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MP-1.01
Clinical application of chromosome 8q24 SNPs in prostate cancer diagnosis

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Introduction and Objective: Several large genome-wide association studies using high-throughput SNP gene chips have shown that SNPs rs1447295, rs16901979 and rs6983267, in particular, were associated with increased prostate cancer risk. We examined whether these SNPs could be used in a clinical setting for prostate cancer detection.

Materials and Methods: We genotyped 2789 men who underwent a prostate biopsy for prostate cancer detection, based on an abnormal PSA or DRE for rs1447295, rs16901979 and rs6983267. These subjects were well characterized for cancer status, age, family history of prostate cancer, ethnicity, urinary voiding symptoms, PSA, free:total PSA ratio and DRE, which were incorporated in a predictive model. Multivariate logistic regression and nomogram construction examined the significance of the chromosome 8q24 SNPs. Area under the curves (AUC) were compared using receiver operating characteristic (ROC) analysis.

Results: Of 2789 men, 1299 (46.6%) had prostate cancer at biopsy and 1490 (53.4%) had no cancer. Of the 3 SNPS, rs1447295 showed the strongest association with prostate cancer. The probability for prostate cancer was 44.2%, 53.4% and 65.5% for patients with the CC, CA and AA genotypes, respectively ($p = 3\times10^{-8}$). After adjusting for age, family history of prostate cancer, ethnicity, urinary voiding symptoms, PSA, free:total PSA ratio and DRE, the odds ratio for patients with the GG genotype was 2.0 (95% CI 1.1–3.7). A nomogram was constructed using all predictor variables including genotype status of rs1447295. The AUC for the nomogram in predicting prostate cancer was 0.72 (95% CI 0.70–0.74). In subanalysis, when we stratified by genotype status, for patients with the variant genotype, AA, the AUC for predicting prostate cancer by the predictor variables of age, family history, ethnicity, urinary voiding symptoms, PSA, free:total PSA ratio and DRE was 0.92 (95% CI 0.86–0.99). This was significantly greater than the AUC for patients with the CC or CA gentoypes (AUC 0.71, 95% CI 0.69–0.73, $p < 0.0001$).

Conclusion: The rs1447295 SNP of chromosome 8q24 is strongly associated with prostate cancer and can be used in nomograms to enhance the clinical detection of prostate cancer. In particular, prostate cancer can be accurately identified by the nomogram for subjects with the variant AA genotype (AUC 0.92).

Keywords: CANCER, GENOMICS, PROSTATE

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MP-1.02
Long-chain omega-3 fatty acids, COX2 gene polymorphism and aggressive prostate cancer

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Introduction and Objective: There is suggestive evidence that intake of foods containing long-chain omega-3 polyunsaturated fatty acids — eicosapentaenoic acid (EPA) 20:5 and docohexaenoic acid (DHA) 22:6 — may protect against prostate cancer risk. Moreover, such an effect could be mediated by genetic factors involved with fatty acid metabolism. We evaluated the impact of dietary intake of EPA and DHA on aggressive prostate cancer risk, and whether this was modified by variants in the COX2 gene.

Materials and Methods: Our case–control study of aggressive prostate cancer is comprised of 1012 subjects recruited from the Cleveland, OH, area. Prostate cancer cases were defined by the following clinical criteria: clinical T stage ≥ T2c, initial PSA ≥ 10 or biopsy Gleason score ≥ 7. Controls were frequency matched to cases for age, institution and ethnicity. We assessed food intake by validated questionnaire and calculated nutrient intake. Nine single-nucleotide polymorphisms (SNPs) tagging the COX2 gene were genotyped using the Taqman allelic discrimination assay. Unconditional logistic regression models were fitted including the following covariates: age, ethnicity, institution, total energy and fat intake, smoking, family history of prostate cancer, and screening for prostate cancer before study enrolment.

Results: Both EPA and DHA were associated with a dose–response reduction in prostate cancer risk (p for trend ≤ 0.0001). The ORs (95% CI) comparing the highest quartile of fatty acid intake to the lowest equaled 0.44 (0.30–0.65) and 0.37 (0.25–0.55) for DHA and EPA, respectively. The EPA association was modified by the rs274557 COX2 variant (interaction $p < 0.05$). Among men carrying the rs2745557 wild-type (GG), the protective effect of EPA was slightly attenuated accros all quartiles. In contrast, among men carrying one or 2 copies of the variant allele (GA/AA), the effect was stronger. We did not observe any other statistically significant interaction between EPA or DHA and any of the other COX2 SNPs.

Conclusion: Intake of food containing the long-chain omega-3 fatty acids EPA and DHA is inversely associated with aggressive prostate cancer. The protective effect of EPA is even stronger among men with the rs274557 COX2 variant. This might be expected because COX2 is a key enzyme involved in the metabolism of fatty acids.

Keywords: GENOMICS, PROSTATE CANCER, RISK FACTORS

MP-1.03
Nomogram evaluation of the PCA3 molecular urine test for prostate cancer detection

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Introduction and Objective: The impact of the PCA3 test with other known risk factors for prostate cancer screening is unclear. We evaluated the significance of PCA3 in a pooled analysis from North American (NA) and European (EU) studies compared to known risk factors for prostate cancer.

Materials and Methods: The NA study consisted of 560 men who underwent a prostate biopsy for an abnormal PSA or DRE. The EU study consisted of 459 men who had one or more biopsies for the same. The 2 cohorts were combined adjusting for previous biopsy. Urinary PCA3 RNA levels were measured using a TMA assay (GenProbe) and normalized to the amount of urinary PSA RNA to produce a PCA3 Score = [PCA3 mRNA] / [PSA mRNA] $\times 10^3$. Unconditional logistic regression, AUC and

nomogram analyses were used to examine how PCA3 performed against known risk factors for prostate cancer.
Results: Among the 1019 patients, 332 (32.6%) were diagnosed with cancer. The adjusted odds ratio for having prostate cancer for patients with the highest quartile of PCA3 was 4.3 (95% CI 2.7–7.1, $p < 0.0001$). From multivariate analysis, the AUC for a model that consisted of age, PSA, DRE, ethnicity, family history, previous biopsy, prostate volume and PCA3 level (0.73, 95% CI 0.69–0.76) was significantly greater than a model without PCA3 (0.70, 95% CI 0.67–0.74; test for joint equality of ROC curve: $p = 0.0007$). A nomogram was constructed that consisted of age, PSA, DRE, ethnicity, family history, previous biopsy, prostate volume and PCA3 level. In subanalyses, PCA3 level performed better among younger patients (AUC for < 60 yr = 0.80, 95% CI 0.73–0.86). When stratified by age and PSA, PCA3 was the best predictor for cancer for men < 60 years and PSA levels < 4.0 based on PCA3 quartile levels ($p = 0.0005$).
Conclusion: Urinary PCA3 is an independent predictor for prostate cancer detection and provides important predictive information in addition to standard factors and PSA. PCA3 appears to be of most benefit among younger men and with low PSA levels where the predictive value of current markers are lowest.
Keywords: BIOPSY, PROSTATE CANCER, SCREENING

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MP-1.04
Active surveillance for favourable risk prostate cancer: update of the Sunnybrook experience

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Introduction and Objective: Active surveillance for favourable risk prostate cancer is appealing in populations where prostate cancer screening is widespread owing to evidence that prostate cancer screening results in the detection of disease that is not life threatening. Canadian men represent such a population. The challenges are to 1) identify patients who have a low likelihood of disease progression during their lifetime; 2) establishing reasonable criteria for intervention, avoiding under and overtreatment; and 3) meeting the communication challenge of cancer anxiety.
Materials and Methods: Approximately 650 men with favourable risk prostate cancer (Gleason 6 or less, PSA < 10, T1c/T2a) have been managed with a formal protocol of active surveillance. This includes serial PSA q 3 months for at least 2 years, confirmatory biopsy at 1 year and then every 3–4 years, and definitive intervention for those patients reclassified as higher risk based on PSA kinetics or grade progression on biopsy. The interpretation of PSA kinetics incorporates a General Linear Mixed Model (GLMM). Among the stable group, the performance of various PSA triggers were compared.
Results: Overall survival is approximately 85% and disease specific survival is 99%. Among the patients who have remained on surveillance, the incidence of progression to metastatic disease and prostate cancer mortality was 0%. Using a trigger of a PSA velocity > 2.0 ng/mL/year, 50% of this stable group would have had a trigger for intervention at some point during follow up. Approximately 20% of patients are upgraded on repeat biopsy. In the majority, a small percentage of Gleason 4 pattern is identified on biopsy. Three percent were upgraded to Gleason 4+3, and 4% to Gleason 4+4.
Conclusion: With increasing follow up and numbers of patients, the experience with this approach continues to provide support for its safety. The mortality rate remains extremely low. The GLMM appears to provide a more rational basis for decision making with respect to the decision for intervention than PSA velocity or first vs. last PSA method of determining PSA doubling time.
Keywords: PROSTATE CANCER, PSA, SURVEILLANCE

MP-1.05
The impact of dietary factors on prostate cancer progression in patients on active surveillance

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Introduction and Objective: Patients on active surveillance represent a population where determinants of progression remain unknown. Dietary factors could play a role in preventing prostate cancer progression to a more advanced stage. The objective of this study is to examine the relationship between several nutritional elements and PSA velocity or doubling time as a measure of progression in a cohort of patients on active surveillance.
Materials and Methods: A prospective cohort of 163 patients with localized prostate cancer was followed expectantly with serial PSA and digital rectal exam since 1997. Out of this cohort, 79 patients agreed to participate in a detailed nutritional assessment carried out by a licensed clinical nutritionist. Dietary intake was analyzed for 34 basic nutrients, vitamins and minerals using commercially available nutritional analysis software (ESHA Research, Salem, OR).
Results: Multivariate logistic regressions observed the relation between several nutritional variables and different cut-offs of PSA doubling time and PSA velocity. The analyses identified that a higher fat intake is associated with a lower likelihood of having a PSADT > 2 and 3 years (HR 0.96; HR 0.89). Similarly, a daily fat intake between 82 and 94 g has a higher likelihood of having a PSA velocity > 1 and 3 ng/mL/year (HR 6.43, HR 15.56). In contrast, a higher daily intake of zinc is associated with a higher likelihood of PSADT > 3 and 4 years (HR 1.56, HR 1.4). The analyses demonstrated that a daily selenium intake higher than 135 µg is associated with lower likelihood of having a PSA velocity > 3 ng/mL/year (HR 0.11). Also, a daily vitamin C intake of more than 162 mg has a lower likelihood of having a PSA velocity > 1 ng/mL/year (HR 0.32).
Conclusion: This study suggests that a high fat diet may be associated with prostate cancer progression in patients on active surveillance as defined by PSA kinetics. The definition of disease progression is variable and can affect results of similar studies. Ongoing studies from our institution and others may help clarify the role of dietary factors and other environmental factors on the natural history of prostate cancer.
Keywords: PREVENTION, PROSTATE CANCER, WATCHFUL WAITING

MP-1.06
Currently used criteria for active surveillance in men with low-risk prostate cancer: an analysis of pathological features

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Introduction and Objective: Active surveillance represents one of the treatment options for low-risk, organ-confined prostate cancer. The challenge is to accurately identify those patients who are not at risk of progression. We addressed the rates of extracapsular extension, seminal vesicle invasion or high-grade tumours (Gleason sum 8–10) as proxy for more aggressive disease in a large cohort of patients treated with radical prostatectomy. We tested some of the currently used criteria in a large population of patients.
Materials and Methods: The population consisted of 4755 patients treated with radical prostatectomy at 2 centers. We identified 4281, 3969, 3972, 2444 and 2301 patients that qualified for active surveillance according to the criteria proposed by Hardie and colleagues, Choo and coauthors, Roemeling and colleagues, Klotz, and D'Amico and others, respectively. We examined the rates of unfavourable pathological characteristics and of high grade prostate cancer in these patients.
Results: Table 1 shows the number of patients who fulfilled each criterion and the rates of adverse pathological characteristics.
Conclusion: The more stringent the selection criteria the lower are the rates of unfavourable pathologic characteristics at radical prostatectomy. However, regardless of the criterion, in between 14% and 26% of the selected patients are at very high risk of failing active surveillance.

Table 1. Abstract 6.

	Clinical stage	PSA	Gleason score	*n*	ECE	SVI	HGPCa	Overall unfavourable
Hardie et al.	T1–T2	≤ 20	≤ 7	4281	1122 (26.2%)	353 (8.2%)	74 (1.8%)	1130 (26.3%)
Choo et al.	T1b–T2b	≤ 15	≤ 7	3969	971 (24.5%)	288 (7.3%)	66 (1.7%)	978 (24.6%)
Roemeling et al.	T1c–T2	≤ 15	≤ 7	3972	1004 (25.0%)	300 (7.5%)	66 (1.7%)	1011 (25.4%)
Klotz L.	T1c–T2a	< 15 ≤ 10	≤ 7 (3 + 4) age > 70 ≤ 6 age < 70	2444	364 (14.7%)	79 (3.2%)	17 (0.7%)	367 (15.0%)
D'Amico et al.	T1c–T2a	≤ 10	≤ 6	2301	313 (13.6%)	66 (2.9%)	13 (0.6%)	318 (13.8%)

Keywords: LOCALIZED PROSTATE CANCER, PROSTATE CANCER, SURVEILLANCE

MP-1.07

Nonsteroidal anti-inflammatory drug use is associated with decreased prostate cancer mortality

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Introduction and Objective: Regular use of nonsteroidal anti-inflammatory drugs (NSAIDs) has been associated with reduced risk of gastrointestinal and other cancers and possibly prostate cancer. The objective of this study was to examine the effect of regular use of NSAIDs on the risks of developing prostate cancer and dying from it, using data from the Saskatchewan Cancer Registry (SCR) and the Saskatchewan health databases.

Materials and Methods: The effect of NSAIDs on the risks of developing prostate cancer was examined with a case–control study nested within the at-risk cohort of all men eligible for prescription drug benefits in Saskatchewan. The effect of NSAID use on survival (overall and prostate cancer specific) was examined by studying the survival experience of the prostate cancer cases followed actively by the SCR from date of diagnosis through Dec. 31, 2001. Information on prognostic factors has been extracted from medical charts. The case group included all men ($n = 9111$) with primary prostate carcinoma who were registered with the SCR between Jan. 1, 1985, and Dec. 31, 2000. Four controls per case were randomly sampled and age matched. Detailed histories of exposure to prescribed NSAIDs were obtained from the Saskatchewan Prescription Drug Plan (SPDP). For each prescription, the date of dispensing, the active ingredient name and strength, and the form and quantity dispensed was obtained.

Results: NSAID use was associated with a lower risk of developing advanced (stage T3/N+/M+) prostate cancer and this effect was statistically significant for higher doses (HR 0.57, 95% CI 0.36–0.90). Survival analyses showed that among prostate cancer cases, men in the upper quintile of acetylsalicylic acid use experienced a significant reduction in the risk of dying from prostate cancer (HR 0.75, 95% CI 0.68–0.84) compared to men who were not dispensed acetylsalicylic acid after adjusting for prognostic factors such as age, stage, Gleason score, socioeconomic status and for the effect of cancer treatment. Similar results were observed for use of Coxibs but not for other NSAIDs. acetylsalicylic acid use was also associated with lower overall mortality.

Conclusion: Regular NSAID and acetylsalicylic acid use appears to be associated with reduced rate of advanced prostate cancer and reduced prostate cancer mortality.

Keywords: PROSTATE CANCER

MP-1.08

Role of magnetic resonance spectroscopic imaging in patients diagnosed with prostate cancer managed with active surveillance

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Introduction and Objective: There is increasing evidence that magnetic resonance spectroscopic imaging (MRI/MRSI) of the prostate helps in the prediction of pathologic findings at surgery or cancer recurrence after treatment. However, the role of these techniques in active surveillance has not yet been described. Therefore, in this retrospective cohort study, we determined whether MRI/MRSI was an independent predictor of disease progression in patients diagnosed with prostate cancer and managed with active surveillance.

Materials and Methods: From our urologic oncology database, we identified all patients ($n = 367$) diagnosed with prostate cancer and managed with active surveillance that had given consent for research. We then identified patients that had undergone an MRI/MRSI exam of their prostate from the radiology database, and we analyzed the first exam after diagnosis. The main predictor was whether a lesion suspicious for cancer was detected at MRI or was metabolically active at spectroscopy (MRSI). Univariate and multivariate Cox models were fitted to assess time to cancer progression defined as biopsy upgrading, PSA velocity of more than 0.75 ng/mL/year or clinical stage progression. Covariates included because of significance were age at diagnosis, year of diagnosis and time from diagnosis to MRSI imaging. Other risk factors for cancer progression were not significant at univariate analysis.

Results: Our final cohort included 111 patients that were imaged at least once. The median follow-up time was 4.3 years. Sixty-seven (58%) patients had a metabolically active lesion at MRSI and 78 (70%) had an anatomically suspicious lesion at MRI. Patients with a metabolically active lesion at spectroscopy had a higher risk of cancer progression (HR 2.4, 95% CI 1.04–5.5, $p = 0.04$) than patients without such a lesion. Patients with an anatomically suspicious lesion at MRI had a higher risk of cancer progression (HR 3.3, 95% CI 1.30–8.1, $p = 0.01$) than patients without such a lesion.

Conclusion: MRSI is an independent predictor of disease progression in patients diagnosed with prostate cancer and managed with active surveillance. Patients with a lesion suspicious for cancer and a metabolically active one are at higher risk of cancer progression.

Keywords: PROSTATE CANCER, WATCHFUL WAITING

MP-1.09

External-beam radiation therapy increases the rate of secondary malignancies relative to radical prostatectomy in men with prostate cancer

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Introduction and Objective: Several previous reports addressed the effect of external beam radiation therapy (EBRT) on the rate of secondary malignancies in patients with localized prostate cancer. Conflicting results were reported. We addressed the association between EBRT exposure and secondary malignancies rate in a large administrative database.

Materials and Methods: The study population consisted of 10 333 men treated with radical prostatectomy (RP) ($n = 6196$) or EBRT ($n = 4137$) between 1983 and 2004 without neo or adjuvant hormonal therapy. The diagnosis of bladder, lung and colorectal cancer were established with the ICD-9 and surgery codes that defined extirpative interventions aimed at eradicating these 3 malignancies (cystectomy, lobectomy or pneumectomy and colectomy with or without rectal resection). Univariable and multivariable Cox regression analyses addressed the rate of secondary malignancies (bladder, lung and rectal cancer).

Results: Overall, 92 (0.9%) cystectomies, 82 (0.8%) lung cancer surgeries and 228 (2.2%) surgeries for colorectal cancers were performed. In univariable analyses, the rate of cystectomies (log rank $p = 0.002$), of treatments for lung cancer (log rank $p < 0.001$) and for colorectal cancers (log-rank $p < 0.001$) were higher in patients treated with EBRT relative to patients treated with RP. At multivariable analyses, after adjusting for age, baseline comorbidities and year of treatment (coded in quartiles), EBRT predisposed to a 3.0-fold higher rate of cystectomy for bladder cancer

($p = 0.04$), to a 1.8-fold higher rate of lung cancer resections ($p = 0.02$) and to a 1.7-fold higher rate of rectal cancer ($p = 0.02$).
Conclusion: The increased rate of secondary malignancies after EBRT should be considered in localized prostate cancer treatment decision-making.
Keywords: LOCALIZED PROSTATE CANCER, PROSTATE CANCER, RADIATION

MP-1.10

The relation between prostate tumour density and pathologic and clinical outcomes

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Introduction and Objective: Tumour volume and more recently prostate volume have been suggested to be significant factors predictive of outcome following radical prostatectomy (RP). In this study we evaluate the interaction of these 2 variables as tumour density in its ability to predict for pathologic and clinical outcomes.
Materials and Methods: Between 1995 and 2007, 447 consecutive patients were treated with RP alone at our institution. Of these 272 had tumour and prostate volume measurements and served as the study population. Univariate and multivariate Cox proportional hazards analyses incorporating patient age, pretreatment PSA, RP cancer volume, RP Gleason sum, and individual components of RP stage were conducted to assess the ability of tumour density to predict surgical margins (SM), extracapsular extension (ECE), high grade Gleason score (7–10) and recurrence free survival. Tumour density was analyzed as a categorical variable (0%–5% v. > 5%). Recurrence was defined as a PSA > 0.2 ng/mL or postoperative use of adjuvant radiation or hormonal therapy.
Results: Tumour density predicted for all pathologic endpoints in univariate analysis and for SM and ECE in multivariate analysis ($p < 0.05$). When controlling for tumour density, cancer volume was only predictive of RP Gleason sum 7–10. Tumour density predicted for disease free interval in univariate ($p < 0.05$) but not in multivariate analysis (HR = 0.92, 95% CI 0.36–2.36). Cancer volume was also not predictive of recurrence ($p = 0.86$).
Conclusion: Tumour density is a more important predictor of ECE and SM than cancer volume. However, despite predicting for these pathologic endpoints, it failed to predict for disease recurrence when controlling for other standard pathologic variables. Nonetheless, the significance of tumour density in predicting these pathologic endpoints has implications on surgical management and thus warrants further study.
Keywords: ANDROGEN INDEPENDENCE, PROGNOSTIC MARKER, PROSTATE CANCER, PROSTATE VOLUME

MP-1.11

External validation of the updated Partin tables in a cohort of North American men

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Introduction and Objective: The Partin Tables were updated in 2007. However, their accuracy and performance characteristics were not confirmed in an external validation cohort.
Materials and Methods: Clinical and pathological characteristics were available from 1838 men treated with radical prostatectomy between 2001 and 2005 at the Cleveland Clinic Foundation. These data were used to examine the discrimination and calibration properties of the 2007 Partin Tables. Receiver operating characteristics derived area under the curve (AUC), quantified the discriminate properties of the 2007 Partin Tables' extraprostatic extension (EPE), seminal vesical invasion (SVI) and lymph node invasion (LNI) predictions. Calibration plots examined the relation between the predicted and observed rates of EPE, SVI and LNI.
Results: The rates of EPE, SVI, and LNI were 26.9%, 5.5% and 1.8%, respectively. The accuracy of EPE, SVI and LNI prediction was, respectively, 71%, 80% and 75%. EPE predictions between 0 and 25% and LNI predictions between 0 and 5% correlated very well with the observed EPE and LNI rates. Conversely, suboptimal correlation was recorded between predicted and observed SVI rates as well as between predicted and observed rates of EPE and LNI for predicted EPE and LNI values above 25% and 5%.
Conclusion: In this examined validation cohort, the overall accuracy of the Partin Tables is comparable to the results reported for the original 2007 development cohort. However, the performance characteristics indicate that predictions within specific probability ranges should be interpreted with caution.
Keywords: LOCALIZED PROSTATE CANCER, NOMOGRAM, PROSTATE CANCER

MP-1.12

The effect of androgen deprivation therapy on the rate of subsequent non-cancer morbidities

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Introduction and Objective: Androgen deprivation therapy (ADT) is widely used for the treatment of prostate cancer patients. This treatment modality exposure has been shown to be associated to a subsequent increase in the rate of other comorbidities. We examined the effect of ADT exposure time on the rate of 12 different comorbidities in a large administrative database.
Materials and Methods: The study population consisted of 28 510 prostate cancer patients diagnosed between 1983 and 2004. Of these, 10 787 (37.8%) were treated with androgen deprivation therapy according to medication codes. Exposure to more than 1.5 years was recorded in 6437 patients (59.7%). The addressed comorbidities consisted of: myocardial infarction, congestive heart failure, peripheral vascular disease, dementia, cerebrovascular disease, chronic pulmonary disease, connective tissue disease, ulcer disease, moderate to severe renal disease, diabetes, mild liver disease and moderate to severe liver disease. Univariable and multivariable Cox regression analyses were performed. Covariates included age, antiandrogen therapy exposure and comorbidities acquired prior to the date of the diagnosis of the comorbidity of interest. Each comorbidity was addressed in a separate analysis and was excluded from the list of covariates. Comorbidities were coded as cubic splines, to account for nonlineal effect.
Results: In univariable analyses, the rates of myocardial infarction (HR 1.24, $p < 0.001$), congestive heart failure (HR 1.49, $p < 0.001$), peripheral vascular disease (HR 1.13, $p = 0.002$), dementia (HR 1.98, $p < 0.001$), cerebro-vascular disease (HR 1.22, $p < 0.001$), chronic pulmonary disease (HR 1.18, $p < 0.001$), moderate to severe renal disease (HR 1.53, $p < 0.001$) and diabetes (HR 1.19, $p < 0.001$) were elevated in ADT exposed patients relative to unexposed ones. In multivariable analyses, after adjusting for age and antiandrogen therapy exposure, virtually all rates of these morbidities were increased in ADT exposed individuals. Interestingly, after controlling for other comorbidities using the time-dependent covariate approach and after coding other comorbidities such as cubic splines, only the rates of dementia ($p = 0.02$) and of chronic pulmonary disease ($p = 0.01$) maintained their independent predictor status.
Conclusion: Exposure to ADT is associated with an increased risk of developing dementia and chronic pulmonary disease. Lack of detailed control for the confounding effect of comorbidities and of variable ADT exposure time may falsely exaggerate the strength of the association between ADT and other morbidities.
Keywords: ANDROGEN ABLATION, PROSTATE CANCER, QOL

MP-1.13

Intake of a healthy diet pattern and health related quality of life in patients diagnosed with prostate cancer

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Introduction and Objective: There is increasing evidence that dietary

interventions may be beneficial in cancer patients treated with a curative or palliative intent. However, the effect of nutrition intake on health-related quality of life (HRQoL) in prostate cancer patients is not known. In this cross sectional study, we tested the hypothesis that adherence to a healthy diet pattern was associated with a better HRQoL in patients initially diagnosed with localized prostate cancer.
Materials and Methods: The more than 13 000 men enrolled in CaPSURE, a national prostate cancer registry, were invited to participate in our nutrition study; 2134 men were enrolled. Inclusion criteria for this analysis were to have localized disease at diagnosis, and have completed the mailed food frequency questionnaire (FFQ) and HRQoL measurements within 6 months. Healthy diet pattern was defined as the upper quartile of intake for fruits and vegetables, and legumes, and as the lower quartile for red meat and refined grains. We used analysis of variance and adjusted for the following variables: age, race, education and income levels, living with partner, BMI, smoking status, PSA, Gleason sum, clinical T stage all at diagnosis, cancer risk category and treatment type.
Results: Among the 1807 men included for analysis, the median time between prostate cancer diagnosis and completion of FFQ was 3 years. Overall, 322 patients met the criteria for the healthy diet pattern. In univariate analyses, the physical component domain of SF-36 questionnaire, and the bowel function domain of the UCLA Prostate Cancer Index (PCI), were statistically significantly associated with healthy diet pattern (all $p < 0.03$). Sexual and urinary function domains (PCI) and mental component domain summary (SF-36) were not significant. In the multivariate analysis, only the physical component summary domain remained statistically significant ($p = 0.026$).
Conclusion: Regardless of other factors known to influence physical well-being, such as smoking, BMI and disease stage, men diagnosed with localized prostate cancer who maintained healthier diets were able engage more in physical activities, experienced less pain and discomfort, and felt healthier than those who ate less healthily. Prospective evaluation of dietary pattern and HRQoL after prostate cancer diagnosis is warranted.
Keywords: PROSTATE CANCER, QOL, RISK FACTORS

MP-1.14

Repeat biopsy for ultrasound-guided prostate biopsy system

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Introduction and Objective: Repeat biopsy is an important clinical tool in prostate cancer detection. Urologist need to identify previous biopsy sites on current scan so that those sites will be re-visited or avoided. Due to different imaging condition, patient posture, or prostate shape deformation between 2 scans, it is challenging to map previous biopsy sites onto current prostate volume. In this paper, we present a repeat biopsy scheme for Eigen's ultrasound-guided prostate biopsy system under development.
Materials and Methods: Ultrasound images from previous visits are saved as volume, segmented surface and biopsy sites file. For the ultrasound scan of current visit, prostate surface is segmented first, either manually or using a semi- or fully-automated segmentation technique. Then prostate surface from previous scan is registered to current segmented surface, using a robust surface-based registration method, through which correspondence is determined. Then thin-plate splines transformation can be built and previous biopsy sites are projected onto current prostate volume. The system is developed on Microsoft Windows XP using VC++ (Microsoft Corp., Redmond, Wash.)
Results: We tested our repeat biopsy system using specially designed prostate phantom data sets acquired using 3D transrectal ultrasound (TRUS) system. The phantom includes beads to simulate biopsy sites. Beads in ultrasound scans serve as landmarks and the distance between computer estimated locations and actual position is used to evaluate the system performance. In our experiments, the average distance is 2.16 mm and the standard deviation is 0.51 mm.
Conclusion: We presented a newly developed repeat biopsy system for ultrasound-guided prostate biopsy. The accuracy meets the requirement of biopsy system.
Keywords: BIOPSY, IMAGING, PROSTATE CANCER

Moderated Poster Session 2: Training/UTI/Sexual Function
June 22, 2008, 1430–1600

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MP-2.01

Closure v. nonclosure of buccal mucosal graft harvest site: a randomized controlled trial

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Introduction and Objective: To determine the impact of closure versus nonclosure of the buccal mucosal graft harvest site in men undergoing urethral reconstruction. The primary endpoint is postoperative oral pain. Secondary endpoints are return to regular diet, oral numbness, change in salivation and mouth opening.

Materials and Methods: To date, 29 of 50 patients have been randomized, 14 to donor site closure and 15 to donor site open. Procedures were performed by 1 surgeon (K.R.). Postoperatively, questionnaires were completed daily for the first week and monthly for 6 months. The questionnaire consisted of a visual analog pain scale as well as questions pertaining to return to regular diet, salivation, numbness and ability to fully open mouth.

Results: There were no early- or long-term donor site complications in either group. Postoperative pain demonstrated a trend favouring the open group at postoperative day 1 (4.8 v. 2.3, $p = 0.10$). At 6 months, there was no difference in pain scores between groups (0.2 v. 0.4, $p = 0.53$). Return to regular diet was sooner for the open group at postoperative day 1 (6 v. 1, $p = 0.02$). At 6 months, all patients were tolerating regular diet. Numbness at harvest site was present in 5 open versus 7 closed patients ($p = 0.15$) postoperative day one. At 6 months, 2 open versus 4 closed patients ($p = 0.05$) complained of numbness. Change in saliva was reported in 3 open versus 4 closed at postoperative day 1 and by one in each group at 6 months. Full mouth opening at postoperative day 1 was reported by 6 open and 1 closed ($p = 0.02$). At 6 months, 8 open and 6 closed reported full mouth opening ($p = 0.24$).

Conclusion: At this point, interim data suggest that leaving the buccal mucosal graft site open may lead to lower reported pain scores, earlier return to full diet, and earlier return to full mouth opening early in the postoperative period. At 6 months follow-up, there may be a decrease in harvest site numbness for patients in the open group.

Keywords: DONOR, STRICTURE, URETHRA

MP-2.02

Accounting for attrition rates and causes of intercavernosal injection therapy (ICI) in patients with erectile dysfunction (ED)

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Introduction and Objective: Intracavernosal injection (ICI) therapy with vasoactive agents is a commonly used treatment for erectile dysfunction (ED) at our outpatient clinic. This study is to determine our ICI program's attrition rates and factors contributing to user dissatisfaction. We also examined the ICI outcomes in the postprostatectomy subpopulation and how they differed from other men.

Materials and Methods: All patients who attended ICI Teaching Clinic (from Jan. 1, 2000, to Dec. 31, 2004) were contacted by mail, and each received a satisfaction survey. Retrospective chart reviews identified patient characteristics and ED risk factors. Surveys assessed previous treatments, reasons for discontinuation and side effects experienced. Current erectile function was assessed via 3 validated questionnaires (International Index of Erectile Function [IIEF-5], Erectile Dysfunction Index of Treatment Satisfaction [EDITS] and Sexual Encounter Profile [SEP]).

Results: In total, 189 of a 704 possible men were enrolled (27%), yet 94% of all contacted prostatectomy patients participated. The majority of ED risk factors were related to vascular dysfunction and pelvic surgery. Overall attrition was 61.3%, at a mean interval of 5.25 months, and most reported discontinuance owing to ineffective therapeutic response (34%), partner dissatisfaction (22%) and painful injections (13%). The postprostatectomy population ($n = 118$) had a 12% lower attrition rate in comparison to nonprostate surgery group (54% v. 66% in the nonprostatectomy group) while experiencing significantly more side effects (39% v. 24% in the nonprostatectomy group, $p = 0.046$). The IIEF-5 scores were 13.8 in the postprostatectomy group, compared with 10.2 in the nonprostatectomy group. Both groups showed SEP scores of 1.8 once ICI was stopped; however, the postprostatectomy group currently using ICI reported a significantly higher mean SEP score (3.5, $p = 0.03$). Average EDITS scores were highest for post-prostatectomy respondents currently using ICI (71 v. 57 for nonsurgical group using ICI currently).

Conclusion: Almost two-thirds of men who begin ICI discontinue its use, mainly owing to its poor therapeutic response. Patients with satisfactory responses are more likely to continue. Men who have had prostatectomies are more likely to continue, score better on the IIEF, SEP, and EDITS questionnaires, and report better erectile quality and function (compared with men with other risk factors) while on ICI. This may reflect a lower risk profile in general in this population. While the dropout rate of ICI was high in this study population, ICI should be considered as a good option for men who have undergone prostatectomy.

Keywords: ERECTILE DYSFUNCTION, RADICAL PROSTATECTOMY, SEXUAL ACTIVITYMP-2.03

MP-2.03

Quality of life assessment after urethral reconstruction

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Introduction and Objective: To identify factors affecting patient satisfaction and quality of life after urethral reconstruction for urethral stricture disease and to further assess if patient satisfaction following urethral reconstruction correlates to objective clinical success.

Materials and Methods: One hundred and forty-five consecutive patients who underwent urethral reconstruction by a single surgeon (K.R.) between August 2003 and August 2006 were invited to complete study questionnaires assessing urinary health, sexual function and patient satisfaction by mail or telephone interview. The questionnaires included a customized 14-item questionnaire, the AUA symptom score and SF-36 quality of life assessment. Patient characteristics and clinical outcomes were obtained through retrospective chart review and creation of a urethral reconstruction database. Questionnaire results were analyzed by comparing clinical variables and cystoscopic findings following urethroplasty.

Results: The response rate was 56%. An overall urethral patency rate of 89% was based on cystoscopic findings. Questionnaire findings indicated 86% of patients were either satisfied or extremely satisfied; and only 4% were dissatisfied or very dissatisfied with the results of their operation. Ninety-one percent of patients reported that they would undergo urethral reconstruction again. Patient satisfaction does not appear to correlate with urethral patency rates on 6 m postoperative cystoscopy ($R = 0.10$).

Conclusion: Patient satisfaction after urethral reconstruction is not solely determined by a patent urethra on cystoscopy. The majority of patients who underwent urethral reconstruction were either satisfied or very satisfied with the operative result and would undergo urethroplasty again. Further quality of life research is needed in the area of urethral reconstruc-

tion to help determine specific needs of these patients so that successful surgical outcomes can be matched with patients' high quality of life.
Keywords: QOL, RECONSTRUCTION, URETHRA

MP-2.04

Bacterial adhesion and viability to 5 commercially available stents

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Introduction and Objective: Ureteral stents are prone to infection and may cause significant morbidity. Newer materials, coatings and drug-eluting stents have been designed in an attempt to reduce infection. We sought to determine the bacterial adhesion of 6 common uropathogenic bacteria to 5 commercially available stents over a 48-hour and 7-day time period.
Materials and Methods: Three-centimeter segments of ureteral stents: Triumph (Triclosan-eluting), Percuflex, silver-coated (Boston Scientific); Radiance (Heparin-coated Endo-Sof stent); and Endo-Sof stents (Cook) were incubated in sterile artificial urine with approximately 10e8 CFUs/ml of 1 of 6 common bacterial pathogens (*Escherichia coli* C1214, *Proteus mirabilis* 296, *Enterococcus faecalis* 1131, *Klebsiella pneumoniae* 280, *Staphylococcus aureus* Newman, *Pseudomonas aeruginosa* AK1) for 48 hours or 7 days at 37°C. Stents were rinsed to remove loosely adherent bacteria and sonicated to remove the adherent bacteria. Sonicated fluid samples were plated on agar plates for bacterial counts.
Results: With the exception of the triclosan eluting stent, all stents were colonized with bacteria ranging from $3 \times 10e4$ to $2.1 \times 10e7$ CFU/cm^2 (p = ns) for all bacteria tested. The triclosan eluting stent prevented any growth of E. coli and Klebsiella. For the triclosan stent, levels of Staphylococcus, Pseudomonas, and Proteus were $2.4 \times 10e2$, $7.7 \times 10e1$, and $3.8 \times 10e1$ CFU/cm^2, respectively. The Endo-sof coated heparin stent and its control (Endo-sof) had equal amounts of bacterial growth in all bacteria tested ($2.5 \times 10e4$ to $1.1 \times 10e6$ CFUs/cm^2). Silver stents did not display any bactericidal effects. The Percuflex stents had significantly more bacterial adherence compared to the triclosan-eluting stents ($p < 0.0001$).
Conclusion: Triclosan-eluting ureteral stents were the only stents to decrease or completely prevent bacterial adherence. Heparin-coated and silver coated stents do not decrease bacterial adherence. Triclosan-eluting ureteral stents were the only stent tested that may decrease urinary tract infections. The relevance of this in vitro testing will need to be verified in a clinical setting.
Keywords: INFECTION, PREVENTION, UTI

MP-2.05

Uropathogen stimulated cytokine expression in bladder and kidney cell culture and the effects of triclosan

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Introduction and Objective: Ureteral stents often induce patient discomfort in addition to their potential role as a bacterial infection nidus. In an attempt to prevent stent-related infections, the antimicrobial triclosan (TCN) has been impregnated into a ureteral stent (Triumph; Boston Scientific, Natick, Mass.). Since TCN has already exhibited anti-inflammatory properties in the oral cavity and on skin, it is possible that it may provide both antibacterial and anti-inflammatory effects in the urinary tract. In this in vitro study, we evaluated the effects of TCN on inflammatory cytokine expression in bladder and kidney cell lines challenged with uropathogens or physical injury. We also evaluated overall cytokine expression following bacterial challenge to determine whether specific profiles could be assigned to specific uropathogens, potentially leading to a clinic-based diagnostic test for infection.
Materials and Methods: T24 bladder and A498 kidney cell lines were challenged for 4 hours with 1× 108 S. aureus, *S. epidermidis*, *E. coli*, *K. pneumoniae*, *E. faecalis*, *P. mirabilis* or *P. aeruginosa* in the presence and absence of TCN. For mechanical injury, segments of control or Triumph stents were used to mildly disrupt monolayers of both cell lines, akin to urinary tract stent movement. Supernatants were collected for cytokine analysis using multiplexing technology.
Results: TCN significantly reduced proinflammatory cytokine production in response to physical insult. With respect to bacterial challenge, TCN induced effects largely dependent upon the Gram status of the organism. For example, while TCN downregulated IL-6, IL-8 and TNF-alpha production stimulated by the Staphylococci (Gram positive), it promoted their general upregulation during challenge with *E. coli*, *K. pneumoniae* and *P. mirabilis* (Gram negative). This may have been due to TCN-induced lysis of Gram-negatives or the abrogation of bacteria-produced anti-inflammatory factors. Finally, each uropathogen induced a moderately specific cytokine profile, with Gram positive strains generally stimulating higher overall expression.
Conclusion: TCN reduced inflammation in both cell lines in response to physical insult and Staphylococcus challenge. TCN generally increased inflammation during challenge with Gram negative uropathogens, likely through its antimicrobial effects on the cell membrane. Uropathogens stimulated specific cytokine profiles, suggesting the future potential for cytokine detection to aid in infection diagnosis and treatment.
Keywords: ANITIBIOTICS, INFECTION, INFLAMMATION

MP-2.06

Staged urethral reconstruction using buccal mucosal grafts: an analysis of complications and success rates

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Introduction and Objective: Urethral stricture disease complicated by multiple prior surgeries, abscess, dense fibrosis or fistula represents a therapeutic challenge. Data on success and complication rates using buccal mucosa in a staged manner remains limited. Our goal was to evaluate our experience with staged urethroplasty using buccal mucosal grafts and analyze our complication and success rates.
Materials and Methods: We conducted a retrospective cohort study of 276 patients undergoing urethral reconstruction by a single urologist from 2003 to 2007 (K.R.). Data was obtained on 24 of these patients who underwent staged urethroplasty with buccal mucosal grafts. Treatment outcomes included graft take, donor site complications, wound infection, urethrocutaneous fistula, cystoscopic urethral patency and a subjective assessment of treatment acceptability.
Results: Of the 24 patients included in this review, the average age was 42 years (range 15–80). Stricture etiology included failed hypospadias (58%), balanitis xerotica obliterans (25%), trauma (8%) and Fournier Gangrene (4%). Mean stricture length was 5.7 cm (range 3–9 cm). Preoperatively, 20 patients (83%) had prior attempts at open reconstruction, 6 patients (25%) had urethrocutaneous fistulae and 7 (29%) had chordee. Following the first stage, 2 patients (8%) experienced delayed graft maturation. No infectious or donor site complications were observed. Overall complication rates following second stage was 4/24 (17%), with 2 wound infections and 2 urethrocutaneous fistulas. Seventeen out of 24 of the patients have completed follow up (mean = 25 months) with 16/17 (94%) achieving acceptable cystoscopic urethral patency. Treatment was deemed acceptable in 22/24 (92%) of patients.
Conclusion: The management of complex anterior urethral stricture disease continues to be a challenging clinical problem. In this series, buccal mucosal graft staged urethroplasty provides excellent short-term results with low complication rates. Objective urethral patency is 94%. Our success rate shows that this procedure is an excellent treatment modality when other reconstructive options have been exhausted.
Keywords: STRICTURE, URETHRA

MP-2.07

Long-distance tele-mentoring: future in training laparascopic radical prostatectomy?

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Introduction and Objective: Laparoscopic radical prostatectomy (LRP) is a technically challenging operation that has a steep learning curve associated with prolonged operative times, operative complications and poor oncologic outcomes during the early development of the procedure. In the past, LRP has been taught to the practising urologist with the mentor being physically present in the operating room. We describe the first experience in the use of long-distance telementoring to facilitate the performance of LRP.
Materials and Methods: Using Socrates telecommunications ISDN network, the LRP–naive trainee observed 6 LRPs performed by the trainer located 200 km away (group 1). Using the same ISDN network, the trainee performed 6 LRPs under the supervision of the remote trainer (group 2). The next 6 LRPs were performed by the trainee independently (group 3). Patient demographics, preoperative cancer characteristics, oncological and surgical outcomes were assessed prospectively.
Results: Preoperative demographic and oncological parameters were similar between all 3 groups. Due to weather, telecommunications failed in 1 case (group 2) and the trainee performed LRP without the assistance of the mentor. The median operative times for the 1) trainer, 2) telementored trainee and the 3) independent trainee were 190 minutes versus 285 min versus 240 minutes (p = NS between groups 2 and 3). Median estimated blood loss was not different between groups (200 ml) and no anastomotic leaks, open conversions or intra-operative complications occurred. Of the patients with pT2 disease, only one patient had a local positive surgical margin (group 2). At a mean follow-up of 5 months, 10/12 patients in groups 2 and 3 had achieved urinary continence.
Conclusion: To our knowledge, this is the first description of the use of long-distance telementoring to teach a naive practising urologist LRP. Telementoring facilitates acceptable operative times, operative results and oncologic outcomes.
Keywords: PROSTATE CANCER

MP-2.08
Uropedia: an online urology community resource for urological trainees
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Introduction and Objective: With the proliferation of online social networking sites such as Facebook, MySpace and the invention of the blogosphere and Web 2.0, it is apparent that online communities can be communed and remain active, vibrant and productive in a stable, long-term manner. Establishing these online communities is a complex task, requiring integral knowledge of the target population, an ability to offer value added resources and an infrastructure flexible enough to be user customizable to enable a personalized experience. Medical educators have delivered online resources in various formats, but generally failed in terms of developing self sustaining learning communities.
Materials and Methods: We have developed Uropedia, an online urology community resource targeted to urologic trainees. Key individuals in urological education have been consulted and the product includes elements including a wiki, question resource and real-time collaboration tools to allow trainees and programs to edit a "living text." The result is up-to-date urology-specific information that is always at hand. Additionally, questions submitted through a vetting process allow trainees to self-test and programs to issue periodic standardized examinations for longitudinal progress reporting.
Results: Pilot programs across Canada are participating in Uropedia, and we anticipate offering this resource to all urological training programs in Canada in the near future. Correlation metrics will be collected to determine associations between performance on Royal College of Physicians and Surgeons Urology Certification Examination and interval standardized examinations through Uropedia.
Conclusion: The information exchange of social networking is a reality in other spheres of education. To our knowledge, Uropedia is the first tool to bring this learning resource to the field of Urology.
Keyword: EDUCATION

MP-2.09
Quality assurance for radical cystectomy morbidity and mortality
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Introduction and Objective: Surgical audits may have increased importance when outcomes can be compared and individual surgeons receive feedback and have the opportunity to improve their outcomes in an expeditious fashion. CUSUM (cumulative summation) is one method for quality assurance that has recently been adapted to the medical field, as it can be used to monitor any binary surgical outcomes on an ongoing basis. The aim of this study was to utilize CUSUM charts for quality assurance in radical cystectomies.
Materials and Methods: CUSUM charts were generated from prospectively collected data for the first 150 radical cystectomies done by a single surgeon from July 2001 to September 2007. Overall survival (OS) and disease-specific survival (DSS) were estimated using the Kaplan–Meier actuarial methodology and stratified by pathologic stage to demonstrate survival outcomes. Based on a literature review, the following alerts were set (acceptable and unacceptable rates) for these binary outcomes: death 0.3%–4%, ileus 2%–18%, ureteral-ileal anastomotic leak 0.3-%–%, wound dehiscence 3.7%–9%, pulmonary embolism 0.4%–2% and rectal injury 0.3%–1%.
Results: The median follow-up was 16 months. There were 12, 12, 41, 26, 25 and 34 patients with pTis, pT1, pT2, pT3, pT4 and pN+ disease, respectively. Thirteen patients underwent neoadjuvant chemotherapy and 29 patients received adjuvant chemotherapy. Ten patients underwent prior pelvic radiotherapy. The 5-year OS for < pT2, pT2, pT3, pT4 and pN+ were 90%, 83%, 60%, 43% and 15%, respectively. The 5-year DSS for < pT2, pT2, pT3, pT4 and pN+ were 92%, 90%, 60%, 51% and 30%, respectively. The occurrence rates for each binary outcome studied were death 1/150, ileus 34/150, ureteral-ileal leak 1/150, wound dehiscence 2/150, pulmonary embolism 3/150 and rectal injury 0/150. CUSUM graphs allowed a visual guide to the key performance indicators.
Conclusion: Using predetermined alert limits, surgeons would be warned if their morbidity or mortality is approaching the benchmark limits. The ongoing longitudinal feedback to individual surgeons may provide more timely information when alterations in surgical technique, patient selection and perioperative care should be considered if benchmark limits are being approached for a variety of surgical outcomes.
Keywords: BLADDER CANCER, CYSTECTOMY, STATISTICS

5*
MP-2.10
Early induction of erectile dysfunction by angiotensin II in the rat
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Introduction and Objective: Erectile dysfunction (ED) has been suggested to be an early indicator of cardiovascular disease. On the other hand, angiotensin II (AngII) receptor AT1 blockers, used for the treatment of hypertension, appear to improve erectile function. Whether elevated levels of AngII are involved in the pathophysiology of ED has not yet been addressed directly. The current study aims to determine whether chronic AngII infusion negatively impacts erectile function and whether these changes precede systemic damages.
Materials and Methods: Male Sprague–Dawley rats (250 g) were randomized to receive a 7-day infusion of AngII (200 ng/kg/min s.c., n = 5) or saline (n = 6) by osmotic minipump. Mean arterial pressure (MAP) and intracavernosal pressure (ICP) were measured simultaneously, and erectile function was evaluated by variations in the ratio ICP/MAP in response to electrical stimulation of the cavernosal nerve (1–5.5V). At the end of this procedure, the heart was excised and left and right ventricles were separated and weighed. Aorta and penis were excised, cleaned and a section of each was formalin fixed and the rest snap frozen.
Results: A continuous 7-day infusion of AngII not significantly affect the MAP (saline 97, SD 9 mm Hg v. AngII 86, SD 4 mm Hg) or left ventric-

ular hypertrophy (saline 1.93, SD 0,07 g/kg BW v. AngII 1.94, SD 0,22 g/kg BW). Similarly, there was no change in aortic cross-sectional area (Saline: 0.47, SD 0.020 mm^2 v. AngII 0.48, SD 0.061 mm^2, NS) or cell number (saline 174, SD 32.4cells/mm v. AngII 177, SD 38.9cells/mm, NS). However, the ratio ICP/MAP was significantly diminished in the group treated with AngII as shown in Table 1.

Table 1. Abstract 10.

	ICP/MAP		
Cavernous nerve stimulation, V	Saline; mean (and SD)	AngII; mean (and SD)	*p* value (Student *t* test)
0.9	11 (10)	1 (1)	NS
2.0	27 (10)	14 (5)	NS
3.7	47 (6)	25 (8)	0.025
4.7	50 (6)	28 (6)	0.017
5.0	58 (6)	28 (8)	0.002
5.5	57 (6)	26 (9)	0.003

Conclusion: This study demonstrates for the first time that chronic administration of AngII significantly impairs erectile function. Furthermore, the diminution of erectile function precedes systemic changes, including hypertension and aortic hypertrophy.
Acknowledgements: Financed by the Canadian Council on Male Sexual Health — Pfizer Canada
Keywords: ERECTILE DYSFUNCTION

MP-2.11

Developing a prognostic tool for Peyronie disease: validation of a percutaneous aspiration technique

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Introduction and Objective: One of the greatest challenges in the treatment of Peyronie disease (PD) is the lack of prognostic tools to help guide patient management. Previous data from our lab demonstrated differential protein expression between cell cultures of normal tunica albuginea and PD plaque tissue using surface enhanced laser desorption/ionization time-of-flight mass spectrometry (SELDI). The aim of this project is to validate a percutaneous penile plaque aspiration technique by correlating SELDI spectral data between aspiration and surgical biopsy specimens and to determine if a less invasive office-based needle aspiration technique will provide an adequate amount of protein for analysis.
Materials and Methods: Aspiration specimens were obtained from patients undergoing reparative surgery for PD. Aspiration was accomplished by moving a 25-gauge needle with a negative pressure syringe in and out of the palpable plaque within the tunica albuginea layer. During the surgery, a biopsy specimen of PD plaque was obtained for comparison purposes. Protein extracts were prepared using tissue protein extract buffer with protease inhibitor and homogenization. Total protein was quantified by BCA protein assay. Approximately 2 mg of protein from each sample was incubated on CM10 (weak cation exchange) array and read by the SELDI-PCS 4000 system. Spectra were analyzed using Ciphergen Express 3.0 software.
Results: Between 2 mg and 10 mg of protein was obtained from each sample by using the percutaneous aspiration technique. Similar spectral peaks were demonstrated between the surgical tissue and aspiration samples. The spectral peaks at molecular weight at 6.5 kDa and 6.7 kDa appeared in all samples. Peaks at 15.8 and 66.6 kDa appeared in most samples.
Conclusion: Our aspiration technique is a valid means of procuring an adequate amount of protein for SELDI analysis. It is efficient, less invasive and provides similar proteomic information as the surgical biopsy specimen. This may serve as a means of detecting protein alterations in men with PD. Further work to identify the proteins representing these spectral peaks and to correlate the expression pattern of these proteins with disease severity is ongoing in our laboratory.
Keywords: BIOPSY, MOLECULAR MARKER, PROGNOSTIC MARKER

MP-2.12

Endothelial effects of chronic sildenafil use among diabetic men

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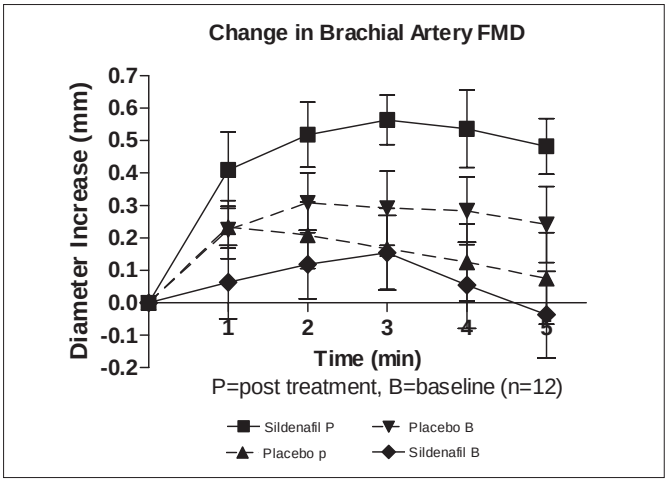
Introduction and Objective: Diabetes-associated erectile dysfunction (ED) is frequently a result of autonomic neuropathy and endothelial dysfunction. This study was designed to evaluate whether chronic sildenafil use would alter endothelial function in a group of high-risk diabetic ED patients.
Materials and Methods: A double-blind, randomized, prospective controlled trial among 24 type II diabetic men, drawn from our ED clinic, served as the study population. These men had a mean age of 59 years (range 49–75), with diabetes duration of 3 to 20 years and ED on average 7 years. Most of the patients were nonresponders to previous PDE5 inhibitors. Patients received sildenafil citrate 50 mg daily ($n = 12$) or placebo ($n = 12$) for 10 weeks. Brachial artery flow mediated dilatation (FMD) was measured at baseline and at 10 weeks. Levels of C-Reactive protein (CRP), microalbuminuria, microalbumin/ creatinine ratio, lipid profile and questionnaires for erectile function were completed at baseline and end of study.
Results: Patients who received sildenafil had significantly better scores on the International Index of Erectile Function questions 3 and 4 than placebo ($p < 0.001$). At 10 weeks, FMD was significantly improved in the sildenafil group compared with placebo ($p < 0.01$). There was a 2-fold increase of brachial artery diameter above baseline measurement in the sildenafil group.
Conclusion: In this prospective double-blind placebo controlled study, sildenafil improved endothelial function as measured indirectly through FMD in a robust manner. Questions related to the duration of this effect and the potential for long-term systemic benefits in endothelial function and erectile function remain to be studied (Fig. 1).



Keywords: DIABETES, ERECTILE DYSFUNCTION, PREVENTION

5*
MP-2.13

Intracorporal pressure measurement as an index of erectile function: Is there a better way?

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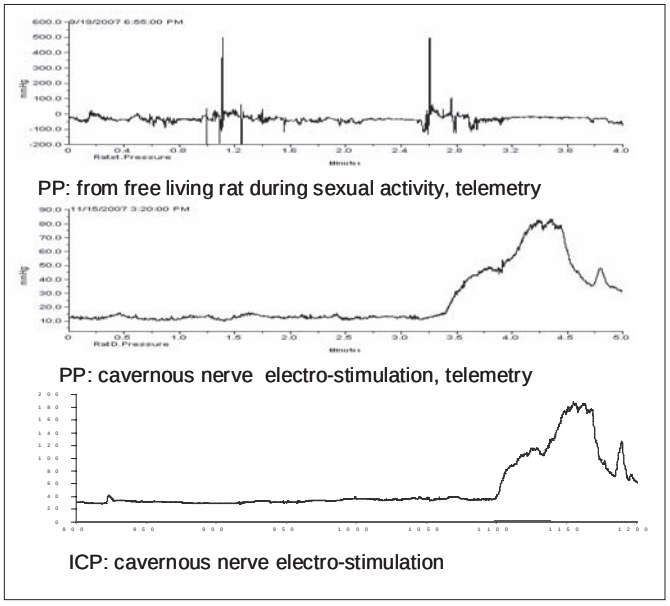
Introduction and Objective: Intracavernous pressure (ICP) induced through electrostimulation of the cavernous nerve is considered a reliable measure of penile erection. It is widely reported as the methodology of choice to understand the physiologic impact of disease states on erectile mechanisms. The aim of this study was to use an implantable telemetric penile pressure monitoring device in conscious, free-living rats and compare the results with standard nerve stimulated responses among anaesthetized animals using a standard preparation involving intracavernous catheterization. Our hypothesis is that free-living conscious animals may be a better model than anaesthetized animals for the study of vasoactive drugs and understanding the effect of disease on penile hemodynamics.

Materials and Methods: Sexually experienced male Sprague Dawley rats (450–500 g) were implanted with telemetric devices (Data Science). Penile pressure was recorded during sexual activity with receptive female rats in the same cage under normal living conditions. These rats were subsequently anaesthetized and underwent a standard ICP measurement using a bipolar electrode applied to the cavernous nerve with intracorporal catheterization, with simultaneous telemetric pressure recording.

Results: As shown in Figure 1 below, penile pressure peaks were greater



but of shorter duration in conscious rats during sexual activity. Identical penile pressure patterns were recorded on the telemetric devices and intracorporal pressure transducers supporting the validity of the telemetric recordings. The altered pressure wave pattern measured with cavernous nerve stimulation is not physiologic and may obscure the effect of interventions in some protocols.

Conclusion: Telemetric technology allows for reliable and repeated intracorporal pressure recordings among free living conscious animals and may provide a more accurate picture of erectile function than the current gold standard of cavernous nerve stimulation.

Keywords: CATHETER, ERECTILE DYSFUNCTION, MICROSURGERY

MP-2.14

Erectile dysfunction: What motivates men to finally seek treatment?

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Introduction and Objective: Men with erectile dysfunction (ED) often delay seeking treatment. The rationale for this delay, and the sudden motives for seeking treatment have been poorly explored. This study attempts to identify reasons for this delay and factors propelling patients to seek solutions for their ED and their satisfaction with information they receive.

Materials and Methods: All individuals with ED seen in our sexual dysfunction clinic from November 2006 until November 2007 were asked to complete a questionnaire. The questionnaire identified duration of impotence prior to seeking treatment, reasons for delay, reasons for approaching a health care professional and satisfaction with information received. Data is reported in absolute numbers and percentage of individuals with that response.

Results: Overall, 153 questionnaires were completed. Patients were on average 57 years old and suffered with ED for 41.7 months prior to seeking help. The most common reasons for delaying treatment were the belief that it would resolve on its own (n = 34, 24.1%), embarrassment (n = 33, 23.4%), confusion (n = 19, 18.4%) and misinformation (n = 11, 7.8%). Patients predominately approached family physicians (n = 126, 82.4%), followed by specialists (n = 12, 7.8%), urologists (n = 9, 5.9%) and other (n = 6, 3.9%). Patients felt compelled to seek treatment secondary to relationship concerns (n = 33, 23.4%), partners' suggestion (n = 16, 11.3%), frustration (n = 27, 19.1%), diabetic counseling (n = 23, 16.3%) and worsening ED (n = 22, 15.6%). Satisfaction with information received regarding their ED is described in Figure 1.

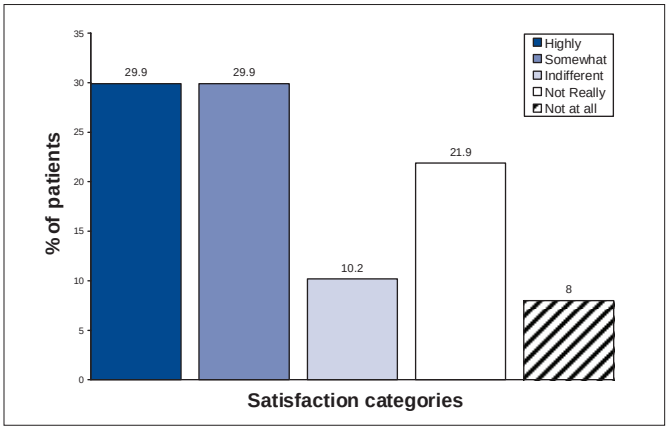

Fig. 1. Patient satisfaction rates: information received regarding treatment of erectile dysfunction

Conclusion: Health care professionals continue to inadequately identify and treat men with ED. As a result, men suffer for years before seeking help because they have a poor understanding of the disease. Only when relationships are collapsing or frustration is overwhelming do they finally seek solutions. When they do, almost 30% are not satisfied with information they receive. As physicians we need to strive for improvement in the understanding and treatment of erectile dysfunction.

Keywords: ERECTILE DYSFUNCTION, QOL, TREATMENT DELAY

MP-2.15

Fellow or foe: the impact of fellowship training programs on the education urology residents in the United States and Canada

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Introduction and Objective: Throughout North America, academic urologists are placing increased emphasis on fellowship training. Surgical educators and trainees have raised concerns that the escalating focus on fellowships may impact resident education. The current study was designed to 1) compare opinions from leading urology training programs regarding fellowship structure, selection and impact of clinical fellowships on urology resident training; and 2) highlight differences between Canadian and US programs.

Materials and Methods: Urology faculty (39), fellows (16) and residents (36) from 2 leading residency and fellowship programs (Baylor College of Medicine and the University of Toronto), were anonymously surveyed. The survey consisted of a 12-item questionnaire focusing on fellowship structure, selection and impact on resident training, with each item rated using a 5-point Likert scale. Intra- and interprogrammatic differences were analyzed.
Results: The overall response rate was 92%. Significant intra- and interprogrammatic differences identified. Specifically, both faculty and fellows supported the addition of more fellows ($p < 0.001$), did not feel that fellows "steal" operative cases from residents ($p < 0.001$), and felt that certain complex cases should be designated as "fellow cases" ($p = 0.001$). Urology faculty held stronger convictions than residents regarding the educational value of fellows towards resident education ($p < 0.001$) and did not feel the need to formally evaluate the technical skills of fellowship candidates prior to program acceptance ($p = 0.01$). International program differences: Residents: US residents expressed more favourable attitudes towards increasing fellowship positions ($p < 0.001$), felt less threatened about fellows restricting research opportunities ($p = 0.003$) and expressed less utility in formally evaluating the technical skills of the fellowship candidates prior to program acceptance ($p = 0.01$). Fellows: US fellows felt that the number of fellowship positions should be increased ($p = 0.03$) and that fellows should actively participate in daily patient ward rounds ($p = 0.05$). Faculty: Canadian faculty expressed stronger feelings regarding the value of fellows towards resident education ($p = 0.03$) and expressed less concern that fellows restrict resident research opportunities ($p = 0.02$). Consistent among both Canadian and US programs, proficiency in technical skills, clinical knowledge, and teaching and teamwork were cited as the most attractive characteristics of an effective clinical fellow.
Conclusion: Significant inter- and intraprogrammatic differences between faculty, fellow and resident opinions regarding fellowship structure, selection and impact on resident education exist, suggesting that careful attention to theses issues may circumvent internal conflict and promote a mutually beneficial educational atmosphere. Programs should select fellows with proficient baseline technical skills and clinical knowledge to ensure that they focus on high-level "specialized" training.
Keyword: RESIDENCY

Moderated Poster Session 3: General Oncology/ Penile and Testis Cancer June 22, 2008, 1430–1600

MP-3.01

EGFR overexpression in squamous cell carcinoma of the penis

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Introduction and Objective: Squamous cell carcinoma of the penis (SCCP) can be an aggressive, disabling disease and a limited body of published literature exists in this area. Furthermore, standard chemotherapy drug combinations have been poorly studied and there have been no recent advances in systemic therapy. The use of targeted agents in SCCP has not been reported. Although epidermal growth factor receptor (EGFR) expression is seen in normal squamous epithelium, it is typically confined to the basal cell layer. SCC from other sites overexpress EGFR and respond to EGFR targeted therapy, which leads one to consider whether the same is true for SCCP. This study was designed to examine whether EGFR is overexpressed in SCCP and could serve as a potential target for treatment.

Materials and Methods: Seventeen consecutive cases of invasive SCCP (biopsy or surgical resection) collected over an 8-year period (1997 to 2004) were analyzed. Specimens were obtained from the QEII HSC pathology database after REB approval. EGFR expression was evaluated and graded (0, 1+, 2+, 3+) by a trained pathologist using guidelines outlined in the commercially available immunohistochemical system kit, EGFR pharmDxTM (DakoCytomation, Carpinteria, Calif.). EGFR pharmDx monoclonal mouse antibody (clone 2-18C9) with controls consisting of human cell lines CAMA-1 (negative control) and HT29 (positive control) were used. Overexpression of EGFR was defined as any immunohistologic staining of tumour cell membranes above background level whether complete or incomplete circumferential staining.

Results: All 17 cases overexpressed EGFR (14 cases 3+, 3 cases 2+). Of the specimens examined, 4 cases were also associated with CIS. In 2, the CIS also overexpressed EGFR, however, to a lesser degree (1+) compared with the invasive component and in 2 cases, the CIS did not overexpress EGFR. In all cases, adjacent normal squamous epithelium demonstrated normal background EGFR expression.

Conclusion: EGFR was overexpressed in all cases of invasive penile SCC in this study. Given this high rate of overexpression and that other SCC (e.g., head and neck) benefit from EGFR targeted therapy, it is very reasonable that EGFR targeted agents warrant investigation in penile SCC.

Keywords: CANCER, MOLECULAR MARKER, NEOPLASM

5*

MP-3.02

Outcome of surgical treatment of patients with upper versus lower urinary tract urothelial carcinoma: stage by stage comparison

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Introduction and Objective: Urothelial carcinoma (UC) of the upper and lower urinary tract may have similar biology. It remains controversial whether we can apply similar principles in the management of upper tract UC based on extrapolation of the literature on patients with lower tract UC. We sought to perform a comparative analysis of outcome between the 2 groups of patients.

Materials and Methods: A retrospective review of data was performed on patients who underwent nephroureterectomy for upper urinary tract UC (UUT-UC) and radical cystectomy for UC of the bladder (B-UC) from 1991 to 2006 at one institution. The recorded data included sex, age, history of superficial bladder UC, type of surgery, complications, tumour site, tumour stage and grade, and adjuvant chemotherapy. We evaluated the overall and disease-specific survival rates following both procedures.

Results: A total of 280 patient charts were reviewed (99 underwent nephroureterectomy and 181 underwent radical cystectomy). Mean patient age was 70.3 (SD 1.2) years in UUT-UC group and 66.5 (SD 0.8) years B-UC group ($p = 0.017$). Twenty-eight females and 71 males presented with UUT-UC. Fifty-one females and 127 males presented with B-UC. Median follow-up for all patients was 29 months. None of the patients received neoadjuvant chemotherapy. Patients with UUT-UC presented less commonly with invasive disease compared with those with B-UC (20% v. 52% were > pT2). Stage by stage, there was no difference in the 5-year overall survival between patients with invasive UC (> pT2) of the upper versus the lower urinary tract (54.6% v. 60.8%, $p = 0.74$). Similarly, there was no significant difference in the 5-year OS between patients with noninvasive UC (< pT2) of the lower versus upper urinary tract (61.8% v. 86.4%, $p = 0.08$).

Conclusion: Invasive UC of the upper urinary tract appears to have similar tumour biology compared to UC of the lower urinary tract. Whether we can safely extrapolate on the benefit of neoadjuvant and adjuvant strategies to patients with upper tract UC requires further investigation.

Keywords: BLADDER CANCER, TCC, URETER

MP-3.03

Primary retroperitoneal lymph node dissection for clinical low stage nonseminomatous germ cell testicular tumours

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Introduction and Objective: Nonrisk adapted surveillance is the recommended standard of care for clinical stage I nonseminomatous germ cell testis tumours (NSGCTT) at the Princess Margaret Hospital Testis Tumour Clinic. Primary bilateral retroperitoneal lymph node dissection with sympathetic nerve sparing when feasible (NS-RPLND) is offered as an alternative at patient request and when surveillance is contraindicated. Small volume stage II patients with low marker levels are offered surgery as they usually do not need subsequent chemotherapy. We have evaluated our experience with primary RPLND.

Materials and Methods: The charts of the 120 consecutive patients from the Princess Margaret Hospital Testis Tumour Clinic with clinical low stage NSGCTT who underwent primary NS-RPLND between November 1984, when NS was introduced, and October 2007 were reviewed. Adjuvant chemotherapy was offered if resected disease was extensive or pathological characteristics were adverse. Perioperative tumour characteristics, histology, need for additional treatment and functional outcomes, including loss of antegrade ejaculation were assessed. Survival outcomes were generated using the Kaplan–Meier method.

Results: The median age at diagnosis was 28.6 years. The median time of follow-up was 4.9 years (range 0.02–20.89). Fifty-one patients (42.5%)

were clinical stage I and 69 (57.5%) were stage II (61-IIA and 8 IIB). Of those with initial stage I, 20 underwent immediate RPLND and 31 at progression to clinical stage II (25 IIA and 6-II B). Outcomes were similar for these groups. Laparotomy revealed grossly enlarged lymph nodes (median size 3.5 cm) in 89 (81.8%) patients. Nerve sparing was technically feasible in 106 (88.3%) patients. In 1 patient, laparotomy revealed extensive disease and surgery was abandoned in favor of chemotherapy (NX). There were 5/38 (13%) N0 patients who relapsed and required chemotherapy. There were 38/57 (67%) patients with N+ who did not receive adjuvant chemotherapy remained NED by RPLND alone. Of those, 4/25 (16%) received adjuvant chemotherapy and needed further therapy. There were 73/106 who had NS follow-up data and 63 (86%) who had documented antegrade ejaculation. Disease specific and overall survival was 98.1% and 97.2%, respectively, with 4 deaths, 3 from testicular cancer.
Conclusion: Primary RPLND is highly effective treatment option for patients with low burden retroperitoneal disease. The nerve-spearing technique should be the standard of care. Adjuvant chemotherapy does not appear to be necessary with small volume completely resected nodal disease.
Keywords: GERM CELL TUMOUR, RPLND, TESTIS CANCER

5*
MP-3.04
Postchemotheraphy retroperitoneal lymph node dissection of residual retroperitoneal mass for testicular germ cell tumours: Is bilateral template necessary?
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Introduction and Objective: Postchemotherapy bilateral retroperitoneal lymph node dissection with sympathetic nerve sparing (NSPC-RPLND) when feasible for testicular germ cell residual masses has been our standard of care. We have not routinely performed lumpectomy (resection of gross residual disease only) or modified template dissection (MTD). We have evaluated our experience to assess the theoretical efficacy of lumpectomy and MTD as well as other outcomes.
Materials and Methods: The charts of the 240 consecutive patients from the Princess Margaret Hospital Testis Tumour Clinic with residual normalized tumour marker RP disease after primary chemotherapy from 1978 to July 2007 were reviewed. Bilateral PC-RPLND with postganglionic sympathetic nerve preservation was done in 235 (5/240 incomplete or MTD), where possible. The pathological characteristics of the resected residual mass including size (≤ 2, 2–5 and > 5 cm) and location (left paraaortic, interaorto-caval or right paracaval zones) was recorded. The mass seen on CT was an identifiable separate specimen. The hypothetical efficacy of less surgery limited to lumpectomy or MTD was assessed. Possible association of mass location, size and histology with less surgery was calculated by logistic regression.
Results: The median residual mass size was 6.5 cm (range 0.5–21). Nerve sparing was feasible in 52.8% of cases. Histology of the residual mass was carcinoma [Ca ± teratoma(T)] in 39(16.6%), T only in 129 (54.9%), or necrosis/fibrosis (N) in 67 (28.5%), respectively. In the last 134, 18(13.4%) were Ca. Tumour, usually T, was present outside the lumpectomy or MTD specimen in 50 (21.4%) and 11 (4.7%) of cases respectively ($p < 0.0001$). Only mass histology correlated with the risk of incomplete resection with lumpectomy (Ca 23.1, T 30.2 and N 3%; $p = 0.002$).
Conclusion: NS is feasible in > 50% of PC-RPLND despite residual mass. Lumpectomy and MTD result in incomplete resection of residual disease. The significance of microscopic residual disease is uncertain so we are analyzing our experience with those that achieved complete RP response by imaging but who did not undergo RPLND. Preservation of antegrade ejaculation, preoperative prediction of RP status, the need for additional treatment and survival will be presented.
Keywords: NERVE SPARING, RPLND, TESTIS CANCER

MP-3.05
Management of postradical prostatectomy complete bladder neck occlusion
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Introduction and Objective: Complete bladder neck (BN) occlusion postradical prostatectomy (RP) is a rare but severe complication. Controversy exists regarding interventional treatment of this problem. The aim of this report is to review the outcome of management of a cohort of men who experienced this complication.
Material and Methods: A total of 6 men with an average age of 64.3 (range 51–73) years were referred for management of complete BN occlusion. The occlusion occurred at a mean of 2 months (range 1 wk – 6 mo) after retropubic RP. All patients had suprapubic tubes in place at the time of referral. None had previous radiotherapy. One patient had undergone an unsuccessful attempt at BN to urethra reanastomosis 2.5 months after RP. The measured bladder to urethra gap was a mean of 2 cm (range 1.5 to 3). Treatment was undertaken at a mean of 16.3 months (range 3.4 to 55.4) after RP, with 5 of 6 treated at less than 1 year. Five out of 6 patients underwent retropubic exploration and had a bladder to urethral re-anastomosis with 2 patients requiring perineal urethral mobilization for extra length. The bladder neck tapering was identical to that carried out during a RP. A cut-to-light procedure was done on the patient with the 1.5-cm gap.
Results: Additional endoscopic procedures (dilatations and/or visual urethrotomy) and self-catheterization were necessary in 2 out 3 men with direct re-anastomoses and the man with the cut-to-light procedure for the first year. After a mean follow-up of 39.4 months, all 6 men have urethral patency and void with no residual urine. Two patients in the group are continent after re-anastomosis, 3 have mild incontinence, including 2 after implantation of an artificial sphincter, and 1 has moderate incontinence.
Conclusion: Re-anastomosis of the bladder neck to urethra, with or without perineal urethral mobilization, is technically feasible for complete BN occlusion following RP. A cut-to-light procedure may also be possible for shorter gaps. Postoperative reinterventions and self-cathetrization may be necessary to ensure long-term stabilization and patency. Subsequent continence procedures may also be required.
Keyword: STRICTURE

MP-3.06
Testicular cancer patient participation in tissue banking: the Alberta Research Tumour Bank experience
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Introduction and Objective: The Alberta Research Tissue Bank (ARTB) was established in 2005 as a source of cancer tissues and blood (serum and buffy coat cells) for translational research. Multidisciplinary scientists (surgeons, pathologists, oncologists and basic research) interested in translational and genomic projects assist in the organization and management of ARTB. Tissue donors provide written consent for sample banking, for periodic review of their medical records and for use of their samples for research. The unique provincial health system with centralized cancer registry offers opportunities to constantly update treatment and outcome information associated with the banked samples.
Aim: Banking of testicular cancer (TC) specimens was initiated in March 2007 at the surgical center in Edmonton. To date, there was no systematic documentation on the incidence of TC in Edmonton region nor banking of valuable tissue samples from these patients.
Materials and Methods: TC patients undergoing orchidectomy at the surgical center were referred to the tertiary cancer center following diagnosis of cancer. An experienced research nurse approached patients for consent.
Results: Of 17 TC specimens collected between Mar. 13, 2007, and Nov. 30, 2007, 15 were malignant. When approached for participation, all 15 patients expressed interest, provided written consent and contributed a blood sample to the ARTB. These men also frequently requested further opportunities to participate in research. The rate of accrual of TC samples in this nine-month period are higher than the accrual rate in 2 other tumour banks surveyed in Canada.
Conclusion: This small sample of TC germ cell patients demonstrated exceptional interest in participating in translational research projects,

similar to patients with other tumour types participating in the ARTB. Approaching this group of patients for biological specimens and clinical information is feasible and acceptable. We believe that the higher than normal accrual rates in ARTB will contribute in next 1–2 years to the overall sample size, a prerequisite to undertaking translational research towards improved diagnosis and treatment for TC patients.
Keywords: DONOR, PATHOLOGY, TESTIS CANCER

MP-3.07

Kidney-sparing management of upper urinary tract transitional cell carcinoma

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Introduction and Objective:. Kidney sparing surgery (KSS) of upper urinary tract transitional cell carcinoma (UUT-TCC) offers treatment alternative for patients with solitary kidney, high surgical risk, significant comorbidities and decreased overall renal function. Our aim is to evaluate oncological outcomes of KSS for UUT-TCC.
Materials and Methods: We performed a retrospective chart review of patients who underwent segmental ureterectomy and endoscopic treatment (percutaneous nephroscopy or retrograde ureteroscopy) for UUT–TCC between 1991 and 2006 at our institution. We evaluated recurrence-free and overall survival rates following KSS. There was a total of 40 renal units in 38 patients. Three patients had bilateral synchronous disease. Mean patient age was 69.8 (SD 12.3) years. Eighteen (47%) patients had a prior history of bladder TCC. Most tumours (72.5%) were located in the ureter. Sixteen (40%) segmental ureterectomies and 24 (60%) endoscopic treatments were performed. Six (16%) patients received adjuvant BCG. Grade distribution was 24 (60%) low-grade, 12 (30%) high-grade and 4 (10%) Gx. The mean follow-up was 47 months (range 1–219).
Results: Ipsilateral recurrence of the disease occurred in 13 (32.5%) units. The 3- and 5-year recurrence-free survivals were 56.5% and 42.4%. Tumour grade and location were significant prognostic variables for recurrence ($p < 0.02$). The 3- and 5-year overall survivals were 91.6% and 79.8%. Overall survival was significantly stratified by tumour grade ($p < 0.045$), stage ($p < 0.018$) and a prior history of bladder cancer. Tumour focality, surgical approach, indication for surgery and adjuvant BCG were not significant. There was a statistically significant correlation ($r = 0.3539$) between tumour grade and stage ($p = 0.027$).
Conclusion: KSS offers good oncological outcomes in select patients with UUT–TCC. The tumour biology rather than the surgical approach dictates prognosis. Long-term, thorough surveillance is required. Prior history of bladder cancer negatively affects survival. Patients with higher stage/grade disease and a prior history of bladder cancer may be better served with a more aggressive treatment approach.
Keywords: KIDNEY, TCC, URETER

MP-3.08

Comparison of open and laparoscopic nephroureterectomies for management of upper urinary tract transitional cell carcinoma

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Introduction and Objective: Since its introduction in 1991, laparoscopic nephroureterctomy has gained increased popularity for treating upper-tract transitional cell carcinoma, mainly owing to the reduced perioperative morbidity associated with this procedure. We report our experience with this technique and compared it with the open nephroureterectomy.
Materials and Methods: Between 2000 and 2004, 59 radical nephroureterectomies were performed at our centre. Of these 59 patients, 18 underwent laparscopic nephroureterectomies (LNU) and 41 had open nephroureterctomies (ONU). There was no significant difference between the 2 groups in terms of patient age, sex, BMI, ASA classification and pathological parameters.
Results: See Table 1.
Conclusion: ONU still remains the gold standard for managing upper tract TCC. LNU appears to be a safe and effective techniques in experienced hands without any added perioperative morbidity. However, long-term follow-up and a larger sample size are still needed to assess long-term oncological outcomes of this procedure.
Keywords: LAPAROSCOPY, NEPHROURETERECTOMY, TCC

Table 1. Abstract 8.

Variable	LNU	ONU
Mean duration of procedure	286 min	221 min
Intraoperative complications	22% (4 patients)	20% (8 patients)
Perioperative blood transfusion	10%(2)	32%(13)
Mean hospital stay	11 d	15 d
Postoperative complications	5%(1)	20%(8)
Perioperative mortality	none	2.5% (1 patient due to pulmonary embolism)
Mean follow-up	25.5 mo	34 mo
Bladder recurrence	27%(5)	22%(9)
Metastatic disease	22%(4)	24%(6)
Local recurrence	5.5%(3)	25%(6)
Cancer-related mortality	22% (4 patients at mean interval of 15 mo)	12% (5 patients at mean interval of 15 mo)

MP-3.09

Comparison of epidural and intravenous patient-controlled analgesia in patients undergoing radical cystectomy

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Introduction and Objective: Postoperative analgesia is an important factor influencing surgical outcomes. There is no consensus of the role of patient controlled epidural analgesia (PCEA) versus intravenous patient controlled analgesia (PCA) after urological surgery. With a paucity of data in patients undergoing urologic surgery, our study evaluates these analgesic modalities in radical cystectomy patients.
Materials and Methods: We reviewed consecutive radical cystectomy patients at our institution between 2003 and 2007 to evaluate the effect of either PCEA or PCA on patient postoperative pain scores and outcomes such as diet advancement, time to ambulation and length of stay. Patients received either hydromorphone or morphine via IV PCA, or bupivacaine and hydromorphone or ropivacaine via PCEA. Pooled *t* tests and Wilcoxon rank-sum tests were used to compare outcomes. A mixed model regression analysis was used to compare pain scores.
Results: A total of 131 patients were included in the analysis, with 73 (56%) and 58 (44%) in the PCEA and PCA groups, respectively. An average of 10 minutes more peri-induction time ($p = 0.003$) was noted among patients who received PCEA. No significant differences in patient mobilization, diet advancement or length of hospital stay were detected, although there was a trend for earlier diet advancement among the PCEA group. Both patient characteristics and outcomes are compared in Table 1. Using our mixed model analysis, we found no significant difference between pain scores at rest across groups ($p = 0.11$) and the rate of decrease in pain scores over time was not significant ($p = 0.38$). For pain scores with activity, there was a significant effect between groups ($p = 0.02$) in favour of PCEA, with a significant interaction effect ($p = 0.03$), indicating the benefit of PCEA occurred in the early postoperative period.

Table 1. Abstract 9. Characteristics of patients who had PCA or PCEA

Variable	PCEA ($n = 73$)	PCA ($n = 58$)	p value
Mean age, yr	68.5	65.1	0.10
Mean BMI, cm^2/kg	25.9	28.6	0.13
Mean ASA score	2.6	2.7	0.83
Mean operative time, h	6.1	5.8	0.33
Mean preoperative time, h	1.2	1.1	0.003
Median hospital stay, d	9	9	0.65
Median time to regular diet, d	2.7	3.5	0.09
Median time to ambulation, d	1.0	1.0	0.42
Mean operative PRBCs transfused	1.9	2.0	0.82
Mean postoperative PRBCs transfused	0.5	0.7	0.27

Conclusion: For patients undergoing radical cystectomy, PCEA provides better early postoperative pain relief, but there was no significant difference in postoperative outcomes or length of stay.
Keywords: ANALGESIA, CYSTECTOMY, PAIN

Moderated Poster Session 4: Oncology: Kidney/Ureter
June 23, 2008, 1230–1400

MP-4.01

Partial v. radical nephrectomy in patients with adverse clinical and pathological renal cell carcinoma characteristics: a matched analysis

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Introduction and Objective: Partial nephrectomy is a treatment option for an increasingly large proportion of patient with renal cell carcinoma. The objective of this analysis was to assess cancer-specific survival of patients treated with partial nephrectomy (PN) for lesions 7 cm or larger, for patients with pathologically unfavorable lesions (pathologic T3a stage or high Fuhrman grade III/IV).

Materials and Methods: Between 1984 and 2001, 4072 patients were treated with either partial or radical nephrectomy (RN) for renal cell carcinoma. Of all, 925 (22.7%) patients had tumours greater than 7 cm; 973 (23.9%) patients had Fuhrman grade III or IV; and 861 (21.1%) patients had pathological T3a tumours. None had evidence of distant metastases or histologically confirmed nodal metastases. Matched (age, gender, tumour size, T stage, histological subtype and Fuhrman grade) and unmatched survival analyses addressed the effect of nephrectomy type (partial v. radical) on cancer-specific mortality.

Results: In patients with tumours > 7 cm, in matched analyses, PN was associated with higher mortality v. radical nephrectomy (HR 5.3, p = 0.025). No significant cancer-specific survival differences were recorded for PN in analyses addressing patients with high Fuhrman grade (HR 2.2, p = 0.09) or in patients with pT3a lesions (HR 2.5, p = 0.9).

Conclusion: Partial nephrectomy may undermine cancer control in patients with tumours in excess of 7 cm. Conversely, same cancer control may be expected in patients with high-grade Fuhrman or pT3a histology regardless of nephrectomy type.

Keywords: NEPHRECTOMY, PARTIAL NEPHRECTOMY, RENAL CELL CARCINOMA

MP-4.02

A preoperative prognostic model for patients treated with nephrectomy for renal cell carcinoma: a multi-institutional validation of a cancer-specific survival nomogram

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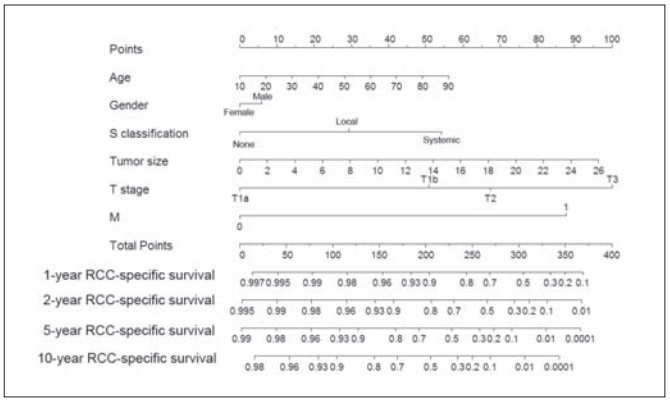
Introduction and Objective: To develop a pretreatment nomogram for the prediction of cause-specific mortality after nephrectomy for renal cell carcinoma.

Materials and Methods: Two cohorts of patients treated with either radical or partial nephrectomy were used: one (n = 2474) for nomogram development, the second (n = 1972) for external validation. The nomogram predicted freedom from renal cancer-specific mortality was based on Cox proportional hazards regression models, which used 2002 T and M stages, tumour size, symptoms, age and gender (Fig. 1).

Results: Median follow-up in patients who did not die of renal cancer-specific death was 4.2 years in the development validation cohort. Cancer-specific mortality was observed in 559 (22.6%) patients, whereas 196 (7.9%) died as a result of other causes. The 5- and 10-year cancer-specific survival in the nomogram development cohort was respectively 75.4 and 68.3%. all predictors except for gender achieved independent



predictor status. In the external validation cohort the nomogram predictions were 88.1%, 86.8%, 86.8% and 84.2% accurate at respectively 1, 2, 5 and 10 years.

Conclusion: The nomogram-based predictions may be used as benchmark data for pretreatment management decision-making in patients with various stage of renal cell carcinoma.

Keywords: NOMOGRAM, RENAL CELL CARCINOMA, SURVIVAL

MP-4.03

Predicting development of chronic renal impairment after nephrectomy for malignancy

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Introduction and Objective: To study and compare the long-term impact of radical nephrectomy (RN) and partial nephrectomy (PN) on renal function and identify factors that predict deterioration to chronic renal impairment.

Materials and Methods: A total of 417 patients who underwent RN or PN from January 1997 to December 2003 were considered for this study. Included were 206 patients who had a normal contralateral kidney, absence of chronic renal impairment (preoperative GFR ≥ 70 mL/min) and at least 1 year of follow-up after surgery. Glomerular filtration rate (GFR) pre- and postsurgery was calculated using the Modification of Diet in Renal Disease equation. A preoperative GFR value of < 80 mL/min was hypothesized to predict deterioration towards stage 4 KDOQI renal failure (GFR ≤ 29 mL/min) postoperatively. Additionally, clinical factors including age, smoking history, hypertension, diabetes mellitus, tumour size and type of procedure (laparoscopic or open) were analyzed to determine if they were significant factors in progression to chronic renal failure.

Results: After a median follow-up of 50 months post-RN, preoperative GFR ≤ 80 was found to be associated with deterioration towards stage 4 chronic renal disease (p < 0.01). Importantly, all RN patients with a preoperative GFR > 80 remained off dialysis, whereas 7.9% with preoperative GFR ≤ 80 required chronic dialysis. At 3 and 5 years of follow-up, the decline in GFR was significant higher in the RN v. PN group (34.1 v. 9.3 mL/min, p < 0.0001) and (35.8 v. 13.7, p < 0.005), respectively. In the RN group, patient age, history of cancer recurrence, hypertension, diabetes and smoking did not predict decline in renal function. In the

PN group, no solitary factor significantly affected 3-year postoperative GFR.
Conclusion: In patients undergoing RN, preoperative GFR < 80 mL/min predicts progression to stage 4 renal failure. As PN reduces long-term decline in GFR compared with RN, PN should be offered to suitable patients, especially those with a preop GFR ≤ 80.
Keywords: KIDNEY FUNCTION

5*
MP-4.04
Then and now: the effect of tyrosine kinase inhibitors on survival in patients with metastatic renal cell carcinoma in Alberta, Canada

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Introduction and Objective: We performed a retrospective population based study to assess the impact of tyrosine kinase inhibitors (TKIs) on overall survival (OS) in patients treated for mRCC in Alberta, Canada.
Materials and Methods: One hundred and thirty patients were identified who commenced either sorafenib, or sunitinib between December 2003 and June 2007 for mRCC at 1 of 2 referral cancer centres in Alberta. Survival was compared to that of an earlier cohort of 141 patients treated with Interferon α (IFN) at the same centres between May 1995 and March 2003. Data were collected enabling stratification into risk categories according to the MSKCC prognostic model. The primary endpoint was OS measured from date of commencement of TKI in the recent cohort, and IFN in the earlier cohort. The Kaplan–Meier method was used to determine OS, with Cox regression analysis used to determine hazard ratios (HRs) and confidence intervals (CIs).
Results: Of the 130 patients treated with a TKI, 78 received treatment in the first line setting, whereas 52 received treatment after prior IFN therapy. All 141 patients from the IFN cohort received treatment in the first line setting. Patients treated on TKIs had an improved OS compared with the IFN cohort with an HR of 0.621 (95% CI 0.45–0.857, $p = 0.004$). Median OS was 16.5 months and 10.2 months, respectively. There was no significant impact on OS based on whether the TKI was received after prior IFN therapy or in first line (HR 0.774, 95% CI 0.451–1.327, $p = 0.351$). Survival according to MSKCC risk groups is outlined in Table 1.

Table 1. Abstract 4.

Risk group	No. of patients; TKI/FN	HR	95% CI	*p* value
Favourable	46/21	0.311	0.115–0.84	0.021
Intermediate	45/66	0.559	0.332–0.94	0.028
Poor	28/25	0.814	0.46–1.442	0.559

Factors associated with improved survival on multivariate analysis were treatment with a TKI, time between diagnosis and treatment > 12 months, LDH ≤ 1.5 ULN, normal Hb, normal corr. Ca++ and Karnofsky PS ≥ 80%.
Conclusion: TKIs improve OS compared with IFN in mRCC with significant benefits in favourable and intermediate risk groups.
Keywords: CHEMOTHERAPY, RENAL CELL CARCINOMA, SURVIVAL

5*
MP-4.05
Outcome of capsular invasion in clinically localized renal tumour

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Introduction and Objective: We assessed the outcome and clinical behaviour of pathologic T1–2 RCC with capsular invasion compare to those with pathologic T1–T2 disease without invasion.
Materials and Methods: A total of 269 patients with clinical T1–T2 diseases who underwent radical nephrectomy (RN) or partial nephrectomy (PN) in our institution from 1994–2006 were included in the study. All patients underwent preoperative CT or magnetic resonance imaging (MRI) for clinical staging. Postoperative tumour size, pathologic grade together with 5-year-recurrence-free survival data were determined.
Results: Out of the 269 patients who underwent radical or partial nephrectomy, 213 were clinical T1 while 56 were clinical T2. Median age was 61 (SD 12) years and median follow-up was 33.5 months. Partial nephrectomy was done in 77 patients. Ninety-four patients (RN = 67, PN = 27) underwent laparoscopic surgery. Final pathological staging showed that 34 (12.6%) patients have capsular invasion. Of the 34 patients, 3 underwent PN and 31 underwent RN. Twenty-three patients were cT1 and 11 were cT2 disease while, higher Fuhrman grade and larger tumour size (6.9 [SD 4.9] v. 4.8 [SD 3.0]) were noted with the capsular invasion group ($p < 0.0002$, $p < 0.0001$, respectively). Disease recurrence was found in 5.1% and 23.5% of patients without and with capsular invasion, respectively. The 5-year-recurrence-free survival rate was 92.24% and 73.58% for pT1–2 without and with capsular invasion, respectively ($p < 0.0001$).
Conclusion: Though pathologically localized tumour (T1–T2) without capsular invasion were staged similarly to those with capsular invasion, our study showed that pT1–2 tumour with capsular invasion behaves more aggressively and disease recurrence was significantly higher compare to those without capsular invasion. Meticulous clinical follow-up protocol for this group of patients is warranted.
Keywords: RENAL CELL CARCINOMA

MP-4.06
Increasing tumour size is associated with higher rates of high Fuhrman nuclear grade in patients with renal cell carcinoma

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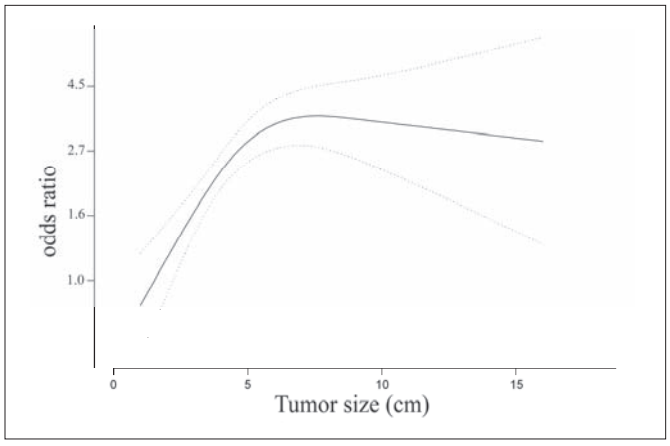
Introduction and Objective: Active surveillance as been used in selected patients with small localized renal masses. Since high Fuhrman nuclear grade defined as grade III or IV is associated with unfavourable outcomes, we assess the effect of tumour size on the rate of Fuhrman grade III–IV in patients who underwent nephron-sparing surgery (NSS) and radical nephrectomy (RN) for renal cell carcinoma.
Methods: Between 1984 and 2001, 2476 patients were treated for renal cell carcinoma in 13 academic centres in Europe. Univariable and multivariable logistic regression analyses addressed the presence of Fuhrman grade III-IV at final pathology according to the tumour size. Covariates



consisted of age, T stage and symptoms at diagnosis. Tumour size was coded as cubic splines (to allow nonlinear effect).
Results: The age mean and median were 60 years and 61 years, respectively (range 18–93). Of all, 1991 (80.4%) patients were T1 stage and 485 (19.6%) patients were T2 stage tumours. Mean and median tumour size values were 5.2 cm and 4.5 cm, respectively (range 0.5–21.0). Of all, 1625 (65.6%) were male. At diagnosis, 1776 (71.7%) patients were asymptomatic. The rate of Fuhrman grade III–IV increased with tumour size, where tumours ≤ 1 cm, 1–2 cm, 2–3 cm, 3–4 cm, 4–5 cm, 5–6 cm, 6–7 cm and > 7 cm were associated with rates of Fuhrman grade III–IV of 0.4%, 3.7%, 11.2%, 14.8%, 15.9%, 12.5%, 11.2% and 30.3%, respectively (Fig. 1). In univariable and multivariable analyses increasing tumour size was associated with higher risk of Fuhrman grade III–IV at final pathology. The multivariable cubic spline analyses showed that the rate of Fuhrman grade III–IV markedly increased up to a tumour size of 7 cm ($p < 0.001$) and then flattened.
Conclusion: Tumour size predicts the rate of Fuhrman grade III–IV up to 7 cm and may be used as an indicator of nuclear grade.
Keywords: CANCER, PATHOLOGY, RENAL CELL CARCINOMA

MP-4.07

Gender differences in renal cell cancer patients

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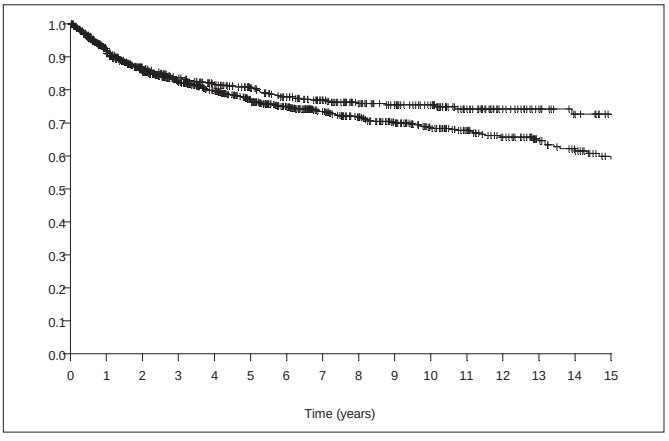
Introduction and Objective: Renal cell carcinoma (RCC) is known to have a gender predilection, where 1 woman is affected for every 1.6–2 men. A gender predilection may translate into more aggressive clinical phenotype and may result in worse cancer control outcomes after therapy. Despite the important implications of gender differences in RCC, relatively few studies addressed this topic. In consequence, we decided to rely on a large multi-institutional dataset of patients treated with nephrectomy to assess the gender differences at presentation and the effect of gender on cancer-specific survival.
Materials and Methods: Our cohort consisted of 4002 patients who were diagnosed with RCC in 13 academic centres in Europe. Symptom classification, tumour stage, tumour size, Fuhrman grade, histological subtype and pathological stage were used to evaluate the gender differences. Moreover, univariable and multivariable analyses addressed the potential effect of gender on renal cell carcinoma specific survival after nephrectomy.
Results: Overall, 1344 (33.6%) were female, for a male to female ratio of 1.6. The differences at presentation consisted of higher prevalence of symptomatic disease ($p = 0.01$), higher rate of Fuhrman grade I and II RCC ($p = 0.03$) and higher rate of clear cell and chromophobe histological subtype ($p < 0.001$) in the female group. Cause-specific survival at 5 and 10 years was 80.6% v. 76.4% and 75.5% v. 68.4%, for females v. males (log rank $p = 0.03$) (Fig. 1). However, after adjustment for known predictors there was no statistically differences in RCC-SS rates ($p = 0.2$).
Conclusion: Although the rate of RCC is virtually 2-fold higher in males, there are no statistically significant differences in cancer-specific survival. Therefore, no special adjustment appears required for gender differences.
Keywords: CANCER, RENAL CELL CARCINOMA, RISK FACTORS



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MP-4.08

T4 stage renal cell carcinoma without any evidence of metastatic disease have similar cancer-specific survival rates to those with nodal metastasis after radical nephrectomy

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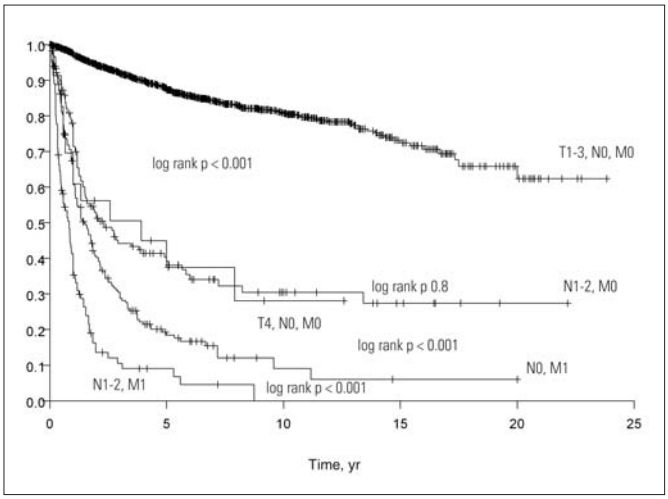
Introduction and Objective: Most patients diagnosed with T4 stage renal cell carcinoma exhibit local or distant metastatic disease at diagnosis. However, a small proportion of them will not have any evidence of nodal or distant metastasis. Accurate risk stratification is crucial for treatment decision-making, since patients with advanced disease can benefit of new systemic therapies. Therefore, we assessed the renal cancer–specific survival rates in who harboured more advanced disease such as T4N0M0 and those with nodal metastasis.
Materials and Methods: Between 1984 and 2001, 3952 patients were treated for renal cell carcinoma in 13 academic centres in Europe. Life tables, Kaplan–Meier addressed renal cancer–specific survival rates after radical nephrectomy according to the TNM stage.
Results: The age mean and median were 61 years and 62 years, respectively (range 18–93). Of all, 1152 (29.1%) patients were T1a stage, 934 (23.6%) T1b, 512 (13.0%) T2, 1283 (32.5%) T3 and 71 (1.8%) T4 (Fig. 1). Absence



of nodal disease was seen in 3658 (92.5%) patients. Conversely, 263 (6.7%) patients were N1 and 31 (0.8%) patients were N2. Distant metastatic disease was seen in 414 (10.5%) patients. Tumour size mean and median were 6.4 cm and 5.5 cm, respectively (range 0.5–25.0). Of all, 2621 (66.3%) were male. At 5 and 10 years, RCC-SS rates in men with T4N0M0 v. N1-N2 M0 were 85.3% v. 92.5% and 62.9% v. 83.6%, respectively (log rank $p = 0.8$).
Conclusion: Patients diagnosed as T4N0M0 stage exhibit similar cancer-specific survival rates to those with evidence of nodal metastasis. Therefore, although T4N0M0 tumours might be considered potentially surgically resectable, additional treatment modalities such as adjuvant systemic therapy might increase cancer-specific survival in this group of patients.
Keywords: NEPHRECTOMY, RENAL CELL CARCINOMA, SURVIVAL

MP-4.09

Pathological upstaging in clinically localized renal tumour: Is it a concern?

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Introduction and Objective: The treatment approach for renal cell carcinoma (RCC) depends mainly on the clinical stage of disease while the 5-year-cancer-specific survival is determined mainly by the pathologic staging. Clinical staging relies primarily on computerized tomographic (CT) scanning or magnetic resonance imaging (MRI). In this study we analysed the outcome of pathologic T3 RCC that were upstaged from clinical T1 or T2 and compared with those with both clinical and pathologic T1 or T2 disease.

Materials and Methods: A total of 709 patients who underwent radical or partial nephrectomy from 1994–2006 were considered in the study. All patients underwent preoperative CT or MRI for clinical staging. Only clinical T1-2 diseases were included in our study. Postoperative tumour size and pathologic stage, together with survival data, were determined.

Results: A total of 360 patients with clinical T1 (278) or T2 (82) who underwent radical or partial nephrectomy were included in the study. Partial nephrectomy was done for 25% of the patients and 29.5% of the patients underwent laparoscopic surgery. Final pathological staging showed that 66 (18.3%) patients were upstaged to pT3; 39 of those were cT1 (14%, 39/278) and 27 were cT2 disease (33%, 27/82). Mean tumour size was 5.1 (standard deviation [SD] 3.3) cm for pT1-2 lesions and 7.3 (SD 3.7) cm for pT3 lesions ($p < 0.0001$).The 5-year-recurrence-free rate was 92.7% and 66.8% for pT1-2 and pT3 patients, respectively ($p < 0.0001$).

Conclusion: Pathologic upstaging of renal cell carcinoma is a common finding in patients diagnosed with clinically-localized renal tumours, and it appears to have significant impact on progression free and survival outcome. The possibility of pathologic upstaging and its effect on the clinical outcome should be considered when counselling patients, especially when considering active surveillance of those patients.

Keyword: NEPHRECTOMY

MP-4.10

Diagnostic yield of image-guided fine needle aspiration of solid renal masses

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Introduction and Objective: In light of increased percutaneous ablations of renal masses, biopsies for solid renal masses have risen. Historically, the nondiagnostic rates of up to 60% have been reported with percutaneous fine needle aspiration biopsies (FNA). We sought to determine the diagnostic yield of image-guided FNA in a contemporary series.

Materials and Methods: We retrospectively reviewed our institutional database of renal biopsies performed between 1995 and 2006. The pathology database identified 377 patients with renal biopsies. While 259 core biopsies were performed for medical renal diseases, all 118 patients with renal masses underwent FNA, which were analyzed. Indications for biopsy were significant comorbidities, history of malignancy, multiple lesions, and metastatic disease. Except for 4 (3 open, 1 ultrasound-guided), all of the biopsies were performed with CT guidance.

Results: Of the 118 patients, 61% were males and 39% were females, with a median age of 68.4 years (range 1.6 to 101). There were 51.2% right-sided, 46.2% left-sided lesions. The median number of passes for each biopsy session was 2.7 (range 1–6). The histology of the diagnostic biopsies were as follows: 34.7% renal cell carcinoma, 8.5% transitional cell carcinoma, 5.9% lymphoproliferative disease, 6.8% oncocytic neoplasm, 5.9% metastasis, 16% normal renal histology, and 6.9% other benign histology. The nondiagnostic rate was 15.3%.

Conclusion: Renal FNA has an excellent diagnostic yield of 85%. Recent advances in image-guided FNA technology and cytological examination together with improved diagnostic yield should prompt a re-examination of the role of image-guided FNA in the management of renal masses.

Keywords: BIOPSY, IMAGING

MP-4.11

A contemporary analysis of the utility of liver enzymes for the detection of hepatic metastases in renal cell carcinoma

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Introduction and Objective: Up to 40% of patients with renal cell carcinoma (RCC) develop synchronous or metachronous hepatic metastases. Early detection and therapeutic intervention offers patients prolonged survival potential. In this review, we evaluate the clinical utility of liver function tests (LFTs) in the detection of hepatic metastases.

Materials and Methods: Of 807 patients with a diagnosis of RCC referred to our centre between 2000 and 2006, 394 had evidence of distant metastases, including 89 patients with hepatic metastases. Of the patients with clinically apparent hepatic metastases, 31% had elevated levels of AST or ALT; whereas 9% of patients with nonhepatic metastases had elevated LFTs.

Results: Compared to patients with nonhepatic metastases, patients with hepatic metastases had significantly higher mean levels of AST (36.3 v. 23.6 U/L, $p = 0.00$), ALT (41.7 v. 22.0, $p = 0.00$), but not ALP (126.1 v. 105.4, $p = 0.08$). Nonetheless, the sensitivities of AST and ALT for the detection of hepatic metastases were only 28.2% and 26.5%, respectively; while the specificities were 92.3% and 93.8%, respectively. In our cohort, elevated LFTs led to the detection of RCC metastases in only 2 patients, the remaining were identified by clinical symptoms and abdominal imaging.

Conclusion: Regular measurement of LFTs could help predict the development of hepatic metastases, however an 8% false-negative rate can be expected. A considerable number of patients who may benefit from early detection and curative therapeutic intervention will likely be missed if screened by LFTs only. The best method of screening for hepatic metastases is probably a combination of LFT and abdominal imaging.

Keyword: KIDNEY

MP-4.12

A nomogram for prediction of early renal cancer-specific mortality in patients with nodal metastases

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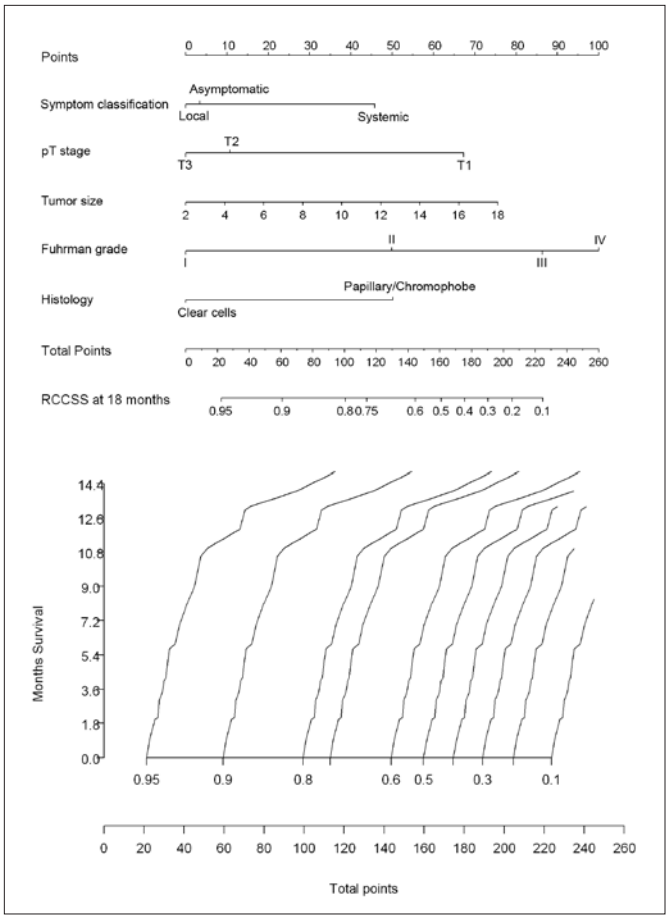
Introduction and Objective: There are no tools that adjust for disease-free interval in cancer survivors. We applied the conditional probability method to predict the free from renal cell carcinoma-specific mortality within 18 months after nephrectomy in patients with localized renal cell carcinoma (T1–T3) and evidence of nodal metastases.

Material and Methods: Cox regression models addressed the conditional probability of remaining free of renal cancer-specific mortality within 18 months after surgery in patients with localized renal cell carcinoma and nodal metastases. The study population consisted of 164 men treated with surgery with median follow-up of 1.3 years (mean 3 yr). The conditional nomogram was internally validated with 200 bootstraps. Covariates consisted of symptoms classification, pathological T stage, tumour size, Fuhrman nuclear grade and histology.

Results: The 1-, 1.5- and 2-year actuarial rates of cancer-specific survival were respectively 72.1%, 58.7% and 51.1%. Symptoms classification, pathological T stage, tumour size, Fuhrman nuclear grade and histology represented independent predictors of in both Cox regression model, and constituted the nomogram predictor variables. The predictive accuracy of the model was 76.3%.

Conclusion: We developed a model 76.3% accurate to predict freedom from renal cancer-specific mortality 18 months after surgery. Moreover, the

model accounted for disease-free interval in cancer survivors (Fig. 1).



Keywords: LYMPH NODES, NOMOGRAM, SURVIVAL

MP-4.13

Cryotherapy for small renal masses

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Introduction and Objective: There has been increasing interest in surveillance and ablative techniques (radiofrequency and cryosurgical ablation) for small renal masses (SRM), given the increasing number being diagnosed at smaller sizes. We describe our short-term outcomes using cryotherapy for SRM.

Materials and Methods: Nineteen patients were treated with cryotherapy between 2002–2007. Access was either laparoscopic (transperitoneal) or via open surgical techniques. From 2002 to 2004, the CryoCare system was used, with probe sizes ranging from 3 mm to 5 mm. Subsequent to 2004, the SeedNet system (Galil Medical) was used, with 17 G (1.47 mm) Ice Rod cryoneedles. All patients underwent 2 freeze-thaw cycles, and real time ultrasound guidance was used both to localize the tumour and to monitor the progression of iceball formation.

Results: The mean age was 56.7 years (range 27–78), and the mean tumour size was 2.6 cm (range 1.2 cm–4.0 cm). Eight patients underwent open cryotherapy, while 11 patients underwent laparoscopic cryotherapy. Seven tumours were located at the lower pole, 7 interpolar, and 5 at the upper pole. The mean hospital stay was 4.8 days and 2.6 days for the open and laparoscopic groups, respectively. There were no intraoperative or postoperative complications. Biopsies were performed on 14 patients; these showed 9 renal cell carcinomas (RCC), 4 showed benign lesions and 1 biopsy was not diagnostic. Of the 5 patients who did not undergo biopsy, 3 had a known history of previous RCC, and 2 had imaging consistent with angiomyolipomas. One patient has been lost to follow-up; mean follow-up was 22.6 months (range 1–55 months). Recurrence, defined as either increase in size of lesion or enhancement on follow-up imaging, was seen in 2 patients (11.1%). There was one non–cancer specific death.

Conclusion: Further prospective studies with longer follow-up are needed to determine the exact role of cryotherapy in the treatment of SRM; however, preliminary data are encouraging.

Keywords: CRYOTHERAPY, KIDNEY, RENAL CELL CARCINOMA

MP-4.14

A nomogram for prediction of renal insufficiency development after nephron-sparing surgery for renal cancer

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Introduction and Objective: To develop a model capable of predicting the probability of renal function loss after partial nephrectomy for renal cancer.

Material and Methods: Data were available for 415 patients affected by T1–3 renal cancer and treated with nephron-sparing surgery. Renal function loss was defined as ≥ 25% serum creatinine increase relative to preoperative level. Univariable and multivariable logistic regression models addressed the rate of renal function loss. The variables included in the model were age, indication for NSS (absolute v. relative), surgical time, cross-clamp time and preoperative creatinine level.

Results: After surgery, 42 (10.1%) patients developed renal function loss. In the multivariable analyses, absolute indication for NSS, longer surgical time and higher preoperative creatinine represented independent predictors of renal function loss. A model relying on age at surgery, indication for NSS, surgical time, clamping time and preoperative creatinine level was 70.2% accurate in prediction of renal function loss after 200 bootstrap resamples.

Conclusion: The probability of postoperative renal function impairment can be accurately predicted in patients treated with NSS for renal cancer.

Keywords: PARTIAL NEPHRECTOMY, RENAL CELL CARCINOMA, RENAL FAILURE

MP-4.15

Perioperative morbidity in patients treated with targeted therapy for metastatic renal cell carcinoma

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Introduction and Objective: Since targeted therapies (TT) were introduced into clinical practice, there have been theoretical concerns regarding wound healing, vascular integrity, perioperative bleeding and thromboembolic phenomena. Results from animal studies are conflicting, and there has been limited clinical experience with surgery in the setting of TT. Herein we report our initial experience with surgery while or after being treated with Sorafenib or Sunitinib, 2 TT commonly used in renal cell carcinoma (RCC).

Materials and Methods: We reviewed the records of patients with metastatic RCC who underwent surgery after being placed on either medication. Patients were identified via a retrospective review of our RCC database.

Results: Twelve patients (9 male, 3 female) with a mean age of 56 underwent surgery between January 2005 and September 2007. The procedures performed included metastatectomy (5: adrenalectomy, en bloc distal pancreatectomty and spleenectomy, mediastinal and inguinal lymphadenectomy, brain and lung metastatectomy), cytoreductive nephrectomy (4), decompression of pathological spinal fracture (2) and a palliative diverting colostomy (1). Seven patients were on Sorafenib and 5 on Sunitinib, and all of them were off therapy prior to surgery for a median period of

2 weeks (range 2–6 weeks) except one who had surgery while on drugs. There was no particular increase in hemorrhage, postoperative thromboembolic events or delay in wound healing. However, 3 patients did experience perioperative morbidity that is not commonly seen. These included stomal necrosis of the colostomy, delayed healing of a pancreatic fistula and recurrence of a recently repaired abdominal aortic aneurysm.

Conclusion: Targeted therapies are being prescribed more commonly for the treatment of RCC. In this small series of varied procedures in patients with varying exposure to TT, there was no obvious impact on hemostasis or wound healing. However, complications did occur and may or may not be related to TT.

Keywords: KIDNEY, NEPHRECTOMY, RENAL CELL CARCINOMA

Moderated Poster Session 5: Pediatric Urology
June 23, 2008, 12:30–14:00

5*
MP-5.01
Tissue engineering of a genitourinary tubular tissue graft resistant to suturing and to high internal pressures

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Introduction and Objective: To overcome the inconvenience of grafting other sources of tissue for urogenital use, the availability of a tissue-engineered genitourinary tissue would be extremely practical. The aim of this study is to evaluate the possibility of constructing a fully autologous tissue-engineered tubular genitourinary graft (TTGG) and determine its mechanical and physiological properties.

Materials and Methods: Dermal fibroblasts (DF) are extracted from a small skin biopsy, expanded and cultured in vitro with sodium ascorbate to form fibroblast sheets. Once the sheets have reached a state allowing manipulation, they are wrapped around a tubular support to form a cylinder. Following adequate maturation, urothelial cells (UC) are seeded inside the DF tube and the construct is placed in a bioreactor for 1 week. The fully mature TTGGs are then characterized in histology, immunohistochemistry, resistance to suture, burst pressure and ultimate tensile strength (UTS).

Results: The histology and the indirect immunofluorescence assays of the TTGGs confirmed that all the fibroblast layers had merged together to form a unified tubular construct and that a pluristratified urothelium coated the luminal surface of the tube. The burst pressure of nonsutured TTGGs was measured with or without perfusion or urothelial seeding and did not present significant differences. The mean maximum pressure was 2369 (SD 436) cmH_2O while real porcine urethras tested with the same apparatus, had a maximum-recorded burst pressure of 618 cmH_2O. The sutured constructs leaked at an internal pressure of about 54 cmH_2O. Perfusion of the TTGGs allowed the tissue to be mechanically stimulated and to gain force in UTS and diameter, passing from 10 (SD 4) N to 14 (SD 3) N in UTS and from 18 Fr to 24 Fr in diameter.

Conclusion: Adding urothelial cells to our TTGGs has not decreased its mechanical resistance. Results have shown that our construct can sustain an entire week of pulsatile stimulation without loss of mechanical or histological integrity. The tissue engineering technique used to produce this model seems very promising for bioengineering of a urethra or ureter graft. This method could open a doorway to new possibilities of reconstruction and solve part of the problem related to insufficient quantities of urinary tissue.

Keywords: RECONSTRUCTION, URETER, URETHRA

MP-5.02
Urinary TGFb1 concentration in the first 3 months of life can predict surgery in newborns with unilateral hydronephrosis

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Introduction and Objective: We evaluated the role of bladder urine transforming growth factor b1 (BU-TGF-b1) concentration in newborns with unilateral antenatal hydronephrosis.

Materials and Methods: We prospectively studied all newborns presenting to the Montréal Children's Hospital with unilateral antenatal hydronephrosis between January 2005 and 2007. Patients with associated anomalies, vesicoureteral reflux, contralateral pathology or ipsilateral ureteral dilatation were excluded. Postnatal evaluation included voiding cystourethrography, renal ultrasonography (US) and determination of urinary BU-TGFb1 concentration. Diuretic renal scans were carried out in patients with initial grade 3 or 4 hydronephrosis and with increasing hydronephrosis during follow-up. Surgical indications included an obstructive drainage curve, an equivocal washout curve with renal function of < 35% or symptomatic patients. Patients were analyzed in observational and surgical groups. We studied the longitudinal changes in BU-TGFb1 in each group and compared BU-TGFb1 levels in the first 3 months of life in both groups.

Results: A total of 42 newborns were included. The observational group included 31 patients who were followed for a mean of 14 (SD 6) months. During the first 3 months, from 3 to 12 months and in the second year of life, mean US grade and BU-TGF b1 decreased from 2.3 to 1.7 to 1.2 ($p < 0.05$) & 11.5 to 8.6 to 6.1 pg/mmol creatinine ($p < 0.05$), respectively. Pyeloplasty was carried out in 11 patients at mean age 6 (SD 5) months. The mean follow-up period was 7 (SD 5) months. In the first 3 months, preoperatively and at 3–12 months postoperatively, mean US grade and BU-TGFb1 were 3.5, 4 and 3 ($p < 0.05$) and 23, 29 ($p > 0.05$) and 8 pg/mmol creatinine ($p < 0.003$), respectively. Mean BU-TGFb1 in the first 3 months of life was 23 (SD 14) and 11.5 (SD 8) pg/mmol creatinine in the surgical and observational group, respectively ($p < 0.001$). Limiting comparison to only the 23 patients with initial grade 3 and 4 hydronephrosis showed levels of 23 (SD 14) and 13 (SD 9) pg/mmol creatinine for surgical and observational groups, respectively ($p < 0.02$). At a cutoff value of 17 pg/mmol creatinine, BU-TGF b1 in the first 3 months of life was 82% sensitive ahd 86% specific in predicting surgery.

Conclusion: BU-TGF- b1 changes over time are associated with similar changes in hydronephrosis grade. BU-TGF- b1 in the first 3 months of life can predict the need for surgery in newborns with antenatal hydronephrosis.

Keyword: NEPHROPATHY

MP-5.03
Outcome analysis of different pyeloplasty approaches in an age-matched pediatric cohort

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Introduction and Objective: Anderson-Hynes dismembered pyeloplasty is the technique of choice for correction of ureteropelvic junction obstruction (UPJO) in children. The selection of surgical approach is mostly driven by surgeon preference, including laparoscopy, flank incision, or dorsal lumbotomy. An outcome analysis involving these 3 different approaches has not been previously reported.

Materials and Methods: A retrospective chart review was conducted for all patients who underwent laparoscopic pyeloplasty between January 2005 and July 2007. Of 53 laparoscopic cases (lap) , we selected 29 performed by a single surgeon and compared them to 54 age-matched patients out of 203 who had an open approach between 2003 and 2007 (32 flank and 22 dorsal lumbotomy). Children younger than 3 years were excluded to allow age-matched comparison to the laparoscopic group. Age at surgery, operative time, performance of retrograde pyelogram (RPG), hospital stay, and complication/failure rates were evaluated. Statistical analysis was carried out using one-way ANOVA.

Results: See Table 1.

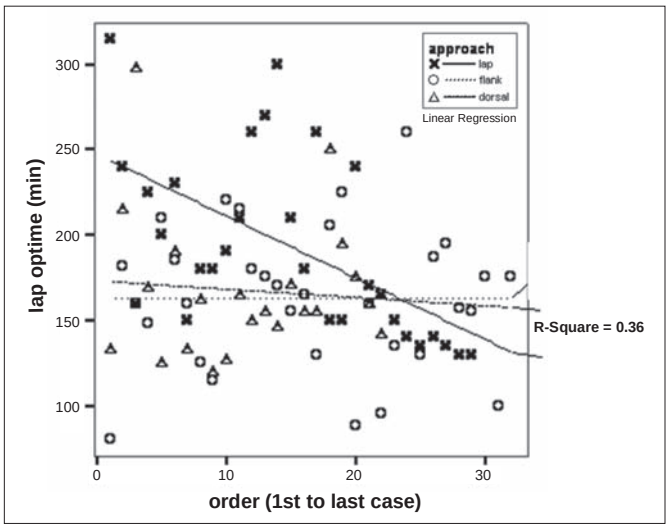
Conclusion: Although mean operative time was greater for the laparoscopic group versus open cases, mean hospital stay was significantly shorter. Overall, the success rate was similar for the 3 pyeloplasty approaches. Although the 3 groups had different follow-up periods, our data do not favour one particular surgical access over the others. Future studies on cosmesis and pain control may reveal more divergent outcomes for these 3 approaches.

Keywords: LAPAROSCOPY, OBSTRUCTION, PEDIATRIC

Table 1. Abstract 3.

Variable	Laparo-scopic*; $n = 29$	Flank; $n = 32$	Dorsal; $n = 22$	p value; ANOVA
Mean age, yr	7.9	8.0	7.2	0.49
Mean operative time, min	187.8	163.9	167.7	0.02
RPG, %	12 (41.4)	21 (65.6)	19 (86.4)	0.03
Mean hospital stay, d	2.3	3.6	3.3	0.01†
Complications, %	3 (10.3)	1 (3.1)	1 (4.5)	0.39
Failure/redo, %	1 (3.4)	1 (3.1)	0 (0)	0.67
Mean follow-up, mo	13.5	36.9	34.6	0.01†

*Mean operative time for the last 10 laparoscopic cases was 155 minutes (similar to open; see Fig. 1). Complications included readmission for pyelonephritis (2-1/lap,1/flank), prolonged urinary leakage from Penrose (2-lap.) and stent misplacement in the urethra (1-dorsal lumbotomy). One failure occurred in a non-RPG flank incision pyeloplasty and 1 after a RPG-laparoscopic case.
†Kruskal-Wallis test was used for nonparametric data.



MP-5.04

Prospective open-label double anticholinergic therapy for refractory hyperreflexic bladder in children

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Introduction and Objective: When facing hyperreflexic bladder, refractory to conventional medical approach, the therapeutic invasive alternatives are to proceed with augmentation cystoplasty or more recently, botulinum toxin detrusor injections. Therefore, we aimed to optimize medical therapy in a select group of children by using 2 anticholinergic medications simultaneously thus evaluating efficacy, tolerability and safety of this approach.
Materials and Methods: Pediatric patients presenting refractory hyperreflexic bladders with incontinence were offered to enter a prospective open-label protocol using adjusted dose regimens. Inclusion criteria were intensive medical and behavioural therapies have failed to improve symptoms, absence of correctable neurological anomalies (MRI) and initially on optimal dose of one well-tolerated extended release anticholinergic medicine with clinical and urodynamic (UDS) partial responses. The follow-up consisted of voiding diaries, postvoid residuals and urine cultures every 3 months, ultrasound and UDS every 6 months and yearly VCUG. Families were regularly asked for compliance, side effects, change in behaviour at home and school, continence status and overall quality of life. Blood samples and EKG were also obtained to detect potential toxicity. The primary endpoint was efficacy toward continence; the secondary endpoints were tolerability and safety. Medication used was oxybutynin 15–30 mg and (or) tolterodine 4 mg and (or) solifenacine 5–10 mg.
Results: A total of 24 patients were enrolled (15 neurogenic, 9 severe OAB, 10 voiding, 14 on CIC) and completed a minimum of 3 months. Mean age was 12 years for the 9 girls and 15 boys. They were on double medication for a mean of 12 months. Urodynamic capacity improved from 199 (SD 106) mL to 367 (SD 124) mL, no deterioration in compliance was detected and maximum uninhibited contractions decreased from 72 (SD 28) to 19 (SD 11) cmH_2O. Continence improved in all (9 dry, 13 significantly and 2 moderately improved). No patient withdrew from the protocol, 14 reported no side effects, 7 mild and 3 moderate. Of the 10 patients voiding, 3 developed postvoid residuals of 30–50mL and one was put on CIC. Blood tests and EKG remained normal.
Conclusion: In the presence of refractory hyperreflexic bladder in children, a double anticholinergic therapy was proven to be a serious alternative to surgical treatment. Tolerability was acceptable and the adjusted-dose regimen appeared safe.
Keywords: BLADDER DYSFUNCTION, OVERACTIVE BLADDER, PEDIATRIC

MP-5.05

Urodynamic and histologic changes over time in an animal model of bladder outlet obstruction

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Introduction and Objective: Bladder outlet obstruction accounts for significant morbidity in pediatric patients born with congenital neurologic and genitourinary anomalies. Although well studied in vitro, a comprehensive animal model has not been developed and studied to its maximum potential. Therefore, we have undertaken to develop an animal model with a partial bladder outlet obstruction (BOO) and wish to characterize it with clinically relevant parameters. We hypothesize that BOO will result in an initial compensatory response, then decompensation characterized by pathologic fibrosis.
Materials and Methods: All appropriate animal and ethics approvals were obtained. Female Fisher rats were placed under anesthesia and urodynamics performed via an 18 Fr angiocatheter placed with a cystotomy. Then, the angiocatheter was advanced into the urethra and a silk ligature was tied just below the bladder neck. Animals were analyzed at 2 ($n = 8$), 4 ($n = 6$) and 6 weeks ($n = 6$) after BOO and compared with sham operated controls ($n = 4$). Urodynamics were repeated, and tissue harvested. Histology was performed with H+E and Masson's trichrome. Statistics were performed via t test.
Results: All analyzed animals remained healthy for the duration of the study, as demonstrated by maintaining their weight and serum creatinine levels. Bladder capacity was significantly greater at 2 weeks than sham (0.2 mL v. 1.1 mL, $p < 0.05$) and greater at 2 weeks than 6 (1.1 mL v. 0.22 mL, $p < 0.05$). Leak point pressure was significantly higher at 6 weeks than 2 (41 cmH_2O v. 15 cmH_2O, $p < 0.05$). Bladder weights were significantly higher than shams at 2, 4, and 6 weeks (0.08 g v. 0.26 g, 1.1 g and 1.1 g respectively, all $p < 0.05$). Histologic sections demonstrated a progressive in collagen deposition with increased duration of BOO.
Conclusion: We have demonstrated that our model of a partial BOO induces significant changes that may represent the clinical scenario. Changes result in an initial increase in capacity, then a decrease. This corresponds to a progressive increase in intravesical pressure. We believe that the histology corresponds to these changes, demonstrating significant tissue fibrosis. This model has great potential to elicit biochemical pathways and study novel medical interventions.
Keyword: PEDIATRIC

5*
MP-5.06

Fowler-Stephens orchiopexy: is staging beneficial? A systematic review

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Introduction and Objective: Fowler and Stephens showed that by dividing the spermatic vessels and relying on vasal and cremasteric collaterals, a high intra-abdominal testis could be placed in the scrotum. Testicular atrophy is a potential complication of this technique. A systematic review was conducted to determine whether single-staged or two-staged Fowler-Stephens orchiopexy (FSO) results in better testicular viability. Success was defined as a testis with normal size or volume, located in the scrotum.

Materials and Methods: A search of relevant electronic databases and grey literature was conducted. Citation lists of selected papers and clinical trial protocol registries were also searched. Reports describing boys aged < 18 years with a primary outcome "testicular viability and position" were included. Following screening, included papers were assessed for risk of bias, and data was abstracted independently by at least 2 reviewers. Meta-analyses were performed using random effects models. Heterogeneity was assessed clinically using a forest plot and the I2 statistic. Publication bias was assessed using a funnel plot.

Results: There were 1804 citations identified. Following comprehensive screening, 55 papers were considered relevant. Of these, 8 reports included data for single-stage FSO, 33 reports for 2-stage, and 14 reports provided data for both. There were no randomized controlled trials; the vast majority was cohort studies or case series. The pooled estimate of success rates for single-stage FSO was 80% (95% CI 74%–86%) and for 2-stage FSO 86% (95% CI 81%–90%). The pooled odds ratios of single-stage versus 2-stage FSO was 2.32 (95% CI 1.25–4.32) in favour of a 2-stage FSO. The funnel plot showed no evidence of asymmetry. Complications were reported in 13% (1/8) and 55% (18/33) of the papers on single and 2-stage FSO, respectively. There was no complication with single-stage FSO, and ileus, hematoma and infection were the most common with 2-stage FSO.

Conclusion: Both techniques showed fairly good results, with the 2-stage FSO carrying a higher rate of success. However, the level of evidence is low and not up to contemporary standards. Based on our findings, studies of a more robust design, such as a randomized controlled trial should be performed to evaluate the efficacy of these therapies.

Keywords: PEDIATRIC, STAGE, TESTIS

MP-5.07

Role of calyx to parenchyma ratio in diagnosis and follow-up of unilateral antenatal hydronephrosis

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Introduction and Objective: We evaluate the role of calyx to parenchyma (C/P) ratio in newborns with high-grade unilateral antenatal hydronephrosis.

Materials and Methods: We prospectively studied all newborns presenting to the Montréal Children Hospital with high-grade unilateral antenatal hydronephrosis between January 2005 and 2007. Patients with associated anomalies, vesicoureteral reflux, contralateral pathology or ipsilateral dilated ureter were excluded. Postnatal evaluations included voiding cystourethrogram and periodic renal ultrasonography (US). In addition to the hydronephrosis grade, the C/P ratio was measured in the most representative and comparable views. The measurements were usually taken at the upper or lower pole in the coronal view, on the computer screen. Diuretic renal scans were carried out in all patients and were repeated in patients with increasing hydronephrosis during the follow-up. Indications for surgery included obstructive drainage curve pattern during the diuretic phase, an equivocal washout curve with renal function of < 35% or symptomatic patients. Patients were analyzed in observational and surgical groups. We studied the longitudinal changes in C/P ratio in each group and compared C/P ratio in the first 3 months of life in both groups.

Results: A total of 23 newborns were included. Observational group included 12 patients who were followed nonoperatively for a mean of 13 (SD 6) months. During the first 3 months, from 3 to 12 months and in the second year of life, mean US grade and C/P ratio decreased from 3 to 2.3 ($p < 0.03$) to 1.5 ($p > 0.05$) and 1 to 0.5 ($p < 0.02$) to 0.4 ($p > 0.05$), respectively. Pyeloplasty was carried out in 11 patients at mean age 6 (SD 5) months. Mean follow-up period was 7 (SD 5) months. In the first 3 months, preoperatively and 3–12 months postoperatively, mean US grade and C/P ratio were 3.5, 4 and 3 ($p < 0.05$) and 2.4, 3.1 and 0.9 ($p < 0.003$), respectively. Mean C/P ratio in the first 3 months of life was 2.4 (SD 1.5) and 1 (SD 0.9) in surgical and observational group, respectively ($p < 0.01$). Using a cutoff value of 1, the C/P ratio in the first 3 months of life was 100% sensitive and 66% specific in predicting surgery.

Conclusion: C/P ratio changes over time are associated with similar changes in hydronephrosis grade in both groups. Newborns with high-grade unilateral antenatal hydronephrosis and C/P ratio below 1 may not require surgery and can be followed less frequently. Future study with a larger number of patients and longer follow up is warranted.

Keywords: KIDNEY, ULTRASOUND

MP-5.08

Identifying risk factors of hypospadias that predict severity of malformation

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Introduction and Objective: Hypospadias is one of the most common congenital anomalies in males with an estimated prevalence of 3 to 8 per 1000 live births. Low birth weight, prematurity and advanced maternal age are associated with hypospadias. There are few studies that have identified risk factors for hypospadias that predict severity of the malformation based on the location of the urethral meatus. In one study, women older than 35 were more likely to have children with severe hypospadias compared with younger women, but other risk factors were not examined.

Materials and Methods: The Nova Scotia Atlee Perinatal Database records the maternal and fetal details of all children born in Nova Scotia. It was used to identify all patients with hypospadias born in the Province from 1988 to 2006. The patients were categorized into four groups based on the location of their urethral meatus: glanular, coronal, penile shaft, or perineal. Using ANOVA and multivariate analysis, potential risk factors were examined to identify those that predicted severity of the malformation.

Results: There were 995 cases of hypospadias in Nova Scotia, the severity of hypospadias was graded for 550. When comparing three categories: glanular, coronal and proximal to the corona; low birth weight ($p = 0.001$), decreased gestational age ($p = 0.01$), and advanced maternal age ($p = 0.02$) were predictive of more severe malformation. Logistic regression analysis comparing glanular versus proximal hypospadias showed maternal age was the only significant predictor of severity with an adjusted odds ratio of 1.043 (95%CI 1.003–1.083) for every increasing year. Other variables such as fetal measurements, maternal smoking, and maternal height/weight did not predict severity of hypospadias.

Conclusion: Severity of hypospadias malformation is associated with advanced maternal age, low birth weight, and decreased gestational age.

Keywords: PEDIATRIC, URETHRA

5*
MP-5.09

Single-surgeon evolution of maneuvers impacting fistula formation in tubularized incised plate hypospadias

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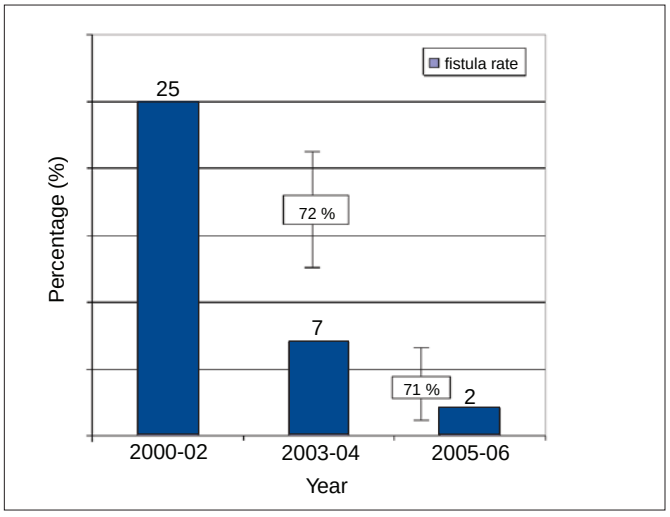
Introduction and Objective: To assess the impact of specific surgical maneuvers on fistula reduction during evolution of tubularized incised plate (TIP) repair for distal and midshaft hypospadias in children.

Materials and Methods: A retrospective chart review of 220 patients who underwent TIP repair by a single surgeon between 2000 and 2006 was performed. Sixty-seven children with proximal hypospadias, redo cases and incomplete follow-up were excluded, resulting in 153 patients to form our study sample. The surgeon experience was divided into 3 periods:

1) 2000–2002; 2) 2003–2004; and 3) 2005–2006. The evolution of TIP urethroplasty was judged based on the fistula rate for each period after adjusting for stent insertion. Comparative analysis between those time periods was performed using χ^2.
Results: Mean age at surgery was 16 months (range 6–96), with a mean follow up of 9.6 months (range 1.5–60). Urethral meatus was located at the corona in 101 (66%), distal shaft in 32 (20%), midshaft in 15 (10%) and glandular in 5 (4%). Of 153 patients, 119 (77.8%) underwent repair with dartos flap coverage: 55 using double "pants over vest" and 64 using single layer. Stent was inserted in 65 (42.5%) boys. Overall, 20 children developed fistula (13%). A significant drop in fistula rate occurred from period 1 (14/55, 25%) to period 2 (5/57, 7%), ($p = 0.02$). This coincided with increase in the use of single-layer dartos coverage during period 2 over period 1 (91% v. 49%, $p = 0.04$). The fistula rate further reduced to 2% (1/41) during period 3. This fact was attributed to incorporation of double-layer dartos coverage in the majority of TIP repairs performed in period 3, compared with period 2 (71% v. 36%, $p = 0.03$).
Conclusion: According to this 7-year single surgeon experience, adoption of dartos flap coverage appeared to be responsible for the significant drop in fistula rate observed between periods I and II. Adding a second layer of dartos flap (double dartos coverage) may have offered further protection against leakage, helping to reduce the incidence of fistula during period 3 (Fig. 1).



Keywords: PEDIATRIC, RECONSTRUCTION, URETHRA

MP-5.10
Urine cytology in neuropathic and augmented bladders
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Introduction and Objective: It has long been known that chronic inflammation is a risk for bladder cancer and recent publications have highlighted the increased risk of malignancy after intestinocystoplasty. This has resulted in the recommendation of screening cystoscopy, but the role of urine cytology has not yet been explored.
Materials and Methods: Institutional ethics approval was acquired. Urine cytology was collected from consecutive patients with neuropathic bladders, bladder exstrophy, posterior urethral valves and those who had undergone cystectomy for malignancy. Patients were excluded if clinically suspected of a UTI. A retrospective chart review was used to collect data regarding adequacy of sample, means of bladder emptying, presence of intestine in urinary tract, inflammation and cellular atypia. Statistical significance was determined using χ^2.
Results: Sixty samples have been collected to date, with 56 (93%) reported as satisfactory for evaluation. No malignant cells were detected. Two (3.3%) samples were reported as having atypical cells, and inflammation was present in 28 (47%). Clean intermittent catheterization (CIC) was performed in 40 (67%) patients and 14 (23%) were able to void spontaneously. Bladder augmentation had been performed in 11 (18%) patients and 3 (5%) were managed with a urostomy. There was significantly more inflammation detected in patients who performed CIC with their native bladder than those patients who were able to void spontaneously (52% v. 14%, $p < 0.05$). There was also significantly more inflammation in those patients with a bladder augmentation when compared with those who performed CIC in their native bladder and those who void spontaneously (73% v. 52% and 14%, $p < 0.05$).
Conclusion: Bladder cancer in congenitally abnormal bladders occurs at an elevated rate compared with the normal population and must be screened for. We believe that urine cytology has the potential to be an important adjunct in the care for these patients. Although our numbers in this study are far too small to examine efficacy, we have demonstrated that even in the presence of intestinal mucus, the examination of urine cytology is feasible. We believe that the inflammation seen in patients who perform CIC, increased further in those with an intestinocystoplasty, may account for their increased risk of malignancy.
Keyword: CYTOLOGY

MP-5.11
Comprehensive analysis of the clinical and urodynamic outcomes of spinal cord un-tethering
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Introduction and Objective: To evaluate the short- and long-term clinical and urodynamic outcomes following spinal cord untethering (SCU).
Material and Methods: The charts of 46 patients undergoing spinal cord untethering between January 1998 and December 2006 were reviewed. Analysis was performed on 2 groups. Group 1 included 23 patients with a primary tethered cord (8M:15F, mean age 4.6 yr). Group 2 included 23 patients with secondary cord tethering (13M:10F, mean age 8.6 yr). Preoperative and postoperative clinical and urodynamic data were compared 6 to 12 months postoperatively (mean 9, SD2, and 9, SD 3, mo for groups 1 and 2, respectively) and at long-term follow-up (mean 58, SD 32, and 58, SD 38, mo for groups 1 and 2, respectively).
Results: Urological and neuro-orthopedic symptoms were initially reported in 7 (30%) and 13 (61%) patients, respectively in group 1. At early and late follow-up, urological symptoms persisted in only 1 patient (4%). Neuro-orthopedic symptoms persisted in 3 patients at early follow-up. Five patients (21%) were symptomatic at the last follow-up. Total cystometric bladder capacity (TCC) increased from 108 (SD 88) to 155 (SD 126) mL ($p < 0.00$), and to 228 (SD 107) mL ($p < 0.00$) in early and late follow-up, respectively. The pressure at maximum capacity (PMC) decreased from 40 (SD 23) to 28 (SD 17) cmH_2O ($p > 0.05$) to 26 (SD 19) cmH_2O ($p < 0.04$) in early and late follow-up, respectively. Urological and neuro-orthopedic symptoms were initially reported in 13 (56%) and 19 (83%) patients, respectively, in group 2. Urological symptoms persisted in 7 patients (30%) at early and late follow-up while 3 (13%) patients developed new symptoms. Neuro-orthpedic symptoms persisted in 6 (26%) at early and late follow-up, while 1 patient (4%) developed new symptoms. TCC improved from 223 (SD 118) to 234.5 (SD 126) mL ($p < 0.02$) to 321 (SD 137) mL ($p < 0.00$) at early and late follow-up, respectively. PMC changed from 35 (SD 19) to 33 (SD 19) cmH_2O ($p > 0.05$) to 36 (SD 26) cmH_2O ($p > 0.05$) at early and late follow-up, respectively.
Conclusion: SCU of the primary tethered cord was associated with long-term clinical and urodynamic improvements. SCU of the secondary tethered cord was associated with 63% overall long-term improvement in the neuro-orthopedic symptoms. Long-term urological improvement was only 23%. Moreover, the PMC did not improve.
Keywords: CLINICAL PATHWAY, PEDIATRIC

MP-5.12
Development of a symptom score for dysfunctional elimination syndrome

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Introduction and Objective: Dysfunctional elimination syndrome (DES) is the most common cause of referral to pediatric urology clinics in many centers. DES is a constellation of lower urinary tract symptoms, urinary/fecal incontinence and constipation. DES is a heterogeneous syndrome and there are no widely accepted criteria for diagnosis. Several questionnaires have been developed to assist clinicians with the diagnosis, but they all suffer from incomplete psychometric assessment. The objective was to develop a discriminative questionnaire for diagnosis of DES and assess its validity and reliability.

Materials and Methods: A 13-item questionnaire was devised using literature review, experts opinion and patients input. This questionnaire was then administrated to 62 children with clinical diagnosis of DES, as made by a pediatric urologist (age 4–16 yr, median 8, 71% female). Children with any structural lower urinary tract were excluded. Fifty healthy controls were randomly selected from our ENT clinics (age 4–16 years, median 7, 60% female). We also asked the last 50 subjects to answer to the questionnaire 1 week later and mail it back. The questionnaire was returned by 36/50.

Results: The mean total score for cases was 14.3 (SD 5.6) out of 52 and 6.9/52 in controls (SD 3.7). The difference was statistically significant ($p = 0.001$). Discriminant function analysis yielded 80% accuracy. Receiver operating curve showed a score of 13 as the optimum threshold with the area under curve of 88.4% (95% CI 81.4%–94.8%).
Test–retest reliability was 84.5% ($p = 0.01$). Factor analysis showed unloading on 4 factors corresponding to urinary incontinence, urgency, obstructive symptoms and constipation/fecal soiling. Of the total subjects, 85% classified the questionnaire as very easy or easy to fill out.

Conclusion: This new questionnaire is valid and reliable in diagnosis of DES and can be used as a clinical or research instrument.

Keywords: BLADDER, INCONTINENCE

MP-5.13

Selective ablation of intestinal mucosa using laser photodynamic therapy with 5-aminolaevulinic acid: an experimental study in pigs

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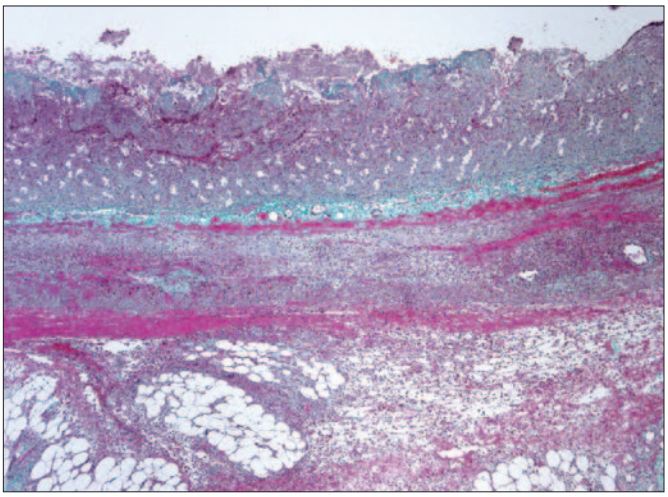
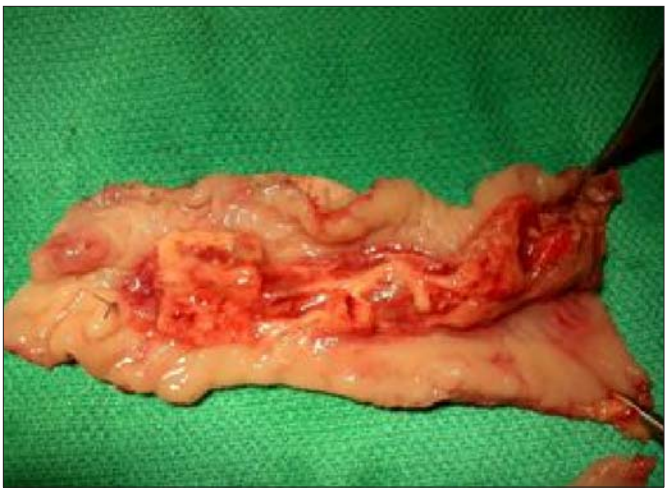
Introduction and Objective: Photodynamic therapy (PDT) involves photosensitizing tissue with 5-aminolaevulinic acid (ALA) and then activating it with monochromatic light (laser), causing necrosis. Precise control of the extent of injury should be possible by varying the energy density of the light applied to the target issue.

Materials and Methods: We tested the sensitivity of the bowel to PDT by instilling a 2% solution of ALA into a 20-cm isolated ileal segment of 3 female pigs. After 4 hours, the ileum was opened and cleansed. A 2-cm^2 circle of mucosa was exposed to predetermined 45 mW of light produced by an argon-pumped dye laser. Four 2-cm^2 circles of ileal segment of the first 2 pigs were exposed to energy densities of 10, 25, 50 and 100 J/cm^2, controlled by 2.6, 6.5, 13 and 26 minutes of laser exposure times, respectively. After 48 hours, the pigs were euthanized and the bowel segments were fixed, sectioned and stained. Histological staining techniques, including H&E and Masson's trichrome, were performed to show the extent of bowel injury. In the third pig, we limited the light dose based on our previous histological findings in order to determine the correct dose responsible for selective mucosal ablation.

Results: Four distinct circles with different degrees of intestinal injury were identified on the ileal segment gross section of the first 2 pigs. Microscopically, the extent of injury ranged from mucosal necrosis alone to full intestinal wall damage (all 4 layers) without perforation. Four different circles (3–6 min laser exposure time) were also seen in the third pig's ileal segment, which was exposed to light doses ranging from 10 to 20 J/cm^2. Microscopically, the extent of injury ranged from mucosal to submucosal injury (Fig. 1). By adjusting the time exposure in the third pig, 15 J/cm^2 of PDT enabled mucosal ablation without damaging the submucosa (Fig. 2). Similar results were obtained when the experiment was





repeated in a different ileal segment of the same pig.

Conclusion: Based on our preliminary results, PDT with 2% ALA and laser exposure of 15 J/cm^2 appears to be safe and effective to selectively ablate ileal epithelium in pigs.

Keywords: PATHOLOGY, PEDIATRIC, PHOTODYNAMIC

MP-5.14

Outcome analysis of peritoneal dialysis catheter placement in children: impact of malfunction and need for surgical revision

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Introduction and Objective: Peritoneal dialysis (PD) is the preferred method of renal replacement therapy for children with renal failure awaiting renal transplantation or recovering from an acute insult. Despite strict adherence to details, complications requiring surgical intervention are relatively common. In this study, we sought to analyze the effect of revisions on long-term PD success.

Materials and Methods: A retrospective analysis of a single center experience with 89 consecutive children started on PD between 1996 and 2006 was conducted. Patient demographics, indication for PD, time to initiate dialysis, complications, catheter removal or repositioning and the

need for conversion to hemodialysis (HD) were recorded. Variables were subjected to univariable time-to-event and Cox analysis. Patients were censored at time of renal function recovery, renal transplantation, last follow-up or death.

Results: Mean age at insertion was 83 months. Thirty-four children were temporarily placed on PD while recovering from acute renal failure. On average, patients were on PD for 9.2 months (range 0.03–56 mo). Catheter-related complications were reported in 36, most commonly infection and malfunction. Revisions were carried out in 12 patients (range 1–7 procedures). Infection had a significant effect on need to transfer from PD to HD ($p = 0.02$), even while correcting for other factors. Surgical revision did not affect the long-term success of PD. Laparoscopic exploration allowed for early dialysis resumption with no increased risk of fluid leak.

Conclusion: Catheter displacement or malfunction can be surgically addressed without affecting the overall success of PD, even after multiple procedures. Laparoscopic revision is feasible and allows early resumption of dialysis. Prevention of catheter related infections is likely to minimize the need to transfer to HD.

Keyword: PEDIATRIC

Moderated Poster Session 6: Oncology: Basic Science
June 23, 2008, 1230–1400

MP-6.01
Intravesical chemotherapy of high-grade bladder cancer with HTI-286, a synthetic analogue of the marine sponge product hemiasterlin

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Introduction and Objective: HTI-286 is a fully synthetic analogue of the natural tripeptide hemiasterlin that inhibits tubulin polymerization and has strong cytotoxic potential. In this study we evaluate the inhibitory effects of HTI-286 on human bladder cancer growth both in vitro and as an intravesical agent in an orthotopic murine model.

Materials and Methods: Various bladder cancer cell lines were treated with HTI-286 and mitomycin C (MMC) in vitro. Human KU-7 bladder tumour cells that stably express firefly luciferase were inoculated in female nude mice by intravesical instillation and quantified using bioluminescence imaging. Mice with established KU-7-luc tumours were administered HTI-286 or MMC intravesically twice a week for 2 hours. Pharmacokinetic data was obtained using HPLC-MS analyses.

Results: In vitro, HTI-286 was a potent inhibitor of proliferation in all tested cell lines and induced marked increases in apoptosis of KU-7-luc cells even after brief exposure. In vivo, HTI-286 significantly delayed cancer growth of bladder tumours in a dose-dependent fashion. HTI-286 at a concentration of 0.2 mg/mL had comparable strong cytotoxicity as 2.0 mg/mL of MMC. The estimated systemic bioavailability of intravesically administered HTI-286 was 1.5%–2.1% of the initial dose.

Conclusion: Intravesical HTI-286 instillation therapy showed promising antitumour activity and minimal toxicity in an orthotopic mouse model of high grade bladder cancer. These findings provide preclinical proof-of-principle for HTI-286 as an intravesical therapy for non–muscle invasive bladder cancer and warrant further evaluation of efficacy and safety in early phase clinical trials.

Keywords: BLADDER, BLADDER CANCER, CHEMOTHERAPY

MP-6.02
Intravesically administered antisense oligonucleotides targeting HSP27 inhibit the growth of non–muscle invasive bladder cancer

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Introduction and Objective: To evaluate the inhibitory effects of a second-generation antisense oligonucleotide (ASO) targeting the cytoprotective chaperone HSP27 (OGX-427, OncoGeneX, Vancouver, Canada) on human bladder cancer growth both in vitro and in vivo as an intravesical agent in an orthotopic murine model.

Materials and Methods: KU-7 bladder tumour cells were treated with OGX-427 or a mismatch (MM) control oligonucleotide in vitro and were assessed for HSP27 expression, proliferation and apoptosis. KU-7-luc cells that stably express luciferase were inoculated in female nude mice by intravesical instillation and tumour size was quantitated using bioluminescence imaging. Mice with established KU-7-luc tumours were administered OGX-427 or MM as well as controlled release microparticulate chitosan/oligonucleotide formulations intravesically. Tumour growth was monitored over time and tumours were analyzed postmortem using immunohistochemistry and Western blotting.

Results: In vitro, OGX-427 significantly decreased HSP27 protein levels and cellular viability. While naked OGX-427 showed only a trend in tumour suppression as compared to MM control, OGX-427 complexed with chitosan significantly inhibited orthotopic tumour growth. The chitosan preparation induced some hematuria compared to naked ASO, but this formulation had improved tissue uptake of oligonucleotides and reduced HSP27 tissue levels by 75%.

Conclusion: Intravesical OGX-427 instillation therapy showed promising antitumour activity and minimal toxicity in an orthotopic mouse model of high grade bladder cancer. These findings provide preclinical proof-of-principle for the use of ASO as intravesical agents for non–muscle invasive bladder cancer and warrant further evaluation of efficacy and safety in early-phase clinical trials.

Keywords: ANTISENSE, BLADDER, BLADDER CANCER

MP-6.03
Oncolytic vesicular stomatitis viruses are potent agents for intravesical treatment of high-risk bladder cancer

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Introduction and Objective: Bladder cancer is the second most common genitourinary malignancy. At initial diagnosis, about 70% of cases are non–muscle invasive. However, current treatment options for superficial disease are of limited efficacy since many patients will develop recurrent tumours. The purpose of this study was to examine 2 replication-competent oncolytic vesicular stomatitis virus (VSV) strains as intravesical agents in an orthotopic murine model of bladder cancer.

Materials and Methods: Four human bladder cancer cell lines (RT4, MGHU3, KU7, UMUC3) were treated with either wildtype VSV or a mutant Delta51M variant (AV3) in vitro. In vivo, KU7-luc bladder tumour cells, which stably express firefly luciferase, were inoculated into nude mice by intravesical instillation and tumour growth was quantified using bioluminescence imaging. Mice with established xenografts were administered VSV intravesically on days 4, 9 and 14 and necropsy was performed after 3 weeks.

Results: Both wildtype VSV and AV3, which has an impaired ability to shut down innate immunity, preferentially killed the more aggressive, interferon-nonresponsive cell lines UMUC3 and KU7, while interferon-responsive RT4 and MGHU3 cells were less susceptible. In vivo, AV3 as well as wildtype VSV significantly inhibited KU7 tumour growth by 90% (AV3) and 98% (wildtype) as compared to controls treated with inactivated VSV. Despite using immuno-compromised hosts, there was no evidence of toxicity in either group.

Conclusion: VSV instillation therapy showed promising antitumour activity and safety in an orthotopic model of bladder cancer. These findings provide preclinical proof-of-principle for the intravesical use of VSV against non–muscle invasive bladder cancer, especially in interferon-refractory patients.

Keywords: BLADDER, BLADDER CANCER, NEOPLASM

5*
MP-6.04
Comparison of bladder cancer cell apoptosis induced by bovine alpha-lactalbumine complex or tumour necrosis factor-related apoptosis-inducing ligand

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Introduction and Objective: High-risk superficial transitional cell carcinoma of the bladder (TCCB) requires adjuvant therapy (Tx). Current intravesical Tx carries the risk of infection or mutagenesis. Bovine α-lactalbumin and oleic acid complex (bLAC) isolated from milk selectively kills cancer cells. bLAC differs from other apoptosis-inducing agents in that it is not dependent on surface receptors, p53, Bcl-2, or caspase status

of the cells. Tumour necrosis factor-related apoptosis-inducing ligand (TRAIL) induces apoptosis by binding to cognate receptors and activating effector caspases. However, not all cells are sensitive to TRAIL and some acquire resistance with treatment due to changes in receptors, Bcl-2, or apoptotic inhibitors. We explored bLAC, and compared it with TRAIL as a novel apoptotic Tx for TCCB using a large panel of TCCB cells.
Materials and Methods: bLAC and its control protein without the oleic acid cofactor (bLA) were provided by NatImmune. TRAIL was purchased from PeproTech Inc. Our well characterized panel of TCCB cell lines, were exposed to bLA, bLAC, or TRAIL in serum free culture media at escalating dose and time intervals (1–4 h) while attached to multiwell plates. After overnight incubation in drug-free media, cytotoxicity was analyzed by MTT assay, and apoptotic proteins (caspases-3, 8, 9, Bid, DFF45) determined by Western blot. Flow cytometry was used to quantitatively detect apoptosis and distribution of cell cycle using propidium iodide (PI). Cocultured spheroids (TCCB/fibroblasts) with a live/dead (Syto16/PI) assay were used to assess selectivity by epifluorescent microscopy (EM).
Results: Cell cycle analysis demonstrated a dose-dependent apoptosis induced by bLAC with IC_{50} of 0.21 mg/mL for AY-27 (rat TCCB), and 0.22–0.61 mg/mL for human TCCB cells (UMUC3, T24, 253J, HTB-9, MGH-U3, UMUC6, RT112, RT4, UMUC14, HT-1376 and UMUC9, in the order of decreasing sensitivity). TRAIL resistant cell lines (T24, 253J, UMUC6, UMUC9, RT112 and HT-1376) were sensitive to bLAC. TRAIL sensitivity correlated with Bid and caspases cleavage. EM showed selective bLAC and TRAIL targeting of TCCB spheroids. No cell killing was observed from bLA (control).
Conclusion: bLAC induces apoptosis in a variety of TCCB cells, including TRAIL resistant cells, warranting further evaluation for intravesical Tx of TCCB.
Keywords: APOPTOSIS, BLADDER CANCER, TCC

5*
MP-6.05
Frequency of cyclooxygenase-2 expression is increased in non–muscle invasive bladder tumours at higher risk of recurrence

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Introduction and Objective: Nonsteroidal anti-inflammatory drugs (NSAID) have been shown to reduce the incidence of bladder cancer by 20% in a large population-based case–control study (OR = 0.81). Moreover, selective COX-2 inhibitors have been shown to have an antitumour effect in vitro and in vivo in a study using a human TCC cell line (HT1376). To determine the potential utility of COX-2 inhibition in secondary prevention of bladder cancer recurrence, we evaluated the expression of COX-2 in non–muscle invasive bladder tumours (NMIBT) in relation to known risk factors of recurrence and progression.
Materials and Methods: Our study population comprised of 214 patients with initial NMIBT followed without previous BCG for a median time of 7 years, and 81 patients at high risk of recurrence treated with BCG and followed for a median time of 4 years. COX-2 expression was evaluated immunohistochemically with a monoclonal anti-COX-2 antibody. Results were correlated with risk factors of recurrence. Immunoreactivity was categorized as positive if COX-2 staining was > 5% tumour cells.
Results: Cox-2 was expressed in 52/214 patients (24.3%) with initial NMIBT. COX-2 was associated with increasing risk factors such as tumour stage (17% in Ta and 47% in T1), grade (14% in G1, 20% in G2 and 64% in G3), tumour diameter (19% in ≤ 3 cm and 32% in > 3 cm) and number of tumours (single 19% and multiple 34%). The expression of COX-2 was also increased in accordance with risk categories of recurrence: low 7.7%, intermediate 22%, and high 45%. In this cohort, COX-2 expression was associated with an increased risk of recurrence ($p = 0.0051$). Among BCG treated patients, 27/81 (33%) had a positive COX-2 expression. In this cohort, there was no association of COX-2 expression with stage, grade, number of tumours and duration of BCG treatment, nor with recurrence-free survival.
Conclusion: COX-2 expression on initial NMIBT does increase with increasing risk factors for tumour recurrence. However, in higher-risk patients treated with BCG, no association was found with outcome. COX-2 inhibitors may be effective in reducing recurrence of NMIBT after transurethral resection.
Keywords: BLADDER CANCER

5*
MP-6.06
Inter-related effects of androgens, fatty acids and oxidative stress in prostate cancer: a mechanistic support for prevention strategies

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Introduction and Objective: Epidemiological evidences suggest that dietary fat may play a role in the etiology of prostate cancer (PC). Oxidation of fatty acids (FA) results in the generation of reactive oxygen species (ROS) which have been postulated to play a key role in the initiation and progression of PC. The purpose of this study was to determine whether androgens, which stimulate the growth of PC, also play a role in fatty acid (FA) uptake and degradation and consequently increase mitochondrial ROS production.
Materials and Methods: The model used compared the effect of a synthetic androgen (R1881) and an androgen receptor (AR) blocker (bicalutamide) on androgen-sensitive LNCaP and androgen responsive 22rv1 cells versus that on the androgen-independent CL1 subline that was derived from the parental androgen-sensitive LNCaP cells. Methods Used were immunofluorescence, confocal microscopy, Western blot, flow cytometry, 3H-oleate uptake and C14 radiolabeled long chain FA degradation studies.
Results: Androgen supplementation increased the cellular and surface expression of the plasma membrane fatty acid binding protein (FABPpm) leading to increase uptake of fluorescently labeled FA and of 3H-oleate only in PC cells that express the AR. Bicalutamide inhibited this phenomenon. Furthermore, androgen supplementation significantly increased the oxidation of FA by increasing the levels of CPT1, the rate limiting enzyme in this pathway. Subsequently we demonstrated that blockage of mitochondrial ROS generation by 2 different inhibitors — rotenone and thenoyltrifluoroacetone — could eliminate the androgen induced generation of cellular ROS which is coupled to FA oxidation, bringing it to the same levels of PC cells that were deprived of androgens or treated with bicalutamide.
Conclusion: We propose that the uptake of FA into PC cells is androgen regulated through the increased expression of FABPpm. More FA are therefore available for mitochondrial oxidation, a process that is also positively regulated by androgens, leading to the increased production of ROS that are associated with cancer cell proliferation and mutagenesis. These results may support the rationale for PC prevention using 5-alpha reductase inhibitors, dietary restrictions or anti-oxidants, all of which each have different inhibitory but complementary effect on the proposed mechanism.
Keywords: PROSTATE CANCER

MP-6.07
Micronutrient supplementation precludes tumour progression by elevating the endogenous inhibitor of angiogenesis, platelet factor-4 (PF-4), in the Lady mouse

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Introduction and Objective: Long-standing evidence suggests that diet remains a key component of cancer onset and progression. The purpose of this study was to identify candidate serum biomarkers specifically

related to dietary supplementation with selenium, vitamin E and lycopene, a treatment that we have already reported to significantly reduce the onset of prostate cancer in mice.
Materials and Methods: Lady transgenic mice (our model of adenocarcinoma of the prostate) were placed on diets of standard rodent chow with or without the combined micronutrients. The micronutrients added were in proportion to the human equivalent of (per day) 800 IU vitamin E (α-tocopherol succinate), 200 µg of Selenium (seleno-DLmethionine) and 50 mg of lycopene. The mice were followed over a period of 32 weeks and serum was collected and analyzed by the method of SELDI-ToF mass spectrometry.
Results: Mice receiving a diet containing the combined micronutrients revealed significantly elevated platelet factor-4 (PF-4), an endogenous inhibitor of angiogenesis. Immunohistochemical staining for PF-4 in the prostates of both control and treated mice revealed positive staining for the protein along the endothelium of the latter group, indicating a functional attribute associated with its elevated concentrations in this group. These mice also exhibited reduced tumour burden or complete absence of a tumour altogether. As well, overt manifestations associated with progressive disease were absent in mice receiving selenium, vitamin E and lycopene, compared to those receiving a standard diet without supplementation. Validation of changes in blood vessel density and/or integrity by immunohistochemistry is currently underway to substantiate an inhibition of angiogenesis leading to the inhibition of disease onset and/or progression.
Conclusion: We propose that a potent antiangiogenesis response may be induced by the combined effects of selenium/vitamin E/lycopene-supplemented diets. This response appears to be due, at least in part, to the localized elevation of an endogenous inhibitor of angiogenesis, PF-4. This localized increase in prostate tissue is likely mediated by platelet binding to an activated endothelium in premalignant lesions of the prostate. We present the novel observation that micronutrients inhibit angiogenesis by promoting the production of the key endogenous, platelet-associated inhibitor of angiogenesis, PF-4.
Keywords: PROSTATE CANCER

MP-6.08
NADPH oxidases as a potential target for prostate cancer radio sensitization
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Introduction and Objective: The generation of toxic oxidative stress is the core mechanism for radiation therapy (RT). Despite contemporary usage of high dose RT for localized prostate cancer (PC), long-term failures are still substantial, but can be reduced by adjuvant androgen deprivation therapy (ADT). We have previously shown that ADT radio sensitize PC cells through the modulation of oxidative stress (Neoplasia 2007). In attempt to spare potential side effects of adjuvant ADT, we examined if the inhibition of reactive oxygen species (ROS) generation by NADPH oxidases (NOX), a membrane multimere superoxide generating protein complex, could potentially replace the need for ADT.
Materials and Methods: We compared the effects of a synthetic androgen (R1881), an androgen receptor (AR) blocker (bicalutamide) and 2 different NOX inhibitors: apocyanine and diphenyleneiodonium (DPI) on the production of ROS in the androgen responsive 22rv1 human PC cells. The expression of 2 core NOX subunits — p22phox and gp91-phox, ROS production and the radio-sensitivity of the cells (colony formation assay following single exposure to 3Gy), were compared between these treatments.
Results: 22rv1 cells that were treated with physiological concentration of androgens (10^{-8}M R1881) had increased specific production of ROS by NOX and had reduced sensitivity to radiation compared to 22rv1 cells that were deprived from androgens. The addition of bicalutamide, apocyanine or DPI to R1881 reduced ROS production and restored the sensitivity of the cells to radiation. Androgens increased the expression of the p22phox and gp91-phox subunits of NOX as compared to treatment with androgens + bicalutamide or by androgen deprivation.
Conclusion: Androgens regulate the expression of the p22phox and gp91-phox NOX subunits in 22rv1PC cells. Increased generation of ROS by NOX induces radio resistance in 22rv1 PC cells but this can be ameliorated by the use of either ADT or NOX inhibitors.
Keyword: RADIATION

MP-6.09
Application of electrochemical principles in the treatment of localized prostate cancer
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Introduction and Objective: Electrochemical therapy (ECT) is a modality that employs low level direct continuous current to produce local electrochemical reactions in order to destroy tumours. Although used worldwide for localized tumours, limited standardization studies are reported. This study was aimed to characterize ECT parameters in human prostate cancer xenografts in mice and normal dog prostates.
Materials and Methods: Mice (n = 65) bearing human PC-3 or LNCaP tumours of 0.6–1.2 mL were used. Electrodes (2–4) were implanted in tumours to apply current densities of 10–15 or 25–30 mA/cm^2, for either 30 or 60 min. Three mice were used as controls (electrodes implanted but no current); 29 mice were euthanized for tumour histopathology; 28 were followed for recurrence/cure; 5 were excluded. In the canine model (n = 8), prostates were submitted to ECT (25–100 mA/cm^2) via laparotomy and were harvested for histopathological analysis.
Results: In both models, ECT produced edema and high pH at the cathode, and tissue dryness along with low pH at the anode. Histopathological analyses immediately after ECT revealed extensive necrosis, particularly at the cathode, and severe architectural changes at the anode. Lesions were most prominent at greater current density and treatment time, and in mice, progressively increased with time intervals post-ECT reaching up to 99% cell damage in the strongest treatment arm at 4 days. In the LNCaP series, this was accompanied by a decline in serum PSA levels, which were negligible by 7 days. Healthy malignant cells remained at the base of tumours in the 2-electrode configuration, but were destroyed with the 4-electrode configuration. Normal dog prostatic tissue required greater current density than cancer xenografts (100 v. 30 mA/cm^2) to achieve similar tissue destruction. ECT did not alter tumour growth rate in mice with clinical recurrence. Time to recurrence was longer in the group receiving the strongest ECT regimen.
Conclusion: ECT is highly efficient in rapidly inducing extensive necrosis in the prostate and killing prostate cancer cells. Prostate tumour cells appear more sensitive than normal prostate cells, Current delivery needs to be optimized to destroy all cancer cells. Innovative electrode configurations will be explored in a large model for treatment of localized prostate cancer.
Keywords: LOCALIZED PROSTATE CANCER, PROSTATE CANCER, PSA

MP-6.10
IKKε monitors IL-6 deregulation in prostate cancer cells
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Introduction and Objective: Elevated inflammatory cytokine levels in serum have been associated with advanced stage metastasis-related morbidity in prostate cancer (PCa). Several studies have shown that IL-6 can accelerate the growth of human PCa cell lines. We recently reported that Ikappa-B kinase-epsilon (IKKe) overexpression in hormone-sensitive (HS) 22Rv1 and LNCaP PCa cells induces the secretion of several inflammatory cytokines including IL-6. We also observed that high IKKe expression results in its

nuclear translocation, a phenomenon that is TBK1-independent. We therefore hypothesized that IKKe nuclear translocation leads to the nuclear activation of several transcription factors that control inflammatory cytokine gene expression, particularly IL-6.
Materials and Methods: LNCaP and 22Rv1 cells were used to study IL-6 secretion. The pUNO-hIKKe plasmid was used to overexpress IKKe in these HS cells. IL-6 gene regulation was followed using a CAT reporter gene under the control of 6 different IL-6 promoter deletions. CAT expression and cytokine secretions were characterized using ELISA assays. Expression of IKKe was measured by immunoblot assays which were also used to study the intracellular status of several transcription factors.
Results: We observed an increase in CAT expression in LNCaP and 22Rv1 cells cotransfected with pUNO-hIKKe and complete pIL6-CAT plasmids. We defined a minimal pIL6 promoter stimulated by IKKe expression. We also demonstrated that the IKKe classical targets NF-kB and IRF-3 are not activated by IKKe overexpression. Finally, several new IKKe-dependent putative transcription factor sites were identified by sequence analysis of the pIL-6 minimal promoter.
Conclusion: Our results show, for the first time, evidence that IKKe overexpression is closely linked to IL-6 gene expression. Moreover, the increase in IL-6 expression is not dependent on NF-kB and IRF-3 in PCa cells overexpressing IKKe. Further studies will be needed in order to determine the new IKKe-nuclear targets involved in the deregulation of inflammatory cytokine secretion with regard to IKKe overexpression and PCa progression.
Keywords: ANDROGEN INDEPENDENCE, HORMONE REFRACTORY PROSTATE CANCER, INFLAMMATION

MP-6.11

PDE inhibition as a chemotherapeutic adjuvant for prostate cancer

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Introduction and Objective: Low tumour oxygenation (hypoxia) correlates with resistance to chemotherapeutic agents. We have recently demonstrated that in vitro and in vivo hypoxia-induced resistance to various anticancer drugs can be attenuated by manipulating nitric oxide (NO) signaling through cGMP mediated pathways. The aim of this study was to determine whether PDE inhibitors are able to inhibit hypoxia-induced chemoresistance in prostate carcinoma cells.
Materials and Methods: Western blots, immunohistochemistry and functional enzymatic assays were used to determine the presence and type of cGMP and cAMP specific PDEs on a panel of human cell lines as well as in tissue samples. Drug sensitivity assays of cell lines exposed to hypoxic or standard conditions were performed in the presence of various concentrations of PDE inhibitors.
Results: These studies revealed the presence of 2 of the multiple cGMP PDE's (PDE5 and PDE11A) in both the cell lines and in prostate cancer tissue. Clonogenic assays revealed that incubation of these cells in 0.5% O_2 for 24 hours resulted in a corresponding 4- and 10-fold increase ($p < 0.001$) in their survival following a 1-hour exposure to doxorubicin (12.5 μM). While small concentrations of PDE inhibitor (zaprinast) did not affect the sensitivity to doxorubicin in cells incubated in 20% O_2, similar concentrations of the PDE inhibitor inhibited the survival of these cells incubated in 0.5% O_2 by up to 50% ($p < 0.05$).
Conclusion: These results for the first time describe the functional cAMP and cGMP PDE in prostate cancer and demonstrate a possible role as adjuvants to chemotherapy in the management of prostate cancer.
Keywords: APOPTOSIS, CHEMOTHERAPY, PROSTATE CANCER

MP-6.12

Intra-arterial injection of lipophilic photosensitizer for photodynamic therapy of the canine prostate

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Introduction and Objective: Photodynamic therapy (PDT) is an experimental therapy for prostate cancer. PDT destroys target tissue if a photosensitizer (PS) is activated locally by light of a specific wavelength. We have previously reported a novel PS and light delivery system for PDT: intra-arterial (i.a.) drug infusion and switched illumination. The objective of this study was to compare the outcomes of PDT with i.a. injection of PS formulated in liposomes or in dimethyl sulfoxide (DMSO).
Materials and Methods: With ethics approval, a total of 20 male dogs were studied. A percutaneous angiographic approach to internal iliac arteries was used in 11 dogs. The prostate arteries were selectively cannulated with a 3Fr microcatheter. Hypocrellin derived PS (Quest Pharma Tech) in liposomes (L-52) or in DMSO (D-52) was injected bilaterally. The PS doses ranged from 2 mg to 18 mg per dog. At 60 minutes postinjection, 635-nm light (200–600 J/cm^3) was delivered sequentially to 7 optical fibers with cylindrical-diffusing tips implanted in the prostate. Controls included: (A) i.a. drug-only ($n = 2$); (B) light-only ($n = 1$); (C) i.v. L-52 (160 mg/dog, $n = 2$) 3-h prior to illumination. PS fluorescence was real-time monitored. Animals were monitored for complications and sacrificed at various times.
Results: Controls were sacrificed at 3 months with no complications observed. In the light control, there was no tissue effect. In the i.a. drug (D-52) controls ($n = 2$), their prostate volume reduced 40%, suggesting an embolic effect. Controls treated with either i.v. or i.a. L-52 plus light ($n = 2$, respectively) had ~ 40% reduction in prostate volume. Of the 13 dogs treated with i.a. D-52 plus light, 5 were terminated earlier than 3 months. Their prostate glandular tissue was completely necrosed and separated from the capsule causing urinary obstruction. The other 8 were sacrificed at 3 months post-PDT. The prostate volume reduced 80%–100%, with near complete glandular tissue destruction. Normal urinary and erectile function was observed.
Conclusion: PDT with i.a. injection of free lipophilic PS in DMSO destroys the prostate glandular tissue more completely than PDT with PS in liposomes. Complications can be controlled by dose tailoring.
Keywords: LASER, PHOTODYNAMIC, PROSTATE

MP-6.13

Androgen regulated immunosuppression in prostate cancer through arginase expression

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Introduction and Objective: The significant immunological boost following androgen depletion therapy (ADT) illustrates the immunosuppressive potential of androgens in prostate cancer. As the expression of arginase II (ArgII) appears to be one possible mode of immunosuppression in prostate cancer, it is of interest to determine whether the expression of ArgII in prostate cancer cells is regulated by androgens. Our objectives are to evaluate the in vitro and in vivo expression of ArgII in prostate cancer cell lines and primary tumours.
Materials and Methods: The androgen-regulated expression of ArgII was evaluated by immunohistochemistry on duplicate tissue micro-array containing cores from a cohort of 40 control patients (radical prostatectomy only) and 36 ADTx patients (ADT prior to radical prostatectomy). Two independent observers scored ArgII expression based on staining intensity and percentage of stained cells. The in vitro expression was evaluated in LNCaP cells stimulated for 72 hours with 10 nm of R1881. PBMCs from healthy donors were stimulated by 0.250 ng/mL of OKT3 in the presence of conditioned media from LNCaP expressing a siRNA against ArgII. PBMCs activation was monitored by ELISA against IFNγ.
Results: In vivo expression of ArgII in ADTx patients was 2 times lower in normal adjacent tissues ($p < 0.001$, t test) and was 1.3 times lower in tumour tissues ($p = 0.024$, t test) compared to control patients. By real-time PCR, LNCaP stimulated for 72 hours with R1881 expressed > 6 times more ArgII than control LNCaP ($p < 0.01$, Mann-U, $n = 6$). Western blot revealed that ArgII protein was also overexpressed by > 2.5 times in the presence of R1881. PBMCs activated by OKT3 for 24 hours in the presence of conditioned media of LNCaP + SiArgII demonstrated that the

absence of ArgII was associated with increased IFNγ secretion: 1681 pg/mL with LNCaP + SiCtrl v. 537 pg/mL with LNCaP + SiArgII ($p < 0.05$, Mann-U, $n = 4$).
Conclusion: Our results demonstrate that the presence of androgens favors the expression of ArgII both in vitro and in vivo. Our data supports the notion that, in the presence of androgens, prostate cancer cells are directly involved in the development of an immunosuppressive tumour environment through the up-regulation of ArgII.
Keywords: ANDROGEN ABLATION, INFLAMMATION, PROSTATE CANCER

MP-6.14

Role of angiotensin II receptors in prostate cancer

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Introduction and Objective: Both angiotensin II receptors, AT1R and AT2R mRNA are expressed in prostate cancer. It is well known that AT1R is associated with proliferation and AT2R with inhibition of proliferation. Clinical studies have shown that treatment of advanced hormone-refractory prostate cancer with AT1R antagonists has antiproliferative and antiangiogenic beneficial effects, while PD123319, an antagonist of the AT2R, increases proliferation of prostate cancer cell lines. The objectives of our study were: 1) to characterize the cellular localization of AT1R and AT2R during development of prostate cancer and; 2) to assess the effects of agonists and antagonists of these receptors on cell proliferation.
Materials and Methods: Tissues obtained from prostate biopsies and radical prostatectomies were used either for immunofluorescence and Western blotting using antibody directed against AT1R and AT2R or used for primary cell cultures. Normal and various Gleason score were compared. The presence of AT1R and AT2R were verified by binding studies. For proliferation assays, cells were stimulated with Ang II or CGP42112 (an AT2R agonist) in the absence or in the presence of DuP753 (an AT1R antagonist) and PD123319 (an AT2R antagonist). Gleason scores were confirmed by a single pathologist.
Results: AT2R are present in normal and tumoural prostate cells. Immunofluorescence studies indicate that AT2R in normal prostate cells are predominantly localized at the basal membrane of the glands, while in the tumoural glands, AT2R is diffused throughout cytoplasm. Binding studies confirm the presence of both AT1R and AT2R in prostate tissues. In primary cell cultures, stimulation with CGP42112 or Ang II+DuP753 decreases cell proliferation. Besides, stimulation with Ang II+PD123319 increases cell number compared to Ang II alone. These results indicate that AT2R activation may restrain growth of prostate cells.
Conclusion: Both AT1R and AT2R are present in normal and in tumoural prostate. When used in primary cell cultures of epithelial prostate cells, stimulation with an AT2R agonist decreases cell proliferation. This important discovery may lead to the development of new promising and highly selective therapeutic agents against prostate cancer, since AT2R is expressed in only few adult tissues.
Keywords: CANCER, NEOPLASM, PROSTATE CANCER

MP-6.15

Tumour suppressive effects of adiponectin in renal cell carcinoma: in vitro studies

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Introduction and Objective: We recently showed that lower blood levels of adiponectin correlate with large tumour mass and metastatic progression in patients with clear cell renal cell carcinoma (RCC). We investigated the effects of adiponectin on the induction of apoptosis and secretion of vascular endothelial growth factor (VEGF) in an in-vitro model of human clear cell RCC.
Materials and Methods: As models, we used the CRL-1932 and CRL-1933 human clear cell RCC cell lines (ATCC). VEGF secretion to the culture medium (pg/mL) and apoptosis in response to 24 hours incubation with increasing doses of human recombinant full length adiponectin (0–30 ng/mL) were measured using specific ELISA assay and FACS analysis of anexin staining respectively. Cell proliferation was determined using the WST-1 proliferation assay
Results: VEGF secretion from the CRL-1933 cells was significantly inhibited in a dose-dependent manner by adiponectin ($p = 0.01$). Incubation with adiponectin significantly induced apoptosis in CRL-1932 cells, without an effect on cell proliferation.
Conclusion: Adiponectin can induce apoptosis in human clear cell RCC without a prominent effect on cellular proliferation. Inhibition of VEGF secretion from the tumour cells suggest an anti-angiogenic effect of adiponectin that needs to be validated with in vivo studies.
Keywords: RENAL CELL CARCINOMA

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MP-7.01
What is the appropriate length of ureteral access sheath for flexible ureteroscopy?

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Introduction and Objective: Ureteral access sheaths provide access to the kidney during flexible nephroureteroscopy. Sheaths are currently available from 20 cm to 55 cm in length. The appropriate length of access sheath should gain access to the ureter just distal to the ureteropelvic junction. When sheath length is too long, excess sheath distal to the urethral meatus renders ureteroscope control difficult. For proximal ureteral stones, a shorter sheath length is required than for renal stones. We aimed to establish the length of access sheath most suitable for proximal ureteral stones.

Materials and Methods: Thirty-three consecutive successful ureteroscopies (23 male, 10 female) were studied. Under cystoscopic and fluoroscopic guidance, the length between the urethral meatus and ureteric orifice and between the urethral meatus and ureter at the level of the iliac vessels were measured using a graduated 5Fr ureteral catheter.

Results: The distance from urethral meatus to ureteric orifice was 25 cm (SD 2 cm) (max. 27 cm) in males and 8 cm (SD 1 cm) (max. 9 cm) in females. The distance from urethral meatus to level of the iliac vessels was 30 cm (SD 2 cm) (max. 33 cm) in males and 15 cm (SD 1 cm) (max. 17 cm) in females.

Conclusion: In order to enter the ureter, the length of ureteral access sheath used for ureteroscopy should exceed 27 cm in males, and 9 cm in females. The access sheath should approximate 32 cm in males and 16 cm in females for successful ureteroscopy of proximal ureteral stones. Current brands of ureteral access sheaths include the Cook Flexor (available at 20, 28, 35, 45, 55 cm), ACMI Uropass (at 24, 38, 54 cm), Bard Aquaglide (at 25, 35, 45, 55 cm) and Boston Scientific Navigator (at 28, 36, 46 cm). Therefore, the shortest available ureteral access sheath from Cook at 20 cm, is adequate for flexible nephroureteroscopy in most females while the 35 cm access sheaths from Cook and Bard should suffice in most males.

Keywords: CALCULI, NEPHROLITHIASIS, URETEROSCOPY

5*
MP-7.02
Coherent scatter computed tomography for the analysis of urinary calculi: preliminary results of a prospective trial

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Introduction and Objective: Many urinary calculi have a heterogeneous composition in layers about a central core. At present, the most common techniques of stone analysis are infrared spectroscopy (IRS) and conventional x-ray diffractometry. Both methods are limited, requiring that stones be crushed prior to examination and a bulk measure of composition be obtained. We are currently conducting a trial using coherent-scatter computed tomography (CSCT) as an ex situ technique of stone analysis. We believe this technique will provide detailed structural information, including composition at the core of the stone.

Materials and Methods: Our ongoing prospective trial examines urinary calculi from 100 consecutive eligible patients undergoing either percutaneous nephrolithotripsy or ureteroscopy. All calculi removed intraoperatively are analyzed with CSCT and then the same samples are sent for IRS (the standard of care at our centre). Stone analyses from the 2 modalities are compared for overall bulk composition and the CSCT data analyzed to determine composition of the core.

Results: At present complete data is available for 24 patients. The core mineral identified by CSCT was not the primary component identified by IRS in 33%, with the core mineral missed by IRS in 25%. For stones of nonuniform composition ($n = 12$), the stone core was not the primary IRS component in 83% with the core component being missed by IRS in 50%.

Conclusion: Results to date demonstrate that CSCT is a viable method of stone analysis, providing not only accurate bulk composition but also detailed 2- and 3-dimensional structural maps of each mineral. IRS provides bulk composition but fails to identify the core mineral in up to 50% of cases, likely due to sampling issues. As several of these patients have chronic stone disease, the additional information provided by CSCT may prove useful in strategies to prevent recurrence.

Keywords: CALCULI, IMAGING, NEPHROLITHIASIS

MP-7.03
In vitro comparison of 1.5Fr and 2.2F four wire nitinol stone baskets

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Introduction and Objective: The N-trap stone basket is offered in a variety of sizes including a new 1.5F model. The purpose of this study is to compare characteristics of the 1.5F basket to the existing 2.2F model, with respect to renal and ureteral use.

Materials and Methods: The impact of the basket on deflection rates of the Flex-X flexible ureteroscope (Olympus) was tested. In addition, the impact of the basket in the working channel on the flow of irrigation was examined both alone and in conjunction with a 272 micron laser fibre. The means were compared with a Student t test. The function of both baskets with respect to stone relocation from the lower pole to the upper pole of a clay renal model was tested using 2 stone sizes, with 5 trials performed by a total of 3 operators, for a total of 30 trials with each basket. The catch, transfer, release and total times were compared using 1-way ANOVA.

Results: Both baskets had minimal impact on the degree of deflection of the ureteroscope from baseline. The mean flow of irrigation with the 1.5Fr basket in the working channel was 45.8 mL compared with 25.8 mL with the 2.2Fr basket ($p < 0.001$). Mean irrigation flow with the 1.5Fr basket and 272 micron laser fiber in the working channel was 23.5 mL compared with12.7 mL for the 2.2Fr basket and laser fiber ($p < 0.001$). With respect to stone transfer, there was no significant difference in the mean catch time (14.6 v. 10.7 s; $p = 0.09$), mean transfer time (11.6 v. 8.0 s; $p = 0.27$), mean release time (3.6 v. 2.9 s; $p = 0.26$) and total time (29.9 v. 21.5 s; $p = 0.06$) between the 1.5F and 2.2F baskets respectively.

Conclusion: When used in the ureter in conjunction with holmium laser lithotripsy, it is likely that the improved flow with the 1.5F basket will aid in visualization and the more efficient removal of stone. The 1.5F basket, despite its smaller size and therefore less rigid sheath, appears equally capable of catch, transfer and release of 5-mm and 8-mm stones from the lower pole to the upper pole of a model kidney.

Keywords: CALCULI, NEPHROLITHIASIS, URETER

MP-7.04

Stones lodge at 3 sites of anatomic narrowing in the ureter: Clinical fact or fiction?

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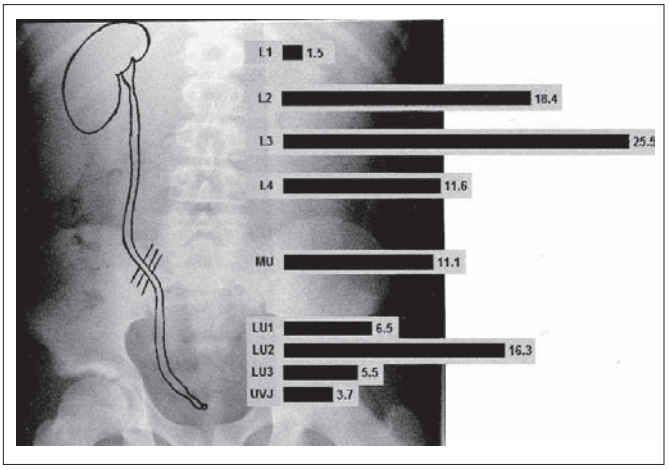
Introduction and Objective: The ureter is described as having 3 anatomic sites of narrowing where stones tend to lodge: the ureteropelvic junction (UPJ), the ureteric crossing of the iliac vessels and the ureterovesical junction (UVJ). The purpose of our study is to determine if 3 peaks of stone distribution exist in patients referred for shockwave lithotripsy (SWL).

Materials and Methods: The 596 patients with solitary calculi, referred for first time ESWL, were identified. Pretreatment KUB films were reviewed and stones were categorized accordingly to 20 levels outlined in the attached diagram. Histograms were then constructed to plot the distribution of stones within the ureter.

Results: The male to female ratio was 2.7:1, with stones equally distributed between the right and left sides. Stents were placed preoperatively in 26% of patients. Stone area was less than 100 mm^2 in 84% and greater than 100 mm^2 in 16%. The below histogram (Fig. 1) demonstrates two



peaks in calculus distribution the first adjacent to the upper border of the third lumbar vertebra, while a second was identified in the middle segment of the lower ureter. There is an absence of the peak predicted by classic anatomic teaching over the iliac vessels.

Conclusion: This descriptive study demonstrates 2 peaks of stone distribution, one in the upper ureter below the radiographic level of the UPJ and a second in the lower ureter half way from the lower border of the sacroiliac joint and the coccyx, more proximal than one would expect in the UVJ. This correlates with the author's observations from ureteroscopic treatments where few stones are noted at the level of the iliac vessels.

Keywords: CALCULI, IMAGING, URETER

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MP-7.05

Cryotherapy of the nephrostomy tract decreases the risk of hemorrhage in percutaneous renal surgery

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Introduction and Objective: Immediate or delayed renal hemorrhage requiring transfusions and angioembolisation is a significant morbidity associated with complex percutaneous renal surgery. The aim of the present study was to compare in a retrospective fashion cryoablation of the nephrostomy tract and antegrade double J stent placement as compared with controls who had nephrostomy tube.

Materials and Methods: Consecutive patients undergoing percutaneous nephrolithotomy or endopyelotomy between May and September 2007 were included in the study. Patients with calyceal diverticula were excluded. The control group had a 24F re-entry nephrostomy tube inserted. Cryotherapy of the nephrostomy tract was performed after antegrade insertion of 7F double J stent. A 2.4-mm cryoprobe was inserted through the neprhostomy tract and a 10-minute freeze-thaw cycle was performed. Perioperative data and postoperative complications were collected for all patients. Data was analyzed using SPSS software to calculate 2-sided p values.

Results: Sixty-one patients (30 cryotherapy and 31 controls) were included in this study. Both groups were comparable in terms of age, sex, BMI and ASA. Mean stone areas were 1540 mm^3 and 1553 mm^3 in the cryotherapy and control group, respectively. Mean number of dilated renal tracts was 1.86 in the cryotherapy group and 1.5 in control ($p = 0.02$). Operative time was significantly longer in the cryotherapy group (123.9 v. 95.2 min, $p = 0.02$). Postoperative analgesic requirements and pain scale as measured by visual analog scale were not significantly different between the 2 groups. The cryotherapy group had significantly shorter hospital stay compared to control (2.1 v. 3.6 days, $p = 0.001$). Delayed renal bleed requiring angioembolization was significantly less in the cryotherapy group (3% v. 13%, $p = 0.001$, odds ratio 0.23).

Conclusion: Cryotherapy of nephrostomy tract is a novel technique that significantly decreased the delayed bleeding complications for patients after complex percutaneous renal surgery. It significantly shortens the hospital stay after percutaneous renal surgery. This novel technique may have a role in high-risk patients.

Keywords: CALCULI, CRYOTHERAPY, NEPHROLITHIASIS

MP-7.06

Effect of holmium laser settings on stone fragmentation in vitro

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Introduction and Objective: The holmium laser is widely used as an intracorporeal lithotripter. Urologists currently use a variety of rates and energy settings to fragment calculi. The purpose of this study is to determine the efficiency of stone fragmentation using a consistent power, with various energy and frequency settings.

Materials and Methods: Stone phantoms were treated in vitro with a 272 micron Holmium laser fibre and a Coherent generator. Five treatment strategies were applied: (1) 1.5 J and 6 Hz, (2) 1 J and 8 Hz, 0.5 J and (3) 16 Hz, 0.4 J and (4) 20 Hz, and (5) 0.2 J and 40 Hz. Four 4-minute trials were performed for each treatment strategy. Stone material ablated per minute and the stone material ablated per joule of energy was calculated and compared with 1-way ANOVA.

Results: The mean weight of ablated stone was significantly higher with strategy 1 at 307.5 mg with strategies 2–5 ablating 232.5 mg, 202.5 mg, 150.0 mg and 147.5 mg respectively ($p < 0.001$). Strategy 2 and 3, as well as strategy 4 and 5 were similar ($p = 0.20$ and 0.91). Strategy 3 was significantly better than strategy 4 and 5 ($p = 0.034$, $p = 0.027$). Stone mass ablated per joule of energy used was progressively better with each strategy at a mean of 0.168 mg/J, 0.138 mg/J, 0.105 mg/J, 0.080 mg/J and 0.077 mg/J respectively, in order of highest to lowest energy setting, with the exception of strategy 4 and 5 between which the difference was insignificant ($p = 0.78$). Finally, when comparing the mean stone mass ablated per minute of treatment strategy 1 was significantly better than the rest at 76.9 mg/min ($p < 0.001$), while strategy 2 and 3 were not significantly different at 58.1 mg/min and 50.6 mg/min respectively ($p = 0.20$). Strategy 2 and 3 were significantly better than strategy 4 and 5, however no significance between strategy 4 and 5 at 37.5 mg/min. and 36.9 mg/min. was detected ($p = 0.91$).

Conclusion: The use of high energy, low frequency settings was associated with the most efficient stone ablation. There was no difference in stone ablation efficiency between 0.4 J/20 Hz and 0.2 J/40 Hz.

Keywords: CALCULI, LASER, LITHOTRIPSY

MP-7.07

Bidirectional transport of oxalate in the colon: A potential mechanism to reduce hyperoxalemia?

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Introduction and Objective: Hyperoxaluria results in an increased risk of stone formation. Up to 50, to 80% of oxalate in the body is absorbed from foodstuffs in the gastrointestinal (GI) tract. While the focus on the GI tract has been primarily that of oxalate absorption, it has recently been suggested that it may also have excretory functions. We sought to determine if oxalate could be transported from the basal to apical side of cultured colonic cells (mimicking excretion of oxalate into the lumen of the GI tract).
Materials and Methods: Standard absorption assays were performed using carcinoma of the colon (CaCo2) cells cultured in DMEM with 20% FBS. Sixty thousand (150 000 cells/mL) cells were plated in Millicell 24 cell culture plates PCF 0.4 µm (Millipore PSHT010R1). Three oxalate concentrations of 0.25, 0.50 and 1 mmol/L were used for incubation. For apical (A) to basal (B) transfer experiments, 400 µL of oxalate was added to the apical layer wells and HBSS was added to receiver plates. For B-A transfer experiments (simulating hyperoxalemia), HBSS was added to apical layer wells and 800 µL of oxalate was added to receiver plates. The plates were incubated for 2 h at 37°C with constant shaking. Oxalate concentrations in the top and bottom wells were determined. Each concentration was repeated in quadruplicate. The apparent permeability (A_{app}: a measure of transfer rate in cm/s) for oxalate was calculated for each well.
Results: Cells were grown to confluence in 21 days (TEER values 120–150 ohms cm^{-1}). The A_{app} was $5.5x10^{-4}$, $2.79x10^{-4}$, $2.88x10^{-4}$ cm/sec for the movement of oxalate from the apical to the basal side using 0.25, 0.50 and 1 mmolar/L mmol/L oxalate respectively. For the opposite direction (basal to apical sides), the A_{app} was 2.03×10^{-4}, 1.95×10^{-4}, 1.24×10^{-4} cm/s using the same concentrations of oxalate.
Conclusion: Using Caco-2 cell monolayers, oxalate was transported in the basal to apical direction demonstrating that colon cells can excrete oxalate into the lumen of the GI tract. This may be important in understanding and treating hyperoxalemia and hyperoxaluria.
Keywords: CLINICAL PATHWAY, KIDNEY, KIDNEY FUNCTION

MP-7.08

Utilization patterns of shockwave lithotripsy (SWL) at a high volume regional referral centre

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Introduction and Objective: Patients treated with shockwave lithotripsy (SWL) at St. Michael's Hospital (SMH), Toronto, are prospectively entered into a database to track patient and stone characteristics as well as referral patterns. This data represents the current state of SWL use in the region serviced by SMH.
Materials and Methods: The Lithotrack database and Phillips LithoTron have been used in conjunction since 2001. The database was used to extract patient demographics including age, gender and home address, as well as stone characteristics including side, size and location. Data from the 7-year period were analyzed to determine the characteristics of patients and stones that were referred. Linear regression was undertaken to determine if any change in referrals with respect to stone location or size had occurred in the 7-year period. Data were analyzed with SPSS.
Results: There were 19 848 SWL treatments performed over the 7-year period. Men represent 64.6% and women 35.4% of patients referred. Stones were located on the left and right sides 56.3% and 47.7% of the time. The majority of treatments, 67.6%, were for renal stones while 32.3% were for ureteral stones. Women underwent more treatments for renal stones than men (74.4% v. 64.0%, $p < 0.001$). Over 7 years, the referrals for lower caliceal stones have been consistent at 35.2%, compared with 32.4% for all other renal stones and 32.3% for ureteral stones. However, upper ureteral stone treatments have decreased significantly over the 7 years by 5% ($p = 0.03$). Referrals for mid- and lower ureteral stones have not decreased significantly. With respect to stone size, 81.3%, 14.2% and 4.5% of referrals are for stones < 100 mm^2, 100–199 mm^2 and > 200 mm^2 respectively. Stones referred < 100 mm^2 have increased by 4% ($p = 0.007$) while stones 100–199 mm^2 have decreased by 4% ($p = 0.009$). Referrals for small renal stones < 11 mm^2 have not increased over time.
Conclusion: The majority of referrals for SWL in the Greater Toronto Area are for renal stones. A decrease in referral for upper ureteral stones, which may relate to the more widespread use of flexible ureteroscopy, has occurred, while referrals for larger stones have not increased.
Keywords: LITHOTRIPSY, NEPHROLITHIASIS, STATISTICS

MP-7.09

A review of the indications for cancellation of shockwave lithotripsy (SWL) at a high-volume centre: strategies to reduce the cancellation rate

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Introduction and Objective: Shockwave lithotripsy (SWL) is delivered through regionalized treatment centres across Canada. As a result, patients often must travel lengthy distances and wait up to 6 weeks for elective treatment. An efficient SWL booking system is imperative to ensure optimal clinical care and reduce the chance of cancellations to a minimum. The aim of the study was to review the documented SWL treatment cancellations over a 5-year period from Jan. 1, 2003 to Dec. 31, 2007.
Materials and Methods: A retrospective review was performed to identify all patients whose SWL treatment was cancelled during the study period. Demographic (age, gender) information was obtained from our prospectively collected database. Cancellation reasons were grouped into 5 categories: stone factors (stone passed, sand only, stone too small for therapy, stone too large for therapy, stone not visible for therapy), patient factors (patient not NPO, no accompanying person to take the patient home, recent Aspirin, NSAID or anticoagulant use, untreated UTI, patient refusal to consent), medical factors (cardiac or respiratory issues, or inadequate medical workup), equipment failure and other.
Results: There were a total of 1404 cancellations, out of 15964 booked treatments, for a cancellation rate of 8.8%. There were 34.2% of cancelled patients who were male, and the average age of cancelled patients was 52.5 (SD 15.38) years. There were no differences in age or gender between cancelled and treated patients. Stone factors were the most common cancellation reason (73.6%), and there was no significant change over time (Table 1). Potential preventable reasons for cancellation were identified in 15.2%.

Table 1. Abstract 9.

	2003	2004	2005	2006	2007	Total
SWL (*n*)	2680	2970	2927	3140	2843	14 560
Cancellations (*n*)	275	281	272	296	280	1404
Cancellation reasons (%)						$p = 0.156$
Stone	74.2	77.2	71.3	76	68.9	73.6
Patient	15.6	14.6	19.5	16.6	20.0	17.2
Medical	5.1	5.7	4.8	6.1	5.4	5.4
Equipment	4.7	1.8	3.7	1	5.7	3.3
Other	0.4	0.7	0.7	0.3	0	0.4

Conclusion: SWL cancellations rates are low, but might be minimized further with improved educational methods, to ensure adequate NPO status, avoidance of Aspirin or anticoagulants, avoidance of untreated UTIs and reduce referral of radiolucent stones.
Keywords: LITHOTRIPSY, NEPHROLITHIASIS, PREVENTION

MP-7.10

Differences in the metabolic profile of diabetic and nondiabetic uric acid stone formers

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Introduction and Objective: Recently, it has been appreciated that diabetes mellitus is a significant risk factor for uric acid stone disease. The purpose of this study was to determine whether the metabolic profile of

diabetic and nondiabetic uric acid stone formers differs and whether similar medical therapy and dietary counseling is appropriate for both groups.
Materials and Methods: A retrospective study was conducted among patients with uric acid stones (pure and mixed) seen in the Metabolic Stone Clinic. All patients underwent comprehensive metabolic evaluations for recurrent stones as outpatients. The information collected from the database was clinical stone history, results of 2 consecutive 24-h urine collections, blood chemistry and stone analysis. A detailed dietary history was obtained along with individually tailored dietary counseling.
Results: The study subjects comprised 45 patients with uric acid nephrolithiasis of which 16 had diabetes. There were 35 males (11 diabetics v. 24 nondiabetics) and 10 females (5 diabetics v. 5 nondiabetics). There were no differences in the average age or average BMI (35.86 diabetics v. 33.75 nondiabetics, $p = 0.17$) among the 2 groups. There were 24 patients who had pure uric acid stones and 21 had mixed uric acid and calcium monohydrate stones. Pure uric acid stones were more common in the diabetic group (75%) than among the nondiabetics ($p = 0.021$). There were no significant differences in 24-h urinary volume, urinary sodium or urinary urate excretion. Urinary phosphate and calcium were within normal limits for both groups. Hyperoxaluria was more frequent in the diabetic group compared to the nondiabetic group (43.75% v. 13.8%, $p = 0.029$). A greater proportion of nondiabetic uric acid stone formers had hypocitraturia (34.8%) than their diabetic counterparts (18.75%, $p = 0.032$). Low urinary pH was more common in the nondiabetic group ($p = 0.046$). There were no statistically significant differences in any of the serum biochemical parameters.
Conclusion: This study has demonstrated several differences in the biochemical profile of diabetic and nondiabetic uric acid stone formers. Hyperoxaluria was more prominent among diabetics and hypocitraturia and lower urinary pH were more common in the nondiabetic uric acid stone formers. Although a small sample size, the suggestion of differences may imply diverse mechanisms of stone formation between the groups and the need for different preventative strategies.
Keywords: CALCULI, DIABETES, NEPHROLITHIASIS

MP-7.11

Effects of novel coatings inspired by marine mussels on ureteral stent encrustation and uropathogen adherence in vivo

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Introduction and Objective: Device-related urinary tract infections are often difficult to treat and can result in persistent infection or removal of the device. Bacteria employ several strategies to attach to devices and subsequently form biofilms that protect them from host factors and antimicrobial agents. We have previously demonstrated reduced bacterial adherence in vitro using a novel coating derived from mussel adhesive protein mimics conjugated to polyethylene glycol (mPEG-$DOPA_3$). Our objective in the present study was to assess the ability of mPEG-DOPA-based coated stents to resist bacterial adherence and encrustation in a rabbit model of *Escherichia coli* cystitis.
Materials and Methods: Coated (3 coatings: S-02, S-08, S-09) and uncoated curls cut from ureteral stents (Sof-Flex, Cook Urological; Percuflex Plus, Boston Scientific) were inserted transurethrally for 7 days into the bladders of 50 male New Zealand white rabbits under general anesthesia via ultrasound guidance. *E. coli* GR12 (10^7) was instilled into the bladders immediately following stent insertion. Urine (days 0, 1, 3 and 7) and stent curls (day 7 following euthanization) were cultured for bacterial counts and encrustation assessed. Bladders were examined histologically for inflammation and immune scoring.
Results: Of the 3 coating groups, S-09 demonstrated considerable reductions in urine and stent bacterial counts compared to both uncoated stent groups. Importantly, 8/10 rabbits in the S-09 group had sterile urine cultures by day 3 compared to only 1 in either control group. In addition, stent adherent organisms were reduced by over 75% in the S-09 group compared to controls. While no statistical differences were found in stent encrustation and bladder inflammation across groups, immune scoring was equal and lowest in the uncoated Sof-Flex and S-09 groups ($p = 0.03$).
Conclusion: Stent curls coated with S-09 strongly resisted bacterial attachment, resulting in improved infection clearance over uncoated devices. This did not translate, however, to reduced encrustation, which appears to be independent of infection in this model. The rabbit model presents unique challenges in that the high phosphate diet of the animals leads to high rates of precipitation of urinary constituents and encrustation. Future experiments will involve in vitro long-term incubations using human urine and multiple uropathogens.
Keywords: CALCULI, INFECTION, UTI

MP-7.12

Introduction of a novel biodegradable ureteral stent

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Introduction and Objective: Ureteral stents often result in patient morbidity and the potential for a "forgotten" stent. If the suture tether is detached, a secondary procedure is required for removal. Previous attempts at developing biodegradable ureteral stents have been unsuccessful since those stents were either not biocompatible or failed to degrade timely. This study outlines a new degradable Double-J stent using a porcine model.
Materials and Methods: Thirty-six Yorkshire pigs were stented unilaterally with either a biodegradable Uriprene stent (Indevus Pharmaceuticals, Lexington, Mass.) or a control percuflex stent (Boston Scientific, Natick, Mass.). Intravenous pyelograms, blood and urine tests were performed at weeks 2, 3, 4, 5, 7 and 10. Four animals from each group were sacrificed after 2, 4, 7 and 10 weeks to determine stent degradation and to obtain samples for pathology.
Results: The degradable ureteral stents began dissolving at 3 weeks and by weeks 7 and 10, 60% and 100% were fully dissolved, respectively. There was no significant difference in laboratory parameters or the amount of hydronephrosis between the 2 groups. However, ureteral dilation was significantly more pronounced in the control group than in the Uriprene group. The novel stent was biocompatible on histological evaluation and led to significantly less urinary tract infections than controls.
Conclusion: The biodegradable Uriprene stents provided similar drainage to standard percuflex stents and began to dissolve in a benign fashion at 3 weeks with complete dissolution between 7 and 10 weeks. Moreover, the Uriprene stents resulted in significantly less ureteral dilatation and fewer positive urine cultures. Their material was biocompatible and holds promise in reducing the need for a secondary procedure and inducing less stent-related morbidity such as infection, irritative symptoms and encrustation. Biocompatibility is currently being tested in a second species to allow human trials, which are planned to start enrolment in 2008.
Keywords: CALCULI, URETER

MP-7.13

Determining composition of urinary calculi using dual energy computed tomography (DECT)

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Introduction and Objective: Helical CT has become the modality of choice for investigating renal colic. Knowing the composition of urinary calculi can be a key factor in determining appropriate management. Determination of stone composition using dual energy CT has been verified in an in vitro model and we sought to determine if it could determine stone composition in an in vivo setting.
Materials and Method: CT images of KUBs were prospectively obtained in 47 patients at Vancouver General Hospital utilizing a dual energy CT-KUB protocol on a Siemens Definition Dual Source CT scanner. The

images were acquired at 20 × 0.6 mm collimation, a pitch of 0.9, and a reference mAs value of 70. Kernel B25f software was used to reconstruct images at 3- and 5-mm thickness for PACS viewing. Kernel D30f software was utilized to reconstruct images at 0.75-mm thickness for dual energy viewing. A radiologist experienced in dual energy CT reviewed each scan. Stone composition was assessed on a dual energy viewing workstation. Stones that were extracted from patients were subsequently sent to the hospital laboratory for chemical analysis and correlation.
Results: CT KUB results were evaluated on a dedicated dual energy viewer. Eight of the 47 patients demonstrated uric acid calculi (colour coded in red / negative value Housfield Unit). Thirty-nine patients demonstrated findings in keeping with calcium oxalate calculi (colour coded in blue / positive value Hounfield Units). These results were verified pathologically in laboratory investigation and the 8 patients in whom we demonstrated uric acid calculi were confirmed.
Conclusion: Dual energy CT does allow accurate characterization of uric acid calculi in vivo. A larger prospective study will verify the accuracy of this technique and determine the clinical utility of dual energy CT in characterization of renal calculi.
Keywords: CALCULI, CT, IMAGING

MP-7.14

Bleeding complications of percutaneous nephrolithotomy from a single teaching centre

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Introduction and Objective: Percutaneous nephrolithotomy (PCNL) is a safe and effective procedure in the treatment of large kidney stones. We describe bleeding complications and try to identify predictors of transfusions in patients undergoing PCNL.
Materials and Methods: Records from 2000–2006 were analyzed retrospectively. Patient demographics, stone data, lab, admission records and radiology results were analyzed for predictors of bleeding and transfusion.
Results: Staghorn: 52 partial, 27. Records for 377 patients were available for analysis for which 11 of these patients underwent bilateral PCNL. The average drop in hemoglobin in all patients was 17% (SD 0.5%), and in patients who were transfused, the average drop was 25% (SD 3%) (p = 0.0002). Twenty-three patients (6.1%) had a significant bleed requiring transfusion: 2 of these cases were during bilateral PCNL. Two patients required angioembolization. Of the transfused patients, 16% had a staghorn calculus and 20% had a partial staghorn. Of those with a staghorn calculus, 4/52 (7.7%) and 5/27 (18.5%) with partial staghorn calculi were transfused. A median of 2 units was transfused (range: 1–13). The most common type of stone in patients requiring transfusion was calcium oxalate (37.5%), struvite (16.7%), cystine (16.7%), uric acid (12.5%), calcium phosphate (12.5%), and calcium carbonate (4.2%) (Table 1).
Conclusion: The transfusion rate during PCNL at our institution is low and comparable to those in the published literature. Patients with larger stones or staghorn calculi and those who were not rendered stone free were more likely to receive a blood transfusion. Balloon dilation is safer than using Amplatz or Metal Alken dilators. Most puncture sites were via the lower pole, but those patients with midpole access had a higher rate of transfusion. We suggest caution in patients who have large stone burdens located particularly in the midpole in whom midpole access will be used.
Keywords: CALCULI, NEPHROLITHIASIS

Table 1. Abstract 14.

Major complications	Transfused	Non-transfused	p value
No. of patients	23	354	
Percentage transfused	6.1	93.9	
Age, yr (and SD)	46.6 (17.8)	52.3 (15.9)	ns
ASA	2.45 (SD 0.10)	2.45	ns
Stone surface area	1176 (SD 192) mm^2	657 (SD 59) mm^2	0.02
Stone free rate	13.04%	37.2%	< 0.0001
Non-stone free	86.96%	62.8%	< 0.0001
Location of puncture			
Upper pole	24.1%	21.5%	0.04
Mid pole	27.6%	8.3%	0.04
Lower pole	48.3%	70.2%	0.04
Dilation method			
Metal Alken dilators	52.4%	50.8%	0.002
Balloon	23.8%	41.7%	0.002
Amplatz Dilators	23.8%	7.5%	0.002
Stone location			
Upper pole	21.7%	14.3%	< 0.0001
Mid pole	39.1%	12.1%	< 0.0001
Lower pole	21.7%	40.9%	< 0.0001
Renal pelvis	15.2%	28.1%	< 0.0001
Ureter	2.1%	4.7%	< 0.0001

MP-7.15

A comparison of ureteroscopic laser lithotripsy in obese and normal weight patients

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Introduction and Objective: Surgical treatment of kidney and ureteral stones remains a challenge in the obese population (BMI > 25 kg/m^2). Extracorporeal shockwave lithotripsy is hindered by weight limitations. New clinical series have demonstrated that ureterorenoscopy and adapted percutaneous nephrolithotomy techniques can result in similar stone clearance rates and morbidity to the nonobese patient.
Materials and Methods: Over a 14-month period in 2006–2007, we retrospectively analyzed a group of 114 patients who underwent ureteroscopic procedures for urolithiasis.
Results: Of the 114 patients, 49 were obese (BMI ≥ 30 kg/m^2), 31 were overweight (BMI = 25–30), 34 were normal (BMI < 25) (Table 1). There was significantly more ASA 3 and 4 patients in the obese and overweight groups than the normal group (p = 0.0002). The rate of diabetes

Table 1. Abstract 15.

Parameter	Obese (n = 49)	Overweight (n = 31)	Normal BMI (n = 34)	p value
Mean age, yr	54 (SD 13.6)	57.2 (SD 2.0)	54.1 (SD 3.1)	0.79
Mean BMI, kg/m^2	38.9 (SD 1.2)	27.5 (SD 0.2)	22.3 (SD 0.3)	0.0001
Type 2 diabetes	25%	19%	3%	0.057
Maximum stone diameter, mm	12.6 (SD 1.1)	8.9 (SD 0.8)	11 (SD 2.0)	0.11
Outpatient procedures	84%	90%	91%	0.99
Stented post-op	67%	65%	68%	0.99
Stone Free rate	78%	94%	82%	0.55
Post-operative complications	4%	7%	9%	0.07

was higher in the obese and overweight groups and approached significance ($p = 0.057$). The percentage of obese patients requiring flexible ureteroscopy (78%) was higher than in the other groups ($p = 0.003$). A ureteral access sheath was used equally in all groups (29%–43%, $p = 0.35$). There was no statistical difference in stone-free rates. The complication rates did not differ between the groups. In the obese group, 2 patients had postoperative complications including 1 myocardial infarction and 1 urethral stricture.

Conclusion: Ureteroscopic lithotripsy in the obese and overweight populations produces the same stone-free rate as in the nonobese population. The complication rates are similar and the techniques of rigid and flexible ureteroscopy, laser lithotripsy, ureteral access sheath and postoperative stenting remain the same in all weight groups. Ureteroscopic laser lithotripsy is an effective and safe technique to treat urolithiasis in the overweight/obese patient.

Keywords: CALCULI, NEPHROLITHIASIS, URETEROSCOPY

Moderated Poster Session 8: Oncology: Prostate — Treatment of Localized Disease
June 23, 2008, 1600–1730

5*
MP-8.01
Radical retropubic prostatectomy for high-risk prostate cancer: the Vancouver experience

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Introduction and Objective: The appropriate local treatment for high-risk localized prostate cancer (CaP) is evolving but controversial. Few series report outcomes of radical prostatectomy for high-risk CaP. We report on pathologic outcomes and PSA recurrence for this group of patients.

Materials and Methods: High-risk cases were defined as those with 1 or more of 3 adverse criteria: PSA more than 20 ng/mL, biopsy Gleason score 8 or more, clinical stage T3. From a prospectively updated database, 211 men were identified who had radical retropubic prostatectomy for high-risk CaP by 2 surgeons at a single institution. Preoperative PSA, biopsy Gleason score, percentage of positive biopsy cores, clinical stage, number of risk risk factors (RFs) and neoadjuvant hormone therapy were compared with treatment outcome (pathologic stage and PSA recurrence).

Results: Median age was 63.2 years (46.5–77.3 yr). Median follow-up was 4.3 years (2 mo–10 yr). Pathologic stage was organ confined (pT2, margin negative [m-]) in 50%, specimen confined (pT3, m-) in 21%, not specimen confined (pT any, margin positive [m+]) in 23%, and lymph node positive (pT any, N+) in 6%. Overall PSA recurrence rate was 31.6%. Risk of PSA recurrence increased significantly with baseline PSA (23% if < 10 v. 48% if > 20, $p = 0.004$), percentage of positive biopsy cores (25% if $< 50\%$ cores positive v. 42% if $\geq 50\%$, $p = 0.018$), number of risk factors (30% if 1RF, 50% if 2 RFs and 75% if 3 RFs, $p = 0.0005$) and pathologic stage and margin status (22% if pT2,m-; 42% if pT3,m-; and 54% if pT any, m+; $p = 0.0001$). Multivariate analysis showed that preoperative parameters of PSA ($p = 0.033$) and percentage of positive biopsy cores ($p = 0.035$) remained independent predictors of PSA recurrence.

Conclusion: Radical retropubic prostatectomy is associated with good long-term biochemical recurrence-free survival rates in selected men with high-risk localized CaP.

Keywords: PROSTATE CANCER, PSA, RADICAL PROSTATECTOMY

5*
MP-8.02
The prognostic significance of capsular incision at radical prostatectomy

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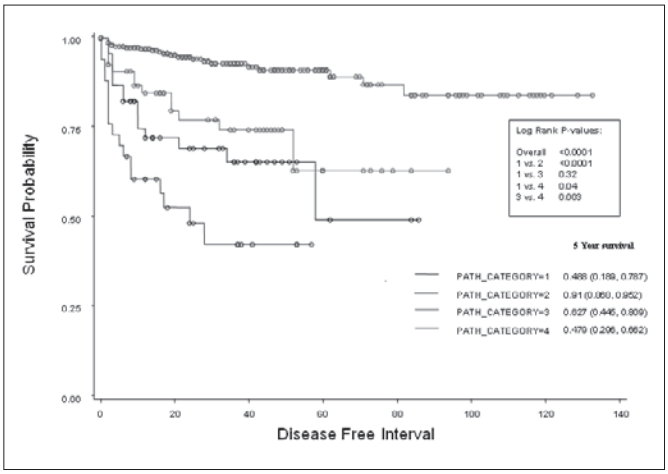
Introduction and Objective: Surgical margins (SMs) are an important predictor of outcome following radical prostatectomy (RP). Their significance in patients with otherwise organ-confined disease is, however, more controversial. In this study we evaluate the impact of patients with capsular incision (CI) on patient outcome.

Materials and Methods: Between 1995 and 2007, 447 consecutive patients were treated with RP alone at our institution. Patients were divided into 4 pathologic categories. Group 1 (CI group) = SM positive (p), extracapsular extension (ECE) negative (n); Group 2 = SM n, ECE n; Group 3 = SM n, ECE p; Group 4 = SM p, ECE p. Estimates of recurrence-free survival were generated with the Kaplan–Meier method. Recurrence was defined as a PSA > 0.2 ng/mL or the postoperative use of adjuvant radiation or hormones. Cox proportional hazards regression was used to estimate the hazard ratio (HR) for recurrence controlling for SM, ECE, pretreatment PSA, date of RP, Gleason sum, cancer volume, prostate volume, seminal vesicle invasion (SVI) and lymph node involvement (LNI).

Results: The 5-year recurrence-free probability after RP for the CI group was 48.8% (95% CI 19–79). This was similar to patients with SM n and ECE p (log rank $p = 0.32$). In multivariate analysis patients with CI had a 5.57 times increased hazard of recurrence relative to Group 2. Here as well, the CI group had similar risk of recurrence as those patients with SM n and ECE p ($p < 0.05$).

Conclusion: CI has a significant impact on patient outcome following RP. Patients who would have otherwise been organ confined now have similar probability of recurrence compared to those with completely resected more advanced disease (ECE p). Limiting CI is therefore of utmost importance and is an important quality indicator of RP (Fig. 1).

Keywords: CANCER, PROGNOSTIC MARKER, PROSTATE CANCER



MP-8.03
Does surgical experience affect urinary incontinence rates after laparoscopic radical prostatectomy?

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Introduction and Objective: To correlate surgical experience with urinary incontinence rates after laparoscopic radical prostatectomy.

Materials and Methods: Urinary incontinence rates were compared between patients undergoing a laparoscopic radical prostatectomy at the Royal Alexander Hospital from October 1999 through July 2002 (Group I) to patients having the same surgery from November 2006 to November 2007 (Group II). Surgery was performed by the same 2 surgeons and, for Group II, both had undertaken more than 400 laparoscopic radical prostatectomies. All subjects had the same prospective pre- and postoperative data collected: baseline, 3-, and 12-month 24-hour incontinence pad test, IPSS questionnaire and a quality of life question. Pathological and demographic data was also collected. Urinary conti-

nence was defined as < 8 g urine loss on 24-hour pad test. Ethics approval was granted by the University of Alberta Health Ethics Review board.
Results: There were 63 and 42 patients enrolled in group I and group II, respectively. Demographic and pathological variables were similar between groups. Median (25th and 75th percentiles) baseline pad weight was significantly higher in Group II; 4.1 (5.0–7.01) compared to Group I; 3.8 (2.5–4.5) ($p < 0.01$). IPSS scores and the IPSS quality of life question were not statistically different between the groups. Urinary incontinence rates at 3 months were 70%, 71% in groups I and II respectively. The 12-month incontinence rates were 17% and 40% between groups I and II. Mean pads weights at the 12-month point was 17 g for group I and 10 g for group II. There was no statistical difference between the mean pad weights (Kruskal–Wallis test) or proportion of patients with urinary incontinence (logistic regression). There was not a significant difference between the IPSS quality of life question between the groups after 12 months.
Conclusion: Urinary incontinence is a significant and debilitating complication after radical prostatectomy. Objective and subjective measures of urinary incontinence are not significantly affected by surgical experience at 3 and 12 months postoperation.
Keywords: INCONTINENCE, LAPAROSCOPY, LOCALIZED PROSTATE CANCER

MP-8.04

Changes in health-related quality of life and health values over 12 months after radical prostatectomy

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Introduction and Objective: Although radical prostatectomy (RP) is an effective treatment for prostate cancer, it has deleterious effects on health-related quality of life (HRQoL). There are no published prospective data characterizing men's values or utilities for HRQoL outcomes post-RP.
Materials and Methods: Consecutive men undergoing RP at the University Health Network Prostate Centre from July 2003 to June 2006 completed the Patient Oriented Prostate Utility Scale (PORPUS), a validated disease-specific HRQoL and utility instrument. Observations were made prior to surgery and at 0–3, 3–9, 9–18 and 18–30 months post-RP.
Results: Two-hundred and thirteen men (mean age 60.9 y, median Gleason score 7) met inclusion criteria and 73.5% underwent nerve-sparing RP. At baseline, HRQoL was high (mean PORPUS-P = 83.8, range 0–100). Scores sharply declined by 3 months (65.5, $p < 0.001$) and improved but did not reach baseline by 9–18 months (75.1, $p < 0.001$). Utility scores showed the same pattern: 0.94 at baseline; 0.81 at 0–3 months ($p < 0.001$); 0.88 at 9–18 months ($p < 0.001$). Sexual function and interest were the most severely affected of 10 domains at 0–3 months and 9–18 months ($p < 0.001$). Pain, energy and urinary function worsened at 0–3 months ($p < 0.001$). By 9–18 months, urinary function and pain returned to normal ($p > 0.05$) whereas energy levels improved but did not return to baseline ($p < 0.05$). Emotional well-being, doctor communication, family support, and bowel function did not significantly change post-RP. Among patients with normal baseline function, bladder control and urinary frequency returned to normal in most individuals by 1 year, whereas sexual function did not (Table 1).
Conclusion: Prior to RP, HRQoL and utility scores were excellent, and comparable to age-matched men. Post-RP, utilities demonstrated the same pattern as HRQoL–declining by 3 months, followed by an improvement at 9–18 months that did not reach baseline. Similar patterns were observed for sexual function, interest, urinary function, and energy, whereas non-prostate HRQoL domains remained stable.
Keywords: PROSTATE CANCER, QOL, RADICAL PROSTATECTOMY

Table 1. Abstract 4. Percentage of cohort maintaining "normal" function in specified PORPUS Domains at different follow-up time points

	N	Baseline	0–3 mo	3–9 mo	9–18 mo
Bladder control	122	100%	27%	62%	73%
Urinary frequency	88	100%	55%	73%	88%
Sexual drive	84	100%	60%	61%	67%
Sexual function	94	100%	4%	20%	38%

MP-8.05

Low but detectable prostate specific antigen post–radical prostatectomy in the era of the ultrasensitive assay

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Introduction and Objective: By describing the patterns of postoperative PSA among a cohort of open and laparoscopic radical prostatectomies (ORP and LRP, respectively), we determined whether detectable, but very low, values ultimately led to clinical progression.
Materials and Methods: A chart review was performed on 311 patients. All open (151) and laparoscopic (160) radical prostatectomies, performed between March 2000 and March 2004, were reviewed. Only patients with > 3 postoperative PSA values collected over > 6 months were included. PSA progression was a biochemical recurrence as defined by > 3 consecutive increases to a minimum value of 0.2 µg/L. The Roche Ultra-sensitive Assay (minimal detectable value 0.02 µg/L) was used.
Results: Among 296 charts with adequate data, the mean follow-up duration was 37 months. A total of 126 patients (43%) had at least 1 detectable PSA postoperatively. Among these, 103 (82%) did not have significant PSA progression while 23 (18%) did. Among the latter group, with progressive rise of their PSAs, 7 were ultimately treated for local recurrence and 16 had metastatic disease. Those who progressed to local recurrence had a higher initial postoperative PSA than those who did not progress (0.11 v. 0.03 µg/L, $p < 0.05$), and over the first 18 months, had a higher postoperative PSA velocity (0.14 v. 0.008 µg/L/y; $p < 0.01$). Furthermore, those who progressed had a higher proportion of positive surgical margins (71% v. 35%, $p < 0.001$), higher pathological tumor stage ($p < 0.05$) and higher Gleason scores ($p < 0.05$). These results held true when the ORP and LRP groups were analyzed together or separately.
Conclusion: In the era of ultra-sensitive PSA assays, urologists are often faced with detectable, but very low values. This study suggests that the majority of these patients exhibit postoperative features which may forecast a benign clinical course. The method of radical prostatectomy did not alter this observation. This study shows that the conservative treatment of low, but detectable postoperative PSA is reasonable in the majority of cases and those not suitable for conservative management are readily identifiable.
Keywords: PSA, RADICAL PROSTATECTOMY, RELAPSE

MP-8.06

Treatment of localized prostate cancer with high intensity focused ultrasound (HIFU): 18 months results of the Canadian experience

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Introduction and Objective: To investigate the efficacy and safety of high intensity focused ultrasound (HIFU) in the treatment of localized prostate cancer.
Materials and Methods: A total of 193 patients with T1–T2 prostate cancer were treated with HIFU (Ablatherm, EDAP, France) at the Toronto centre. Adenocarcinoma with Gleason grading 6–7/10 was confirmed in all patients. PSA levels were measured and bone scan was performed prior to treatment. All patients completed questionnaires describing their prostatic symptoms (IPSS), erectile function (IIEF), quality of life (QOL) and incontinence survey before, 6, 12 and 18 months after HIFU treatment. HIFU was the primary treatment for prostate cancer in the majority of

patients while in few patients it was offered to control local cancer recurrence after radiotherapy.
Results: All patients completed the HIFU procedure. Mean age: 62.7 (SD 12.8) years, prostate volume: 24.49 (SD 9.7) mL, and serum PSA level: 6.94 (SD 3.9) ng/mL. Before HIFU; staging of prostate cancer was T1A, T1B, T1C, T2A and T2C in 132, 39, 13 and 8 patients, respectively. Three patients had failed radiotherapy. Gleason score was (3+3), (3+4), (4+3), (> 7) and (< 6) in 33%, 31%, 16%, 17% and 3% of patients, respectively. PSA levels were < 0.5 in 172 patients after 3 months follow-up. The results of the questionnaires showed no significant changes in the IPSS & QOL before, 6, 12 and 18 months after HIFU ($p > 0.05$). Erectile dysfunction was reported in 40% of 102 patients, and 3 patients out of 32 patients reported incontinence 6 months after HIFU. No major complications were recorded including urethro-rectal fistulae.
Conclusion: HIFU treatment in localized prostate cancer is a safe and effective treatment modality. Further studies with long-term follow-up are recommended.
Keyword: ULTRASOUND

MP-8.07

Phase II study of treatment with 5 alpha reductase inhibitors in low-risk prostate cancer

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Introduction and Objective: The PCPT trial showed a 25% reduction of prostate cancer (PCA) incidence in men treated with 5 alpha reductase inhibitors (5ARIs). We studied the impact of a treatment of low-risk PCA patients with 5ARIs on follow-up biopsy outcome.
Materials and Methods: Patients with a low-risk PCA (Gleason ≤ 7, PSA < 10 ng/mL, < 3 biopsy cores) on 12 cores TRUS biopsy were offered a treatment with 5ARIs. Patients were followed with PSA, digital rectal examination and a first follow-up TRUS biopsy after 6 to 12 months of therapy and yearly thereafter. The presence of cancer, Gleason score, high grade PIN, ASAP, inflammation and atrophy were recorded at diagnosis and at each successive biopsies. The percentage of positive specimens for each pathological category was estimated.
Results: We recruited 44 patients (median age 62.8 y) with a median PSA of 5.51 ng/mL and median follow-up 16 months. All 44 patients had a first follow-up biopsy at a median of 11.8 months and 14 patients had a second follow-up biopsy on average a year later. At the first follow-up biopsy only 15 (34%) patients were still positive for cancer of whom 7 (15.9% of total) had a Gleason score upgraded (4 = G7, 3 = G > 7). Of the 14 patients with a second follow-up biopsy, 8/9 negative at the first remained negative and 1 had a Gleason 6. Of 5 patients with positive first follow-up biopsy, 3 became negative. The percentage of specimens positive for high grade PIN and ASAP changed little while inflammation and atrophy doubled after treatment with 5ARIs. Compared to pretreatment biopsy, the percentage at first follow-up biopsy of high grade PIN went from 22.7% to 17.4% and ASAP from 6.1% to 6,8% while inflammation went from 18.6% to 37.9% and atrophy from 24.6% to 42.4%.
Conclusion: Treatment of low-risk PCA with 5ARIs resulted in a negative first follow-up biopsy in 29/44 (66%) providing a positive reinforcement to expectant management. On the other hand, 7/44 (16%) patients were found to have a high grade cancer at first follow-up biopsy, a frequency similar to the cumulative incidence in watchful waiting series.
Keywords: BIOPSY, GLEASON, PROSTATE CANCER

MP-8.08

Improving treatment results for localized prostate cancer using combined single fraction HDR-brachytherapy and short-course external beam radiation therapy

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Introduction and Objective: The use of fewer fractions and higher dose-per-fraction of radiation therapy is based on theoretical radiobiological modeling that supports a low alpha/beta ratio for prostate cancer, and this is currently being translated into clinical evidence. High-dose-rate brachytherapy (HDR-B) may achieve superior biologically effective doses of radiation in comparison to low-dose-rate brachytherapy, and improve therapeutic ratio. We report our prospective program of single fraction HDR-B plus hypofractionated external beam radiation therapy (H-EBRT) for patients with intermediate risk prostate cancer (PC).
Materials and Methods: Since 2001, 111 patients with intermediate risk PC were treated with HDR-B plus H-EBRT, without hormonal therapy. The median age was 69 years. Radiotherapy consisted of a single HDR-B fraction of 10 Gy to the prostate surface followed by H-EBRT to a dose of 50 Gy in 20 fractions. The first 73 consecutive patients with minimum follow-up of 2 years were assessed for toxicity and disease control. Repeat prostate biopsies and PSA control (Phoenix definition), were used to assess local control.
Results: Median follow-up was 50.6 months. No patient presented acute grade III or higher gastrointestinal or genitourinary toxicities. Late rectal toxicity grade II was seen in 5 patients and grade III in 1. Five patients presented intermittent gross hematuria, and 1 patient developed urinary incontinence. After a minimum follow-up of 2 years, 42 patients (57.5%) underwent a repeat prostate biopsy; the remaining either refused or were never offered the procedure. Negative biopsies were found in 39/42 patients (92.9%); among the 3 positive biopsies, only 1 patient has true biochemical failure, while the other 2 have stable serum PSA levels below 0.1 ng/dL. Overall, 8 patients (10.9%) were diagnosed with biochemical failure, 6 of them with evidence of metastatic disease.
Conclusion: Our novel program of HDR-B plus H-EBRT was well tolerated, with acceptable rates of acute and chronic toxicities. Moreover, the results from rebiopsies reveal an elevated rate of local control. These results are encouraging and confirm that the use of highly conformal radiotherapy techniques and of specific radiobiological data has the potential to improve therapeutic ratio in PC patients.
Keywords: BRACHYTHERAPY, LOCALIZED PROSTATE CANCER, PROSTATE CANCER

MP-8.09

Antibiotic prophylaxis during Foley catheter removal after laparoscopic radical prostatectomy

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Introduction and Objective: To determine the impact of antibiotic prophylaxis during catheter removal after laparoscopic radical prostatectomy.
Materials and Methods: Patients having laparscopic radical prostatectomies by three surgeons at the Royal Alexander Hospital from September 2006 to Feburary 2007 were enrolled in the study. The primary end point was a positive urine culture after the foley catheter was removed. Secondary endpoints were postoperative complications, readmission to hospital, retention, antibiotic use and sepsis. Urine cultures were collected at baseline and 1 week after foley catheter removal.
Results: Thirty-seven patients with a median age of 61 yr (25th/75th percentile: 57/68) had both a baseline and post foley removal urine culture and sensitivity done. Of these 37 patients, 55% received ciprofloxacin for 3 days following catheter removal. Logistic regression revealed that there was not a significant difference in positive cultures 1 week after the foley catheter was removed between the 2 groups. Similarly, there was no difference in postoperative complications between the groups. The bacteria in those with positive postoperative urine cultures were diverse, consisting of gram negative and positive organisms. The flora between those taking and not taking ciprofloxacin were not different. The resistance profiles of the bacteria in the 2 groups were also similar.
Conclusion: Antibiotic prophylaxis during foley catheter removal after radical prostatectomy does not influence the rate of positive urine cultures, or early postoperative complications. Positive cultures had a diverse number of organisms with varying resistance profiles.
Keywords: ANITIBIOTICS, LOCALIZED PROSTATE CANCER, PROSTATE CANCER

MP-8.10

Outcome following radical prostatectomy in the treatment of high-risk prostate cancer

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Introduction and Objective: The role of radical prostatectomy (RP) in the management of high-risk prostate cancer continues to evolve. In this study, we present the results of high risk patients treated with RP at our institution and examine factors that predicted for favourable outcome.

Materials and Methods: Between 1995 and 2007, 511 patients underwent radical prostatectomy at our institution. Fifty-five patients had high-risk prostate cancer as defined by clinical stage T2C/T3 or biopsy Gleason sum 8–10, or preoperative PSA > 20 ng/mL. Estimates of recurrence for patients at high risk as well as for the 3 high-risk features individually were generated with the Kaplan–Meier method. Recurrence was defined as PSA > 0.2 ng/mL, or postoperative use of radiotherapy or hormones. Cox proportional hazards regression was used to estimate the hazard ratio for recurrence in high risk compared to low-risk patients as well as to measure the effect of percentage of positive biopsy cores.

Results: Nineteen high-risk patients were treated with neoadjuvant hormonal therapy and 36 had RP alone. Extracapsular extension, seminal vesical involvement and lymph node metastases were found in 50%, 25% and 0% of the high-risk patients treated only with RP whereas 47% were organ confined. The 5-year relapse-free probability was 43% (95% CI 26–59) for all high-risk patients and 46% (95% CI 24–69) for those treated with RP alone ($p = 0.91$). The relapse-free probability was similar for the 3 high-risk features when assessed individually ($p < 0.5$). High-risk patients had 7.7 times increased hazard of recurrence relative to good risk patients. The percentage of positive biopsy cores significantly predicted recurrence in high-risk patients ($p = 0.02$). Those with > 50% positive cores had 2.9 times increased hazard of recurrence relative to those with < 50%.

Conclusion: Our study confirms the efficacy of RP in the treatment of high-risk prostate cancer. Patients at high-risk had a 46% 5-year relapse-free probability when treated with RP alone. Whereas all 3 individual high-risk features respond similarly well to RP, percentage of positive biopsy cores can stratify high-risk patients and identify those least likely to recur.

Keywords: PROSTATE CANCER, RADICAL PROSTATECTOMY, SURVIVAL

MP-8.11

Robotic radical prostatectomy: development of the first program in the province of Quebec

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Introduction and Objective: To analyze outcomes of the first cohort of patients who underwent robotic radical prostatectomy in the province of Quebec.

Materials and Methods: Between September 2006 and December 2007, 25 transperitoneal robotic radical prostatectomies were performed by a single fellowship-trained surgeon (AEH) with a 3-arm da Vinci surgical system and 1 assistant. Seven (28%) patients underwent pelvic lymph node dissection. Data were collected prospectively. Mean patients' age was 62 (SD 1.3; range 49–72) years. Preoperative prostate-specific antigen (PSA) concentration was 6.9 (SD 1.28; 1.8–37) ng/mL. Gleason sum 6.7 (SD 0.18; range 6–9) and mean follow-up 7.5 (SD 0.9) months.

Results: Mean operative time was 227 (SD 11; range 145–335) minutes and blood loss 347 (SD 38; range 150–800) mL. There were no intraoperative complications or conversion to open surgery. No blood transfusions were required. One patient developed self-limiting anostomotic urinary leak for 3 days and 1 patient had ileus requiring NG tube for 2 days. Median hospital stay was 2 days. Ten (40%) patients left the hospital on postoperative day 1. Pathological staging was 18 (72%) T2, 6 (24%) T3a, 1 (4%) T3b, and 0 N+. Mean pathological Gleason sum was 6.7 (SD 0.15; range 5–9), and 17 (68%) had Gleason 7 or higher. Four (16%) patients had positive surgical margin, 3 of which were focal. Mean catheter time was 7.4 days (range 6–12). Uroflowmetry at 6 weeks revealed mean QMax of 21.2 mL/s. Continence (0 pads or 1 liner) at 6 weeks, 3 and 6 months was 72%, 100% and 100%. Using a strict definition of 0 pads, 60%, 86% and 100% were fully continent at 6 weeks, 3 months and 6 months. Potency data is maturing. There were no strictures and no biochemical failures.

Conclusion: Our results compare favourably to well-established series beyond the learning curve. The margin rate is acceptable in view of significant tumour biology. In our Canadian health system, operating costs may be offset by savings in shorter hospital stay and faster return to activity compared to open surgery.

Keywords: PROSTATE CANCER, RADICAL PROSTATECTOMY, ROBOTICS

MP-8.12

Incidence of positive surgical margins in radical prostate specimens at a community hospital

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Introduction and Objective: The identification of positive surgical margins (PSM) at prostatectomy has been shown to be an independent predictor of biochemical failure and local recurrence. Many factors may contribute to PSM including pathology technique, patient and tumour parameters and surgical technique. We evaluate the incidence and location of PSM at GBHS over a 2-year period.

Materials and Methods: A retrospective review of all prostate specimens ($n = 122$) from January 2006 to December 2007 was conducted. Preoperative PSA, Gleason score and stage was identified and correlated with final pathology grade and the incidence and location of PSM.

Results: The overall incidence of PSM was 40% with the highest location being the apex. For organ confined T2 disease the incidence was 19% but there was a high incidence (52/122) of locally advanced disease where the PSM rate was 67%. Preoperative PSA, stage and Gleason score correlated with higher rate of PSM. There was a 21% incidence of upstaging at final pathology.

Conclusion: Our incidence of PSM is higher than that in contemporary series. This may relate to the high incidence of locally advanced disease. For organ confined disease the PSM was reasonable. Perhaps there is a delay in referral or in proceeding to biopsy. There was significant upstaging at final pathology and this could be a factor. Certainly, surgical technique is a modifiable factor and a wider excision margin may be indicated when locally advanced disease is anticipated. Ongoing critical appraisal and reflective practice is essential to improving outcomes.

Keyword: PATHOLOGY

MP-8.13

Robotic-assisted laparoscopic radical prostatectomy at the University of Alberta: analysis of outcomes and learning curves of the initial 40 cases

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Introduction and Objective: To report the surgical and early functional outcomes as well as learning curves from our initial series of 40 patients treated by robotic-assisted laparoscopic radical prostatectomy (RALP).

Materials and Methods: Between September 2007 and December 2007, 40 patients with clinically localized prostate cancer underwent RALP. All 3 surgeons had a combined experience of over 1100 cases of conventional laparoscopic radical prostatectomy. Prospective data collection included patient age, body mass index (BMI), previous abdominal surgery, clinical T stage, biopsy Gleason score and PSA. Operative outcome measures included skin time, console time, estimated blood loss (EBL), transfusion requirements, complications and conversion rate. Postoperative outcomes were length of hospital stay (LOS), pathology, margin status and early return of continence. Continence data were assessed using the IIQ-7 questionnaire at baseline and at 3 months and 24-hour pad testing at 3 months.

Results: Mean patient age and BMI was 61.3 years and 28.3 respectively. Seventeen percent of our patients had previous abdominal surgery. Mean (range) skin time and console time was 211.2 min (110–306) and 164.6 min (85–288). Following the initial 10 cases for each surgeon,

the mean (range) skin time and console time was 171.3 min (110–208) and 128.7 min (85–155). The mean EBL was 291.9 mL. Three patients required a blood transfusion (7.5%). Complications occurred in 17.5% of patients including hemorrhage (7.5%) and urine leak (10%). There was no conversion to either open or conventional laparoscopy. Mean LOS was 2.8 days. The positive margin rate was 30%. Over 60% of the positive margins were located at the apex. Continence data at 3 months were available for 10 (25%) of the patients. The mean IIQ-7 score was 6.7 and 5 (50%) of the patients were continent at 3 months as defined by a total pad weight gain of ≤ 8 g/24 h.
Conclusion: RALP is a safe, feasible and minimally invasive alternative for treating clinically localized prostate cancer. Our initial experience reveals comparable perioperative and early continence outcomes with our published conventional laparoscopic series. The learning curve for RALP for surgeons experienced in conventional laparoscopic radical prostatectomy in our series was 10 cases.
Keywords: LOCALIZED PROSTATE CANCER, RADICAL PROSTATECTOMY, ROBOTICS

MP-8.14

A phase II neoadjuvant study of OGX-011: a 2′methoxyethyl phosphorothioate antisense to clusterin, in patients with prostate cancer prior to prostatectomy

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Introduction and Objective: Clusterin is a stress-induced cytoprotective chaperone protein expressed in cancers including prostate. Clusterin increases after androgen deprivation and overexpression confers a resistant phenotype. OGX-011 (OGX) is a second generation antisense that inhibits clusterin expression in xenografts and increases sensitivity to therapy. Objectives of this study were to determine pathologic complete response (pCR) rate and evaluate target regulation effects of OGX with neoadjuvant hormone therapy (NHT) prior to prostatectomy.
Materials and Methods: Patients with localized prostate cancer and high-risk features were eligible for this 2-stage design study. LHRH agonist was given with OGX 640 mg IV weekly x 12 weeks with prostatectomy performed within 14 days of last dose. OGX prostate tissue concentrations were determined. Prostate tissues, lymph nodes, and serial samples of mononuclear cells and serum were assessed for clusterin expression.
Results: Twenty-four patients were enrolled. Baseline characteristics: median age=62, Gleason Score ≥ 8 in 39%, median PSA = 7.9 (range 2.7–28), clinical T2 in 83%. Toxicity was predominantly grade 1/2 including fevers, rigors, fatigue and transient AST and ALT elevations. Four patients did not complete protocol therapy: 2 for grade 3/4 AST/ALT toxicity, 2 for pre-existing cardiac reasons. Median nadir PSA presurgery = 0.2 (range 0.1–1.4). OGX tissue concentrations associated with preclinical effect were achieved (> 1 μg/g). Compared to historical controls (NHT alone), inhibition of clusterin expression was observed. By immunohistochemistry (score 0–3), mean score was 1.1 (SD 0.6) for OGX treated and 2.1 (SD 0.5) for control ($p < 0.001$), % of cancer cells with IHC score of 0 was 33.7% (SD 24.9) for OGX treated and 8.5% (SD 11.1) for control ($p < 0.001$). Using laser capture microdissection and QRT-PCR, mean clusterin mRNA was decreased by 61% compared to control ($p = 0.009$). Mean apoptotic index (TUNEL) was 1.3% (SD 0.4) for OGX treated and 0.8% (SD 0.3) for control ($p = 0.003$). There were no pCR.
Conclusion: OGX is well tolerated and can reduce clusterin expression in prostate cancer. Correlative study analyses are continuing.
Keywords: ANTISENSE, PROSTATE CANCER, RADICAL PROSTATECTOMY

5*
MP-8.15

A phase II randomized CUOG study of custirsen (OGX-011) combination therapy in patients with poor-risk hormone refractory prostate cancer (HRPC) who relapsed on or within 6 months of first-line docetaxel therapy

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Introduction and Objective: There is no standard of care when patients with metastatic HRPC manifest disease progression (PD) after fisrst-line docetaxel. Custirsen is an antisense oligonucleotide targeting clusterin that, in preclinical studies, increased response of taxane-resistant cell lines to chemotherapy. This study evaluated the safety and efficacy of custirsen in combination with either docetaxel or mitoxantrone as second-line therapy (Rx).
Materials and Methods: Patients were eligible if they had PD while receiving or within 6 months of discontinuing first-line docetaxel. All patients received 640 mg of weekly IV custirsen following 3 loading doses. Patients were randomized to standard doses of docetaxel/prednisone (DPC) or mitoxantrone/prednisone (MPC) on a 21-day cycle for up to 9 cycles. Protocol defined PD was based on RECIST, pain and performance score but not solely on PSA.
Results: Analysis as of Jan. 3, 2008; median follow-up:13.3 (range 8.4–17.1) months. Forty-two patients received at least 1 cycle of combined therapy (DPC — 20, MPC — 22). Prior outcomes with first-line docetaxel were similar in both arms. The median time to PD for all patients was 1.8 months; 16 (38%) patients had PD while receiving first line Rx. Following custirsen therapy: median number of cycles delivered: DPC-7.5, MPC-6.0; 40% of patients completed 9 cycles. Best PSA response (≥ 90%, ≥ 50%, ≥ 30%): DPC — 20/40/55%, MPC — 0/27/32%. Predetermined pain response: DPC — 8/12 (67%), MPC — 7 /14 (50%); median duration in both arms: 6 months. KM estimate of PFS: DPC — 4.7, MPCm — 2.6 months. At a median follow-up of 13.3 months, 60% of patients are still alive in both arms. Both regimens were well tolerated; there were more grade 3/4 AEs with MPC (68%) than DPC (50%) + 1 patient died of CHF following 8 cycles of MPC.
Conclusion: In patients who progressed during or soon after first-line docetaxel, both custirsen combination regimens were well tolerated and associated with impressive PSA + pain responses and better than expected survival. Custirsen/docetaxel/prednisone appeared superior to custirsen/mitoxantrone/prednisone in both efficacy and safety. Phase 3 studies are planned utilizing chemotherapy plus custirsen as second-line therapy in patients progressing after a first-line docetaxel regimen.
Keywords: HORMONE REFRACTORY PROSTATE CANCER, PROSTATE, PROSTATE CANCER

MP-12.02

Normalization if NTX levels correlate with significantly increased clinical benefits in patients with bone metastases secondary to prostate cancer

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Introduction and Objective: Bone metastases perturb the coordinated process of bone remodeling and result in increased levels of bone metabolism markers including N-telopeptide of type I collagen (NTX). In patients with malignant bone disease, high NTX levels are associated with significantly increased risks of skeletal-related events (SREs), disease progression and death. Zoledronic acid reduces risk of SREs and NTX levels in patients with malignant bone disease. This exploratory analysis investigated whether zoledronic acid-mediated NTX normalization correlates with improved clinical outcomes in patients with bone metastases from hormone refractory prostate cancer (HRPC).

Materials and Methods: In this exploratory analysis of a large, randomized, phase III placebo-controlled trial, urinary NTX was measured at baseline and at month 3 in patients with bone metastases from HRPC ($n = 314$) who received zoledronic acid for up to 24 months. Patients were stratified by baseline NTX (normal, < 64 nmol/mmol creatinine; high, ≥ 64 nmol/mmol creatinine).
Results: Baseline NTX was high in 193 (62%) patients. Anticancer treatment that included zoledronic acid normalized NTX levels within 3 months in ~ 70% of these patients. Mean NTX levels in this group decreased from 208 (SD 227) at baseline to 71 (SD 92) nmol/mmol creatinine at 3 months, and approximately one-half had decreases of ≥ 75% from baseline. Normalization of NTX significantly decreased the relative risk of death by 59% (relative risk 0.410, $p < 0.0001$) compared with patients whose NTX levels remained high. Moreover, there was a continuum of treatment benefit dependent on the percentage decrease in NTX at 3 months, with the greatest survival benefit occurring in patients whose NTX levels decreased 75% ($p < 0.0001$ for comparison between percentage reduction quartiles). Although reductions in NTX correlated with clinical benefits in all patient groups, benefits appeared greater in patients with higher baseline NTX levels.
Conclusion: Anticancer treatment for HRPC that included zoledronic acid normalized NTX levels in the majority of patients with high baseline NTX. Normalization of NTX correlated with survival benefits in this patient subset, which was most profound in those whose NTX levels decreased by higher percentages from baseline. Further analyses in patients with HRPC and high NTX are warranted to confirm the implications of these findings.
Keywords: BONE METASTASES, PROGNOSTIC MARKER, PROSTATE CANCER

Moderated Poster Session 9: Oncology: Bladder/Urinary Disease June 23, 2008, 1600–1730

MP-9.01

Comparison between open and laparoscopic radical cystectomy for bladder cancer: results from the Alberta Urology Institute radical cystectomy database

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Introduction and Objective: The safety and feasibility of laparoscopic radical cystectomy (LRC) with extracorporeal urinary tract reconstruction as opposed to open radical cystectomy (ORC) is not well documented. The objective of this study was to compare LRC with ORC with regard to perioperative outcomes.

Materials and Methods: The Alberta Urology Institute (AUI) radical cystectomy database is an ongoing, multi-institutional computerized database containing clinical and pathological data on all adult patients with a diagnosis of primary bladder cancer treated with RC in Edmonton, Alta., from April 1994 onwards. Up to and including September 2007, 515 patients underwent ORC and 10 patients underwent LRC. All 10 LRC (10 men) were selected for this study. These patients had urinary tract reconstruction (9 ileal conduit, 1 orthotopic neobladder) performed extracorporeally through a 5–6 cm mini-laparotomy incision. This group was compared with a cohort of 18 ORC (18 men) with urinary tract reconstruction (4 ileal conduit, 14 orthotopic neobladder) performed during the same period by the same surgeon.

Results: There were no statistically significant differences between ORC and LRC with respect to mean patient age (62 v. 68 yr, $p = 0.103$), BMI (28 v. 25 kg/m^2, $p = 0.082$ comorbidity ($p = 0.798$), pathologic T stage ($p = 0.471$), pathologic lymph nodes positive (5 v. 2 patients, $p = 0.375$), positive surgical margins (1 v. 1 patient, $p = 0.662$), blood product transfusion (7 v. 2 patients, $p = 0.064$), length of hospital stay (16 [range 8–51] v. 18 [range 7–90] d, $p = 0.808$), any early postoperative complications (EPC; 12 v. 5 patients, $p = 0.387$), minor EPC (3 v. 4 patients, $p = 0.172$) or 90-day mortality (1 v. 1 patient, $p = 0.662$). However, there were statistically significant differences between ORC and LRC with respect to OR time (215 v. 315 min, $p = 0.003$), EBL (922 v. 429 mL, $p = 0.029$), mean number of lymph nodes excised (10 v. 5 nodes, $p = 0.037$) and major EPC (11 v. 2 patients, $p = 0.037$).

Conclusion: LRC with extracorporeal urinary tract reconstruction appears safe and feasible and offers the potential for reduced blood loss and major EPC compared with ORC. Surrogate oncological outcomes are concerning but require long-term assessment.

Keywords: BLADDER CANCER

MP-9.02

Determination of the outcomes of bladder cancer patients with "unsatisfactory" urine cytology

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Introduction and Objective: Cystoscopy aided by cytology is the mainstay for diagnosing bladder cancer. Urine cytology may be reported as unsatisfactory for evaluation when an insufficient number (< 15) of urothelial cells are present to identify the presence or absence of malignancy. Presently, no guidelines exist to guide the urologist in interpreting this result and directing further investigations. We postulate that since individuals with high-grade urothelial carcinoma will shed a large number of cells, an unsatisfactory urine cytology could potentially be interpreted as negative for malignancy. The objective of this study was to determine the outcome of patients with a urine cytology deemed "unsatisfactory for evaluation" in order to help guide the clinical decision making process.

Materials and Methods: A retrospective review of 142 patients, with 265 cases of unsatisfactory urine cytology, was completed from our bladder information systems (Blis) database and chart review. The cytology, cystoscopy and pathology results both at the time of the unsatisfactory cytology and in the subsequent 12 months were reviewed and recorded. Urothelial-specific outcomes of the patients were tabulated to calculate the incidence of new and recurrent GU tract cancers.

Results: All patients had a previous history of or developed urothelial carcinoma during the follow-up. There were 41 cases (16.3%) in which bladder cancer was evident at the time of the unsatisfactory cytology. Twenty-nine percent of these tumours were high grade. There were an additional 44 cases (17.5%) in which new or recurrent bladder cancer developed in the year following an unsatisfactory urine cytology result. The greatest proportion (39%) of these tumours were high-grade. In only eight of these 44 episodes (18%), the cytology converted to positive at the time of development of new or recurrent tumour. In total, there were 85 episodes (33.9%) in which the patient either had, or went on to develop, bladder cancer within 1 year following an unsatisfactory urine cytology result.

Conclusion: An unsatisfactory urine cytology result cannot be interpreted as negative for malignancy as a substantial number of high-grade tumours will be missed. An unsatisfactory cytology should be repeated in the setting of bladder tumour surveillance and aided by cystoscopy.

Keywords: BLADDER CANCER, CYTOLOGY, SURVEILLANCE

MP-9.03

Update on delay to radical cystectomy in Quebec

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Introduction and Objective: Invasive bladder cancers have a rapidly progressing nature. We have shown that delay to radical cystectomy is associated with increased mortality in Quebec (*J Urol* 2006;175:78–83). The aim of the current study was to examine the delay to RC in more recent years in Quebec and compare with our original study of 1990–2002.

Materials and Methods: We obtained the billing records of all patients treated with RC for bladder cancer across Quebec from 2003 to 2005. Collected information included age, sex, dates of urologists visits, cystoscopy, TURBT and CT scanning, hospital type (academic or not) and volumes and dates of death. Data were then compared with the previously obtained billing records from 1990 to 2002.

Results: A total of 610 RCs were included in this study. Median recent (2003 to 2005) diagnostic delays from urologist to cystoscopy, then to TURBT have increased significantly when compared with earlier (1990 to 2002) delays; going from 11 to 43 and 4 to 21 days, respectively. TURBT to CT or to RC delays have also increased, going from 14 to 22 and 33 to 55 days, respectively. Finally, median urologist to RC delays have increased from 69 to 134 days. Interestingly, hospital caseload has increased significantly during the same time period. Although recent mean caseload/year was significantly greater in academic institutions when compared with nonacademic (11 v. 31 cases/yr, $p = 0.02$), the former tended to have shorter delays ($p = 0.09$).

Conclusion: Recent treatment delays have significantly increased when compared to earlier periods. Although academic centres had significantly higher caseload/year when compared to nonacademic institutions, they did not demonstrate longer delays.

Keywords: BLADDER CANCER, CYSTECTOMY

5*
MP-9.04
Impact of wait times for cystectomy on overall survival in Ontario: a population-based study

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Introduction and Objective: The impact of waiting for radical cystectomy is controversial. While some studies have determined that extended wait times lead to tumour progression and decreased survival, others have failed to corroborate these results. We used population-level data incorporating tumour pathology variables and factors that influence preoperative waiting to inform the debate.

Materials and Methods: Patients undergoing cystectomy in Ontario between 1992 and 2004 were identified via the Canadian Institute for Health Information Discharge Abstract Database. Linkage with the Ontario Cancer Registry yielded cystectomy pathology reports for 2535 patients, which were reviewed for tumour characteristics. Wait time was defined as the period between cystectomy and antecedent TURBT. Cox proportional hazards modelling was performed to assess the impact of wait time on overall survival. The model was adjusted for patient factors, tumour variables and for factors that could influence preoperative waiting (consultation, staging investigations, surgeon and hospital volume). The tumour stage-specific impact of waiting for cystectomy was also assessed. Cubic splines Cox regression analysis was used to determine a maximum wait time within which optimal care can be provided.

Results: The median wait time for cystectomy was 50 days. On univariable analysis, wait time was significantly associated with overall mortality ($p = 0.015$). The significant effect of wait time on mortality remained after adjusting for patient, tumour and wait time factors ($p = 0.027$). For each incremental increase in wait time by 30 days, the risk of long-term death increased by 3.7%. Assessing the impact of wait time by tumour stage revealed that wait times increased the relative hazard of death more for low-stage lesions (an 11%–25% increase for stages T1 and lower) compared with high-stage tumours (a 3%–4% increase for stage T3 or higher). Plotting the hazard ratio for death by increasing wait time using cubic splines regression revealed that the risk of death begins to increase after 40 days.

Conclusion: Treatment delay between TURBT and radical cystectomy results in worse overall survival. The wait time effect was most influential on lower stage lesions, suggesting that delays facilitate further tumour invasion and micrometastases. The maximum time from TURBT to cystectomy was found to be 40 days.

Keywords: BLADDER CANCER, RADICAL CYSTECTOMY, SURVIVAL

5*
MP-9.05
Statins and non–muscle invasive bladder cancer evolution: a population-based study

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Introduction and Objective: There is growing evidence that statins may have an anticancer effect. Statins are mostly associated with diminished incidence of many solid cancers. Little is know about the effect of statins on bladder cancer. Our objective was to test the hypothesis that statins reduce the risk of non–muscle invasive bladder cancer (NMIBC) evolution, defined as recurrence, progression to cystectomy and death from all causes.

Materials and Methods: This study was based on administrative databases in Québec, Que., containing data on patient demography, prescription claims and physician services. Study patients were newly diagnosed with NMIBC and had a transurethral resection of tumour (TURBT) procedure between 1995 and 2002. We excluded patients with prior cancer diagnosis and those with immediate cystectomy, chemotherapy or radiation therapy. All eligible patients were grouped into cohorts of statin users and nonusers. Cox regression models assessed time to recurrence (second TURBT), to progression to cystectomy and to death from all causes. Covariates included in our model were sex, age, intravesical adjuvant therapy, chronic disease score, medical and emergency visits, and hospitalization days in the year prior to first TURBT. Models were adjusted for immortal time and used time dependent classification of exposure to statins.

Results: Of the 4834 cohort patients, 1211 (25%) were statin users. Recurrence, progression and death were observed in 2340 (48%), 225 (5%) and 1051 (22%) of patients, respectively. Baseline variables were similar in statin users and nonusers, except for 2 of them. Intravesical adjuvant therapy was more frequent in unexposed patients (9.9% v. 7.8%). Chronic disease score was higher in exposed patients (5.1 v. 3.3). Compared with nonusers, statin users had a similar risk of recurrence (HR 0.97, 95% CI 0.86–1.09), but a lower risk of NMIBC progression to cystectomy (HR 0.58, 0.38–0.91) and of death from all causes (HR 0.54, 0.44–0.66).

Conclusion: Statin use appears protective for superficial bladder cancer progression to muscle-invasive status leading to cystectomy, and for death from all causes. Satin use has no apparent impact on bladder cancer recurrence. Its apparent efficacy suggests that further investigation in randomized trials may be warranted.

Keywords: BLADDER CANCER, RADICAL CYSTECTOMY, RELAPSE

5*
MP-9.06
Outcomes of radical cystectomy for bladder cancer: results from the Alberta Urology Institute radical cystectomy database

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Introduction and Objective: Limited data are available evaluating outcomes of radical cystectomy (RC) for primary bladder cancer at Canadian Centres. The objective of the current study was to evaluate the associations between clinical and pathologic variables and overall survival (OS) in patients treated with RC in Edmonton, Alta.

Materials and Methods: The Alberta Urology Institute (AUI) RC database is an ongoing, multi-institutional computerized database containing clinical and pathologic data on all adult patients with a diagnosis of primary bladder cancer treated with RC in the Capital Health Region of Edmonton from April 1994 onwards. The current study was an analysis of consecutive AUI RC database patients treated between January 1996 and September 2007. The main clinical variables were age, sex and comorbidity (classified using the Adult Comorbidity Evaluation 27 instrument), and the pathologic variables were pathologic risk group (≤ pT2N0, > pT2N0, pT1–4N+, pT1-4Nunknown), lymphovascular invasion (LVI–, LVI+) and histologic grade (low, unknown, high). The main clinical outcome was OS. Cox Regression analyses were used to determine the associations between clinical and pathologic variables and OS. Statistical tests were 2-sided.

Results: During the study period, 499 patients (men 389 [73.5%] and 110 women) with a mean age of 66 years (range 31–86 yr) underwent RC. Using saturated multivariate Cox regression analyses, age > 80 years (HR 2.2, 95% CI 1.3–3.7, $p = 0.003$), moderate comorbidity (HR 1.5, 95% CI 1.1–2.1, $p = 0.006$), severe comorbidity (HR 1.8, 95% CI 1.2–2.7, $p = 0.003$), LVI+ (HR 1.5, 95% CI 1.1–2.1, $p = 0.006$), > pT2N0 pathologic risk group (HR 2.0, 95% CI 1.4–2.9, $p < 0.001$), pT1-4N+ pathologic risk group (HR 2.7, 95% CI 1.9–4.0, $p < 0.001$), and pT1–4Nunknown

pathologic risk group (HR 3.1, 95% CI 2.0–4.9, $p < 0.001$) were independent predictors of OS.
Conclusion: Age, comorbidity, LVI and pathologic risk group are independent predictors of OS in patients who undergo RC for primary bladder cancer. These patients represent a high-risk group that may benefit from multimodal therapy.
Keywords: BLADDER CANCER

MP-9.07

MSH2 mutations and bladder cancer risk: family members of hereditary nonpolyposis colorectal cancer (HNPCC) patients with MSH2 mutations are at increased risk not only for upper urinary tract uransitional cell carcinoma (TCC) but also bladder cancer

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Introduction and Objective: We analyzed the risk of bladder cancer and upper tract transitional cell carcinoma (TCC) in patients within families from the Toronto Familial Colon Cancer Registry and in particular with MSH2 mutations. Except for smoking, previous pelvic irradiation and certain occupational exposures, genetic risks for bladder cancer are largely unknown. A correlation between hereditary nonpolyposis colorectal cancer and upper tract TCC had been previously described, but information about bladder cancer risk in MSH2 mutations within these families is largely unknown.
Materials and Methods: Cancer data were obtained from the Toronto Familial Gastrointestinal Cancer Registry from 1970 to 2007, including 353 people with known mutations (APC, CDH1, CRAC1, MLH1, MSH6, MYH or FMS2 mutations), among whom 174 had MSH2 mutations. The standardized incidence ratio in Canada (2) was used to measure cancer risk in offsprings among families with proven MSH2 and other mutations according to familial cancer status.
Results: We identified 71 patients with urothelial cancers. Fifty-three had bladder cancer (75%), 24 upper TCC (25%). Thirty-six of these patients had a double primary cancer and 29 (41%) had colon cancer. Among patients with colon cancer, urothelial cancers appeared before colon cancer in 25% of cases. Within the 174 patients in the registry with proven MSH2 mutations, bladder cancer was found in 10 (5.74%) persons but none among the 179 patients with APC, CDH1, CRAC1, MLH1, MSH6, MYH or FMS2 mutations. There were 6 women and 4 men, in contrast with the expected male to female ratio for bladder cancer of 3:1 in Canada. This 5.74% risk for bladder cancer among MSH2 carriers is clearly increased as compared with the 2.5% and 0.5% lifetime risk among men and women in Canada, respectively. With respect to upper tract TCC among MSH2 carriers, the observed risk was 2.9% (5/174), which is in line with previous reports (2.6%) about the significantly increased risk of upper tract TCC in these populations (1).
Conclusion: Siblings of hereditary colorectal cancer patients with MSH2 mutations are at increased risk not only for upper tract TCC as previously demonstrated (which actually can precede the diagnosis of colon cancer) but also of bladder cancer. None of the other genetic markers predisposing to HNPCC was involved in upper tract or bladder cancer TCC. Our study suggests that mutations of mismatch repair proteins may have an important contribution in the development of a subset of TCCs.
Keywords: BLADDER CANCER, GENOMICS, RISK FACTORS

MP-9.08

Contemporary outcome of patients who had an aborted cystectomy due to unresectable bladder cancer

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Introduction and Objective: Abortion of a cystectomy due to unresectable disease is not uncommon in patients with bladder cancer. Our aim was to review the outcome of these patients and evaluate various prognostic variables.
Materials and Methods: From 1993 to 2007, a total of 31 patients with urothelial carcinoma underwent exploration for radical cystectomy, which was aborted owing to fixation to the pelvis and rectum or presence of grossly palpable nodes. Collected variables included presence of hydronephrosis, concomitant carcinoma in situ, clinical stage, variant histology, ECOG performance, Charleson comorbidity score, history of superficial tumours, reason for abortion, pelvic lymph node dissection, postoperative chemotherapy/radiation, recurrence and salvage cystectomy. Survival data were analyzed using Kaplan–Meier method and Cox regression analysis.
Results: Mean age of patients was 66 years with a median follow-up of patients alive in 10 months. The 2- and 5-year overall survival (OS) rates were 27.6% and 0%, respectively. Of those, 15 cases were aborted owing to tumour fixation to the pelvis or rectum, 14 owing to gross palpable nodes and 2 owing to peritoneal carcinomatosis. Seventeen had a pelvic lymph node dissection and 14 had no lymph node dissection or just nodal sampling. Twenty-three patients received postoperative therapy, of whom 7 received chemotherapy alone and 16 a combination of chemoradiation. OS was not significantly associated with hydronephrosis, concomitant carcinoma in situ, clinical stage, histology, performance, comorbidities, history of superficial tumours, postoperative therapy or salvage cystectomy. However, fixation to sidewalls showed a worse outcome than gross palpable nodes with shorter median OS (7 v. 13 mo, $p = 0.041$). Patients who underwent a pelvic lymph node dissection were associated with prolonged OS compared to those who did not (11 v. 7 months, $p = 0.036$).
Conclusion: Outcome of patients with unresectable disease is dismal. Patients who had an aborted cystectomy owing to unresectable disease may benefit from a pelvic lymph node dissection prior to chemoradiation. Further refinements of clinical staging to better identify these patients preoperatively and offer them up-front chemotherapy is needed.
Keywords: BLADDER CANCER

MP-9.09

The impact of cystectomy hospital and surgeon volume on postoperative and overall mortality in Ontario: a population-based study

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Introduction and Objective: Hospital and surgeon volume are often used as proxy measures of quality of care for radical cystectomy. Studies published to date have primarily originated from privately funded health care systems and have focused on postoperative mortality rates. We assessed the effect of provider cystectomy volume on both postoperative and overall mortality in a publicly funded health care setting.
Materials and Methods: Patients undergoing cystectomy in Ontario between 1992 and 2004 were identified via the Canadian Institute for Health Information Discharge Abstract Database, a population-based administrative database of all inpatient hospital admissions. The effects of hospital volume and surgeon volume on postoperative mortality rates were assessed with multilevel, random effects logistic regression models. Analyses were adjusted for common patient factors. The effects of hospital volume and surgeon volume on overall survival were assessed using Cox proportional hazards models designed to account for patient clustering within hospital or surgeons, respectively. In addition to patient factors, overall survival analyses were adjusted for tumour characteristics extracted from cystectomy pathology reports gathered via linkage to the Ontario Cancer Registry.

Results: Of 3296 cystectomy patients identified, 126 (3.8%) experienced a postoperative death and 2230 (67.7%) died overall. Pathology reports were available for 2535 (77%) of these patients. Neither hospital volume (OR 0.98, 95% CI 0.95–1.00, $p = 0.074$) nor surgeon volume (OR 0.96, 95% CI 0.90–1.02, $p = 0.143$) were significantly associated with postoperative cystectomy mortality. However, both hospital volume (HR for a 10 cystectomy increase 0.94, 95% CI 0.90–0.99, $p = 0.015$) and surgeon volume (HR for a 10 cystectomy increase 0.85, 95% CI 0.76–0.94, $p = 0.001$) were significantly associated with overall survival. With both hospital volume and surgeon volume in the Cox model, neither was statistically significant, indicating that the high volume benefit can be attained by receiving care from either high-volume hospitals or high-volume surgeons.
Conclusion: In a publicly funded health care system, provider volume was not significantly associated with postoperative mortality. High-volume providers, however, experienced improved overall mortality rates compared with low-volume providers. Future research should focus on the underlying process measures that contribute to the overall mortality benefit of high-volume providers.
Keywords: BLADDER CANCER, RADICAL CYSTECTOMY, SURVIVAL

MP-9.10

Provider volume and long-term outcomes for radical cystectomy: an assessment of underlying structure and process of care measures

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Introduction and Objective: High hospital and surgeon volumes are associated with improved long-term mortality outcomes following radical cystectomy. The mechanisms behind this phenomenon are unclear. We assessed the preoperative processes, physician characteristics and hospital-level factors that may underlie the cystectomy volume–outcome relation.
Materials and Methods: All patients undergoing cystectomy in Ontario, between 1992 and 2004 were identified via the Canadian Institute for Health Information Discharge Abstract Database. Linkage to the Ontario Cancer Registry enabled review of each patient's cystectomy pathology. Baseline Cox proportional hazards models, designed to account for patient clustering within hospital or surgeons and adjusted for patient factors and pathologic factors, were created. Sequential addition of preoperative processes (consultations, imaging studies) physician characteristics (experience, specialization and choice of diversion) and hospital-level factors (teaching status, cardiac catheterization and dialysis capabilities) as variable blocks to the model was performed to assess which set of variables, if any, attenuated the effect of volume on overall mortality. Assessment of each individual variable on the volume hazard ratio (HR) was also performed to elucidate the single most influential factor underlying the volume–outcome relation.
Results: A total of 2535 patients were included in the analysis. Both fully-adjusted baseline hospital and surgeon volume models were statistically significant (hospital volume HR 0.994, $p = 0.015$; surgeon volume HR 0.983, $p = 0.001$). Addition of preoperative process and (or) physician characteristic variables did not attenuate the statistical significance of volume in either model. However, introduction of hospital factors did attenuate the significance of volume in both models with the HR for hospital volume (0.996) moving closer to 1.0 (null effect) than the HR for surgeon volume (0.987). The combination of variable categories that attenuated the HR most were physician characteristics and hospital factors together (hospital volume HR 0.999; surgeon volume HR 0.989).
Conclusion: Hospital factors were the most influential determinants underlying the hospital volume and surgeon volume association with overall survival. The effect of hospital factors was greatest on the hospital volume–outcome association. Structures and process of care measures underlying both the hospital and surgeon volume–outcome association require further elucidation.
Keywords: BLADDER CANCER, RADICAL CYSTECTOMY, STATISTICS

MP-9.11

Prognosis of bladder cancer: difference between primary muscle-invasive and recurrent or progressive non–muscle invasive urothelial tumours

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Introduction and Objective: The outcome of patients with high-grade non–muscle invasive bladder cancer is variable. Early cystectomy has been advocated in high-risk patients as delaying cystectomy until progression to muscle invasion (T2) may result in poor outcomes. In this study, we evaluate the prognosis of patients undergoing cystectomy for recurrent high-grade non–muscle invasive disease and compare to those patients who have T2 disease at presentation.
Materials and Methods: The study population included 114 patients with clinically confined bladder urothelial cancer, treated with radical cystectomy alone (no neoadjuvant therapy) between 2000 and 2006. Patients were grouped into 3 categories based on reason for cystectomy: 1) T2 at presentation; 2) recurrent high grade non–muscle invasive disease; 3) initial non–muscle invasive disease progressing to T2. Univariate and multivariate Cox proportional hazards regression analyses including, age, sex, number of courses of BCG and time from initial diagnosis to cystectomy were performed to determine likelihood of extravesical disease (p3/4) and freedom from recurrence for the 3 groups. Patients were followed for a mean of 21.6 months (range 1–92).
Results: In univariable analysis patients in group 2 had lower likelihood of extravesical disease compared to those in group 1 ($p < 0.05$). Patients in group 3 showed a trend toward less extravesical disease ($p = 0.06$). The 5-year recurrence-free probability was 44.8% (95% CI 28–62), 41.3% (95% CI 9–74) and 48.7% (95% CI 21–77) for groups 1,2 and 3, respectively. In multivariate analysis patients in group, 2 were less likely to recur compared to group 1 ($p < 0.05$), whereas patients in group 3 had similar hazard of recurrence to group 1. Time to cystectomy and number of courses of BCG were predictors of recurrence in multivariate analysis ($p < 0.05$).
Conclusion: In our study, patients with recurrent high-grade non–muscle invasive disease had improved pathological and recurrence-free outcomes compared with those with muscle invasion at presentation. Delaying cystectomy until disease progression resulted in similar outcomes to those with initial T2 disease. This argues that although early cystectomy is beneficial, delaying cystectomy until progression is a reasonable option in selected patients.
Keywords: BLADDER CANCER, RADICAL CYSTECTOMY, SUPERFICIAL BLADDER CANCER

MP-9.12

Long-term results of BCG in the treatment of T1G3 bladder cancer

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Introduction and Objective: Intravesical immunotherapy with Bacille Calmette–Guérin (BCG) is an established conservative treatment for high-grade (G3) T1 urothelial bladder cancer. Meta-analyses have demonstrated BCG to potentially prevent tumour progression, but the main criticism was the short follow-up of these studies (median follow-up of 2.5 yr) and the inclusion of Ta tumours. Data about the long-term ability of BCG for preventing tumour progression are sparse and series limited in number of patients. We therefore analyzed the long-term ability of BCG to prevent bladder tumour progression in a large cohort of primary T1G3 bladder tumours.
Materials and Methods: From June 1991 to November 2006, 109 patients

diagnosed with primary G3T1 tumours were initially managed by bladder conservation. All patients were treated with BCG induction (6 weekly) and with reinduction for failure to achieve a complete response (CR) by 12 weeks. BCG failures underwent cystectomy or salvage intravesical therapy. Data was managed with eCancerBladder (formerly BLIS or BLadder Cancer Information System, University Health Network,University of Toronto). Progression rates and time to progression were assessed.
Results: Median follow-up was 45 months (range 4–191). Overall, 38 (34.8%) patients progressed to muscle-invasive and (or) metastatic disease. Most patients progressed within 2 years after BCG, although exceptional cases of progression were observed as late as 10 years after intravesical therapy. Of those who progressed, 25 underwent cystectomy (median time to cystectomy 17 mo, range 4–75) and 5 (20%) had node positive disease. An additional 13 progressed (median time to progression 15 mo, range 6–168) and treated with a bladder preservation approach. Seventy-one (65.2%) did not progress, of whom 42 (38.5%) did not recur. At last follow-up, 88/109 (80.7%) had no evidence of disease.
Conclusion: Our series, one of the largest reported with primary G3T1 bladder tumour, supports that conservative treatment with BCG is a reasonable approach for these patients. However, high-grade T1 tumours are clearly very aggressive and one-third of the patients are at risk of progression despite BCG, with a narrow window of curability by cystectomy. Most patients will progress within 2 years after BCG, but late progressions within 10 years may occur. The long-term ability of BCG to prevent bladder tumour progression after 10 years is unknown.
Keywords: BCG, BLADDER CANCER, SUPERFICIAL BLADDER CANCER

MP-9.13

Transabdominal ultrasound for the detection of bladder cancer: How reliable is it?

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Introduction and Objective: Cystoscopy remains the gold-standard exam for assessing the lower urinary tract to detect bladder cancer in the work-up of hematuria and in the follow-up of patients with a history of bladder cancer. Few studies have addressed the reliability of transabdominal ultrasound for the detection of bladder cancer. This imaging modality would constitute a less invasive and more cost-effective screening exam than cystoscopy. To retrospectively evaluate the sensitivity of transabdominal ultrasound for the detection of bladder cancer in patients that had transurethral resection of a bladder tumour (TURBT).
Materials and Methods: We comprehensively reviewed 155 consecutive cases of TURBT performed at a single institution between 1999 and 2002. Demographics, risk factors, symptoms, surgery, pathologic findings at TUR and preoperative diagnostic imaging were collected on each patient. A total of 70 patients had a transabdominal ultrasound before TURBT. We calculated the imaging test characteristics of the reports that specifically mentioned that the bladder was examined thus excluding 37 cases.
Results: Mean age was 67.1 years and hematuria was present in 50 patients (71%), being microscopic in 39 patients. Only 16 patients (23%) did not have a history of smoking. A malignant tumour was resected in 54 (77%) patients and a benign one in 13 (19%) patients. Clinical characteristics of the patients imaged with ultrasound did not differ significantly from those of patients not imaged. Among cases where the baldder was specifically examined (n = 33), sensitivity was calculated at 87.9% for overall detection of benign and malignant tumours, and at 90.0% for malignant tumours only. This was independent of the presence of hematuria. Intravenous urogram showed a lower sensitivity at 63.8% for malignant tumours.
Conclusion: Abdominal ultrasound appears effective to detect bladder tumours when the radiologist specifically examines the bladder. Ultrasound appears more effective than intravenous urogram. These results warrant a large prospective cohort study to determine the value of ultrasound to both detect (sensitivity) and rule out (specificity) the presence of bladder tumours in the work-up of hematuria and in the follow-up of patients with a history of bladder cancer.
Keywords: BLADDER, BLADDER CANCER, ULTRASOUND

MP-9.14

A conditional nomogram for prediction of early recurrence of bladder cancer after radical cystectomy

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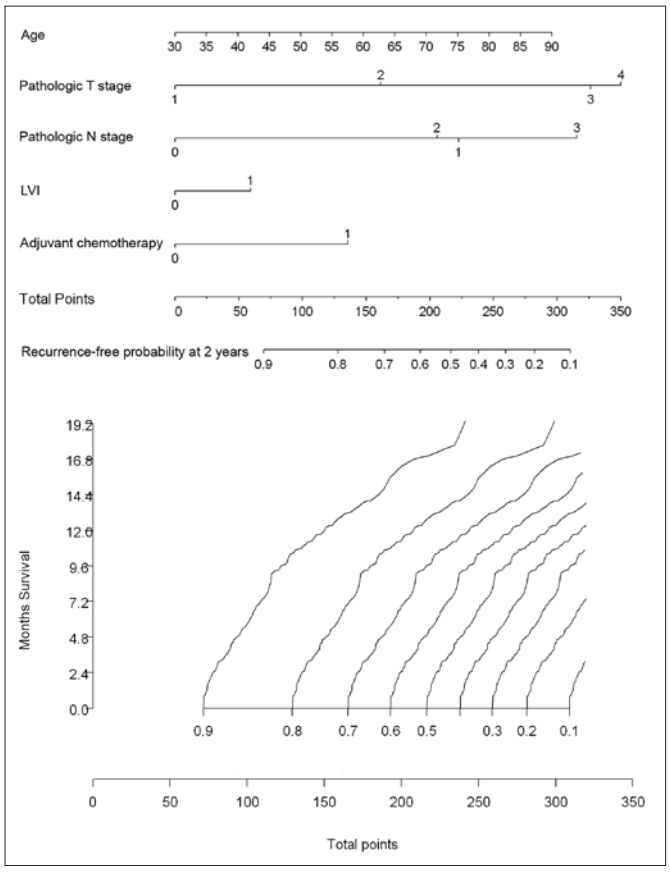
Introduction and Objective: Early recurrence is associated with more aggressive disease and poor outcome in patients treated with radical cystectomy for bladder carcinoma. Moreover, there are no specific tools that adjust for disease-free intervals in cancer survivors. We applied the conditional probability method to predict the freedom from bladder cancer recurrence within 2 years after radical cystectomy.
Materials and Methods: The study population consisted of 663 patients with T1-4, N0-3, M0 transitional cell carcinoma (TCC) who were treated with radical cystectomy. The median follow-up was 3.2 years (range 0.1–15.3). The Cox regression models addressed the conditional probability of remaining free of recurrence-free survival at 2 years after radical cystectomy. Predictor variables consisted of age, pathological T stage, pathological N stage, presence of lymphovascular invasion and adjuvant chemotherapy. The Cox regression coefficients were used to develop a conditional nomogram predicting recurrence-free survival at 2 years after radical cystectomy. The C-index was used to quantify the nomogram accuracy. The conditional nomogram was internally validated with 200 bootstrap resamples.
Results: The recurrence-free survival at 2 years was 86.1% and 336 (50.1%) patients were at risk of recurrence at 2 years. In multivariable analyses, age, pathological T stage, pathological N stage, presence of lymphovascular invasion and adjuvant chemotherapy represented independent predictors, and constituted the nomogram predictor variables. The predictive accuracy of the model was 80.3%, where 50% represents random prediction and 100% represents perfect discrimination (Fig. 1).



Conclusion: Our model represents the most accurate tool for prediction of recurrence after radical cystectomy and can identify those patients who have an aggressive variant of TCC.
Keywords: BLADDER CANCER, RADICAL CYSTECTOMY, RELAPSE

MP-9.15

Salvage radical cystectomy following chemoradiotherapy: the Ottawa experience

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Introduction and Objective: The advent of bladder sparing treatments in patients with bladder cancer has resulted in an increased number of patients requiring salvage therapy. Operative and cancer outcomes in these patients remain poorly defined. We examined our experience with patients undergoing salvage cystectomy for urothelial carcinoma with a history of prior treatment incorporating pelvic radiation. Success of treatment, complications and the factors predictive of recurrence were evaluated.
Materials and Methods: A review of 2 urologists' operative logs identified patients undergoing salvage cystectomy after definitive chemoradiotherapy. Only patients treated for primary urothelial carcinoma were included in the study. Patient demographics, surgical outcomes, and recurrence free-survival were assessed. A univariate analysis of predictors for post-cystectomy recurrence was performed.
Results: From September 2000 to August 2006, a total of 22 patients (17 men, 5 women) underwent salvage cystectomy for urothelial carcinoma after chemoradiotherapy. The mean length of surgery was 9.1 hours, with an associated estimated blood loss of 1360 mL. There were 7 early and 5 late surgical complications. Neither the precystectomy stage, last transurethral resection (TUR) stage, number of courses of preoperative intravesical chemotherapy nor interval from first TUR to cystectomy predicted tumour recurrence on univariable analyses. The median recurrence-free interval following salvage cystectomy was 1.57 years (range 0.98–2.08) and 5-year recurrence-free rate 40%.
Conclusion: There exists a paucity of literature on salvage cystectomy following chemoradiotherapy. Our data indicates that complication rates and recurrence-free intervals are comparable with those patients treated with initial cystectomy alone. This would suggest that attempts at bladder sparing may be reasonable in well selected patients. Further studies are required to determine those patient and tumour factors predictive for recurrence following salvage cystectomy.
Keywords: BLADDER CANCER, CYSTECTOMY, SURVIVAL

Moderated Poster Session 10: LUTS/Incontinence/ Voiding Dysfunction June 25, 2008, 1030–1200

5*
MP-10.01
"Add-on" tolterodine extended release improves overactive bladder symptoms in men receiving α-blocker therapy

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Introduction and Objective: α-Blockers may not effectively relieve urgency and frequency in men if lower urinary tract symptoms (LUTS) in men are related to overactive bladder (OAB) syndrome. Tolterodine extended release (TER) is an accepted treatment for OAB. We evaluated the benefit of TER as "add-on" therapy in men with OAB symptoms who were being treated with α-blockers.

Materials and Methods: Men (aged ≥ 40 yr) with OAB symptoms receiving an α-blocker for ≥ 1 month were randomized to receive TER 4 mg/d or placebo (PBO) for 12 weeks while continuing α-blocker therapy. At baseline, eligible subjects had ≥ 8 micturitions per 24 hours and ≥ 1 urgency episode per 24 hours with or without urgency urinary incontinence (UUI). Subjects completed bladder diaries, Patient Perception of Bladder Condition (PPBC) and International Prostate Symptom Score (IPSS) at baseline and week 12; the percentage of subjects showing improvement (≥ 1) on the PPBC at week 12 was the primary endpoint. Subjects rated level of urgency associated with each micturition on the 5-point Urinary Sensation Scale (USS; 1 = no urgency, 5 = UUI). Micturition-related urgency episodes and severe urgency episodes were those with urgency ratings of ≥ 3 and ≥ 4, respectively; frequency–urgency sum was defined as the sum of urgency ratings for all micturitions in a subject's diary.

Results: The percentage of subjects reporting improvement on the PPBC at week 12 in the TER + α-blocker (57%) and PBO + α-blocker (53%) groups was not significantly different. However, many secondary OAB-related bladder diary and IPSS variables were significantly improved in the TER + α-blocker v. the PBO + α-blocker group (Table 1). No treatment differences were found for UUI episodes per 24 hours (present in about 15% of patients at baseline) or mean USS rating.

Abstract 1. Table 1. Changes in bladder diary variables and IPSS scores at week 12

Assessment	TER + α-blocker (*n* = 329)	PBO + α-blocker (*n* = 323)	*p* value
Diary variables; LS mean change (SE)			
Micturitions per 24 h	–1.8 (0.1)	–1.2 (0.1)	0.0079
Urgency episodes per 24 h	–2.9 (0.2)	–1.8 (0.2)	0.0010
Severe urgency episodes per 24 h	–1.1 (0.1)	–0.7 (0.1)	0.0495
Frequency-urgency sum	–7.8 (0.6)	–5.4 (0.6)	0.0065
IPSS; LS mean change (SE)			
Total	–4.7 (0.4)	–4.3 (0.4)	0.4223
Storage domain	–2.6 (0.2)	–2.1 (0.2)	0.0370
Voiding domain	–2.0 (0.2)	–2.1 (0.2)	0.7655

IPSS = International Prostate Symptom Score; LS = least squares; SE = standard error. *p* values are based on an ANCOVA model with terms for treatment, country, treatment by country interaction, and baseline value as a covariate.

Conclusion: Men with OAB symptoms receiving α-blocker therapy for LUTS may benefit from adjunct TER for persistent storage symptoms.

Keywords: BLADDER DYSFUNCTION, LUTS, OVERACTIVE BLADDER

MP-10.02
A PSA-activated protoxin (prx302) administered transperineally to men with symptomatic benign prostatic hyperplasia is well tolerated and exhibits signs of activity

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Introduction and Objective: Use of PSA-activated drugs for the treatment of benign prostatic hyperplasia (BPH) is a novel approach. PRX302 is a protoxin that was modified to be cleaved by PSA, releasing an active toxin. We hypothesize that PRX302-induced local destruction of the transition zone of the prostate will decrease pressure exerted on the urethra and relieve BPH symptoms. We report findings of a phase I safety and tolerability study of transperineal PRX302 administration in patients with symptomatic BPH.

Materials and Methods: A total of 15 patients (mean age 64.8 yr) with symptomatic BPH were injected with PRX302 transperineally into the transition zone under TRUS guidance. Four cohorts of 3 patients each received increasing concentrations (0.75, 2.25, 7.5, and 10.5 mg/mL) with 250 mL per deposit (3–4 deposits in each of 2 lobes), while an additional cohort received 1.33 mL per deposit (0.75 mg/mL). Patients were evaluated using International Prostate Symptoms Scores (IPSS), Quality of Life (QoL) indicators and prostate volume.

Results: We present data for 30, 90, and 180 days after treatment. Because of small cohort sizes, an overall analysis was done. At screening, the IPSS was 19.1 (SD 4.3) and decreased in all cohorts to overall mean values of 14.3 (SD 5.7) at day 30 ($p = 0.01$) and to 10.6 (SD 5.9) at day 90 ($p < 0.01$). The QoL decreased from 4.3 (SD 1.1) at screening to 2.5 (SD 1.6) at day 30 and to 2.1 (SD 1.6) at day 90 ($p < 0.01$, both time points). Prostate volume decreased significantly up to day 90 ($p < 0.01$). Preliminary results indicate that improvements were sustained at day 180 with a mean IPSS of 12.3 (SD 4.9) and a mean QoL of 2.1 (SD 1.1). The 14-fold dose escalation was well tolerated. No serious adverse events (AEs) or grade 3 or higher AEs were seen. AEs included 2 grade 2 events in 2 patients, and 8 grade 1 events in 4 patients. Most AEs were deemed unrelated to PRX302.

Conclusion: Transperineal administration of PRX302 is well tolerated over the full dose range examined. IPSS and QoL scores improved significantly following treatment and remained improved until day 180. PRX302 appears to provide symptomatic relief and might constitute a promising treatment for patients with BPH.

Keywords: BPH, PROSTATE, PSA

MP-10.03
Body mass index and its association with genitourinary disorders

in men undergoing prostate cancer screening

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Introduction and Objective: Elevated body mass index (BMI) may predispose to several pelvic pathologies. We tested the association between BMI and 5 endpoints, namely 1) erectile dysfunction (ED); 2) lower urinary tract symptoms (LUTS); 3) chronic prostatitis-associated pain (CPP) and ejaculatory dysfunction (EJD) that is subdivided between; 4) pain/discomfort on ejaculation; and 5) subjectively decreased ejaculate volume.

Materials and Methods: Age, height and weight were prospectively recorded in a cohort of 590 consecutive healthy men undergoing prostate cancer screening. Continuously coded and categorized BMI (World Health Organization classification) were studied. Age-adjusted analyses relied on logistic and linear regression models, according to data type.

Results: The average age was 54.1 years (range 30–83). Of all, 296 were overweight (50.2%, BMI 25–29.9 kg/m^2) and 85 were obese (14.4%, BMI ≥ 30 kg/m^2). After age-adjustment, elevated continuously coded BMI ($p < 0.001$) and elevated categorized BMI ($p = 0.01$) were associated with worse erectile function. Conversely, after age-adjustment, elevated continuously coded BMI ($p = 0.02$) and elevated categorized BMI ($p = 0.05$) were associated with lower rate of subjectively decreased ejaculate volume. Finally, after age-adjustment, elevated categorically coded BMI was related to lower rates of CPP ($p < 0.001$) and to lower rate of pain/discomfort on ejaculation ($p = 0.03$).

Conclusion: In men undergoing prostate cancer screening, the effect of BMI on the 5 endpoints is not invariably detrimental. Elevated BMI may predispose to ED, but may also decrease the rate of pain/discomfort on ejaculation and may lower the reported rate of subjectively decreased ejaculate volume. Finally, it appeared to have no effect on LUTS.

Keywords: BPH, ERECTILE DYSFUNCTION, LUTS

MP-10.04

A comparison of perioperative factors between men with and without urinary retention at the time of transurethral resection of the prostate

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Introduction and Objective: To determine whether men in urinary retention (UR) have adverse operative and postoperative characteristics as compared with men not in urinary retention at the time of transurethral resection of the prostate (TURP).

Materials and Methods: A retrospective cohort study was performed. We conducted a chart review on all patients who underwent a TURP between January 2005 and October 2006 at the Misericordia Community Hospital in Edmonton, Alberta. Patient surveys were used to acquire data on re-catheterization rates and IPSS scores 4–13 months postoperatively. Patients were divided into 2 groups: those who presented for TURP in urinary retention versus those who presented for other indications. We compared demographic, medical, operative and postoperative variables between the groups. The main outcome variables included immediate postoperative transfusion rates, recatheterization rates and long-term follow-up IPSS scores. The study was adequately powered.

Results: Of 629 available charts, 605 had complete data. Forty-nine percent of the cohort presented for TURP with UR and had a urinary catheter in situ. The postoperative transfusion rate was significantly greater for the UR group than for the non-UR group (12.5% v. 6.5%, respectively, $p < 0.05$) as was the recatheterization rate (2.7% v. 0.3%, respectively, $p < 0.05$), and the resection weight (27.5 g v. 22 g, respectively, $p < 0.05$). The UR group was slightly older (73.2 yr), but not significantly greater than the non-UR group (69.4 yr, p = NS). There were no statistically significant differences between the groups for hospital stay, resection time, or IPSS-total or -QOL scores.

Conclusion: This study suggests that patients in UR who present for surgical treatment via TURP may be at increased risk for blood transfusion as well as for failure to void spontaneously upon the initial trial without catheter. Patients in UR at the time of TURP, however, do not differ from those without UR in terms of their ultimate voiding symptoms or QOL 4-13 months postoperatively.

Keywords: BPH, LUTS, TURP

MP-10.05

Laparoscopic transcapsular simple prostatectomy (Millin): our experience after 50 cases

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Introduction and Objective: Laparoscopic simple prostatectomy Millin (LSPM) has been recently proposed for the treatment of patients with benign prostatic hyperplasia (BPH) and large prostate volume.

Materials and Methods: From January 2003 to September 2007, 50 patients with BPH and a prostate volume > 80 mL at TRUS underwent LSPM. For each patient preoperative, intraoperative and postoperative variables were recorded. In order to evaluate the impact of the learning curve on the results, the patients were divided into 4 chronological groups and a statistical analysis was performed to compare intra- and postoperative variables among the groups.

Results: Mean prostate and adenoma volume (TRUS) were respectively 83.6 (range 50–154) mL and 70.3 (range 38–123) mL. Mean operative time was 100.4 (range 60–180) minutes and mean blood loss 317.5 (range 50–2000) mL. Mean catheterization time was 4.3 (range 5–20) days and mean length of hospital stay was 5.1 (range 3–21) days. Mean preoperative and postoperative Qmax were 9.1 mL/s and 26.9 mL/s, respectively. Mean preoperative and postoperative IPSS were 24.3 and 3.7, respectively. Two patients had significant intraoperative bleeding in the first part of the learning curve and 1 patient developed a urethral stricture. As far as the learning curve is concerned, the statistical analysis showed a significant difference between group 1 (first 12 patients) and group 4 (last 13 patients) in terms of operative time ($p = 0.01$), blood loss ($p = 0.01$), hospital stay ($p = 0.003$) and catheterization time ($p = 0.001$).

Conclusion: LSPM is a safe and effective technique for the treatment of large prostatic adenomas. A significantly lower catheterization time and hospital stay can be achieved with increasing experience. The outcomes equal those of open surgery and holmium laser enucleation. However, at the present time LSPM should be still reserved to centres with advanced laparoscopic expertise in order to further confirm these results.

Keywords: BPH

MP-10.06

An evaluation of patient and physician satisfaction with controlled-release oxybutynin 15 mg as a 1-step daily dose in elderly and nonelderly patients with overactive bladder: results of the STOP study

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Introduction and Objective: To evaluate patient and physician satisfaction with a single, once-daily controlled-release (CR) oxybutynin 15 mg tablet as both the initial and maintenance dose in elderly and nonelderly patients with overactive bladder (OAB).

Materials and Methods: A multicentre, open-label trial was conducted by urologists, gynecologists, urogynecologists and family practitioners in Canada. Patients not on anticholinergic treatment for OAB and experiencing incontinence (≥ 1 episode/wk) and frequency (≥ 8 micturitions/d) or urgency (≥ 1 episode/wk) initiated treatment on once daily 15 mg CR oxybutynin for 4 weeks. Dose adjustment was not permitted throughout the study. Satisfaction, efficacy, mental status and adverse events were evaluated at the end of the treatment period. The analysis compared the outcomes in patients who were elderly (≥ 65) and nonelderly (< 65).

Results: Of the 240 patients enrolled, 111 (46%) were ≥ 65 years of age.

The completion rate was 76.0% (< 65) and 62.2% (≥ 65) ($p = 0.0204$). The medication was rated as tolerable by 75.2% of patients < 65 and 58.6% of patients ≥ 65 ($p = 0.0099$). Based on overall patient and physician satisfaction scores, 64.2% and 57.1% of patients were considered "successfully treated" ($p = 0.0001$ and $p = 0.0451$). There was a significant reduction in incontinence (64.3%, $p = 0.0001$), nocturia (38.6%, $p = 0.0001$) and night-time incontinence (39.7%, $p = 0.0436$) with no difference between treatment groups. Total continence was achieved by 29.8% and 47.5% of patients < 65 and ≥ 65, respectively ($p = 0.0077$). There was no significant change in cognitive status as assessed by the Mini Mental Status Examination (0.03 unit change — clinically meaningful change is 3 units) when compared with no treatment ($p = 0.738$) with no difference between treatment groups ($p = 0.1019$). Dry mouth was the most common adverse event reported by 24.8% of patients < 65 and 36.0% of patients ≥ 65 ($p = 0.0584$) and any adverse event was reported by 41.1% of patients < 65 and 64.9% of patients ≥ 65 ($p = 0.0002$).
Conclusion: CR oxybutynin 15 mg once daily was well tolerated as both the initial and maintenance dose and provided significant reductions in incontinence, nocturia and night time incontinence without a change in cognitive status. Total continence rates were superior in patients ≥ 65, but there was no difference in dry mouth, cognitive status or efficacy in patients ≥ 65 and < 65 years of age.
Keywords: INCONTINENCE, OVERACTIVE BLADDER

5*
MP-10.07
Nocturia in the elderly: age differences in functional bladder capacity as observed on cystometrogram

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Introduction and Objective: The relation between patient symptoms and cystometrogram (CMG) findings has been poorly explored. In this study, we attempted to discover the relation between patient reported nocturia versus functional capacity and first sensation determined by CMG in men ≥ 60 and men < 60 years of age.
Materials and Methods: We have electronic charts on all patients who have undergone urodynamic testing from 1996 to 2006 at our institution contained in a urodynamics (UD) database. Using the UD database functional capacity and volume at first sensation was crossreferenced with the degree of nocturia reported by our male patients. The amount of nocturia was graded from 0 to 3, with 0, 1, 2 and 3 corresponding to 0 times/night, 1–2 times/night, 3–4 times/night and > 4 times/night, respectively. The patients were then divided into men 60 years of age and over and those less than 60 years of age. The mean and standard deviation for functional capacity (MCC) and first sensation (FS) were then determined for each level of nocturia in both groups of men. A 1-way ANOVA ($p < 0.05$) was then applied to each level of nocturia to determine if the observed differences in their respective MCCs and FSs were statistically significant in men ≥ 60 and men < 60 years of age.
Results: There were 881 consecutive patients identified in the UD database who had the above parameters identified (495 ≥ 60, 386 < 60). First sensation did correlate with severity of nocturia in both older and younger patients ($p < 0.0001$ and $p < 0.0247$, respectively). However, functional bladder capacity only correlated with severity of nocturia in men greater than 60 years of age ($p < 0.0001$).
Conclusion: This study of 881 patients demonstrates that nocturia in the elderly is mainly caused by decreased functional capacity of the bladder and not nocturnal polyuria.
Keywords: BLADDER, DETRUSOR, LUTS

MP-10.08
Urodynamic changes following AdVance male sling insertion

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Introduction and Objective: The AdVance male sling (American Medical Systems Inc., Minnetonka, Minn.) is a recently available treatment alternative for postprostatectomy incontinence (PPI). The goal of treatment is to eliminate urinary incontinence without affecting normal voiding parameters. A concern of any new procedure in treating men with PPI is whether the treatment is inducing obstruction and causing retention. We present the urodynamic changes and early results associated with the AdVance male sling.
Materials and Methods: Data was prospectively collected from 15 consecutive patients undergoing AdVance male sling insertion at our centre. All procedures were performed by a single surgeon. All patients were preoperatively selected based on urodynamics showing stress incontinence and cystoscopy showing a functional sphincter. Urodynamics were repeated at 6 months postoperatively. A 24-hour pad test was completed preoperatively and at 6 months.
Results: All patients had previously undergone prostatectomy for prostate cancer. Median age of the patients at the time of the procedure was 63.8 years (range 44.6–74.7). Two of the patients did not have urodynamics available and were subsequently excluded. The preoperative and 6 month postoperative urodynamics are presented in Table 1 of the remaining 13 patients. The preoperative and 6 months patient reported pad usage were 4.52 and 1.04 (2-tailed *t* test, $p = 0.0009$). The 24-hour pad test performed preoperatively and at 6 months yielded pad weights of 779.3 and 67.6 ($p = 0.03$).

Abstract 8. Table 1.

Variable	Preoperative mean	Postoperative mean	*p* value; 2-tailed
Valsalva leak point pressure; mm Hg	29.3	46.6	0.032
Detrusor voiding pressure at Qmax; mm Hg	26.2	32.1	0.5
Postvoid residual volume; mL	19.6	19.2	0.9
Maximum uroflow; mL/s	23.5	21.9	0.82
Average uroflow; mL/s	9.7	10.6	0.72
Total voided volume; mL	225.7	257.4	0.52

Conclusion: These results are encouraging as this series demonstrates a significant improvement in both patient reported pad usage and 24-hour pad tests. In addition, the improvement is accompanied without any changes in the voiding parameters of the patients, with the exception of valsalva leak point pressure. Ongoing studies with longer follow-up are pending to compare with these promising early results with the AdVance male sling.
Keywords: INCONTINENCE, QOL, RADICAL PROSTATECTOMY

MP-10.09
A modified approach for patient selection in sacral nerve neuromodulation

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Introduction and Objective: Peripheral nerve evaluation (PNE) response is the best predictor of permanent sacral neuromodulation (SNM) success, yet it has a high rate of false negative results owing to migration of the electrode. The development of the staged procedure, with implantation of a tined lead in the first step, helped to overcome this issue. In our centre, in an effort to provide the most specific patient selection and owing

to budget limitations, patients eligible for SNM had a PNE done before the 2-stage implant procedure. Success rate was defined as a 70% improvement or more. We report our experience with long-term follow-up results.
Material and Methods: We retrospectively reviewed data from 102 consecutive patients who, between 2003 and 2007, underwent a PNE for refractory lower urinary tract dysfunction (57 overactive bladder with or without urge urinary incontinence, 20 urinary retention and 25 painful bladder syndrome/interstitial cystitis (PBS/IC)). Data was collected from bladder diaries, visual analogue scale (VAS) for pain, self-administered questionnaires and programming visits for the staged procedures and the subsequent visits.
Results: One hundred and fifteen PNEs were performed on 102 patients with a mean age of 56.4 years (range 29–71). A total of 22 (21.5%) patients had negative PNE results (good sensory/motor response but no objective improvement) and the remaining 80 had the stage 1 procedure performed. Forty-five patients with OAB with or without urge incontinence, 9 patients with urinary retention and 18 patients with painful bladder syndrome/interstitial cystitis (PBS/IC) completed the stage 2 procedure. At a median follow-up of 38 months (range 6 to 46) for the OAB with or without urge incontinence patients, the mean pad per day, leaking episode per day and voids per day decreased from 3.6 (SD 2.2) to 1.2 (SD 0.5), 4.8 (SD 2.7) to 0.9 (SD 1.3) and 14.1 (SD 3.2) to 6.5 (SD 2.5), respectively. For patients with PBS/IC, VAS scores decreased from 77 (SD 12) to 23 (SD 19). Finally 75% (15) patients with urinary retention were able to void. The mean reprogramming visit was 1.6/year (0 to 3). Migration rate for temporary and permanent lead were 6.9% and 2.5%, respectively. Seven patients complained of pain at the pulse generator site. Explantation and revision rate were 5% and 6.2%, respectively.
Conclusion: PNE is a good adjunct to the staged procedure especially in a context of limited budget allowed for SNS. It allows a better patient selection, and when combined with a strict definition of success, it helps to improve efficacy and reduces complication rates.
Keywords: BLADDER DYSFUNCTION

MP-10.10

Sacral nerve stimulation in western Canada: a summary of the experience at our institution

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Introduction and Objective: The Pelvic Floor Clinic in Calgary, Alta., deals with the highest volume of sacral nerve stimulation (SNS) cases in western Canada, receiving referrals from Alberta, British Columbia, Saskatchewan, Manitoba, Yukon Territory and the Northwest Territories. The purpose of this study was to summarize our institution's experience with sacral nerve stimulation for the treatment of a variety of urological conditions.
Materials and Methods: A retrospective chart review of all patients who were referred to the clinic for SNS assessment from 1999 through 2007. This time period reflects the entire experience of the clinic with this technology.
Results: A total of 162 patients met criteria for peripheral nerve evaluation (PNE). If a 50% improvement of symptoms was noted after PNE, implantation was offered. A total of 71 went on to SNS implantation (43.8%). The average age at implantation was 44 (range 16–81) years. Indications for implantation included overactive bladder (46.5%), retention/atonic bladder (33.8.0%), myofascial pelvic pain (30.9%) and interstitial cystitis (15.5%). Forty percent of patients had multiple indications. Twenty-three patients had no complications (32.4%). Battery pain was the most common complaint, however, only 3 patients had the device removed owing to pain (4.2%). Nineteen had mild battery pain (26.8%), and 8 had the battery repositioned owing to pain (11.3%). The reoperation rate was 25.4%. Of those, reposition of battery (44%) and addition of leads (28%) were the most common indications. Eleven patients had the device explanted (15.5%). Three were explanted because the SNS was ineffective, 3 because of battery pain, 2 became infected and 2 had remission of symptoms.
Conclusion: Although a relatively unfamiliar treatment modality, SNS provides clinicians with a viable last-option for a variety of refractory urological conditions.
Keywords: BLADDER DYSFUNCTION, INCONTINENCE, OVERACTIVE BLADDER

5*
MP-10.11

The use of botulinum toxin A in patients with neurogenic detrusor overactivity: preliminary results from a Canadian multicentre randomized trial

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Introduction and Objective: Inadequate response and adverse effects may limit use of anticholinergics in neurogenic detrusor overactivity (NDO). We evaluated Botulinum toxin A (BoNT-A) for NDO in a randomized, placebo-controlled trial and report an interim analysis of data from patient questionnaires.
Materials and Methods: Patients with NDO secondary to spinal cord injury (SCI) or multiple sclerosis (MS) and urinary incontinence (≥ 1 occurrence/day) received BoNT-A (Botox) 300 U or placebo, injected into 30 sites in the detrusor, sparing the trigone. This interim analysis included 12 BoNT-A and 14 placebo recipients; 10 and 12 patients, respectively, received open-label BoNT-A when offered at week 36. Anticholinergics were discontinued 3 weeks posttreatment and could be resumed at 50% of the previous dosage at 4 weeks. The International Consultation on Incontinence Questionnaire (ICIQ) and Urinary Incontinence-Specific Quality of Life (QOL) Instrument (I-QOL) were completed at weeks 6, 24 and 36 by all patients, and at weeks 48 and 60 following open-label BoNT-A.
Results: Treatment with BoNT-A, but not placebo, significantly reduced mean scores for the frequency of urine leakage at weeks 6 and 24, and interference of urine leakage with life at weeks 6, 24 and 36 (based on ICIQ) and significantly improved mean total QOL scores at weeks 6 and 36 (based on I-QOL) versus baseline. Significant improvements on these 3 parameters were maintained during the open-label study phase (weeks 48 and 60) in the group initially assigned to BoNT-A. In addition, the group initially assigned to placebo exhibited significant improvement from baseline in mean scores for interference of urine leakage with life and total QOL at week 48 following open-label BoNT-A.
Conclusion: BoNT-A had a beneficial effect on frequency of urinary incon-

Abstract 11. Table 1. Change from baseline in selected patient questionnaire parameters

Parameter	6 wk	24 wk	36 wk	48 wk	60 wk
Frequency of urine leakage*					
BoNT-A	–1.75†	–1.82†	–1.09	–2.40†	–1.63‡
Placebo	0.07	–0.07	–0.08	–1.00	–0.50
Interference of urine leakage with life§					
BoNT-A	–4.64†	–3.45†	–2.36‡	–4.90†	–4.00‡
Placebo	0.00	–1.14	0.00	–2.92‡	–1.25
QOL (Total)¶					
BoNT-A	19.89‡	18.70	8.26‡	30.00†	24.15†
Placebo	–0.41	2.35	–0.70	17.61‡	8.66

*6-point scale: 0 = never, 5 = all the time.
†$p < 0.01$ v. baseline.
‡$p < 0.05$.
§11-point scale: 0 = not at all, 10 = a great deal.
¶Higher scores indicate better quality of life.

tinence, and resulting interference with life and QOL impact, in patients with NDO secondary to SCI or MS. Improvements were maintained for 24–36 weeks posttreatment. Following open-label treatment with BoNT-A, improvements were also seen in patients who had been initially randomized to placebo (Table 1).
Keywords: INCONTINENCE, OAB, QOL

MP-10.12

Bulbous urethral reconstruction using buccal mucosa with a dorsal onlay technique

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Introduction and Objective: Long segment bulbous urethral strictures are rarely amenable to success with endoscopic techniques and cannot be readily reconstructed by stricture excision and anastomosis. Tissue transfer with substitution urethroplasty is required for repair of these strictures. This series reports early experience reconstructing long segment bulbous urethral strictures using a buccal mucosa graft and a dorsal onlay "augmented anastomosis."
Materials and Methods: Eighty-one patients prospectively underwent open reconstruction for long segment bulbous urethral stricture disease from September 2003 to January 2007. Strictures were reconstructed using a buccal mucosa graft and a dorsal onlay "augmented anastomosis." All patients underwent preoperative urethrography and flexible cystoscopy. Mean stricture length was 4.9 cm (range 3–13 cm). Ninety-three percent (75/81) of patients had undergone previous endoscopic treatment and 8.6% (7/81) had prior attempts at open urethroplasty. Patient follow-up consisted of flexible cystoscopy and subjective symptom assessment at 6 and 12 months with annual symptom assessment thereafter. All patients had a minimum of 12 months follow-up, with a mean followup of 27.2 months (range 12–51). Stricture recurrence was defined as a segment < 18 Fr calibre on cystoscopy or recurrent obstructive voiding symptoms.
Results: Postoperative complications included wound infection (4.9%), urinary tract infection (7.4%), erectile dysfunction (4.9%) and orchalgia (6.2%). Ninety-six percent (77/80) of patients had no evidence of cystoscopic stricture recurrence on follow-up. One patient elected to undergo uroflow studies in lieu of cystoscopy (Qmax > 40 mL/s). Two patients underwent direct vision internal urethrotomy for recurrence postoperatively and are stricture free at 31 and 18 months posturethrotomy.
Conclusion: Using a buccal mucosa graft with a dorsal onlay "augmented anastomotic" repair yields excellent early results. This 96% stricture-free rate on cystoscopy must undergo the scrutiny of long-term follow-up. With time, this technique will likely emerge as the "gold standard" for reconstruction of the long segment bulbous urethral stricture.
Keywords: RECONSTRUCTION, STRICTURE, URETHRA

MP-10.13

Outcomes of concomitant surgery for stress urinary incontinence and pelvic organ prolapse

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Introduction and Objective: A significant number of patients present with both pelvic organ prolapse (POP) and symptomatic or occult stress urinary incontinence (SUI) requiring surgery. The aim of this study was to assess the efficacy and outcome of concomitant surgery for POP and SUI.
Materials and Methods: Seventy-nine women who underwent both POP and SUI surgery over the past 10 years were retrospectively reviewed. Data on patient demographics, presenting symptoms, examination findings, surgeries performed and complications were collected by chart review. Outcomes were collected by chart review and patient interview.
Results: The median age was 61.5 years (range 41–90). Forty-four patients (56%) had prior surgery for SUI and 11 (14%) had prior POP surgery. Seventy-four (94%) had symptomatic SUI and 5 (6%) had masked SUI. Thirty-six patients (45%) presented with mixed symptoms and 16 (20%) had urodynamic detrusor overactivity preoperatively. Surgeries performed for SUI included primarily pubovaginal sling in 47 (60%) and midurethral tape in 29 (37%). In terms of POP surgery 34 (43%) had combined anterior, apical or posterior repairs and 45 (57%) had single compartment repair. The median follow-up was 43 months (range 4–140 mo). Operative morbidity was low with hematomas in 2 patients, wound infection in 1 and transfusion in 1. Initially, 12 (15%) required intermittent catheterization (IC). Four of these had the slings incised and voided, 6 eventually voided spontaneously and 4 have remained on IC. Nineteen (24%) developed de novo storage symptoms and detrusor overactivity. Six (8%) had secondary procedures for persistent or recurrent SUI. Two patients (3%) required mesh removal owing to extrusion or infection. Dyspareunia was reported in 3%. Overall, 33 (38%) patients were cured of their SUI, 38 (51%) were improved, 7 (9%) the same and 1 (1%) was worse. There was no difference in SUI outcomes between pubovaginal sling and midurethral tape ($p > 0.05$) Objective cure of POP was seen in 64 (81%) patients, improvement in 13 (16%) and failure in 2 (3%).
Conclusion: Concomitant surgery for POP and SUI is feasible and is associated with low operative morbidity. Voiding dysfunction or new storage symptoms may occur in one-third of patients postoperatively. While the majority of patients achieved an improved continence status, complete cure was seen in 38%. POP surgery results were acceptable.
Keyword: INCONTINENCE

MP-10.14

Interstitial cystitis/painful bladder syndrome and sexual abuse

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Introduction and Objective: Recent data shows 33% of patients with interstitial cystitis/painful bladder syndrome (IC/PBS) have a history of sexual abuse. If prior sensitization of central pathways occurs from sexual traumatization, patients with subsequent IC/PBS might have "easily" upregulated central pathways compared to patients without prior sensitization. We test the hypothesis that IC/PBS patients with a history of female sexual abuse have a different clinical presentation compared with nonabuse patients.
Materials and Methods: Consecutive female IC/PBS patients were studied. All patients had history and physical, urinalysis, urine culture, voiding diary, PUF, ICSI and ICPI, and Female Sexual Function Index (FSFI) instruments and cystoscopy. Some patients underwent cystoscopy with hydrodistension. IC/PBS patients with and without history of sexual abuse were compared.
Results: There were 100 consecutive patients, 20 with a history of sexual abuse. Comparing nonabuse versus abuse patients, respectively, patients showed similarities for ages 39 (SD 13) versus 36 (SD 11), $p = 0.25$; PUF 19 (SD 6) versus 19 (SD 8), $p = 0.92$; ICSI 9 (SD 3) versus 9 (SD 5), $p = 0.72$; ICPI 10 (SD 4) versus 10 (SD 4), $p = 0.72$; and hydrodistension volumes (mL) 748 (SD 182) versus 688 (SD 165), $p = 0.57$. However, comparing nonabuse and abuse patients, respectively, there were differences for daytime frequency (hr) 1.0 (SD 0.6) versus 1.6 (SD 1.0), $p < 0.01$; nocturia 3 (SD 2) versus 2 (SD 2), $p = 0.01$; suprapubic tenderness 45% versus 74%, $p = 0.03$; posterior vaginal wall tenderness 9% versus 42%, $p < 0.01$; cervical tenderness 29% versus 54%; rectal tenderness 3% versus 17%, $p = 0.05$. Domain scores for FSFI differed for orgasm 3.6 (SD 2.1) versus 2.4 (SD 2.0), $p = 0.05$; satisfaction 3.6 (SD 1.5) versus 2.4 (SD1.6), $p = 0.05$; pain 2.9 (SD 2.0) versus 1.5 (SD 1.8), $p = 0.04$; and adjusted total score 20.8 (SD 8.7) versus 15.2 (SD 8.6), $p = 0.04$.
Conclusion: Twenty percent of IC/PBS patients have a sexual abuse history. IC/PBS patients with a sexual abuse history tend to have less voiding frequency, more pain, more tender areas on physical exam and worse FSFI domain scores compared to nonabuse patients. Abuse patients present differently than nonabuse patients.
Keywords: INTERSTITIAL CYSTITIS, PAIN

MP-10.15

Long-term outcomes of the treatment of male stress urinary incontinence with polydimethylsiloxane following spinal cord injury

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Introduction and Objective: We used retrospective analysis for the study guide to evaluate the long-term outcomes of Polydimethylsiloxane (PDS, Macroplastique) submucosal injections in the treatment of male stress urinary incontinence (SUI) secondary to spinal cord injury (SCI) at London Spinal Injuries Unit, Stanmore, UK, and Institute of Urology and Nephrology, London, UK.

Materials and Methods: Thirteen SCI patients with urodynamic SUI were retrospectively identified. All were managed by a single surgeon at a spinal specialist unit and had submucosal PDS injections between 1997 and 2002. The mean age was 49.6 years and the mean duration from injury to first injection was 7.1 years. Outcome measures were changes in incontinence objectified by pad usage, postprocedural videourodynamics (VCMG). Complete cure was defined as cessation of pad usage with no evidence of leakage on VCMG. Partial cure with improvement was defined as > 50% reduction in the number of pads used, with incontinence present on VCMG.

Results: The follow-up ranged from 6.1 to 11.2 years (mean 7.8 yr). Overall cure rate was 27.3%. After a single injection, 1e patient remained completely dry at 6.8 years and another achieved partial cure at 10.5 years. One achieved partial cure following repeat injections at 11 months and 1.5 years. Of the remaining 8, 4 eventually required artificial urinary sphincters (AUS) insertion. One patient had died and 1 was lost to follow-up.

Conclusion: The use of PDS can be contemplated as a first-line treatment in urodynamic SUI in SCI patients. Although its long results are not durable, it can be effective in select cases with or without repeat injections in the short term.

Keywords: SPINAL CORD INJURY, URETHRA, URINARY STRESS INCONTINENCE

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MP-11.01

Real-time quantification of renal ischemia using in vivo expression of p-selectin

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Introduction and Objective: During partial nephrectomy the renal hilum is clamped to safely resect renal masses. This results in ischemia-reperfusion injury (IRI), marked by endothelial expression of p-selectin, which attracts neutrophils. The purpose of this pilot study was to quantitate the microvascular perfusion and in vivo expression of p-selectin as a marker of IRI.

Materials and Methods: After approval of the IACUC, 10 C57/BL6J female mice were evaluated. The left renal artery and vein were ligated for 30 minutes. Pulse–wave doppler was performed to measure renal arterial blood flow. Vevo 770 (VisualSonics, Toronto, Ont.), with a resolution of 40 mm was used to noninvasively measure the microvascular flow and to quantitate targeted microbubbles. Microbubbles are fluorocarbon filled lipid shells that vibrate and generate their own unique sound frequencies that are picked up by the ultrasound probe. Microbubbles coated with anti–p-selectin antibodies were injected after unclamping and both kidneys were scanned 10 minutes later. Isotype serum and sham operated mice were used as controls to determine background nonspecific binding. Untargeted microbubbles were used to examine the microvascular flow. The software produced digital subtraction video intensity units that were compared in the different regions of the kidney.

Results: In the sham left kidney, the corticomedullary junction (CMJ) had the highest blood flow (141.1) compared with renal medulla (43.7) and cortex (100.6) (all $p < 0.01$). After unclamping, blood flow to the left kidney decreased from 576 mm/s to 303 mm/s, despite improvements in the color of the kidney from blue to pink. After 30 minutes of ischemia, when compared with the isotype serum, the expression of p-selectin increased by 41%, 25% and 14%, in the CMJ, cortex and the medulla, respectively. p-Selectin expression was highest in the CMJ (432.1) compared with the cortex (369.4) and medulla (86.5, $p < 0.01$).

Conclusion: This pilot study of in vivo model of IRI, microvascular reperfusion was quantitated for the first time indicating that the CMJ region has the most blood flow and the most susceptible to ischemic injury as evidenced by 41% increase in expression of p-selectin immediately following unclamping. Future studies are planned to correlate our findings with histochemical stains using superoxide dismutase.

Keywords: KIDNEY FUNCTION, PARTIAL NEPHRECTOMY

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MP-11.02

Predictors of health-related quality of life (HRQOL) recovery following laparoscopic radical, donor and simple nephrectomy

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Introduction and Objective: The purpose of this study is to determine the factors that contribute to the recovery to baseline quality of life after laparoscopic radical nephrectomy (LRN), laparoscopic donor nephrectomy (LDN) and laparoscopic simple nephrectomy (LSN).

Materials and Methods: A prospective cohort of LDN, LRN and LSN patients were followed and surveyed with the postoperative recovery scale (PRS). Demographics were compared with Student *t* tests and χ^2 tests where appropriate. Predictors of HRQOL returned to 75% of preoperative score by the 60th postoperative day were analyzed with univariate and multivariable logistic regression. Mean and median number of days to achieve 75% and 100% of the preoperative HRQOL score were determined. Return of HRQOL was compared between those undergoing LDN and those undergoing nephrectomy for other causes with a repeated measures ANCOVA.

Results: One hundered and forty-nine patients were enrolled: 95 LDN patients, 42 LRN patients and 12 LSN patients. The LRN group was significantly older ($p = 0.02$) and more sedentary at baseline ($p = 0.04$). The LDN group had significantly lower BMI ($p = 0.03$), were more often female ($p < 0.01$) and more often had left-sided surgery ($p < 0.01$). The LSN group had significantly smaller extraction incision size ($p < 0.01$). Age less than 60 years, BMI less than 30, an active preoperative lifestyle and nondonor indication for nephrectomy were all significant predictors of return of HRQOL in univariate and multivariate analysis with odds ratios of 2.1 ($p < 0.01$), 1.7 ($p < 0.01$), 1.3 ($p < 0.01$) and 1.4 ($p < 0.01$), respectively. Incision size did not correlate with return of HRQOL. Comparing the return of HRQOL in LDN patients versus other indications, donors had significantly slower return ($p = 0.015$). This may relate to the use of a hand port to extract the kidney, or perhaps psychological differences in the indication for the operation.

Conclusion: Patients who undergo laparoscopic nephrectomy for the purposes of renal donation have slower return to baseline HRQOL compared with LRN or LSN, independent of age, incision size, BMI and preoperative HRQOL. Predictors of a more rapid return to baseline HRQOL are age less than 60 years, BMI less than 30, an active lifestyle and a nondonor indication for nephrectomy. Incision size did not significantly predict return of HRQOL.

Keywords: KIDNEY, LAPAROSCOPY, QOL

5*
MP-11.03

Single port laparoscopic renal surgery: the Cleveland Clinic experience

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Introduction and Objective: Single port laparoscopic (SPL) renal surgery is challenging owing to parallel placement of surgical ports. However, with accumulating laparoscopic experience and instrument improvements, laparoscopy through a single port is now feasible. Herein, we present the initial experience in SPL for various kidney pathologies.

Materials and Methods: Prospective evaluation of patients undergoing renal SPL surgeries were recorded in an IRB-approved database. Patients eligible to undergo standard laparoscopic surgery were eligible to undergo SPL. Single port access was gained via the Uni-X Single Port Access (Pnavel Systems Inc.) trocar. Patients who had multiple abdominal surgeries, large renal tumours or solitary kidneys were excluded. Through an open Hassan technique, transperitoneal access via the umbilicus or retroperitoneal access at the tip of the 12th rib was obtained. Pre- and perioperative data were recorded for all surgical procedures.

Results: A total of 14 SPL renal surgeries have been performed successfully without conversion (Table 1). All surgeries were completed through the single multichannel port. For partial nephrectomies, small exophytic renal masses were excised without renal hilar clamping. Patient age and body mass index ranged from 24 to 80 years and 20 to 53 kg/m^2, respectively. Only 1 patient received a blood transfusion following renal cryoablation; no other complications were noted. Operative times ranged from 120 to 180 minutes and the mean length of hospital stay was 2.2 (SD 1.8) days.

Abstract 3. Table 1. Single port laparoscopic renal surgery: intraoperative data

Procedure (no.)	Approach (no.)	Tumour size, cm	Operative time, min	Blood loss, mL	Length of stay, d	Pathology (no.)
Cryoablation (6)	trans (2) rp (4)	2.6 (SD 0.4)	170 (SD 15)	83 (SD 25)	2.6 (SD 3)	Clear cell RCC (3); Papillary RCC (1); Oncocytoma (2)
Partial nephrectomy (2)	trans (1) rp (1)	1.4	175 (SD 7)	275 (SD 318)	2.5 (SD 0.7)	Clear cell RCC (1); Papillary RCC (1); all margins negative
Simple nephrectomy (2)	trans	n/a	180	200 (SD 70)	2.5 (SD 0.7)	Hydronephrosis (2)
Radical nephrectomy (1)	trans	5	120	50	1	Chromophobe RCC
Metastectomy (1)	rp	1.2	120	150	1	Clear cell RCC
Cyst décortication (1)	trans	5	120	50	2	Benign cyst wall
Wedge biopsy (1)	trans	na	120	150	3	Oncocytoma

RCC = renal cell carcinoma; rp = retroperitoneal; SD = standard deviation; trans = transperitoneal.

Conclusion: SPL kidney surgery is feasible and safe. The transumbilical approach provides a virtually scarless appearance post surgery. Further refinements in surgical instrumentation may ptoentially make SPL surgery more ubiquitous.
Keywords: KIDNEY, LAPAROSCOPY

MP-11.04

Single port laparoscopic pelvic surgery: a new horizon in urology

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Introduction and Objective: Minimally invasive surgery for pelvic pathology has gained momentum over the last decade. Laparoscopic and robotic radical prostatectomy, radical cystectomy and female reconstructive procedures are commonly performed worldwide. With the development in articulating surgical instruments and steerable telescopes, operating via a single multichannel port has now been made possible. Herein, we report the first single port laparoscopic (SPL) approach to pelvic urological surgery.
Materials and Methods: Patients eligible to undergo standard laparoscopy were deemed eligible to undergo SPL surgery. Patients who had multiple abdominal surgeries and advanced pelvic malignancy were excluded from undergoing SPL surgery. Single port access was achieved via the Uni-X Single Port Access (Pnavel Systems Inc.) trocar. A periumbilical approach using the Hassan technique was utilized to gain transperitoneal access for all procedures. Data of all single port laparoscopic pelvic surgery was tabulated on an IRB approved database. The initial operative and perioperative outcomes were evaluated and where feasible follow-up oncological and functional data.
Results: A total of 9 pelvic urological surgeries were completed successfully via a single multichannel port (Table 1). In total, 2 radical prostatectomies, 6 sacrocolpopexies and 1 radical cystectomy with bilateral

Abstract 4. Table 1. Single port laparoscopic pelvic surgery

Procedure (no.)	Preoperative pathology/ stage	Operative time, min	EBL, mL	Postoperative pathology/ stage	LOS, d
Radical prostatectomy (2)	i. T1C,G 7, PSA 4.3 ii. T1C, G 6, PSA 4.8	300	275 (SD 176)	i. T3A, G 7, focally M (+) ii. T3A,G 6, M (–)	2.5 (SD 0.7)
Radical cystectomy and pelvic lymph node dissection (1)	i. T2, high-grade urothelial carcinoma	360	250	T2, high-grade TCC, G7 prostate cancer M (–), 19 lymph nodes (–)	7
Sacrocolpopexy (6)	Grade II to III pelvic organ prolapse	170 (SD 15)	50	Initial follow-up pending	1.7 (SD 0.5)

G = Gleason score; PSA = prostate specific antigen; SD = standard deviation.

pelvic lymph node dissection was performed. Successful intracorporeal free-hand suturing was performed for the urethra–vesical anastamosis and during sacro–colpopexy. No complications or conversions to standard laparoscopy were encountered during all procedures. Overall mean patient age and BMI were 64.4 (SD 13) years and 25.3 (SD 2.2) kg/m^2, respectively. Although follow-up at this time is limited, there is no evidence of recurrent prolapse or biochemical PSA failure.
Conclusion: We have been able to demonstrate that laparoscopic urological pelvic surgery through a single multichannel port is feasible. With further advances in surgical instrumentation and refinements in technique, this procedure can potentially minimize abdominal wall trauma and improve cosmetic results. Long-term follow-up is needed to establish the role of SPL for pelvic malignancy, but early results are promising.
Keywords: LAPAROSCOPY, PELVIC, RECONSTRUCTION

MP-11.05

Percutaneous renal cryoablation: early results from a prospective database

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Introduction and Objective: Management for small renal tumours is evolving, with minimally invasive surgery assuming a leading role. Within this field, cryoablation is one alternative in appropriately selected cases. We have initiated a prospective database to assess long-term outcomes and herein we report our early results.
Materials and Methods: Data is collected regarding patient demographics, radiographic findings and tumour characteristics. Intraoperative data was collected with respect to the specific method of cryoablation, technical details and analgesia use. Follow-up data includes radiological surveillance (CT scans done at POD 1, 3 mo, 6 mo, 1 yr up to 5 years), renal function, hemoglobin and, disease-free and overall survival. Ethics approval was attained.
Results: Thirty patients have been treated to date (2 procedures using ultrasound imaging, 28 with CT guidance). Mean patient age is 67 years. All tumours were solitary and mean preoperative tumour size was 3.2 cm (range 2.0–5.9 cm). Twenty-four were renal cell carcinoma, 3 oncocytomas and 3 fibrous/connective tissue on biopsy at the time of treatment. Three solitary kidneys have been treated to date and mean patient ASA score is 2.5. There have been no intraoperative complications. One patient had a postoperative bleed requiring transfusion, and 1 case a bleed was detected 3 weeks postop. One patient developed a pleural effusion

in hospital. Blood loss was negligible in all other cases. Hospital stay was overnight in 28 of 30 cases. Intravenous midazolam and fentanyl was used in 60% of cases and postoperative analgesic use was minimal. Mean follow-up is 44 weeks (range 5–81 wk). Tumour size has decreased in all cases postoperatively (mean decrease 23%). There is no enhancement and no evidence of metastatic disease in all cases. To date, 2 cases demonstrate incomplete ablation (1 U/S guided and 1 CT guided). There has been 1 repeat procedure. There was no significant difference between preoperative and postoperative serum creatinine levels.
Conclusion: With the increasing frequency of diagnosis of small renal tumours, minimally invasive therapeutic options are being explored, especially for tumours increasing in size. Percutaneous cryoablation appears as a safe, effective and patient friendly method of dealing with these lesions.
Keywords: CRYOTHERAPY, KIDNEY, RENAL CELL CARCINOMA

MP-11.06

Robotic pyelopasty: long-term follow-up of first Canadian experience

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Introduction and Objective: Robot-assisted laparoscopic pyeloplasty (RALP) has recently been established as an option in the treatment of ureteropelvic junction obstruction (UPJO). The long-term durability of the RALP procedure requires analysis. We present the first Canadian experience with RALP with respect to operative results and long-term outcomes.
Materials and Methods: Fifty-five patients underwent transperitoneal RALP for UPJO using the da Vinci robotic platform (Intuitive Surgical Inc., Sunnyvale, Calif.). All patients had symptoms and radiographic evidence of UPJO. Two surgeons performed Anderson–Hynes dismembered pyeloplasty in 54 cases and YV plasty in 1 case. Five patients had RALP for secondary UPJO after failure of other treatments. Lasix renography was performed 2 and 6 months postpyeloplasty. The mean follow-up was 15.3 (SD 9.6) months.
Results: The mean operative time was 170.7 (SD 49.5) minutes and the mean anastomotic time was 37.9 (SD 11.9) minutes. The mean operative duration significantly decreased with time ($p < 0.05$). Thirty-one patients (56.3%) had evidence of crossing vessels. Seven patients required simultaneous nephroscopic stone management via the pyelotomy incision. The mean blood loss was 56.6 (SD 35.5) mL and mean hospital stay was 2.3 (SD 0.5) days. There were 2 major postoperative (stent migration, urinoma) and 3 minor complications associated with the RALP procedures. Postoperative renal scintigraphy demonstrated only 4 cases with persistent obstruction. From a symptom standpoint, 52 patients (94%) experienced improvement of symptoms whereas 3 continued to be symptomatic. Two patients required secondary procedures to relieve persisting obstruction.
Conclusion: This is the first large case series of RALP from Canada. It demonstrates that RALP can be performed with relatively short operative times and is safe and effective, achieving similar long-term results with standard open repair. With its cost, its role in the Canadian system requires further study.
Keywords: OBSTRUCTION, ROBOTICS

MP-11.07

Retroperitoneal laparoscopic partial nephrectomy: the Québec City experience

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Introduction and Objective: Laparoscopic partial nephrectomy is progressively more an option for small renal tumour. Both retroperitoneal and transperitoneal approaches have their advantages and disadvantages. We present our experience with 110 patients undergoing retroperitoneal laparoscopic partial nephrectomy.
Materials and Methods: We retrospectively reviewed the records of 110 consecutive patients undergoing retroperitoneal laparoscopic partial nephrectomy from February 2004 to January 2008.
Results: There were 67 men and 43 females, mean age was 58.9 (range 16–84) years, mean BMI was 28.48 kg/m^2 (range 17.0–45.0), mean tumour size was 2.82 (range 1.0–15.0) cm, with 56.4% of tumours on the right side. The median operative time was 113 minutes (range 51–220 min), median warm ischemia time was 22.0 min (range 0–60 range), median blood loss was 50.0 mL (range 5–1500 mL) and median hospital stay was 3 days (range 1–10 d). The overall complication rate was 30.9%, including 4 (3.6%) open conversions, 3 (2.7%) postoperative hemorrhages and 9 postoperative urine leaks (8.2%). There was no postoperative mortality. Regarding pathology, 79 (71. 8%) tumours were malignant (52 clear cell carcinoma, 19 papillary, 8 chromophobe) with pathological stages T1a in 70 tumours, T1b in 6 tumours and T2 in 3 tumours. All surgical margins were negative. To date, there is no cancer recurrence.
Conclusion: We report one of biggest series of retroperitoneal laparoscopic partial nephrectomies. Our results can be compared favourably with other series previously published. Longer follow-up is necessary for long-term oncological outcomes.
Keywords: LAPAROSCOPY, PARTIAL NEPHRECTOMY

MP-11.08

Effects of warm ischemia time on differential renal function after laparoscopic partial nephrectomies: the Laval University experience

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Introduction and Objective: Laparoscopic partial nephrectomy (LPN) is a minimally invasive technique that has been shown to be safe and effective when compared with open partial nephrectomy (OPN). However, LPN is technically difficult and warm ischemia time (WIT) is longer when compared to OPN. The impact of WIT on the operated kidney's differential function have been poorly studied in the literature. We evaluated the impact of WIT on the renal differential function assessed by pre- and postoperative renal scintigraphy.
Materials and Methods: Between 2003 and 2007, 159 LPN were performed by a single surgeon, among which 51 had a MAG3-lasix renal scintigraphy pre- and postoperatively. Data were collected prospectively.
Results: Patients and tumour characteristics were as follows. Medians for age, preop creatinine and tumour size were 62 years, 81 µM and 26 mm, respectively. Tumour stages were pT1a, pT1b, pT2 and pT3a in 65%, 10%, 6% and 20% of cases, respectively. Median WIT and preoperative renal differential function (RDF) were 30 minutes (range 0–60 min) and 50% (range 38–60%). Median loss of RDF was 12% (range 0–39%). In univariate analysis, WIT and exophytic localization of the tumour could predict a statistically significant decrease RDF of less than 10%, 15% and 20% ($p < 0.05$). Age, sex, pre-operative creatinine, tumour size, blood loss or tumour stage were not associated with decrease in RDF. Change in creatinine plasma levels between pre- and postoperative levels also correlated with loss of renal function of the operated kidney. By ROC analysis, we show that the WIT that optimizes sensitivity and specificity for predicting a loss in renal differential function < 10% was 31 minutes for a sensitivity of 78% and a specificity of 64%. Also by ROC analysis, we show that WIT of 30 minutes could predict RDF loss > 20% with a sensitivity of 67% and a specificity of 56%.
Conclusion: Altough some studies based on creatinine level changes post-LPN that have shown that WIT can be up to 55 minutes, we show a WIT of less than 30 minutes optimizes the chances of preserving RDF of the operated kidney.
Keywords: LAPROSCOPIC PARTIAL NEPHRECTOMY

MP-11.09

Left transperitoneal laparoscopic pyeloplasty with transmesocolic access to the uretero–pelvic junction: description of the technique and results with a 1-year minimum follow-up

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Introduction and Objective: Transperitoneal left laparoscopic pyeloplasty (TLLP) requires mobilization of the descending colon. In order to avoid bowel manipulation, a direct access to the left ureteropelvic junction (UPJ) can be performed through a small mesenteric incision. Aim of this prospective study is to describe technique, safety and results of TLLP with this approach.
Materials and Methods: Seventy laparoscopic pyeloplasties according to the Anderson–Hynes technique have been performed overall at our centre since January 2002. From March 2005 we have performed TLLP with a direct transmesocolic approach to the UPJ in 18 consecutive patients with a BMI < 30 kg/m^2. For each patient age, gender, body mass index (BMI), hospital stay, skin-to-skin operative time, time from incision of the posterior peritoneum to dissection of the UPJ, blood loss, time to resumption of oral intake and complications were recorded. Statistical analysis was performed to assess whether the body habitus (BMI higher or lower than 25 kg/m^2) had an impact on the outcomes.
Results: No intra- or postoperative complication was observed. No conversion to open surgery or blood transfusion was needed. Mean time to resumption of oral intake was 1.36 (SD 0.5) days. Mean hospital stay was 3.3 (SD 0.67) days. Mean follow up was 13.4 (SD 2.1) months. No statistically significant difference was observed between patients with a BMI higher or lower than 25 kg/m^2 for all the variables analysed ($p = 0.42$). Success rate at 1 year from surgery was 100%.
Conclusion: TLLP with direct transmesocolic access to the UPJ is a safe and effective technique. This approach should be considered for all patients with left primary UPJ obstruction who are eligible for laparoscopic pyeloplasty and especially for slim patients or patients with a large renal pelvis.
Keyword: LAPAROSCOPY

MP-11.10

Outcomes of kidney transplantation from donors after cardiocirculatory death: the Ontario experience

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Introduction and Objective: The disparity between patients awaiting kidney transplantation and transplants performed each year continues to widen in Canada. Renewed interest in using organs from donors after cardiocirculatory death (DCD) is one potential solution to expand the donor pool. Herein, we describe the contemporary experience and short-term outcomes with DCD kidney transplants in Ontario.
Materials and Methods: Donor and recipient characteristics from all DCD kidney transplants performed in 4 Ontario cities (London, Hamilton, Toronto and Ottawa) from June 2006 to January 2008 were analyzed. Mean follow-up was 10.6 months (range 1–19 mo).
Results: Forty-six kidney transplants were performed from 23 DCDs donors. Mean donor age was 37 years (range 18–59 yr), and mean warm and cold ischemia times were 59 minutes (range 14–128 min) and 385 minutes (range 180–780 min), respectively. Mean donor serum creatinine at procurement was 75 µmol/L (range 49–128 µmol/L). Mean recipient age was 53 years (range 22–68 yr). The incidence of immediate, slow and delayed graft function (DGF) were 16%, 8% and 76%, respectively. Mean length of stay was 15 days (range 8–29 d) and postoperative dialysis was employed for a mean of 11 days (range 2–25 d) in patients with DGF. All grafts eventually functioned with no reports of rejection or primary nonfunction. Mean serum creatinine and estimated creatinine clearance at 3 and 6 months were 158 µmol/L and 53 mL/min, and 162 µmol/L and 57 mL/min, respectively.
Conclusion: Despite a high rate of DGF, short-term results are encouraging and consistent with international data. Use of organs from DCD is an acceptable and effective means of expanding the donor pool in Canada.
Keyword: TRANSPLANT

MP-11.11

Donor preconditioning with CORM-2 protects against ischemia-reperfusion injury in a murine kidney transplant model

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Introduction and Objective: Significant organ damage occurs as a result of ischemia-reperfusion injury (IRI) following the transplantation process. Carbon monoxide (CO) has previously been shown to reduce damage associated with IRI, but in a clinical setting, problems remain regarding safe and controlled CO delivery and carboxyhemoglobin formation. CO-releasing molecules (CORM) permits a novel and safe delivery of CO. Herein we assess the ability of CORM-2 to prevent IRI in transplant-relevant models.
Materials and Methods: Renal tubular epithelial cell (TEC) injury and endothelial cell (EC) inflammatory response were assessed in vitro after cytokines, temperature and anoxia/reoxygenation-related injury. Lewis rat donors were pretreated with CORM-2 (8 mg/kg) or vehicle injected IP 18 hours before kidney retrieval. Kidneys were cold preserved for 26 hours in UW solution. After bilateral recipient nephrectomies, kidney transplantation was performed. Postoperatively, organ function, survival and isograft histology were assessed.
Results: 1. We demonstrated the ability of CORM-2 to prevent TEC apoptosis and EC inflammatory response compared with control-treated cells. All recipients of CORM-2-treated isograft survived to the transplant process. Their mean serum creatinine (sCr) was 59 (SD 4) and 69 (SD 14) µmol/L at 24 hours and 72 hours, respectively. In comparison, the animals that received a vehicle-treated allograft had a mean sCr of 566 (SD 62) and 680 (SD 15) µmol/L at 24 hours and 72 hours. They all died by day 3 following acute renal failure. Early postoperative histology revealed that CORM-2-treated isograft suffered mild acute tubular necrosis (ATN) while vehicle-treated animals experienced severe IRI characterized by severe ATN and hemorrhage.
Conclusion: We have shown that CORM-2 can protect the renal graft from IRI through prevention of apoptosis and inflammation. This provides rationale to use CORM clinically to prevent early injury and limit interstitial fibrosis/tubular atrophy. Further studies are required to define the best administrative strategy in regards to donor and recipient treatment.
Keywords: KIDNEY FUNCTION, SURVIVAL, TRANSPLANT

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MP-11.12

Living unrelated (commercial) renal transplantation: a single Canadian centre experience

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Introduction and Objective: Canada, akin to other developed nations, faces the growing challenges of end-stage renal disease (ESRD). Even with expanded donor criteria for renal transplantation, the treatment of choice for ESRD, the supply of kidneys is outpaced by the escalating demand. Remuneration for kidney donation is proscribed in Canada. Without an option of living-related transplantation (biological or emotional donors), patients often struggle with long waiting lists for deceased donor transplantation. Accordingly, many patients are now opting for more expedient avenues to obtaining a renal transplant. Through commercial organ retrieval programs, from living and deceased donors, patients are travelling outside Canada to have the procedure performed.
Materials and Methods: Between September 2001 and July 2007, 10 patients (7 male, 3 female) underwent commercial renal transplantation outside Canada. We describe the clinical outcomes of these patients man-

aged postoperatively at our single Canadian transplant centre.
Results: Six living unrelated and 4 deceased donor renal transplantations were performed in our 10 patients (mean age 49.5 yr). All procedures were performed in developing countries and the postoperative complications were subsequently treated at our centre. The mean posttransplant serum creatinine was 142 µmol/L. Average follow-up time was 29.8 months (range 3–73 mo). One patient required a transplant nephrectomy secondary to fungemia and subsequently died. One patient had a failed transplant and has currently resumed hemodialysis. Acute rejection was seen in 5 patients with 3 of these patients requiring reinitiation of hemodialysis. Only 1 patient has had an uncomplicated course after surgery.
Conclusion: Despite the kidney trade being a milieu of corruption and commercialization, and the high-risk of unconventional complications, patients returning to Canada following commercial renal transplantation are the new reality. Patients are often arriving without any documentation and timely goal-directed therapy for surgical and infectious complications are frequently delayed by establishing an accurate diagnosis. Refuting the existence of commercial renal transplantation is not a practical solution; perhaps more consistent communication and documentation with transplant teams may be more pragmatic. In the current climate, patients considering the option of overseas commercial renal transplantation should be advised that heightened risks to life and graft survival exist.
Keywords: DONOR, KIDNEY, TRANSPLANT

MP-11.13

Laparoscopy, dorsal lumbotomy and flank incision in live donor nephrectomy: comparison of donor outcomes

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Introduction and Objective: Donors undergoing laparoscopic nephrectomy have been shown to require less analgesia postoperatively and have a shorter hospital stay than patients undergoing a standard open flank incision. Further, the literature has shown that graft function and the incidence of recipient complications are similar for both laparoscopic and open flank techniques. Our centre has historically performed donor nephrectomy procedures via dorsal lumbotomy incisions, and to our knowledge there have been no studies comparing donor nephrectomy via this approach and the laparoscopic technique. In this study, we compare donor outcomes for patients undergoing either laparoscopic (LDN), flank incision (FL) or dorsal lumbotomy (DL) donor nephrectomy.
Materials and Methods: We performed a retrospective chart review of all donors undergoing either open (dorsal lumbotomy or flank incision) or laparoscopic nephrectomy between 2002 and 2007. We evaluated preoperative donor characteristics, operative time, blood loss, postoperative analgesia use, length of stay in hospital and intraoperative and postoperative complications. Additionally, we evaluated the corresponding recipients for postoperative allograft function and early complications.
Results: Donors who underwent LDN required an average of 96.3 (SD 14) mg of morphine versus DL (63.4, SD 10 mg) and FL (120.4, SD 25 mg) ($p < 0.001$ DL v. LDN or FL, $p = 0.09$ LDN v. FL) Mean intraoperative blood loss was 75.5 (SD 8.9) mL, 280.9 (SD 42.4) mL and 177.8 (SD 20.7) mL for LDN, DL and FL procedures, respectively ($p < 0.001$ LDN vs DL, $p < 0.001$ LDN v. FL). Length of hospital stay was 3.9 (SD 0.2) days for LDN patients versus 4.1 (SD 0.3) days for DL ($p = 0.08$) or 4.6 (SD 0.2) days for FL ($p < 0.01$). There was an increased incidence in major and minor intraoperative and postoperative complications in both the FL and DL groups when compared with LDN ($p < 0.01$). Mean serum creatinine of recipients at 2 weeks, 6 months, 12 months and 24 months postop was not significantly different amongst the three groups ($p > 0.45$).
Conclusion: Laparoscopic donor nephrectomy has become the standard approach because of its well-documented safety profile, advantages to the donor and equivalent graft function. In our study, donors undergoing LDN lost a significantly smaller amount of blood, experienced a lower rate of intraoperative and postoperative complications, and were discharged home sooner than patients undergoing either open approach (FL or DL). This was likely owing to improved visualization of the renal pedicle and minimally invasive technique. Patients undergoing LDN also used less analgesia than patients undergoing a flank incision but more than those undergoing DL. While all groups received postoperative Toradol infusion for pain control, only the LDN and FL groups were offered patient controlled analgesia as per protocol. This likely could account for the decreased amount of parenteral opiods used by patients undergoing DL, who were primarily offered oral narcotics postoperatively. However, it is clear from our study that LDN has a superior safety profile compared with either open approach, offers significant benefits to the donor in the postoperative period and provides equivalent long-term graft function. Our study supports the widespread adaptation of LDN as the standard technique in live donor nephrectomy over either the DL or FL techniques.
Keywords: DONOR, KIDNEY, LAPAROSCOPY, NEPHRECTOMY, TRANSPLANT

MP-11.14

Long-term health related quality of life (HRQOL) following laparoscopic and open donor nephrectomy

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Introduction and Objective: Short-term benefits of LDN with respect to narcotic use and hospital stay are established when compared with ODN. This study aims to determine the long-term differences in HRQOL between people who undergo LDN versus ODN.
Materials and Methods: A prospective contemporaneous cohort of living related renal donors performed at 1 centre in Canada were followed over a 5-year period. HRQOL was assessed with the postoperative recovery scale (PRS) which consists of the short form 36 QOL index and a visual analog pain scale. The maximum achievable HRQOL score is 100%. Scores were compared with repeated measures ANCOVA using SPSS 15.
Results: The cohort consists of 61 patients of whom 54 have complete 5-year follow-up. LDN patients have a PRS score of 99% at 5 years compared with 93% for ODN patients ($p = 0.025$). The difference in the score may relate to wound complications experienced in 5 of 27 ODN patients versus 1 in 34 LDN patients. In the ODN group 3 patients have persistent flank bulges, one of whom had chronic pain associated. Two patients in the ODN cohort have chronic incisional pain, one of whom requires periodic nerve blocks. In the LDN cohort 1 patient developed an incisional hernia 6 months after the operation but is now asymptomatic.
Conclusion: In this prospective contemporaneous cohort of living renal donors from a single institution, those who underwent LDN have a significantly higher HRQOL score at 5 years of follow-up. The factor accounting for the difference seems to relate to a higher incident of wound complications in the ODN group
Keywords: DONOR, LAPAROSCOPY, QOL

MP-11.15

Radiopaque contrast administration during deceased donor evaluation: effects on renal transplant outcomes

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Introduction and Objective: Coronary angiography is an important investigative tool in the evaluation of the deceased donor during multiorgan procurement for transplantation. It is a definitive tool for the assessment of atherosclerosis in the donor heart, and its use will likely only increase with increasing limits of acceptability of cardiac donor demographics. Although radiographic contrast agents used in angiography are relatively safe, adverse effects such as contrast-induced nephropathy (CIN) can occur following administration. In fact, most institutions adhere to strict guidelines as to who is an acceptable patient for contrast studies and use renoprotective protocols as additional prevention. Unlike in the typical patient undergoing contrast study, the deceased donor usually generates concurrent significant additional systemic insults kidneys (i.e., catecholamine storm, hemodynamic instability, etc.). As such, these

cumulative factors may contribute to allograft performance following transplantation. We present our single program experience with the use of radiocontrast agents in the evaluation of deceased donors for renal transplantation.
Materials and Methods: A retrospective review of the British Columbia renal transplant program was conducted comparing the clinical outcomes of 32 recipients who were transplanted with kidneys procured from deceased donors who received intravenous contrast administration during evaluation, and 64 matched control recipients transplanted with contrast naive kidneys. The study period was between 2002 and 2006.
Results: No difference was found between the 2 groups in terms of frequency of delayed graft function, slow graft function or primary nonfunction of the transplanted allografts. Likewise, no significant difference was determined between groups with regards to frequency of acute rejections. Allograft function between groups determined through calculated GFR failed to demonstrate a difference at 3, 6 and 24 months after transplantation ($p = 0.38$, 0.395 and 0.07, respectively); however, they did demonstrate a difference at 12 months ($p = 0.03$). Multivariate analysis confirmed the same findings on univariate with the 12 month GFR, continuing to demonstrate significance ($p < 0.005$).
Conclusion: Based on the results of this experience, there appears to be minimal lasting effect of preimplant contrast administration in the donor on renal allograft function. It remains important to be vigilant with regards to evaluation and treatment of the deceased donor, as numerous interacting factors occur between the time of donor death and time of implantation of the donated organ. The continued study of these factors and development of strategies to minimize these detrimental effects may be crucial in extending the quality and longevity of the transplanted organ.
Keywords: KIDNEY FUNCTION, RENAL FAILURE, TRANSPLANT

Moderated Poster Session 12: Oncology: Prostate – Advanced Disease
June 25, 2008, 1030–1200

MP-12.01

A phase II study of patupilone in patients with metastatic hormone refractory prostate cancer (HRPC) who have progressed after docetaxel

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Introduction and Objective: Reliably effective chemotherapy for patients with HRPC who have progressed after docetaxel remains to be identified. Recent trials of second line chemotherapy after docetaxel have described PSA response rates in the 20% range and a median overall survival of approximately 12 months. Patupilone is an epothilone with broad spectrum preclinical activity including in taxane resistant models. The objective of this trial was to evaluate the clinical activity of patupilone in patients with HRPC who previously received docetaxel.

Materials and Methods: Multi-center, 2-stage design. Patients with progressive disease documented within 6 months of or while receiving docetaxel were eligible. Patupilone was initially given 10 mg/m^2 IV every 3 weeks. Primary endpoint was PSA response (≥ 50% decline from baseline). Forty-three patients were to be accrued to stage 1 (H0: response rate < 15%, H1: PSA response rate > 25%) and continue to stage 2 if > 6 responses were seen. Secondary outcome measures include survival, objective response, and serial pain and analgesics scores.

Results: To date, 54 patients have been enrolled with baseline data available on 19 receiving a median of 4 cycles (range 1–7). Baseline characteristics: median age 66 (range 53–78) years, PSA 248 (range 17–1170), hemoglobin 114 (range 94–149), median time from last docetaxel 4.8 (range 1.4–15.0) months, number of prior chemotherapy regimens 1:2:3+ in 5:10:4 patients, ECOG PS 0:1:2 in 3:12:4 patients, disease in bone, lymph nodes and viscera in 18, 13 and 4 patients, respectively. Four first-cycle gastrointestinal serious adverse events occurred in the first 6 patients (diarrhea and vomiting) and the dose of patupilone was lowered to 8 mg/m^2 for subsequent patients with better tolerance. Grade 3/4 related adverse events at the 8 mg/m^2 dose (13 patients): fatigue (1 patient), diarrhea (2 patients) and abdominal pain (1 patient). There have been no grade 3/4 hematologic adverse events. PSA declines of ≥ 30% and ≥ 50% have occurred in 13/20 (65%) and 10/20 (50%) patients with a confirmed PSA response occurring in 9/20 (45%).

Conclusion: In this population, patupilone 8 mg/m^2 every 3 weeks is well tolerated. Initial results show encouraging PSA responses in patients with docetaxel resistant/refractory disease and accrual continues into stage II.

Keywords: CHEMOTHERAPY, HORMONE REFRACTORY PROSTATE CANCER

MP-12.02

One-year, North American multicenter, randomized dose-finding study of degarelix, a gonadotrophin-releasing hormone (gnrh) receptor blocker, in patients with prostate cancer

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Introduction and Objective: Degarelix is a GnRH receptor blocker that induces immediate suppression of serum testosterone (T), without T surge. The objective was to evaluate the efficacy and safety of degarelix at 2 different doses by assessment of long-term effects on T and prostate specific antigen (PSA) levels and adverse events (AEs) in patients with prostate cancer (PCa).

Materials and Methods: This 1-year randomized multicentre dose-finding study included 127 patients (median age 76 yr, range 47–93 yr) with histologically confirmed PCa and PSA ≥ 2 ng/mL. Degarelix was administered subcutaneously at an initial dose of 200 mg (40 mg/mL) followed by monthly maintenance doses of 60 or 80 mg (20 mg/mL).

Results: After the initial 200 mg dose, T levels were ≤ 0.5 ng/mL in 88% of patients at day 28 and there was no evidence of testosterone surge. Of the patients with T levels ≤ 0.5 ng/mL at day 28, 98% of those receiving a maintenance dose of 80 mg and 93% of those receiving a maintenance dose of 60 mg had T levels consistently ≤ 0.5 ng/mL from day 28 to day 364. PSA levels were reduced from baseline in both treatment groups. The median PSA reductions were 92% at 8 weeks after starting therapy, 94% at 12 weeks and 96% at 24 weeks. Both doses were associated with a similar frequency and pattern of AEs; the majority were mild to moderate and attributed to hormone deprivation. Six patients withdrew owing to AEs, but only 1 of these (injection site urticaria) was considered related to degarelix administration. No systemic allergic reactions were reported.

Conclusion: Degarelix treatment at a 200 mg starting dose and a subsequent monthly maintenance dose of 80 mg (20 mg/mL) resulted in an immediate, profound and sustained suppression of T (≤ 0.5 ng/mL), and reduced levels of PSA. Degarelix was well-tolerated.

Keywords: ANDROGEN ABLATION, HORMONE THERAPY, PROSTATE CANCER

5*
MP-12.03

A phase II study of sorafenib in combination with bicalutamide in patients with chemotherapy naive hormone refractory prostate cancer (HRPC)

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Introduction and Objective: Sorafenib is a multitargeted kinase inhibitor with activity against Raf and VEGFR. Sorafenib is associated with clinically discordant PSA responses in HRPC as a single agent, possibly owing to effects on PSA production/secretion. Inhibition of the Ras–Raf–MAPK signaling pathway has been associated with restoration of androgen sensitivity in the hormone refractory C4-2 cell line. The objective of this trial was to evaluate the clinical effects of sorafenib in combination with androgen receptor blockade in patients with chemotherapy-naive HRPC.

Materials and Methods: Multicenter phase II study with 2 stage design. Eligible patients had rising PSA > 5, minimal symptoms and had not received bicalutamide in the previous 12 months. Sorafenib 400 mg BID was administered with bicalutamide 50 mg daily on a 28-day cycle. Primary endpoint was PSA response (≥ 50% decline) or stable disease ≥ 6 months, with a 40% rate of response/stable disease considered of interest. Seventeen evaluable patients were to be accrued to the first stage. Patients could continue therapy with rising PSA in the absence of other disease progression.

Results: Twenty patients were enrolled in stage 1. Baseline characteristics: ECOG PS 0:1 in 16:4, median PSA 29 (range 6.5–410), 6 patients

had no metastases, 11 bone, 9 lymph node and 3 visceral. Ten patients had previously received bicalutamide for > 28 days. To date, a median of 3 cycles (range 0–7) have been delivered and 13 patients continue therapy. Related grade 3/4 adverse events: AST/ALT elevations (6 patients), anorexia (2 patients), fatigue (4 patients), muscle weakness (2 patients), skin rash (2 patients), hand–foot syndrome (8 patients). Treatment was stopped owing to AE in 3 patients, PSA progression in 8 patients and radiological/symptomatic progression in 2 patients. One patient died of acute pancreatitis possibly related to sorafenib. PSA declines of ≥ 30% and ≥ 50% have occurred in 8 (40%) and 7 (35%) patients, including patients previously treated with bicalutamide. Median time to PSA response was 1.0 month (range 0.9–2.1 mo).

Conclusion: The combination of bicalutamide and sorafenib is well tolerated. Six patients have had a confirmed PSA response/stable disease, meeting criteria to proceed with the second stage of this study.

Keywords: HORMONE REFRACTORY PROSTATE CANCER, HORMONE THERAPY

MP-12.04

Intermittent androgen deprivation therapy (ADT) in the management of hormone independent prostate cancer (HIPCa): results of a multi-institutional randomized prospective clinical trial

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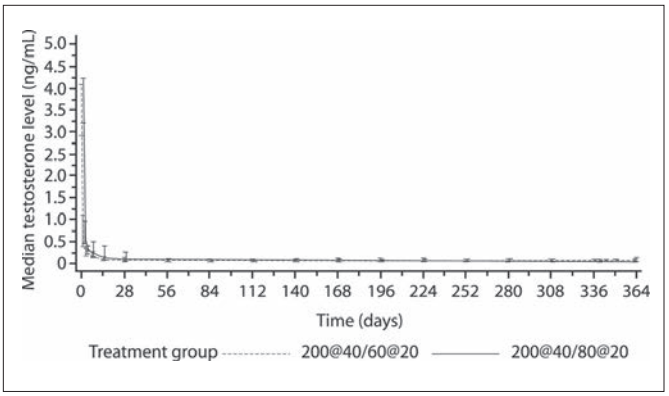
Introduction and Objective: The standard of care for the hormonal management of patients with HIPCa is continuous ADT until death. Whether continuous ADT is still needed in the setting of HIPCa is unknown. Intermittent ADT is widely used in the hormone sensitive setting. This study was designed to measure 1) the rate of recovery of testosterone in this patient population that required LHRHA re-initiation; and 2) overall survival, health related quality of life (QOL) and economic impact, in patients with HIPCa.

Materials and Methods: Patients with HIPCa on ADT with LHRHA from 3 Canadian centres were randomized to continuous (arm 1) or intermittent (arm 2) ADT. Clinical, QOL and biochemical assessments were performed every 2 months. Radiological evaluation, chemotherapy, radiation and best supportive care were provided to patients as per standard of care. ADT was restarted if testosterone reached > 1.75 nmol/L. The calculated sample size was 80 patients. The study was closed when > 50% of patients needed to restart ADT in the intermittent arm. Preliminary results are presented.

Results: Thirty-one patients were accrued from December 2004 to June 2006. Thirteen patients were randomized to arm 1 and 18 to arm 2. One patient from arm 1 withdrew at 14 months. Mean follow-up time to last visit or death was 14.6 months (range 1–24 mo). Ten (55.6%) patients from arm 2 required reinitiation of ADT at a mean time of 9.2 months (range 5–20 mo). Mean time to death for the entire group was 12.6 months (range 1–24 mo). In arm 1, 8/13 (61.5%) patients died at a mean time of 13.6 months (range 1–24 mo). In arm 2, 11/18 (61.1%) patients died at a mean time of 8.5 months (range 2–20 mo) (Fig. 1).



Conclusion: Fifty-five percent of patients who received intermittent ADT required reinitiation of LHRHA at a mean time of 9.2 months. Close monitoring of testosterone is required if this strategy is undertaken. Continued follow-up is required to further interpret the survival data although the same sample size is not large enough for statistical comparison. Accrual to studies that evaluate the use of intermittent ADT in HIPCa is difficult as current chemotherapy trials mandate continuous ADT. QOL and economic impact data for this study are maturing.

Keywords: HORMONE REFRACTORY PROSTATE CANCER, HORMONE THERAPY, PROSTATE CANCER

MP-12.05

Added value of SPECT-TC to ProstaScint imaging for biochemical failure following definitive local prostate cancer therapy

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Introduction and Objective: Hybrid imaging has been shown to play an increasing role inconventional nuclear medicine. We assessed the utility of adding low-dose SPECT-CT to ProstaScint (111In-Capromab pendetide) for biochemical failure following definitive local therapy for prostate cancer (CaP).

Materials and Methods: Thirty-two consecutive CaP patients (mean age 67.4 yr, mean PSA level 4.47 ng/mL) evaluated for biochemical recurrence after definitive therapy. All patients were initially staged according to the NCCN guidelines (v.2.2005). SPECT-CT data were compared to planar/SPECT data in terms of image quality and diagnostic performances for detection of pelvic and (or) extra-pelvic ProstaScint avid-foci. ProstaScint SPECT-CT findings were correlated to the PSA levels, CT/MRI and bone scan results. Impact of ProstaScint PECT-CT imaging on treatment-decision making was evaluated by a prostate cancer ultidisciplinary team. $p < 0.05$ was considered as significant.

Results: In all cases, ProstaScint SPECT imaging combined to a low-dose CT for OSEM-based attenuation correction and anatomic localization significantly improved the image quality and the image interpretation when compared with conventional planar/SPECT imaging alone. ProstaScint SPECT-CT was positive in 25 of 32 patients (78.1%): local pelvic disease alone 17 patients (53.1%), distant extra-pelvic disease alone 4 patients (12.5%), and both pelvic and extra-pelvic disease 4 patients (12.5%). CT/MRI and bone scan were positive in only 20% and 18% of cases, respectively. By the Fisher exact 2-tailed test, the percentages of positive ProstaScint SPECT-CT studies did not significantly differ ($p > 0.9$) between PC patients with PSA levels ≤ 4.0 ng/mL (79.2%) and high-risk patients with PSA levels > 4 ng/mL (80%). In 83.1% of patients, ProstaScint SPECT-CT results had an impact on treatment choices by either guiding local adjuvant postop radiotherapy or obviating invasive local salvage therapy with the associated morbidity.

Conclusion: This experience highlighted the technical and clinical added value provided by ProstaScint SPECT-CT from image interpretation to treatment decision making in patients with biochemical failure following definitive local therapy. Further prospective multicentre studies are needed to further define the role of ProstaScint and ProstaScint SPECT-CT in management of CaP.

Keyword: IMAGING

MP-12.06

Prediction of survival benefit from docetaxel chemotherapy with PSA response and PSA half-life in men with hormone refractory prostate cancer

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Introduction and Objective: To determine if the rate of PSA decline, measured as PSAHL, may aid in predicting survival following docetaxel chemotherapy in men with metastatic hormone refractory prostate cancer (mHRPC). Docetaxel has been shown to prolong survival in men with mHRPC, but this treatment is not without adverse effects and variability in outcomes has been observed. In men with mHRPC, PSA doubling time (PSADT) and PSA response (> 50% decline) following docetaxel have been identified as useful markers of survival, but earlier and more effective clinical predictors of survival following chemotherapy are needed to guide treatment decisions.
Materials and Methods: A retrospective chart review of 154 patients with HRPC treated at the Cross Cancer Institute and Tom Baker Cancer Center from January 2000 to May 2006 was performed. Eligible patients had mHRPC, evidence of metastatic disease and had received at least 1 cycle of docetaxel. At 42 days (postcycle 2) and 90 days (postcycle 4), PSA response and PSAHL were determined for patients with a PSA drop from baseline. Patients were optimally stratified by PSAHL using the log rank χ^2 statistic and Kaplan–Meier curves were used to estimate overall survival in these subgroups.
Results: During the postdocetaxel follow-up period, 54% of patients died and 71% experienced a biochemical failure of docetaxel. The median overall survival from docetaxel initiation was 16 months. At 42 days, no surrogate markers of survival could be identified for any stratification based on PSA response or PSAHL. At 90 days, survival relative to PSA response was confirmed (16 mo v. 22 mo), but PSAHL displayed a substantially greater survival differentiation (15 mo v. 2 5mo). The optimal PSAHL stratification was 70 days. Improved survival in patients with PSAHL < 70 days remained following multivariate analysis (HR 11.84, 2.95–47.50).
Conclusion: In our retrospective analysis of mHRPC treated with docetaxel, no survival difference could be predicted by PSA response or PSAHL at 42 days. At 90 days, a PSAHL < 70 days was associated with a 10 month survival advantage and a PSA response (> 50% decline) was associated with a 6 month survival advantage.
Keywords: CHEMOTHERAPY, HORMONE REFRACTORY PROSTATE CANCER, PSA

MP-12.07

Low usage of docetaxel among patients with metastatic hormone refractory prostate cancer (HRPC): a population-based analysis

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Introduction and Objective: The province of British Columbia (BC) has a population of 4.2 million with universal publicly funded health care delivered across 5 health regions. Docetaxel has been funded as first-line chemotherapy for patients with HRPC since 2004. The objective of this study was to review intraprovincial usage of docetaxel among patients with HRPC.
Materials and Methods: The number of deaths from prostate cancer between Jan. 1, 2001, and Dec. 31, 2004, (data available) was used to extrapolate the number of patients potentially eligible for docetaxel therapy for 2004–2006. Information on patients who had a diagnosis for prostate cancer and had been prescribed docetaxel between Jan. 1, 2004, and Dec. 31, 2006, were extracted from provincial databases.
Results: The average yearly prostate cancer death rate from 2001 to 2004 was 500/year (range 446–545) with a median age of death of 80 years (range 44–101). From 2004 to 2006, 295 patients received docetaxel: median age was 71 (range 43–86) years, median number of cycles was 6 (range 1–13), 92% received treatment 3-weekly, 21% received treatment on a clinical trial and 72% received treatment at a cancer centre. There was an increasing usage over time with the ratio of patients receiving docetaxel to extrapolated potentially eligible patients on a yearly basis being 0.19 in 2004, 0.17 in 2005 and 0.25 in 2006 ($p = 0.004$ χ^2). For the years 2004–2006, there was significant variation in ratio of docetaxel use/extrapolated potentially eligible patients by health region: 0.65 for Vancouver Coastal, 0.30 for Northern, 0.17 for Interior, 0.09 for Vancouver Island and 0.05 for Fraser ($p < 0.001$ χ^2). The Vancouver Coastal region accounted for 55% of the patients treated but represented only 17% of the extrapolated potentially eligible patients in the province. The Vancouver Coastal region also had the highest ratio of oncology specialists to potential patients (med oncologists 0.34, radiation oncologists 0.24, urologists 0.34).
Conclusion: Use of docetaxel for HRPC in BC appears to be in accordance with results from randomized phase III trials. There is, however, evidence of regional disparity and an overall low uptake in the use of docetaxel.
Keywords: CHEMOTHERAPY, HORMONE REFRACTORY PROSTATE CANCER

MP-12.08

Treatment outcome of immediate versus delayed hormone therapy in patients with lymph node metastases following radical prostatectomy

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Introduction and Objective: Early adjuvant androgen deprivation therapy (ADT) was shown to improve survival in patients with lymph node metastases treated by radical prostatectomy (RP). We evaluated the impact of immediate versus delayed until biochemical recurrence ADT on patient outcome according to the extent of nodal involvement.
Materials and Methods: A total of 215 men (mean age 63.4 yr) treated by RP were found to have positive nodes at final pathology: 127 were stage N1 (single microscopic node) and 88 were N2 (more than 1 node). The median follow-up of all patients was 8.7 years (IQR 5.7–11.2). Eighty-six patients were treated with continuous ADT started within 6 weeks following RP while 129 received definitive ADT only at the time of biochemical failure.
Results: In the group with delayed ADT, median time to PSA failure was 5.7 years for patients with N1 and 2.5 years for patients with N2. At 10 years, 32% of the N1patients and 20% of the N2 patients were free from PSA failure. No statistical difference was reached in cancer-specific mortality (CSM) between the early treated ADT (10.5% CSM) and the delayed ADT (9.3% CSM) ($p = 0.79$). To the contrary, mortality for other causes differed significantly between patients treated with continuous ADT (17.4%) and delayed ADT (7%) ($p = 0.02$). At the multivariable analysis adjusted for age, pGleason, pStage and pN stage, continuous ADT was associated with a significantly increased risk of mortality (HR 2.36, $p = 0.006$) and particularly a 4.5 times higher risk of dying from other causes.
Conclusion: Patients with LN metastasis and delayed hormone therapy may have a long-term survival free of PSA recurrence that reached the median of 5.7 years for the N1 and 2.5 years for the N2. At 10 years still 32% of N1 and 20% of N2 were free from PSA recurrence. In this study, no benefit in terms of prostate cancer-specific survival was observed between continuous versus delayed ADT. On the contrary, patients with continuous hormone therapy had 4.53 times higher risk to die from other causes.
Keywords: PROSTATE CANCER

Unmoderated Poster Session 1
June 22, 2008, 1045–1630

UPOS-1.01

Assessment of energy delivery systems for the treatment of benign prostatic hyperplasia (BPH): a meta-analysis of existing randomized controlled trials

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Introduction and Objective: The introduction of 2 new laser therapies for benign prostatic hyperplasia (BPH) (holmium laser ablation of the prostate [HoLAP] and potassium-titanyl-phosphate photoselective laser vaporization of prostate [KTP PVP]) has helped to redevelop interest in minimally invasive treatments of BPH among urologists. Minimally invasive treatments may have less morbidity than transurethral resection of the prostate (TURP) but must provide a durable and significant improvement in voiding. From a government perspective, these may represent attractive alternatives as the usage and costs for alpha-blockers and 5-ARIs have skyrocketed since the release of the Medical Therapy of Prostatic Symptoms (MTOPS) trial. The objective was to conduct a meta-analysis of energy delivery systems for BPH treatment.

Materials and Methods: We performed a systematic review of randomized, controlled trials (RCTs) published from January 2000 to June 2006 comparing minimally invasive procedures for the treatment of BPH to the gold standard, TURP, and conducted a meta-analysis of the results of the RCTs. The primary outcomes were change in symptom score and peak flow rates, with secondary outcomes of OR time, duration of catheterization, length of stay, rate of transfusion, reoperation rate, stricture and sexual dysfunction.

Results: A total of 284 citations were identified and 38 trials met the inclusion criteria. This represented 4043 patients randomized to the new technologies and 1964 to TURP. Meta-analysis results indicated the following: monopolar and bipolar electrovaporization were as effective as TURP, with lower risk of bleeding and TURP syndrome. Visually-guided laser ablation of the prostate (VLAP) and interstitial laser coagulation (ILC) patients had prolonged catheterization, and the VLAP patients had a significantly higher reoperation rate. ILC patients had a higher incidence of urinary tract infection. Holmium laser enucleation of the prostate (HoLEP) was superior to TURP in both changes in symptom scores and flow rates. Transurethral needle ablation (TUNA) and transurethral microwave thermotherapy (TUMT) patients had less improvement in flow rates and symptom scores than TURP and there was a significantly higher reoperation rate with TUNA. TUMT resulted in longer catheterization. One cohort study with short-term follow-up showed that PVP was as effective as TURP with a shorter length of hospital stay and duration of catheterization.

Conclusion: TURP, HoLEP, bipolar or monopolar electrovaporization are appropriate treatments for patients with symptomatic BPH. With longer follow-up studies, PVP should join this group. The use of VLAP, contact laser, ILC, TUMT and TUNA should be re-evaluated by treating physicians.

Keywords: BPH, LASER, META-ANALYSIS

UPOS-1.02

Compliance and short-term results from a novel Web-based system for the evaluation of health related quality of life following laparoscopic radical prostatectomy

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Introduction and Objective: The advent of minimally invasive techniques, including laparoscopic radical prostatectomy (LRP), for prostate cancer has increasingly placed attention on accurately measuring health related quality of life (HRQOL) after therapy. We wish to determine the compliance of patients using a novel Web-based system for measuring HRQOL and evaluate short-term HRQOL following LRP.

Materials and Methods: All patients eligible for a LRP at our centre were approached to participate in this study. The HRQOL assessments evaluated for this study were the Health Status Questionnaire (SF-36), and the Health Utilities Index (HUI-2 and HUI-3). Surveys were performed preoperatively and at 2 weeks, 6 weeks, and 3, 6, 9, 12 and 18 months postoperatively. This study evaluated those patients who have completed 3 months of follow-up.

Results: Overall, 86 patients were eligible and 75 entered into our study. Four of the patients decided not to undergo LRP and 1 patient had treatment elsewhere. Therefore, the overall compliance was 93% (75/81) for those patients who underwent a LRP at our centre. To date, 54 patients have completed 3 months of follow-up. At 3 months, the SF-36 Mental Health domain increased from 82.4 to 86.9 ($p = 0.0157$). The other SF-36 domains, HUI-2 and HUI-3 scores were not statistically significantly different between baseline and 3 months.

Conclusion: The compliance for the use of a Web-based system for measuring HRQOL is excellent. In the future, Web-based follow-up may provide an adjunct to the clinical visit and provide valuable, objective data to the physician. This system should also have positive time and thus cost savings. Furthermore, although urologists often anticipate physical aspects of quality of life changes related to LRP, we have demonstrated that at 3 months, patients have improved mental health compared to baseline.

Keywords: PROSTATE CANCER, QOL, RADICAL PROSTATECTOMY

UPOS-1.03

Cost of treatment of benign prostatic hyperplasia (BPH) in Ontario and implications for policy recommendations

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Introduction and Objective: Newer energy-based technologies may offer advantages in terms of outcome and cost compared with transurethral resection of the prostate (TURP) for the treatment of benign prostatic hyperplasia (BPH). The objective of this economic study was to estimate the cost of treating benign prostatic hyperplasia (BPH) in Ontario as part of a Health Technology Policy Assessment (HTPA) conducted to inform a policy recommendation regarding the treatment of BPH in Ontario.

Materials and Methods: Retrospective analyses of Ontario administrative databases were conducted for the fiscal years 2002, 2003 and 2004. These include the Ontario Drug Benefit Plan for utilization and cost of drugs, Provincial Health Planning Database for the number of procedures and the Ontario Case Costing Initiative for hospital resource utilization and costs. Using a standardized costing methodology, the costs per procedure with TURP and with 9 energy-based interventions for the treatment of BPH were estimated. A budget impact analysis was conducted.

Results: Overall, 95% of the procedures were TURP. During this time period, the total number of surgical procedures for BPH decreased by approximately 500 (from 5471 in fiscal year 2002 to 4974 in fiscal year 2004). At the same time, the utilization of drugs increased by 300%. From fiscal year 2002 to fiscal year 2004, the cost of drugs to the government increased by $10 million while the savings due to a decline in the number of procedures totalled $1.9 million. The cost associated with TURP

was $3887 per procedure and Greenlight PVP was the cheaper alternative ($1184). TUMT was the second cheaper alternative at $1529 per procedure while the cost per procedure associated with other alternatives ranged from $3892 to $4804 per procedure. The incremental budget impact of treatment with PVP resulted in a cost savings of $13.5 million.
Conclusion: Based on this information and on the results of the systematic literature review conducted as part of this HTPA, several recommendations regarding the treatment of BPH were made by the Ontario Health Technology Advisory Committee. This resulted in the conduct of a 2-year nonrandomized prospective trial comparing Ontario TURP with PVP 120 W in terms of effectiveness, complication rates, costs, quality of life and cost-effectiveness.
Keywords: BPH, LASER, TURP

UPOS-1.04

Initial experience with habib bipolar radiofrequency probe for laparoscopic partial nephrectomy: implications for frozen section analysis

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Introduction and Objective: Hemostasis during laparoscopic partial nephrectomy is a challenge. Habib 4X Laparoscopic XL is a 4-pronged bipolar radiofrequency device. Its use has been shown to reduce transfusions in laparoscopic resection of liver lesions. The aim of this pilot study was to evaluate this new technology in laparoscopic partial nephrectomy.
Materials and Methods: Three patients underwent laparoscopic partial nephrectomy without hilar clamping using the Habib device to create an avascular resection margin. The tumours were exophytic ranging from 1.1 cm to 4 cm.
Results: Mean operative time was 150.3 minutes, and mean EBL was 100 mL. The mean preoperative and postoperative creatinine was 1.3 and 1.4, respectively ($p > 0.05$). Hematocrit dropped from a mean of 44.3% preoperatively to a mean of 37.0% postoperatively ($p = 0.02$); none required transfusions. All 3 resected masses were renal cell carcinomas. Intraoperative frozen sections from the centre of the tumour base demonstrated negative margins in all cases, however, in the third case, the permanent section analysis on margins was read as focally positive. There were no intraoperative or postoperative complications. On follow-up with serial axial imaging, there were no recurrences.
Conclusion: The Habib device permits resection of exophytic lesions without the need for hilar clamping. However, cautery artifact can cause difficulty in interpreting frozen section analysis of resection margins. Randomized studies are needed to further evaluate its impact on blood loss and long-term renal function.
Keywords: CANCER, LAPAROSCOPY, PARTIAL NEPHRECTOMY

UPOS-1.05

Transperitoneal laparoscopic repair of a dorsal lumbotomy incisional hernia

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Introduction and Objective: Hernias are a rare complication following muscle-splitting dorsal lumbotomy surgery. There is no recommended approach to treatment. We chose laparoscopy due to the recognized benefits of minimally invasive surgery in the postoperative recovery of the patient.
Materials and Methods: We present details of a case of laproscopic repair of a lumbotomy incisional hernia post donor nephrectomy using a quilted two-layer PTFE mesh.
Results: The procedure was uncomplicated and required 2 hours operating time to complete. A 2-day stay in hospital was observed for convalescence and the patient quickly returned to routine activity post discharge.
Conclusion: Advantages of the laparoscopic approach include excellent visualization and wide coverage of the hernia defect under direct vision. This case illustrates the benefits of laparoscopic repair of a rare lumbotomy complication.
Keywords: DONOR, KIDNEY, LAPAROSCOPY, NEPHRECTOMY, TRANSPLANT

UPOS-1.06

Immunosuppressive monitoring using the ImmuKnow Functional Assay in kidney transplant recipients: a single-centre experience

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Introduction and Objective: Achieving optimal immunosuppression in solid organ transplant recipients is challenging. Currently, immunotherapy is titrated based on toxicity and drug levels, independent of the true immune state. The ImmuKnow assay measures cell-mediated immunity by quantifying ATP release from CD4+ T-cells in peripheral blood. Herein we describe our experience with this assay in a prospective cohort of kidney transplant (KT) recipients.
Materials and Methods: ATP levels were determined at baseline and several postoperative intervals over 2 months in 29 consecutive KT recipients. Values from 30 healthy volunteers and 6 patients with clinically relevant infection or rejection were also obtained. Baseline values were compared with postoperative values in stable patients and those with infection or rejection. Of the prospective cohort, 19/29 received rATG and 4/29 received basiliximab induction. 28/29 patients received tacrolimus-based triple therapy. ATP values were not used to affect patient care.
Results: Mean ATP levels of volunteers and recipients preoperatively were 304 ng/mL and 282 ng/mL, respectively (p = NS). Induced recipients experienced a decline in ATP levels relative to baseline (196 v. 302 ng/mL, $p = 0.05$), whereas noninduced patients showed an increase (257 v. 205 ng/mL, p = NS). There was no relationship between ATP levels and tacrolimus levels. Stable recipients had higher ATP levels than those with infection (268 v. 112 ng/mL, $p < 0.001$), and lower values than those with rejection (268 v. 372 ng/mL, $p = 0.01$). 100% of 9 patients with 11 infectious episodes had ATP levels < 175 ng/mL (mean 112 ng/mL). In contrast, only 25% of stable patients had levels < 175 ng/mL ($p < 0.0001$).
Conclusion: While the predictive value of the ImmuKnow assay is yet to be defined, these results are promising. Low values were significantly associated with infection and high levels with rejection. Studies assessing clinical outcomes based upon alteration of immunotherapy according to ATP levels are warranted.
Keywords: KIDNEY FUNCTION

UPOS-1.07

Prostatitis-like symptoms: prevalence and impact on quality of life in Kenyan youth aged 16–19 years

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Introduction and Objective: This study examined the prevalence of chronic prostatitis-like symptoms and quality of life (QoL) in community dwelling Kenyan youth aged 16–19 years (n = 166) using the National Institutes of Health Chronic Prostatitis Symptom Index (NIH-CPSI).
Materials and Methods: Prostatitis symptom impact on QoL was examined using pain and urinary symptoms as well as depressive symptoms (Patient Health Questionnaire; PHQ) and demographic information. All participants were registered and attending secondary school during the time of survey. The mean age of the sample was 16.97 (SD = 0.88).
Results: Approximately 23.5% pubertal males reported having total pain domain scores of 4 or greater. Using a prostatitis-like symptom case identification the sample prevalence was 13.3% and 9% using a conservative estimate removing males endorsing pain or burning during urination as a potential indicator of STIs. Further, 5.4% of the sample reported moderate to severe prostatitis symptoms which was reduced to 2.4% when urination pain is removed.

Conclusion: Multiple regression analysis showed that school district (Beta = 0.20), depressive symptoms (Beta = 0.18) and pain (Beta = 0.36) predicted poorer QoL and that urinary symptoms did not (Beta = 0.11). These findings will be discussed in light of the current prevalence data, clinical implications and future research.
Keywords: PROSTATE, PROSTATITIS, QOL

UPOS-1.08

Observational study on the implantation of the TVT-SECUR under local anesthesia

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Introduction and Objective: Stress urinary incontinence (SUI) is a common problem, affecting women of all ages. Treatment options for SUI include physiotherapy and surgical interventions, such as retropubic operations and midurethral slings. Conventional retropubic and transobturator tapes are the preferred choice for most surgeons, because of their wide applicability, technical simplicity and clinical efficacy. However, even if their implantation under local anesthesia has been studied and proven relatively safe, this practice has not gained popularity. The new TVT-SECUR shows a potential for implantation under local anesthesia, because of a less invasive technique using minimal vaginal dissection as well as avoidance of retropubic space and obturator fossa. This is a prospective, clinical, noncomparative study with primary objective to observe the satisfaction and short term efficacy of the implantation of the TVT-SECUR under local anesthesia, with the use of questionnaires completed by the patients.
Materials and Methods: Data is collected through 5 questionnaires completed by the patients at baseline, immediately, 1 week, 2 months and 6 months after surgery. Perioperative and postoperative complications are recorded.
Results: Preliminary results on 29 patients with a mean follow-up of 7 months operated from Jan. 23, 2007, to Oct. 23, 2007, using the "Hammock" technique in the first 23 cases and the "U-method" in the last 6 cases. "Visual Analogue Scale" for pain immediately and 1 week after surgery showed a mean score of 15/100 and 25/100 respectively. At 1 week, 2 months and 6 months after surgery, the improvement in SUI symptoms rate was 81% (22/27), 80% (20/25) and 67% (8/12) respectively and the satisfaction rate was 70% (19/27), 72% (18/25) and 75% (9/12). Perioperative complications included 1 urethral laceration and postoperative complications included 1 transient urinary retention as well as 6 partial tape exposures that needed revision in all cases.
Conclusion: The new TVT-SECUR shows a potential for implantation under local anesthesia. However, TVT-SECUR has shown concern regarding improvement in SUI symptoms and complication rate. Refinement of technique may improve cure rate and help lower the number of complications. Long term follow-up is needed.
Keywords: INCONTINENCE, URETHRA, URINARY STRESS INCONTINENCE

UPOS-1.09

An early evaluation of MiniArc: a less invasive sling

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Introduction and Objective: The MiniArc Sling Study is designed to evaluate long-term safety and efficacy for a single-incision sling in female subjects with Stress Urinary Incontinence (SUI). This report includes data for the intra- and perioperative parameters for 81 subjects.
Materials and Methods: This study is a prospective, multicentre, single-arm trial. Eighty-one of 150 subjects have been implanted with the MiniArc sling to date. A single vaginal incision (1.5 cm) is made at the midurethral and the sling (polypropylene monofilament) is placed along the transobturator trajectory into the obturator internus muscles. The intraoperative parameters collected were procedure location, anesthesia, length of stay (LOS), estimated blood loss (EBL), concomitant procedures, pain scores at discharge and immediate postoperative pain medication. Data on voiding, pain, medication utilization and activity level were collected via phone interview of subjects at 7 days postoperatively. MiniArc procedures were performed in an in-office setting in 27 (33%) subjects and in a hospital or an ambulatory surgery centre in the remaining 54 subjects. Local anesthesia (Oral or IV sedation/local injection) was used in 68% of subjects. Mean EBL was 30.4 (SD 31.0) [2.0, 150.0] mL. Concomitant procedures were performed in 27.2% (22/81) subjects. There were no reported intraoperative complications. At discharge, subjects reported a mean pain score of 1.5 (SD 2.3) per Wong-Baker Faces Pain Scale. The mean LOS (defined as time from first procedure medication to discharge) was 9.2 (SD 13.4) hours. Perioperative parameters have been collected in 71 subjects.
Results: Thirty percent of subjects reported no pain medication usage in this period. Ninety-six percent of subjects returned to normal voiding within the first postoperative day and the remaining 3 subjects resumed normal voiding by their 13th day postprocedure. There have been no reported perioperative mesh related complications and no bladder, bowel, urethral or major vessel perforations reported.
Conclusion: This early evaluation suggests that the MiniArc procedure has a limited recovery time, with no serious complications, and limited postoperative pain. These early data suggest potential clinical advantages over more invasive procedures both intra- and perioperatively. Subjects in the MiniArc Study will continue to be followed for 24 months.
Keywords: INCONTINENCE, URETHRA, URINARY STRESS INCONTINENCE

UPOS-1.10

Current practices in pediatric lower urinary tract dysfunction: survey of Canadian pediatric urologists

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Introduction and Objective: Patients with dysfunctional elimination syndromes represent a significant proportion of referrals to pediatric urology clinics. However, several controversies surrounding these syndromes remain. We aimed to assess current practice by Canadian pediatric urologists in regard to practice pattern, diagnosis, investigation and management of children with lower urinary tract dysfunction.
Materials and Methods: A 15-question survey was formulated. Respondents were asked to exclude patients with monosymptomatic nocturnal enuresis. Surveys were emailed to all members of the Pediatric Urologists of Canada (PUC).
Results: Eighteen completed surveys were received (response rate 60%). All respondents accepted referrals for lower urinary tract dysfunction. There were 12/18 who did not have specialized clinics for lower urinary tract dysfunction, but 10/18 had nurse clinicians or nurse practitioners to assist in management. Biofeedback was used by 11/18 respondents. Voiding diaries and postvoid residuals (bladder scans) were the primary tools of investigation for more than one-half of the respondents. There was less concordance as to the use of uroflowmetry, renal ultrasound, urinalysis and urine cultures. MRI, VCUG were used rarely (< 10% of the time). The main indication for MRI investigation was abnormal physical findings. There were 15/18 respondents who would pursue urodynamic studies for various indications. More than 80% of respondents used timed voiding schedules, dietary changes and patient instruction pamphlets as initial treatment strategies. The primary indication to use anticholinergics was irritative symptoms. Alpha blockers were used by 10/18 for high postvoid residual or abnormal urodynamics (failure to empty). Alpha-blocker therapy with obstructive lower urinary tract symptoms alone was chosen by 7/18 to start.
Conclusion: Although there is consensus among pediatric urologists as to investigation and treatment, there are still aspects which require more research, such as using biofeedback and alpha blockers.
Keywords: BLADDER, INCONTINENCE

UPOS-1.11

A case–control study comparing the sensitivity of the ultrasound to renal scan in children at risk for renal damage

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Introduction and Objective: Children presenting with febrile urinary tract infections are at risk for progressive renal damage and are often screened with an ultrasound to detect renal parenchymal defects or anatomic findings including hydronephrosis. Our objective was to investigate the sensitivity and specificity of the renal bladder ultrasound in comparison to the Tc 99m dimercaptosuccinic acid (DMSA) scan in children at risk for renal damage.
Materials and Methods: Ninety patients under the age of 18 were studied who underwent an ultrasound and DMSA scan, within a 6-month interval. Cases and controls were defined by an abnormal or normal DMSA scan, using this as the gold standard. Ultrasounds were reviewed to determine the sensitivity, specificity, positive predictive value and negative predictive value first, for purely renal parenchymal defects, and second, for any abnormality (including size and hydronephrosis in addition to parenchymal defects).
Results: When ultrasound was used to detect any anomalies, including renal damage and hydronephrosis, it had a sensitivity of 56.7%, specificity of 63.3%, positive predictive value (PPV) of 75.6% and a negative predictive value (NPV) of 42.2%. When used to detect only renal parenchymal damage, ultrasound had a sensitivity of 25%, specificity of 86.7%, PPV of 78.9% and NPV of 36.6%.
Conclusion: Our results suggest that the sensitivity and specificity of the ultrasound is poor and the renal scan should be strongly considered in children when there is significant concern for renal damage.
Keywords: IMAGING, KIDNEY FUNCTION, ULTRASOUND

UPOS-1.12

A mathematical model to predict penile shortening after dorsal plication in hypospadias repair

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Introduction and Objective: Ventral curvature is a defined component of hypospadias anomaly. Among corrective surgical techniques dorsal plication (DP) is favoured by many, especially for mild–moderate curvature. However, anticipated penile shortening (PS) may discourage surgeons from employing DP, particularly in patients with moderate–severe curvature or small penises. No previous studies have looked into prediction of the PS degree after DP. Herein, we propose a nomogram based on a mathematical model to predict PS after DP and verify its validity on a prospective single-centre pediatric cohort.

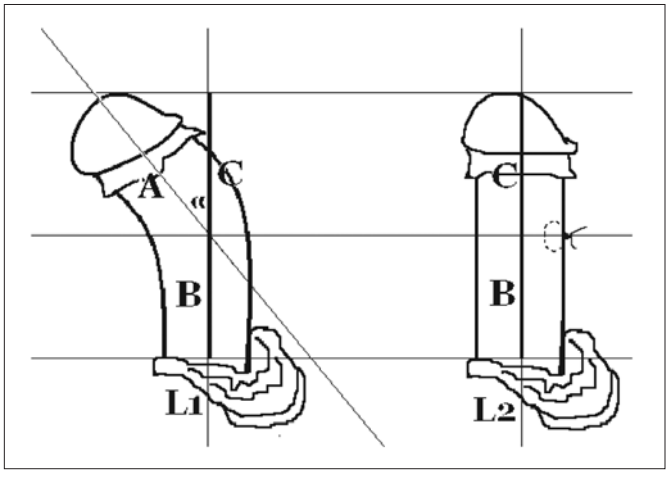

Fig. 1. Derivation of formula shortening Δ(delta)L = L1–L2 = A (1-cos α[alpha]) where A is length from glans to point of maximal curvature and α(alpha) is chordee angle.

Materials and Methods: Over a 6-month period, 100 consecutive patients undergoing hypospadias repair were enrolled. Intraoperative data, including digital photography with erection tests, was recorded. DP was performed based on surgeon preference. Following trigonometry principles a model to calculate PS was formulated (Fig. 1). Measured PS, (L1-L2) utilizing pre- and post-DP photographs, and calculated PS, utilizing the proposed formula, were compared.
Results: Erection test was done on 82 patients. Of those, 38 had straight erections, 27 had mild curvature improving on degloving and 17 had further straightening techniques (13 DP, 2 ventral lengthening and 2 fairy cuts). Measurement was technically possible in 7 patients undergoing DP. Measured and calculated PS values were highly correlated in linear regression analysis (Pearson coefficient = 0.992, $p < 0.01$). A penile shortening nomogram was constructed (Fig. 2).

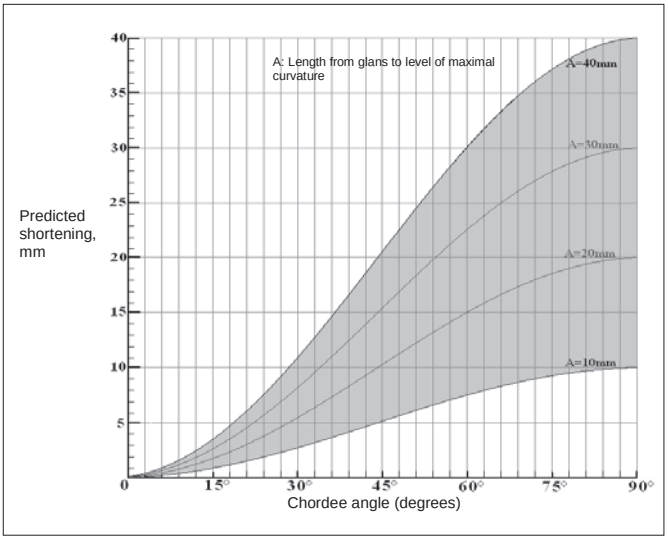

Fig. 2. Penile shortening nomogram.

Conclusion: This mathematical model provides a predictive nomogram for PS after DP. Shortening appears to rely on degree of curvature and the penile length. With further validation the model has potential clinical applicability.
Keyword: RECONSTRUCTION

UPOS-1.13

Retrospective review of pediatric stented and unstented distal hypospadias repairs

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Introduction and Objective: Hypospadias surgery can result in troublesome complications that may require frequent hospital visits and possible revision surgery. Many pediatric urologists use urethral stents in an effort to prevent these complications, however stents can cause bladder symptoms and are difficult for parents to handle. Our objective was to determine whether patient outcomes are better following distal hypospadias repair with the use of a urethral stent.
Materials and Methods: This is a retrospective cohort study of consecutive pediatric (age < 16 yr) patients who had their initial distal hypospadias repair at the University of Alberta Hospital. Patient age, follow-up time, length of hospital stay, length of catheterization, type of operation, and early and late complications were recorded. Statistical analysis was completed with the Fisher's exact test.
Results: A total of 57 children were evaluated in this study. Average follow-up time was 8 months (stented) and 14 months (nonstented). Median

age at surgery was 12 months (stented) and 9 months (nonstented). The rate of urethrocutaneous fistula differed significantly ($p = 0.01$) between stented (3 of 38 [8%]) and nonstented (9 of 19 [47%]) distal hypospadias repairs. There was no significant difference in the rate of meatal stenosis (3 of 38 [8%]) stented and 2 of 19 (11%) nonstented ($p = 0.79$), dehiscence (5 of 38 [13%]) stented and 1 of 19 (5%) nonstented ($p = 0.37$) or urinary retention (3 of 38 [8%]) stented and 1 of 19 (5%) nonstented ($p = 0.60$). At least 1 complication occurred in 13 of 38 (34%) stented hypospadias repairs, while 13 of 19 (69%) occurred in the nonstented group ($p = 0.11$). The average length of stenting was 8 days.
Conclusion: A statistically significant difference was noted in the rate of urethrocutaneous fistula between the stented and nonstented distal hypospadias repair, with the rate being less in the stented hypospadias repair. All other complications did not differ significantly between the 2 groups. Based on these results we feel that all distal hypospadias repairs should be stented in pediatric patients.
Keywords: PEDIATRIC, URETHRA

UPOS-1.14

Circumcision practices of pediatric urologists in Canada

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Introduction and Objective: To gather data regarding the practices of pediatric urologists in Canada with respect to foreskin care and management.
Materials and Methods: An online survey was generated and distributed to the 32 active members of the Pediatric Urologists of Canada. It consisted of 12 questions, and included topics relating to circumcision practices, as well as clinical vignettes of foreskin-related conditions. The clinical scenarios were meant to present commonly encountered reasons for referral, including persistent phimosis, balanitis xerotica obliterans (BXO) and foreskin ballooning.
Results: A total of 24 out of 32 (75%) physicians responded. All but 1 of the pediatric urologists that responded do not perform routine neonatal circumcisions. As for elective circumcisions under general anaesthesia, 63% of urologists perform them at least occasionally, primarily for religious or cultural purposes. The fee for elective circumcisions varied widely, costing the patient anywhere from $0 to greater than $1000. Scenarios describing a physiological phimosis in both a 6- and a 10-year-old were unanimously managed without circumcision; however, topical steroids were often recommended. Conversely, in the scenario involving a child with BXO, all of the responders would intervene, with the majority of responders opting for a circumcision or dorsal slit. With respect to painless foreskin ballooning, the responses were evenly split between prescribing topical steroids versus reassurance and no treatment. None of the physicians felt a circumcision or dorsal slit was needed.
Conclusion: The survey results indicate that the vast majority of pediatric urologists in Canada favour a very conservative approach to the management and care of the foreskin. The results of this survey will be a helpful additional resource with regard to knowledge of foreskin care, and the differentiation of pathological versus physiological processes. A greater understanding of foreskin health will ultimately help to minimize patient, family and primary care physician anxiety. Hopefully, we may reduce the number of nonsurgical referrals and improve access for other genitourinary disorders.
Keyword: CIRCUMCISION

UPOS-1.15

Identifying and predicting cases at risk for fistula formation in distal hypospadias repair: impact of prospectively recorded surgeon impressions

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Introduction and Objective: Urethrocutaneous fistula (UCF) is the most common complication following distal hypospadias repair. Older patient age, poor quality of the urethral plate (UP) and technical factors have been previously related to fistula formation. We sought to analyze factors associated with fistula development and assessed the surgeon's ability to predict cases at risk for complications.
Materials and Methods: We reviewed 103 consecutive boys with distal hypospadias who underwent tubularized incised plate repair by a single surgeon over a 3-year period. Data on patient age, ventral skin deficiency (VSD), quality of the UP, ventral curvature (VC), spongioplasty, urethroplasty technique (1- v. 2-layer closure) and dartos flap coverage were retrospectively collected. Poor quality UP was defined as narrow, shallow or inelastic plate, and noted down intraoperatively by the surgeon. Fistula rate was analyzed for each variable separately. Surgeon impressions were *prospectively* recorded, and cases thought to be at high risk for UCF were flagged.
Results: Median age at surgery was 12 months (7–204 mo). Spongioplasty was carried out in all children. Overall fistula rate was 5.8% (6/103) after a mean follow-up of 13 months (6–30 mo). Of the 6 UCFs, 3 occurred in patients older than 46 months (1 also had poor UP) and 3 in boys with no dartos coverage (1 also had poor UP). The operating surgeon correctly predicted 5 of 6 UCFs (3 with no dartos and 2 with poor UP). The positive and negative predictive values for surgeon impression were 83% and 99% respectively (Table 1).

Abstract 15. Table 1.

	Fistula rate		
Variables	*n* = 6/103	%	*p* value
Age > 18 months	4/27	14.8	0.02
Age < 18 months	2/76	2.6	
2-layer urethroplasty	0/26	0	0.14
1-layer urethroplasty	6/77	7.8	
Poor UP	2/18	11.1	0.29
Good UP	4/85	4.7	
Absence of dartos coverage	3/3	100	< 0.01
Dartos flap coverage	3/100	3.0	
	Final outcome		
Surgeon impression	Fistula	No fistula	Total
at risk for fistula	5	1	6
not at risk for fistula	1	96	97

Conclusion: Age > 18 months and absence of neourethra coverage with dartos flap were associated with a higher fistula rate. In this series, poor UP and 2-layer urethroplasty did not seem to affect hypospadias outcome. An experienced surgeon may accurately predict most fistula cases and precisely anticipate a favourable outcome.
Keywords: PEDIATRIC, RECONSTRUCTION

UPOS-1.16

How often should simple renal cysts be followed in the pediatric population?

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Introduction and Objective: Although no guidelines exist, pediatric renal cysts are usually followed closely for cyst growth, adverse transformation and new cyst formation, which might herald polycystic kidney disease. This study assesses the natural history of incidentally detected simple renal cysts in pediatric patients.
Materials and Methods: A retrospective analysis of patients followed with ultrasound for simple renal cyst within a 5-year period. Exclusion criteria included initially abnormal renal function, dysplastic kidneys and known polycystic kidney disease.

Results: Eighteen patients (9 boys) median age of 5.4 years (1st IQ: 2.9, 3rd IQ: 9.7; numbers in subsequent parentheses signify first and third quartiles) were followed for a median of 34 months (20, 50). Median initial size of the simple renal cysts was 1.0 cm (0.8, 1.5), the ipsilateral kidney 8.2 cm (7.2, 9.3) and the contralateral kidney 8.5 cm (7.2, 9.0). There were 11/18 (61%) right-sided and 7/18 (39%) left-sided cysts. Hydronephrosis was detected in 4 ipsilateral kidneys and resolved in all children. Median growth of the cyst was 0.05 cm (–0.08, 0.48), ipsilateral kidney 1.5 cm (0.7, 1.8) and contralateral kidney 1.3 cm (0.5, 1.7). The proportional growth of cyst to ipsilateral kidney over the study period was a median of 0.05 (0.0, 0.3). There was no development of polycystic kidney disease, renal disease or malignant cyst transformation.
Conclusion: To our knowledge, this is the longest follow-up in any study of pediatric simple renal cysts. No adverse transformation was observed in a median of 34-month follow up. Thus, routine interval follow-up can be safely extended to a minimum of 18 months. Extended prospective observational studies are needed to further elucidate the natural history of simple renal cysts in children.
Keywords: SCREENING, ULTRASOUND

UPOS-1.17

Pediatric bladder augmentation: a single centre's experience

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Introduction and Objective: To review our experience with bladder augmentation procedures in the pediatric population, and to evaluate the complication rate post bladder augmentation surgery.
Materials and Methods: An IRB-approved retrospective chart review was performed on all patients who had undergone bladder augmentation procedures at CHEO between 1990 and 2007.
Results: A total of 50 bladder augmentation procedures were performed in 47 patients (22 females, 25 males, mean age 9.8 years). Bowel segments used were: ileum in 43 (86%), and 1 each (2%) of ileum/cecum, stomach and colon. One ureterocystoplasy (2%) was performed. Twenty patients had continent catheterizable stomas constructed. Complications were: return to OR in 13 (28%), stone formation in 4 (9%), perforation in 3 (6%), renal deterioration in 2 (4%), wound infection in 2 (4%). Complications involving electrolyte abnormalities, hematuria, worsening hydronephrosis, and early postoperative extravasation were each observed in 2 patients (4%). Catheterizable channel complications occurred in 5 of 20 patients (25%). No malignancies were identified. Twenty-four patients (51%) were treated for symptomatic urinary tract infections. Mean follow-up was 56.2 months.
Conclusion: Postoperative cystograms may not be necessary, as the rate of extravasation is low. With regular irrigation and frequent catheterizations, the incidence of stone formation and spontaneous perforation is low. Patients who are undergoing continent diversion must be aware of the possibility of requiring surgical revision. Although no malignancies were identified, this may be due to our relatively short follow-up. The concern for developing malignancy warrants regular endoscopic evaluation.
Keywords: BLADDER, PEDIATRIC, RECONSTRUCTION

UPOS-1.18

Vesicoureteral reflux: a 9-year institutional experience

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Introduction and Objective: The aim of the study was to evaluate our demographics, associated anomalies, clinical features, incidence of renal scarring, management, outcome and follow-up with drop-out rate.
Materials and Methods: Retrospective chart review for paediatric patients diagnosed as Vesicoureteric reflux at our institution (King Abdulaziz Medical City, Jeddah), over a 9-year period (1995–2005).
Results: We identified 123 refluxing renal units from 84 patients; 45 patients were male (53.6%), and 39 were female (46.4%). Frequency of grade 1, 2, 3, 4 and 5 were 7 units (5.69%), 22 units (17.89%), 32 units (26.02%), 34 units (27.64%) and 28 units (22.76%) respectively. Associated anomalies were identified in 55 patients (65.47%). Eighty-seven renal units were examined in initial evaluation with static nuclear scan (DMSA) initial scarring was identified in 34 renal units (39.08%), 22 renal units (25.29%) developed renal scarring during follow-up. Fifteen patients (17.86%) developed renal impairment. Surgical correction of reflux disease was done in 21 patients (25%). Fifty-four patients were managed conservatively with prophylactic antibiotics resulting in spontaneous resolution in 22 patients (40.74%), improvement in 15 patients (27.78%), with persistence in 14 patients (25.93%) and worsening of reflux disease in 3 patients (5.55%). Twenty-two patients failed to continue follow-up (drop-out rate 26.2%).
Conclusion: Vesicoureteric reflux is one of the most common congenital anomalies with important clinical implications. In comparison to the world literature, this study shows an alarmingly high incidence of high grade reflux disease thus warranting a very aggressive and sustained effort to screen for VUR.
Keywords: PEDIATRIC, RENAL FAILURE, VESICOURETERIC REFLUX

UPOS-1.19

An alternative access technique for percutaneous cystolithotomy in the reconstructed urinary bladder

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Introduction and Objective: To report an alternative access technique using a laparoscopic balloon port for the percutaneous removal of bladder calculi in the reconstructed urinary bladder.
Materials and Method: A 15-year-old girl with a history of bladder extrophy, Young-Dees bladder neck reconstruction, and an appendicovesicostomy presented with a 2-cm bladder calculus. Endoscopic treatment via the urethra or Mitrofanoff channel was not technically feasible due to the small luminal diameter. Percutaneous access was established using 12-mm laparoscopic balloon port placed under cystoscopic guidance. We find the technique expedites fragment removal, and more importantly, eliminates the danger of loss of access during the procedure.
Results: A 2-cm stone burden was easily removed within a surgical time of 45 minutes.
Conclusion: Percutaneous cystolithotomy using a laparoscopic balloon access port is an efficient and minimally invasive technique for managing bladder calculi in the reconstructed urinary bladder.
Keywords: BLADDER, EXSTROPHY, PERCUTANEOUS

UPOS-1.20

Current indications and surgical approach for simple nephrectomy in children

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Introduction and Objective: There may be a trend towards performing more nephrectomies for unilateral nonfunctioning kidney in children, yet the demographic composition and the reported indications for nephrectomy are unknown. Herein, we evaluate the predisposing diagnoses for simple nephrectomy in a pediatric tertiary care centre.
Materials and Methods: Over a 7.5-year period, patients who underwent nephrectomy were retrospectively evaluated. Age at surgery, function and approach were recorded. Patients with tumour, ESRD, kidney donors or undergoing partial nephrectomy were excluded.
Results: Of 352 patients undergoing nephrectomy, 89 (25.3%) had unilateral poorly functioning kidney. Mean age was 4.9 years (1.5 mo–16 yr). Mean nuclear scan split function 4.25% (0%–15%). 72% of patients had a laparoscopic nephrectomy (4.5% conversion) (Table 1).
Conclusion: With increasing adoption of laparoscopy as a minimally invasive treatment modality, laparoscopic simple nephrectomy for poorly functioning kidney is commonly performed, accounting for quarter the total load of nephrectomy in one tertiary pediatric centre. Various etiologies of poor function, most commonly MCDK, with variable clinical presentations are encountered.
Keywords: KIDNEY FUNCTION

Abstract 20. Table 1.

Primary etiology of non-function	No. of pts. (%)	Reported indication for nephrectomy (%)
Multicystic dysplastic kidney (MCDK)	34 (38.2)	Persistent cysts (58.8)
		Associated megaureter (8.8)
		Associated reflux (5.8)
		Suspicious parenchyma (5.8)
		Infection (5.8)
		Hypertension (HTN) (5.8)
		Preop UPJO diagnosis (5.8)
		Hemorrhage into cyst (2.9)
Vesicoureteral reflux	17 (19.1)	Infection (70.5)
		HTN (29.5)
Ureteropelvic junction obstruction (UPJO)	15 (16.9)	Pain (33.3)
		Obstruction (26.7)
		Infection (20)
		HTN (13.3)
		Urinoma (6.7)
Neonatal renovascular thrombosis	6 (6.7)	HTN (100)
Pyelonephritis/ pyonephrosis	5 (5.6)	Infection (80)
		Stones (20)
Obstructed megaureter	3 (3.4)	Obstruction (100)
Duplex system	3 (3.4)	HTN (66.7)
		Obstruction (33.3)
Unknown	3 (3.4)	HTN (33.3)
		Obstruction (33.3)
		Infection (33.3)
Ectopic ureter	2 (2.2)	Incontinence (100)
Iatrogenic UVJO post-reimplant	1 (1.1)	Obstruction (100)
	89 (100)	

UPOS-1.21

Anterior urethral valves and congenital urethral diverticula: uncommon causes of urethral obstruction

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Introduction and Objective: Congenital anterior urethral diverticula (CAUD) and anterior urethral valves (AUVs) are rare congenital anomalies that may be difficult to diagnose and may lead to end stage renal disease. Although isolated AUVs have been portrayed in limited case reports, numerous studies still consider that both entities represent the same pathology. The aim of this work was to try to distinguish both entities and present for the first time case series of isolated AUVs and a case report of a CAUD.

Materials and Methods: We retrospectively reviewed hospital charts of all boys diagnosed with AUVs and/or CAUD in the Montreal Children's Hospital between1995 and 2006. We then reviewed all case reports described in the English literature.

Results: A total of 8 boys were included in this report. Mean age at treatment was 2.6 years. Patients presented with urosepsis, dysuria, weak stream and/or failure to thrive. Seven boys (87.5%) were found to have isolated AUV and 1 (12.5%) had CAUD. Diagnosis was made by VCUG in 7 patients and on cystoscopy alone in 1 patient. Six boys (75%) had hydronephrosis and 5 (62.5%) had vesicoureteral reflux. All patients were treated by endoscopic fulguration. All 7 boys with isolated AUVs had no complications related to the procedure and voided normally after valve ablation. The upper tract improved in all 7 patients. The boy with the diverticulum developed an annular stricture that necessitated further endoscopic incision. He still has residual hydronephrosis.

Conclusion: We believe that AUVs and CAUD represent 2 separate and distinct pathologies. To date, VCUG and cystoscopy are the key to diagnosis. Endoscopic ablation is the preferred treatment modality for AUVs.

Keywords: CYSTOSCOPY, PEDIATRIC, URETHRA

Unmoderated Poster Session 2
June 23, 2008, 0900–1630

UPOS-2.01

A population-based evaluation of quality indicators for prostate cancer surgery

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Introduction and Objective: The ability to monitor the quality of health care systems is often impeded by a lack of reliable and valid data for measuring quality and a failure to control for patient characteristics. Efforts to address the quality of prostate cancer care has suffered from a lack of high-quality evidence on the feasibility, reliability and validity of many proposed indicators, undermining their use for distinguishing between good- and poor-quality surgery and their application to the quality-of-care process. In a large population-based study in Ontario, we investigated whether a number of radical prostatectomy quality indicators can be assessed using information captured from patient charts and whether certain indicators are valid in distinguishing quality.

Materials and Methods: This was a retrospective cohort study that used chart-based data collected previously for a study whose objectives included an exploration of practice variations and their impact. From a stratified, random sample of patients from a cancer database, 645 were identified having had a radical prostatectomy for localized prostate cancer. Extensive data were collected by chart review from multiple sources including the treating hospital, cancer centre and from physician's charts. We used hospital prostatectomy volume, a surrogate measure of surgeon experience and an accepted structural indicator of the quality of surgical care to test the convergent construct validity of a group of candidate quality indicators. We also investigated whether selected explanatory variables, including age, comorbidity, socioeconomic status and disease severity account for some of the observed associations.

Results: We demonstrated convergent construct validity for number of units of blood transfused, length of hospital stay and use of a nerve-sparing surgical technique providing evidence that these may be valid surgical quality indicators for quality assessment purposes. A number of other previously identified quality indicators were not found to be feasible owing to problems with missing information despite the extensive chart review, including undetectable postoperative PSA, biochemical disease-free survival and urinary incontinence. Although, it was not possible to determine the construct validity of positive margins, it is interesting that lower volume hospitals were more likely to have missing documentation of margin status.

Conclusion: In this population-based study, we have demonstrated the validity of a number of indicators of quality care for radical prostatectomy, which may aid providers and quality councils to more effectively identify problems and guide change in the management of early prostate cancer.

Keywords: RADICAL PROSTATECTOMY

UPOS-2.02

Critical assesement of tools to predict clinically insignificant prostate cancer at radical prostatectomy in contemporary men

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Introduction and Objective: The notion of active surveillance was validated in several contemporary reports. We tested the ability of statistical models to identify patients who could safely qualify for this management option.

Materials and Methods: In a cohort of 1132 patients, a nomogram was developed to predict the probability of insignificant prostate cancer (IPCa). Predictors consisted of PSA, clinical stage, biopsy Gleason scores, core cancer length and percentage of positive biopsy cores (% positive cores). IPCa was defined as organ confined PCa with tumour volume < 0.5 mL and without Gleason 4 or 5 patterns. Finally, an external validation in 900 patients of the most accurate Kattan et al. nomogram version predicting IPCa was performed to compare its accuracy to the newly developed model and to test various nomogram probability cut offs.

Results: IPCa was pathologically confirmed in 65 men (5.7%). The 200 bootstrap-corrected predictive accuracy of the nomogram was 90% versus 81% for the Kattan et al. nomogram. A probability cut off of 10% for the newly developed model versus the Kattan et al. nomogram correctly identified only 52/65 (80%) versus 39/51 (76.5%) of the patients with pathological IPCa, whereas, respectively, 138/1067 (12.9%) and 213/849 (25.1%) of individuals with pathological significant disease would have incorrectly been qualified as having IPCa.

Conclusion: Our work suggests that statistical models are not capable of accurately discriminating between those fit for active surveillance and those who merit definitive therapy, as too many patients with aggressive variants of PCa are qualified as clinically insignificant by these models.

Keywords: PROGNOSTIC MARKER, PROSTATE CANCER, RISK FACTORS

UPOS-2.03

Table 1. Abstract 3.

Variable	SRP	PRRP
Previous TURPs, no.	1	8
Preoperative PSA	4.6 (2.6–7.3)	9.1 (1.1–25)
Mean operating time, min	158 (135–181)	168 (90–240)
Perioperative mortality	None	None
Intraoperative complications, no. (and %)	None	2(1.3)(1 ureteric injury and 1 rectal injury both treated by primary repair)
Postoperative complications	None	3(2.6) (1 Ileus, 1 pulmonary embolism and 1 *C.difficile* diarrhea)
Perioperative blood transfusion	None	15 patients(13%)
Average hospital stay, d	5	6
Catheterization time, d	14	14
Negative surgical margins, no. (and %)	4 (50)	92 (80)
Mean maximum follow-up, mo	9	17.4
Anastomotic strictures	None	4 (treated by single dilation under local anaesthesia.)
Continence at 3 mo, no. (and %)	7 (87)	105 (91)
Continence at last follow-up, no. (and %)	7 (87)	114 (99)
PSA recurrence free, no. (and %)	7(87)	112(97)

Salvage radical prostatectomy: an evolving single surgeon experience

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Introduction and Objective: In this case series, we present a single surgeon's evolving experience with salvage radical prostatectomies (SRP) and compared it with primary radical retropubic prostatectomies (PRRP) performed by the same surgeon.
Materials and Methods: From February 2003 to August 2007, 123 patients were subjected to radical prostatectomies by the same surgeon. Of these, 115 patients (mean age 62 yr) had PRRPs and 8 patients (mean age 65 yr) had SRPs. All patients undergoing SRPs had external beam radiotherapy with curative intent in the past, biopsy proven recurrent disease and rising PSA, with PSA profile suggestive of localized recurrence. Among the SRP group, mean preradiation PSA was 10.6 (range 4.5–20) and mean interval from radiotherapy to repeat biopsy was 64.6 months (range 39–120 mo).
Results: The results are shown in Table 1.
Conclusion: The results of our small series suggest that salvage radical prostatectomy is a technically challenging procedure, but in appropriately selected patients and in experienced hands, this is an effective and safe technique. A larger sample size and a longer follow-up are needed to assess the oncological outcome of this procedure.
Keywords: PROSTATE, PROSTATE CANCER, RADICAL PROSTATECTOMY

UPOS-2.04

Transversus abdominis plane (TAP) block after radical prostatectomy: initial experience

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Introduction and Objective: Adequate non-narcotic pain control after radical prostatectomy improves perioperative outcomes and reduces length of patient's stay. We have previously reported a postoperative pathway is effective in achieving the above goals (McLellan et al. *CJU* 2006,Oct;13). Regional anesthesia is efficient but adds anesthetic complexity and time. The transversus abdominis plane (TAP) block is a recently described method of providing postoperative analgesia in patients undergoing lower abdominal wall incisions. We report our initial experience with its analgesic efficacy over the first 24 postoperative hours after open radical prostatectomy.
Materials and Methods: Ten patients undergoing radical prostatectomy underwent TAP block with ultrasound guidance at the completion of the surgical procedure. Bilateral TAP block was performed using 20 mL of 0.25% bupivacaine. The patients then entered our clinical pathway with breakthrough analgesia controlled through use of regular ibuprofen and acetaminophen and narcotic supplementation as required. Each patient was assessed postoperatively for breakthrough supplementary narcotic use.
Results: The TAP block with bupivacaine provided satisfactory postoperative analgesia in the first 24 postoperative hours with most patients avoiding narcotic use completely. This technique is easily learned, rapid and can be done with or without ultrasound guidance. No complications were attributable to the TAP block. Ultrasound guided and intraoperative TAP block will be illustrated.
Conclusion: The TAP block, as a component of a multimodal analgesic regimen, provided adequate analgesia following open radical prostatectomy.
Keywords: ANALGESIA, PROSTATE CANCER, RADICAL PROSTATECTOMY

UPOS-2.05

PSA density improves the ability to predict the presence of cancer at extended initial biopsy: results of a predictive accuracy analysis

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Introduction and Objective: Prostate volume has been shown to be an independent predictor of prostate cancer detection. We tested the ability of the combined effect of PSA and prostate volume (PSA density) to improve the prediction of prostate cancer prevalence at initial extended biopsy.
Materials and Methods: At 2 different institutions, 2913 extended prostate biopsies were performed for suspected prostate cancer. Age, digital rectal examination, PSA, %fPSA and PSA density adjusted for sampling density were tested in univariable and multivariable logistic regression models to predict the presence of prostate cancer at biopsy.
Results: Prostate cancer was detected in 1162 (39.9%) patients. All the tested variables represented independent predictors of prostate cancer in multivariable analyses. PSA density represented the most informative predictor of prostate cancer at initial biopsy. Table 1 shows the accuracy of various models predicting prostate cancer at biopsy. After adjusting for sampling density, a model relying on age, DRE, PSA and %fPSA was 71.3% accurate. The addition of PSA density to this model resulted in a 2% gain in predictive accuracy ($p < 0.0001$).

Table 1. Abstract 5.

Model	Predictive accuracy, %
PSA (univariable)	57.9
&fPSA (univariable)	66.5
PSA density (univariable)	67.5
Age, DRE, PSA, sampling density	68.8
Age, DRE, PSA density, sampling density	71.1
Age, DRE, PSA, PSA density, sampling density	71.9
Age, DRE, PSA, %fPSA, sampling density	71.7
Age, DRE, PSA, %fPSA, PSA density, sampling density	73.7

Conclusion: PSA density represents an independent predictor of prostate cancer at initial extended prostate biopsy. The initial management of patients with suspected prostate cancer should account for prostate volume.
Keywords: BIOPSY, PROSTATE CANCER, PSA

UPOS-2.06

Classical neural networks do not perform better than logistic regression for predicting prostate cancer

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Introduction and Objective: Complex models that utilize multiple inputs to derive a risk assessment can greatly benefit the clinical setting of prostate cancer (PCA) detection where the major focus has been on PSA and its variants. Two primary techniques have been used to assess the impact of multiple variables on outcome: regression and neural networks. Although regression is inherently more "understandable," neural networks are superior in many health care settings. This study develops competing classical neural network (CNN) and logistic regression (LR) models for the prediction of PCA.
Materials and Methods: Men undergoing TRUS guided biopsy (BX) at University Health Network between 2000 and 2006 were selected from the BX quality assurance database ($n = 3025$). An LR model and a 3-layer CNN were developed to predict the likelihood that a BX is positive for PCA. Predictors were age, PSA, DRE, positive TRUS, TRUS prostate volume and whether the BX was extended pattern (≥ 10 cores).
Results: Forty-one percent had PCA. Median age, PSA and prostate volume were 64 years, 5.7 and 50.1 mL, respectively. TRUS was positive in 47% of patients and DRE positive in 39%. Using LR, all variables, except DRE and BX pattern were significantly predictive of PCA (Table 1).

Table 1. Abstract 6.

Variable	Age	PSA	Volume	TRUS	DRE	Ext BX
OR*	1.7	1.6	0.30	2.5	1.1	1.2
95% CI	1.5–1.9	1.4–1.8	0.26–0.34	2.1–2.9	0.9–1.3	0.97–1.6
p value	< 0.001	< 0.001	< 0.001	< 0.001	0.22	0.09

*OR: increase in odds of PCA; change for age, PSA and volume expressed over the interquartile range.

Increasing age and PSA, decreasing prostate volume and positive TRUS were strongly associated with increased likelihood of a positive BX. The overall fit for the model was c statistic 0.76, R^2 = 25.7. The CNN provided an equal fit to the data (c = 0.76).
Conclusion: Unlike many applications CNN did not outperform LR. One explanation is that relations between the predictors and BX outcome are quite simple, whereas CNN excels when relations are complex with nonlinearities and interactions. Also R^2 is low indicating significant predictors remain unidentified. Addition of such variables may increase the complexity of the best-fit model and result in a superior performance by CNN.
Keywords: BIOPSY, PROSTATE CANCER, RISK FACTORS

UPOS-2.07

Predictive covariates differ between clinically significant and nonsignificant prostate cancers

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Introduction and Objective: Most prostate cancers (PC) are diagnosed via PSA-driven TRUS-guided biopsy (BX). Results of the Prostate Cancer Prevention Trial, in which 20% of men with PSA values between 1.1 and 3.0 ng/mL had PC at BX, have challenged current PC detection strategies. This high yield suggests that many PCs detected at BX are minimal threat to longevity and that PSA's utility as a marker for PC has changed. As a result, models are needed to not only predict the likelihood of PC, but also to distinguish small-volume, low-grade disease from high-volume, high-grade disease.
Materials and Methods: Men with PSA < 10 ng/mL were selected from our institutional BX quality assurance database (*n* = 3025). BX outcome was classified as benign, ASAP/PIN, nonsignificant (NSPC) or clinically significant PC (CSPC). NSPC were Gleason 6, ≤ 3 positive cores all with < 50% of the core involved. This presentation reports logistic regression models fit to three scenarios: NSPC versus benign; CSPC versus benign; and CSPC versus NSPC. Predictors were age, PSA, DRE, TRUS, TRUS prostate volume and BX pattern (< 10 v. ≥ 10 cores).
Results: Forty-four percent of BXs were benign, 14% ASAP/PIN, 16% NSPC and 25% CSPC. Median age, PSA and prostate volume were 64 yrs, 5.7 ng/mL and 50.1 mL. TRUS was positive in 47% and DRE positive in 39%. Twelve percent had an extended pattern BX. Greater age, higher PSA and smaller volume were strongly significant for all scenarios ($p < 0.001$). Positive TRUS was strongly predictive of CSPC versus benign (OR 5.0, $p < 0.001$) and CSPC versus NSPC (OR 4.0, $p < 0.001$) but did not distiguish NSPC from benign. Positive DRE only distinguished CSPC from NSPC (OR 1.5, $p = 0.005$). NSPC were more likely than benign to have extended pattern BX (OR 1.7, $p < 0.001$) while CSPC had extended pattern BX less often than NSPC (OR 0.6 $p = 0.01$). CSPC versus benign and CSPC versus NSPC were predicted with high to good accurarcy (c statistic 0.84 and 0.75, respectively). NSPC versus benign was fit less well (c = 0.66).
Conclusion: 1) All variable distinguished CSPC from NSPC; 2) TRUS distinguished CSPC, but not NSPC, from benign; 3) The models provided good fit for CSPC versus benign but not NSPC versus benign.
Keywords: BIOPSY, PROSTATE CANCER, RISK FACTORS

UPOS-2.08

The effect of comorbidity and socioeconomic status on health related quality of life in men treated with radical prostatectomy for localized prostate cancer

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Introduction and Objective: To assess the effect of comorbidity and socioeconomic status (SES) on generic and prostate cancer (PCa) specific health related quality of life (HRQOL) in men treated with radical prostatectomy (RP) for localized PCa.
Materials and Methods: We sent a self-addressed mail survey composed of the generic RAND short form 36-item health survey (SF-36), the PCa-specific UCLA Prostate cancer Index (PCI) as well as a battery of items addressing SES and life time prevalence of comorbidity to 4546 men treated with RP in Quebec between 1988 and 1996. The association between comorbidity, SES and HRQOL was tested and quantified using univariable and multivariable linear regression models.
Results: Survey responses from 2415 participants demonstrated that comorbidity and SES are strongly related to sexual, urinary and general HRQOL in univariable and multivariable analyses. In multivariable models, the presence of comorbid conditions was associated with significantly worse HRQOL, as evidenced by lower scale scores by as much as 17/100 points in general domains and by as much as 10/100 points in PCa specific domains. Favourable SES characteristics were related to higher general (up to 9/100 points) and higher PCa specific (up to 8/100 points) HRQOL scale scores.
Conclusion: Comorbidity and SES are strongly associated with sexual, urinary and general HRQOL.
Keywords: PROSTATE CANCER, QOL, RADICAL PROSTATECTOMY

UPOS-2.09

Prostate gland biopsies and prostatectomies: an Ontario community hospital experience

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Introduction and Objective: Transrectal ultrasound guided core biopsies of prostate gland and prostatectomies have become common procedures at many community hospitals in Canada, especially in the era of prostate specific antigen (PSA) screening for prostate cancer. The Gleason grading of prostate cancer in biopsies is a major determinant used for treatment planning. The objective of this study was to determine the diagnostic rates and Gleason scoring patterns for prostate gland biopsies and prostatectomies at our institution compared with the literature.
Materials and Methods: A retrospective review of all prostate gland biopsies and prostatectomies performed at the Grey Bruce Health Services from January 2005 to September 2005 was undertaken. Data from 194 biopsies and 44 prostatectomies was collected. Prebiopsy PSA levels and digital rectal exam results for all patients were obtained from urologist's office records.
Results: The average age for men having biopsies was 65.8 (SD 8.6) years and the average prebiopsy PSA was 8.7 (SD 6.2) ng/mL (median PSA 7.1 ng/mL). The rate of diagnosis in prostate gland biopsies of benign (17.6%), high-grade prostatic intraepithelial neoplasia (11.0%), atypical small acinar proliferation suspicious for invasive malignancy (13.2%) and invasive prostatic adenocarcinoma (58.2%) at our institution was significantly different than that reported in the literature ($p < 0.0001$). There was significant variation in the rates of these diagnoses among the community hospital pathologists in this study ($p = 0.004$). There was a strong correlation between increasing number of positive core biopsy sites and increasing Gleason score in biopsies ($p < 0.0001$). There was also a strong correlation between increasing prebiopsy PSA level and increasing Gleason score in biopsies ($p < 0.0001$). A significant proportion Gleason score 6

biopsies were diagnosed as Gleason score 7 at prostatectomy (21.9%).
Conclusion: There was a significantly higher positive biopsy rate at our institution compared with the literature. Implications include a higher incidence of prostate cancer locally versus a delay in time to referral for biopsy. There was also significant variation amongst the pathologists in this study as well as a high incidence of upstaging at prostatectomy. The data identifies a strong positive correlation between increasing prebiopsy PSA levels and increasing Gleason score.
Keywords: PROSTATE CANCER

UPOS-2.10

Gleason scoring and ethnicity: its prognostic significance in prostate cancer patients of multi-ethnic origins

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Introduction and Objective: To study the relation between the Gleason scoring in prostate cancer patients and ethnicity, prognosis and clinical applications.
Materials and Methods: A group of 360 men of multi-ethnic origin with adenocarcinoma of the prostate were subdivided into three groups and studied retrospectively: Caucasians (group 1 $n = 140$), Afro-Caribbean men (group 2 $n = 70$) and men from the Middle East (group 3 $n = 150$). Patients were selected using pathology reports, theatre reports, hospital episode statistics and cancer registry data, from which ethnicity of all the cases was determined. Racial and pathological association with the Gleason scoring was explored.
Results: A Gleason score of 2–4 was found in 25.5%, 25.8%, 28.5% (in groups 1, 2 and 3, respectively), and a Gleason score of 5–7 was found in 58.1%, 58.1%, 36.7% (in groups 1, 2 and 3, respectively). Finally, a Gleason score of 8–10 was found in 34.6%, 16.1%, 16.2% (in groups 1, 2 and 3, respectively). Using Kaplan–Meier survival estimates, there was a significant difference in survival between the three groups, which was proportional with the Gleason scoring being lower with the higher grade ($p = 0.0004$). In addition, with regards to its relation with the ethnicity, there was a statistically significant difference in survival among the 3 ethnic groups, compared grade for grade, being significantly higher in the Gulf population ($p = 0.0021$, $p = 0.0014$), as opposed to the Caucasians and the Afro-Caribbean men ($p = 0.61$).
Conclusion: There is a significantly better prognosis in Middle Eastern men with prostate cancer, as opposed to Caucasian and Afro-Caribbean men who have the same histological characters of the disease. This entails further research with regards to the natural behaviour of the disease in the Middle Eastern population and the genetic and environmental factors affecting this group, which are different from the other groups.
Keywords: EDUCATION, GLEASON, PROSTATE CANCER

UPOS-2.11

Prostate cancer screening practices and attitudes among primary care physicians in Victoria, BC

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Introduction and Objective: Though prostate cancer is the most common noncutaneous cancer in males, screening practices of primary care physicians (PCPs) in British Columbia remain controversial. The conflicting recommendations published by professional associations have created confusion on the most appropriate standard of care. Despite a lack of evidence from large clinical trials demonstrating that digital rectal examination (DRE) and prostate specific antigen (PSA) testing reduce prostate cancer mortality, they remain the best available tools for prostate cancer screening.
Materials and Methods: Self-administered questionnaires were delivered to 150 randomly selected primary care physicians in Victoria, BC, to evaluate their prostate cancer screening practices and opinions. Our objectives were to determine preferred screening practices, gauge opinions on DRE and PSA testing, and examine how clinical guidelines affect prostate cancer screening.
Results: Most PCPs surveyed report regularly screening asymptomatic men for prostate cancer, with 92.4% and 81.0% using DRE and PSA testing, respectively. The majority of physicians surveyed (64.4%) believe that the Medical Services Plan should pay for PSA as a screening test in BC. The clinical guidelines endorsed by the BC Cancer Agency/the Prostate Centre at Vancouver General Hospital were preferred by 40.9% of respondents, while 21.2% favoured the guidelines published by the Canadian Task Force on Preventative Health Care.
Conclusion: The majority of PCPs believe that PSA testing remains a useful tool in prostate cancer screening along with DRE, though the value of such screening tests remains uncertain. The prostate cancer screening practices and attitudes of PCPs in Victoria are comparable with those in other provinces, although PCPs in Victoria were significantly less reliant on PSA testing compared with PCPs in provinces where the test is paid for by the government. Clinical guidelines appear to have an influence on the prostate cancer screening practices of PCPs, yet there is no absolute consensus on which guidelines are most favoured.
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Keywords: DRE, PROSTATE CANCER, PSA

UPOS-2.12

What is the rate of sexual recovery after radical prostatectomy? It depends on how one defines an erection

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Introduction and Objective: Erectile recovery after radical prostatectomy (RP) is an important issue for most men with prostate cancer. Although reported recovery rates vary tremendously, definitions of erectile function also differ and may explain part of the wide range of published recovery rates. We determined the impact of different definitions of erectile function on potency rates after RP.
Materials and Methods: A cohort of 213 men who underwent RP between 2003 and 2006 were recruited from the University Health Network Prostate Centre. Subjects completed the Patient Oriented Prostate Utility Scale (PORPUS), a validated scale containing a single-item question on sexual function with 5 response options. Three definitions of erectile function were developed: "Restricted" ($n = 162$) — men who maintained full erections sufficient for intercourse with/without some reduction in firmness; "Moderate" — restricted definition or erections sufficient for masturbation or foreplay only; lastly "Liberal" — moderate definition or erections that were not firm enough for any sexual activity. Analyses were done prior to surgery and at 0–3, 3–9, and 9–18 months post-RP.
Results: A total of 162 men (mean age 59 y, 75% nerve sparing) with normal preop erectile function met inclusion criteria. At 0–3 months, < 10% of men had good erectile function regardless of definition. At 3–9 months, 7.4% of men had good erectile function using the restricted definition, as compared to 18% and 38% with moderate or liberal definitions, respectively. Even greater differences were noted at 9–18 months, with good erectile function reported by 19%, 37% and 53% of men with restrictive, moderate and liberal definitions, respectively.
Conclusion: Although there is improvement in erectile function with time post-RP, erectile function rates vary markedly based on the definition used. This partly explains the significant variation in observed erectile function rates across published studies. Clear and consistent definitions of erectile function post-RP are warranted (Table 1).
Sexual function (problems with achieving/maintaining an erection)
1. Full erections sufficient for intercourse
2. Erections sufficient for intercourse, but some reduction in firmness
3. Erections sufficient for masturbation or foreplay only

Table 1. Abstract 12. Percent of patients reporting erectile function post RP stratified by definition and time point

Definition of erectile function	Time point; % of patients			
	Baseline; *n* = 62	0–3 mo; *n* = 123	3–9 mo; *n* = 117	9–18 mo; *n* = 155
Restrictive (items 1 or 2)	100	3	7	19
Moderate (items 1–3)	—	3	18	37
Liberal (items 1–4)	—	9	28	53

4. Erections, but not firm enough for any sexual activity
5. No erections at all

Keywords: PROSTATE CANCER, RADICAL PROSTATECTOMY, SEXUAL ACTIVITY

UPOS-2.13

Clinical utility of non–image guided transperineal prostate biopsy in patients with multiple negative transrectal biopsies

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Introduction and Objective: Transperineal biopsy of the prostate is currently rarely performed, rendered near obsolete by transrectal ultrasound technique, although reports have shown both to be effective. Repeat prostate biopsies using TRUS technique have yielded declining detection rates on the second and third biopsy, with a reported detection rate of approximately 10%–25% and 0%–10%, respectively. Previous studies suggest the transperineal approach allows increased detection rates for cancers in the transition zone. We explored the usefulness of non–image guided transperineal biopsy of the prostate in detecting prostate adenocarcinoma after multiple negative transrectal ultrasound guided biopsies.

Materials and Methods: A retrospective chart review of patients who underwent transperineal biopsy of the prostate after at least 2 (range 2–7) negative transrectal biopsies from 2004 to 2008 was performed. These patients had persistently rising PSA or abnormal/nondiagnostic histology on previous TRUS biopsies. Transperineal digital guided biopsies were performed under general anesthesia with a mean of 10 cores being obtained.

Results: Eighteen patients were identified. Biopsies diagnostic of prostate cancer were detected in 8 patients, the remaining 10 showing no malignancy (44% positive). High-grade cancer (Gleason score > 7) was detected in 5 of these cases. No patient had focal carcinoma.

Conclusion: The transperineal approach without the use of ultrasound visualization, once the foundation of prostate cancer detection continues to be an effective method to detect prostate cancer in high-risk patients. This technique, rendered near obsolete with current diagnostic practices, continues to be an excellent option for prostate biopsy in selected high-risk patients.

Keywords: PROSTATE CANCER

UPOS-2.14

The effect of nerve-sparing surgery on patient-reported incontinence postradical prostatectomy

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Introduction and Objective: Reported rates of urinary incontinence after nerve-sparing radical prostatectomy (RP) vary widely. We reviewed the University Health Network Prostate Centre database to assess the impact of nerve-sparing surgery on patient-reported continence.

Materials and Methods: We reviewed prospectively collected information from clinical records as well as from our database. Patients completed the PORPUS, a validated psychometric and health utility instrument, prior to surgery and at each postoperative follow-up visit. We included RP patients with greater than 12 month follow-up. Operative notes identified those with nerve-sparing procedures. Patients with preoperative incontinence, radiotherapy preoperatively or within the follow-up time were excluded. Incontinence was defined by a single item on the PORPUS questionnaire. Patients responding, "occasionally leak urine or lose bladder control, interferes with a few activities" or worse were classified as incontinent. The χ^2 test was used to compare categorical data and the Student *t* test and Mann–Whitney test were used for continuous data. Multivariable logistic regression was used to control for effects of nerve-sparing and other covariates.

Results: Two-hundred twenty-five patients were eligible and had sufficient data. Of these, 136 patients had bilateral nerve-sparing, 30 had unilateral nerve-sparing and 58 had non–nerve sparing surgery. Of the patients, 27%, 17% and 34%, respectively, were classified as incontinent. These proportions were not significantly different when compared dichotomously ($p = 0.21$) or categorically on the PORPUS scale ($p = 0.46$). Univariate analysis showed only cancer volume as significant ($p = 0.018$), while multivariable logistic regression analysis did not show nerve sparing status to significantly affect continence. There was a significant difference in the proportion of PORPUS sexual function scores between nerve-sparing groups after excluding those with baseline sexual dysfunction ($p = 0.047$). Similarly, health related utility scores were different across groups ($p = 0.026$).

Conclusion: In contrast to some previous reports, our results (Table 1) do not suggest a difference in patient-reported continence in those who underwent nerve-sparing surgery.

Keywords: INCONTINENCE, NERVE SPARING, QOL

Table 1. Abstract 14. Patient characteristics according to PORPUS-defined urinary continence at 12 months after RP

Variable	Continent	Incontinent	*p* value
No. of patients	162	62	
Mean (and SD) age, y	60.6 (6.8)	61.3 (7.4)	0.50
Mean body mass index, cm^2/kg	26.7	27.3	0.40
Mean follow-up duration, d	627	581	0.18
Mean (and SD) prostate weight, g	48.6(1.7)	53.3(2.8)	0.15
Mean (and SD) cancer volume, mL	8.6(7.8)	12.9(14.9)	0.012
Mean (and SD) preoperative PSA, ug/L	7.54 (4.04)	6.37 (5.67)	0.11
Gleason score			0.79
5	1	1	
6	16	39	
7	43	110	
8–10	2	9	
Unreported	0	3	
Node-positive disease	0	2	0.02

UPOS-2.15

Impact of cancer recurrence on fear of cancer recurrence in men with prostate cancer treated with curative intent

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Introduction and Objective: Fear of cancer recurrence is a common experience among men diagnosed with prostate cancer, but little is known about how a cancer recurrence impacts the fear of cancer recurrence. We sought to identify clinical predictors of fear of cancer recurrence and of its evolution in time among men diagnosed with prostate cancer and treated with curative intent.

Materials and Methods: From the CaPSURETM prostate cancer registry, we selected patients treated with curative intent (radical surgery, radiation therapy or brachytherapy) from 1995 to 2002 and had completed at least 2 follow-up validated measures of fear of cancer recurrence. Ordinal logistic regression models were used to estimate the effect of cancer recurrence status on the risk of higher fear of cancer recurrence at time of last questionnaire (Q-last). We controlled for baseline fear of cancer recurrence (Q-ini). Our multivariable models included the following variables: age at diagnosis, race, household income, education level, active relationship, prostate cancer risk category, treatment type (surgery v. radiation) and time since treatment.

Results: Our study population included 1980 patients, of which 168 (8.5%) had documented disease recurrence before Q-last. The mean interval between Q-ini and Q-last was of 18 months. Overall, the median score of fear of cancer recurrence was of 9/25 (interquartile range of 6/25 to 12/25). A higher score value represents higher fear of cancer recurrence. Patients who had a cancer recurrence showed less fear of cancer recurrence than patients who were without evidence of disease recurrence. The odds ratio for having at least 1 point higher score was of 0.38 ($p < 0.0001$). The effect was consistently measured in the same direction for each of the 5 composite questions. Patients with a high annual income (> $50 000) had greater fear of cancer recurrence than patients with a low income.

Conclusion: Fear of cancer recurrence is lower in patients who had a cancer recurrence than in patients without evidence of disease recurrence. This counterintuitive finding can probably be interpreted as a sign of a good adaptation process of patients who had a recurrence, as well as a sign of higher anxiety for those who face the unknown, or the possibility of a cancer recurrence.

Keywords: PROSTATE CANCER

UPOS-2.16

Treatment of BCG failures with intravesical BCG/Interferon: Winnipeg experience

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Introduction and Objective: To assess recurrence-free survival in patients treated with intravesical BCG/IFN for non–muscle invasive, BCG refractory, transitional cell carcinoma (TCC) of the urinary bladder in a referral-based uro-oncology practice: a single urologist experience.

Materials and Methods: A total of 23 patients were treated with at least a course of BCG and failed therapy. Of these, 16 patients with established failure of BCG treatments were offered the option of intravesical BCG/IFN as salvage therapy. The main inclusion criteria consisted of pathologically proven evidence of intravesical BCG failure and of complete transurethral resection of latest post-BCG recurrence. Induction consisted of 6 intravesical BCG/IFN instillations as per the O'Donnell protocol. Select patients were treated with BCG/IFN maintenance therapy.

Results: Sixteen patients aged from 43 to 84 years (mean 65 yr) were included. Stages at BCG failure were distributed as follows: 9 (56%) CIS, 6 (38%) Ta and 1 (6%) T1. BCG/IFN maintenance was administered to 9 (56%) patients. Follow-up ranged from 6 to 24 months (mean 12 mo). Recurrence was diagnosed in 3 patients (19%); stages at recurrence were CIS, T1G2 and Tag2. Of 9 patients started on maintenance, only 1 patient developed recurrence. Recurrence-free survival (RFS) at 6 months was 89%.

Conclusion: We found that BCG/IFN therapy after BCG failure can reduce recurrence in patients with noninvasive bladder cancer and provides some hope to patients, prior to offering cystectomy, as definitive management of BCG refractory disease.

Keywords: BCG, BLADDER CANCER, IMMUNOTHERAPY

UPOS-2.17

A phase II study to evaluate the efficacy and tolerability of intravesical vicinium in patients with carcinoma in situ (CIS) previously treated with bacille Calmette-Guérin (BCG): preliminary results

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Introduction and Objective: Vicinium (Viventia Biotech, Inc., Mississauga, Ont.) is a fusion protein comprised of a humanized scFv, specific for EpCAM (epithelial cell adhesion molecule) and a truncated fragment of *Pseudomonas exotoxin A*. EpCAM is highly expressed on carcinoma cells including transitional cell carcinomas (TCC) of the bladder. Vicinium specifically targets and induces apoptosis in EpCAM positive tumours resulting in cell death. We have previously reported that it was well tolerated in a phase I intravesical study in 64 patients with noninvasive urothelial carcinoma. Preliminary efficacy and tolerability results from a phase II trial of Vicinium instilled into the bladders of patients with BCG refractory carcinoma in situ (CIS) will be presented.

Materials and Methods: Forty-six patients with EpCAM positive CIS of the bladder who were refractory or intolerant to BCG therapy were entered into the study. Twenty-three patients received Vicinium once weekly for 6 weeks followed by 6 weeks of no therapy. At week 12, patients with disease < T2 received Vicinium once weekly for 6 weeks followed by 6 weeks of no therapy, whereas patients who were free from disease received maintenance dosing with Vicinium once weekly for 3 weeks followed by 9 weeks of no therapy. Patients free of disease continued to receive maintenance dosing up to a maximum of week 51. Twenty-three patients received Vicinium once weekly for 12 weeks followed by 1 week of no therapy. At week 13, patients who were free from disease received maintenance dosing with Vicinium once weekly for 3 weeks followed by 9 weeks of no therapy up to a maximum of week 57.

Results: Twenty-nine patients have been enrolled to date and preliminary data supports an excellent safety and tolerability profile. Preliminary efficacy data shows no histological evidence of disease in 8 of 19 patients at week 12, 5 of 10 patients at week 25, and 1 of 1 patient at week 38 demonstrating initial evidence of antitumour activity. It is expected that preliminary efficacy and tolerability data for 46 patients will be available for the presentation.

Conclusion: Preliminary results suggest an excellent safety profile with evidence of antitumour activity following treatment with Vicinium thus supporting its further development as a promising therapy for noninvasive transitional cell carcinoma of the bladder.

Keywords: BLADDER, BLADDER CANCER, SUPERFICIAL BLADDER CANCER

UPOS-2.18

Toward quality measures in bladder cancer surgery: a population-based assessment of radical cystectomy in Ontario

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Introduction and Objective: Quality of cancer surgery and pathology reporting is under increasing scrutiny. As radical cystectomy (RC) for bladder cancer has not been well characterized on a population level, we assessed RC quality as measured by pathology records in the province of Ontario.

Materials and Methods: Pathology reports for patients undergoing RC in 2001 were obtained from the Ontario Cancer Registry. Of 213 RC's,

26 were excluded (pathology reviews without original reports or RC not done for bladder cancer). Patient, pathology and provider data were abstracted and analyzed.
Results: Of the 187 patients, 81% were men. Median age was 70 years (range 42–86 yr). The main histology was TCC (95%). High-grade cancer was present in 90%. Most patients (78%) had muscle-invasive cancer (≥ pT2), including 21% with disease involving contiguous organs (pT4). There were lymph node (LN) metastases in 27%, and 16% had positive surgical margins. Pelvic LN dissection was not performed in 33%. Among the 138 patients with at least 1 LN evaluated, the exact number of LN identified was not stated in 46%. In the 75 patients with a precisely stated number of nodes, the median number of LN examined was 7 (range 1–37). Only 34/187 patients (18%) had the UICC-recommended standard of 8 or more LN reported. In all, 73 surgeons performed RC's; median number of cases performed per surgeon was 2 (range 1–16). Results were reported by 97 pathologists; median was 2 cases (range 1–8). Over one-half (56%) of RC's were performed in nonacademic community hospitals.
Conclusion: Most patients undergoing RC in Ontario have high-risk disease. Pathology reporting varies greatly, which makes it difficult to evaluate the quality of RC. One-third of all patients did not undergo a pelvic LN dissection, and 82% did not fulfill UICC criteria for LN removal or reporting. Knowledge translation strategies to improve quality of surgery and pathology reporting in RC must consider that a large number of surgeons and pathologists doing small numbers of cases are involved. Further studies to examine factors predictive of RC quality, and LN counts as a potential quality measure, are being performed.
Keywords: BLADDER CANCER, LYMPH NODES, RADICAL CYSTECTOMY

UPOS-2.19

A longitudinal follow-up of patients with T1 bladder lesions managed conservatively

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Introduction and Objective: Optimal timing of cystectomy in patients with high-risk non–muscle invasive transitional cell carcinoma is controversial. Both immediate treatment of high-risk stage T1 TCC of the bladder with radical cystectomy and more conservative management with intravesical immunotherapy are considered options in most published guidelines. This study's purpose was to further determine the outcomes of bladder-sparing, conservative approaches for T1 lesions and investigate the prognostic ability of molecular and pathologic markers.
Materials and Methods: We performed a retrospective chart review of patients who first presented with stage T1 TCC of the bladder managed conservatively with intravesical BCG and had complete pathologic data over their management, including p53 immunostaining of the original T1 tumour specimens. Clinical variables followed included number of tumour resections, progression of disease (T2 or greater), time to cystectomy and death. Pathologic variables included p53 status, lymphovascular invasion, stage, grade and in situ carcinoma. Data was analyzed by Fisher exact 2-sided χ^2 and Kaplan–Meier methods.
Results: Between 1997 and 2002 we identified 94 patients meeting inclusion criteria, 80 (85%) patients with T1G3 and 14 (15%) T1G2 TCC. The mean follow-up was 4.5 years. Persistent conservative management of T1 TCC in this cohort did not appear to affect cancer-specific survival ($p = 0.179$). The overall recurrence rate was only 45.7% (43 patients), and the progression rate was 20.2%. Of those 19 patients who progressed to muscle-invasive disease, 11 underwent cystectomy. Five patients received bladder-sparing chemoradiation and 3 had palliation only for high comorbidity status. Only 4 patients underwent radical treatment for multiple non–muscle invasive recurrences. Those patients treated for a clinical progression to muscle-invasive TCC, 12 patients (13%) demonstrated systemic recurrence (6 patients) or died of bladder cancer (6 patients). Presence of in situ carcinoma, p53 status, lymphovascular invasion and gender were not predictive of progression to T2 or survival.
Conclusion: In this single center experience of patients presenting with stage T1 TCC, 80% of patients were successfully managed conservatively and kept their bladders intact. No predictors of progression were found in this cohort. For the majority of those patients presenting with T1 disease, repeat resections and intravesical therapy appears to be a viable alternative to immediate cystectomy, although those progressing to muscle-invasive disease could not be predicted by available molecular or pathologic markers.
Keywords: STAGE, SUPERFICIAL BLADDER CANCER, SURVIVAL

UPOS-2.20

Identification of knowledge gaps in staging, treatment and surveillance of non–muscle invasive urothelial cell carcinoma (NMIUCC) of the bladder: a survey of Canadian urologists

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Introduction and Objective: NMIUCC of the bladder is a common problem. Following tumour resection, cystoscopic surveillance is required. Traditionally, the most common approach consisted of cystoscopy every 3 months for the first 2 years, every 6 months for the next 2–3 years and yearly for life. Studies have concluded that this regimen is unnecessary for low-grade NMIUCC. Currently, there are no Canadian guidelines. The purpose of this survey was to acquire data on the practices of Canadian urologists with regard to staging and follow-up of NMIUCC of the bladder.
Materials and Methods: Members of the Canadian Urological Association (CUA) received an invitation to complete an online survey. A mass email was sent on Jan. 21, 2008; a reminder was sent 7 days later. The survey consisted of 11 questions about staging, treatment and follow-up of NMIUCC, as well as the use of guidelines. Results were analyzed by Opinio survey software (Object Planet Inc., Oslo, Norway). Answers were compared with recommendations in current international guidelines.
Results: In total, 522 CUA members were contacted. The response rate was 23% (123). Of respondents, 44.5% had a community practice and 55.5% practised in academic centres; 27% have been in practice for less than 5 years. Methods of staging and treatment varied between urologists. Important knowledge gaps included that random bladder biopsies during TUR are performed in 9%–80% of cases depending on grade and stage, work up for metastatic disease is not performed in 11%–59% of patients with high-grade disease or CIS, up to 72% of urologists perform cystoscopy more frequently than recommended in the first 2 years for PUNLMP and low-grade Ta disease, and up to 59% perform cystoscopic follow-up for longer than recommended. Canadian guidelines were felt to be beneficial by 86% of respondents.
Conclusion: The majority of Canadian urologists vary in their techniques of staging, treating and surveying NMIUCC. Although most urologists report following guidelines, we have identified significant knowledge gaps in random bladder biopsies during TUR, staging of high-grade disease, frequency and duration of cystoscopic evaluation in low-grade disease. The majority of respondents to this survey indicated that guidelines for NMIUCC would be of benefit.
Keywords: BLADDER CANCER, CYSTOSCOPY, SUPERFICIAL BLADDER CANCER

UPOS-2.21

Computerized tomography measurement of visceral adiposity predicts plasma adiponectin levels and presence of metastatic disease in patients with clear cell renal cell carcinoma

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Introduction and Objective: Obesity is a risk factor for renal cell carcinoma (RCC). We have recently shown that plasma levels of adiponectin, a hormone secreted solely by adipocytes, inversely correlates to adverse prognostic factors in clear cell RCC but not with body mass index (BMI). The purpose of this study was to develop a quantitative method of measuring visceral obesity and to correlate it to adiponectin levels and disease characteristics.
Materials and Methods: Blood samples were collected preoperatively from a cohort of 25 patients (11 with metastatic disease) confirmed to have clear cell RCC (stage T1–T3). Visceral and peripheral fat content was

measured using preoperative CT. Three representative slices were analyzed: the top of L2 vertebral body, umbilicus and the anterior superior iliac spine. Tissue at fat density was digitally extracted from each image, separated into subcutaneous and visceral components, and then the number of pixels was summed across three slices to create a surrogate score of visceral and peripheral fat. This score was correlated to plasma adiponectin levels, tumour size, grade, presence of metastasis and BMI.
Results: Using linear regression analysis, plasma adiponectin correlated inversely with the size of the tumour ($p < 0.01$) but not with BMI. BMI correlated strongly with CT total fat and peripheral fat measurements ($p < 0.01$) but not visceral fat measurement. Similarly, visceral obesity correlated inversely with plasma adiponectin levels ($p = 0.04$) and with the presence of metastasis ($p = 0.03$ by logistic regression), but not with other prognostic factors.
Conclusion: Using a novel and easily reproducible method to quantify adiposity, we have shown that visceral obesity correlates with aggressive disease and lower levels of plasma adiponectin in RCC.
Keywords: CT, MOLECULAR MARKER, RENAL CELL CARCINOMA

UPOS-2.22

Tyrosine kinase inhibitors as adjuvant therapy for metstatic sarcomatoid renal cell carcinoma: the McMaster experience

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Introduction and Objective: Sarcomatoid variant of renal cell carcinoma (RCC) is a rare subset of RCC, accounting for as low as 0.7% of the disease. This highly malignant transformation portends a poor prognosis and is associated with a high aggressiveness and metastatic rates. Median survival after diagnosis is dismal, in the order of 6.6 months with surgery alone. However, recent advances in understanding the pathobiology of RCC have led to the identification of novel therapeutic targets for RCC. In particular, a series of emerging antiangiogenic agents and receptor tyrosine kinase inhibitors (TKIs) appear to be promising. Sunitinib and sorafenib are novel TKIs that have shown significant clinical activity in metastatic clear cell RCC. The activity of sunitinib and sorafenib in sarcomatoid histologies has not been evaluated.
Materials and Methods: Clinical features and outcomes of 12 patients with metastatic sarcomatoid variant RCC treated in our institute from 2003 to 2007 were evaluated in a retrospective chart review. ANOVA, multivariable analysis and Kaplan–Meier methods were used to analyze our patient characteristic and outcome data.
Results: All patients had radical nephrectomy performed. Seven were treated with adjuvant TKIs, 2 with gemcitabine based regimens and 3 did not receive adjuvant therapy. Mean survival of patients in each arm were 15.3, 6.3 and 3.3 months, respectively.
Conclusion: Our data demonstrates a promising trend towards greater survival for patients with metastatic sarcomatoid RCC treated with surgery and adjuvant sorafenib or sunitinib.
Keywords: KIDNEY, NEPHRECTOMY, SURVIVAL

UPOS-2.23

Noninvasive urothelial carcinoma of the upper tract treated with nephroureterectomy: a multicenter study

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Introduction and Objective: To determine risk factors associated with clinical outcomes in patients with pTa upper tract urothelial carcinoma (UTUC) treated with radical ephroureterectomy (RNU).
Materials and Methods: Institutional RNU databases (1990–2006) were obtained from 12 centres worldwide. Overall, 264 patients had pTa disease. Clinical variables collected from medical chart and pathological variables were all re-reviewed by designated pathologists. Statistical analyses were performed using standard methodology.
Results: Fourteen patients developed recurrences after a median follow-up of 49 months; all were distant recurrences and 7 of whom developed both local and distant recurrence. The 5-year OS and RFS rates were 95.8% and 92.6%, respectively. Variables including institution, age, sex, presence of symptoms, type of surgery and distal ureter management, tumour location, performance of regional lymphadenectomy, number of lymph nodes excised, tumour necrosis, grad, and architecture were not significantly associated with overall or recurrence-free survival. The presence of lymphovascular invasion was the only pathologic variable significantly associated with shorter OS (HR 1.59, 95% CI 1.013–4.215, $p = 0.046$) and RFS (HR 1.29, 95% CI 1.007–3.081, $p = 0.049$) in the multivariable analysis. Previous endoscopic management of UC of the upper tract was associated with shorter RFS (HR 3.23, $p = 0.051$).
Conclusion: Patients with non-invasive UUT-UC have excellent prognoses. Tumours with lymphovascular invasion portend worse prognoses and may benefit from upfront radical surgery than initial endoscopic management.
Keywords: TCC

UPOS-2.24

Progression-free survival in patients with metastatic and recurrent renal cancer treated with sorafenib: single centre experience

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Introduction and Objective: Treatment of metastatic renal cell carcinoma (RCC) with sorafenib was previously shown to prolong progression free survival (PFS) with a median of 5.5 months. One of the advantages of using sorafenib is a relatively tolerable side effect profile. We examined our own experience with sorafenib as first line treatment of metastatic RCC in a heterogonous patient population, including patients with brain and bone metastases.
Materials and Methods: We analyzed PFS defined as increased in size of target lesion or appearance of new metastases. Twenty-one patients with metastatic RCC were treated with oral sorafenib (400 mg bid administered in 4-week cycles for the first 24 weeks and in 8-week cycles thereafter). Follow-up consisted of 4 weekly appointments with blood work and physical exams, quarterly or as needed CT and bone scans and ranged from 23 to 85 weeks (median 54 weeks). Soft tissue metastases were defined as within the lungs or liver ($n = 12$). Two patients had brain metastases, 5 had bone metastases and 2 had local recurrence in the nephrectomy bed. Nine patients presented initially with metastatic tumour and 7 underwent cytoreductive nephrectomy. Eleven patients underwent therapeutic nephrectomy for localized disease.
Results: The median PFS was 8.4 months (range 1.2–59 mo). Four patients (19%) were progression free at last follow-up (median 12.75 mo). Median PFS for patients with soft tissue metastases versus patients with brain or bone metastases was 8.7 versus 6.1 months, respectively, with no statistically significant difference. Median PFS for patients with solitary versus multiple metastases was 12.25 versus 8.75 months, respectively. Durable PFS greater than 1 year was observed in 24% of patients. Stage, grade, age or gender did not predict PFS. During a follow-up period of up to 85 weeks, 7 (33%) deaths were recorded. All patients had some degree of side effects, most commonly gastrointestinal (81%), skin reaction (76%), fatigue (76%) and cardiovascular (57%). However, none of them had to stop therapy. Four patients who progressed were switched to sunitinib.
Conclusion: Treatment of patients who have heterogonous and diverse metastatic RCC with sorafenib can achieve a median PFS of 8.4 months with frequent but tolerable side effects.
Keywords: RENAL CELL CARCINOMA

UPOS-2.25

Recurrent renal cell cancer: 10 years or longer after nephrectomy

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Introduction and Objective: Localized renal cell carcinoma responds well to surgery. Patients often question how long they have to be on surveillance after their surgery. Most recurrences occur within 10 years. We attempted to determine if there are patients presenting 10 years or longer after nephrectomy. Mode of presentation, diagnostic tests and treatments administered were studied.

Materials and Methods: This was a retrospective case study from a single urologist practice in Northern Ontario. The office's clinical notes, diagnostic imaging studies and pathology reports were reviewed. The types of therapy, response rates and follow-up were studied.

Results: We found 3 patients, 2 men and 1 woman aged between 47 and 67 years. Their second or secondary tumours were discovered 11, 11 and 13 years, respectively ,following nephrectomy. Sites of tumours were lungs (1), solitary kidney (2) and tail of pancreas (1). Treatment consisted of thoracotomy and tumour excision and interferon (1), partial nephrectomy (1) and TARGETs therapy (1). Of the 3 patients, 2 are alive with no evidence of disease (1) and stable disease (2). The third patient was lost to follow-up.

Conclusion: Careful long-term follow-up is recommended in patients with a history of renal cell carcinoma. Diagnostic imaging studies should be used during surveillance to detect any asymptomatic metastases at an early stage. TARGETs therapy should be considered when surgery is not feasible. Collaborative future studies are recommended.

Keyword: RELAPSE

UPOS-2.26

Laparoscopic radical nephrectomy and open tumour thrombectomy for level II vena caval thrombus: a comparative analysis to the standard open approach

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Introduction and Objective: To compare the results of a combined laparoscopic and open supraumbilical midline incision technique versus the standard open approach for renal cell carcinoma with level II caval thrombus.

Materials and Methods: Between 2004 and 2007, a retrospective review of radical nephrectomies with level II caval thrombus were assessed at the Cleveland Clinic. All laparoscopically approached tumours with confirmed intraoperative level II caval thrombus were included in the in the analysis. Clinical, pathological and perioperative information were evaluated for both the combined and open group.

Results: A total of 11 patients underwent laparoscopic/open radical nephrectomy and level II caval thrombectomy. One patient in the combined technique was excluded owing to conversion from laparoscopy to a Chevron incision (lap/open = 4, open = 6). Average patient age (58, SD 4.3, years) and tumour size (9.4, SD 2.1, cm) of the combined group was comparable to the open (55, SD 16.1, years and 7.3, SD 4.6, cm); $p > 0.05$. Moreover, clear cell histology and soft tissue and vascular margin positivity rates were similar with either technique (Table 1). Although length of hospital stay was equivalent in both groups, open radical nephrectomy and caval thrombectomy did require more narcotics to manage their postoperative pain. In addition, an epidural catheter was used for postoperative analgesia in the open series.

Conclusion: The combined laparoscopic and open approach for renal cell carcinoma with level II caval thrombus provides comparable results to those of the standard open procedure. Analgesic administration via epidural catheter is circumvented in the combined group given the surgical exposure gained by the non–muscle splitting approach. The combined method also provides a successful technique for both left or right renal masses with vena cava involvement.

Keywords: LAPAROSCOPY, NEPHRECTOMY, RENAL CELL CARCINOMA

Table 1. Abstract 26. Radical nephrectomy and level II tumor thrombectomy via a combined laparoscopic and open technique versus standard open surgery

Variable; mean (and SD)*	Lap/open	Open
Age, yr	58 (4.3)	55.0 (16.1)
Side (and no.)	Right (3) Left (1)	Right (4) Left (2)
Tumor size, cm	9.4 (2.1)	7.3 (4.6)
Incision type (and no.)	Midline supra-umbilical (4)	Chevron (5) thoraco–abdominal (1)
Transfusion, units	6 (1.7)	4.3 (3.5)
Length of stay, d	7.5 (3.5)	5.3 (2.3)
Narcotic requirement		
Morphine sulphate, mg	652.9 (244.5)	286.9 (76.2)
Epidural morphine sulphate, mg	0†	803.9 (587.3)

*Unless otherwise indicated.
†$p < 0.05$.

UPOS-2.27

Robotic salvage radical prostatectomy following radiation/brachytherapy: initial results

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Introduction and Objective: Salvage radical prostatectomy (SRP) is associated with higher morbidity when compared with standard prostatectomy. We report on our initial 4 patients who underwent robotic SRP following biochemical recurrence after radiation therapy. In addition, we review the surgical outcomes of robotic cystoprostatectomy for bladder cancer in 2 patients who received prior radiation for prostate cancer.

Materials and Methods: A retrospective review of all robotic salvage prostatectomies and robotic surgery performed following radiation therapy for pelvic disease was reviewed at the Cleveland Clinic. Patients eligible to undergo salvage robotic prostatectomy demonstrated a biochemical failure with absence of metastatic disease. A retrospective analysis of the immediate and short-term surgical and functional outcomes were reviewed.

Results: Since 2006, 4 patients underwent 6-port robotic SRP following biochemical failure following radiation and (or) brachytherapy. Robotic SRP was completed in all patients without any complication or conversion to open approach. Mean operative time and blood loss was 125 minutes and 117mL (range 50–250 mL), respectively. The mean length of stay was

Table 1. Abstract 27. Postradiation/pre- and postoperative data of locally recurrent prostate cancer following brachy and or EBRT therapy

				Surgical pathology			
Patient	Pre-operative PSA	Biopsy	Post-operative PSA	Lymph nodes	Margins	EPE	SV
1	3.5	4 + 3 3 + 4	< 0.03	–	+	+	+ (L)
2	3.14	3 + 4	< 0.03	–	+	+	–
3	8.01	—*	< 0.03	–	–	–	–
4	0.74	4 + 4 4 + 5	14.75	–	–	+	+ (R,L)

*Owing to radiation effect, an accurate Gleason score could not be assigned.

2.7 days. Three patients had extracapsular extension, and the initial 2 cases had positive margins. Negative lymph nodes were noted in all SRP patients (Table 1). Three patients were continent within 1 month follow-up while 1 patient continued to use 2–3 pads per day at 3 weeks follow-up. One patient continued to have a rising PSA despite an initial negative metastatic work up both pre- and postoperatively. Two patients who underwent cystoprostatectomy had no major complications or increased surgical difficulty.

Conclusion: We were able to demonstrate that SRP is technically possible with limited perioperative morbidity. Further studies are warranted to validate the oncological and functional outcomes of salvage robotic prostatectomy following radiation and (or) brachytherapy. Moreover, a robotic approach for radical cystoprostatectomy in patients following prostate radiation is feasible without increased morbidity.

Keywords: ROBOTICS, PROSTATE, RADIATION

Unmoderated Poster Session 3
June 24, 2008, 0900–1300

UPOS-3.01

Forces required for urological stent insertion: explanation of the intussuscepted pusher phenomenon

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Introduction and Objective: Measuring the force needed to insert ureteral stent is of importance. Applying too much force can result in complications. As the force increases, the holes in the stent deform, then close. Further force results in buckling or a concertina effect. This prevents the stent from sliding over the wire. Applying a greater force could lead to more serious complications such as ureteral perforation and avulsion or stent/ pusher intussusception and inadvertent stent removal.

Materials and Methods: This in vitro study was designed to measure (in Newtons) the force needed to slide the stent over a 0.35 in guide wire unlubricated and lubricated, to close the side holes in the stent, to buckle the stent when up against an obstruction and to intussuscepts a pusher over a stent. Using an Imada Digital force Gauge DS2 (Imada Inc., Northbrook, Ill.), the forces were measured using 4.7, 6 and 7 Fr Double pigtail Ureteral Stent (Cook Medical, Stouffville, Ont.) over a 0.35 Wire guide. Each measurement was repeated 10 times.

Results: We found that the 4.7 pusher intussuscepts within the 4.7 F stent if the force used to push it exceeds 7.70 (SD 0.55) N. This could result in advertent removal of stent. This did not occur with the larger size pushers and the 4.7 F stent. Also, this did not occur with any larger diameter stents with their pushers (Table 1).

Abstract 1. Table 1.

	Sliding with no lubrication; mean (and SD)	Sliding with water lubrication; mean (and SD)	Sliding with gel lubrication; mean (and SD)	Closing the holes; mean (and SD)	Buckling the stent; mean (and SD)	Intussuscepting pusher over stent; mean (and SD)
4.7 Fr	0.72 (0.09)	0.24 (0.04)	0.44 (0.08)	2.12 (0.30)	5.48 (0.57)	7.70 (0.55)
6 Fr	0.55 (0.10)	0.52 (0.06)	0.44 (0.07)	4.55 (0.38)	8.28 (0.47)	—
7 Fr	0.46 (0.07)	0.26 (0.04)	0.46 (0.05)	5.04 (0.79)	7.17 (1.07)	—

Conclusion: We now have a model to study the force required to perforate or avulse a ureter in a pig model or human ureters removed surgically. We can also study the force required to bypass an obstructing stone in the ureter using a sterilizable head to the digital force gauge. The 4.7 F pusher can intussuscepts into 4.7 F stent and we advise the use of a larger diameter pusher with these stents.

Keywords: CALCULI, CATHETER, URETER

UPOS-3.02

Holmium:YAG incompatibility between lasers and fibres

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Introduction and Objective: We document proximal connector end failures from mismatched holmium:YAG fibres and lasers.

Materials and Methods: We tested Trimedyne (Trimedyne Inc., Lake Forest, Calif.) 200 µm fibres (BSM200) on New Star (New Star Lasers, Roseville, Calif.) and Lumenis (Lumenis Inc., Santa Clara, Calif.) lasers. In an in vitro test, new fibres were tested for output. In a clinical test, we compared retrospectively the number of laser failures during use of either Lumenis 272 µm fibres (Slimline 200) versus BSM200 fibres on the Lumenis laser (approximate spot size 265 µm). We also recorded the number of lithotripsy cases using larger fibres and the number of proximal fibre failures. In all cases of failure, proper laser rod alignment was verified.

Results: The in vitro testing was stopped prematurely. The laser discharged smoke at the connector. The fibre was melted into the SMA housing and could not be removed. In clinical use, we experienced connector end fibre failures with blast shield damage in 7 of 188 (4%) of small caliber fibres versus 0 of 104 (0%) of 365 µm fibres, and 0 of 48 (0%) 550 µm fibres, $p < 0.01$. Comparing different brand fibres on the Lumenis laser, proximal fibre failures occurred in 4 of 30 (13%) cases with the Trimedyne fibre versus 3 of 155 (2%) with the Slimline fibre (Sigmacon Surgical Systems, Middlesex, UK), $p < 0.01$. The core fibre was off axis by approximately 20 µm.

Conclusion: Mismatch of holmium:YAG lasers and fibres can damage both fibres and lasers. The risk is greatest with small caliber fibres. Urologists should verify laser and fibre specifications before assuming that fibres can be used interchangeably on different lasers.

Keywords: CALCULI, LASER, LITHOTRIPSY

UPOS-3.03

Success rates of percutaneous nephrolithotomy in 392 patients: results from a single centre

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Introduction and Objective: We retrospectively determined our stone free rate (SFR) and complications in patients undergoing percutaneous nephrolithotomy (PCNL).

Materials and Methods: Available medical charts and radiographs from PACS imaging systems were analyzed from 2000 to 2006 to determine stone free rates and complications. Predictors of stone free status were determined.

Results: Records of 392 patients were obtained. Eleven of these procedures were bilateral (total of 403 PCNLs attempted). Fifteen cases were abandoned owing to inability to establish access and data was incomplete for 10 patients leaving a total of 378 cases for analysis. The mean age was 53 (SD 0.8) years with a mean ASA score of 2.4 (SD 0.05) and a mean stone surface area of 706 (SD 59) mm^2. There were 52 complete and 27 partial staghorn calculi. The SFR (defined as no calcifications on CT scan) was 36%. Of all fragments with data available, 46% were smaller than 4 mm; therefore, 53% of all patients were stone free or had retained fragments smaller than 4 mm. Minor complications occurred in 27% including infection, emergency room visits (7%), pleural effusions (9%), pneumonia (4%), pneumothorax not requiring chest tube (1%) or perforation of renal pelvis (2%). Major complications occurred in 8% of cases including blood transfusion (5.9%), chest tube insertion (0.5%), empyema (0.3%), pleural decortication (0.8%), angioembolization (0.5%), urosepsis and ICU admission (0.8%). Of all dilation methods, Alken metal and Amplatz dilators (Cook Medical Inc., Stouffville, Ont.) were associated with significantly more major complications ($p = 0.0004$) compared with balloon dilation. Larger preoperative stone surface area was strongly corre-

lated with major complications (105, SD 161, mm^2) compared with minor (633, SD 97, mm^2) or no complications (670, SD 75, mm^2, $p < 0.001$). Access site was also significantly associated with more major complications — specifically mid-pole punctures (P=0.0008). Similarly, upper and mid calyceal stones were associated with more major complications ($p < 0.0001$). There were no differences between minor complications and complication free PCNLs for stone location or access site.
Conclusion: PCNL SFRs are lower than in the reported literature — likely owing to our stringent CT follow-up. Patients with larger stone burdens were more likely to not be stone free and experience more complications. Stone location and access site also affected success and complication rates.
Keywords: CALCULI, LITHOTRIPSY, NEPHROLITHIASIS

UPOS-3.04

Prevalence of diabetes 20 years following extracorporeal shockwave lithotripsy (ESWL)

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Introduction and Objective: ESWL has become a mainstay in the treatment of kidney stones. A recent publication suggests that patients who have received ESWL therapy have a greater risk of developing diabetes. Our objective was to determine the prevalence of diabetes in patients who underwent ESWL 20 years ago, and we compared this with the background BC population.
Materials and Methods: Database review identified 357 patients who received ESWL at Vancouver General Hospital between 1985 and 1987. Telephone surveys were conducted regarding diagnosis of diabetes since ESWL. Data were gathered regarding BMI, smoking status, recurrent stone disease and family history of diabetes. It was difficult to identify patients with known stone disease who have never had ESWL; therefore, the prevalence of diabetes in our study group was compared with the provincial prevalence as reported by Statistics Canada in 2005.
Results: Of the 357 contact letters mailed, 200 were ineligible: deceased (23), incorrect address (119), unable to reach (44), refused/unable to consent (14). Telephone questionnaires were completed for 157 patients (44.0% response rate). Five were excluded for diagnosis of diabetes prior to ESWL. The mean age was 67.3 years and the mean BMI was 26.9 kg/m^2. There was a greater proportion of overweight or obese individuals in the ESWL group ($p = 0.154$, NS). The overall prevalence of diabetes in the study group was 26.3%: 29.4% (30/102) in males, and 20.0% (10/50) in females. The provincial prevalence of diabetes for this age group is 10.1% for men and 9.1% for women.
Conclusion: There is an increased prevalence of diabetes in male patients who underwent ESWL 20 years previously (OR 3.72, 95% CI 2.43–5.70). The shortcoming of this study is that it lacks proper controls; thus, it would be premature to conclude that this increased prevalence is due to ESWL alone. It may be attributable to the fact that diabetic patients are prone to developing stone disease and that diabetes does not manifest until later in life. The observation that patients have a higher prevalence of diabetes 20 years following ESWL remains to be completely explained, but this study supports that an association exists.
Keyword: CALCULI

UPOS-3.05

Practice patterns and perceptions of cystoscopy among Canadian urologists

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Introduction and Objective: Exposure to blood and other bodily fluids during medical practice is exceedingly common, especially during invasive procedures such as genitourinary endoscopy. Musculoskeletal injury is also a significant risk given the often awkward and repetitive nature of genitourinary endoscopic procedures. We were curious about the practice patterns of Canadian urologists with regard to the use of video-assisted endoscopy and their perceptions regarding risks associated with genitourinary endoscopy.
Materials and Methods: A mailout survey to all current Canadian Urological Association members was carried out evaluating endoscopic practice patterns, use of protective equipment and perceived risks associated with their practice.
Results: There was a 31% response rate. Only 58% and 78% of respondents routinely used video-assisted equipment for diagnostic and therapeutic endoscopy, respectively, although over 80% would prefer to use video-assisted equipment if it were available. Only one-quarter of respondents routinely used protective equipment during diagnostic and therapeutic endoscopy, although almost one-half of all respondents felt that they were at risk of significant exposure to blood and bodily fluids, and almost 10% had personally required testing, prophylaxis or treatment for exposure. Only one-third of respondents perceived their risk of musculoskeletal injury as significant, although one-quarter had personally required medical attention for neck or back pain.
Conclusion: There appears to be discordance between the number of Canadian urologists who use video-assisted endoscopic equipment and those who would use it if it were available. Canadian urologists appear to underestimate their risks of bodily fluid exposure and musculoskeletal injury. The risks of exposure and musculoskeletal injury could be reduced by the adoption of universal precautions and the use of video-assisted endoscopy for all diagnostic and therapeutic endoscopic procedures.
Keyword: CYSTOSCOPY

UPOS-3.06

Screening and health advocacy: a prospective study of male urology patients

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Introduction and Objective: The importance of health screening and promotion is well documented. Currently, many patients have no primary physician, and many family physicians are overburdened. Urology clinic patients are primarily older male patients who have lower rates of adherence to screening measures. We sought to identify the level of screening and a potential role for increased preventative measures among urological outpatients.
Materials and Methods: We prospectively interviewed 100 male patients in the urology clinic regarding their current screening status for hypertension, dyslipidemia, diabetes and both prostate and colorectal cancer. Smoking, alcohol and weight loss counselling were also investigated. Self-reported height and weight were used to calculate body mass index (BMI). χ^2 and Student t tests were used to examine the association of these variables with both the referral source (family doctor or other) and the reason for referral (prostate cancer investigation or not).
Results: The mean age of the participants was 62 (SD 6) years. Screening rates were equivalent regardless of the reason for the referral. Patients referred by family doctors were more likely to have been screened for dyslipidemia, diabetes and weight control. There was no screening for colorectal cancer in 38% of patients. While 83% of patients were overweight (BMI 25–29.9) or obese (BMI > 30), only 9/52 (17%) of overweight patients received weight loss counselling, compared with 20/30 (67%) of obese patients.
Conclusion: Urology patients who are referred from family doctors are more thoroughly screened than those from other sources. Despite this, there is room for improvement in weight management counselling and colorectal cancer screening. More investigations are needed to explain these differences.
Keywords: PREVENTION, SCREENING, SURVEILLANCE

UPOS-3.07

Effects of unilateral ureteral obstruction on glomerular podocytes

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Introduction and Objective: Previous unilateral ureteral obstruction (UUO) models have focused on the medullary interstitial fibrosis. These are mediated by increased levels of angiotensin and its downstream protein activation. However, its effects on podocytes have not been examined. Therefore, the aim of the present study is to study the effects of UUO on podocytes.
Materials and Methods: C57/BL6J mice were used. There were 4 groups of mice in each group. The first group of 4 mice received the sham operation. The next 5 groups of 4 mice were sacrificed at the following schedule (1 day, 3 days, 7 days, 14 days and 28 days) after the first operation with ligation of the left ureter. IACUC protocol was followed. Both the ipsilateral obstructed kidney and the contralateral kidney were harvested. Immunohistochemical studies were performed using antibodies against Angiotensin I/II, ETS and WT-1.
Results: We found that in the glomerulus, parietal cells express Angiotensin at low levels (+) in both the obstructed kidney and the nonobstructed contralateral side. As expected, podocytes did not show immunostaining for Angiotensin. In addition to these glomerular findings, there was also a differential cell type specific and sequential expression of Angiotensin in the tubular cells. Whereas the distal convoluted ducts showed moderate expression (++) in control kidneys, this immunostaining increased (+++) in the first 3 days of obstruction in the obstructed kidney and then decreased (+) in 7–14 days. Collecting ducts, on the other had, increased the immunostaining from (+) in the control side to (++) in the first 3 days to (+++) in the 7–14 day period of obstruction. We also used ETS-1, which is one of the transcription factor for synthesizing proinflammatory molecules. Podoctyes in both contralateral nonobstructed and ipsilateral obstructed kidneys were strongly (+++) immunopositive indicating a paracrine mechanism of action of Angiotensin from the parietal glomerular cells or the juxtaglomerular cells onto the podocytes. We have confirmed that these cells are podocytes by immunostaining serial sections with WT-1, which is a marker of podocytes.
Conclusion: Glomerular parietal cells express angiotensin, which acts in a paracrine fashion on podocytes in a mouse UUO model.
Keywords: NEPHROLITHIASIS, OBSTRUCTION

UPOS-3.08

The use of Triclosan-eluting ureteral stents in short-term stented patients

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Introduction and Objective: The use of ureteral stents is complicated by biofilm related infection and encrustation, promoting the frequent use of prophylactic antibiotics, even in patients requiring short-term indwell times. In an attempt to reduce these infections and the associated antibiotic use, the broad spectrum antimicrobial Triclosan (TCN) was incorporated into a ureteral stent (Triumph; Boston Scientific, Natick, Mass.). This device provides local antibiosis directly within the urinary tract through the constant elution of TCN, potentially preventing bacterial growth and survival, as well as stent-associated adherence, biofilm formation, infection and encrustation. In this study we sought to determine the clinical effects of the TCN-eluting stent in patients requiring short-term stenting.
Materials and Methods: Patients were randomized to receive either the TCN-eluting stent alone or a control stent (Percuflex Plus; Boston Scientific, Natick, Mass.) in combination with antibiotic therapy (3 days Levofloxacin) (20 patient endpoint). Urine samples were obtained for culture both at the time of stent placement and removal, and all patients' stents were cultured upon removal. All cultured organisms were identified to at least the genus level and profiles of their susceptibility to several clinically-relevant antibiotics were generated where possible.
Results: More patients in the TCN-eluting stent group had positive urine and stent cultures compared with controls. Organisms cultivated include *Corynebacterium sp.*, *Enterococcus sp.*, *Lactobacillus sp.*, *Streptococcus viridans* and *Staphylococcus auricularis*. While 4 patients in the TCN group had positive urine cultures at the time of stent removal (1 was positive at placement), only 1 of their stents had a positive culture, matching the organism found in that patient's urine (*S. auricularis*). No significant encrustation was found on any of the stents upon removal.
Conclusion: TCN-eluting stents did not show a clinical benefit compared with controls in terms of urine and stent cultures. However, since only 1 of 4 TCN-group patients with positive urine cultures also showed a positive stent culture, the Triumph stent appears to inhibit the formation of viable biofilms on its surface when exposed to infected urine. It remains to be determined whether the combination of an antimicrobial stent and oral antibiotics may be of clinical value in patients with difficult and (or) recurrent infections.
Keywords: ANITIBIOTICS, INFECTION, URETER

UPOS-3.09

Evaluation of the knowledge about urology in the general population: a descriptive study

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Introduction and Objective: Urology is the branch of medicine and surgery concerned with the study, diagnosis and treatment of diseases of the genitourinary tract of the male and the urinary tract of the female. It constitutes an important special field of medicine and has been practised for centuries. However, for different reasons, urology appears to be one of the least known specialties in medicine. In fact, when mentioning the discipline of urology in a conversation, it is often confused with other specialties and, most of the time, explanations need to be given concerning the definition of urology. The main objective of this descriptive study was to evaluate the knowledge about urology in the general population with the use of a questionnaire.
Materials and Methods: The population of the study is constituted of 75 persons living in Sherbrooke, a French-Canadian city of the Québec province. These participants were selected randomly and had to complete the questionnaire to be enrolled in the study.
Results: Respondents have a mean age of 50 years (range 13–83); 41 (55%) are women, 34 (45%) were men, and 38 (51%) had a high school education or less. Out of the 75 participants, 41% (31/75) considered themselves to know nothing about urology, 80% (60/75) considered themselves to know little or nothing about urology and only 20% (15/75) considered themselves to have an average knowledge or better about urology. Only 40% of the responders (30/75) know that urology involves surgery. Furthermore, 43% of the participants (32/75) were not able to name at least 1 organ concerned by urology and 61% (46/75) were not able to name at least 1 disease concerned by urology.
Conclusion: This study reveals the lack of knowledge about urology in the general population. The community of urologists may have to consider the need to conduct some form of advertising campaign in order to inform the population about the services given by urologists. In being more informed about the specialty, patients may be inclined to consult earlier for urological problems. For this reason, better information may have a positive effect on prevention and treatment of urological diseases.
Keywords: EDUCATION, PREVENTION, STATISTICS

UPOS-3.10

The top 100 cited articles in urology

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Introduction and Objective: Analysis of the top cited articles in a given field provides understanding of what qualities such articles possess, gives recognition to seminal advances, and provides historical perspective and a template for future research. We analyzed the characteristics of the 100 most frequently cited articles published in journals dedicated to urology and related fields between 1965 and 2007.
Materials and Methods: A total of 65 of the highest impact urology and subspecialty journals and 22 of the highest impact general medical and

medical research journals were selected from the Journal Citation Reports Science Edition, 2006 under the subject categories "Urology & Nephrology," "Transplantation," "Medicine, General & Internal" and "Medicine Research & Experimental." Six additional urological journals were identified. The 100 most frequently cited urological articles published in these 93 journals were identified using the Science Citation Index Expanded (1965 to present). The articles were reviewed via MEDLINE and analyzed for the following: number of citations, year of publication, journal, country of origin, institution, authorship, type of article and sub-field of urology.
Results: The top 100 articles were cited an average of 629 times (range 418–1435) and published between 1965 and 2003, with 89% published after 1979 and 54% published in the 1990's. Only 15 journals were represented, led by the *New England Journal of Medicine* (30), the *Journal of Urology* (22) and *The Lancet* (11). Altogether, 90 publications originated from North America (US 77, Canada 4) and the UK (9). Johns Hopkins (13), Harvard (5), Stanford (5) and Washington University (4) published the most articles. Five urologists were first authors of > 2 of the top-cited articles. A total of 56 articles reported observational studies; the remaining study types included randomized controlled trials (14), reviews (14), basic science studies (14), a systematic review (1) and a validation study (1). Oncology (51) and transplantation (20) were the most commonly represented urological subfields.
Conclusion: These top cited articles in urology identify topics and authors that contributed to major advances in urology over the last 40 years. Observational studies and randomized controlled trials in oncology published in high-impact urological or general medical journals constitute the most common type of highly cited publications.
Keyword: EDUCATION

UPOS-3.11

Patterns of computer and Internet usage among urology patients in northern Ontario

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Introduction and Objective: We attempted to determine if the Internet can be used as a potential health promotion tool in northern Ontario by identifying patient's computer and Internet access and use patterns in 2 northern Ontario communities: Kirkland Lake and Kapuskasing.
Materials and Methods: This study was reviewed and approved by the review boards of the Kapuskasing and Kirkland Lake hospitals and Brock University, St. Catharines. Data were collected by paper and pen questionnaire in English and French. Qualitative information regarding computer and Internet use was also obtained. Quantitative and qualitative data were analyzed using the Statistical Analysis Software (SAS) and the conceptual matrix, respectively.
Results: The response rate of the study sample was 90%; 137 questionnaires were distributed and collected, 7 were incomplete. There were 67 men (62%) and 63 women (48%) aged between 24 and 84 (mean 56) years. Languages spoken by respondents were English (56.9%), French (37.5%) and other (5.1%). The sample was stratified into 3 groups: those with computer and Internet access, those with computer and no Internet, and those with neither computer nor Internet access. Those who were younger, had higher education and higher paying jobs used the computer more often than older people, less educated or with lower paying jobs. Seeking health information for themselves, their families and friends was their main reason for use of the Internet in health related matters. There were mixed feelings about communicating with their physicians through the Internet.
Conclusion: A majority of the respondents (53.5%) used computer and Internet to access health information. Patient reactions toward online communication with their physician were mixed. The sample population is small and limits far reaching conclusions. Further studies are recommended.
Keyword: EDUCATION

UPOS-3.12

Desirable personality traits of urologists: a nursing perspective

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Introduction and Objective: The selection of residents for a training program in any specialty is a complex task riddled with subjectivity. Resaerch shows a positive, collaborative nurse–physician relationship improves patient outcomes and workplace satisfaction for all involved. This paper aims to uncover the traits most valued by nurses who work closely with urologists.
Materials and Methods: An online survey was sent to members of the Urology Nurses of Canada association asking them to score 37 traits on a scale of 1 (not at all important) to 7 (absolutely necessary) for success in urology. Subsequently, they were asked to rank order the top 5 traits that they would like to see in their physician colleagues. Means and standard deviations, representing importance and agreement in ratings respectively, were then calculated for each trait.
Results: A total of 62 nurses from locations across Canada responded. Forty-two (68%) had worked closely with urologists for more than 10 years, with 61% working in a unit with a residency program. Traits with the highest means and lowest variance were: communicates well with staff and patients, knows limitations, not afraid to ask for help and excellent work ethic. Eighteen of 37 traits had a mean score of 6.00 or more. When forced to choose the top 5 traits from the list, the aggregate order became: 1) communicates well with staff and patients; 2) technical/surgical expertise; 3) good team participant; and 4) compassionate. The traits that corresponded to the widest variance and therefore disagreement among respondents were: willing to put in long hours and humility.
Conclusion: Results of this survey could provide selection committees an additional tool to aid in the process of choosing residents and hiring staff. Similar, wider scale surveys should be utilized to determine what traits nurses value in other disciplines.
Keyword: EDUCATION

UPOS-3.13

Information needs of men and their partners about prostate surgery

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Introduction and Objective: There has been minimal research investigating men's information needs in terms of prostate surgery in general and laparoscopic procedures in particular. One exception was the booklet published by the Canadian Continence Foundation (Moore and Vandall-Walker; 2000–2001) based on input from health professionals and men and their partners who had experienced open prostate surgery. New surgical procedures adopted recently were not reflected in this document, indicating a revision was needed to ensure that this patient education booklet remained evidenced based and current. The objective was to investigate the experiences of men and their partners about prostate surgery, focussing on information needs.
Materials and Methods: A qualitative methodology was adopted for this study. This scientifically sound approach was most appropriate, resulting in "rich, thick data" that best revealed the range of information needs. The resultant patient education information is more comprehensive than would be the case if only the "average" was included.
Procedure:
1. Systematic literature review
2. Ethics board approval
3. Recruitment of volunteers for one of three focus groups
4. Content analysis of focus group data and written feedback (men and their partners)
5. Content expert review of first revision of the booklet
6. Content analysis of final focus group data and written feedback (men and their partners)
7. Content expert review of second revision of the booklet
8. Interpretive analysis of all focus group data and written feedback

Results:
Participants
- Nineteen men and five partners
- Three urologists
- Four urology nurses

Information needed:
1. At the time of diagnosis with prostate cancer included comprehensive written, research-based information
2. From an integrated collaborative approach to inform decision making about treatment and surgical outcomes
3. About prostate support groups
4. Included 1:1 review with a nurse
5. About referral to psychologists
6. For partners at all stages

Conclusion: The revised teaching guide that reflects the findings of this study (Vandall-Walker, Moore and Pyne, in press) is one important tool that can be provided by urologists to address their patients' information needs. This booklet will be available in June 2008 in French, English and online, published by AU Press.
Keywords: RADICAL PROSTATECTOMY

UPOS-3.14

Status of urology in China: opportunity for the CUA and SIU

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Introduction and Objective: A joint educational grant was provided by the CUASF and the Canadian Section of the SIU to the authors for an "educational mission" to an academic centre in Changsha, a city of 4–6 million in south-central China.
Methods and Materials: The mission included 1) a 2-day symposium featuring lectures by the authors on pediatric, oncological and reconstructive/incontinence surgery; 2) case conferences and ward rounds; 3) operative surgeries on the aforementioned areas; and 4) conference with the hospital and university president.
Results: The findings were: 1) resources/infrastructure: The 1000-bed university-affiliated teaching hospital has state-of-the-art ORs, radiology is not online and the CT scanner is off site and not readily accessible for viewing. Most new urology patients present to "urology walk-in clinics"; 2) health care system: funding of health care is from federal and regional governments and patients, with no universal access. All urologists are generalists, with no subspecialists; 3) urological knowledge and care: didactic knowledge of trainees appears adequate. However, clinical application, timely and appropriate utilization of investigative modalities, and therapeutic decisions by attending and trainee are inconsistent. Differences in care from the Canadian system were apparent in cases involving superficial bladder cancer, UPJ obstruction, hypospadias, vesicovaginal fistula and renal cancer; and 4) investment in the future: the government has availed, annually, 20 one-year scholarships (US$10 000) for recent surgical graduates to go to Europe, North America or Japan to "further their training." However, accreditation and language barriers thus far have precluded trainees from being involved in hands-on basic clinical training abroad, instead of doing mere observerships and research fellowships.
Conclusion: While we were only exposed to a small segment of the health care system, we feel that there is significant room for improvement and development in urological care in this emerging world power. The CUA, SIU and Canadian academic urology institutions have the opportunity to make a major impact on the development of clinical and academic urology in the most populous country in the world by changing the eligibility criteria for clinical training for young Chinese urologists.
Keyword: EDUCATION

UPOS-3.15

Survey of residency training in laparoscopic, robotic and endourological surgery in Canada

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Introduction and Objective: We determined the status of Canadian training in laparoscopic, minimally invasive and robotic surgery.
Material and Methods: Twenty-eight residents in their final year of training were surveyed in person.
Results: All residents (28) completed the survey. Most (89.3%) train at centres with at least 1 surgeon performing primarily laparoscopic surgery and 82.1% at a centre performing > 50 laparoscopic procedures yearly. Robotic urological procedures are performed at only 1 respondent's institution (3.6%) and only 28.6% of residents intend to perform them in the future. The majority (92.9%) believe laparoscopic nephrectomy is the gold standard. However, only 64.3% have participated in a laparoscopic pyeloplasty or partial nephrectomy in the last year. Of respondents, 64.3% have participated in a laparoscopic prostatectomy and only 3.6% think it's the gold standard. However, 60.7% think the procedure looks promising. Of respondents, 50%, 30.8% and 19.2% reported that laparoscopic donor nephrectomy is performed by urologists, general surgeons, or both, respectively. Percutaneous nephrolithotomy is widely performed (96.4%) but only 42.9% report urologists obtaining primary percutaneous access. Of respondents, 60.7% report percutaneous needle ablation is performed at their institution; 70.6% by radiologists. Laparoscopic needle ablation is performed at the institutions of only 25% of residents. Of respondents, 71.5% believe their laparoscopic experience to be either good or extensive.
Conclusion: Laparoscopic nephrectomy is commonly performed by residents and is considered standard of care. Minimally invasive surgical fellowships remain popular as advanced reconstruction, renal mass ablation and robotic assisted laparoscopy are infrequently performed by Canadian residents. With technologic advances, urologists must strive to learn new procedures or risk them to other specialties.
Keywords: EDUCATION, LAPAROSCOPY, RESIDENCY

UPOS-3.16

The rising incidence of ciprofloxacin resistant bacterial urosepsis after prostate biopsy

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Introduction and Objective: Transrectal ultrasound (TRUS) guided prostate biopsy is a common procedure that is associated with complications such as urosepsis. The choice of prebiopsy antibiotics remains controversial with some centres withholding fluoroquinolone use owing to emerging bacterial resistance.
Materials and Methods: We retrospectively examined a group of 26 men over 6 years with urosepsis after undergoing TRUS biopsy at our centre. In total, 4749 TRUS biopsies were done.
Results: The most common risk factors were diabetes (2), prior history of prostatitis (3) and immunosuppression (5). The most common comorbidities were hypertension (12), hypercholesteremia (8) and diabetes (2). Enemas were not administered prior to TRUS biopsy. At the time of presentation, the median leukocyte count was 13.0 × 109 cells/L (range 3.3–21 × 109 cells/L). The median time to sepsis was 1 day (range 0–9 d) post biopsy. The median length of hospitalization was 4 days (range 0–21 d). Of the 26 men, 24 were given prophylactic ciprofloxacin. Of the 26 blood cultures taken, 16 were positive for strains of *E. coli*, 1 was positive for *Morganella morganii* and 9 were negative. Of the patients with positive blood cultures, almost all bacteria (16/17) exhibited resistance to ciprofloxacin. Bacteria were most likely to be sensitive to gentamicin (13), cefazolin (13), sulfamethoxazole (7) or trimethoprim sul, 1 for *Enterobacter cloacae*, 1 for *Coagulase* (-) *Staphylococci* and 13 negative cultures. Of the positive urine cultures, organisms were most likely to be sensitive to nitrofurantoin and cefazolin, while ciprofloxacin was again the most common antibiotic to exhibit resistance in all 11 instances.
Conclusion: There is an emerging resistance to ciprofloxacin by organisms causing postbiopsy sepsis. Thought should be given to changing prac-

tice patterns to avoid this global change in emerging bacterial resistance. Although the data are limited, consideration of combination therapy prebiopsy of SXT and ciprofloxacin is recommended. Gentamicin use in patients presenting with urosepsis postbiopsy is recommended based on these results.
Keywords: ANITIBIOTICS, BIOPSY, PROSTATE

UPOS-3.17

Development of a real-time laparoscopic mentor device based on the Nintendo Wii transaxial accelerometer platform

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Introduction and Objective: A real-time laparoscopic mentorship platform that allows surgeons to take a hands-off approach in guiding trainees through a minimally invasive surgical procedure has been developed. The ability to provide effective intraoperative guidance without taking back over the case with this tool helps to minimize the occurrence of intraoperative complications due to trainee inexperience, while enhancing the learning experience.
Materials and Methods: The mentorship platform is an interconnection of several functional modules that include a laparoscopic camera and a camera box equipped with S-video output capability, 2o Bluetooth-enabled handheld Nintendo Wii accelerometer based controllers, computer software that communicates with the wireless handheld devices and the real-time laparoscopic video stream, and a monitor that displays an integrated 3D augmented reality environment.
Results: The wireless handheld devices are grasped and maneuvered in 3D space by the attending surgeon as virtual laparoscopic instruments. Computer software detects the controller motions and represents it graphically as movable virtual laparoscopic instruments projected onto the real-time endoscopic view.
Conclusion: Laparoscopic surgery and other minimally invasive surgical techniques are becoming standard techniques for many procedures in urology. Teaching these techniques in a graduated, mentored manner to trainees while providing sufficient real-time visual feedback in the operative field without reducing the continuity of the learning experience is the goal of this project. We believe this tool will fulfill a gap in the attending surgeon's armamentarium in the transitioning of the trainee from tentative resident to confident professional.
Keyword: TECHNOLOGY

UPOS-3.18

Design and integration of online case based interactive multimedia problem-oriented learning in urology using standardized software

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Introduction and Objective: Our goal was to develop an online resource of urology cases for both junior and senior medical undergraduate students during the renal basic science block and clinical clerkship. This resource would be accessible from all 3 sites of the distributed medical program (Vancouver, Victoria and Prince George) in the province of British Columbia. These cases will supplement examinable lecture material and represent classic urological cases which will never go stale.
Materials and Methods: Common office and emergency problems were selected and assigned to a medical student, urology resident and UBC urology faculty member. Using commercially available interactive software, the cases were developed on a collaborative basis to reflect current standards of practice. Each case contained an introduction, pretest and posttest questions, images, bibliography and a link to UBC urology faculty member. Keywords were selected to allow for search engine function. All cases are accessible on a 24/7 basis thus rendering them particularly useful for a distributed medical program.
Results: A library of 39 interactive cases was developed at the 3 said regional campuses. Password protection allows remote access by students on rural rotation. Development for students by students (acronym FSBS is similar to FUBU) ensures relevance and comprehensibility. Case based learning provides a more clinical perspective and framework compared with textbook learning; 100 hours per case invested.
Conclusion: Good interactive and operating systems are required. In addition, considerable technical support to post and maintain library of cases was necessary throughout the course of the project. Access can be controlled by the faculty; this requires a major investment of time and effort. Efficacy of this teaching method cannot be assessed until a large number of students have completed the cases and pretest and post-test scores can be completed. Recommend that authors function as content experts only.
Keywords: EDUCATION, RESIDENCY

UPOS-3.19

The effect of comorbidities and socioeconomic status on sexual and urinary function in men undergoing prostate cancer screening

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Introduction and Objective: Comorbidities and socioeconomic status (SES) represent known confounders of baseline HRQOL. The objective was to assess the effect of comorbidities and of SES variables on urinary and sexual function (SF) and on associated bother items.
Materials and Methods: A cohort of 1162 men without an established diagnosis of PCa completed questionnaires addressing SES characteristics, the lifetime prevalence of 12 comorbid conditions, sexual and urinary function (UF), as well as their associated bother. Crude and adjusted logistic regression models tested the association between the predictors, SES and comorbidity, and four separate outcomes, namely SF, UF and their associated bother.
Results: Of all men aged 40–79 years, 172 (14.8%) reported poor or very poor ability to have an erection, and for 165 (14.2%) erectile function (EF) was a big or moderate problem. Daily or weekly urinary incontinence was reported by 98 (8.4%) men; and for 94 (8.1%) men, UF was a big or moderate problem. One or more comorbidities were present in 437 (37.6%) men. In age and SES adjusted analyses, major depression and diabetes had the most detrimental effect on EF (5.8, $p < 0.001$ and 4.8, $p < 0.001$, respectively) and on sexual bother (4.3, $p < 0.001$ and 7.2, $p < 0.001$, respectively). Stroke (4.7, $p = 0.004$) and drug problems (4.8, $p = 0.002$) had the most detrimental effect on urinary incontinence. Alcoholism and alcohol related problems (3.1, $p = 0.004$) had the most detrimental effect on the urinary bother scale. Finally, SES only affected urinary incontinence, which was poorer in men who lived with a spouse or partner (2.1, $p = 0.03$).
Conclusion: Select comorbidities have very strong effects on urinary and EF. Conversely, for most SES variables, the effect was weak and insignificant. In consequence, when patients are assessed for definitive PCa therapy, comorbidities require an adjustment, whereas SES assessment may potentially be omitted, especially if questionnaire brevity is a consideration.
Keywords: ERECTILE DYSFUNCTION, PROSTATE CANCER, URINARY STRESS INCONTINENCE

UPOS-3.20

Recovery of erectile function after unilateral and bilateral cavernous nerve interposition grafting during radical pelvic surgery

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Introduction and Objective: Cavernous nerve interposition grafting has been attempted in order to preserve erectile function in men who require unilateral or bilateral resection of neurovascular bundles (NVBs) for adequate prostate cancer control. Here we report the outcomes and the

predictors of which in men undergoing unilateral grafting during radical prostatectomy (RP) or bilateral grafting during radical cystectomy (RC) and prostatectomy (RP-B) with autologous genitofemoral (GF) nerve grafts by the urologic surgeon.
Materials and Methods: We retrospectively reviewed electronic records of 36 patients who underwent cavernous nerve interposition grafting between the period of 2003 and 2006. Postoperative erectile function was assessed with the International Index of Erectile Function (IIEF) 15-item questionnaire along with other parameters, including the use of pharmacology for erectile dysfunction (ED) and new risk-factors for ED. Predictors of potency, including age at time of surgery, time since surgery, PSA at time of surgery and postoperative radiation therapy were assessed by univariate analysis.
Results: Thirty-three patients (92% response rate) were followed up at mean times of 34, 26, and 18 months post RC ($n = 10$), RP ($n = 20$) and RP-B ($n = 3$), respectively. The overall IIEF-5 defined incidence of mild or no erectile dysfunction was 31% and 36% during unilateral and bilateral grafting (RC and RP-B), respectively. Additionally, potency, defined as the ability to attain and maintain erections sufficient for penetration at least 50% of the time with or without PDE-5 inhibitors was 31% with unilateral grafts, 36% with bilateral grafts and 25% in the RC subgroup. Patients using intracavernosal injections ($n = 2$) or those receiving postoperative androgen ablation ($n = 3$) were excluded from analysis. Age at time of surgery was found to be the only significant determinant of potency and showed an inverse relationship in the bilateral nerve graft group ($p < 0.05$).
Conclusion: Cavernous nerve interposition grafting by the urologic surgeon appears to have a role in the recovery of erectile function and should be considered in men undergoing non-nerve sparing radical cystectomy.
Keywords: BLADDER CANCER, CAVERNOUS NERVE, CYSTECTOMY, ERECTILE DYSFUNCTION, LOCALIZED PROSTATE CANCER, NERVE GRAFT, NERVE SPARING, PROSTATE CANCER, RADICAL CYSTECTOMY, RADICAL PROSTATECTOMY

UPOS-3.21

Isolation and primary culture of urothelial and smooth muscle cells from porcine (sus scrofa) urinary bladder: preliminary results

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Introduction and Objective: Isolation and primary culture of urothelial and smooth muscle cells from porcine (sus scrofa) urinary bladder.
Materials and Methods: Porcine urinary bladders were obtained at the end of experimental laparoscopic nephrectomy. Cells were isolated from a 1–2 cm^2 bladder piece. We used both micro dissection and enzymatic digestion (Dispase II, Versane and Collagenase IV) for isolation of urothelial cells (UC). Smooth muscle cells (SMC) were isolated from the remaining tissue using Collagenase IV. UC were seeded at a rate of $4 \times 104/cm^2$ in keratinocyte serum free medium (KSFM). When confluent, cells were sub cultured at a ratio of 1/3 or 1/6. SMC were seeded at a density of $3.5 \times 103/cm^2$ in DMEM with 20% FBS. UC and SMC were co-cultured in an attempt to develop multilayer construct from containing both cell types. Briefly, SMC were grown until confluent in SMC medium. SMC were then inoculated with UC 2 days after confluence.
Results: After UC inoculation medium was changed to KSFM. UC in culture grew over SMC but never reached a confluent state (only 95% confluence after 2 weeks). In parallel we cultured UC on commercially available small intestine submucosa (SIS) of porcine origin (1-ply and 4-ply). Two weeks after seeding, H&E staining was performed and revealed multilayer growth of the UC.
Conclusion: These promising in vitro results will lead to further developments towards tissue engineering of urological tissues in vivo.
Keyword: BLADDER

UPOS-3.22

Postmortem sperm retrieval: the Canadian perspective

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Introduction and Objective: Postmortem sperm retrieval has been used worldwide. Following retrieval, sperm can then be used (usually by the surviving partner) to produce a child related to the now deceased male.
Materials and Methods: This case describes a request for postmortem sperm retrieval made by the family of a man who had suffered trauma leading to his death. The man had not given written consent for the retrieval and use of his sperm before his accidental death.
Conclusion: The case illustrates some of the complex ethical and legal issues occurring in Canada and describes the new Canadian regulations that prohibit postmortem sperm retrieval unless explicit written consent has been provided by the deceased.
Keywords: ICSI, SPERM, TRAUMA

UPOS-3.23

Seladin-1 in the prostate: a potential protector against cancer progression

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Introduction and Objective: Recently, overexpression of Seladin-1 (a protein involved in cholesterol synthesis) has been reported in prostate cancer. The objective of this study was to examine the localization, expression and role in proliferation of Seladin-1 in normal and malignant human prostatic tissue at different Gleason scores. The hypothesis is that Seladin-1 offers a protection against prostate cancer progression.
Materials and Methods: Tissue localization of Seladin-1 was determined by immunofluorescence performed on human prostate biopsies and primary cell culture. Expression of Seladin-1 was assessed on prostatectomy specimens by Western blot. Cell culture proliferation was assessed by counting the cells after 5 days of culture following treatment with Seladin-1 specific inhibitor, U18666A.
Results: Seladin-1 is highly expressed in low-risk prostate cancer (Gleason score 6) compared with normal tissue. Its expression is much lower in advanced prostate cancers (Gleason score 8–10). In both normal and cancer tissue, Seladin-1 is more expressed in glandular than in fibromuscular tissues. Tissue localization of Seladin-1 changes from the basal layer in normal prostate to the luminal side of epithelial cells in low-risk prostate cancer. In primary prostate cell culture, U18666A increases cell proliferation.
Conclusion: Our results are in agreement with our hypothesis that in low- to intermediate-grade prostate cancer Seladin-1 increases its expression in the cytoplasm to protect the prostate against anarchic proliferation thus helping to slow down progression of the cancer. In high-grade cancer, Seladin-1 expression decreases leading to more invasive forms of cancer. Confirmation of a role of Seladin-1 would open new horizons relative to the treatment of prostate cancer.
Keywords: CANCER, PROSTATE, PROSTATE CANCER

UPOS-3.24

Human chorionic gonadotropin, the prostate gland and ethnicity: the true story

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Introduction and Objective: To assess the significance of the expression of the β subunit of human chorionic gonadotropin (hCGb) in benign prostatic hyperplasia (BPH) and prostate cancer in men of multi-ethnic origin.
Materials and Methods: We retrospectively studied 375 men, equally subdivided into 3e groups of African–Caribbean men ($n = 75$), Caucasian men ($n = 150$) and men from the Middle East ($n = 150$) with BPH and prostate cancer adenocarcinoma. Immunohistological analysis on formalin fixed, paraffin wax embedded prostate tissue from transurethral resections,

prostate biopsy specimens and radical prostatectomy specimens was related to clinical outcome and — in case of prostate cancer — survival. Prognosis was also related to tumour grade.
Results: hCGb expression was detected in all the 3 groups (both in BPH and prostate cancer). It was expressed in 27 (62.7%) of those with BPH in the African–Caribbean group and in 11 (39.2%) of those with prostate cancer. In the Caucasian men, hCGb expression was found in 35 (41.2%) of those with BPH and 12 (28.5%) of those with prostate cancer. Interestingly, hCGb expression was much less in men from the Middle East compared with the former groups, and it was found to be positive in 36 (37.5%)of men with BPH and 9 (20.9%) men with prostate cancer. Of those prostate cancer patients with positive expression, 3 (37.5%) in the African–Caribbean group, 2 (18.2%) in the Caucasian group and 3 (10.4%) in the Gulf population were found to have evidence of disease progression.
Conclusion: The demonstration of hCGb in prostatic adenocarcinoma identifies a group of patients with poor prognosis, irrespective of histological grade. This additional information will be extremely valuable in the subsequent clinical management of such patients.
Keywords: CANCER, MOLECULAR MARKER, PROSTATE CANCER

Moderated Video Session 1
June 22, 2008, 1430–1600

VID-1.01
Complications of ureteroscopy revisited
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Introduction and Objective: Ureteroscopy has become a powerful and frequently used procedure by urologists. This educational video highlights the complications and the latest technology on how to prevent them.
Materials and Methods: Immediate complications of common peroneal nerve injury, gram negative sepsis, failure to gain ureteral access, poor visualization, migration of stone fragments and stent problems are identified and illustrated with examples. In terms of delayed complications, deep vein thrombosis, urinary extravasation and ureteral strictures are presented.
Results: Simple lithotomy with well-padded legs is important to prevent nerve injury. Gram negative sepsis is avoided by sterilizing urine and avoiding pyelovenous backflow. Diuretics, dyes and ureteral meatotomy are used to identify the difficult ureteral orifice. For tortuous ureters, nitinol glidewire, cobra-tip catheter or Biwire could be used. The ureteroscope could also be used to identify the true mucosa in case of a false ureteral passage. To improve vision, ureteral access sheaths and low-cost pressure bags could be used. Escape basket, Stone Cone, Ntrap and Accordion are the latest devices available that could be used to prevent stone migration. Sequential venous compression devices are used to prevent deep vein thrombosis. Urinary extravasation is treated with indwelling ureteral stent and percutaneous drainage of urinoma in addition to broad spectrum antibiotics. Strictures are treated according to their location and length. There has been no true objective evidence of symptoms related to different ureteral stents.
Conclusion: In the present, video, tips and the latest devices are presented to decrease the risk of ureteroscopy complications. It is always advisable to place a stent and perform delayed ureteroscopy whenever the urologist is not comfortable proceeding.
Keywords: CALCULI, URETEROSCOPY

VID-1.02
Robotic partial nephrectomy: duplicating the laparoscopic technique
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Introduction and Objective: Laparoscopic partial nephrectomy (LPN) provides comparable short-term results to open surgery. However, the learning curve for acquiring the skills necessary to perform LPN is steep. Continued experience in robotic surgery has made robotic partial nephrectomy possible. We report the 8 necessary steps to safely perform a robotic partial nephrectomy (RPN).
Materials and Methods: A prospective evaluation of patients deemed eligible to undergo LPN were consented to undergo RPN. Through video representation, a 77-year-old woman with an enhancing 2.5 × 2–cm left lateral interpolar renal mass will undergo RPN. A stepwise analysis of the procedure will be presented. Warm ischemia time, length of stay in hospital, estimated blood loss and pathological analysis will be evaluated.
Results: RPN was performed safely by translating 8 key maneuvers used in LPN to RPN: 1) port-in-port configuration; 2) mobilization of bowel; 3) identification of tumour; 4) application of satinsky clamp; 5) excision of tumour; 6) parenchymal hemostasis; 7) bolster application; and 8) unclamping of hilum under direct vision. The port-in-port configuration allows for interchangeability between conventional laparoscopy and robotic surgery. In our patient, we encountered a warm ischemia time of 25 minutes and an estimated blood loss of less than 150 mL. The patient endured no perioperative problems and was discharged postoperative day 3. Pathology confirms the presence of renal cell carcinoma with negative soft tissue margins. Ten additional RPN's have been completed successfully, achieving both oncological and functional results comparable to the laparoscopic experience.
Conclusion: RPN is a safe and viable alternative to performing partial nephrectomy. These 8 maneuvers are essential to duplicate the currently established LPN for small renal masses. These key steps also provide a platform for educating surgeons to perform partial nephrectomies for small, incidentally detected renal masses.
Keywords: PARTIAL NEPHRECTOMY, ROBOTICS, TEACHING

VID-1.03
Percutaneous insertion of a stent in laparoscopic pyeloplasty: a new technique
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Introduction and Objective: Multiple techniques of urinary stenting during laparoscopic pyeloplasty have been described, but all have drawbacks. Retrograde double-J stenting has the disadvantage of requiring repositioning of the patient and a second procedure for removal of the stent. Antegrade double-J stenting is often frustrated by inability to bypass the ureterovesical junction, especially in children. Percutaneous, endoscopy-guided nephrostomy can be difficult once the collecting system is open and collapsed. We describe a novel, percutaneous antegrade technique that overcomes these difficulties.
Materials and Methods: Once suturing of the anterior anastamotic suture line is complete, a Chiba needle is passed percutaneously across the anterior wall of the renal pelvis. A guide wire is inserted through the needle trocar followed by, after trocar removal, an angiocatheter over the guide wire and through the flank. A percutaneous pyelo-ureteral stent is passed through the angiocatheter, over the guide wire and across the wall of the renal pelvis. The guide wire is withdrawn and the distal tip of the stent then advanced to the mid ureter. The remaining posterior suture line is then closed and the system tested for leaks. The stent is capped on postoperative day 1 and removed in the office postoperative day 10.
Results: We have utilized this technique in 3 patients thus far, ages 5, 7, and 10 years. Two were in a single system and 1 in a lower moiety pyeloplasty. The procedure was quick with no difficulties encountered in terms of passing the needle, guide wire or stent. No intraoperative or postoperative complications were noted.
Conclusion: The antegrade pyelo-ureteral stent is easily and quickly inserted. Further experience with a larger number of cases is needed.
Keywords: LAPAROSCOPY, PEDIATRIC

VID-1.04
Urethral diverticulectomy in the female
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Introduction and Objective: These are 2 cases of urethral diverticulectomy captured on video. The first is a 49-year-old woman with postvoid dribbling, stress incontinence, dyspareunia and an anterior vaginal wall mass on physical examination. The second is a 33-year-old female with an 8-year history of urinary infections, dyspareunia, a painful vaginal mass and purulent urethral discharge. Both patients had physical exam findings of urethral diverticula. The second patient, on pelvic MRI, was found to have a saddle diverticulum. Neither patient had a history of urethral or vaginal surgery.

Materials and Methods: Both surgeries comprised the same basic technique. With the patient in the lithotomy position, an inverted U-shaped incision was made in the vagina and the diverticulum dissected outside of the periurethral fascia. This fascia was then entered and dissected off the diverticulum. The sac of the diverticulum can be entered to visualize the entire lumen and to confirm its anatomy. Once the sac is dissected completely (except for its urethral attachment via a periurethral gland/stalk), it was sharply transected. The urethra is then closed in 2 layers with a 3–0 polyglactin braided suture. The periurethral fascia was then also closed as a third layer. Lastly, the vaginal epithelium was closed. The periurethral fascia preservation and closure is critical to the long-term success of this surgery. A urethral catheter was left in place for 10 to 14 days and a pullout cystogram was done at the time of catheter removal to confirm no extravasation of urine or recurrence.
Results: Both of these women underwent successful and uncomplicated diverticulectomies. Neither one experienced a recurrence.
Conclusion: Vaginal urethral diverticulectomy is an effective surgery with little morbidity. Conservation of the periurethral fascia and its closure over the urethra is important in the success of this surgery.
Keywords: EDUCATION, URETHRA, UTI

VID-1.05

Distal urethroplasty in a female with a midurethral stricture

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Introduction and Objective: Urethral stricture disease in the female is usually caused by prior dilation, difficult catheterization with subsequent fibrosis, urethral surgery or trauma. Initial treatment of strictures is often urethral dilation or visual urethrotomy. However, when these methods fail or the stricture is very fibrotic, urethroplasty is needed. Blandy described, but never published, an effective, technically facile vaginal inlay flap urethroplasty technique. This method has been shown to be effective in a series of 8 women reported by Schwender and colleagues. We present a case of a 55-year-old woman who was treated for urgency and frequency with multiple urethral dilations; she then developed a subsequent stricture from these dilations. Her symptoms included recurrent urinary infections, nocturia, frequency, incomplete emptying and vaginismus. On physical exam, her urethra could only accommodate an 8F feeding tube and cystoscopy revealed a midurethral stricture.
Materials and Methods: In the lithotomy position, a silicone catheter was placed into the urethra and an inverted U-shaped vaginal flap was raised. The urethra was then sharply incised at the 6 o'clock position over the catheter until it would admit a urethral sound and then the incision was lengthened over the sound. The urethral incision was completed using a nasal speculum, which allows for thorough inspection of the urethra to ensure that even the most proximal portion of the scar is incised. Any scarred tissue surrounding the urethra was then excised. The vaginal flap was then advanced and folded over with its apex sutured to the apex of the urethral incision. The edges of the flap and the urethral incision are then reapproximated in an interrupted fashion using a rapidly absorbable stitch. A urethral catheter was then left in place for 7 to 10 days.
Results: This procedure was uncomplicated and the patient was able to spontaneously void after the catheter was removed. She required daily self obturation with a catheter for one month and has had no recurrences.
Conclusion: The vaginal inlay flap urethroplasty is a simple and effective technique for a female with a midurethral stricture and should be considered over chronic urethral dilation.
Keywords: STRICTURE, URETHRA, URINARY RETENTION

VID-1.06

Laparoscopic partial nephrectomy for a complex hilar tumour: surgical technique

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Introduction and Objective: Partial nephrectomy by laparoscopy (LPN) offers patients the advantage of a nephron-sparing surgery combined with a minimally invasive approach. LPN, however, continues to be a challenging and demanding procedure. In this video, we present the main steps of our surgical technique for a case involving a centrally located hilar tumour with complex renal vasculature.
Materials and Methods: A 57-year-old woman with a 3.4-cm renal mass located on the antero–medial aspect of the right kidney in close proximity to the renal hilum. Past medical history is significant for hypertension, type II DM and a BMI of 39. The operation was performed transperitioneally by using two 12-mm, two 5-mm and one 10-mm port. Following mobilization of the colon and duodenum, the gonadal vein was identified, clipped and divided. The ureter was then mobilized with dissection proceeding up to the renal hilum. Three renal arteries and a single renal vein were identified. The upper pole of the kidney was then mobilized free from the adrenal gland. The renal tumour was identifed within the renal hilum. A laparoscopic satinsky was then applied clamping each renal artery and vein. The renal mass was excised with sharp dissection. Frozen section was negative. Reconstruction of the kidney involved running chromic 2–0 sutures within the defect, a surgicel bolster placed over the defect and interrupted 0 chromic capsular sutures for reapproximation of the renal capsule and compression of the parenchyma. The renal defect was infiltrated with fibrin glue. Warm ischemia time was 36 minutes.
Results: The operative time was 224 minutes and the estimated blood loss was less than 100 mL. There were no intraoperative complications. The drain was removed on the second postoperative day and the patient was discharged home on the fourth postoperative day. Pathology revealed a pT1a conventional renal cell carcinoma with a Fuhrman nuclear grade 1. Surgical margins were negative.
Conclusion: LPN can safely be performed and is feasible for complex renal tumours involving the renal hilum with multiple renal vessels.
Keywords: LAPAROSCOPY, PARTIAL NEPHRECTOMY, RENAL CELL CARCINOMA

VID-1.07

Vesico-vaginal fistula laparoscopic repair

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Introduction and Objective: Open hysterectomy is known as the most frequent cause of vesicovaginal fistula (VVF) (1/1800 procedures). Several techniques have been described to repair VVFs. To date few cases of laparoscopic repair of VVFs have been described.
Materials and Methods: We describe the technique of laparoscopic repair of VVFs we performed in 3 consecutive patients. The steps of the procedure are: transvesical resection of the fistula, reconstruction of bladder and vaginal walls with interposition of a peduncolarized omental flap. The patient is placed in a lithotomic position and 5 trocars are inserted in a fan shape. Several adhesions on the anterior abdominal wall due to previous hysterectomy are dissected and the posterior peritoneum is incised. The bladder floor is dissected from the anterior vaginal wall. The bladder is then opened and the fistula is identified at the level of the bladder trigone. The posterior bladder wall is incised and the path of the fistula is resected. A running suture is performed with 0 Vycril on the vaginal wall. A double layer Vycril 2–0 suture is then performed on the bladder wall. An omental vascularized flap is pulled down between the bladder and the vaginal walls and secured to the vaginal wall with a stitch. Finally, the posterior peritoneum is reconstructed.
Results: No complications occured. Mean catheterization time was 8.2 (range 7–12) days. A follow-up retrograde cystography showed a good result of the procedure in all cases.
Conclusion: Based on our results and on the analysis of the literature, the laparoscopic approach can be considered as a valid option for the repair of VVFs, with the advantage of minimal invasiveness and low morbidity.
Keyword: RECONSTRUCTION

VID-1.08

Laparoscopic transvesical ureteral reimplantation for obstructive megaureter

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Introduction and Objective: In the last few years, the indications for laparoscopic reconstructive procedures have increased. We present the case of a left transvesical ureteral reimplantation for obstructive megaureter in a young woman.

Materials and Methods: A 23-year-old woman came to our attention for recurrent urinary tract infections and left hydronephrosis. The abdominal CT scan showed the presence of a left obstructive megaureter. The patient underwent a laparoscopic transvesical ureteral reimplantation. The main steps of the procedure were: remodelling of the ureter according to the Kalicinsky folding technique and ureteral reimplantation with submucosal tunelling. The posterior peritoneum was incised and the pelvic ureter was dissected from the iliac vessels and down to the intramural tract. The ureter was sectioned and the bladder sutured with a 2–0 Vycril. The pelvic ureter was remodeled according to the Kalicinsky folding technique with a 3–0 Vycril running suture. The bladder was filled with saline and the anterior wall was incised and suspended with a stitch. A submucosal injection of saline was performed to create a submucosal tunnel. The ureter was pushed through the tunnel and the new ureteral orifice was created with 4–0 Vicryl interrupted sutures. A 7 French JJ stent was placed and the bladder wall was sutured.

Results: Operative time was 180 minutes. No complications occurred. The urethral catheter and the JJ ureteral stent were removed after 7 and 20 days, respectively. An IVU demonstrated a good result one month after the procedure.

Conclusion: Laparoscopic transvesical ureteral reimplantation is feasible and should be considered as an option in the management of obstructive megaureter.

Keyword: URETER

VID-1.09

Important findings on fluoroscopy during videourodynamics: a teaching file

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Introduction and Objective: Fluoroscopic videourodynamics (FUDS) are the combination of urodynamic measurements of the bladder and urethra with simultaneous fluoroscopy. The lower urinary tract structures and function are both evaluated so the risk of missing anatomical defects and the misinterpretation owing to artefacts is reduced. Several patients with complex urological histories have been evaluated with FUDS at our tertiary care centre, and in many the fluoroscopy has been indispensable in their diagnosis and treatment plan. It is our objective to share several examples of fluoroscopic abnormalities on FUDS that would be otherwise difficult to diagnose with urodynamics alone. This is an educational aid to be used as a teaching file.

Materials and Methods: Six patients had FUDS as part of their surgical work-up. A 10 French, double port, triple lumen catheter that measures bladder and urethral pressures is placed. The radiopaque distal port is positioned in the bladder and the proximal port at the external sphincter. The patient is then tilted upright on a fluoroscopy table and the bladder filled at 50–75 mL/minute with contrast media. Images are taken intermittently during filling. At approximately 200 mL Valsalva and (or) cough manoeuvers are imaged.

Results: In the 6 cases fluoroscopy aided in the diagnosis of an ectopic ureter, vesicoureteric reflux and a severely contracted bladder, vaginal vault prolapse, detrusor-external sphincter dyssinergia, a widely open bladder neck and persistent urethral obstruction from a midurethral sling.

Conclusion: Fluoroscopy can often add a significant amount of information combined with urodynamics.

Keywords: BLADDER DYSFUNCTION, EDUCATION, IMAGING

VID-1.10

Percutaneous renal surgery: how to minimize bleeding

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Introduction and Objective: Percutaneous renal surgery has become a common and frequently used procedure by urologist. This educational video highlights the hemorrhagic complications and the how to prevent them.

Materials and Methods: Bleeding from percutaneous renal surgery occur at the time of access, surgery, and while exiting the kidney. In addition management of bleeding complications is presented.

Results: Percutaneous access to the kidney should be obtained laterally and through the papilla rather than through the interpapillary tissue in order to avoid damage to the interlobular arteries. When inadvertent caval entry occurs, the guidewire is withdrawn and access to the collecting system is re-established. Other pitfalls that should be avoided during access are: kinks in the guidewire, dilation without fluoroscopic guidance and perforation of the renal pelvis. Dr. Clayman's technique of simultaneous ureteroscopy prevents renal pelvic perforation. Fogarty balloon occlusion of the renal artery allows bloodless operative field and the embolization of any injured vessels immediately postoperatively. This may be an option in highly selected patients who are critically ill and cannot tolerate any blood loss. In terms of intraoperative manipulations, the use of nontraumatic graspers minimizes inadvertent renal parenchymal tissue damage and bleeding. Avoiding torque on the Amplatz sheath and using a flexible nephroscope are 2 other ways. One of the easiest ways to minimize bleeding immediately postoperatively is to either elevate the nephrostomy tube or to clamp it. Dr. Clayman's technique of inserting Floseal into the percutaneous tract is another way. Here we describe a novel technique of sealing the percutaneous tract by cryoablation to decrease postoperative bleeding. A single 10-minute cycle of freezing is used. Postoperative bleeding is managed by stabilizing patients with intravenous fluids and transfusions. If bleeding continues, then superselective angioembolization is performed. Pseudoaneurysms, AV fistulas and lacerated vessels are 3 causes of bleeding visualized and treated with angiography.

Conclusion: Meticulous attention during percutaneous access, surgery and exit will pay off in terms of decreasing the risk of hemorrhagic complications. In this video, ways to minimize bleeding and their management have been presented.

Keywords: CALCULI, IMAGING, LITHOTRIPSY

Unmoderated Videos

UVID-1.01

Digital ureteroscopy: the next step

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Introduction and Objective: Flexible ureteroscopy is a powerful endourologic procedure for diagnosing and treating upper urinary tract disease such as stone disease, transitional cell carcinoma and ureteral strictures. Despite technological advances in making flexible ureteroscopes smaller caliber, the fibreoptic scope usually suffers from a grainy image. Furthermore, the fibreoptic ureteroscopes are fragile, requiring costly repairs. Therefore, new technology to overcome these deficiencies in current endoscopes is needed.

Materials and Methods: The new Invisio DUR-D digital flexible ureteroscope from Gyrus ACMI (Southborough, Mass.) was tested for the first time.

Results: The tip of this scope houses dual LED (Light Emitting Diode)-driven light carriers and a 1-mm digital camera, which obviates the need for an external xenon light source, and it eliminates the need for a hot light cord to light source, thus eliminating the risk of drape fires and patient burns. Since there are no external cameras or light cables, the DUR-D digital ureteroscope is much lighter and more ergonomic when compared to the fibreoptic ureteroscope. There is no need to focus or white balance, just plug-and-play. The weight of the DUR-D is 505 grams whereas the fibreoptic DUR-8 Elite ureteroscope with external camera and light cord can weigh up to 1012 grams. This represents a 50% reduction in weight. The tip of the Invisio DUR-D digital flexible ureteroscope is 8.7F with a 3.6F working channel and is capable of dual 250 degrees of articulation. A 1-mm digital camera at the tip eliminates the need for fragile low-resolution fibreoptics and provides superb unprecedented resolution. Furthermore, the laser fibre detection system recognizes and deactivates the laser whenever the fibre is retracted within the ureteroscope to prevent accidental misfiring of the laser, thus reducing laser-caused scope damage and helps prolong the life of the instrument.

Conclusion: The latest generation of digital ureteroscopes provides better image resolution and quality. They also reduce the risk of fires associated with external xenon light sources. Long-term use of this digital ureteroscope is needed to compare its durability with the traditional fibreoptic ureteroscopes.

Keywords: IMAGING, LITHOTRIPSY, URETEROSCOPY

UVID-1.02

The Accordion: a new device to prevent stone migration during ureteroscopic lithotripsy

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Introduction and Objective: Stone migration and retropulsion can complicate ureteroscopic lithotripsy resulting in longer operating times and decreased stone-free rates. Several devices are currently available to prevent such retropulsion. We present a novel device that is a 0.038" guidewire with 2 filmy polyurethane flanges that when deployed, "accordions" to a 7-mm wide device that prevents fragment migration.

Materials and Methods: The Accordion (Perc Sys, Mountainview, Calif.), was employed in 6 patients with proximal or distal ureteral stones undergoing flexible or semi-rigid ureteroscopic laser lithotripsy. The Accordion was inserted either through the ureteroscope, through a ureteral access sheath or via a cystoscope and guided using fluoroscopy. The holmium:YAG laser was utilized for intracorporeal lithotripsy.

Results: The Accordion was successfully placed in all patients proximal to the stone and laser lithotripsy was successfully carried out. No fragments migrated beyond the Accordion. The Accordion was used to pull and sweep the fragments out of the ureter or access sheath. In cases where the fragment was too large to be removed, the accordion simply undeployed itself and was easily removed. In one case where a prestented patient had his stent migrate into the distal ureter, the Accordion was used to remove it from the ureter. All patients were stone-free postoperatively. A postoperative ureteral stent was not necessary in any of the cases.

Conclusion: The Accordion is easily inserted, deployed and successfully prevented stone migration. It can also be used to sweep fragments out of the ureter during ureteroscopic lithotripsy.

Keyword: URETEROSCOPY