# Podium Session 3: Endourology and Surgical Education June 29, 2014, 1630-1730

#### POD-03.01

#### A Single Institution PCNL Experience over 22 Years: Defining Independent Predictors of Residual Stone Burden

<u>Violette, Philippe</u>; Tailly, Thomas; Bao, Yige; Denstedt, John D.; Razvi, Hassan

Western University, London, ON, Canada

**Introduction and Objectives:** The occurrence of nephrolithiasis and the use of percutaneous nephrolithotomy (PCNL) are increasing in North America. Rendering patients stone free is of paramount importance during PCNL. Therefore our objective is to identify independent predictors of residual stones 3 months post-PCNL.

**Methods:** Between July 1990 and December 2012, prospective data were collected for 2198 consecutive PCNL treatments in 1,884 patients in a single high-volume institution. Data included patient demographics, comorbidity, renal anomaly, stone and procedure characteristics and adverse events. Adverse events were described using Dindo-Clavien classification. Multivariate logistic regression was used to identify independent predictors of residual stone at 3 months follow-up. Stones were identified as per usual care with plain film x-ray, CT or ultrasound.

**Results:** Our cohort had a mean age of 54±15 years, was 44% female and had a mean BMI of 31+/-8. Medical comorbidities were present in 44%, and renal anomalies in 24%. Mean stone surface area was 895±602 mm<sup>2</sup> and complete or partial staghorn stones were present in 314 and 387 patients respectively. Three month follow-up of 1,633 available patients showed residual stones in 9.7%. Multivariate logistic regression revealed that the presence of hydronephrosis OR 1.90 (1.23-2.92), complete staghorn OR 3.02 (1.95,4.67), partial staghorn OR 2.02 (1.31,3.10), two tracts OR 2.46 (1.41,4.30) and three or more tracts OR 5.35 (1.17,16.75) were independent predictors of residual stones.

**Conclusions:** PCNL is an efficient procedure for managing large volume, complex urolithiasis with a low residual stone burden rate. The presence of staghorn configuration, multiple tracts and hydronephrosis independently predict residual stone burden after PCNL. These factors predominantly reflect stone size and complexity.

#### POD-03.02

#### Practice Patterns of Extracorporeal Shockwave Lithotripsy: Variability Amongst and Between Canadian and American Urologists - Do We Need Guidelines?

<u>McKay, leff</u><sup>1</sup>; Lantz, Andrea<sup>2</sup>; Ordon, Michael<sup>3</sup>; Pace, Kenneth<sup>3</sup>; Honey, R.J. D'A<sup>3</sup>

<sup>1</sup>Dalhousie University, Halifax, NS, Canada; <sup>2</sup>Department of Urology, Dalhousie University, Halifax, NS, Canada; <sup>3</sup>Division of Urology, St. Michael's Hospital, University of Toronto, Toronto, ON, Canada

**Introduction and Objectives:** Extracorporeal shockwave lithotripsy (SWL) is a widely utilized form of treatment for urolithiasis. There are few evidence-based recommendations regarding pre-SWL patient workup and performance of SWL. This study aims to determine practice patterns and compare the performance of SWL in Canada and the United States to evaluate variability between centres and countries.

**Methods:** A survey was prepared to determine pre-procedural workup and performance of SWL. In Canada, SWL is a highly regionalized procedure with 16 sites across the country. Representatives from each Canadian site, members of the Endourology Society and two large stone management groups were surveyed. Responses across Canadian and American urologists were compared.

**Results:** 16 Canadian lithotripsy centres and 187 US urologists completed the survey. Practice patterns varied between countries. Routine antibiotics were more commonly given in USA (CAN 6.3% vs. USA 78.1%, p<0.001); a higher shock rate of 2Hz was more common in Canada (CAN 68.8 vs. USA 16.2%, p<0.0001); rate of discontinuing ASA for ureteral stone treatment was higher in the USA (CAN 50% vs. USA 90.3%, p<0.0002), and ureteral stents were more commonly used if treating a large stone in the USA (CAN 46.7% vs. USA 88.8%, p=0.0002). There were no significant differences between countries for use of routine pre-SWL ECG (CAN 43.8% vs. USA 48.7%, p=0.71), pre-SWL urine culture (CAN 56.3% vs. USA 55.2%, p=0.93), dose escalation (CAN 100% vs. USA 87.4%, p=0.23), discontinuation of ASA for renal stones (CAN 81.3% vs. USA 66.3%, p=1).

**Conclusions:** There are limited evidence based recommendations for the pre-procedural workup and performance of SWL. This study highlights the lack of standardization in the performance of SWL. Significant regional differences exist in practice patterns and performance of SWL between Canadian and American urologists.

### POD-03.03

Interim Results of a Randomized Trial Comparing Narrow versus Wide Focal Zones for Shock Wave Lithotripsy of Renal Calculi Honey, R.J. D'A; Alzahrani, Tarek; Ghiculete, Daniela; Pace, Kenneth St. Michael's Hospital, University of Toronto, Toronto, ON, Canada Introduction and Objectives: The Modulith SLK-F2 electromagnatic lithotripter (Storz Medical) is the first lithotripter allowing for a dual focus of either a narrow (6×28 mm) or wide (9×50 mm) focal zones. The objective of this study is to compare single-treatment success rates of narrow and wide focal zones for the shock wave lithotripsy (SWL) of renal stones. Methods: 118 patients with a previously untreated radio-opague solitary stone located within the kidney, were randomized to receive narrow (N) or wide (W) focus lithotripsy. Patients were followed with KUB x-rays and renal ultrasound at 2 and 12 weeks post-lithotripsy to assess stone free status. Urinary markers indicating the degree of renal cellular damage (microalbumin and Beta-2 macroglobulin) were measured pre- and post-SWL, 24 hours post-SWL and 7 days post-treatment. Primary outcome was single-treatment success rate, defined as stone-free or adequate fragmentation (sand and asymptomatic fragments ≤4 mm) at 3 months post-treatment. **Results:** 61(51.7%) patients were randomized to narrow focus lithotripsy versus 57(48.3%) patients to wide focus. The groups were similar in baseline characteristics (age, gender, BMI, stone size and density and skin to stone distance). The overall success rates were not significantly different at 2 weeks post treatment (N:72.1% vs. W:61.4%; p=0.216) nor at 3 months (N:68.3% vs. W:58.9%; P = 0.292). The overall complication rates were also comparable in the two groups (N:24.6% vs. W:17.5%; p=0.349) including similar rates of perinephric hematoma (N: 3.3% vs. W: 3.5%; p=0.945). The microalbumin-to-creatinine ratio was significantly different between the two groups (p=0.019), but that difference was gone within 24 hours after the treatment.

**Conclusions:** Interim results indicated that single-treatment success rate and complications are comparable when using the narrow or wide focus of the Modulith SLX-F2. We are continuing to recruit patients to a pre-planned sample size of 300.

#### POD-03.04

#### Is Canada Pioneering Ambulatory Percutaneous Nephrolithotomy? The Queen's/McGill Experience

<u>Beiko, Darren</u><sup>1</sup>; Kokorovic, Andrea<sup>1</sup>; Roberts, Gregory<sup>1</sup>; Elkoushy, Mohamed<sup>2</sup>; Andonian, Sero<sup>2</sup>

<sup>1</sup>Queen's University, Kingston, ON, Canada; <sup>2</sup>McGill University, Montreal, QC, Canada

**Introduction and Objectives:** Traditionally, patients are admitted following PCNL. Ambulatory PCNL has not been widely adopted by the urologic community due to concerns of re-admissions and delayed postoperative complications. 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 review of all ambulatory 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:** All 45 patients were discharged home on the same day with a mean hospital stay of 208 minutes or 3 hours and 28 minutes. All except one patient underwent tubeless PCNL. The mean narcotic requirement was 33mg of morphine equivalents. Five patients (11%) 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%) were admitted - 1 with multiresistant E. coli and 1 with uncomplicated flank pain. Stone-free rate was 93%. Importantly, there were no Clavien III complications or deaths.

**Conclusions:** This study is the largest outpatient PCNL series to date. In properly selected patients, outpatient PCNL is feasible. With a postoperative re-admission rate of less than 5% and a stone-free rate of 93%, outpatient PCNL appears to be safe and effective. Further evaluation of outpatient PCNL is warranted.

#### POD-03.05

## Incorporation of the GreenLight-SIM<sup>™</sup> Simulator at the Annual Quebec Urology Objective Structured Clinical Examinations

Noureldin, Yasser<sup>1</sup>; Elkoushy, Mohamed<sup>2</sup>; Carrier, Serge<sup>2</sup>; Elhilali, Mostafa M.<sup>2</sup>; Fahmy, Nader<sup>2</sup>; Andonian, Sero<sup>2</sup>

<sup>1</sup>McGill University Health Centre, Montreal, QC, Canada; Benha University, Kalyobiya, Egypt; <sup>2</sup>McGill University Health Centre, Montreal, QC, Canada

**Introduction and Objectives:** To assess laser prostatectomy skills of postgraduate trainees (PGTs) during the annual Quebec Urology Objective Structured Clinical Examinations (OSCEs).

Methods: After obtaining Institutional Review Board (IRB) approval and written informed consent, urology PGTs in Post-Graduate Years (PGY-3 to PGY-5) from all 5 urology training programs in Quebec were recruited to participate in assessment of their laser Photoselective Vaporization of the Prostate (PVP) skills using the GreenLight-SIM™ (GL-SIM) during two annual OSCEs on December 1, 2012 and December 7, 2013. PGTs were asked to perform 2 excercises: anatomical identification and PVP of a 30 g normal prostate within a 20-minute station. Grams resected, global scores

and number of correct anatomical landmarks were recorded and correlated with PGY level, training on GL-SIM and previous PVP experience. **Results:** 25 PGTs were recruited at each OSCE with 13 PGTs participating in both OSCEs. PGTs had performed on average 2.8 and 4.5 PVP cases (p>0.05) prior to the first and second OSCEs, respectively. When comparing scores from the 1st to the 2nd OSCE, there was a significant increase in the number of grams resected (2.9±0.2 vs. 3.4±0.4 g; p=0.003) and global score (100±15 vs. 165±26; p=0.03). Whereas PGY level and previous PVP experience did not significantly affect grams resected and global score (p>0.05), previous practice on the GL-SIM significantly increased global score (100.6±19.6 vs. 162.6±22.4; p=0.04) and grams resected (3.1±0.27 vs. 4.1±0.36; p=0.04). For the 13 PGTs who participated at both OSCEs. there was significant improvement in the global score (107±21 vs. 219±31; p=0.003) and grams resected (2.9±0.3 vs. 5.2±0.5; p=0.001) from the first to the second OSCE.

**Conclusions:** Performance on the GreenLight-SIM at OSCEs significantly correlated with previous practice on the GL-SIM simulator rather than PGY level or previous PVP experience.

#### POD-03.06

## Can Baseline Laparoscopic Skills Predict Innate and Future Robotics Skills?

<u>Goldenberg, Mitchell</u>; McVey, Ruaidhri; Bernardini, Marcus; Yasufuku, Kazuhiro; Quereshy, Fayez A.; Finelli, Antonio; Pace, Kenneth; Lee, Jason Y. University of Toronto, Toronto, ON, Canada

**Introduction:** As with any novel surgical platform, robotic surgical training is associated with a learning curve unique to each trainee. Being able to predict both a trainee's baseline robotic skill level and "learning capacity" can aid in the development of personalized, competency-based curricula. We wish to identify whether baseline laparoscopic/thoracosopic (Lap/T) skills predict aptitude and adaptability to surgical robotics.

**Methods:** Trainees from 4 different surgical subspecialties, with varying degrees of MIS experience/ability, were included in this study. Using 2 validated skill tasks, Peg Transfer (PT - basic) & Intracorporeal Suturing and Knot Tying (ISKT - advanced), we assessed baseline Lap/T and robotic skills among trainees. Following a 4-week, hands-on robotic surgery basic skills training course, trainees were again assessed on their robotic skills using the same 2 skill tasks.

**Results:** A total of 32 trainees were included in the study; 14 Urology, 7 Gyne, 8 Thoracic Sx, 3 General Sx. The mean self-assigned laparoscopic skill rating across the group was 2.91 out of 5. Fifteen (47%) trainees had no prior robotic experience. There were no differences in baseline Lap/T skills between specialties. At baseline, urology trainees were significantly better for the robotic PT task (p=0.03) while gynecology trainees were significantly worse on the robotic ISKT task (p=0.01). Trainee performance on Lap/T PT task correlated with baseline robotic ISKT task (p=0.01) but not PT task. Performance on Lap/T ISKT task correlated with baseline robotic ISKT (p<0.01) and both post-course robotic PT (p=0.01) and ISKT (p<0.01) tasks.

**Conclusions:** In our study, we found that baseline Lap/T skills may correlate with baseline robotic skills. In addition, better baseline performance on an advanced, but not basic, Lap/T skill task may correlate with a shorter learning curve for basic robotic skills. Further exploration of this finding may yield better training and simulation models.