Moderated Poster Session III: Stones/Endourology, Laparoscopy/Robotics
Friday, November 1, 2013
10:45 AM - 12:30 PM

P28
Urinary Stone Risk after Colon Surgery: The Inflammatory Bowel Disease Bias

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Background: Previous studies investigating urinary stone risk after colon surgery have demonstrated significant reductions in urinary pH, volume, citrate, and magnesium that correspond to an increased incidence of kidney stones. These studies, however, have consistently included patients with inflammatory bowel disease (IBD) which may bias their findings due to known urinary abnormalities present prior to surgery and differences in length of bowel removed compared to other types of colon surgery. This study aims to evaluate urinary stone risk after colon surgery in patients with and without IBD.

Methods: Retrospectively, baseline 24-hour urine samples of 21 kidney stone patients with a history of colon resections were evaluated from a data set of over 800 patients. Urinary chemistries of those who required colon surgery for IBD (9 patients) and non-IBD reasons (12 patients) were compared to each other and a control of 52 first-time stone formers without bowel disease.

Results: The IBD colectomy group had a significantly lower urinary pH (5.55 vs. 6.08, p=0.003), magnesium (41.8 mg/d vs. 103.7 mg/d, p=0.0002), citrate (109.8 mg/d vs. 230.4 mg/d, p=0.0001), sodium (95.2 mmol/d vs. 7.9 mmol/d, p=0.013), and calcium (109.8 mg/d vs. 230 mg/d, p=0.01) than the control. The non-IBD colectomy group had lower pH (5.69 vs. 6.09, p=0.015) and higher supersaturation of uric acid (1.62 vs. 0.87, p=0.015) compared to the control. The IBD colectomy group revealed a lower magnesium (p=0.04), citrate (p=0.007), and sodium (p=0.045) than the non-IBD colectomy group. 66% of the colectomies in the IBD group were total while 100% of the colectomies in the non-IBD group were partial.

Conclusions: The urinary stone risk of colectomy patients with IBD is significantly different from colectomy patients without IBD and is more reflective of abnormalities present in IBD patients prior to surgery such as low citrate, magnesium, and urinary pH. It is likely the IBD patients biased the findings of previous studies investigating the urinary stone risk after colon surgery. Patients who underwent colon surgery for non-IBD reasons, however, have few urinary abnormalities and a urinary risk more similar to first-time stone formers. The difference in urinary risk of colectomy patients with and without IBD may be explained by the intrinsic stone risk present in IBD and the differences in length of bowel removed.

P29
A Multicentre, Randomized, Double-blind, Placebo-controlled Study of Silodosin to Facilitate Medical Expulsion of Ureteral Calculi

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Background: Medical expulsive therapy using alpha blockers is a common practice in treatment of ureteral calculi. We evaluated the efficacy of silodosin 8 mg as medical expulsive therapy for proximal, mid, and distal ureteral calculi.

Methods: After Institutional Review Board approval was obtained in 34 academic and community sites throughout the United States, 246 subjects with a unilateral ureteral calculus (4-10 mm) were randomized, with blinding and concealment, to receive either placebo or silodosin 8 mg once daily for up to 4 weeks. A total of 232 subjects received study medication and completed the study follow-up. Univariate logistic regression was utilized to compare the primary endpoint of stone passage at 4 weeks with intention-to-treat analysis. If there was no stone passage after 4 weeks, or if the patient required intervention at any point, the study was terminated. Secondary endpoints included time to stone passage, need for emergency department visits, surgical intervention, pain assessment scores, and analgesic use.

Results: For subjects with stones located in the distal ureter, treatment with silodosin resulted in significant improvement in the spontaneous expulsion rate at 4 weeks (69.2% vs. 45.8%, p=0.0138). A trend towards improvement in passage rate was observed for all ureteral stones collectively but not for the subsets of proximal or mid-ureteral stones. Among all patients, larger stones (6-10 mm) had higher passage rates with silodosin than with placebo (33% vs. 9.1%, p=0.0573). For subjects with distal ureteral stones, time to stone passage was lower in subjects receiving silodosin, approaching statistical significance. Subjects with distal ureteral stones receiving silodosin reported significantly greater improvements in average pain scores at study exit (Table 1).

Conclusions: This investigation represents a large, multi-institutional, level I study demonstrating that silodosin 8 mg is effective over placebo in improving the passage of distal ureteral calculi. In particular, the spontaneous passage of large ureteral stones (6-10 mm) was positively affected by silodosin.

Table 1. P29

Spontaneous stone passage at 4 weeks (primary endpoint)

	Silodosin 8 mg	Placebo	*p* value
Distal stones (n=111)	36/52 (69.2%)	27/59 (45.8%)	0.0138

P30

Ultrasonography-guided Shock Wave Lithotripsy for the Treatment of Radioluscent Urolithiasis: A Retrospective Study

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Background: Ultrasonography-guided shock wave lithotripsy is one of the non-invasive treatment strategies for radioluscent intra-renal and ureteral stones. Currently, there are few urologists in Quebec who have an expertise in this technique. Our objective was to determine the efficacy of ultrasonography-guided shock wave lithotripsy in our tertiary care centre, the CHUM (Centre Hospitalier de l'Université de Montréal), depending on the size and site of calculi and the complications associated.

Methods: One hundred forty-three ultrasonography-guided shock wave lithotripsies were performed in our centre between January 2007 and March 2013. Twenty-one patients were excluded from our study because of missing data. We therefore retrospectively reviewed the operative procedures, imaging and follow-up of 122 patients. Analysis of the efficiency and complications of ultrasonography-guided shock wave lithotripsy was performed. Success rates were cumulated depending on the size and location of the calculi. Success was defined as no need of a further intervention. Patients were stratified in three size groups (15 mm) and seven location groups (superior calyx, medial calyx, inferior calyx, renal pelvis, superior ureter, medial ureter and inferior ureter).

Results: In our study, 56.5% of patients treated by ultrasound-guided shock wave lithotripsy had renal pelvis stones. Fifteen percent of the patients had stones in the medial calyx, 10.7% in the superior calyx and 9% in the inferior calyx. Nine percent of the patients had ureteral calculi. First treatment success rates for renal pelvis stones were 60% for the 15 mm group. In the superior calyx group first treatment success rates were between 0% and 45.4% with a 45.4% success rate in the 15 mm calculi. In the medial calyx group success rates were between 25% and 100%: 88.9% in the 15 mm group. In the inferior calyx group success rates were between 71.4% and 75%: 71.4% in the <10 mm group, 75% in the 10-15 mm group. No patients were treated in the >15 mm group. Success rates between 40% and 100% were estimated for ureteral stones. There were few complications in our study. Five patients presented slight macroscopic hematuria, one Steinstrasse event was reported and one urinary tract infection without sepsis.

Conclusions: Ultrasound-guided shock wave lithotripsy is an efficient treatment option for radioluscent renal or ureteral calculi associated with few complications. Succes rates vary according to size and emplacement of the stones with better results for intra-renal urolithiasis less than 15 mm.

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Validation of a Clinical Nomogram to Predict the Successful Shockwave Lithotripsy of Renal and Ureteral Calculi

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Background: Although shockwave lithotripsy (SWL) outcomes are dependent on patient and stone-related factors, there are few reliable algorithms predictive of treatment success. We previously created a clinical nomogram to use pre-treatment patient and stone variables to predict successful SWL outcomes, based on patients treated on the Phillips Lithotron. The purpose of this paper is to validate that nomogram in a different, more current set of patients who underwent treatment on a different lithotripter to determine if the nomogram is valid and generalizable.

Methods: Data from patients treated at our lithotripsy unit from June 2010 to September 2012 were reviewed. Analysis was restricted to patients with a solitary renal or ureteral calculus <20 mm in maximum dimension, with a pre-treatment CT scan within 4 weeks of SWL, and follow-up at our institution. Demographics, stone, patient, treatment and follow-up data were collected from a prospective database. All patients were treated on the Storz Modulith SLX-F2 lithotripter.

Results: In total, 270 patients (67.5% male) were analyzed. Mean stone size was 52±37 mm^2 for ureteral stones and 66±54 mm^2 for renal stones, with 82 (50.3%) of the renal stones located in the lower pole. The single treatment success rates for ureteral and renal stones were 62% and 75%, respectively. On univariate analysis, predictors of SWL success, regardless of stone location, were age (p=0.04), body mass index (p=0.048), stone size (p<0.01), mean stone density (MSD; p<0.01), gender (p=0.029), stone location (p<0.01) and skin-to-stone distance (SSD; p<0.01). By multivariate logistic regression, stone area, stone location, MSD and SSD remained significant predictors, with an area-under-curve (AUC) of 0.79.

Conclusions: Patient and stone parameters have been identified to create a nomogram that predicts SWL outcomes. These parameters have been validated in two independent cohorts of patients treated on entirely different lithotripters (one elctrohydraulic machine, the other electromagnetic). Use of a clinical nomogram can facilitate optimal treatment-based decisions and provide patients with more accurate single-treatment success rates for SWL that are tailored to patient-specific situations.

P32

No Difference In 24-hour Urine Parameters Between Patients With Obstructing And Non-obstructing Urolithiasis Presenting to a Tertiary Referral Centre

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Background: Metabolic work-up of stone formers often includes at least one 24-hour urine collection. Conventional teaching has been to perform the 24-hour urine collection after an acute stone event and after obstruction has been relieved. However, by the time a patient is seen in follow-up some stone prevention counseling is likely to have occurred, altering the 24-hour urine collection results ("clinic effect"). At our institution, patients bring a 24-hour urine collection to the initial assessment for extracorporeal shockwave lithotripsy (SWL). The study objective is to determine if there are differences in 24-hour urine parameters for patients with obstructing versus non-obstructing stones.

Methods: In 2011, 2670 SWL treatments were performed at our institution. Newly referred, unstented patients with pre-SWL 24-hour urine data were reviewed (n=849). Institutional axial imaging was available for retrospective review in few patients; therefore, patients were grouped into renal versus ureteral stones assuming most renal stones are non-obstructing and unstented ureteral stones have some degree of obstruction.

Results: 615 renal and 191 ureteral stones were included. 65.4% were male with more males in the ureteral stone group (73.8% vs. 62.8%, p=0.005). Average age was 51.3 years (±13.1) with an average BMI of 27.5 kg/m^2 (±5.4). Mean stone size was similar between groups (p=0.898). The rate of hypercalciuric patients was significantly higher in the renal group (17.3% vs. 11.1%, p=0.039) but no other parameters differed between groups.

Conclusions: There are few differences in 24-hour urine parameters between obstructive and non-obstructive urolithiasis when location of stone is used as a proxy for obstruction. Only urinary calcium was statistically different between groups but this may be of little clinical significance. This study may support earlier 24-hour urine evaluation, in order to minimize the "clinic effect," regardless of urinary obstruction.

P33

Validity of Administrative Coding for Pregnant Patients with Urolithiasis

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Background: Administrative databases are frequently used for retrospective study of patients with urolithiasis. While coding has been validated for urolithiasis in the general population, pregnancy remains a unique condition where kidney stone diagnosis is challenging, and thus the validity of coding in this group is unknown. We aim to define the validity of ICD-9 codes for upper urinary tract stone disease in the pregnant population.

Methods: All patients from 2001-2011 with an ICD-9 coding diagnosis of pregnancy (640-648, V22.0, V22.1, V22.2) and upper tract urinary calculus (592, 592.0, 592.1, or 592.9) at a tertiary women's hospital were

identified. 75 randomly chosen patients underwent further chart review. Patients were deemed not to be appropriately coded if no imaging was performed, no renal colic was present, no stone or hydronephrosis was identified on imaging, negative ureteroscopy was performed, and/or no stone passed.
Results: A total of 417 patients were identified as being coded for pregnancy and nephrolithiasis. Of the 75 selected for thorough chart review, 36 correctly had a urinary calculus while 39 did not. In the pregnant population on administrative chart review, only 48% of patients were correctly coded based on ICD-9 diagnosis code for upper tract urolithiasis.
Conclusions: ICD-9 coding for urinary calculi in the pregnant population is not valid and should not be used in administrative databases to study stone disease in this group of patients unless diagnosis can be confirmed on an individualized basis.

P34
Radiation Practice Patterns and Exposure in the High-Volume Endourologist
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Background: Endourology is an evolving field with minimally invasive procedures often guided by fluoroscopy. To date, research has focused on radiation risk to the patient, however limited literature exists to characterize surgeon exposure. We aim to define radiation exposure and practice patterns among endourologists by evaluating high-volume surgeons with varying experience.
Methods: Surveys were obtained from the Research in Calculus Kinetics (R.O.C.K.) Society members from 14 different institutions across North America. All surgeons practice at high volume academic institutions as surgical stone specialists. Protective equipment, fluoroscopy variables and practice patterns were recorded. Dosimeter readings for the past year were obtained from those available and analyzed. Effective delivered dose was examined as a function of the practice variables studied.
Results: 15 surveys were returned, with a response rate of 94%. Fluoroscopic procedures comprised 87% of surgeon cases. Surgeon mean experience was 12.4 years (range 1-32). On average, surgeons operated with a fellow 30.4% of cases, with a resident 92.9% of the time, and scrubbed for 70.1% of cases. Lead aprons were worn in 99.3% of cases, thyroid shields in 98.7%, radiation glasses in 52.7%, and lead gloves in 9.7%. About 2/3 of surgeons controlled the foot pedal themselves and less than half used a dedicated radiology technologist. Only 33.3% of surgeons regularly wore dosimeters. Of these surgeons, average deep dose equivalent was 816.6 mrem/year, or 68.1 mrem/month. Lens dose equivalent was 1303.4 mrem/yr or 108.6 mrem/month. Shallow dose equivalent was 1286 mrem/year or 102.8 mrem/month. With only 4 surgeons having dosimeter readings, comparisons were limited, but there did appear to be a trend when comparing those surgeons with equal to or greater than 10 years of practice experience to less experienced surgeons (25.3 mrem/month compared with 110.7 mrem/month). All surgeons with dosimeter readings used pedal control of fluoroscopy and obtained their own access for percutaneous nephrolithotomy.
Conclusions: Endourologists receive moderate radiation exposure, which can be further reduced with practice experience and improved education. As low as reasonably achievable (ALARA) principles should be in place and judiciously followed. Dosimeter use remains quite low, limiting analysis of other potentially significant variables. Improved monitoring and education should assist with reduction of radiation exposure to both the patient and endourologist.

P35
Pioneering Outpatient PCNL: The McGill/Queen's Experience
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Background: Traditionally, patients are admitted following PCNL. The concept of discharging a patient a few hours following PCNL has not been widely adopted and in fact has been seen by some thought leaders as substandard care. Consequently, there remains a paucity of studies on outpatient PCNL. The purpose of this study is to challenge tradition by assessing the safety and efficacy of outpatient PCNL in two "early adopter" Canadian centres.
Methods: A retrospective review of all outpatient PCNL cases between March 2007 and May 2013 at McGill and Queen's Universities was performed, including collection of preoperative, intraoperative and postoperative data. Strict criteria were used in the selection of candidates for outpatient PCNL: ASA class 1 or 2; no intraoperative complications; minimal intraoperative bleeding; no collecting system perforation; no obvious residual stones; hemodynamically stable postoperatively; adequate pain control; reliable patient with supportive family.
Results: Forty-five outpatient PCNL cases were performed, including 2 calyceal diverticula. All patients were discharged the same day, within hours of PCNL. No patients were admitted overnight in a 23/24-hour short stay ambulatory unit. With the exception of 1 of the calyceal diverticulum patients who received a nephrostomy, all PCNL cases were performed using a tubeless technique. Presently, complete follow-up is available on 42 of 45 patients, as follow-up on the 3 most recent patients is pending. Five patients (11.9%) returned to the emergency room within the first 7 postoperative days. Three patients had flank pain/stent colic and were discharged and 2 patients (4.8%) were admitted - 1 with multiresistant E. coli and 1 with uncomplicated flank pain. Stone-free rate was 95.2% (40/42 patients). Importantly, there were no major complications or deaths.
Conclusions: This study represents the largest series to date of outpatient PCNL cases. In properly selected patients, outpatient PCNL is feasible. With a postoperative readmission rate of less than 5% and a stone-free rate of greater than 95%, outpatient PCNL appears to be safe and effective, respectively. Furthermore, same day discharge following PCNL could potentially add value to the healthcare system through significant cost savings. Prospective studies comparing standard PCNL to outpatient PCNL are warranted.

P36
Urinary Tract Injury During Hysterectomy: Robotic-Assisted versus Conventional-Laparoscopy versus Laparotomy
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Background: Given the enhanced visualization and dexterity afforded by robotic surgery, we sought to evaluate whether there was a lower incidence of urinary tract injury during robotic-assisted hysterectomy, as compared to conventional-laparoscopic and laparotomic hysterectomy.
Methods: Retrospective chart review was performed on all robotic-assisted, conventional-laparoscopic, and laparotomic hysterectomies at our institution from January 2009 to June 2012. Patients were excluded if they had concomitant urogynecologic procedures, laparoscopic-assisted vaginal hysterectomy, cesarean-hysterectomy, or prior abdomino-pelvic radiation. Gynecologic-oncology patients were included. 2558 patients met our inclusion/exclusion criteria. Medical records were reviewed for patient and operative characteristics, as well as for urinary tract injury characteristics and potential risk factors.
Results: Among our 2558 patients, 756 were conventional-laparoscopic, 570 were robotic-assisted, and 1232 were laparotomic hysterectomies. 57 patients sustained 60 urinary tract injuries, including 41 cystotomies and 19 ureteral injuries, yielding an overall incidence of 2.22%. The incidences of urinary tract injury were: robotic-assisted, 1.92%; conventional-laparoscopy, 1.85%; and laparotomy, 2.59%. These differ-

ences were not statistically significant (p=0.54). When comparing high & low volume surgeons within each cohort, significant differences in urinary tract injury rates were only observed among laparotomic surgeons (p=0.02). On multi-variate analysis, the only factors that influenced urinary tract injury were EBL (OR 1.001, p<0.0001), supracervical approach (OR 0.32, p=0.0018), and oncology status (OR 0.44, p=0.037). On subgroup analysis, when controlling for supracervical approach, a significant difference in urinary tract injury rates was only observed in the conventional-laparoscopic group compared to the laparotomic group (0.6% vs. 2.3%, p=0.029). There was no significant effect of c-section history on incidence of cystotomy (p=0.072), nor was there any effect of oophorectomy on ureteral injury (p=0.16). Cystoscopy was performed in 24.3% of cases, with significant differences in utilization between groups: 47% conventional-laparoscopic, 20% robotic-assisted, and 13% laparotomic (p<0.0001). Cystoscopy had a sensitivity of 84.6% and specificity of 99.7% for detection of urinary tract injury. Ureteral stents were utilized in 1.5% of cases, with no significant differences between groups. There was a trend towards improved intra-operative detection of ureteral injuries with stents, but this was not statistically significant (p=0.11).
Conclusions: Incidence of urinary tract injury during hysterectomy was only influenced by EBL, a supracervical approach and oncology status. Among supracervical hysterectomies, the
conventional-laparoscopic cohort had a significantly lower rate of injury than the laparotomic cohort. Robotic-assisted hysterectomy was not associated with decreased rates of urinary tract injury.

P37
Robotic Assisted Simple Prostatectomy for Recurrent Giant Benign Prostatic Hyperplasia Following TURP
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Background: Recurrent benign prostatic hyperplasia (BPH) can occur after transurethral resection of the prostate, especially after more than 5 years from surgery. Some patients report severe lower urinary tract symptoms (LUTS) due to giant anomalous intravesical regrowth of the prostate. We report our experience with robotic assisted simple prostatectomy for giant recurrent BPH in patients with a prior transurethral resection of the prostate (TURP).
Methods: From November 2011 to May 2013, 15 patients were treated surgically for giant recurrent BPH causing severe LUTS. All patients had had a prior TURP procedure. Patient demographics, pre-operative and peri-operative data was analyzed.
Results: Patient mean age and body mass index was 68 years (60-78) and 31 (28-34). All patients had a robotic assisted transperitoneal transvesical simple prostatectomy. Two patients had an additional umbilical hernia repair, and one patient had removal of a 15 cm bladder stone at the same time of the procedure. Mean robotic console time was 120 minutes (90-150 min). The mean estimated blood loss, jackson-pratt drainage days, hospital stay, and days of Foley catheter was 150 cc, 2, 3, and 7 days, respectively. The mean pre and post IPSS score was 25 and 7, respectively (p<0.05). Mean follow-up was 7 months (1-12 months). There were no blood transfusions performed and no perioperative complications.
Conclusions: Robotic assisted transvesical simple prostatectomy is a real alternative for patients that suffer of severe LUTS due to giant recurrent BPH.

P38
Influence of Intraoperative Fluids on Surgical Outcomes in Partial Nephrectomy
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Background: The type and amount of fluids given intra-operatively has an effect on post-operative renal function and outcomes in renal transplantation. Data in the context of partial nephrectomy are scarce. We set out to investigate the influence of type and amount of intraoperative fluid on surgical outcomes for partial nephrectomies.
Methods: The prospectively maintained IRB-approved kidney cancer database at Roswell Park Cancer Institute was queried. All patients with normal contralateral kidney and normal renal function who underwent elective open, laparoscopic or robot-assisted partial nephrectomy between 1997 and 2012 were included in the study. Patients were excluded if data on postoperative renal function was unavailable. Patients were separated into three groups: open, laparoscopic, and robotic-assisted. Patient characteristics were compared between surgery groups using the Wilcoxon rank sum test and Chi-Square tests. The association between independent variables (ie. age, BMI, OR time, EBL, warm ischemia, renal score, pre-op Cr/GFR, fluids etc.) and response variables (change in Cr/GFR) were assessed using Spearman correlation coefficients and odds ratios. The relationship between the independent variables and responses were then adjusted for surgery type using linear and logistic regression models.
Results: A total of 334 patients were identified (34 open, 165 laparoscopic, 135 robotic-assisted). Demographics were equal between groups except pre-operative Cr which was higher in open procedures (1.22 vs. 1.07 [lap] vs. 1.08 [robot] p<0.001). OR time, EBL, and warm ischemia time were all significantly greater in open procedures. Amount of LR given intra-operatively was greater in open procedures (33.34 vs. 26.13 vs. 20.58 mL/kg/hr p<0.001). Hextend administration was greatest in open surgeries (9.92 vs. 4.50 vs. 7.73 mL/kg/hr p<0.001). Immediate change in post-operative GFR was greatest in open cases (-0.20 vs. -0.10 vs. -0.08). On univariate analysis, OR time, EBL, warm ischemia, renal score, and amount of LR given had a significant effect on post-operative Cr. When adjusting for the amount of LR given, there was a significantly greater effect in open cases (-0.066 vs. -0.003 vs. -0.010 p<0.001). The amount of Hextend administered did not have a significant effect on renal function.
Conclusions: The amount of LR given was less in laparoscopic and robotic surgeries. LR had a significant effect on post-operative renal function demonstrated by decreased Cr in all surgery groups. However, this effect was greatest in open surgeries.

P39
2-year Oncologic Outcomes in Non-organ Confined Bladder Cancer after Robot-Assisted Radical Cystectomy.
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Background: Oncologic outcomes of pT3 and pT4 bladder cancer after Robot-Assisted Radical Cystectomy (RARC) are poorly defined. We define the oncologic outcomes of non-organ confined bladder cancer treated with RARC and pelvic lymphadenectomy (PLND).
Methods: Prospectively collected and maintained clinical and pathological data were retrospectively reviewed for 114 patients with pT3 and pT4 bladder cancer who underwent RARC between 2005 and 2012. We reported the 2-year overall survival (OS), cancer-specific survival (CSS) and progression-free survival (PFS) after RARC and PLND for pT3 and pT4 bladder cancer using Kaplan-Meier survival curves. Multivariate analysis was used for secondary outcomes included identification of predictors of poor oncologic outcomes.
Results: The median age was 71 (36-90). The mean follow-up was 17 months (0.2-85). 2-year OS, CSS, and PFS were 47% (95% CI 35%, 57%), 68% (95% CI 56%, 78%), and 37% (95% CI 25%, 49%), respectively. The median number of lymph nodes (LN) was 24 (range 0-63) and 52 (46%) patients had LN metastasis. Surgical margins were positive

in 11 patients (10.6%). OS, CSS and PFS rates differed by pathologic stage (p=0.03, 0.004 and 0.02, respectively). Additionally, LN metastasis adversely affected OS, CSS and PFS (p=0.01, 0.04 and 0.02, respectively). Positive surgical margin decreased OS, CSS and PFS (p=0.003, 0.01 and 0.012, respectively). Meanwhile, lymph-vascular (LVI) only adversely affected CSS (p=0.04). pT stage was independent predictor of poor PFS and CSS outcomes (p=0.02 and 0.014, respectively) while LN metastasis was independent predictor of poor OS (p=0.02).
Conclusion: Oncologic outcomes after RARC for patients with locally advanced bladder cancer are poor, similar to open RC series. Tumour stage (T4 vs. T3), LN metastasis, positive surgical margins and LVI were independent predictors of some adverse oncologic outcomes.

P40

The Reclassification of Preoperative High Risk Prostate Cancer Patients after Robotic Assisted Laparoscopic Prostatectomy

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Background: The most commonly used definition criteria for prostate cancer risk-stratification (D'Amico and Epstein) do not necessarily reflect the complexity and biological behavior of this disease. They include tissue diagnosis data (biopsy results) along with clinical (clinical stage) and biochemical parameters (PSA level). The aim of this study was to compare histologic high risk features preoperatively with final pathological results.
Methods: 30 (5.5%) patients from 550 consecutive RALP cases performed from 2009 to 2011 had high-risk preoperative features based on the D'Amico-Epstein definition (Gleason Score ≥8, pT3 or positive lymphatic nodes). These pathological results were compared with final pathological results after RALP.
Results: Of the 30 patients who had high Gleason score on biopsy (≥8), 15 (50%) were reclassified to a lower risk based on final pathology (Gleason <8, organ-confined disease and negative lymph nodes). Patients with a lower biopsy Gleason score were more likely to be down-staged (67% for Gleason 8, 17% in Gleason 9 and 0 in Gleason 10, p<0.05). Similarly, lower preoperative PSA levels and fewer positive cores were associated with increased likelihood of reclassification (p<0.05).
Conclusions: 50% of men with preoperative high-risk prostate cancer were reclassified to a lower risk category bases upon final pathological results. Histopathologic features alone may guide clinicians away from definitive treatment such RALP. In the future, we believe more comprehensive pre-procedurual staging, including advanced imaging as well as molecular and genetic testing to better correlate risk in the future.

P41

The Treatment Trends for Localized Prostate Cancer in Large Urology Group

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Background: Robotic assisted laparoscopic prostatectomy (RALP) is an increasingly utilized modality for primary definitive therapy. *da Vinci* Surgery is considered "Minimally Invasive Robotic-Assisted Surgery" (MIRS). When compared to open surgery, *da Vinci* Surgery provides patients with the following potential benefits: shorter hospital stay, less blood loss, lower risk of complications, less pain and faster recovery and return to normal activities.
Methods: We analyzed the results of the 1243 patients who underwent the definitive treatment for localized prostate cancer in our group from January 2009 to December 2011 in order to define treatment trends. The following treatment modalities were used: RALP, open prostatectomy, radiation therapy (IMRT or brachytherapy), cryoablation and active surveillance (AS).
Results: The age distribution of our cohort was the following: 40-49 years- 3%, 50-59 years- 25%; 60-69 years - 35% and ≥70 years- 37%. The predominant modality utilized was radiation therapy (mostly IMRT) in148 cases during 2009, 269 cases in 2010 and 321 cases in 2011. However, RALP is rapidly rising from 118 cases in 2009 to 154 in 2010, and 269 in 2011. Open radical prostatectomy has been performed in sporadically: 4 cases in 2009, 2 cases in 2010 and 3 cases in 2011.
Conclusions: Our results suggest in increase in surgical intervention for the treatment of localized prostate cancer. Radiation therapy still plays an important role in the treatment of prostate cancer. Current studies are examining these trends for 2012 and 2013.

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Robotic Assisted Radical Prostatectomy in High-grade Prostate Cancer: Experience From Two Tertiary Centres

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Background: The use of radical prostatectomy as part of the treatment algorithm in high-grade prostate cancer (HGPCa) remains controversial. On the other hand, there are well-known limitations of conventional TRUS-guided biopsy such as insufficient tissue sampling, pathologist experience etc. Such limitations raise concerns about the accuracy of Gleason grading as a main predictor of PCa aggressiveness. Based on validation by the final pathology assessment of prostatectomized specimens, we searched a cohort of patients with Gleason downgrading regarding association with other pathology characteristics, oncological and functional outcomes.
Methods: Among a total of 965 collective RARP consecutive cases, 59 (6.17%) patients with high-grade PCa underwent RARP at two, high-volume tertiary centres from October 2006 to August 2012. We assessed the rate of pathological Gleason downgrading, status of surgical margins, extarcapsular extension, seminal vesical invasion, lymph node involvement, biochemical recurrence (PSA ≥0.20 ng/mL) and recovery of urine continence (0 pads usage).
Results: Median follow-up was 12 months (range 1-24). Sixteen patients (27.1%) had positive surgical margins, majority (70%) where pT3-disease. Nineteen men (32.3%) had extra-capsular extension and eight (13.5%) had seminal vesicle invasion. Six patients (10.1%) did not reach undetectable PSA on initial postoperative visit and were treated with ADT, 3 of which had positive lymph nodes. Overall biochemical recurrence was observed in a total of 7 patients (11.8%) with median time for recurrence 12 months. Only four men had PSA ≥0.20, the remaining had early salvage EBRT with PSA <0.20. Nine patients (15.2%) underwent adjuvant/salvage EBRT ± ADT. In total, 34 patients (57.6%) were downgraded to Gleason 7 on final surgical pathology, and yet another two patients downgraded to Gleason 5 and 6. Finally, pad-free urine continence at 3 and 12 months were 64.5% and 82.9%, respectively.
Conclusions: In spite of advances in prostate biopsy diagnosis of HGPCa, we observed a significant likelihood for disease downgrading on final pathology. Most patients had organ/specimen confined disease, adequately served by RARP and avoided ADT, while maintaining known advantages of RARP. Therefore, it should be taken into consideration by robotic surgeons that not necessarily all biopsy proven HGPCa will have these features at final pathology.

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Self-Assessment of Surgical Technique Leads to Reduction of Positive Surgical Margins in Partial Nephrectomy

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Background: To examine potential causes for a positive surgical margin (PSM) and develop strategies to improve surgical outcomes. The oncological goal of partial nephrectomy (PN) for renal cell carcinoma (RCC) is to achieve a negative surgical margin, the significance of which is controversial. In our initial experience with PN, we experienced a higher than expected rate of PSM which made us reevaluate our technique.

Methods: A retrospective review of consecutive PN cases for RCC was performed. We divided the patients into 2 groups. The first group consisted of the first 67 renal tumours in 65 patients that underwent our early surgical technique. The second group consisted of the next 45 renal tumours in 39 patients that underwent the revised surgical technique which included wider resections and robotic ultrasound. Our primary outcome was margin status and secondary outcome was disease recurrence. Demographic, operative, and perioperative data were compared between both groups. Univariate and multivariate analyses were performed to determine patient, surgical, and tumour characteristics that resulted in PSM.

Results: Positive margins were detected in 19 out of 67 (28%) renal tumours in the early technique group compared to 1 out of 45 (2%) positive margins in the revised technique group ($p<0.001$). Patients undergoing the revised technique experienced a significantly shorter clamp time (22 min vs. 35min, $p<0.001$), although there was no difference in % decrease of estimated glomerular filtration rate between the two groups. On multivariate analyses, only technique modification (OR 0.04, $p=0.003$) and larger tumour size (OR 0.41, $p<0.05$) were significant predictors of a lower rate of PSM. Smaller tumours were more common in robotic assisted partial nephrectomies which had a higher rate of PSM on univariate analyses (OR 3.51, $p<0.05$). Only 1 patient with a PSM experienced a systemic disease recurrence.

Conclusions: In our experience, self-assessment and technique modification resulted in a dramatic PSM improvement. Smaller tumours were associated with PSM. It is important for all surgeons to look at their own surgical outcomes and modify their surgical technique accordingly.

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Routine En Block Stapling of the Renal Hilum During Laparoscopic Nephrectomy is Safe and Effective

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Background: En block hilar ligation is not routinely performed due to the concern for risks of arteriovenous (AVF) fistula formation. Traditionally, most urologists dissect out both the renal artery and vein and ligate them separately using either clips or staples. This can cause increased operative times and an increased risk of vascular injury.

Methods: A retrospective chart review was performed on patients undergoing laparoscopic nephrectomy between 2010 and 2013. We identified 188 consecutive patients that underwent laparoscopic nephrectomy. Approximately 87 patients underwent en block hilar stapling while 101 patients underwent dissection of the artery and vein individually. Radical nephrectomy was carried out for a variety of different renal pathologies. Tumour characteristics, pathologic stage, operative time, blood loss, follow-up imaging modalities, clinical exam for evidence of abdominal bruit or complications were evaluated.

Results: Eighty-seven patients underwent laparoscopic nephrectomy with en block stapling of the renal hilum using a vascular stapler (46 right renal units, 41 left renal units). The mean operative time was 160 minutes (range 80-350 minutes). The mean estimated blood loss (EBL) was 122 mL (range 50-400 mL). The mean tumour size was 6.6-cm, (range 4.3-11.9 cm). Seventy-six percent of patients received post procedure imaging: 21% had a CT scan with IV contrast, 20% had a non-contrast CT scan, 12% had an ultrasound with Doppler and 24% had an MRI with contrast. The predominant pathology was renal cell carcinoma in most of the patients. Other pathology included oncocytoma and XGP. No complications were noted at the time of surgery. No patients (0%) developed clinical evidence of an AVF with a mean follow-up of 19 months (no abdominal bruit and the lack of a palpable abdominal thrill). Imaging studies confirmed the absence of AVF.

Conclusions: Ligation of the renal hilum with en block stapling during laparoscopic nephrectomy is a safe and effective procedure. No patients in our cohort developed any immediate surgical complications as a result of en block ligation. Also, no patients developed any clinical or radiological evidence of AVF on follow-up.

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The Treatment Trends for Localized Kidney Cancer in Large Urology Group

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Background: Robotic assisted laparoscopic partial nephrectomy (RALPN) is an increasingly utilized modality for primary definitive therapy. When compared to open surgery, RALPN provides patients with the following potential benefits: shorter hospital stay, less blood loss, lower risk of complications, less pain and faster recovery and return to normal activities.

Methods: We analyzed the results of 550 patients who underwent definitive treatment for localized kidney cancer in our group from January 2008 to August 2012 in order to define a treatment trends. The following treatment modalities were used: RALPN, open nephrectomy, and laparoscopic nephrectomy.

Results: A total of 175 RALPN were performed while 375 laparoscopic and open radial nephrectomies were done during the 4.5 years of the study. The recurrence rates after RALPN was 2/175 (1%) patients while after radical nephrectomy was 15/375 patients (4%). In the last 2 years there has been an increasing usage of RAPLN in our practice

Conclusions: Our results confirm the general treatment trends towards more wide implementation of robotics in the nephrons-sparing techniques for renal masses. The data suggests there will be a continuous rise in the use of RALN when treating patients with renal masses

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Robot-Assisted versus Pure Laparoscopic Radical Nephrectomy: Are Additional Costs Offset by Technical Gains?

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Background: Radical nephrectomy is still performed in a pure laparoscopic fashion in some centres with access to a robot, primarily due to concerns over cost effectiveness. The objective of the present study was to compare traditional and robot-assisted laparoscopic radical nephrectomy with respect to operative outcomes and cost data.

Methods: Patients undergoing laparoscopic or robot-assisted laparoscopic radical nephrectomy at our institution between 2007 and 2011 were included in this retrospective study. Hospital financial records were analyzed for each patient's surgical hospitalization. Charges, expected revenues, and costs generated during the surgical admission were obtained from the hospital finance department. Distributions of continuous variables were compared between the laparoscopic versus robotic cases using the Wilcoxon-Mann-Whitney test or the t-test (as appropriate). Distributions of categorical variables were compared with Fisher's exact test.

Results: Of the 207 patients included, 114 were laparoscopic and 93 robot-assisted procedures. There were no significant differences in the age, BMI, or Charlson score of either group. Among patients with a tumour, robotic cases were performed on significantly higher clinical stages compared to laparoscopic cases (p=0.02). Mean estimated blood loss was higher in the robotic group, 230 mL (range, 20-1650) versus 146 mL (20-1000), p=0.006. Mean operative times were 190 min (117-416) and 187 min (82-325) in the robotic and laparoscopic groups, respectively (p=0.95). Retroperitoneal lymph node dissection was performed more frequently in the robotic group (42% vs. 8%, p<0.001). Pathologic stage T2-4 disease was more common on final pathology in the robotic group (46%) compared to the laparoscopic group (25%, p<0.001). There were no significant differences in positive margins (4 robotic, 2 laparoscopic) or major complications (Clavien grade ≥ 3b) between the two groups (5 each). Mean revenues expected for each procedure were similar (laparoscopic $12,663 and robotic $13,257, p=0.39), but the average total cost was significantly lower in the laparoscopic group ($7,979) compared to the robotic group ($10,554), p<0.0001.

Conclusions: Surgical outcomes are relatively similar between laparoscopic and robot-assisted laparoscopic radical nephrectomy procedures. Costs are significantly lower with pure laparoscopic procedures. However, higher stage tumours and retroperitoneal lymph nodes are more readily removed when the robot is used.