was assessed. Cure was regarded when patient reported as no symptoms in 6 months follow up. Renal function and anatomy were stable.

Conclusion: A well-designed growth pattern of HBSMCs, on HAM with abundant cell to cell adhesions may encourage us to use it as a competent tissue for reconstruction of relatively damaged or diseased bladders. A well-designed growth pattern of HBSMCs, on HAM with abundant cell to cell adhesions may encourage us to use it as a competent tissue for reconstruction of relatively damaged or diseased bladders.

MP-17.06, Table. Comparison of postoperative change between ‘U’ and ‘H’ approach

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<th>‘H’</th>
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Introduction and Objective: The applicability of slings for the treatment of male stress urinary incontinence (SUI) is one of the fastest developments in urology. The reason for the introduction of the functional retrourethral sling was to treat the SUI by relocating the posterior urethra into a more proximal position without disturbing the sphincter mechanism. Thus, in patients with residual sphincter function continence can be achieved again. The aim of this study was to evaluate the complications after implantation of this new functional retrourethral sling.

Materials and Methods: Between April 2005 and March 2009, 238 patients (117.7%), time between initial radiation therapy and sling implantation was > 6 months.

Results: The overall complication rate in the current study was 17.6% (42/238). There were 4/26 (15.4%) patients with complications who underwent prior radiotherapy (without statistical significance). The median catheter time was 2 d (1-10 d). Thirty-nine of the patients with postoperative complications suffered from urinary retention requiring temporary either suprapubic drainage or IK (in case of neobladder) for a maximum of 8 weeks. Three of these patients had adjuvant radiotherapy after radical prostatectomy. One patient had a local wound infection and was treated with oral antibiotics. An explantation of the sling was in this case not necessary. One patient had an erosion of the urethra after 4 weeks. This patient had a history of adjuvant radiotherapy. One patient had an infectious myositis of the os pubis after 6 weeks. In both cases, the sling was removed. The overall complication rate was 0.84%.

Conclusions: The data of 238 patients with postsurgical SUI treated with a functional retrourethral sling suspension demonstrates that the procedure is safe and reproducible with an overall low complication rate. The most seen postoperative complication was an acute urinary retention, but these patients needed besides a catheter no further treatment.

MP-17.08
Audit of the Use of Intravesical Injection of Botulinum Toxin-A for Urgency Urinary Incontinence Over a 5 Year Period in a British NHS Foundation Trust

Lucky M, Irwin P
Leighton Hospital, Cheshire, UK

Introduction and Objective: We looked at 49 patients (45 female, 6 male) who underwent intravesical injection of botulinum toxin-A for urgency urinary incontinence from January 2004 to February 2009, in whom previous therapies had failed.

Materials and Methods: All patients with overactive bladder (wet) symptoms who had failed maximum anticholinergic treatment and who had urodynamically confirmed detrusor overactivity (DO) were offered intravesical botulinum toxin-A injection treatment (250 units). The Overactive Bladder Symptom Score (OABSS) and Quality of Life scoring systems were used to measure outcomes at 4 weeks post treatment.

Results: There were 40 females and 6 males with urodynamically proven DO who received a total of 73 treatments. Mean symptom scores improved by 4.2 after injection. Of the 46 patients, 56.5% (26) reported improvement of their symptoms, 30.4% (14) were cured, 6.5% (3) reported minimal improvement in symptoms, 2.3% (1) saw no difference, and 4.3% (2) reported worsening of symptoms. The duration of the response varied from 1 week to 18 months.

Conclusions: Intravesical botulinum toxin-A injection treatment botulinum toxin is an extremely effective and safe alternative to invasive surgery for patients in whom maximal conservative measures and anticholinergic treatment have failed. It can successfully be used to reduce or even cure symptoms in patients with refractory idiopathic detrusor overactivity.

MP-17.09
Hepatocyte Growth Factor and Insulin-Like Growth Factor-1 Induce Migration and Invasion of Satellite Cells in Human Urethral Rhabdosphincter through PI3K/Akt Signaling Pathway

Hirata Y, Hanada M, Sumino Y, Sato F, Minata H
Department of Urology, Oita University Faculty of Medicine, Oita, Japan

Introduction and Objective: Satellite cells have been considered a population of muscle-derived stem cells responsible for the development and renewal of striated muscle fibers. Migration and invasion of satellite cells between plasma membrane of the muscle fiber and basement membrane toward the renewal site are the first step of muscle degeneration. We previously reported that the proliferation of human urethral rhabdosphincter (RS) satellite cells was primarily enhanced by both the endogenous and exogenous actions of hepatocyte growth factor (HGF) and insulin-like growth factor-1 (IGF-1) (Neurourol Urodyn in press). In the present study, we also examined the effects of HGF and IGF-1 on the migration and invasion of these cells.

Materials and Methods: Human RS was obtained from the patients undergoing radical prostatectomy for prostate cancer. Primary cells were selectively cultured by magnetic affinity cell sorting using an anti-neural cell adhesion molecule antibody. Selectively cultured cells, transfected with simian virus-40 T antigen (SV40Tag) to extend their lifespan. Cells were treated with varying concentrations of human recombinant HGF and IGF-1 and PI3K inhibitor LY294002. Migration and invasion were measured by transwell assays. The
activation of PI3K/Akt signaling pathway was analyzed using western blotting.

**Results:** HGF and IGF-1 were found to enhance cell migration and invasion at a dose dependent fashion through activation of PI3K/Akt pathway.

**Conclusions:** Migration and invasion of satellite cells in human urethral rhabdosphincter were enhanced through HGF and IGF-1 via PI3K/Akt pathway. These findings may be useful in the development of a novel technique for the regeneration of RS to treat urethra incontinence.

**MP-17.10**

Persistence with Antimuscarinics in Patients with Overactive Bladder Syndrome: Analysis of a UK Database

**Introduction and Objective:** Antimuscarinic drugs are the cornerstone of pharmacological treatment for overactive bladder (OAB). However, patients might become disillusioned with treatment if their expectations about efficacy and/or adverse events are not met, leading to discontinuation of treatment. Our objective was to report an analysis of persistence data from a UK database of 4833 patients with OAB, who received different antimuscarinics in general practice over a 12 month period.

**Materials and Methods:** UK prescription data from a longitudinal patient database were analyzed to assess persistence with darifenacin, oxybutynin (extended [ER] and immediate release [IR]), propiverine, solifenacin, tolterodine (ER/IR) and trospium in the 12 months from December 2007. Data for each patient were anonymous, with no risk of sampling bias. Patients had not received an antimuscarinic in the previous >6 months prior to starting treatment with each of the antimuscarinics. Each patient was tracked until they ceased to be continuously treated, with a break in therapy defined as an interval >1.5 times the expected number of days of therapy of the previous prescription.

**Results:** Of patients who started on solifenacin, 58% were still on treatment after 6 months, compared with 52% on darifenacin and <47% on tolterodine ER/IR, propiverine, oxybutynin ER/IR, or trospium. After 12 months, 35% of patients who started on solifenacin were still receiving this treatment, compared with 17-28% on the other antimuscarinics. Table 1 shows the mean number days that patients remained on therapy for each product, the longest persistence being given by solifenacin (187 days vs. 119-157 days for the other treatments).

**Conclusion:** Solifenacin was consistently associated with the highest levels of persistence compared with the other antimuscarinics evaluated.

**MP-17.11**

Topically Applied NSAID is Locally Delivered to the Lower Urinary Tract where it Suppresses Excessive Production of Prostaglandin E2 (PGE2) and Ameliorates PGE2-Related Urinary Symptoms

**Introduction and Objective:** The aim of this study is to evaluate whether NSAID topically applied to the perineum can suppress excessive production of PGE2 and whether it ameliorates the symptoms related to excessive production of PGE2 without the adverse side-effects associated with circulating NSAIDs.

**Materials and Methods:** A total of 50 male patients who were to undergo transurethral prostatectomy (TUR-P n=25) or bladder tumor resection (TUR-Bt n=25) were enrolled in this study. Patients were randomly divided into a treated group and an untreated group. After balloon removal, 500 mg Diflunisal gel was applied to the perineum twice daily for 1 week. Before the operation, and on the 3rd and 7th day after balloon removal, the amount of PGE2 in urine voided in 24 hours was measured, and the degree of micturition pain was evaluated using a 5 point visual pain scale. Eleven volunteers who did not undergo lower urinary tract surgery (LUTS) topically applied NSAID to evaluate the effect on production of PGE2 derived from the upper urinary tract.

**Results:** Full results were obtained for 46 eligible patients. There were no differences in urinary PGE2 before treatment among the treated, untreated, and non-LUTS volunteer groups. In the untreated group, urinary PGE2 significantly increased on both the 3rd and 7th day after balloon removal (p<0.0001). On the other hand, in the treated and volunteer groups, urinary PGE2 did not change significantly after surgery or application of NSAID. In the untreated group, the degree of micturition pain was worse on both the 3rd and 7th day after balloon removal (p<0.0001). In the treated group, the degree of micturition pain did not change significantly after surgery. No adverse side-effects associated with the topical application of NSAID were observed, and no patients in the treated group needed other analgesic drugs during treatment.

**Conclusions:** NSAID topically applied at the perineum may be locally delivered to the lower urinary tract where it inhibits excessive PGE2 production. This may be a useful treatment to manage LUTS without the adverse side effects associated with circulating NSAIDs.

**MP-17.12**

A Study of Factors Predicting Female Bladder Outlet Obstruction Defined Using Pressure-flow Study

**Introduction and Objective:** There is no standardized definition or established standards for urodynamic diagnosis of bladder outlet obstruction (BOO) for women. Particularly, on factors predicting female BOO in case the cause is not anatomical obstruction, there have been few studies. Thus, the present study purposed to evaluate the predictive factors for BOO defined using pressure-flow study in female patients without anatomical obstruction.

**Materials and Methods:** The cohort of this study were 320 female patients for whom urodynamic study was conducted for lower urinary tract symptom (LUTS) and who did not have the cystocele, rectocele, urethral stricture, urethral diverticulum or history of anti-incontinence surgery, which may cause anatomical BOO. BOO was defined when Qmax is 12ml/sec or below, and PdetQmax is 25cmH2O or over in pressure-flow study. Those whose abdominal pressure went up to 10cmH2O in pressure-flow study were excluded, and only those who voided and whose detrusor pressure showed sustained increase...
Moderated Poster Session 18: PCA, Advanced
Thursday, November 5 10:45-12:15

**MP-18.01**

Intermittent Therapy with Lycopene Delays Disease Progression in Hormone Sensitive Prostate Cancer

Mohanthy N, Arora R, Kumar A
V.M. Medical College and Safdarjang Hospital, New Delhi, India

**Introduction and Objective:** Initially, all hormone sensitive prostate cancers become hormone resistant within 18 to 22 months of their diagnosis. Our study aimed to delay hormone sensitive disease progression in prostate cancer by intermittent lycopene therapy.

**Material and Methods:** Seventy-eight elderly males with hormone sensitive locally advanced prostate cancer received injected LHRH analogue (22.5 mg) every third month for one year until their PSA reached a safe nadir value (< 4 ng/ml). After one year of therapy, patients were randomized alternately into two groups A and B. Group A (40 patients) received lycopene (Lycored) 4 mg twice a day until there was an indication of biochemical or radiological disease progression, while group B (38 patients) were followed up periodically. The average follow-up period in either group was 36 months, during which serum PSA, isotope bone scan and CECT abdomen were conducted.

**Results:** In group A, 4 patients (10%) progressed to hormone resistant prostate cancer while 47.3% (18 patients) progressed to hormone resistant prostate cancer during follow-up. In group A, all 4 patients showed biochemical progression while in group B, 12 patients showed radiological and biochemical progression, and 6 patients showed only biochemical progression. Quality of life was greatly improved in group A more so than group B. No side effects were observed in group A.

**Conclusions:** Lycopene, a tertiary antioxidant, delays disease progression by its anticarcinogenic property. Hormone sensitive prostate malignancy disease progression can be significantly delayed by oral lycopene therapy, which is not only safe but also improves quality of life and prolongs survival period.

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**MP-18.02**

Table 1: Logistic regression analyses

<table>
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<th>Parameter</th>
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<th>Multivariate</th>
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Introduction and Objective: Cancer volume (CaV) was shown to be an independent predictor of clinical progression free survival (CPFS) in clinical T3a prostate cancer in an earlier analysis by our group. Prostate cancer index (cancer volume / prostate volume) (PCindex) may also play a role in prognosis. The objective of this study is to determine whether PCindex is a stronger predictive factor than cancer volume for adverse final histopathology (positive section margins, positive lymph nodes, extracapsular extension and seminal vesicle invasion) and biochemical progression free survival (BPFS) and CPFS in cT3a prostate cancer.

Materials and Methods: Between 1987 and 2004, 200 patients with unilateral cT3a prostate cancer, assessed by digital rectal examination, underwent radical prostatectomy and bilateral lymphadenectomy at our institution. The CaV, prostate volume (PV) and PCindex of each patient were recorded. Outcome variables were margin status, nodal status, extracapsular extension and seminal vesicle invasion. Logistic regression and Cox proportional hazard analysis were used to analyze differences between the predictive values of CaV and PCindex, corrected for PV.

Results: The mean age was 63.3 years (range 41-79), mean follow-up was 70.6 months (range 7-77). The mean CaV was 6.6 ml (range 0.2-31.0), mean PV was 42.0 ml (range 16.0-134.5), mean PCindex was 16.3% (range 0.4-85.5). Sixty-seven patients had positive margin, 32 had seminal vesicle invasion and 17 had lymph node invasion. In both uni- and multivariate logistic regression analysis (Table 1) and Cox analysis (Table 2), CaV proved to be an independent, highly significant and stronger predictor than PCindex and PV in all outcome variables.

Conclusion: CaV is an independent prognostic factor, and is stronger than PCindex in the prediction of adverse histopathology and BPFS and CPFS in cT3a prostate cancer. Therefore, absolute cancer volume should be calculated and provided in histopathology reporting.

MP-18.03 Comparative Study of Intermittent Versus Continuous Androgen Blockade in the Treatment of Advanced Prostate Cancer
Zhu S, Chen J, Li Y, Tang H, Huang X
Department of Urology, Union Hospital, Fujian Medical University, Fuzhou, China

Introduction and Objective: To compare the efficacy and side effects of total intermittent androgen deprivation (IAD) versus total continuous androgen deprivation (CAD) for treating patients with advanced prostate cancer. Of them, 21 patients (group IAD) received IAD therapy and 23 patients (group CAD) underwent CAD, i.e., surgical castration plus anti-androgen. The response to therapy and occurrence to disease progression was monitored by observing patients’ prostate-specific antigen (PSA) and testosterone levels. Patients’ quality of life also was measured by European Organization for Research and Treatment of Cancer Quality of Life Questionnaire PR25 (EORTC QLQ-PR25). The time to prostate cancer progression, quality of life, and side effect rate were compared between the 2 groups.

Results: 1. The mean follow-up period was 24 months (range, 10-39 months) in group IAD and 22 months (range, 9-36 months) in group CAD. The median time to disease progression was 36 months in group IAD and 30 months in group CAD, respectively. There was no significant difference between group IAD and CAD in the progression-free survival rate (P=0.132). 2. The 21 patients treated with IAD completed 19 cycles. The mean cycle length was 15.9 months (time-on treatment and time-off treatment were 9.1 months and 7.6 months, respectively). The percentage of time-off treatment for each individual patient decreased and the disease progression rate increased with successive cycles. 3. During the off-treatment period, scores of the patient in group IAD reflected improvement in treatment related symptoms over baseline levels during on-treatment period (P<0.007). But there was a significant difference between the two periods in the urinary symptoms scores, bone pain scores, and bowel symptoms scores (P<0.05). After 5 months of androgen deprivation therapy, scores of the patient in group CAD reflected development in urinary symptoms over baseline levels in 5 months ago (P=0.007). However, there were no significant changes in scores of bowel symptoms, treatment related symptoms, and bone pain (P>0.05). Side-effects were found in more patients of group CAD than in group IAD, including hot flash (60.9% (14/23) vs. 28.6% (6/21), P<0.05); gynecomastia (52.2% (12/23) vs. 19.0% (4/21), P<0.05). During off treatment period, patient treated with IAD experience im-

MP-18.02 Table 2: The uni- and multivariate Cox proportional hazard analyses

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<th>Survival</th>
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<th>HR</th>
<th>95%CI</th>
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<th>parameter</th>
<th>HR</th>
<th>95%CI</th>
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<td>1.024-1.089</td>
<td>&lt;0.001</td>
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<td>1.026-1.092</td>
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<td>&lt;0.001</td>
<td>PV</td>
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<td>CPFS</td>
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</table>
provement in hot flash and gynecomastia (P<0.05). But patients treated with CAD experience remaining in these symptoms after 5 months of androgen deprivation therapy (P<0.05).

Conclusions: IAD therapy is safe and feasible. It can minimize the negative effects of androgen deprivation therapy while maximize the clinical benefits and patients’ quality of life. The efficacy of IAD therapy prolonging the time to androgen independence is equal to CAD therapy at least. Accordingly, maybe IAD therapy is a better choice of androgen deprivation treatment for advanced prostate cancer.

MP-18.04 Impact of Seminal Vesicle Invasion on Oncological Outcome after Radical Prostatectomy
Hinev A1, Krasnaliev I2, Marinova I3, Kalev B4
1Department of Surgery, Division of Urology, Varna Medical University, Varna, Bulgaria; 2Department of Pathology, Varna Medical University Varna, Bulgaria; 3Department of Radiology, Varna Medical University, Varna, Bulgaria; 4Department of Chemotherapy, Varna Medical University, Varna, Bulgaria

Introduction and Objective: Seminal vesicle invasion (SVI) is generally considered as an adverse pathological feature in prostate cancer (PC). Our objectives were to estimate the impact of radical prostatectomy (RP) on disease-specific survival of patients with PC and SVI and to identify a subset of patients who might have a favorable oncological outcome.

Materials and Methods: A total of 135 men with localized and locally advanced PC, who underwent RP by a single expert surgeon, were examined. Patients were stratified based on the presence or absence of SVI at the time of RP. The two groups were compared with regard to the functional and oncological outcome after surgery. Clinicopathological variables and outcome data were compared across the groups using chi-square and log-rank tests. Multivariate Cox proportional hazards analysis was used to determine the significant predictors of outcome among men with SVI.

Results: The median follow-up in the entire series was 57 months (range 1 to 154). Of the 135 patients, 38 (28%) had histological evidence of SVI. Men with SVI had significantly higher initial PSA values, clinical stage and Gleason grade, and were more likely to have concomitant extracapsular extension, lymph node involvement and positive surgical margins. The Kaplan-Meier estimates of the disease-free, the overall and the cancer-specific survival at the 10th year after surgery were 71.3%, 70.6% and 87.8% for SV negative disease, and 35.9%, 54.7% and 59.7% for SV positive disease, respectively. Using multivariate analysis, the adjuvant radiotherapy applied (p = 0.004), the surgical margin status (p = 0.021) and the pathological Gleason score (p = 0.025), were found to be independent predictors of PSA failure among men with SVI. Patients with favorable combination of these prognostic variables had significantly longer disease-free (p < 0.001) and cancer-specific (p = 0.012) survival, close to those of men without SVI.

Conclusions: SVI does not uniformly indicate poor prognosis after radical prostatectomy. Patients, who might benefit the most from complete surgical excision, are those with negative surgical margins and pathological Gleason score ≤ 7, additionally treated by adjuvant radiotherapy.

MP-18.05 Factors Affecting Femoral Bone Mineral Density in Japanese Prostate Cancer Under Maximum Androgen Deprivation Therapy
Oh-Oka H
Kobe Medical Center, Kobe, Japan

Introduction and Objective: Androgen deprivation therapy (ADT) in patients with prostate cancer (PCa) has many well recognized adverse events including flushing, fatigue, osteoporosis, etc. I retrospectively analyzed factors affecting bone mineral density (BMD).

Materials and Methods: Fifty ADT treated PCa patients (age; 59.2-92.1 [median; 80.9] years, ADT duration; 2.0-100.0 [median; 41.0] months), whose PSA level was favorably controlled (<0.01-5.5ng/ml), were enrolled in this study. BMD of femoral neck, as measured by dual-energy X-ray absorptometry [DXA], is considered the preferred site of assessment. The diagnosis of osteoporosis [OP] was made under condition of T-score less than 70% and apparent osteoporotic changes on plain X-rays. Factors affecting BMD were divided as follows and analyzed; Bone related factors (presence of compression fracture [comp. fx.], serum adjusted Ca, P, ALP, bone-specific alkaline phosphatase [BAP], C-telopeptide [CTX], urine N-telopeptide [NTx]), PCa related factors (Gleason’s total score, baseline PSA level), blood making factors (Hb, Fe), build/nourishment factors (serum albumin, age [all]), body mass index [BMI], height [Ht], weight [Wt]), renal factors (serum uric acid [UA], blood urea nitrogen [BUN], creatinine [Cr]), liver/lipid factors (asparate aminotransferase [AST], alanine aminotransferase [ALT]), total cholesterol [T-chol], triglyceride [TG], high density lipoprotein [HDL], low density lipoprotein [LDL]).

Results: Significant factors affecting BMD using the linear regression analysis of two variables was AlP (p = 0.010, R² = 0.111), BAP (p = 0.013, R² = 0.105), Fe (p = 0.005, R² = 0.155), Ht (p = 0.016, R² = 0.096, UA (p = 0.050, R² = 0.059), BUN (p = 0.043, R² = 0.063), and Cr (p = 0.010, R² = 0.111). PCa related factors and Liver/lipid factors had no significant relationship between BMD. A multiple regression analysis using above mentioned factors revealed significance between BMD (p = 0.050, R² = 0.343), significant coefficients were Fe (p = 0.014) and TG (p = 0.014).

Conclusions: In this Japanese PCa population, ADT duration did not decrease BMD significantly. These results indicated better understanding of multifactorial pathological conditions prescribing BMD, including internal environment of a body and various extrinsic factors.

MP-18.06 Factors Affecting Femoral Bone Mineral Density in Japanese Populations and Comparison with Prostate Cancer Patients Under Maximum Androgen Deprivation Therapy
Oh-Oka H
Kobe Medical Center, Kobe, Japan

Introduction and Objective: We analyzed factors affecting femoral bone mineral density (BMD) in Japanese populations and compared BMD with patients with prostate cancer (PCa) under androgen deprivation therapy (ADT) retrospectively.

Materials and Methods: Fifty no ADT treated (no PCa) male patients (age; 61.8-96.6 [median; 78.7] years, ADT duration; 2.0-100.0 [median; 41.0] months), were enrolled in this study. Their BMD was compared with 50 PCa patients under ADT. BMD of femoral neck, as measured by dual-energy X-ray absorptometry [DXA], is considered the preferred site of assessment. The diagnosis of osteoporosis was made under condition of T-score less than 70% and apparent osteoporotic changes on plain X-rays. Factors affecting BMD were divided as follows and analyzed; Bone related factors (presence of compression fracture [comp. fx.], serum adjusted Ca, P, ALP, bone-specific alkaline phosphatase [BAP], C-telopeptide [CTX], urine N-telopeptide [NTx]), PCa related factors (Gleason’s total score, baseline PSA level), bone making factors (Hb, Fe), build/nourishment factors (serum albumin, age [all]), body mass index [BMI], height [Ht], weight [Wt]), renal factors (serum uric acid [UA], blood urea nitrogen [BUN], creatinine [Cr]), liver/lipid factors (asparate aminotransferase [AST], alanine aminotransferase [ALT]), total cholesterol [T-chol], triglyceride [TG], high density lipoprotein [HDL], low density lipoprotein [LDL]).
leuprolide acetate. The delivery system consists of a biodegradable polymer of lactic glycolide and triethylcitrate, a plasticizer which controls the diffusion rate of the drug through the capsule membrane.

**Materials and Methods:** One hundred and sixty patients with prostate cancer who could benefit from androgen deprivation therapy enrolled to receive a single intramuscular injection of Lutrate 3.75 mg Depot each, every 28 days for a total of six doses. Plasma testosterone was determined at specific times throughout the study. Testosterone suppression (< 0.5 ng/ml) at day 28 and continuance of castration until day 168, with no missing data at the monthly assessments was tested. An exact two-sided binomial test (5% significance level) with two-sided 95% confidence interval (CI) estimated with exact method was performed to test the null hypothesis of 86% successful patients versus the alternative hypothesis of 94%.

**Results:** The proportion of successful patients over the total number of evaluable patients was 96.8% (152/157) and the exact binomial test was satisfactory (p = 0.00094, 90% CI: 92.7–99.0%). Of 157 evaluable patients 122 achieved testosterone suppression by day 21 (78.7%). At day 28, 96.8% of the patients achieved castrate levels and 73.1% achieved testosterone levels ≤ 0.2 ng/ml. At conclusion of the trial, all patients (100%) maintained castration and 92.8% had testosterone levels ≤ 0.2 mg/l. The most common treatment-related adverse events were hot flashes (45%), associated with testosterone suppression. Fatigue, hyponatremia, weight loss, headache occurred in ≤ 6.3% of patients. The most frequently reported local adverse reaction was pain at the injection site, which was experienced by 8.1% of patients.

**Conclusions:** The results of this study demonstrate that Lutrate 3.75 mg Depot is as effective as presently marketed one-month leuprolide acetate formulations in establishing and maintaining testosterone concentration below castration levels in prostate cancer patients.

**MP-18.08**

**Oncological Outcome for Locally Advanced (Pt3a) Prostate Cancer in Men who Underwent Radical Prostatectomy with at Least 5 Years Follow Up**

**Mevecha A, Kumar V, Rowe E, Callery J, Gillatt D**

**Bristol Urology Institute, Bristol, UK**

**Introduction and Objective:** This study looked at the oncological outcome of the patients who underwent radical prostatec-

tomy (RP) with histologically confirmed T3a prostate cancer and have had a minimum follow up of 5 years.

**Methods and Materials:** We retrospectively reviewed the data for pathological T3a prostate cancer patients who had RP from January 2000 to October 2003. The data were obtained from Network Cancer Registry and details were collected from case notes and pathology reporting system.

**Results:** Total of 51 patients had pathological T3a disease. The age range was from 47 to 71 years. The biochemical recurrence was defined as PSA > 0.2. Only 2 (4%) patients failed to achieve PSA nadir of < 0.1 post surgery. 20 (39%) patients had biochemical recurrence. These patients had salvage treatment at PSA relapse rather than adjuvant. There were 12 patients who received radiotherapy before their PSA reached 2, 1 patient who refused radiotherapy, and 5 patients who had a detectable PSA, reached a stable level without progression, and they were managed expectantly. None of these 6 patients’ PSA reached above 1.5. Of the remaining 2 patients, one was found to have metastases in the post operative period and one was picked up with metastases 5 years post RP after he was lost to follow up for 2 years. Both of them were treated with hormones. Overall 3 out of 37 patients had progressive disease (1 lymph node, 2 bone metastases) requiring hormonal treatment. This includes 1 patient who failed following salvage radiotherapy. Hence in our study 94% had progression free survival and 100% overall survival. Five year biochemical recurrence free survival was 96%. This protocol allowed 6 (30%) patients not to have any adjuvant treatment and its side effects without compromising on biochemical relapse free survival.

**Conclusions:** Surgery alone can be sufficient for pT3a prostate cancer in selected cases. Salvage radiotherapy instead of adjuvant radiotherapy offers additional advantage to the patients without compromising oncological outcome. Hence, we may offer surgery as a first line of multi-modality therapy to all suspected T3a patients over radiotherapy +/- hormones.

**MP-18.09**

**A Clinical Study of Carboplatin plus Docetaxel in Patients with Metastatic Hormone-Refractory Prostate Cancer**


**Belland General Hospital, Dept. of Urology, Sakai, Japan; Osaka City University, Graduate School of Medicine, Dept. of Urology, Osaka, Japan**

**Introduction and Objective:** This study evaluated the efficacy and safety of a new formulation of leuprolide acetate (Lutrate 3.75mg Depot) in suppressing testosterone levels in prostate cancer patients. Lutrate is a new sustained-release formulation of leuprolide acetate. The delivery system consists of a biodegradable polymer of lactic glycolide and triethylcitrate, a plasticizer which controls the diffusion rate of the drug through the capsule membrane.

**Materials and Methods:** One hundred and sixty patients with prostate cancer who could benefit from androgen deprivation therapy enrolled to receive a single intramuscular injection of Lutrate 3.75 mg Depot each, every 28 days for a total of six doses. Plasma testosterone was determined at specific times throughout the study. Testosterone suppression (< 0.5 ng/ml) at day 28 and continuance of castration until day 168, with no missing data at the monthly assessments was tested. An exact two-sided binomial test (5% significance level) with two-sided 95% confidence interval (CI) estimated with exact method was performed to test the null hypothesis of 86% successful patients versus the alternative hypothesis of 94%.

**Results:** The proportion of successful patients over the total number of evaluable patients was 96.8% (152/157) and the exact binomial test was satisfactory (p = 0.00094, 90% CI: 92.7–99.0%). Of 157 evaluable patients 122 achieved testosterone suppression by day 21 (78.7%). At day 28, 96.8% of the patients achieved castrate levels and 73.1% achieved testosterone levels ≤ 0.2 ng/ml. At conclusion of the trial, all patients (100%) maintained castration and 92.8% had testosterone levels ≤ 0.2 mg/l. The most common treatment-related adverse events were hot flashes (45%), associated with testosterone suppression. Fatigue, hyponatremia, weight loss, headache occurred in ≤ 6.3% of patients. The most frequently reported local adverse reaction was pain at the injection site, which was experienced by 8.1% of patients.

**Conclusions:** The results of this study demonstrate that Lutrate 3.75 mg Depot is as effective as presently marketed one-month leuprolide acetate formulations in establishing and maintaining testosterone concentration below castration levels in prostate cancer patients.
Introduction and Objective: Prostate cancer is the second leading cause of cancer mortality among men in the US. To the authors’ knowledge, there was no improved, second-line therapy for metastatic hormone refractory prostate cancer (HRPC). Recent data suggest that docetaxel-based chemotherapy has been effective in HRPC. Combination chemotherapy using carboplatin and weekly docetaxel was examined in Japanese patients with metastatic HRPC.

Materials and Methods: Eligible men had metastatic prostate cancer that had progressed after hormonal therapy. Patients were treated with intravenous docetaxel at a dose of 25 mg/m² (Day 1, 8, 15) plus carboplatin (AUC4, Day 1) every 4 weeks until they had either disease progression or unacceptable toxicity. The primary end point was prostate-specific antigen (PSA) response.

Results: A total of 23 patients were evaluable for this study. The PSA partial objective response rate was 65.2% (15 patients). The median duration of PSA response was 7.8 months and the median survival time was 25 months (2-38 months). Grade 3 leucopenia occurred in only 8.7% of patients. No grade 4 adverse events were admitted in this study.

Conclusions: The combination chemotherapy using carboplatin and weekly docetaxel was effective without severe toxicity in patients with metastatic HRPC.

MP-18.10 Impact of Transurethral Resection (TUR) before Robotic High Intensity Focused Ultrasound (RhiFU) Therapy in Prostate Cancer
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Introduction and Objectives: Transrectal pulsed high intensity focused ultrasound (HiFU) is a local therapy for prostate cancer in all stages. Its efficacy within the prostate gland can be limited by big adenomas, prostatic calcifications, middle lobes or prostatic abscesses, as well as by bladder neck stenosis (ie. after previous TURP) or bladder neck tumor infiltration. Goal of TUR is, to create a standardized anatomic situation in all cases as to avoid successive bladder neck stenosis by HiFU induced shrinkage effect and typical prostatic volume reduction down to 5 cc.

Materials and Methods: 1.005 cases of TUR+HiFU in primary, biopsy proven prostate cancer (2000-10/2008) at HiFU or within 6 months before - have been registered prospectively. First, electrosurgery, since 2007 plasmaresection has been used for TUR. All resections were performed with Iglesias technique and/or trocar-cystoscopy. TUR was performed radically, leaving only the peripheral zone (≈20 cc of tissue). Differences to normal BPH resection was the formation of an extralarge bladder neck and radical resection ventrally. Resection was controlled pre-/intra- and postoperatively by transrectal ultrasound (TRUS) to optimize resection mode. If resection weight > 40 g was estimated preoperatively, HiFU was performed one month before HIFU, to allow the prostatic capsule to shrink. HiFU (Ablatherm® EDAP-Lyon, France) at 3 MHz was performed as radical HIFU treatment of the entire gland.

Results: Initial prostatic volume was median 34 cc (6-181cc). Prostatic volume was reduced by median 14 gr (1-116) to a volume before HiFU of median 20 cc (5-65) The transrectal HiFU dose applied after was median 662 lesions (95-1255) corresponding to 39 cc (6-75cc) treated tissue in median 152 min (37-280). There was not one case of transfusion after this combination procedure (synergistic hemostatic effect of HiFU coagulation and edema after TUR). Residual prostatic volume after 6 months was median 7 cc (3-25). PSA (ng/ml) before HIFU was reduced only by TUR from 4.1 to 1.8 in T1-2 and 17.6 to 4 in T3-4 PCa.

Conclusion: TUR before transrectal HiFU adapts each prostate - independent from size, form, calcifications or micro-or macro abscesses - to the HiFU device. It enables complete HiFU treatments in most cases, lowers post HiFU tissue sludge and strictures rates, increases efficacy and lowers PSA level dramatically.

MP-18.11 Effect of Intensified Training on Learning Curve for Robotic High Intensity Focused Ultrasound (rHiFU) in Advanced Prostate Cancer Therapy
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Introduction and Objective: Prostate cancer (PCA) therapy by rHiFU (Ablatherm® EDAP-TMS, Lyon, France) is a technology used since ’96, meanwhile spread worldwide. Standardized teaching as application techniques allow to establish 20 ngr/dl as the optimal endpoint to reach.

Materials and Methods: Site (D) as high volume rHiFU training center (> 200 tx/y) trained new site (RUS) in 3 sessions in 2008 in use of rHiFU, as well as for pre-rHiFU-TUR. First session was for rHiFU training, 2nd & 3rd focused on TUR. Comparison of significant criteria achieved since then. Site (D), based on 13 years experience, compared itself with the new center (RUS), performing rHiFU since 1 year. Prospective data collection.

Results: Comparison of inclusion criteria, oncological results and side effect rate show as major difference-2/3rd T3 cases in Samara vs 1/3rd in Munich, as different Gleason score evaluation between Samara and Munich with a preference to higher Gleason scores in Munich. Treatment strategy, performance and parameters as short term outcome (PSA Nadir) are excellent and almost identical (see table).

Conclusion: Prospective data comparison between two sites in (D) as (RUS) - using rHiFU for the treatment of all stages of PCa - show, that knowledge transfer by standardized teaching by a training site to a new site is safe and ensures high quality rHiFU treatments without long or risky learning curve for the new user or patients. Side effects as efficacy showed in the new site (RUS) excellent results compared to the experienced training site. Additional training, focusing on “specific TUR” before HiFU, showed positive input in safety and efficacy of the combined treatment.

MP-18.12 Evaluation of Predictor Factors, of the Different aLHRH Available in Daily Clinical Practice, to Reach Castration Level (< 20 Ng/Dl) in No Metastatic Prostate Cancer Patients
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Introduction and Objective: Surgical castration is the gold standard to obtain androgen deprivation. The reference castration value is 50 ng/dl of testosterone (T). Nowadays, quimioluminiscence techniques allow to establish 20 ng/dl as the optimal endpoint to reach. The objective of this work is to perform a prospective analysis of the predictive factors contributing to the androgen suppression in daily clinical practice for aLHRH.
Materials and Methods: Between September 2006 and June 2008, 170 patients presenting a T1c-T3bNxM0 prostate cancer received hormonotherapy, as neoadjuvant therapy for RT 3DCR or prior brachytherapy with downsizing purposes. Of them, 157 reached T <50ng/dl and are the population of this study. The mean time since the initiation of treatment till the first determination was 70 days (28 ± 87). The predictor factors of androgen suppression level evaluated are: basal T (bT), age, period of time since initiation of treatment till first evaluation of T (TFE), subtype of a LHRH, and time since initiation of treatment till first evaluation of T (TFE), subtype of a LHRH, and time since initiation of treatment till first T determination. The mean time since initiation of treatment till first T evaluation was 70 days (28-87). The predictor factors of androgen suppression level evaluated are: basal T (bT), age, period of time since initiation of treatment till first evaluation of T (TFE), subtype of a LHRH, and simple vs. complete androgen suppression.

Results: Mean age population: 68 years (49-77). Median T basal value: 5 ng/dl (49-77). There were no differences between the different treatment groups for: age, T, TFE nor aLHRH subtype.

Conclusions: Gosereline, leuproreline, in all its availabilities forms, and triptoreline have an equivalent efficacy for the androgen deprivation reached. A T level < 20 ng/dl was reached in 76% of the patients. The age of the patient was the unique significant predictive factor, showing an inverse relationship to T level. Gosereline was administered in 25% of the patients, (median bT= 446 and cT=14 ng/dl (2-42)). Subcutaneous Leuproleline was employed in 32%, bT= 378 and cT= 9.50 ng/dl (2-41). Intramuscular Leuproleline was the treatment in 23%, bT=425 and cT= 15.5 ng/dl (2-42). Triptoreline was administered to 20%, bT=462 and cT=14.5 ng/dl (2-39). A T level >20 ng/dl was reached by: Gosereline 64%, subcutaneous Leuproleline 84%, intramuscular Leuproleline 81% and Triptoreline 71%. No statistical differences were observed (p=0.096). The age of the patient was the unique significant predictive factor (p=0.02; Exp(B) 0.242; IC 95%, -0.823 a 0.085 for a year).

Introduction and Objective: Clues to more local paranchymal contusions such as hematuria/hematoma occurring in a remarkable number of patients following extracorporeal shock wave lithotripsy (SWL), merits the need to further assessments. Our aim was to evaluate the effect of SWL on the kidney function, using glomerular filtration rate (GFR) and time to peak clearance (T max), as predictors of renal function via radionuclide imaging.

Materials and Methods: A total of 15 patients (9 males, 6 females) with a documented single, lower calyx stone in one kidney, underwent renal scintigraphy using 99m-technetium diethylene-triamine-pentaacetic acid, 24 hours before, 1-3 hours after and two weeks following the SWL. GFR and T max were measured in ipsilateral (R1) and contralateral (R2) kidneys, the region where the stone was located (R3) and also the same region in the contralateral kidney (R4).

Results: GFR levels in R1 and R2 decreased 1-3 hours after SWL and returned to slightly higher levels in two weeks after the procedure. The same pattern was observed in R3 and R4; however, two weeks later, the GFR level was fairly lower than pre-SWL. GFR was also observed to be lower in R3 compared to R4. Moreover, T max decreased immediately after SWL but returned to pre-SWL levels two weeks later except for R3 where a significant decline was maintained two weeks after the procedure.

Conclusions: Patients with renal stones had a temporary decrement of GFR following SWL in both kidneys, which returned to the normal levels within two weeks. T max alteration also indicated an early increase in blood flow in both kidneys which could be explained by the systemic inflammatory response resulting in vasodilatation of renal vessels. The treatment is more prominent in R3.

MP-19.02 The Role of NF-KB on Renal Stone Formation: Possibility of the Prevention of Urinary Stone Formation Using Antinfl-Kb Reagent, N-Acetyl-L-Cysteine
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Introduction and Objective: Osteopontin (OPN) plays an important role in the development of urolithiasis. Our previous observation revealed that OPN cDNA was encoded in renal calcium oxalate (CaOx) stones protein by molecular sequencing. The transcription factor nuclear factor-κB (NF-κB) is involved in inflammatory and immune responses through the induction of various cytokines and growth factors. Recently, the coordinated action of NF-κB and activator protein-1 (AP-1) was reported in OPN expression. Oxalate, a metabolic end product, is excreted primarily by the kidney and associated with several pathological conditions. In the present study, we demonstrated that oxalate induces OPN expression by activating NF-κB in renal tubular cells. Furthermore, we investigated the inhibitory effect of NAC against NF-κB activation in the human renal tubular cells.

Materials and Methods: All the experiments were carried out using human kidney-2 (HK-2) cells, which are human proximal tubular epithelial cells immortalized by transduction with the human papilloma virus 16/EG7 gene. The time-dependent extraction of total protein was performed after the uptake of 0.5 mM oxalate by the cells. NF-κB activation, OPN expression, and the inhibitory effects of NAC against NF-κB activation were examined by western blotting and immunocytochemistry.

Results: Oxalate loading significantly decreased the amount of i κB at 30 min and 1 h (P < 0.05). Oxalate induced the activation of NF-κB at 30 min in renal tubular cells. As a result of oxalate stimulation, the amount of p65 subunit in the nucleus increased significantly (P < 0.05), and NAC significantly inhibited the translocation of p65 into the nucleus (P < 0.05). The inhibitory effect of NAC on NF-κB activation was demonstrated on a human renal tubular cell line. NAC inhibited OPN expression induced by oxalate. NAC is not only an antioxidant but also an anti-NF-κB reagent. Previously, we demonstrated the inhibition of NF-κB activation in prostate cancer cells and vascular endothelial cells.

Conclusion: Our observations reveal that the inhibition of NF-κB activation and OPN expression using NAC is extremely useful for the prevention of stone formation. These observations indicate that NAC can be used as a drug to prevent stone formation.

MP-19.03 Reactive Oxygen Species in Cell Injury: Mechanisms in Hyperoxaluria Induced Urolithiasis and Therapeutic Approaches
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Introduction and Objective: While many advances have been made in the
area of kidney stone treatment and disease, relatively very little is known about the process within the kidney that initiates stone formation. Despite recent advances in medical treatment, the recurrence can be reduced only 50%. Therefore identifying cellular processes that can initiate stone formation is important to prevent stone recurrence. We have previously demonstrated that oxalate-induced reactive oxygen species (ROS) mediated cell injury appears to play a significant role in kidney stone formation. Since the cell is endowed with several ROS generating systems, we attempt to identity the mechanism through which oxalate induces ROS generation and the therapeutic role of antioxidants.

**Materials and Methods:** Confluent monolayers of LLC-PK1 cells pretreated with or without inhibitors of NADPH oxidase (DPI, apocynin); mitochondria electron transport chain (rotenone, antymycin); mitochondrial permeability transition, MPT (cyclosporine A); lipooxygenase, LOX (esculetin, MK886); cyclooxygenase (indomethacin); nitric oxide synthase, NOS (L-NAME); xanthine oxidase (allopurinol); antioxidants (vitamin E, vitamin C) were then exposed to 0.5 to 1mM oxalate for different time periods. ROS (superoxide and hydrogen peroxide) production and cell injury (LDH release) were determined. Oxalate effect on the activation of ROS systems were determined (Nox activity and cell injury (LDH release) were determined. Oxalate effect on the activation of ROS systems were determined (Nox activity and cell injury (LDH release) were determined. Oxalate effect on the activation of ROS systems were determined (Nox activity and cell injury (LDH release) were determined. Oxalate effect on the activation of ROS systems were determined (Nox activity and cell injury (LDH release) were determined. Oxalate effect on the activation of ROS systems were determined (Nox activity and cell injury (LDH release) were determined. Oxalate effect on the activation of ROS systems were determined (Nox activity and cell injury (LDH release) were determined.

**Results:** Oxalate time and dose dependently increased superoxide, hydrogen peroxide production and LDH release in LLC-PK1 cells. Among the ROS systems studied, inhibition of NADPH oxidase, mitochondrial electron transport chain, MPT, NOS, and LOX significantly inhibited oxalate-induced ROS generation and LDH release. Oxalate treatment significantly increased NADPH oxidase activity, mitochondrial depolarization, iNOS protein expression and LOX Ser271 phosphorylation. Vitamin E, together with vitamin C, treatment significantly decreased oxalate-induced ROS generation and LDH release in renal epithelial cells.

**Conclusions:** Our data demonstrate that activation of several ROS generating systems by oxalate play a significant role in ROS mediated renal cell injury. Therefore, an improved understanding of these ROS generating mechanisms should facilitate development of antioxidant intervention strategies leading to reduction in stone recurrence associated with cell injury. Supported by NIH RO1 DK56249.

**MP-19.04**

**Alpha-Blockers for Stone Clearance in Distal Ureteral Calculi: A Meta-Analysis**

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**Introduction and Objective:** We review the evidence for alpha-blockers concerning clearance rate and expulsion time in distal ureteral calculi.

**Materials and Methods:** We searched MEDLINE, Embase and the Cochrane Library up to December 2008. All randomized controlled trials evaluating alpha-blockers in distal ureteral calculi were eligible for inclusion. Retrieved papers were selected and underwent critical appraisal by two independent authors using predefined criteria. All data were analyzed using RevMan 5.

**Results:** Of the identified 867 articles, 11 trials with a total of 872 patients were included after critical appraisal for data analysis. All studies showed a more favorable effect of alpha-blockers compared to the control group. Pooled results regarding clearance rate showed an absolute risk difference of 29% (95% Confidence Interval (CI), 22% to 37%) in favor of alpha-blockers, i.e. three patients have to be treated with alpha-blockers to achieve clearance in one patient. Sensitivity analysis for tamsulosin showed an absolute risk difference of 33% (95% CI, 23% to 44%). The pooled mean difference regarding expulsion time was 5 days (95% CI, 4 to 6 days) in favor of alpha-blockers. Sensitivity analysis for tamsulosin showed a mean difference of 5 days (95% CI, 4 to 7 days). Furthermore, pain and usage of analgesic was reported to be lower with alpha-blockers.

**Conclusions:** Alpha-blockers appear to be effective in distal ureteral calculi, resulting in a higher clearance rate and shorter expulsion time.

**MP-19.05**

**Low-Dose Tamsulosin Improves Clinical Effect of Single Extracorporeal Shock Wave Lithotripsy for Ureteral Calculi**

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**Introduction and Objective:** To evaluate the efficiency and safety of a short-term low-dose tamsulosin treatment for ureteral calculi after single extracorporeal shock wave lithotripsy (ESWL).

**Materials and Methods:** A 2-week-period randomized and controlled clinical trial was conducted in 108 patients with single ureteral calculi, who accepted ESWL as the initial interventional therapy. After ESWL, the patients in Group 1 (controls, n=55) received conservative therapy, such as hydration, antibiotics and acetaminophen on demand. But in Group 2 (n=53), patients received tamsulosin (0.2mg daily) in addition to conservative therapy. All patients were questioned about the number and intensity of post-discharge pain and evaluated by plain abdominal radiography at the end of the follow-up.

**Results:** The rate of calculi clearance in the Group 2 (84.91%, 45/53) was higher than that Group 1 (65.45%, 36/55) (P=0.020), evidently for the larger (≥10mm) calculi (85.35%, 20/24 versus 48.48%, 16/33) (P=0.007) and the proximal ones (86.67%, 26/30 versus 62.16%, 23/37) (P=0.024). Moreover, Group 1 reported higher mean visual analog scores of colic intensity (3.11±2.60) than Group 2 did (1.98±2.08) (P=0.015). And 36.36% (20/55) patients in Group 1 used acetaminophen to reduce post-discharge pain, higher than that of Group 2 (18.87%, 10/55) (P=0.042). No side effects of tamsulosin were observed in either group.

**Conclusions:** The addition of low-dose tamsulosin after single ESWL can enhance the clearance of ureteral calculi successfully in a 2-week term, evidently for those larger and proximal ones, and reduce the intensity of post-discharge pain, with low risk of side effects.

**MP-19.06**

**Microbial Gans Attack Ureteral Stents Inserted Due to Stone Therapy: Who’s at Risk?**

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**Introduction and Objective:** Contemporary management of urinary stone disease frequently involves internal drainage with ureteral stents (DJs). Since DJs offer an ideal surface for microbial adherence and consecutive biofilm formation these patients are vulnerable to overt urinary tract infection and sepsis. The aim of this study
was to assess microbial colonization on ureteral stents placed due to stone treatment. Indications for device insertion were obstructive pyelonephritis, shock wave lithotripsy (SWL) and ureteroscopy (URS). Furthermore, the value of conventional urine culture in identifying colonizing microorganisms in comparison to sonicate-fluid culture was evaluated.

**Materials and Methods:** A total of 135 patients undergoing removal of a ureteral stent were enrolled. Conventional urine culture was obtained prior to stent removal. The stents were removed under aseptic conditions and divided in small parts. These were placed in sterile tubes and transported immediately to the microbiology laboratory for sonication. In the microbiology laboratory Ringer’s solution was added aseptically. Sonication was performed in an ultrasound bath to dislodge adherent bacteria. The resulting sonicate-fluid was cultured and microorganisms identified. Microbial growth of ≥ 10⁵ colony forming units per ml defined significant stent colonization.

**Results:** Sonicated fluid culture showed that the incidence of microbial colonisation in patients who underwent DJ placement due to obstructive pyelonephritis (n=17/40, 43%) was significantly higher than in patients with URS (n=17/81, 21%) and SWL (n=4/14, 21%). A significant higher detection rate of stent colonisation could be achieved with sonicate fluid culture (n=38/135, 28%) in comparison to conventional urine culture (n=15/135, 11%, p<0.001). In male patients colonisation was detected in 16% (n=15/95) while in females in 55% (n=23/42). The most common isolated microorganisms were Enterobacteriaceae, Coagulase-negative staphylococci and Enterococci. A positive correlation between significant ureteral stent colonisation and indwelling time (median time 39 days, range 2-200) was not observed.

**Conclusions:** Obstructive pyelonephritis is associated with a higher risk of microbial colonisation compared to DJS placed due to URS and SWL. Therefore, these patients should be examined with care for infectious complications. Sonicate fluid culture is more sensitive than conventional urinary culture in diagnosing DJ colonisation.

**MP-19.07 Medical Treatment of Distal Ureteral Stones: Does the Degree of Hydronephrosis Affect Success?**

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**Introduction and Objectives:** We investigated the relation between the degree of calculi-induced urinary obstruction and the outcome of medical treatment in patients with distal ureteral stone.

**Material and Methods:** Between January and September 2008, 86 patients were treated for distal ureteral stone. They were 67 males and 19 females with a median age of 58.3 years (16-81). All of them were treated by Doxazosin (4 mg / day for 30 days) associated to naproxen (550 mg/day for ten days). The mean stone size was 8.2mm ± 2.8 (range 3-10 mm). The degree of hydronephrosis had been defined by ultrasonography (King classification). Patients were divided in four groups according to the degree pelvis dilation by measuring the antero-posterior renal pelvis diameter (PD):

- **Type 1:** PD ≤ 5 mm, Type 2: PD [5-10 mm], Type 3 : PD [10-15] and Type 4 ≥ 15 mm.

The stone size, PD type, side effects, number of renal colic and time to achieve stone clearance were recorded. Success was defined as stone elimination or its passage to the bladder.

**Results:** The mean success rate was 78%. The mean time to stone clearance was 16.4 days ± 9.1 (range2-30days). According to the PD type, the success rate differ (Table).

<table>
<thead>
<tr>
<th>Hydronephrosis</th>
<th>Number</th>
<th>Success</th>
<th>Failure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group 1</td>
<td>25</td>
<td>84 %, n=23</td>
<td>16%, n=4</td>
</tr>
<tr>
<td>Group 2</td>
<td>34</td>
<td>85.3%, n=29</td>
<td>14.7%, n=5</td>
</tr>
<tr>
<td>Group 3</td>
<td>18</td>
<td>72%, n=13</td>
<td>28%, n=5</td>
</tr>
<tr>
<td>Group 4</td>
<td>9</td>
<td>45%, n=4</td>
<td>65%, n=5</td>
</tr>
</tbody>
</table>

**Conclusions:** The degree of urinary obstruction caused by a distal ureteral stone affects the stone clearance rate and does not depend on stone size. Evaluation of the upper urinary tract degree of dilation should be considered as a prognostic parameter.

**MP-19.08 Percutaneous Direct Trans-Pyelo Ureterolithotripsy: A New Approach for Management of Impacted Upper or Middle Ureteric Calculi**

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**Introduction and Objective:** Densely impacted upper or middle ureteric calculus causing moderate to gross hydroureronephrosis still poses a therapeutic challenge. Almost all known modalities of treatment have been recommended and tried. None of these techniques has been universally accepted , implying thereby their shortcomings in one way or another. A new innovative technique has been developed and tried by the author as a modification of PCNL and has been found to be extremely simple, easy and devoid of complications with complete confident clearance of the calculi from the upper and middle ureter.

**Materials and Methods:** Total number of 15 patients, ranging in age from 18 to 67 years with unilateral densely impacted upper or middle ureteric calculi causing significant hydro-ureteronephrosis underwent this procedure over last 28 months. Salvageability of the renal unit was confirmed by DTPA isotope scan. Initial vigorous retrograde attempts of disimpaction of calculi and passage of a guidewire or a ureteric catheter across the calculus into the PCS failed. In 8 patients even contrast could not flow across the calculi and blind antegrade puncture was needed for opacification of the collecting system and planning of most appropriate site for puncture. The basic technique of PCNL was modified in such clinical situations and the Initial Puncture Needle was directed inferiorly and medially and aimed at the dilated dependent portion of Renal Pelvis directly, approx. 2.5 cm. above the PUJ, instead of going through standard superior or middle calyceal puncture through renal parenchyma. PCN track was made carefully with a constant precaution.
and Amplatz sheath was positioned. Standard PCNL equipments were used to remove the calculi completely. Double ‘J’ stent and nephrostomy tubes were indwelled.

**Results:** Complete clearance of impacted calculi was obtained in all cases with an average duration of procedure of 55 minutes. There was negligible blood loss since the puncture was through the renal pelvis, far away from renal parenchyma. There was minimal strain on the Urologist, since wide angle sturdy nephroscopy instruments were used as against slender, long or short ureteroscope with delicate, small stone grasping forceps through standard superior or middle calycetal puncture.

**Conclusions:** Presented innovative approach for management of impacted upper or middle ureteric calculi has given consistently complication free, total clearance of the calculi in this small series. Theoretical risk of loss of track during manipulations was successfully avoided by constant vigil and precautions. A much larger series is needed to establish this technique, which has theoretically been guided by earlier established, experienced and much publicized technique of Posterior Lumbotomy, which was adopted as a standard technique for open removal of impacted renal and upper ureteric calculi. Authors consider this technique as an endoscopic version of Posterior Lumbotomy.

### MP-19.09
**Comparison of Results Percutaneous Nephrolithotomy in Patients with and without Previous Open Renal Surgery: With Multiple Tracts and Multiple Stones**
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**Introduction and Objective:** The consequences of open nephrolithotomy are scar tissue around the kidney and in the retro peritoneum, and distortion of pelviccalceal anatomy that may affect the outcome of percutaneous nephrolithotomy. In this study we want to determine the effects of previous open renal surgery on the results and complications of subsequent percutaneous nephrolithotomy (PCNL).

**Materials and Methods:** From October 2005 and October 2007, 104 patients underwent PCNL in our hospital. We compared the patients who had undergone pervious open surgery on the same kidney (group 1; n=56) with those who had undergone no pervious surgery (group 2; n=68). We extracted requested information such as age, sex, stone number, stone burden, intra operative and post operative complications, hospital stay, operative time and success rate. The results of the study were analyzed using T-Test and Chi-Square then the results and complications were compared in two groups of patients with and without the history of open renal surgery.

**Results:** Intra-operative complications were seen in 11.1% of the patients with the history of open renal surgery and in 11.8% of patients without the history of open renal surgery. Post operative fever was seen in 33.3% of patients with history of open renal surgery and in 26.5% of the patients without the history of open renal surgery. Mean operating time was 75.41 ± 17.2 minutes in group 1 and 67.42 ± 26.25 minutes in group 2. Stone free rate was 88.9% in patients with group 1 and 79.4% in patients in group 2.

**Conclusions:** PCNL in patients who previously underwent open renal surgery is effective and safe. We found no difference in results of two groups based on the number of stones and the number of accesses.

### MP-19.10
**Clinical Features of Urinary Tract Calculi Induced Hydronephrosis in Infants Fed Melamine-Contaminated Milk Powder**
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**Introduction and Objective:** To investigate the clinical features of urolithiasis induced hydronephrosis in infants and young children who had history of being fed melamine-contaminated milk powder. The infants with urolithiasis complicated with hydronephrosis due to being fed melamine-contaminated milk powder have higher prevalence, the clinical symptoms were mild. The severity of hydronephrosis is related to the locations and diameter of calcui. Noninvasive management had good treatment results.

**Materials and Methods:** The data of 46 infants and young children (aged 13m ± 9m) with hydronephrosis due to urolithiasis (HDU) induced by being fed melamine-contaminated milk powder were retrospectively analyzed and 115 urolithiasis cases (aged 14m ± 9m) without hydronephrosis (UWH) as controls. Blood BUN, Scr, SUA and urine PH were compared between hydronephrotic, non-hydronephrotic cases and 30 children (aged 14m ± 8m) without urinary diseases (WUD) (with no history of ingesting melamine-contaminated milk powder).

**Results:** Forty-six cases of urolithiasis complicated with hydronephrosis were detected in the 161 cases with urolithiasis (incidence 28.57%). Among these patients, 51.1% show asymptomatic, others, dysuria 17.0%, infantile colic 14.6%, oliguria or anuria 10.7% and hematuria 6.6%. All hydronephrosis patients were classified into mild (n=7), moderate (n=22), and severe (n=17). Twenty-one cases complicated ureterectomy. There is significant difference (P<0.05) in the mean diameter of calculi, but no significant difference (P>0.05) of the stone structure pattern between HDU and UWH group. The incidence of hydronephrosis due to kidney calculi is markedly higher than hydronephrosis due to ureteral calculi (P<0.05). There is no significant difference of the BUN, Scr and SUA between HDU, UWH and WUD (P>0.05); the mean urinary PH value is decreased remarkably in HDU and UWH compared to WUD. All cases were treated for 9 ± 5 d using non-operative treatment procedure according the guidelines from Chinese Ministry of Health. The stone expulsion rate of all cases in the hospitalization period was 42.86%. Five cases of renal failure recovered to normal.

**Conclusion:** The infants with urolithiasis complicated with hydronephrosis due to being fed melamine-contaminated milk powder have higher prevalence, the clinical symptoms were mild. The severity of hydronephrosis is related to the locations and diameter of calculi. Noninvasive management had good treatment results.
come was the stone free status. Efficiency quotient (EQ) and ESWL suite occupancy time.

**Result:** Of the 92 patients with complete follow-up, 46 patients were treated at 60 shock waves per min and 46 at 90 shock waves per min. There was no statistically significant difference between 2 groups with regards to age, sex, body mass index, stent status and stone diameter. The success rate was evaluated at 1 and 3 months, it was (69.5% versus 80% at 1 month, 78.2% versus 80% at 3 months p value 0.229). EQ was 48% and 50% in group 1 and 2. The Mean ESWL suite occupancy time was 77.41 ± 17.25 vs 62.25 ± 14.41 min (p = 0.000).

**Conclusion:** Slowing shock wave rate does not impact stone free status and EQ but significantly affects the mean ESWL suite occupancy time. This is particularly important for busy endourology suites where patient turn over time is crucial.

**MP-19.12**

**Prospective Evaluation of Short-Term Complications and Results after Extracorporeal Shock Wave Lithotripsy: A Large Scale Analysis**

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**Introduction and Objective:** Extracorporeal shock wave lithotripsy (ESWL) has become the choice of treatment for most urinary calculi; however, its established efficacy has been associated with a number of side effects. Our aim was to further evaluate the incidence rate and management of the complications following SWL and also the efficiency of procedure in a large scale of patients.

**Materials and Methods:** There were 3241 consecutive adult patients with the mean age of 38.1 years (range: 15-75) and urinary calculi (≥4 mm) who underwent SWL (Siemens Lithostar) at our center and were followed for 3 months prospectively.

**Results:** Overall, 3614 stones (kidneys (83.5%), ureters (15.8%) and bladder (0.75%)) in 3241 patients were treated requiring 7245 SWL sessions. Stone-free state occurred in 71.5% calculi and success rate in 79.8% patients. Re-treatment rate, auxiliary procedure and efficiency quotient were 37.2%, 5.6% and 0.50 respectively. SWL success rate decreased as the stone size increased (P<0.0001). The treatment time, fluoroscopy time and patient age had significant effect on SWL outcome (P<0.001, P<0.01 and P<0.001 respectively). The stone-free rate had correlation with stone location. Overall complication rate was 3924 which occurred in 36.3% patients. Colicky pain (40%) was the most frequent symptom followed by gross hematuria (32%) and steinstrasse (24.2%). Bacteriuria developed in 9.7% patients; E. coli (30.4%) was the most causative organisms. Mortality occurred in 2 patients.

**Conclusions:** The complication rate following SWL was high in our study; however, the majority was mild and managed conservatively or with the minimal intervention. Moreover, the management of urinary calculi in adults using SWL was proved to be safe and efficient. Hence, SWL could be considered as the first choice therapy, particularly for ureteral stones <10 mm, renal pelvic stones <20 mm and bladder stones <30 mm.

**MP-19.13**

**Attenuation of Renal Calculi on Non-Contrast CT: A Predictive Value for Success Rate after ESWL?**

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**Introduction and Objective:** It’s very hard to predict whether Extracorporeal Shock Wave Lithotripsy (ESWL) will be a successful therapy in patients suffering from urolithiasis. Literature reports a correlation between attenuation of renal calculus on non-contrast Computed Tomography (NCCT) and success of treatment with ESWL (stone-free). The aim of this study is to evaluate whether stone attenuation on NCCT can predict the outcome of treatment with ESWL.

**Materials and Methods:** This study was performed in all patients undergoing ESWL between January 2006 and December 2007. Inclusion criteria:

- renal calculus ≥ 3mm
- NCCT before treatment
- ≥ 1 treatment with ESWL

Attenuation, size and localization of the renal calculus on NCCT were measured by a single radiologist. Success rate after treatment with ESWL was evaluated by KUB. This was done after 1 treatment and after complete treatment with ESWL. Data were analyzed using SPSS.

**Results:** Eighty-six patients were included, 53 male vs. 33 female. After 1 treatment with ESWL 33/86 of the patients (38%) were stone-free, regardless of localization. Mean attenuation stone-free vs. not stone-free: 720 vs. 916 HU (P<0.001). In total 50 patients were stone-free after complete treatment with ESWL (58%). Mean attenuation stone-free vs. not stone-free: 770 vs. 939 HU (P<0.001). Successfully treated patients underwent 1.6 treatments with ESWL compared to 2.2 treatments in the unsuccessful group. (P<0.02). When attenuation was < 900 HU, success rate was 71% (37/52). If attenuation was > 900 HU, success rate was 38% (15/34).

Kaplan-Meier curve shows a predictive value of 0.7. Multivariate analysis showed that size and localization of the renal calculus did not have any significant added value in predicting the success rate after ESWL.

**Conclusions:**

- Success of ESWL can be predicted by measuring stone-attenuation in NCCT
- An attenuation < 900 HU predicts a successful ESWL
- If attenuation is > 900 HU alternative therapy should be considered

**MP-19.14**

**Urgent Extracorporeal Shockwave Lithotripsy in Patients with Obstruction Solitary or Both Kidneys**

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**Introduction and Objective:** Patients with oliguria because of ureteral stones of solitary or both kidneys are urgent cases. Traditional management consists of urinary diversion and subsequent stone treatment. We selected such patients with serum creatinine below 2 mg/dl and they underwent urgent ESWL without draining their obstructed kidney(s).

**Materials and Methods:** Fifty-two patients between the ages of 21 and 79 years were admitted with less than 48 hours oligo/anuria from 2005 until April of 2009. Twenty-five patients had solitary kidney - group A - and 27 patients had bilateral ureteral stones – group B. Exclusion criteria were infection and serum creatinine above 2 mg/dl. In group A size of the stones was 5-18 mm. In ten cases stone was located in PUJ segment, 5 patients had stones in upper ureter, 5 – in middle ureter and 7 – in lower ureter. In group B the stone size were 5 - 22 mm; and localization of calculi was: on the left

Results: In group A 19 (76%) patients had no complications and serum creatinine level dropped to normal after the first session ESWL. 6 patients needed ureteral catheterization or percutaneous nephrostomy because of rising serum creatinine. In group B no complications were observed in 21 (78%) patients and serum creatinine level returned back to normal. 6 patients needed auxiliary procedures. After normalization of serum creatinine patients underwent repeat sessions of ESWL if need.

Conclusion: ESWL is effective method in immediate relief of obstruction in patients with oligo-anuria because of stone obstruction – in 75-80% urinary drainage was avoided and ESWL treatment was successfully carried out.

MP-19.15
Extracorporeal Shock Wave Lithotripsy (ESWL) vs Percutaneous Nephrolithotomy (PNL) for Lower Pole Stones Larger than 10 mm: Own Experience

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Introduction and Objective: Efficacy of ESWL and PNL was compared in treatment of lower caliceal >10 mm stones.

Materials and Methods: There were 132 patients with symptomatic lower caliceal stones larger than 10 mm who were treated in our institution from 2007 to 2008, 102 patients underwent ESWL and 30 – PNL. ESWL was performed with “Dornier Compact Delta”, while PNL was performed with “Storz – Calculas”. Exclusion criteria were concomitant urinary stone(s) in other location, stones in calyceal diverticula, anatomical anomaly (horseshoe kidney, duplex system) or previous stone treatment. There were no significant differences in age and sex between the two groups (p = 0.932). Stone size was 10 – 27 mm for ESWL and PNL groups (p<0.001). Successful outcome was defined as radiological and sonographical stone-free state without symptoms 1 month after treatment. Hospital stay and complications rate were compared.

Results: The overall stone-free rates after ESWL and PNL at 1 month were 46% and 92.3%, respectively. PNL was more effective in treating lower pole >10 mm stones, even though the stone size was significantly larger than in ESWL group. Mean hospital stay for PCNL was 4.15 days, which was significantly longer than that for ESWL (1.21 days, p < 0.001). Complication rates were 25.5% (infection, clot retention, anemia) for PNL and 9.5% (pain, steinstrasse, hemotoma) for ESWL. Treatment type does not contribute to complication rate (p = 0.146). Treatment type (p < 0.001), Gender (p = 0.05) and Age (p = 0.03) correlate with complication rate. One patient required blood transfusion for significant anemia after PCNL.

Conclusion: PCNL is more effective in treating lower pole >10 mm stones. Hospital stay in PCNL group was significantly longer, but high rate of successful outcome would translate into early discharge of patients and cost-effectiveness in the long run.

MP-19.16
The Correlation between Urinary pH and Metabolic Syndrome in the Adult Korean Men Who Visited Health Promotion Center

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Introduction and Objective: Low urinary pH (≤5.5) was the most powerful risk factor of idiopathic uric acid stone and an acidic urine has been described as a renal manifestation of the metabolic syndrome. We evaluated the association between urinary pH and metabolic syndrome in the ostensibly healthy adult Korean men.

Materials and Methods: From 2004 to 2008, a total of 18,513 adult men who visited our health promotion center were enrolled in this study. The relation between urinary pH and various parameters associated with metabolic syndrome were evaluated.

Results: The average age was 45.6 (18-95), and 4,987 men (26.9%) were defined as metabolic syndrome. Mean urinary pH of metabolic syndrome group was 5.91, which was significantly lower than that of normal group (6.08). In univariate and multivariate analysis, body mass index (BMI), serum triglyceride, blood sugar were negatively correlated with urinary pH (p<0.05). In multivariate logistic regression analysis between low urinary pH (≤5.5) and metabolic syndrome components, BMI (≥25kg/m2), hypertriglyceridemia (≥150mg/dl), high fasting glucose (≥110mg/dl) were the significant factors to predict low urinary pH below 5.5.

Conclusions: This study revealed the metabolic syndrome was related with lower urinary pH in the ostensibly healthy adult men. Further studies are needed to elucidate the exact mechanism responsible for the lower urine pH in individuals with the metabolic syndrome.

MP-19.17
Prediction of Therapeutic Shock Wave Lithotripsy Outcome of Renal and Upper Ureter Stone by Non-Enhanced Computed Tomography

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Introduction and Objective: The outcome of Shock Wave Lithotripsy (SWL) depends on many factors including stone size, location, composition, fragility, etc. There have been many studies that Hounsfield Unit (HU) in non-enhanced computed tomography (NECT) is useful parameter for prediction of therapeutic SWL. The aim of our study is to analyze the relationships between the characteristics of renal stones & upper ureter stone and SWL outcomes by NECT.

Materials and Methods: Between March 2007 and March 2008, we evaluated 65 patients with solitary renal and upper ureteral calculi diagnosed by NECT undergoing SWL. The age, body mass index (BMI) of patients, size, location, HU density, and skin-to-stone distance (SSD) were assessed with the use of univariate and multivariate analysis. The HU density was evaluated by measuring three different areas of the stone on NECT. The SSD was calculated by averaging three distances from the skin to the stone on NECT. Failure of disintegration was defined as fragments bigger than 4 mm. We evaluated the ideal cut-off value of HU which could predict failure of SWL by using Receiver Operator Characteristic (ROC) curve.

Results: Success of disintegration was observed in 48 patients (76.2%). The mean HU was 758.7±250.0 HU for success group versus 1232.1±472.4 HU for failure group. In ROC curve for predicting failure of therapeutic SWL, cut off value was >794 HU (Area under the ROC curve: 0.812, 95% Confidence interval: 0.694-0.899, p<0.0001). On univariate analysis, HU and size were predictors for therapeutic SWL (p<0.0001, p<0.0001). By multivariate analysis, HU was a significant predictor as much as size (p=0.005441, p=0.006947).
Conclusions: We therefore recommend that patients with a stone density > 794 HU should be considered for alternative therapy due to the high failure rates. This study shows that stone density of renal and upper ureteral calculi does predict the success of ESWL outcome.

Moderated Poster Session 20: Bladder Cancer 2 Thursday, November 5 10:45-12:15

MP-20.01
Fluorescent Imaging of Bladder Cancer Using T140 Analogue, A CXCR4 Antagonistic Peptide
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Introduction and Objective: We aimed to develop a fluorescent molecular probe which can visualize small or flat high grade superficial bladder cancers in vivo and improve cancer detection. In the present study we developed fluorescent antagonists for chemokine receptor CXCR4 and evaluated them to visualize superficial bladder cancers in vivo.

Materials and Methods: First, CXCR4 expression was analyzed in bladder cancer cell lines, mouse bladders with or without chemically induced cancer, and human bladder urotheliums with or without cancer by western blot and immunohistochemistry. Then we developed fluorescent T140 analogue and T140T140T140, which can visualize small or flat high grade superficial bladder cancers in vivo.

Results: All the bladder cancer cell lines, mouse bladder cancers, and high grade superficial bladder cancers expressed CXCR4. On the contrary, CXCR4 was not detected in mouse and human normal bladder urothelium. Fluorescent T140 analogues could specifically label and illuminate bladder cancer cell lines on dish, human urothelial cancer cells in urine, and human bladder cancer specimens, although non-malignant cells and urothelium were not labeled. They could also label and visualize mouse superficial cancers, which were too small to recognize by phase contrast observation, on the urothelium.

Conclusions: These results suggest that the fluorescent T140 analogue is a promising diagnostic tool to visualize small or flat high grade superficial bladder cancers in vivo.

MP-20.02
Low Dose CT Virtual Cystoscopy: A Noninvasive Valuable Technology of Diagnosis to the Bladder Tumors
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Introduction and Objective: To evaluate low dose CT virtual cystoscopy (CTVC) in the diagnosis and postsurgical follow-up of the bladder tumors.

Materials and Methods: From January 2007 to March 2008, 68 cases (42 males, 26 females) of hematuria or post-TURBT were enrolled in the study. Volume scanning was estimated by spiral CT, 240mAs in tube current of normal dose CT and 120mAs in tube current of low dose CT. Virtual cystoscopy images were generated from volumetric data of low dose CT using “Fly Through” software. The bladders were observed from multidirections in the CTVC images. The positive rate, negative rate, Positive predictive value, negative predictive value of CTVE were calculated, the sensibility and specificity were compared with type-B ultrasonic by diagnosing gold-standard of conventional cystoscopy.

Results: Among the 68 cases, 61 cases found the bladder tumors by low dose CTVC and conventional cystoscopy. The sensitivity of low dose CTVC was 100%, specificity was 71.43%, none false negativity and accuracy rating was 97.06%, Kappa=0.817. The sensitivity of type-B ultrasonic was 95.08%; specificity was 85.71%, false negativity was 4.29%, accuracy rating was 94.12%, Kappa=0.717. The average radiation dose of normal CT was 17.4 mSv, that of low dose CTVC was 6.9 mSv (P<0.05).

Conclusions: Low dose CTVC has proved to be a noninvasive and valuable methods in the diagnosis of bladder tumors which can be served with type-B ultrasonic as supplement to cystoscopy.

MP-20.03
Prognostic Significance of Epidermal Growth Factor Receptor (EGFR) and Survivin Expression in Bladder Cancer Tissue and Urine Cytology
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Introduction and Objective: To assess whether epidermal growth factor receptor (EGFR) and survivin immunostaining of tumour cells in urinary sediment and tissue of patients with bladder cancer has prognostic significance.

Materials and Methods: Urine sediment obtained prior to cystoscopy in patients with transitional cell carcinoma of the urinary bladder was processed for the presence or absence of EGFR and survivin immunostaining expression. Bladder cancer tissue resected at surgery was also immunostained for EGFR and survivin expression. EGFR and survivin immunostaining was considered positive when membrane staining was present in greater than 20% of tumour cells in one or more microscope slide fields (200 x surface area 0.59m²). The utility of EGFR and survivin expression in the diagnosis of TCC of the bladder was compared to urine cytology.

Results: There were 178 patients studied. Of these, 43 had newly diagnosed bladder cancer while 58 had recurrent TCC and 77 had disease remission. Twenty-five patients with normal urothelium served as controls. The mean sensitivity of urine cytology, tissue survivin immunohistochemistry and tissue EGFR immunohistochemistry was 30.5%, 62% and 59% respectively. The corresponding mean specificity was 99%, 96% and 93% respectively. Tissue EGFR expression was positive in 47.8%, 92.9% and 100% of patients with grades 1, 2 and 3 bladder tumours. Tissue survivin expression was positive in 27.8%, 18.2% and 33.3% of patients with grades 1, 2 and 3 bladder tumours. EGFR expression on urine sediment was positive in 36.7%, 40% and 67.7% of patients with tissue grades 1, 2 and 3 bladder tu-
Introduction and Objective: Theodor Bilharz Research Institute, Cairo, Egypt; Pathology Dept. Theodor Bilharz Research Institute, Cairo, Egypt

The Fas-Fas-L system has been recognized as a major pathway for the induction of apoptosis in cells and tissue. This study was performed to determine the Fas and Fas-L expression in human bladder cancer, and the impact or role of Shistosomiasis association and correlations between various parameters and tumor progression will be evaluated as well.

Materials and Methods: Seventy-five TUR biopsies, 25 with chronic Schistosomal cystitis and 50 with bladder cancer (31 with transitional cell carcinoma (TCC) and 19 with squamous cell carcinoma (SCC)) were included in this study, and 10 control specimens have been taken from apparently normal urothelium of healthy control specimens have been taken from.

Results: All SCC cases showed Fas-L positive immuno reactivity. All grade III carcinomas, 83.3% of grade II tumors and 73.7% of grade I tumors showed Fas-L positive immuno reactivity. So, percent of positive Fas-L malignant cases increases with upgrading of tumors. All T3 carcinoma showed Fas-L positive immuno reactivity.

Conclusion: Shistosomiasis has a positive effect on Fas & Fas Ligand. Malignant bladder lesions express high levels of Fas and decreased expression of Fas is associated with disease progression. Schistosomal associated cancer (either TCC or SCC) show higher co expression of Fas & Fas-L. Urinary bladder carcinoma acquires the functional Fas-L during tumor progression that may induce apoptosis of antitumor T lymphocytes. Co-expression of Fas with Fas-L suggests that bladder carcinoma may have pathways resistant to Fas mediated autocrine cell suicide.

Materials and Methods: There were 3366 consecutive referrals involving haematuria (1966 VH, 1370 NVH), without previous bladder tumour history, over a 21 month period. There were 135 who were referred with lesions being seen on imaging already. Their presenting features and investigation plan were recorded prospectively.

Results: Of those with VH, 456 patients were symptomatic and bladder tumours were found in 35 (7.7%). Of 1510 patients with asymptomatic VH, 207 (13.7%) had bladder tumours. Ten who were referred with NVH and had tumour actually gave a VH history at their first attendance and are included in these figures. In comparison, 2.0% (15/740) of asymptomatic NVH and 5.1% (13/246) of symptomatic NVH over 40 years of age without previous bladder tumour had bladder malignancy. The degree of dipstick was highly variable. Of the 135 with lesions queried prior to referral, only in 2 cases was NVH the stated reason for investigation.

Conclusion: Advice to primary care about prioritising NVH should also indicate the low incidence of cystoscopically revealed malignancy.

Introduction and Objective: To evaluate the incidence and risk factors for developing subsequent bladder cancer in patients with a history of upper urinary tract (UUT) transitional cell carcinoma (TCC).

Materials and Methods: There were 115 patients who were treated in our institution for UUT-TCC between 1994 and 2007; we reviewed clinical, surgical and pathological data of these patients. Median follow-up was 56.2 months. We used univariate and multivariate analyses with logistic regression modeling to determine prognostic variables of bladder recurrences.

Results: There were 48 (41.7%) patients who developed bladder cancer after treatment for UUT-TCC at a mean interval of 18.4 months. The univariate analysis showed a statistical correlation between the development of bladder recurrences and the following variables: UUT tumor size (p=0.02), the pathological grade (p=0.04), UUT tumor location (p=0.01) and a history.
of bladder tumor (p=0.03). On multivariate analysis, the pathological grade (p=0.01) and a previously history of bladder cancer (p=0.05) remained significant. Over 85% of the recurrent bladder tumors were superficial. Contralateral UUT tumour was diagnosed in 8 patients (69%).

Conclusion: Bladder tumours occurred in half the patients after treatment for UUT-TCC. A high grade UUT tumours and a history of bladder cancer predicted the development of subsequent bladder tumours.

MP-20.07
High Molecular Weight Cytokeratin and Cytokeratin-20 Expression as a Strong Predictor for Recurrence in Low Grade Superficial Papillary Urothelial Neoplasms

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Introduction and Objective: It has not been possible to identify those low grade superficial Urothelial neoplasms that will recur based on conventional histopathologic studies. Several biological prognostic markers are being investigated to clarify outcome of these patients. Among these markers is the immunohistochemical expression of cytokeratin 20 (CK 20) and high molecular weight cytokeratin (HMWCK). We aimed to determine the frequency of immunohistochemical expression of HMWCK and CK20 and to investigate the association with the grade or stage, and if they could have a prognostic role for prediction of recurrence.

Materials and Methods: Fifty-one patients, after standard transurethral resection of the bladder tumor (TURBT), were followed by cystoscopy every 3 months for the first 2 years, every 6 months from years 3 to 5, and then annually. Specimens were processed for routine diagnostic histopathology including histological type, grade and stage. Sections immunostained for CK 20 and for HMWCK with mouse monoclonal antibodies Keratin, 20 Ab-1 and Keratin, HMW Ab-3 respectively then were compared with respect to the presence of normal or abnormal immunohistochemical expression of HMWCK or CK20.

Results: According to the World Health Organization/International Society of Urologic Pathology (WHO/ISUP) 2004 grading system, 16% of those patients were papillary Urothelial neoplasm of low malignant potential (PUNLMP) and 84% low grade papillary Urothelial carcinoma (LGPCU). Forty-six percent of cases were pTa and 54% were pT1. Twelve cases showed recurrence, all of them were pT1 LGPCU. Sixteen tumours (32%) showed normal staining pattern of HMWCK expression, 16% showed normal staining pattern of CK20 expression and 12% showed double normal staining of HMWCK and CK20. No statistically significant relation was found between the normal immunohistochemical expression of HMWCK and CK20 on one hand and the grade or stage of LGSPUN on the other hand. However, no recurrence was observed in LGSPUN showing normal expression of CK20 or in cases showing double normal expression of CK20 and HMWCK. Normal immunohistochemical expression of HMWCK could not alone predict tumour non-recurrence in LGSPUN.

Conclusions: Normal immunohistochemical expression of CK20 with or without normal expression of HMWCK could identify a subset of LGSPUN, with markedly statement of the study’s conclusions.

MP-20.08
Evaluation of P53 and CD44 as Markers of Tumor Recurrence in Low Risk Superficial Transitional Cell Carcinoma of the Bladder

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Introduction and Objective: To determine whether there is any correlation between recurrences of superficial, low grade, unifocal bladder TCC and the results of P53 and CD44 in the tumor tissue.

Materials and Methods: In 95 patients with primary diagnosis of unifocal superficial TCC of the bladder TURBT was done. Sixty patients (M=49, F=11) with unifocal, superficial (stage Ta or T1), low grade (grade 1 or 2) papillary TCC of the bladder without carcinoma in situ were enrolled to the study and completed it. Tumor tissue sections were immunohistochemically stained for P53 and CD44 separately. Follow-up cystoscopy was performed every 3 months for the first year and every 6 months for the second year. Recurrence rate of tumor was compared between P53 positive and P53 negative groups and between CD44 positive and CD44 negative groups.

Results: The mean age of the patients was 59.7 years. The overall recurrence rate was 54%. It was 64.5% in P53 positive and 41.2% in P53 negative group (P value=0.07). Recurrence rate in CD44 positive and CD44 negative group was 72% and 40% (P value=0.02) and recurrence rate in both positive marker (CD44 and P53) groups was 87.5% and in both negative marker groups was 40 % (P value < 0.02).

Conclusions: Our results suggest that there is a remarkable relationship between CD44 positive group, specially CD44 and P53 positive group and recurrence rate in low risk superficial TCC, but the relationship between P53 positive group and recurrence isn’t statistically significant.

MP-20.09
Frequency and Level of Expression of EpCAM in Non Muscle-Invasive Transitional Cell Carcinoma of the Bladder

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Introduction and Objective: The epithelial cell adhesion molecule (EpCAM) appears to be over-expressed in the majority of human epithelial carcinomas and EpCAM expression levels correlate with proliferative activity and neoplastic transformation. Vicinium™ is a recombinant fusion protein comprised of a humanized scFv specific for EpCAM and a truncated fragment of Pseudomonas exotoxin A (ETA 252-608) that is being developed as a treatment for non muscle-invasive TCC. In order to identify patients suitable for Vicinium treatment, a semi-quantitative immunohistochemical (IHC) clinical trial assay was developed for the determination of EpCAM expression in tumor tissues. The primary objective of the study was to determine the frequency and level of EpCAM expression on bladder carcinomas with the intent of identifying and selecting those patients most likely to benefit from Vicinium therapy.

Materials and Methods: IHC was performed on formalin-fixed and paraffin-embedded tissue obtained from patients with CIS, Ta or T1 tumors being screened for entry into Vicinium clinical studies. After de-paraffinization and rehydration, the slides were treated for antigen retrieval and then incubated with Vicinium followed by a rabbit polyclonal anti-ETA. Bound Vicinium/anti-ETA complex was detected using anti-rabbit polyclonal EnVision®+HRP. Localization of the drug was visualized by
the application of diaminobenzidine. Membrane staining intensity was assessed under light microscopy and graded on a 4 point scale with 0 being negative and 3+ being very strong. EpCAM positive and negative controls (human colon carcinoma and human normal heart, respectively) were included in each staining.

Results: From the 135 biopsies screened, 132 (98%) were positive and 3 (2%) were negative for EpCAM staining. Of the positive tumors, the intensity of staining for EpCAM was found to be 1+ on 7 (5%), 2+ on 36 (27%) and 3+ on 89 (67%). The frequency of very strong EpCAM staining was significantly higher in CIS vs. Ta tumors and in high grade vs. low grade tumors.

Conclusions: EpCAM is highly expressed in most non muscle-invasive TCC tumors as measured by IHC staining with Vincinum. EpCAM over-expression makes these tumors attractive targets for Vincinum therapy.

MP-20.10
Management of BCG in Non-Responders with Fixed-Dose Intravesical Gemcitabine in Superficial TCC of Urinary Bladder
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Introduction and Objective: The incidence of bladder malignancy is increasing worldwide, with a projected rise to 28% by 2010 for both sexes (WHO). Though intravesical adjuvants therapy with BCG is superior to any other immunotherapeutic/chemotherapeutic agent in reducing tumor recurrences and disease progression, its real efficacy remains controversial, as one-third of patients soon experience BCG failure. Hence there is a need for an alternative intravesical agent for treatment of BCG failure. Our aim was to study the efficacy, tolerability and safety of intravesical gemcitabine in managing BCG-refractory superficial bladder malignancy.

Materials and Methods: Thirty-five BCG failure patients: 26 males and 9 females between 20-72 years of age were instilled 2000mg of gemcitabine in 50ml of normal saline intravesically two weeks post tumor resection, for six consecutive weeks. Mean follow up for eighteen months with cystoscopies was done.

Results: Twenty-one patients (60%) showed no recurrence, 11 patients (31.4%) had superficial recurrences, while 3 patients (8.6%) progressed to muscle invasiveness. Average time to first recurrence was 12 months, and 16 months to disease progression. Adverse events were low and mild. Therapy was well tolerated.

Conclusion: Gemcitabine fulfills all requirements as an alternative agent in treating BCG failure patients with low adverse events, well tolerated and highly effective in reducing tumor recurrences.

MP-20.11
Oncologic Results of Simultaneous Transurethral Resection of Superficial Bladder Cancer and Benign Prostatic Hyperplasia
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Introduction and Objective: To evaluate the oncologic consequences of simultaneous transurethral resection of bladder tumor (TURB) and transurethral resection of prostate (TURP) in patients with superficial bladder cancer and obstructive symptoms due to benign prostatic hyperplasia (BPH).

Materials and Methods: From March 1995 to February 2007, TURB was performed for transitional cell carcinoma (TCC) of the bladder in 395 men by a single surgeon. Simultaneous TURB and TURP were performed in 52 of these men. Among these patients, 24 patients underwent simultaneous TURB and TURP due to superficial TCC, without bladder neck or prostatic urethral invasion, and BPH and were followed up for at least 12 months (group 1). For purposes of comparison, the data from 165 men 50 years and older who underwent TURB alone for superficial TCC of the bladder (group 2) were also reviewed. The mean age at diagnosis was 70.0 years (range 52-84) for group 1 and 64.1 years (range 50-88) for group 2. The mean follow-up period was 52.2 months (range 15-118) for group 1 and 43.8 months (range 12-145) for group 2. Operative parameters and oncologic results were compared between the two groups.

Results: There were no statistically significant differences in resected number, size, T stage and grade of bladder cancer and the presence of carcinoma in situ between the two groups. Recurrences during the follow-up were found in 9 cases (37.5%) from group 1 and 37 cases (22.4%) from group 2, which showed no statistically significant difference (P=0.10). Recurrences at the bladder neck or prostatic urethra occurred in 1 case (4.2%) from group 1 and 3 cases (1.8%) from group 2, which showed no statistically significant difference (P=0.45). Progression during the follow-up were found in 2 cases (8.3%) from group 1 and 10 cases (6.1%) from group 2, which showed no statistically significant difference (P=0.67).

Conclusion: Simultaneous TURP during TURB does not increase the overall recurrence, recurrence at the bladder neck or prostatic urethra, and progression rates of bladder cancer. TURP could be safely performed during TURP in patients with superficial bladder cancer and obstructive symptoms due to BPH.

MP-20.12
Assessment of Angiogenic Factor, VEGF, Serum and Urine Level Changes in Superficial Bladder Tumors: Immunotherapy by Intravesical BCG
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Introduction and Objective: Bladder tumor is one of the most common genitourinary tumors. Management of non-muscle invasive (NMI) bladder tumors is primarily transurethral resection (TURBT) followed by intravesical immunotherapy or chemotherapy. Bacillus – Calmette – Guerin (BCG) is the most effective adjuvant therapy in NMI bladder tumor. As angiogenesis is an essential factor in solid tumor progression and VEGF is an important factor in angiogenesis, we sought to determine serum and urine level changes after BCG therapy for superficial bladder tumors.

Materials and Methods: Twenty-three patients with NMI bladder tumor that underwent BCG therapy after TURBT were selected according to the study criteria. Blood & urine samples were obtained at the first and sixth sessions before instillation of BCG. To obtain VEGF level in samples, ELISA method was used.

Results: Urine and serum VEGF levels before and after BCG therapy didn’t change significantly. VEGF level changes did not differ significantly, neither in low grade against high grade tumors nor in stage T1 against stage Ta tumors. A significant difference in VEGF level was seen between low grade and high grade tumors in serum after BCG therapy (P=0.007).

Conclusion: Although intravesical BCG possesses anti-angiogenic activity, it seems that it exerts its effect through pathways other than VEGF especially in low grade tumors.
Second TURB in Non-Muscle Invasive Bladder Cancer: Experience in 400 Cases

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Introduction and Objective: Even experienced urologists have a high percentage of persisting carcinoma after transurethral bladder tumor resection (TURB) for non-muscle invasive bladder tumors (NMIBT). The aim of our study was to quantify the percentage of residual tumors detected by re-TURB.

Materials and Methods: Between January 2005 and January 2009, 400 patients with NMIBT underwent re-TURB at 4±6 weeks after the initial resection. The indications were represented by absence of muscle tissue in the specimen from the initial resection, large, multiple, high grade or T1 tumors. After the first TURB, the pathologic stage was pTa in 102 patients (25.5%), pT1 in 288 (72%) and CIS in 10 (2.5%). The pathologic records of the second TUR were reviewed and compared with the findings of the first operation.

Results: Re-TURB was negative in 262 patients (65.5%). Of 102 patients with pTa and 288 patients with pT1 at the first TURB, 71 (69.6%) and 184 (63.9%) had a negative re-TUR, respectively. Three patients with initial CIS had residual tumors. Eighty-eight patients (22%) had residual tumors of the same stage, 28 (7%) had a lower stage and 22 (5.5%), a higher stage. In 85% of the cases, residual tumors were located at the initial site. The protocol treatment was changed in 26 cases (6.5%).

Conclusion: A routine re-TURB should be advised in selected patients with NMIBT in order to achieve a more complete tumor resection and to identify patients in which the treatment protocol should be changed. In addition, removal of residual cancer is achieved early.

Combined Thermo-Chemotherapy (Synergo®) in Non Muscle Invasive Bladder Cancer (NMIBC): 8 Year Follow Up of a Prospective monocentric Cohort Study

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Introduction and Objective: Non-muscle-invasive bladder cancer, despite of neo-adjuvant and adjuvant regimens, recurs in 30-50% within 24 months. In 15-30% it progresses to infiltrating stage. We studied, if repetitive intravesical hyperthermia combined with local instillation of mitomycin-C (MMC) could reduce rate of recurrence and progression of NMIBC.

Materials and Methods: Inclusion criteria: patients with recurrence of NMIBC after topic prophylaxis (MMC or BCG), patients with high recurrence rate or multinodular tumor growth (pTaG1/pTaG2) and high risk patients (pT1G2/pT1G3/Cis). Twenty-three patients were involved between 8/00 and 8/04. Thirteen were treated in an adjuvant approach (2×20mg MMC), 10 in a neo-adjuvant approach (2×40mg MMC) with simultaneous microwave induced intravesical hyperthermia (42°C) and local intravesical chemotheraphy (MMC). Treatment cycles were performed 6 times weekly (induction), followed by 6 monthly sessions (maintenance). Initial histologic staging: 3 patients with pTaG1, 9 with pTaG2 and 1 with pT1G2 in the adjuvant arm; 4 patients with multifocal or highly recurrent pTaG2, 1 with pT1G3, 2 with pT1G1, 2 with pT1G1 and 2 with Cis (with concomitant papillary bladder tumors pT1G3 and pTaG2 respectively) in the neo-adjuvant arm. All patients underwent transurethral resection (TUR). Resection was complete (histologically tumor free) in all patients before adjuvant treatment. For neo-adjuvant treatment tumor growth was multifocal or resection was incomplete before Synergo® therapy. All patients under went cystoscopies with biopsies every 3 months during their follow up. Device used was Synergo® SB-TS 101.1 by Medical Enterprises Europe (MEE) with specific urethral catheters including RF antenna, thermocouples and MMC circulation channels.

Results: Therapy was performed in urethral local anesthesia, combined with analgesic-spasmylytic intravenous medication on outpatient basis. Treatment time for each session was 1 hour. Of 13 patients with prophylactic treatment 5 (38%) were tumor free within a mean time of follow-up (first treatment until last cystoscopy) of 57.6 months, 3 (23%) within 36 months before they died because of other diseases, 2 (15%) within 32 months and had 2 recurrences each within 67 months, 1 (6%) within 11 months before he recurred (PUNLMP) and died 20 months later because of a different, unclear event. No one had a tumor progression. One (6%) was tumor free within 19 months before he recurred and underwent a second adjuvant treatment cycle and was tumor free again for 20 months until his next recurrence with tumor progression. He died 16 months later because of spread out bladder cancer. One patient (6%) had recurred during treatment within 5 months without progression and underwent cystectomy. Of 10 patients in the neo-adjuvant arm, 3 (30%) were tumor free within a mean time of 66.3 months, 1 (10%) within 44 months before he died because of a different disease, 1 (10%) within 60 months (incomplete treatment cycle), 2 (20%) within 15 months and had one recurrence each within 50.5 months without progression, 1 (10%) had recurred during treatment within 1 month with progression and underwent cystectomy. 1 (10%) had an iatrogenic perforation of urethra and rectum wall during the catheter insertion and underwent cystectomy with neobladder. 1 (4%) in total died because of his bladder cancer disease. Treatment related adverse effects were urethral strictures (22%) and bladder fibrosis (9%). Average treatment costs per cycle: device and service € 1000 (9%), catheters € 7200 (66%), MMC € 2700 (25%).

Conclusion: Synergo® therapy offers an additional option for local therapy in treatment of multiple recurrent NMIBC after failed TUR, MMC or BCG therapy. This prospective long-term study proved its feasibility in specific cases, encouraging for a possible prevention of cystectomy.

Prognostic Value of Gene PAX5 Expression in the Ta, T1 Urothelial Urinary Bladder Carcinoma

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Introduction and Objective: The aim of the study was to assess PAX5 gene expression level in Ta, T1 urothelial urinary bladder carcinoma and to find out its prognostic value.

Materials and Methods: There have been 147 patients with Ta, T1 urothelial urinary bladder carcinoma enrolled into the study so far. The PAX-5 expression was evaluated quantitatively by real-time PCR method using ABI PRISM 7000. As a reference gene the GAPDH gene was used. mRNA and cDNA were isolated by Oligotex Method using kits (Qiagen) and High Capacity cDNA Archive kit (Applied Biosystems). All the patients were
followed afterwards and treated following common schemes; the follow-up time was 23.88 ± 10.36 months.

**Results:** Tumor recurrence was detected in 78 (53%) patients. In a group of 82 patients with PAX5 positivity higher than 0, (PAX5 > 0, PAX5 positive group) the tumor recurrence was detected in 78 (53%) patients. In the other group of 65 patients with zero PAX5 expression (PAX5= 0, PAX5 negative group) the tumor recurrence was detected in only 28 patients (43.1%). The patients with the PAX5 expression higher than 0 were of 1.7 higher tumor recurrence risk than the patients with the zero PAX5 expression. The invasive form of the tumor was detected in 12 patients (8.2%). In the group of 147 patients, the number of tumor progression was very low, so it was not possible to define the PFI. Following the multivariate Cox model of proportional risks, the variables were PAX5 expression, clinical tumor stage, tumor grade, multiplicity and tumor size. The PAX5 expression and tumor multiplicity were only independent tumor recurrence predictors. It was not possible to predict the tumor progression risk because of a low number of progression cases.

**Conclusions:** In a big group of patients we have confirmed the prognostic significance of PAX5 gene expression when predicting the Ta, T1 urinary bladder carcinoma recurrence risk. This prediction was independent of clinical prognostic factors used in every day. The study was supported by IGA MZ NR 8934-3 a V2 MSM 0021620808 grants.

**MP-20.16**

**EGFR Expression May Correlate with Prognosis in Non-Muscle Invasive Bladder Cancer**

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**Introduction and Objectives:** Recurrence after TUR-B for non-muscle invasive bladder cancer (NMIBC) is high. Available morphological prognostic factors are not sufficient for identifying patients in whom recurrence will occur, or patients who will benefit from adjuvant bladder instillations. Tissue microarray (TMA) has been introduced as a means of studying possible molecular prognostic factors in a systematic and standardized way. We have studied the immunohistochemical expression of six possible molecular prognostic factors with TMA technique.

**Materials and Methods:** Tumor tissue was obtained from 52 patients undergoing TUR-B for primary (32) or recurrent (20) Ta tumours. 22 were Grade 1, 26 Grade 2 and 4 Grade 3. At least 3 core biopsies (diameter 0.6 mm) were punched out from representative tumour areas in the paraffin-embedded tumour block and placed in an array block and prepared. Immunohistochemical staining was performed in an automated immunostainer. The antibodies tested were TP53, Cox-2, E-Cadherin, PCNA, EGFR and FGFR-3. The expression was quantified and correlated to time to recurrence. Median follow-up was 3.1 (0.8-4.3) years.

**Results:** There were 71% patients who developed recurrence. Multiple tumours and number of previous recurrences were significant predictors of time to recurrence. Expression of EGFR stratified as percentage of tumour cells with positive cell nucleus (0-10%, 11-40%, 41-70%, and 71-100%) correlated to time to recurrence; under-expression being associated with early recurrence (p=0.02; log rank test). The intensity of staining did not correlate with recurrence. Multivariate analysis of time to recurrence showed that under-expression of EGFR (0-10%) was associated with higher risk of recurrence than over-expression (>10%); (HR=5.5; p=0.005) after adjusting for multiplicity and number of previous recurrences. No correlations between the other factors and clinical outcome were obtained.

**Conclusion:** In this study under-expression of EGFR correlated with time to recurrence after TUR-B for NMIBC. If this finding can be replicated in an independent and larger series, EGFR-expression may provide a means of identifying patients with high risk of recurrence.

**MP-20.17**

**Dose Reduction of Bacillus Calmette-Guérin (BCG) in the Treatment of Carcinoma In Situ (CBS) of the Bladder with a Less Intense and Shorter Maintenance Regimen: A 15 Year Experience**

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**Introduction and Objectives:** BCG maintenance therapy has shown high efficacy in the treatment of carcinoma in situ of the bladder. The aim of the prospective study was to prove efficacy and tolerability of a shorter and less intense maintenance regimen.

**Materials and Methods:** Between November 1994 and December 1998, 44 patients received intravesical maintenance BCG immunotherapy after transurethral resection of the bladder. The patients had either pure (n=15) or concomitant (n=29) CIS, 20 had T1 GII + CIS. A twelve month schedule was chosen using 27 mg low dose of BCG Connaught: initial six weekly instillations, then three 4-weekly instillations, re-assessment by cystoscopy, cytology and biopsies. In case of complete remission patients received additionally three 3-monthly instillations. The follow-up was performed every three months during the first two years, then twice a year for the next three years and once a year from the sixth year on with cystoscopy and cytology.

**Results:** More than half of patients (n = 26, 59.1%) received the full dose and completed the schedule totally, only 6.8% (n=3) of patients received less than 75% of all instillations. Within the average observation time of 101.4 months (range: 7.2 - 164.6 months) 17 patients (38.6%) presented with recurrent disease, average time to recurrence was 34.0 months (2.4-103.5). Six patients (13.6%) presented with muscle invasive disease, average time to progression was 33.6 months (range: 15.9 - 72.0 months). Two patients (4.5%) had persistent tumor after initial therapy. The 5 and 10-year recurrence free survival rates were 70.5% and 61.4% respectively. The 5 and 10-year muscle-invasive free survival rates were 88.6% and 86.4%, and the correspondent disease specific survival rates were 90.9% and 81.8% respectively.

In patients with concomitant compared to pure CIS there was an advantage concerning recurrence free survival rate after 10 years (72.4% vs. 46.7%) but not regarding the other parameters.

**Conclusion:** The study of a shorter maintenance treatment schedule with low dose BCG shows reproducible results in terms of recurrence, progression and time to progression. This observation can be based on the fact that a very high number of patients received the complete treatment.

**MP-20.18**

**Development of Lyophilized BCG Homogenate-Carbon Nano Tube System and Its Implement in the Prevention of Postoperative Recurrence of Bladder Tumor**

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Introduction and Objective: To develop a new lyophilized BCG homogenate-carbon nano tube system aiming at prolonging the adherence of BCG to inner bladder wall and study its implementation in the prevention of postoperative recurrence of bladder tumor.

Materials and Methods: The system was composed of four parts: BCG, nano ferrite, carbon nano tube and chitosan thermo-sensitive gel. First, we preprocessed carbon nano tube, and prepared nano ferrite and carbon nano tube. Then lyophilized BCG homogenate was connected to the other three parts which had been prepared. Finally, we tested the performance of the system and experimented the adherence of the new system to inner bladder wall of rats in the extracorporeal magnetic field. The results were analyzed by SAS (version 9.2).

Results: The new lyophilized BCG homogenate-carbon nano tube system was successfully developed and all the four parts were testified to operate well and steadily. In the traction of the extracorporeal magnetic field, the system proved to adhere to the inner bladder wall of rats firmly and longer than the control group (p < 0.05).

Conclusions: The new lyophilized BCG homogenate-carbon nano tube system was a good sustained release system which prolonged the adherence of BCG to the inner bladder wall of rats firmly and longer than the control group.

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Conclusions: The new lyophilized BCG homogenate-carbon nano tube system was a good sustained release system which prolonged the adherence of BCG to the inner bladder wall of rats firmly and longer than the control group.
MP-21.03

The Diagnosis of Location of Prostate Cancer on 18F-Fluorodeoxyglucose Positron Emission Tomography

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Introduction and Objective: The purpose of this study was to investigate the correlation between the location of prostate cancer by needle biopsy and 18F-fluorodeoxyglucose (FDG) accumulation in the prostate on positron emission tomography (PET) and PET-CT employing PET and CT.

Materials and Methods: Needle biopsy of the prostate was carried out in 25 patients with suspected prostate cancer, and PET in 16 patients and PET-CT in 9 patients were performed. Scans were started 1 hour after the administration of 111 to 222 MBq FDG. After scanning the entire body, 4-min emission and 5-min transmission spot screenings were performed. Emission data were reconstructed using ordered-subset expectation maximization method with high-level resolution. Furthermore, image reconstruction with optimal compensation of scattered radiation in three dimensions and very high resolution were carried out on PET-CT. The correlations between the location of prostate cancer by needle biopsy and FDG accumulation in the prostate were investigated.

Results: FDG accumulation was identified faintly or clearly in the prostate of all patients. The pathological findings of needle biopsy indicated prostate cancer in 17 patients and benign prostatic hyperplasia in 8. There were correlations between the location of prostate cancer by needle biopsy and FDG accumulation on PET in 6 of 13 patients with prostate cancer, unilaterally in 3 and bilaterally in 3. Although FDG accumulation was noted in 8 patients with benign prostatic hyperplasia accompanied by inflammation, correlations between the location of prostate cancer by needle biopsy and FDG accumulation on PET-CT were clearly observed in all 4 patients with prostate cancer, because FDG accumulation and the location of the prostate were clearly identified on PET-CT employing PET and CT, at a very high resolution. One patient underwent radical prostatectomy and the cancer lesion in the resected prostate was exactly coincided with the location of FDG accumulation on PET-CT.

Conclusion: Although FDG also accumulates in inflamed sites of the prostate gland, FDG accumulation on PET-CT were clearly noted in the lesion of prostate cancer. Therefore, if the location of FDG accumulation on PET-CT is targeted, an accurate and efficient diagnosis of prostate cancer by needle biopsy will be possible. PET-CT may be useful in needle biopsy and radiotherapy.

MP-21.04

Can Redesigning a Laboratory Request Form Reduce the Number of Inappropriate PSA Requests without Compromising Clinical Outcome

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Introduction and Objective: Excessive laboratory utilization due to inefficient test-ordering behaviour among hospital clinicians and community general practitioners (GP) is an ongoing problem in many hospitals and primary care trusts throughout the UK and abroad. In January 2007, our hospital removed the ‘tick box’ for PSA from its laboratory tests request form, in a managed way, with the intention of reducing unnecessary requests for this test. Here we address the impact this action had on the number of PSA tests being requested and its downstream effects on prostate cancer diagnosis.

Material and Methods: Using our laboratory database we compared the number of hospital and local GP requests for PSA before and after modification of our laboratory form (requests from 2004-6 were compared to 2007). We then correlated this data with the number of target referrals from primary care for suspected prostate cancer and the number of prostate cancers being diagnosed, over the same time period.

Results: Mann-Whitney non-parametric testing demonstrated a 17% reduction in the median number of PSA requests since the change was introduced (p=0.001). Subset analysis revealed an 18% reduction in GP requests (p=0.002). However no change was found in the number of prostate cancer diagnoses and target referrals for suspected prostate cancer (p=0.86 and p=0.59 respectively).

Conclusions: Our study shows that with this simple modification to the design of our laboratory request form, whereby the doctor must make an active written decision to order a PSA test, there was a significant reduction in the number of PSA requests, both in the hospital and in the community, without patient safety being compromised by reducing the number of target referrals for suspected prostate cancer and the number of diagnoses being made.

MP-21.05

Overall and the Highest-Core Gleason Score for Prostate Biopsy Specimens

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Introduction and Objective: For prostate biopsy specimens with multiple positive cores showing different Gleason grade, the 2005 International Society of Urological Pathology (ISUP) consensus recommended to assign individual Gleason score (GS) to each core for selecting the highest-core score with the option to give an overall score. We investigated the significance of biopsy GS, overall score (OGS) or the highest-core score (HGS), for distribution and prediction of pathological features of radical prostatectomy (RP) specimens.

Materials and Methods: Patients with clinically localized (cT1c-3) prostate cancer who underwent RP between 1997 and 2005 were enrolled onto the Clinicopathological Research Group for Localized Prostate Cancer registry. Two central uropathologists (K.K. and T.S.) reviewed both biopsy and RP specimens without preoperative hormonal therapy. All data were available in 1365 patients with multiple positive biopsy cores. OGS and HGS were assigned for biopsy specimens. For RP specimens, the existence of extracapsular extension (ECE), seminal vesicle invasion (SVI), and lymph nodes involvement (LNI) were recorded. GS was categorized into four groups: 5-6, 3+4, 4+3 and 8-10. Chi-square test and multivariate logistic regression analysis were performed with the SPSS software.

Results: Overall 311 (23%) patients were upgraded by HGS. Of 375 patients with OGS 5-6, 40 (11%) were upgraded to HGS 3+4. Of 535 patients with OGS 3+4, 141 (26%) and 37 (7%) were upgraded to HGS 4+3 and 8-10. Of 256 patients with OGS 4+3 patients, 93 (36%) were upgraded to HGS 8-10. The distribution of ECE, SVI or LNI in each GS group was equivalent between OGS and HGS. When clinical stage, preoperative serum prostate specific anti-
ion levels and biopsy GS were used as predictive variables, the area under the receiver-operating characteristics (AUCs) for predicting ECE, SVI and LNI were 0.727, 0.814 and 0.833 for GS, and 0.730, 0.809 and 0.829 for HGS, respectively.

**Conclusion:** Despite of significant GS upgrading by the highest-core scoring, the distribution of each pathological feature in RP specimens has not significantly been changed. With precise predicting tools such as preoperative nomograms, we may predict the final pathological features regardless of the method for assigning biopsy GS.

**MP-21.06**

**Validation and Head-To-Head Comparison of Japanese and Western Prostate Biopsy Nomograms on Japanese Data Sets**

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**Introduction and Objective:** We previously developed a novel nomogram for predicting the probability of a positive initial prostate biopsy in Japanese patients with serum prostate specific antigen (PSA) levels less than 10 ng/ml. However, the utility of ours was not adequately assessed because of lacking the external validation. Thus in this report, external validation was performed to assess the validity of our model and the predictive accuracy of various Japanese and foreign nomograms that had been published before.

**Materials and Methods:** External validation of ours and four previously established nomograms was performed in two different cohorts from Chiba Cancer Center (CCC) (n=392) in which transperineal (TP) 16-core biopsy was performed and Chibaken Saiseikai Narashino Hospital (CSNH) (n=269) in which transrectal (TR) 16-core biopsy was carried out. Furthermore, the predictive accuracy of these models, which was quantified with based on the receiver operating characteristics (ROC) curves-derived area under the curve (AUC), was compared directly.

**Results:** Head-to-head comparison of the AUC values on CSNH data demonstrated that our nomogram was significantly more accurate than the other models except Chun’s: Finne’s (p=0.012), Karakiewicz’s (p=0.000), and Kawakami’s (p=0.005). The predictive accuracy of ours was proven to be better than those of the others.

**Conclusion:** Our nomogram is more useful for Japanese population as compared with Western models. Moreover, external validation demonstrated that the predictive accuracy of ours was independent from two different biopsy approaches: TP or TR. This is the first report that proved the predictive accuracy of the nomogram independent from the biopsy methods.

**MP-21.07**

**Human Serum Angiogenin (ANG-0) Increases with More Aggressive Prostate Pathology**

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**Introduction and Objectives:** Human angiogenin (ANG-0) is a ribonuclease whose biologic activities include neovascularization and tumor cell proliferation. In human prostate with PC, ANG-0 expression arises continuously from benign glands to PIN III and PC. The lack of data on serum ANG-0 on human prostate disease, prompted us to investigate a cohort of candidates to PC screening.

**Materials and Methods:** There were 118 untreated patients (median age 68 years and tPSA 7.2 ng/ml) who were screened for PC with 12 core prostate biopsy (ultrasound control). Distribution of pathology diagnosis was: normal prostate or BPH 30.5%; prostatitis 24.6%; PIN III 1.7%; PC 45.2%. Blood was collected for hemogram, biochimic, tPSA, cPSA, iPSA, tTestosterone, prolactin, and monoclonal anti-body human ANG-0 (mab DAN 00; 100% detectable, mean 360,000 (196,000-457,000) ng/ml), from Quantikine TM/RD Systems (ELISA). Statistic Analysis: Proportions were compared with Chi2 test; Kruskal-Wallis test was used for quantitave variables.

**Results:** Significant differences among groups were found for tPSA and cPSA, with higher values for prostatitis and PC; for iPSA, with higher values for prostatitis; and for f/t PSA ratio (within tPSA 2.5-10.0 ng/ml), with lower values for PC. All cases had detectable ANG-0, with a median of 19,000 pg/ml (86.4% above volunteers commercial test values). ANG-0 significant high values were found for PC group of patients (p=0.008) (Table 1). No strong significant association was found between ANG-0 and base-line studied variables.

**Conclusions:** This study on circulating
ANG-0 in different prostate diseases, serum ANG-0 levels were above the volunteers' commercial test highest value in 70%. Despite biologic variability, ANG-0 presented significantly elevated in PC patients, when compared to BPH and prostatitis, which is in concordance with the continuous rising of ANG-0 expression from benign glandular epithelium to PIN III and PC in prostate specimens.

**Materials and Methods:** From VI-2005 to XII-2008 we select 701 sequential cases that, previously to trans-rectal prostate biopsy, collected circulating blood for prostatic markers profile, namely total PSA (tPSA), complexed PSA (cPSA), free PSA (fPSA), total testosterone, and IGF-I measurement with mab human IGF-I (m = 105, var. 40-258 ng/ml; DG 100) from Quantikine™/RD Systems (ELISA). Cases were grouped according to pathologic biopsy diagnosis: BPH, Prostatitis, PIN III, and PC. Statistical analysis: Continuous variables were compared by Chi 2 and Kruskal-Wallis tests. Association between IGF-I levels and prostate lesion occurrence was quantified by odds ratio (OR) calculation and respective confidence intervals at 95% (IC 95%).

**Results:** Among studied population, cases distribution, different variable median values, f/t PSA ratio and IGF-I/tPSA ratio distribution according to different pathology diagnosis are present at table 1. IGF-I presented no significant differences among prostate pathologies (p = 0.425). In relation to BPH, we found no significant association among IGF-I levels (3th tertil versus 1th tertil) and Prostatitis (OR 1.01; IC 95% 0.61-1.68), PIN III (OR 1.56; IC 95% 0.52-4.69), or PC (OR 0.80; IC 95% 0.50-1.30). Among PC patients no association of IGF-I to histologic Gleason grade differentiation (42% with G 8-10) was detected.

**Conclusions:** In this studied Caucasian population IGF-I didn’t show any particular association to worsening prostate diagnosis, namely to PIN III or to PC. Among PC patients IGF-I presented no relationship to histologic gravity.

**MP-21.08**

**Association between IGF-I and Prostatitis, PIN III and Prostate Cancer Diagnosis**

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**Introduction and Objectives:** Insulin-like Growth Factor I (IGF-I) is involved in carcinogenesis, namely on the IGF axis of autocrine stimulation of androgen-independent prostate cancer (PC). Case-control and cohort studies raised the hypothesis that high serum IGF-I could be a human PC risk factor, with OR ≤ 4.12, and PSA independent. Thought two meta-analysis maintained a much modest positive assumption (≤ 1.49), more recent circulating IGF-I and IGF-I gene 19-CA allele polymorphism studies are unfavorable to this role. We decided to perform serum IGF-I among Caucasian candidates to trans-rectal prostate biopsy with ultrasound guidance, in the context of PC screening, and evaluate his behavior according to the different obtained pathology prostate diagnosis.

**Materials and Methods:** From VI-2005 to XII-2008 we select 701 sequential cases that, previously to trans-rectal prostate biopsy, collected circulating blood for prostatic markers profile, namely total PSA (tPSA), complexed PSA (cPSA), free PSA (fPSA), total testosterone, and IGF-I measurement with mab human IGF-I (m = 105, var. 40-258 ng/ml; DG 100) from Quantikine™/RD Systems (ELISA). Cases were grouped according to pathologic biopsy diagnosis: BPH, Prostatitis, PIN III, and PC. Statistical analysis: Continuous variables were compared by Chi 2 and Kruskal-Wallis tests. Association between IGF-I levels and prostate lesion occurrence was quantified by odds ratio (OR) calculation and respective confidence intervals at 95% (IC 95%).

**Results:** Among studied population, cases distribution, different variable median values, f/t PSA ratio and IGF-I/tPSA ratio distribution according to different pathology diagnosis are present at table 1. IGF-I presented no significant differences among prostate pathologies (p = 0.425). In relation to BPH, we found no significant association among IGF-I levels (3th tertil versus 1th tertil) and Prostatitis (OR 1.01; IC 95% 0.61-1.68), PIN III (OR 1.56; IC 95% 0.52-4.69), or PC (OR 0.80; IC 95% 0.50-1.30). Among PC patients no association of IGF-I to histologic Gleason grade differentiation (42% with G 8-10) was detected.

**Conclusions:** In this studied Caucasian population IGF-I didn’t show any particular association to worsening prostate diagnosis, namely to PIN III or to PC. Among PC patients IGF-I presented no relationship to histologic gravity.

**MP-21.09**

**Combination of Diffusion-Weighted Imaging (DWI) and Ultrasound Real-Time Tissue Elastography (RTE) can Eliminate the Necessity of Dynamic Contrast-Enhanced (DCE) MRI in the Detection of Prostate Cancer**

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**Introduction and Objectives:** Diffusion-weighted imaging (DWI) of MRI can allow identifying the movement of water molecules and has recently applied to the prostate cancer (PC) detection, while real-time tissue elastography (RTE) is a new diagnostic and qualitative modality to evaluate the tissue stiffness with objective potential. Both DWI and RTE share less expensive and less invasive characteristics. We hypothesize that the combination of DWI and RTE can eliminate the necessity of expensive and time-consuming approach of dynamic contrast-enhanced (DCE) MRI in the detection of PC.

**Materials and Methods:** Twenty patients who underwent radical prostatectomy were used in this study. All patients receieved preoperative imaging study of transrectal ultrasonography (TRUS), RTE, T2WI, DCE and DWI. PC foci identified in the surgical specimen were compared with the findings of preoperative imaging study and PC detection rate of each imaging modality was analyzed.

**Results:** In this study, a total of 43 PC foci were detected. The PC foci were detected in 52.6%, 39.5%, 37.2% and 48.8% by T2WI, DCE, DWI and RTE, respectively. The detection rate of PC foci localized in the anterior/posterior prostate was 21.1%/41.4%, 42.1%/41.4%, 42.1%/37.9% and 47.4%/65.5% in T2WI, DCE, DWI and RTE, respectively. Small PC foci with a volume of less than 1 ml was more likely to be detected by RTE (41.4%) in comparison with other imaging modalities. Although stepwise improvement of PC detection rate was found from T2WI through T2WI+DWI or T2WI+DCE to T2WI+DCE+DWI+RTE, no significant difference in PC detection rate was found between T2WI+DCE+DWI+RTE and T2WI+D1W1+RTE.

**Conclusions:** RTE can provide a strong impact on the detection of posteriorly localized PC or smaller PC. Our study demonstrates that the combination of DWI and RTE can eliminate the necessity of expensive and time-consuming DCE in detecting PC.
MP-21.10
Predictive Value of the Prostatic Inflammation in the Development of Prostate Cancer
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Introduction and Objective: Several studies have tried to show a link between inflammation and cancer. In prostate cancer (PCa) development, this question is still not completely elucidated. The aim of the study was to investigate, whether the presence of inflammation in the first series of prostate biopsies was a factor of risk.

Materials and Methods: In this retrospective study, we examined prostate biopsy specimen of 220 consecutive patients who had undergone repeat prostate biopsies in our Department. The first screening round was performed between 2000 and 2005. These first prostate biopsies were examined by two pathologists blinded to the patient’s follow-up. Inflammation and multiple precise histological criterions were evaluated. The presence/absence of focal atrophy, diffuse atrophy, hyperplasia, high grade PIN (HGPIN), focal or diffuse inflammation, lymphoid follicles, lymphocytes, granulocytes and histiocytes were studied. Cox proportional hazard model was used to evaluate the role of histological markers on the risk of PCa. We compared PCa incidences rates (IR) for the different histologic markers using χ² analysis and estimated the relative risk (RR) of PCa.

Results: There were 201 patients (mean age at the initial biopsy: 65.5 years) who were included definitively. The median follow-up was 2.1 years (42 days-8.1 years) between the first and the last biopsy. 126 patients (62.7%) were identified with inflammation in the first biopsies (inflammatory group [IG]). 97 patients (48.3%) had PCA, 58 from the IG. PCA IR did not differ significantly between patients with or without inflammation (RR: 0.9, p = 0.6). The average serum PSA level was significantly higher among IG (10.5 ng/mL versus 7.8, p = 0.0008). PCA IR did not differ significantly between patients with or without the followed factors in the first biopsies: focal atrophy (RR: 1.2, p = 0.4), hyperplasia (RR: 1.1, p = 0.5), HGPIN (RR: 1.3, p = 0.3), focal inflammation (RR: 1.2, p = 0.3), diffuse inflammation (RR: 0.5, p = 0.07), the presence of lymphoid follicles (RR: 1.0, p = 1.0) or lymphocytes (RR: 0.9, p = 0.8) or granulocytes (RR: 1.3, p = 0.4) or histiocytes (RR: 1.0, p = 1.0). PCA IR was significantly lower in patients with diffuse atrophy (RR: 0.5, p = 0.01) in the initial biopsies.

Conclusions: According to these data, the presence and type of histological inflammation on initial prostate biopsies does not seem to be a risk factor for the development of PCa.

MP-21.11
Prevalence of Latent Prostatic Carcinoma in Russia: The Autopsy Study
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Introduction and Objectives: The incidence of prostate cancer has increased substantially all over the world since it became common practice to screen asymptomatic men for the disease. Several previous autopsy studies have suggested that prostate cancer might be more prevalent than it seems by the clinical detection rate. The aim of this study was to investigate the true prevalence and features of latent prostate cancer in Russia in a detailed pathological study.

Materials and Methods: One hundred autopsied cases (are ranged from 32 to 80) with no history of urological diseases were examined for prostate cancer and high grade prostatic intraepithelial neoplasia. All the prostates were completely embedded. The histological criteria of Gleason were used to diagnose and grade prostate carcinomas.

Results: The prevalence of prostate cancer in this study was 36.4%. The most common Gleason scores were 2+2, 2+3 and 3+3 (61%) followed by 3+4 and 4+4 (39%) patterns. High grade prostatic intraepithelial neoplasia was present in 28 (28%) cases, of which 19 cases were associated with the presence of cancer and 9 were free of cancer. Eight prostate glands contained multifocal tumors with a total of 45 tumors in 36 specimens. Of 45 cancerous foci 86.7% were localized in the peripheral zone. Seventeen prostates out of 36 contained tumors with a volume greater than 0.5 cc and 7 - greater than 1.5 cc. Seminal vesicle invasion was identified in 2 cases.

Conclusion: The prevalence of latent prostate cancer in our series is similar to those reported in the literature. Tumors in elderly men were more likely to be larger and poorly differentiated. The probability to find a tumor with a volume larger than 1.5 cc in our study is higher than in other autopsy studies. This may be partially explained by the fact of insufficient use of prostate cancer screening program in Russian Federation.

MP-21.12
High Incidence of Significant Cancer Detected by Prostate Saturation Biopsy
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Introduction and Objective: Men with previously negative prostate biopsies but continued suspicion for cancer present a diagnostic dilemma often managed by prostate saturation biopsy. We evaluated whether saturation biopsy improved the detection of significant cancer.

Materials and Methods: Between 2001 and 2008, 68 saturation biopsies were performed in 59 men who previously had negative biopsy results. A biplane TRUS probe was used and it was attached to a brachytherapy stepping unit with a standard 0.5-cm brachytherapy template and positioned over the perineum. The number of biopsy cores taken depended on the size of prostate and ranged from 17 to 78.

Results: Twenty-six of the men (44%) were diagnosed with cancer, and 16 of those 26 (62%) elected to undergo radical prostatectomy. Adenocarcinoma was detected in the transition zone in 68 of 99 cancer specimens (68.7%), and 46 of those 68 specimens (68%) had a Gleason score 7 or greater. Postprocedural urinary retention was a complication from biopsy in 5% of the patients, but no patient had acute prostatitis. Using Mann-Whitney’s U test, we found that in cancer cases the primary biopsy frequency and PSAD were significantly higher and the prostate volume was significantly lower. Logistic model coefficients and ROC analysis indicated that cut-off values of primary biopsy frequency, PSAD, and prostate volume were respectively 2 times, 0.30, and 35.8 ml. Of three factors, primary biopsy frequency contributes to cancer detection. Of the cancer detected in this study, 73% was clinically significant (i.e., Gleason score ≥7 and/or tumor volume ≥0.5 cm³).

Conclusions: Saturation biopsy appears to enhance the identification of transition zone cancers and is an effective diagnostic tool for detecting significant cancer.
MP-21.13
Accuracy of Multi-sequence Magnetic Resonance Imaging of Radio-recurrent Prostate Cancer
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Introduction and Objective: Men treated with external beam radiotherapy (EBRT) for prostate cancer may develop recurrent disease. Multi-functional magnetic resonance imaging (MRI) of the prostate has shown promise in evaluating the presence of cancer within the prostate. Studies evaluating the role of MRI in determining local recurrence after EBRT have been limited by use of inappropriate or inaccurate reference standards. We demonstrate the role of multi-functional MRI in evaluating local recurrence using transperineal template-guided 5mm-spaced biopsies (prostate mapping) which have been shown to be accurate in detecting and localizing significant prostate cancer.

Materials and Methods: Thirteen patients with evidence of biochemical recurrence following EBRT who had undergone multi-functional MRI and prostate mapping were included. Each scan (consisting of T1/T2 weighting, dynamic contrast enhancement and diffusion weighting) was reported by two uro-radiologists expert in reporting multi-functional prostate MRI. Each prostate was divided into four regions of interest generating 52 paired datasets for analysis. Prostate mapping was performed under general anaesthesia with biopsies taken at every 5mm coordinate on a brachytherapy template grid.

Results: Mean age was 65.5 years (range 55-70), mean PSA pre-radiotherapy 36.6ng/ml (range 4.5-150), mean time from radiotherapy to biochemical recurrence 5.7 years (range 5-10) and mean PSA at time of recurrence 7.1 (0.83-27.9). Eleven men had histological evidence of recurrence with 23/52 ROIs involved with cancer. Overall accuracy, as expressed by the area under a constructed receiver-operator curve, was 0.77 and 0.89 for all cancer, with accuracies of 0.86 and 0.93 for those cancers with at least 3mm biopsy core length. Inter-observer variability was measured by calculating kappa coefficients, which showed fair and moderate agreement between radiologists.

Conclusions: Interpretation of multi-functional prostate MRI after previous EBRT is challenging and requires expertise. Using an accurate reference standard is important to determine accuracy rates. Our results demonstrate that good accuracy is achieved. These results need verification in a larger number of patients, but have implications for determining presence or absence of local recurrence and subsequent local salvage therapy.

MP-21.14
Serum LH Value as Diagnostic Tool in Locally Advanced and Metastatic Prostate Carcinoma
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Introduction and Objective: The evaluation of LH values in patients with BPH, localized, locally advanced and metastatic prostate cancer has been undertaken with goal to point out the eventual diagnostic benefit of it.

Materials and Methods: LH values were measured in 120 patients divided in four groups, from January 2005 to December 2008. All patients were between 55 and 75 years of age. Group 1: patients with BPH (30), group 2: with localized prostate cancer (30), group 3: with locally advanced cancer (30), and group 4: with metastatic prostate cancer (30 patients). LH values were evaluated before introduction of any kind of treatment.

Results: In the first two groups LH values were in normal range. In the group of patients with locally advanced disease LH values were lower compared to first two groups but statistically not significant (p>0.01). Patients with metastatic prostate cancer had LH values significantly lower than other three groups (p<0.01).

Conclusions: Serum LH value might, along with all standard diagnostic modalities, be a non-invasive predictor of natural history of prostate cancer.

MP-21.15
Proton Magnetic Resonance Spectroscopy Imaging in Diagnosis of the Prostate Cancer
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Introduction and Objective: Carcinoma of the prostate is one of the most common male neoplasms. We have been observing tendency to increase both number of CaP cases and deaths caused by this cancer. Strong correlation between age (over fifty) and number of positive diagnosis can be observed. In 2004 prostate cancer took 2nd place in incidence and 3rd in mortality among all malignant neoplasms. In 2020 20% of the Polish population will be over 65 years old, which is why the problem of treating prostate diseases is important and actual. The aim of this study is to answer the question about possibility of improved effectiveness of USG guided, targeted transrectal core biopsy and based on Proton Magnetic Resonance Spectroscopy Images.

Materials and Methods: Thirty-two males suspicious of prostate cancer and negative result of sextant core biopsy were qualified to this study. All of them had undergone a transrectal MRI-Sp examination with a positive result. All of them had transrectal core biopsy targeted on atypical suspicious findings in MRI-Sp. Transrectal biopsy was performed using ultrasonography B-K Medical- 2101 Falcon and core biopsy automat Pro-Mag 2.2L. Biopsy System Urotech. Biopsies were performed in patients randomly divided into two groups. Group I in which MRI-Sp positive places were localized by use of our own electronic method of MRI images reconstruction and then transferring them to TRUS image. Group II in which MRI-Sp positive places were localized by use of MRI image only.

Results: Biopsies were performed in patients randomly divided into two groups I-with reconstruction images from MRI-Sp and II without this reconstruction.

Conclusions: Proton Magnetic Resonance Spectroscopy Imaging when compared to morphological MR provide additional information about metabolic changes in prostate tissue. Our own method of localizing and transferring Proton Magnetic Resonance Spectroscopy Images to ultrasonography image increases prostate cancer detectability.

MP-21.15, Table

<table>
<thead>
<tr>
<th>Result of Histopathological Examination</th>
<th>Group II (Without Images Reconstruction)</th>
<th>Group I (With Images Reconstruction)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N (16)</td>
<td>%</td>
</tr>
<tr>
<td>Prostate cancer</td>
<td>4</td>
<td>25</td>
</tr>
<tr>
<td>PIN II</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Inflammatory changes</td>
<td>3</td>
<td>18.75</td>
</tr>
<tr>
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