INTRODUCTION:
Laparoscopic surgery has significant advantages over conventional open surgery. Optimal exposure and precise maneuverability through key-hole skin incisions have dramatically reduced the frequency of access-related morbidity and wound complications. Minimal invasive access surgery has less complications rate than conventional open surgery.1 This approach has several advantages including less postoperative pain, early recovery and cosmetic results.2 The number of ports used in surgery are usually three to six depending upon the surgical procedure.3

ABSTRACT

Objective To describe the results of laparoscopic procedures performed in a Urology unit of a tertiary care hospital.

Study design Case series.

Place & Duration of study Department of Urology Jinnah Postgraduate Medical Centre Karachi, from March 2011 to February 2016.

Methodology Data of all planned laparoscopic surgeries were collected and analyzed for demographic information, laboratory reports, procedure details, operative time, duration of hospital stay, complications and follow up details. BAUS guidelines were used to learn laparoscopic skills. Data was analyzed using Statistical Package for the Social Sciences (SPSS, Version 20.0).

Results There were total of 57 patients who underwent laparoscopic surgery. This included 48 males (84.21%), and 9 (15.7%) females. Mean age of patient was 30.37±12.01 year (Range 12 -73 year). The procedures performed included simple nephrectomy (n=13), ureterolithotomy (n=14), varicocelectomy (n=13), orchidopaxy (n=2). There were 12 diagnostic procedures for non-palpable testes, one adrenalectomy, one radical cystectomy, and one vesico-vaginal fistula repair. Fifteen patients needed conversion to open surgery due to various reasons. Out of 42 successfully performed laparoscopic procedures 10 different complications were noted majority being Clavien Grade II, including blood transfusion in one patient.

Conclusion Laparoscopic surgery has a prolonged learning curve. The conversion rate in this study was 26.3%.

Key words Laparoscopy, Urology, Nephrectomy.
Laparoscopy in the field of urology was initially used as diagnostic tool by pediatric urologists for localizing impalpable testis. Over the years as learning curve improved more and more urologists are now inclined towards minimally invasive surgery. Same transition took place at our department. The aim of this study was to document our experience and initial learning curve of laparoscopy in urological practice in a public sector hospital.

**METHODOLOGY:**
This was a descriptive case series conducted in the Department of Urology Jinnah Postgraduate Medical Center Karachi, from March 2011 to February 2016. All the procedures were performed under general anesthesia through trans-peritoneal approach except two where retroperitoneal access was tried. Modified lateral position was used for nephrectomy and ureterolithotomy and supine position for varicocelectomy, orchidopaxy and diagnostic laparoscopy.

Open method (Hassan technique) was used in all patients for pneumo-peritoneum. A zero degree 10 mm lens was used in all patients. Carbon dioxide gas at a pressure of 14 mmHg was used to insufflate peritoneal cavity. Camera with three port technique was used for nephrectomy and ureterolithotomy while two port technique for varicocelectomy and orchidopaxy. Organ retrieval after nephrectomy was made by extending the lower port incision after putting the kidney inside the glove bag. BAUS guidelines were used to learn laparoscopic skills.

Data of all planned laparoscopies was collected. Demographic information, laboratory reports, procedure details, operative time and duration of hospital stay, record of complications including transformation to open surgery and follow up details were recorded. Data was analyzed using Statistical Package for the Social Sciences (SPSS, Version 20.0). For categorical variables, frequency and percentage were calculated.

**RESULTS:**
A total of 57 patients underwent laparoscopic surgery during the study period. There were 48 (84.21%) males and 9 (15.7%) females. Mean age of patient was 30.37± 12.01 year (Range 12 -73 year). Laparoscopic procedures included simple nephrectomy (n=13), ureterolithotomy (n=14), varicocelectomy (n=13). Details are given in table I.

A total of 13 nephrectomies were performed due to non-functioning kidneys. Out of these nine were due to stone disease, two due to ureteric stricture disease, 1 due to cystic kidney disease and one due to renal artery stenosis. In eight cases it was done successfully with organ retrieval through lower port by extending the incision. In five cases conversion to open procedure was made.

In first case access to kidney was attempted retroperitoneally which was not successful. In two more cases there was failure to dissect and mobilize the kidney because of adhesions. There was history of previous percutaneous nephrolithotomy in both the cases. In one case there was bleeding from adrenal vessels not controllable by clip application so converted to open. In one patient there was injury to sigmoid colon. Average time of surgery was 4 hours and operative blood loss was 100 ml except in one patient who needed blood transfusion due to adrenal vessel injury. Average hospital stay was four days.

Laparoscopic ureterolithotomy was performed in 14 patients. All the calculi were in proximal and middle

<table>
<thead>
<tr>
<th>Procedure Name</th>
<th>Number of patients (n)</th>
<th>Conversion to Open Surgery (n)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Simple Nephrectomy</td>
<td>13</td>
<td>5</td>
</tr>
<tr>
<td>Ureterolithotomy</td>
<td>14</td>
<td>6</td>
</tr>
<tr>
<td>Varicocelectomy</td>
<td>13</td>
<td>1</td>
</tr>
<tr>
<td>Orchidopaxy</td>
<td>02</td>
<td>1</td>
</tr>
<tr>
<td>Diagnostic Laparoscopy for Impalpable Testis</td>
<td>12</td>
<td>-</td>
</tr>
<tr>
<td>Adrenalectomy</td>
<td>01</td>
<td>-</td>
</tr>
<tr>
<td>Vesico-vaginal fistula</td>
<td>01</td>
<td>1</td>
</tr>
<tr>
<td>Radical Cystectomy</td>
<td>01</td>
<td>1</td>
</tr>
<tr>
<td>Total</td>
<td>57</td>
<td>15 (26.3%)</td>
</tr>
</tbody>
</table>
ureter. The size of the calculus varied from 1.2 cm to 1.8 cm. Eight were on left side and 6 on right.

Six cases were converted to open. First cases was attempted through retroperitoneal approach but was unsuccessful. In other cases the reasons for conversion were difficult ureteric identification and mobilization due to extensive periureteric inflammation and upward migration of stone. Operation time was around 4 hours and hospital stay was 7 days.

Laparoscopic varicocelectomy was performed in 13 cases. Eleven were left sided while two were bilateral. One patient was converted to open inguinal approach due to the dense adhesion inside the abdomen. He had previous exploratory laparotomy due to perforated appendix three months back. Another patient developed diathermy burn over sigmoid colon. He was closely monitored, and postoperative recovery was uneventful. Mean operative time was 40 minutes. Mean hospital stay was 2 days.

Two cases of unilateral orchidopaxy were also performed laparoscopically. In both the patients testes were located near deep ring. In first case iatrogenic bladder injury occurred during the placement of mobilized testis at superficial ring. It was managed by conversion to open and bladder repaired. In second case, testis was mobilized uneventfully and brought down up to at the level of neck of scrotum.

Diagnostic laparoscopy was performed in 12 cases of impalpable testes. Five cases were bilateral, 4 were left sided and 3 right sided. Ipsilateral absent testes (anorchia) was found in 2 patients, one of them presented as blind ended vas deferens near deep ring. One stage Fowler-Stephens technique was employed in two patients. Laparoscopic adrenalectomy was successfully performed in one patient. He was 15 year old boy diagnosed as having right adrenal mass of 4 cm x 5 cm. The biopsy report came out as adrenal adenoma.

In one female patient with carcinoma bladder radical cystectomy with hystero-salpingo-opherectomy was attempted with five port technique. The whole pelvic dissection was done with the help of harmonic endo-arm. The final dissection and retrieval of specimen along with pelvic lymphadenectomy was performed by open surgical manner while making ileal conduit.

DISCUSSION:
Laparoscopy has got long learning curve. It requires a lot of skill and experience. We performed total 57 planned laparoscopic procedures during the study period of five years. The BAUS laparoscopic nephrectomy audit reported that centers undertaking more than 12 cases per year have better outcome in terms of conversion rate, transfusion request and complications than those with fewer cases. In this study in early surgeries retroperitoneal route was chosen but not successful. Similar experience was also reported by others in the early part of learning, trying to access kidney percutaneously in pig, human cadavers, and human. They concluded that inadequate visualization owing to the voluminous retroperitoneal fat, operator disorientation during surgery and piecemeal extraction of renal parenchyma combined, makes the retroperitoneal technique cumbersome and largely ineffective. Transperitoneal access brought the revolution in laparoscopic urology, because it provides more working space with familiar anatomy.

In this study high open conversion occurred in nephrectomy and ureterolithotomy cases. This was mostly in early cases as reported by others. Majority of complications occurred in this were of Clavien Grade II, including blood transfusion in one patient. Only one patient after ureterolithotomy had increased urine output of more than 500 ml in 24 hours in his drain for two days. He had blocked stent and required endoscopic replacement of ureteric stent (Grade III –a). Fahlenkamp reported 10.3% conversion to open surgery and 8.3% complication rate in a German multi-institutional experience of 2407 procedures. Zaidi et al reported a complication rate of 3% and a conversion rate of 11.6% with retroperitoneal approach. Our laparoscopic varicocelectomy results were comparable to other studies. Improvement in seminal fluid parameter was seen in three out of five patients. Another study from Iraq showed that 72% patients had improvement in semen parameter.

CONCLUSIONS:
Laparoscopic urology has a steep learning curve. In this study high conversion rate was noted. With experience success of the procedure increased with better outcome.

REFERENCES:


Author’s Contributions:
Muhammad Mansoor: Conception of idea, manuscript writing.
Shahzad Ali: Conception of idea and data collection.
Saeed Ahmed Khan: Data collection

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