Learning curve of laparoscopic nephrectomy: A prospective pilot study

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Objective: To assess the learning curve of laparoscopic nephrectomy for various renal disorders and number of cases required to adopt the technique.

Patients and Methods: Between September 2015 and December 2018, consecutive patients undergoing laparoscopic nephrectomy (LN) for various renal diseases (malignant and non-malignant) were enrolled in this study. Patients were divided into two groups (the first 20 cases done over the first year of the study (group A) and the next 20 cases done over the second year (group B). All procedures were performed by single trainee urologist under supervision of expert endourologist. The participant performed sufficient laparoscopic training at both dry and wet lab before the study in order reduce the number of cases required to adopt laparoscopic nephrectomy and reduce technical complications. The learning curve was assessed in terms of operative time and the incidence of complications. The learning curve was assessed in terms of operative time and the incidence of complications.

Results: A total of 40 patients were included in this pilot clinical study. The mean age was 38.2 ± 16.3 years while the body mass index was 28.5 ± 4.2 kg/m². There were 27 patients (67.5%) underwent left LN. Furthermore, the mean operative time of (group B) was associated with significantly lower the mean operative time of (group A); (108.5 vs. 139.3 min, P <0.05). However, there were no significant differences between both groups in terms of intra-operative blood loss (86 vs. 104 ml; p>0.05), conversion to open surgery (5% vs. 10%; p>0.05), entire post-operative complications (5% vs. 15%; p>0.05) for group B and group A respectively. Similarly, there was no significant difference between both groups in terms of hospital stay (42± 8 vs. 46± 11 hours p>0.05). The surgeon reached Plateauing after 22 cases.

Conclusions: Our study suggests that a minimum of 20 LN procedures are needed in order to adopt the technique of laparoscopic nephrectomy. Learning curve of LN is mainly affected by two main factors; plotting performance and experience (number of performed tasks in a short period of time). Further studies are warranted to assess transfer of laparoscopic skills from the simulators to the operating room.

Prevalence of prostate cancer in Egyptian with high prostate specific antigen level

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Purpose: To evaluate the incidence of prostate cancer (PCa) in Egyptian patients with high prostate specific antigen (PSA) level who underwent prostate biopsy and detect the optimal PSA threshold for the diagnosis of PCa.

Materials and Methods: From April 2007 to December 2017, out of 2865 patients who underwent TRUS, 2242 patients underwent prostate biopsies because of PSA level was greater than 4ng/ml or abnormal finding of DRE suspecting prostate cancer. The results of histopathology were assessed.

Results: The overall final pathologic diagnosis was prostate adenocarcinoma in 545 cases (24.3%), BPH in 1443 cases (64.4%), and prostatitis in 254 cases (11.3%). The patients were divided into five groups according to their PSA values (group A serum PSA level, 2.5 ng/mL; group B, 2.51-4 ng/mL; group C, 4.1-10 ng/mL; group D, 10.1-20.0 ng/mL; group E, > 20 ng/mL). The positive predictive value for PCa in group A,B,C,D and E was 4.1%, 2.8%, 10.5%, 19.9%, and 58.1% respectively.

Conclusions: The prostate cancer is not a rare disease in Egypt. The risk of prostate cancer in Egypt is much lower than values used in many other countries. PSA cutoff value of 4 ng/mL may be applied to the Egyptian population. We recommend prostate biopsy when the PSA level is greater than 4 ng/ml or presence of abnormal digital rectal examination.

The effectiveness of arista in laparoscopic donor nephrectomy - single center experience

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Background: Postoperative bleeding is one of the most serious complication that affect patient live. The use of hemostatic agent intraoperatively is gaining popularity. We studied the use of absorbable surgical hemostatic powder derived from purified plant starch and their effect in postoperative hematoma collection.

Methods: Retrospective review of all laparoscopic nephrectomy done between January 2018 to March 2019. All demographic data collected, indication of nephrectomy, way of pedicle control, indication to use a hemostatic agent. Postoperative day two ultrasound was used to assess postoperative collection size. All nephrectomies with another hemostatic agents were excluded.

Results: Eighty one nephrectomies met our inclusion criteria 76 left nephrectomy 5 right nephrectomies. Indication of nephrectomy 70 laparoscopic donor nephrectomy, 11 radical nephrectomy for renal tumors. Pedicle controlled selectively on the donor cases and mass stapler control in the radical nephrectomy cases. Arista TM used in 50 (61.7%) cases and not used in 31 (38.3%). The main indications to use arista are oozing from the renal bed in 42 (84%) and oozing from the suprarenal site in 8 (16%). The mean collection size in the Arista TM group 2±5.2 ml and the non-hemostatic agent group 2.4±7.5 ml which is statistically insignificant (p=0.77). No postoperative bleeding or significant complications reported.

Conclusion: The main indication to use of intraoperative hemostatic agent is oozing from the renal bed. However, no statistically significant difference in postoperative collection size or incidence of complication between the two groups. A prospective randomized trial is required to detect any difference or not.

Minimally ischemic and off-clamp robot-assisted laparoscopic partial nephrectomy using an endovascular balloon catheter for a solitary kidney tumor: A new perspective to manage renal vascular control?

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Introduction: A 50-year-old male known case of VHL who underwent left radical nephrectomy for multiple renal masses and proximal renal vein thrombosis. A CT scan follow up showed a 27mm lower pole exophotic right renal mass inaccessible for radio-ablative treatment. Preoperative serum creatinine was 140 µmol/L with an eGFR of 50 mL/min per 1.73 m2.

Materials and Methods: First step, the patient underwent an endovascular angiography under local anesthesia. The segmental branch was identified after performing a renal artery angiography. A balloon catheter was used in order to occlude the superselective renal artery branch during tumor excision. A balloon catheter was placed in the identified renal artery branch. The procedure total time was 20 minutes. Second step, the patient was transferred to the main operating theater where surgery was performed under general anesthesia. 4-arm Si HD da Vinci robot with standard port placement. The following procedural steps were performed sequentially: a retroperitoneal approach with a 4-arm trocars placement, the renal artery was dissected, a tumor per-operative ultrasonographic border demarcation, superselective endovascular control of the renal artery, monobloc excision and suture of the parenchyma, renorrhaphy using a sliding weck clip technique, and tumor extraction.

Results: Total operating time was 50 minutes with a warm ischemia of 11 minutes. EBL was <50 mL. No per- or postoperative complications occurred. The arterial catheter was removed immediately after surgery. The patient was discharged 4 days postoperatively. Postoperative serum creatinine levels were 158 µmol/L with an eGFR of 44 mL/min. Histopathology revealed a high-grade renal cell carcinoma, TNM pT3a. Surgical margins were negative.

Conclusion: To our knowledge, this is the first RAPN with minimal ischemia and off-clamp using an endovascular balloon catheter for a solitary kidney tumor. The procedure seems to be feasible and safe. A prospective study is necessary to confirm these advances.

Six-year tertiary care experience in partial nephrectomies

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Introduction: Kidney cancer is one of the most common malignancies among adults, compromising 4% of all
malignancies occurring among adults. In Saudi Arabia kidney cancer has an age-standardized rate (ASR) of 2.4/100,000 and compromise 2.3% of all cancers. Its incidence has increased by 33% with most cases presenting late in the disease course and there are no national cancer control programs aimed at early detection and prevention. Partial nephrectomy is considered as the gold standard for T1 renal masses. Technological advances has led development of minimally invasive procedures. However for partial nephrectomies laparoscopic approach is technically challenging and has a prolonged learning curve. Robotic partial nephrectomy has emerged recently as a valid option that is safe and much easier than the laparoscopic approach.

**Methods:** In this retrospective study, we did a chart review for all patients who underwent partial nephrectomies between April 2013 to February 2019. Data regarding presentation, tumor size, procedures type (open vs laparoscopic vs robotic), intra and post-operative complications. Chi-square, ANOVA, t-test was used to calculate the difference. IRB approval was obtained from King Abdullah International Medical Research Center.

**Results:** 69 patients were included in our study, 43(62.3%) were male 26 (37.7%) were female. Partial nephrectomies were done as open (26.1%), laparoscopic (42%) and robotic (31.9%) [Table 1]. Most cases presented incidentally (72.5%) vs symptomatic presentations with flank pain (14%) and hematuria (7.2%). 13(18.8%) had positive margins no significant between procedure type was found p-value = .072. also when comparing between procedure types in regards to complications using the clavien grading system, blood loss, hospital days and operative time, no significant difference was found [Table 2]. Most common histopathological variant was clear cell 63.8 % followed by chromophobe 14.5 % and papillary 8.7% [Table 3].

**Conclusion:** In conclusion, partial nephrectomy outcomes between open, laparoscopic and robotic are similar in the hands of experienced surgeons. However, open procedures have a higher blood loss, operative time and hospital stay when compared to minimally invasive techniques.

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**A comparison of cancer detection rate between the grasper-integrated disposable flexible cystoscope and the reusable flexible cystoscope in the evaluation of patients with suspected bladder cancer**

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**Aim:** The study evaluates whether disposable flexible cystoscopy is non-inferior to reusable scopes in the detection of bladder cancer.

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**Table 1: Comparing clavien grade for complications between procedure type**

| Procedure type | Clavien grade |
|----------------|---------------|
|                | 0 1 (%)       |
| Open           | 16 0          |
| Laparoscopic   | 28 1 (3.57)   |
| Robotic        | 18 3 (16.6)   |
| P              | 0.219         |

**Table 2: Comparing means of blood loss and operative time between groups**

| Variable           | Open    | Laparoscopic | Robotic | P   |
|--------------------|---------|--------------|---------|-----|
| Blood loss (mls)   | 542±720.0| 334±538     | 245±219 | 0.149 |
| Operative time (min)| 225.39±55.9| 271.3±61.9 | 254.14±66.07 | 0.630 |
| Hospital days      | 7.6±5.08 | 7.62±6.21 | 5.32±4.93 | 0.199 |

**Table 3: Pathology frequency and mean tumor size±standard deviation**

| Pathology          | n (%) |
|--------------------|-------|
| Clear cell         | 44 (63.8) |
| Papillary          | 6 (8.7) |
| Chromophobe        | 10 (14.5) |
| Oncocytoma         | 4 (5.8) |
| AML                | 4 (5.8) |
| Other              | 1 (1.4) |
| Tumor size         | 3.7±1.72 cm |

AML: Angiomyolipomas
Table 1: Positive findings and cancer detection rates in the two groups

|         | Total | Reusable | Disposable | P  |
|---------|-------|----------|------------|----|
| n       | 1212  | 609      | 603        |    |
| Positive finding, n (%) | 232 (19.1%) | 123 (20.2%) | 109 (18.1%) | 0.215 |
| Benign or negative, n (%) | 50 (4.1%) | 28 (4.6%) | 22 (3.6%) | 0.376 |
| Malignant, n (%) | 182 (15.0%) | 95 (15.6%) | 87 (14.4%) |    |

Methods: We reviewed charts of patients who had consecutive flexible cystoscopy between Mar 2016 and Nov 2018. We compared the reusable scope (Storz, Germany), and the disposable grasper incorporated cystoscope (Iisis, Coloplast, Denmark).

Statistics: Based on a pilot study showing a 14% detection rate, the sample size for the binary non-inferiority study if there is truly no difference between groups is 1192 patients’ cystoscopies (596 per group). We selected a non-inferiority limit of 5%, significance level 5%, and power 80%. Data were computed for each cystoscopy encounter in the final analysis. Descriptive statistics, t-test, Fisher exact, and Pearson chi-square tests were used. Significance was assumed when p≤0.05.

Results: A total of 389 patients underwent 1212 cystoscopies. Indication for cystoscopy was prior malignancy in 1181 procedures (97.4%), hematuria 31 (2.6%) or bladder mass 19 (1.6%). There were 609 reusable and 603 disposable cystoscopies. There was no significant difference between groups at baseline. There was no significant difference in positive findings or cancer detection rates among the two groups [Table 1].

Conclusion: The disposable grasper integrated cystoscope is non-inferior to reusable cystoscope in the detection of bladder cancer.

Outcome of robotic-assisted radical prostatectomy: The first multicenter experience of the gulf countries

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Purpose: The Gulf Cooperative Council Countries ranked prostate cancer as the third common malignancy. There are 38 Da Vinci® surgical systems installed in the Middle East, with no reported data about the outcome of robotic-assisted radical prostatectomy (RARP), the widely adopted surgical approach. Therefore, we aimed to present the first multicenter experience in RARP in the gulf countries.

Methods: After obtaining institutional ethical approval, a prospective review for retrospectively collected data was performed for patients undergoing RARP by three surgeons at four different academic and tertiary urology referral centers between 2014 and 2019 in Saudi Arabia and Kuwait. Only patients with at least three months follow-up were included. Continence was defined as the use of 0-pads while potency was defined as the ability to penetrate during sexual intercourse. Positive surgical margin (PSM) was defined as the presence of cancer at the inked margin. Biochemical recurrence (BCR) was defined as a prostate-specific antigen (PSA) > 0.2 ng/ml in patients who had an undetectable PSA (<0.1 ng/ml) at 8 weeks post-operatively. Post-operative complications were graded according to the Clavien-Dindo Classification and grouped as minor (GI and II) or major (GIII-V).

Results: A total of 179 patients were included with a median (Interquartile range: IQR) age of 64 (59-69) years and follow-up of 32 (18 - 42) months. The median PSA and prostate volume at diagnosis were 9.1 (5.7-15.9) ng/ml and 41 (30.7-51.0) cc, respectively, whereas 63.5% had Gleason score ≥7. The proportion of patients in D’Amico intermediate- and high-risk groups were 29.8% and 55.3%, respectively. Median Operative time was 180 (180-240) min and median estimated blood loss (EBL) was 100 mL, where 77.8% have EBL <200 mL. Nerve-sparing procedure and lymph node dissection were performed in 48.4% and 72.1%, respectively. Median hospital stay was 4 (3-6) days. Perioperative transfusion was needed only in two patients (1.1%). Erectile dysfunction (ED) was reported by 88% of patients while 54.2% had stress urinary incontinence (UI). Potency and continence rates at 12-month were 84% and 95%, respectively. Forty-seven patients (26.3%) had PSM or extra-capsular extension in the final specimen, including seminal vesicle invasion. Apart from ED and UI, 15 (8.4%) patients had perioperative adverse events, most of them were minor (Clavien I-II). Eighty-four (46.9%) patients had ³ pT3 disease and 24 (13.4%) had BCR.

Conclusions: The outcomes of RARP in the gulf countries seems to be promising and comparable to the worldwide figures, where its safety and efficacy have been well-established. The outcome is improving with increasing the caseload and fellowship-trained expertise, which are crucial in achieving such outcomes.

Minimal invasive surgery - Endourology/BPH
Transvesical robotic simple prostatectomy: Single surgeon experience

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Background: Knowing that transurethral surgery for benign prostatic hyperplasia (BPH) has been improved significantly, simple prostatectomy remains an excellent option for patients with large glands specially with BPH related complication like large bladder diverticulum and large bladder stone.

Objective: To assess the outcome and feasibility of robot-assisted simple prostatectomy in patient with symptomatic high-volume BPH.

Materials and Methods: Starting from October 2017 to October 2019, robotic simple prostatectomy was performed via a transperitoneal transvesical approach in 12 patients with symptomatic significant BPH, on transrectal ultrasound (>100 gm), failed medical treatment or has BPH related complication.

Demographic, perioperative and outcome data were recorded and all procedures were performed by the same surgeon. (video of the surgical technique will be displayed in the presentation).

Results: Mean patient age was 71 years (range: 61-84), baseline (IPSS) was 21 (range: 9-30), prostate volume was 151 ml (range: 91-260), postvoid residual (PVR) was 303 ml (range: 110-800).

Average estimated blood loss was 147 ml (range 50 to 300). Average operative time was 221 minutes (range 180 to 345). Average hospital stay was 3.3 days (range 2 to 7). There were no intraoperative complications, blood transfusion or conversions to open surgery, mean specimen weight on pathological examination was 96.5 gm (range 32 to 160) 2 patients (16%) had postoperative complication and 2 patients (16%) found to have prostate cancer.

Significant improvement from baseline was noted in (IPSS) (preoperative vs postoperative 21 vs 5) = (76% improvement), maximum urine flow (preoperative vs postoperative 8.7 vs 21.5 ml per minute) = (247% improvement) and PVR (preoperative vs postoperative 300 vs 29) = (90% reduction).

Conclusions: Robotic Simple Prostatectomy feasible, safe and a good option for benign prostatic hyperplasia with larger glands.

A comparison of cancer detection rate between the grasper-integrated disposable flexible cystoscope and the reusable flexible cystoscope in the evaluation of patients with suspected bladder cancer

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Aim: The study evaluates whether disposable flexible cystoscopy is non-inferior to reusable scopes in the detection of bladder cancer.

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