

only in the Triton-insoluble fraction. Under non-reducing conditions, PRDX 1 and 6 were found as bands of high molecular weight (>170 kDa) in spermatozoa incubated with 0.35-5 mM H<sub>2</sub>O<sub>2</sub> (strong oxidative stress). PRDX 6 became a strong single band due to a mild oxidative stress (0.05 mM H<sub>2</sub>O<sub>2</sub>, a condition that promotes sperm capacitation). H<sub>2</sub>O<sub>2</sub> (0.35-5 mM) caused a decrease of the signal for PRDX 4 and 5 compared to non-treated cells.

**Conclusion:** PRDXs are present in human spermatozoa and differentially modified by oxidative stress. These results suggest a role of PRDXs as antioxidants and as potential modulators of H<sub>2</sub>O<sub>2</sub> action in human spermatozoa.

### P34

#### Androgen Receptor (AR) and Bladder Cancer: A Large Bi-Institutional Study on 473 Patients

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**Introduction and Objective:** Bladder cancer is approximately three times more common in men than in women but the reasons behind this observed difference in incidence is largely unknown. A role for androgen receptor (AR) signaling has been suggested. Data on very limited number of patients showed that loss of androgen receptor expression was associated with invasive bladder cancer. We decided to further investigate the AR expression in a large series of bladder cancer patients.

**Materials and Methods:** A total of 473 patients have been analyzed. The study included specimens from the University of Toronto/University Health Network, Canada (n= 120) and the University of Texas Southwestern Medical Center, Dallas, Texas, US. Tissue microarrays comprising both non-muscle invasive (n=126) and invasive bladder (n=347) tumors have been accrued and immunohistochemical staining for AR was performed on tissue microarrays using a monoclonal mouse anti-AR antibody. We used bright field microscopy imaging coupled with advanced color detection software (Automated Cellular Imaging System, ChromaVision Medical Systems Inc., San Juan Capistrano, CA) to detect, classify, and count stained cellular objects based on predetermined color morphology. Results obtained in Dallas were blindly reviewed and validated by one uro-pathologist in Toronto in a manual non-automated fashion.

**Results:** Androgen receptor was positively expressed in a total of 60/473 (12.6%) patients, 13/120 (10.8%) in Toronto and 47/353 (13.3%) in Dallas (p>0.05, NS). There was not statistically significant difference between AR expression in men and women. Overall, 8.7% of superficial tumors (pTa + pT1 + carcinoma in situ) expressed the AR compared with 16.3% of invasive tumors (pT2 + pT3+ pT4; P < 0.05). The highest percentage of AR (28.8% of cases) was found in T2 tumors.

**Conclusion:** In contrast with previous reports on limited number of patients, based on our large bladder cancer series, we did not observe a decrease in AR protein expression in tumors with increased pathologic stage and our data do not suggest that the loss of AR expression is associated with invasive bladder cancer. AR positivity remains a rare event in bladder cancer (12.6%) and is not gender-related.

## Moderated Poster Session III: Robotics, Endoscopy and Laparoscopy Thursday, October 8, 4:00 – 5:00 p.m.

### P35

#### A Multi-Centre Randomized Trial Comparing Bipolar vs. Monopolar Transurethral Resection of the Prostate

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**Introduction and Objective:** Monopolar transurethral resection of the prostate (TURP) is the gold standard therapy for men with lower urinary tract symptoms (LUTS) due to benign prostatic hyperplasia (BPH). Inherent with the use of monopolar transurethral electro-surgery however, are the risks of bleeding, tissue burns, dilutional hyponatremia and irrigant toxicity. Although generally considered safer, the experience with bipolar electro-surgery for TURP application is limited. The objective of this trial was to evaluate both monopolar and bipolar (Gyrus-VISTA platform) TURP outcomes in a multicentre, single-blinded trial.

**Materials and Methods:** Forty-four patients from four Canadian sites were randomized to undergo TURP with either the bipolar or monopolar devices. All patients underwent baseline determinations of AUA symptom score, peak urinary flow rate, post void residual bladder volume and transrectal ultrasound prostate volume. The primary outcome measure was improvement in AUA symptom score (AUA SS), quality of life assessment (AUA QOL) and bother assessment (AUA B) questionnaires and secondary measures included procedural times, duration of urethral catheterization, length of hospitalization, complications and the degree of thermal artifact in the tissue specimens. Patients were followed for six months after surgery.

**Results:** 22 patients were randomized to each treatment arm, pre-operative demographic data were not statistically different between the groups. AUA SS, AUA QOL, AUA B and sexual function assessments at all data collections times were no different for either group. The only differences observed were in the procedure time (60.7 for bipolar vs. 47.4 min for monopolar, p=0.042) and the duration of urethral catheterization (1.5 for bipolar vs. 1.1 days for monopolar, p=0.03). There was no statistically significant difference in the pathological degree of thermal artifact or the rate of complications between groups. There was no difference in the change of post operative hemoglobin among groups, and no patient required blood transfusion.

**Conclusion:** This trial suggests equivalent short term outcomes for men undergoing monopolar or bipolar TURP. Although admittedly monopolar TURP is associated with a relatively low risk of complications, eliminating the need for a return electrode pad and the risk of dilutional hyponatremia would appear to be added safety features favoring the bipolar technology.

### P36

#### Development and External Validation of a Highly Accurate Nomogram for the Prediction of Perioperative Mortality After Transurethral Resection of the Prostate for Benign Prostatic Hyperplasia

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Saad<sup>1</sup>, Markus Graefen<sup>2</sup>, Francesco Montorsi<sup>3</sup>, Paul Perrotte<sup>5</sup>, Pierre I. Karakiewicz<sup>1</sup>

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**Introduction and Objective:** Benign prostatic hyperplasia (BPH) affects 60% of men at the age of 60 years. Transurethral resection of the prostate (TURP) is the gold standard of therapy. Our objectives were to assess the 30-day mortality (30dM) rate after TURP for BPH, to identify risk factors related to 30dM, and to develop a model that discriminates between individual 30dM risk level.

**Materials and Methods:** Development (n=7362) and external validation (n=7362) of a multivariable logistic regression model predicting the individual probability of 30dM after TURP, based on an administrative (Québec Health Plan [QHP]) dataset of 14724 patients, aged 43-99 years, treated between January 1st, 1989 and December 31st, 2000.

**Results:** Overall, 30dM occurred in 58 patients (0.4%) undergoing TURP. In univariable analyses, increasing age (p<0.001) and increasing Charlson Comorbidity Index (CCI) (p<0.001) were statistically significant predictors of 30dM after TURP. Conversely, annual surgical volume was not. In multivariable analyses, age (p<0.001) and CCI (p<0.001) reached independent predictor status. The accuracy of the age and CCI-based nomogram that predicts the individual probability of 30dM after TURP was 83% in the external validation cohort.

**Conclusion:** Age and CCI are important determinants of 30dM after TURP. The combination of these parameters allows 83% accurate prediction of individual 30dM risk after TURP. Despite its limitations that consist of the need for additional external validations and possibly the need for inclusion of clinical parameters, the use of the current model is warranted for the purpose of informed consent prior to TURP and/or for patients counseling.

### P37

#### Renal Access by Urologist or Radiologist During Percutaneous Nephrolithotomy

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**Introduction and Objective:** We evaluated percutaneous access for percutaneous nephrolithotomy (PCNL) obtained by interventional radiologists or urologists at a single academic institution, and compared access outcomes and complications.

**Materials and Methods:** The records of 221 patients undergoing PCNL at the University of Pittsburgh Medical Center between 2000 and 2007 were retrospectively reviewed. Patients were stratified according to percutaneous access by a group of interventional radiologists (group 1) or urologists (group 2) in 37 and 184 patients, respectively. A predicted access difficulty score was calculated using demographic, stone, and operative variables. Percutaneous access was obtained by urologists at the time of surgery. Interventional radiologists obtained access for acute renal decompression or pre-operatively a mean 25 ± 30 days prior to definitive stone treatment. Percutaneous access complications and stone free rates were compared between groups.

**Results:** Mean patient age was 58 ± 17 years (62% male, range 25-95 years) and 53 ± 16 (51% male, range 19-90 years) in groups 1 and 2, respectively. Utilization of multiple access tracts (5.4% vs. 4.3%; p=0.54), mean stone diameter (3.6 ± 1.9cm vs. 3.5 ± 1.8cm; p=0.97) and percentage of supracostal tracts (35% vs. 36%; p=0.63) were comparable between groups. Mean access difficulty scores were comparable between groups. The percentage of staghorn calculi (30% vs. 39%; p=0.28) and number of obese (BMI>30) patients (38% vs. 30%; p=0.34) were also comparable between groups 1 and 2. The complication rate was the same in the two groups (13.5% vs. 14.3%; p=0.52). Stone free rates were greater in the urology group (76% vs. 80%; p=0.22). Radiologist obtained access could not be used in 35% of patients, requiring additional access tract placement at the time of surgery.

**Conclusion:** Despite similar stone complexity and access difficulty, urologist obtained access was associated with a non-statistically significant improvement in stone free rate. Given comparable complication rates and the high failure rate of radiologist obtained access, urologists are able to safely and more effectively obtain percutaneous access for PCNL.

### P38

#### Validation of Real-Time, Intra-Operative, Surgical Competence (RISC) Assessments Linked to Patient Outcomes

Ethan D. Grober, Matthew Roberts, Mohammed Mahdi, Wonnie Shin, Michael AS Jewett

University of Toronto, Toronto, ON, Canada

**Introduction and Objective:** To determine if intra-operative evaluations of technical skill by expert surgeons using Real-time, Intra-operative, Surgical Competence (RISC) assessments, predicts clinical and operative outcomes in real patients?

**Materials and Methods:** *Study Design* - A prospective analysis evaluating the predictive value of RISC assessments of technical skill in relation to clinically-relevant patient outcomes. *Study Model:* Cystoscopic trans-urethral resection of bladder tumors (TURBT). *Subjects* include: 1) Surgeons performing TURBT and 2) Patients identified at diagnostic cystoscopy to have a bladder tumor requiring resection. *RISC Development:* The RISC assessment tool was developed by study investigators following review of unedited surgical videos of 25 TURBT cases with tumor recurrence and 25 cases free of tumor recurrence following surgery. All surgical videos were analyzed by 3 expert surgeons with the goal to identify fundamental technical skill domains influencing a tumor recurrence/recurrence-free state. Twenty-five fundamental surgical competency domains were identified and were used to create the RISC assessment instrument. The technical skill domains comprising the RISC assessment were then structured as a composite of previously validated global rating scales, surgical checklists and final product scores. *Study Intervention:* Live TURBTs (n=160) will be recorded on video and prospectively evaluated in a blinded fashion by three expert surgeons as to the overall technical quality of the tumor resection using the RISC assessment tool. Subjects will be followed for 18-months for signs of disease recurrence or progression according to current standards of care. Bladder tumor recurrence (primary outcome), disease progression, operative complications and need for further treatment will be correlated with RISC scores.

**Results:** The initial construct validity of the RISC assessment was tested on the first 50 TURBT cases. RISC scores discriminated between experienced and novice surgeons and correlated significantly with level of training and the number of previous surgical cases performed.

**Conclusion:** Lessons learned from this research will contribute significantly towards the objective assessment of technical skill in real operative settings, on real patients, based on clinically-relevant patient outcomes. Similar methodology can be applied to develop RISC assessments for a variety of surgical procedures and disease states.

### P39

#### Can Human Anatomy be Taught Through the Lenses of a Virtual Reality Simulator?

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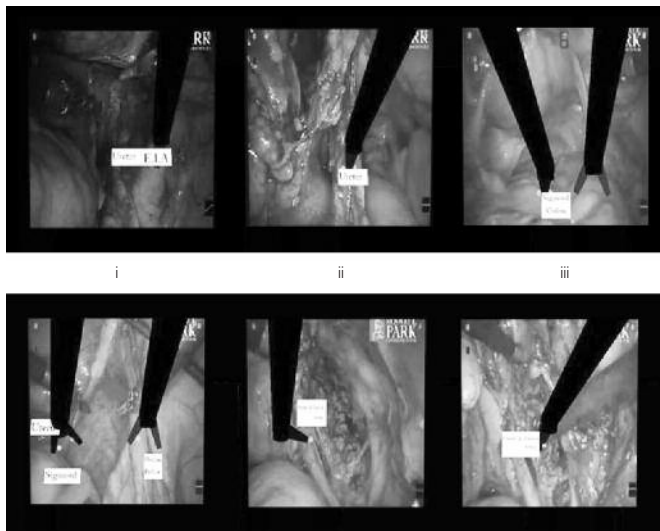
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**Introduction and Objective:** Traditionally human anatomy is taught through text books and cadavers. However, such methodologies are inadequate to prepare student for procedure where human anatomy is viewed through a laparoscopic camera. In this paper we discuss a new virtual reality trainer for cognitive skill improvement using procedure specific anatomical landmark recognition using da Vinci™ Surgical System (DVSS). The trainer was integrated into the Robotic Surgical Simulation System (RoSS) developed at our institution. Augmented reality was used for the trainer, where videos of robot-assisted cystectomy were merged with virtual tools.

**Materials and Methods:** In vivo videos were captured during robot-assisted cystectomy and key steps representing portions of the surgery, where the medical student/resident had to identify key anatomical landmarks, necessary to continue the procedure were extracted as short clips. Medical students and residents were recruited for a study (n=10) and were divided into Group I (no training) and Group II (RoSS trained). Both groups were given one day to review a booklet containing text, line diagrams and colored photographs of the anatomy in the pelvic region. In addition to this, Group II trained on the RoSS with the augmented videos (Fig. 1) for additional cognitive training. Both groups then answered a test where they were asked to identify anatomical landmarks from a series of pictures taken during a cystectomy. Participants were compared on two parameters: (i) Time taken to complete test and (ii) Number of correct answers.

**Results:** For each group the means for these parameters were calculated and ANOVA was performed to determine if there was significant difference in performance because of cognitive training on RoSS. Mean Time (Group I: 142.8s Group II: 118.4s) Correct answers (5): (Group I: 2.9, Group II: 4.2). Both groups had  $p < 0.001$ , indicating significant training and uniform performance.

**Conclusion:** Identification of anatomical landmarks through the RoSS virtual reality simulator has significant impact on training and can be a very effective training tool to improve the cognitive skills.



**Fig. 1.** Sample screen shot of training set up. Augmented virtual tools can be seen overlaid on the video.

#### P40

##### Does Prostate Size Matter? An Evaluation of Patients Undergoing Robot-Assisted Prostatectomy

Matthew M. Lux, Jorge Yao, Jean V. Joseph  
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**Introduction and Objective:** Recent data have suggested that small prostate size is associated with increased incidence of positive surgical margins and biochemical recurrence. In this study we assess the impact of prostate volume on outcomes following robot assisted prostatectomy.

**Materials and Methods:** 1312 patients who underwent robot assisted prostatectomy by a single surgeon had pathologic prostate specimen weights available for analysis. Specimen weights were fitted to a bell shaped curve, with prostates greater than one standard deviation from the mean creating the large and small cohorts. A size-matched cohort centered around the mean was generated for the average size gland. Clinicopathologic parameters evaluated for these three groups included age, body mass index, preoperative PSA, clinical and pathologic stage, blood loss, opera-

tive time, percent of gland with tumor, margin status, perioperative complications, and biochemical recurrence (PSA  $>= 0.1$  ng/ml). Fisher's exact test and Student T test were used for statistical analysis.

**Results:** Fitting the 1312 patients to the bell-shaped curve resulted in a small group (n=142) with a mean weight of 33.6 grams, an average size group (n=163) with a mean weight of 56.1 grams, and a large group (n=184) with a mean of 90.1 grams. The three groups had significant ( $p \leq 0.05$ ) difference in age and blood loss, both of which increased as prostate size increased. Larger glands were significantly more likely to have a lower biopsy Gleason grade. Both large and small glands had significantly different Gleason patterns as compared to the average size group, with the latter exhibiting a higher Gleason pattern. Operative time ( $p=0.1$ ) and complications ( $p=0.06$ ) approached, but did not reach statistical significance for larger glands. There was no difference in the percent of tumor in the gland, clinical or pathologic T stage, margin status, or rate of biochemical recurrence.

**Conclusion:** Smaller prostate were not associated with an increase risk of positive surgical margins or biochemical recurrence. Higher EBL was noted in patients with larger prostates with no significant increase in overall complication rates.

#### P41

##### Does Obesity Affect Outcomes in Extraperitoneal Robot-Assisted Prostatectomies?

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**Introduction and Objective:** Whether laparoscopic or robotic, obesity has been associated with adverse outcomes in patients undergoing transperitoneal robot assisted radical prostatectomy. In this review, we evaluate the impact of obesity on perioperative, oncological and functional outcomes of patients undergoing extraperitoneal robot assisted radical prostatectomy.

**Materials and Methods:** Patients undergoing robot assisted radical prostatectomy were prospectively entered into an institutional database. Those with body mass index (BMI) information available were identified and categorized based on WHO 2004 BMI classifications. Pre and postoperative IIEF-5 and continence questionnaires were completed. Age, PSA, blood loss, operative time, Gleason grade, margin status, complications, continence status, and nerve sparing status were evaluated using Fisher's exact test, t-tests, and logistic regression analyses.

**Results:** A total of 590 patients had BMI data available. 115 patients had normal weight (BMI 18.5-24.9), 254 patients were overweight (BMI 25-29.9), 211 were obese (BMI 30-39.9), and 10 were severe to morbidly obese (BMI 40-49.9). Normal weight patients were significantly ( $p \leq 0.05$ ) older than obese patients by an average of 2 years. Normal weight patients had significantly lower average PSA (5.1), versus overweight (6.0), and obese patients (6.3). Blood loss was higher in the overweight (254 cc) and obese (222) groups, compared to the normal weight cohort (164). Operative times were significantly longer in the obese and morbidly obese groups. Final Gleason pattern was significantly higher in the obese cohort. Normal BMI patients were significantly more likely to undergo a nerve sparing procedure than all other BMI groups. No statistically significant difference was found when final pathology T stage, margin status, complications, or return to continence were evaluated.

**Conclusion:** In contrast to previous studies showing a "PSA hemodilution" in obese patients, our series found significantly lower PSA values in normal weight individuals as compared to the overweight and obese. Obesity had no effect on surgical margins, complications, or return to continence in patients undergoing extraperitoneal robot assisted radical prostatectomy. Intraoperative difficulty however, was higher in obese patients as measured using overall operative time, and blood loss.

**P42****Simplified Laparoscopic Partial Nephrectomy Using a Single-Layer Closure and No Bolsters for Central Renal Tumors**

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**Introduction and Objective:** Centrally located tumors pose a technical challenge during laparoscopic partial nephrectomy (LPN). A simplified LPN technique using a single-layer closure without bolsters is described and outcomes are compared for central and peripheral renal tumors.

**Materials and Methods:** Renal tumors abutting the collecting system or renal sinus were considered central. We reviewed 104 patients who underwent LPN; 52 consecutive patients with central tumors were matched with 52 patients with peripheral tumors. The tumor bed was repaired by passing partially straightened CPX needles (Ethicon, Somerville, NY) beneath the cut surface of the entire tumor bed. Tumor bed was compressed by securing the sutures with LapraTy clips (Ethicon). Openings in the collecting system were not separately closed, even when clearly visualized.

**Results:** There was no statistically significant difference in the demographics of the two groups. In the central tumor group (CTG), the mean age was 61 years, 33 patients were male, 27 tumors were on the left, and 28 tumors were posterior. In the peripheral tumor group (PTG), the mean age was 62 years, 40 patients were male, 29 tumors were on the left, and 27 tumors were posterior. There was no statistically significant difference in the pathologic characteristics. In the CTG, 40 tumors were malignant, 4 were >T1a, and no patient had a positive margin. In the PTG, 38 tumors were malignant, 2 were >T1a, and 1 patient had a positive margin. When comparing the CTG and PTG, the operative times were 195 and 199 min ( $p=0.665$ ), the estimated blood losses were 247 and 220 cc ( $p=0.596$ ), and estimated preoperative/postoperative creatinine clearances were 93/84 and 95/88 ( $p=0.586$ ), respectively. In the CTG, 2 patients required an intraoperative transfusion while no patient in the PTG required a transfusion ( $p=0.495$ ). The CTG had a larger mean tumor size (3 vs. 2.3 cm;  $p=0.002$ ), greater depth of tumor invasion (2.3 vs. 1.5 cm;  $p=0.033$ ), and a longer mean warm ischemia time (23 vs. 17 min;  $p=0.002$ ). No patient in either group developed a urine leak. Delayed bleed occurred in 1 patient in each group and spontaneously resolved following transfusion. During follow-up, 1 patient in each group developed a pseudoaneurysm that was successfully embolized.

**Conclusion:** During LPN for centrally located tumors, a single-layer closure without bolsters is safe and effective, and may help minimize warm ischemia time.

**P43****Laparoscopic Nephroureterectomy Does Not Undermine Cancer Control Outcomes in Selected Patients with Non-Metastatic Upper Tract Urothelial Carcinoma: A Multi-Institutional Analysis of 1249 Cases**

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**Introduction and Objective:** Data regarding the oncological efficacy of laparoscopic nephroureterectomy (LNU) relative to open nephroureterectomy (ONU) are scarce. We utilized a multi-institutional series of ONU and LNU cases to compare the effect of procedure type (ONU vs. LNU) on recurrence and cause-specific mortality rates of upper tract urothelial carcinoma (UTUC).

**Materials and Methods:** Thirteen centers from 3 continents contributed detailed data on 1249 patients with non-metastatic upper tract urothelial carcinoma (UTUC). Univariable and multivariable survival models tested the effect of procedure type (ONU,  $n=979$  vs. LNU,  $n=270$ ) on cancer recurrence and mortality rates. Covariates consisted of institution, age, ECOG performance status and tumor characteristics pT stage, pN stage, grade, necrosis, lymphovascular invasion, tumor location, ureteral management, previous urothelial bladder cancer, architecture, previous endoscopy and concomitant carcinoma in situ.

**Results:** Median follow-up for censored cases was 49 months (mean 62). Relative to ONU, patients treated with LNU were older (median

age 70 vs. 69 years,  $p=0.01$ ), had less adverse pathology stage (pT0/Ta/Tis 38.1% vs. 20.8%,  $p<0.001$ ) and more favorable pathologic features (papillary architecture 81.9% vs. 75.3%  $p=0.02$ , presence of lymphovascular invasion 14.8% vs. 21.3%  $p=0.02$ , presence of necrosis 15.2% vs. 23.6%  $p=0.01$ ). Finally, ureteral tumor location was less likely in LNU vs. ONU cases (64.5 vs. 71.1%,  $p=0.04$ ). In univariable models (UVA) addressing cancer-specific mortality, ONU was associated with significantly higher mortality rates ( $p=0.008$ ). After adjustment for all available confounding variables, in multivariable (MVA) models, the benefit regarding cancer-specific survival related to LNU disappeared ( $p=0.2$ ). The same results were recorded in the statistical analyses that addressed recurrence risk (UVA  $p<0.001$ ; MVA  $p=0.2$ ).

**Conclusion:** LNU had equivalent oncologic control to ONU in patients with clinically-localized UTUC. Laparoscopic approach for the renal portion of nephroureterectomy is a reasonable alternative in the treatment of clinically-localized UTUC. However, further studies are needed to compare the morbidity and convalescence time of LNU to that of ONU.

**P44****Robotic-Assisted Transvesical Prostatectomy for Benign Prostatic Hypertrophy: Description of Technique and Operative and Post-Operative Data of Initial Series of Six Patients**

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**Introduction and Objective:** Suprapubic prostatectomy is the gold standard treatment for large volume benign prostatic hypertrophy and urinary retention with or without concomitant bladder stones. As robotic assisted laparoscopic pelvic surgery becomes more prevalent, it is possible to convert open pelvic procedures into laparoscopic ones with the assistance of the daVinci robot. We present operative and post-operative data of our initial series on 6 patients who underwent robotic assisted transvesical prostatectomy for large volume benign prostatic hypertrophy with or without bladder stones.

**Materials and Methods:** The daVinci robot is employed and the same port placement for transperitoneal robotic assisted radical prostatectomy is used. The bladder is opened and stay sutures are used to provide fixed retraction of the cystotomy. Feeding tubes are passed into the ureteral orifices for ease of identification during dissection. The bladder mucosa is incised around the bladder neck and the prostatic adenoma is dissected free from the capsule in a quadrant by quadrant fashion. The prostatic capsule is easily identified using this technique. The surgeon has excellent vision of and control over the apical dissection. Hemostatic sutures are then placed in the five and seven o'clock positions. The bladder incision is the closed. We describe this technique in detail and present our operative and post-operative results from our initial series of six patients.

**Results:** Average blood loss for patients undergoing robotic assisted transvesical prostatectomy was 333cc (range 50-500cc). Average hospital stay was 2.5 days (range 2-3 days). No patients required blood transfusion. Average weight of prostatic adenoma removed was 102 grams (range 64-144 grams). One patient had several bladder stones which were removed at the same time. All patients had full return to pre-operative function within 2 months of surgery and none experienced post-operative incontinence. One patient was readmitted within one month of surgery for urosepsis from which he fully recovered. One patient experienced a bladder neck contracture and underwent a transurethral resection of bladder neck contracture 7 months post-operatively.

**Conclusion:** Robotic assisted transvesical prostatectomy is a reasonable option for patients with large volume benign prostatic hypertrophy with or without bladder stones. The use of a surgical robotic system is particularly helpful for the apical dissection which has traditionally been performed in a blind manner. We feel this may offer an advantage in return of continence following the procedure. Additional benefits of this technique are low blood loss, minimal post operative pain and a relatively short hospital stay.

**P45****The Value of Transrectal Ultrasound in Predicting Prostate Weights and Outcomes Following Laparoscopic Radical Prostatectomy**

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**Introduction and Objective:** Laparoscopic radical prostatectomy (LRP) is a minimally invasive approach to the treatment of localized prostate cancer. Due to technical difficulties and a steep learning curve, it is currently only performed at a few centers. Pre-operatively, all patients received trans-rectal ultrasound (TRUS) guided biopsies. As part of this procedure, an estimate of the prostate weight (PW) was obtained. Following prostatectomy, the gland was removed and an accurate, pathological PW obtained. Our aims were to determine the ability of TRUS to estimate PW and to capture differences in outcomes following LRP based on stratification by PW.

**Materials and Methods:** The charts of 297 consecutive patients were retrospectively reviewed. All patients had LRPs between November 2004 and September 2007 at a single centre that were performed or supervised by a single surgeon. A 9 month follow-up was conducted to assess sexual outcomes using the International Index of Erectile Function (IIEF). P values of <0.05 were considered significant.

**Results:** PWs were divided into 3 subcategories based on stratification by TRUS and pathological weight (<30 grams, 30.1-60 grams and >60.1 grams). In the TRUS subgroup, preoperative PSA was significantly elevated in the glands >60 grams. Age, BMI, operative time, blood loss and hospital stays were similar amongst all groups. The average PW was significantly different between TRUS (34.7±0.9 grams) and pathological specimens (52.3±1.1 grams). When focused on prostates weighing >60.1 grams, TRUS guided biopsy identified 70% of samples as Gleason 6 and 20% as Gleason 7 with pathological specimens revealing a 40% and 50% distribution respectively. Positive margins were significantly higher in glands with pathological weights of <30 grams (38% vs. 15% for 30.1-60 gm and 6% for >60.1 gm). At a 9 month follow-up, a PW of >60.1 grams predicted significantly worse outcomes for several components of the IIEF.

**Conclusion:** TRUS obtained PW does not correspond to weights obtained at pathology. Sexual outcomes as captured by the IIEF are worse for patients with larger prostates. As such, an improvement in the ability of TRUS to predict pathological weights would assist preoperative patient counseling.

**P46a****Robotics in Urology: Comparative International Contemporary Practice Patterns**

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**Introduction and Objective:** To determine the current status of urologic laparoscopic and robot-assisted surgery (RAS) globally.

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

**Results:** 166 (57%) surveys were completed by urologists in ENA and 125 (43%) from urologists in MEA. 153 (54%) respondents were urologic staff and 103 (36%) respondents were in training. 80% of respondents performed MIS with 64% having prior formal training. Respondents in ENA were more likely to have had formal training in RAS and performed more RAS cases (p<.01). 60% of urologists in both groups planned to perform RAS in practice. More than 75% of all respondents felt RAS training was either beneficial or required for their practice. 60% of those

surveyed from ENA had used robotic consoles in training courses compared to only 20% in MEA (p<.01). Dedicated RAS support teams were far less common in MEA (p<.01). Respondents in ENA performed more robot-assisted radical prostatectomy (RARP), robot-assisted radical cystectomy (RARC), and robot-assisted nephrectomy (RAN) in comparison to MEA respondents. Contrastingly, MEA respondents were more likely to believe RARP, RARC, and RAN to be the gold standard of care.

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

**P46b****Current Status of Robot-Assisted Surgery in Urology: A Multi-National Survey of 297 Urologic Surgeons**

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**Introduction and Objective:** The surgical robot is becoming an important tool for performance of minimally invasive surgical procedures around the world. We surveyed opinions about and utilization of robot-assisted surgery among urologic surgeons from 44 countries.

**Material and Methods:** A total of 297 surveys were completed from September to November 2008 by participating urologic surgeons polled at various national and international urologic meetings. The survey evaluated surgeon background, personal experience with minimally invasive surgery, institutional status regarding robotic surgery surgeons, attitudes towards robot-assisted surgery, in general, and prostate, bladder and kidney oncologic procedures, specifically.

**Results:** 297 participants completed the survey of which 35% were in training for and 54% in practice of urology. Although 57% of these participants were older than 40, 62% had never sat on a robotic surgical console but 61% believed they would perform robot-assisted surgery. 78% of respondents felt it was required or beneficial to have training in robot-assisted surgery. Only 21% of respondents were currently performing robot-assisted radical prostatectomy. 61% of respondents felt robot-assisted radical prostatectomy was the current gold standard or as good as laparoscopic prostatectomy. Only 10% had performed robot-assisted radical cystectomy and 70% of these surgeons have transferred skills from robot-assisted radical prostatectomy. 10% were performing robot-assisted radical nephrectomies and 30% had transferred skills for laparoscopic partial nephrectomy to robot-assisted partial nephrectomy.

**Conclusion:** Robot-assisted surgery has begun to integrate into the minimally invasive armamentarium for urologic surgery and is applied for

**P47****Comparison of Extraperitoneal and Transperitoneal Robot-Assisted Radical Prostatectomy in the Obese Patient**

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**Introduction and Objective:** The number of individuals characterized as being overweight or obese continues to increase across the United States. Obesity is not only associated with a variety of medical conditions, it also increases the complexity of surgical interventions. In this study, we assess whether a transperitoneal or extraperitoneal approach facilitates robot assisted radical prostatectomy in the obese population.

**Materials and Methods:** Data on 1427 men undergoing robot assisted radical prostatectomies (RARP) was prospectively collected. They were divided into extraperitoneal (EP) and transperitoneal (TP) approaches, and subdivided into three groups based on body mass index (BMI): Normal weight (<=24.9), Overweight (25.0-29.9), and Obese (>=30). Only patients who underwent a concurrent pelvic lymph node dissection (PLND) were included in the analysis. Patient age, body mass index (BMI), estimated blood loss (EBL), and operative times was compiled and analyzed using

one and two-way ANOVA and Tukey's post hoc pairwise comparisons. **Results:** 636 patients underwent RARP with PLND. 76 and 560 were performed via TP and EP approaches respectively. Average BMI distribution between the two groups was similar with TP having BMI groups averaging 22.6, 27.5, and 33.9, and the EP group averaging BMI's of 23.0, 27.5, and 33.5. EP approach had an operative time of 194 minutes (n=89) for normal weight, 198 minutes (n=269) for overweight patients, and 203 minutes (n=202) for obese patients. Operative time for TP approaches averaged 200 minutes (n=20) in the normal BMI group, 221 minutes (n=28) for the overweight BMI group, and 257 minutes (n=28) for the obese group. The average operative time for TP patients was 228 minutes and 199 minutes for EP. EBL showed a similar stepwise increase with EP patients having 198, 208, and 235 milliliters of blood loss and TP patients having 155, 228, and 245 milliliters of blood loss for the respective BMI groups. One-way ANOVA analysis showed a significant difference between the BMI groups for operative duration in the TP approach (p=0.01), but no significant difference for the EP approach (p=0.31). Using two-way ANOVA we found a significant difference (p<0.0001) in operative times between the two approaches.

**Conclusion:** Shorter operative times and lower EBL were noted in patients who underwent EP RARP when compared to those treated via a TP approach. The EP approach appears advantageous in the obese population, with a significant reduction in operative time as compared to TP as BMI increases.

#### P48

##### Early Post-Operative Renal Scintigraphy as a Predictor of Long-Term Outcomes After Laparoscopic Pyeloplasties

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**Introduction and Objective:** Laparoscopic pyeloplasty (LP) is a well established minimally invasive technique with high clinical and scintigraphic success rates reported. However, success rates are not always as good as expected when strict scintigraphic criteria are used. Controversy exists about long term failure rates and strategies to predict which patients are likely to face unfavourable outcomes are yet to be put forward. We intend to correlate early post-operative scintigraphic results with late clinical and scintigraphic data in order to identify patients requiring closer follow-up after laparoscopic pyeloplasty.

**Materials and Methods:** We reviewed retrospectively 111 adult cases of laparoscopic pyeloplasties performed between 2003 and 2007. We recently updated our clinical and scintigraphic follow-up for these patients, trying to have, after prior early scan done 3 months post-operatively, another MAG-III-Lasix scan, 18 months later. Majority of patients also had a pre-operative renal scans. They were contacted at a median of 19 months post-operative and asked about adverse outcomes or pain, using visual analog scale.

**Results:** This serie have a 91% non-obstructive scintigraphic success rate (defined by T 1/2 20 minutes on Mag-III-Lasix) at 21 months of follow-up.

No patients with T 1/2 < 10 minutes at early post-op renal scan developed signs of obstruction at longest scintigraphic follow-up. Amongst our patients having a T 1/2 > 20 minutes at early post-op scan, 94% have a long scintigraphic and clinical follow up (n=15). 87% of them have little or no pain, but 47% of them still show a T 1/2 > 20 minutes. Patients that have improved results with long term T1/2 no longer greater than 20, now have an increase of differential function of 2.8% while patients still showing a long term obstructed renal scan (T 1/2 > 20 min.) have an ipsilateral differential function decreased by 1,6% on average. This early difference suggests a trend for long term evolution (+2.8% vs. -1.6%, p=0.06).

**Conclusion:** Early post-op renal scan helps urologists to determine which patients are at risks of long term failure after laparoscopic pyeloplasties. Changes in differential renal function as well as scintigraphic signs of obstruction represent objective measures of prognostic value.

#### P49

##### From Laproscopic to Robotic-Assisted Pyeloplasty: Our Extended Experience

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**Introduction and Objective:** To review our experience in transition from laparoscopic to robot-assisted pyeloplasty for treatment of ureteropelvic junction obstruction (UPJO) in adults at a single institution by a single surgeon.

**Materials and Methods:** We retrospectively reviewed 44 consecutive adult patients who had undergone laparoscopic or robot-assisted treatment for UPJO between 2000-2008. Patient demographics, peri-operative outcomes, and overall success rates were recorded. Successful treatment was defined as absence of pain, radiotracer half-life (t 1/2) on diuretic renogram <20 minutes, or no need for adjunctive procedures.

**Results:** Of the 44 patients, two had bilateral procedures and one had two separate procedures, for a total of 47 procedures. Operative techniques included dismembered pyeloplasty (29 patients), Fengerplasty (6 patients), Y-V plasty (1 patient), and ureterolysis (11 patients). Ureterolysis cases were excluded from analysis. Of the 36 pyeloplasties, 20 (56%) were performed laparoscopically and 16 (44%) were robot-assisted. Twenty-nine patients (81%) presented with flank pain, 22 (61%) had crossing vessels, and 11 (31%) had prior treatment with endopyelotomy, balloon dilation, or ureterolysis. Mean operative time, blood loss, and length of stay were 396±76 minutes, 38±49 ml, and 2.5±0.9 days, respectively. At a mean follow-up of 25.1 months, our overall, laparoscopic, and robot-assisted success rates were 97%, 95%, and 100%, respectively. There were no intraoperative complications and 1 minor post-operative complication.

**Conclusion:** Laparoscopic pyeloplasty for UPJO is a challenging operation which has results comparable to open pyeloplasty. We have demonstrated that these success rates can be achieved using the robot-assisted approach while maintaining low complication rates.