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One-Year Experience of Urological Laparoscopic Surgery with 99 Cases in a State Hospital

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Abstract

Aim: To present the experiences and results of laparoscopic surgeries we conducted in a year's time in our clinic.

Materials and Methods: A retrospective review of ninety-nine patients who underwent laparoscopic urological surgery between May 2013 and May 2014.

Results: There were fifty-eight males and forty-two females in our study. Three of patients were pediatric. Transperitoneal approach was used for 99 patients. Mean age of all patients was 47.2 (2-76) years. The operation type and total numbers undergoing the operation were as follows: simple nephrectomy: 50; renal cyst excision: 11; radical nephrectomy: 10; dismemberred pyeloplasty: 10; ureterolithotomy: 5; adrenalectomy: 3; orchiectomy: 1; orchiopexy: 1; nefroureterectomy with partial cystectomy: 3 (one of these patients was situs inversus totalis); partial nephrectomy: 2; and pyelolithotomy and hemi-nephrectomy 1. No intraoperative complications were experienced and we did not need to switch to open surgery in any of the cases. In three patients preoperatively and in one patient postoperatively blood transfusion was required. Superficial wound infection and dehiscence developed in 4 patients while two patients developed subileus and one incisional hernia. The mean postoperative hospitalization duration was 2.26 (1-4) days.

Conclusion: Indication areas and popularity of the laparoscopic procedures in urology are increasing every day. Today, laparoscopic operations have increased frequency compared to open surgery due to shorter hospital stay, less pain, and high patient satisfaction. Laparoscopic surgery is a safe and feasible technique but it requires necessary experience in peripheral state hospitals.

Keywords: Laparoscopy, Nephrectomy, Pyeloplasty, Adrenalectomy.

Devlet Hastanesi ilk 1 Yıllık Laparoskopik Cerrahi Deneyimimiz: 99 Olgu

Özet

Amaç: Osmaniye Devlet Hastanesi'nde son bir yılda gerçekleştirilen ürolojik laparoskopik girişimlerin sonuçlarının sunmaktır.

Gereç ve Yöntemler: Mayıs 2013 ile Mayıs 2014 tarihleri arasında kliniğimizde laparoskopik cerrahi uygulanan 99 olgu retrospektif olarak değerlendirilmiştir.

Bulgular: Laparoskopik cerrahi yapılan hastaların 58'i erkek, 42'si kadın olup üçü pediatrik olan hastaların ortalama yaşı 47.2 (2-76) yıldır. Tüm hastalara transperitoneoskopik laparoskopi uygulandı. Hastaların 50'sine basit nefrektomi, 11'ine renal kist eksizyonu , 10'una radikal nefrektomi , ikisi pediatrik olan 10 olguya dismembered pyeloplasti, 5'ine üreterolitotomi, 3'üne sürrenalektomi, biri situs inversus totalis olan 3 olguya nefroüreterektomi ve mesaneden cuff eksizyonu, 2'sine parsiyel nefrektomi, 2'sine piyelolitotomi, 2'sine orşiopeksi, 1'ine heminefrektomi uygulandı. Hiçbir olguda intraoperatif komplikasyonla karşılaşılmamış ve açık cerrahiye ihtiyaç duyulmamıştır. Bir olguda peroperatif üç hastada postoperatif kan transfüzyonuna ihtiyaç duyulmuştur. Dört olguda yara yeri enfeksiyonu, iki olguda subileus ve bir olguda insizyonel herni gelişmiştir. Ameliyat sonrası ortalama hastanede yatış süresi ise 2,26 (1-4) gündür.

Sonuç: Laparoskopik girişimlerin ürolojide gün geçtikçe endikasyon alanı ve popülaritesi artmaktadır. Laparoskopik operasyonlar açık tekniğe göre daha kısa süre hastanede yatış, daha az ağrı ve yüksek hasta memnuniyeti nedeniyle günümüzde kullanım sıklığı artmıştır. Laparoskopik cerrahi perifer devlet hastanelerinde de gerekli deneyim ile güvenli ve uygulanabilir bir tekniktir.

Anahtar Kelimeler: Laparoskopi, Nefrektomi, Pyeloplasti, Sürrenalektomi.

INTRODUCTION

Due to its rapid development in recent years, laparoscopic surgery has become widely applicable in urological interventions. After its initiation in 1960s in gastroenterology and gynecology, laparoscopy was introduced for use in the urology practices by Cortesia, who used laparoscopic surgery for the diagnosis of bilateral undescended testes in a child in 1976 (1). In time, and as in other surgical disciplines, the use of laparoscopic surgery in urology expanded to a great extent. The major advantages of the technique are various: it's a minimally invasive method with a potential to help patients return to daily activities more quickly; it has less analgesic requirements; it does not cause large scale incision scars on the skin; and it is thought to be superior in terms of patient morbidity (2). However, that it requires more equipment compared to open surgery and that it comes with a long process of training are among its disadvantages. At first, laparoscopy was most widely used in non-palpable testes but today it has become the preferred method over open surgery for almost all urologic surgery cases. In this study, we aim to present a study of the case reports of 99 patients after the initiation of laparoscopic interventions in May 2013 in Osmaniye State Hospital Urology Clinic.

MATERIALS and METHODS

A total of 99 (57 males, 42 females) patients between the ages of 2 and 76 with a mean age of 47.2, who underwent laparoscopic surgery between May 2013 and May 2014, are retrospectively analyzed. The performed operations, operation methods and durations, and bleeding volumes are given in Table 1.

Table 1. Type of laparoscopic surgery and patient distribution.

Operation	Number	Operation duration	Bleeding
Simple Nephrectomy	50	63,5	65,2
Renal Cyst Excision	11	42,7	39,5
Radical Nephrectomy	10	75	82,5
Pyeloplasty	10	110	55
Surrenalectomy	3	56,6	85
Ureterolithotomy	5	46	36
Partial Nephrectomy	2	120	225
Nephroureterectomy	3	110	123,3
Pyelolithotomy	2	115	50
Undescended Testicle Surgery	2	65	55
Heminephrectomy	1	120	150

Operation technique

All patients received transperitoneal laparoscopic surgery. We inserted nasogastric tubes to all patients on the operating table following general anaesthesia prior to surgery. In renal and adrenal surgeries, we positioned the patients at 60-70° lateral decubitus position and achieved penetration with standard 3 ports. Depending on the conditions during the operations, number of ports was increased. In all cases, pneumoperitoneum was performed by carbon dioxide injection through disposable Veress needles. Intra-abdominal pressure was maintained between 12-14 mmHg during the operations.

In radical and simple nephrectomy operations, after placing ports, colon was medialized starting from the line of Toldt. After locating the ureter on the psoas muscle through the level of the lower pole of the kidney, it was hung with the help of a fourth 5-mm port. Then, following ureter, we reached the renal hilum. We defined the renal artery and vein; placing a clip first to the artery and then to the vein, we performed the dissection. We placed the radical nephrectomy specimens into the organ sacs and removed them out of the body.

Prior to operation, we performed computed tomography and/or cysts urography to all cystectomy patients to see the relationship between cysts and the collecting system. Then, with standard 3 port method, we applied colon medicalisation and opened Gerota's fascia on the cysts. After the cystic content was aspirated, the wall of the cyst was excised a few millimetres from the normal parenchyma with the help of ultrasonic cutters . The cyst base was then cauterised and the cyst wall was sent for pathological examination.

Lowering the dismembered pyeloplasty toldt line and followed by the medicalisation of the column, we opened up Gerota's fascia and found the gonadal vein. Having reached the ureteropelvic junction, we checked the area for traversing vessels. Renal pelvis was released from the proximal ureter and, if applicable, traversing vessels, perirenal fat, and/or fibrous tissue. We spatulated the ureter without dissecting it from the renal pelvis. We did not perform preoperative catheterisation though we placed a double J catheter to every patient postoperatively. In anastomosis, we used absorbable 4-0 polyglactin suture material. Six weeks later, the patients were freed from the stents. Before the adrenalectomy, we considered the clinical features of all patients and tested the blood values to see if the adrenal masses functioned. It was observed that the mass was not functional in three cases. First, we entered the retroperitoneal space from the Toldt line using the standard 3-port method and medicalised the colon. Then we made the upper pole of the left kidney exposable. Initially, we located and clipped the main adrenal vein. Next, we dissected the structure by separating it from neighbouring surreal tissues by using ultrasonic cutters.

In laparoscopic partial nephrectomy, we first mobilised the colon in a transperitoneal way and uncovered the kidney and ureter by releasing the kidney and hilar vessels. We clamped the renal artery with laparoscopic Satinsky or bulldog clamps. While dismissing the tumour with the help of forceps or an aspirator, it was excised using cold laparoscopic scissors. The excised specimen was placed in an organ bag and left in the abdomen until the end of the process. To fix the parenchymal edges, we performed sutures on a homeostatic support pad with the absorbable sutures continuously in a way that would allow every suture to interlock with non-absorbable suture clips (Hem-o-lok).

In nephroureterectomy patients, we first performed cystoscopy followed by cuff incision and catheterisation. We then placed the patients in 70° lateral decubitus position.In the operations, we followed the same standards with that of radical nephrectomy. We left the ureter to the final stages of the operation and released it until the iliac cross level. By creating a modified Gibson incision, we completely removed the kidney and ureter that had already undergone cystoscopic cuff incision.

During laparoscopic pyelolithotomy and ureterolitotomia, we located the ureter to the medial of the posts muscle and, by paying attention to the direction of vascularisation, we dissected it upwards. By using scissors or scalpel, we carried out incisions over the area of the located stones and removed them with the help of graspers. This was followed by placing double J catheters. Incision of the ureter or pelvis was performed with 3/0 Vicryl Suture.

RESULTS

Our study population includes 57 males and 42 females. The mean of the patients was 47.2 (2-76) years; three of these patients were pediatric patients. Of the ninety-nine patients, fifty underwent simple nephrectomy while eleven patients had renal cyst excision, ten underwent radical nephrectomy, another ten, two of which were paediatric patients, were applied dismembered pyeloplasty, five patients had ureterolithotomy, three had surrenalectomy, another three, one of which had situs inversustotalis, underwent nephroureterectomy and cuff incision on the bladder, two patients underwent partial nephrectomy, two underwent pyelolithotomy, another two underwent orchiopexy, and one patient was applied heminephrectomy. We used transperitoneal approach and 3-port in all cases. The number of ports was increased as required. The mean operation time was 69,6 (40-180) minutes. The mean duration for each operation was as follows: 63.5 (45-105) minutes for simple nephrectomy, 42.7 (22-70) minutes for cyst excision, 75.6 (60-125) minutes radical nephrectomy, 108.7 (100-150) minutes for pyeloplasty, 46 (35-60) minutes for ureterolithotomy, 56,6 minutes for surrenalectomy, 120 minuted for partial nephrectomy, 110 minutes for nephrectomies, 115 minutes for pyelolithotomy, and 65 minutes for undescended testicles surgery.

The pathology of 50 patients undergoing simple nephrectomy and of all patients who underwent cystectomy was reported as benign. In all the patients who underwent radical nephrectomy, the pathological examination showed clear-celled renal cell carcinoma.

During the pyeloplasty operations, we encountered adynamic segments in 4 patients and traversing vessels in 6 patients. All patients underwent dismembered pyeloplasty.

One of the nephroureterectomy patients had situs inverses totalis; our survey has shown that this patient was the second case with the same medical picture in relevant literature (3). We administered transperitoneal nephrectomy and cuff incision for this patient. Both of the patients undergoing laparoscopy for undescended testis had unilateral abdominal testis. We performed orchiopexy for the 9-year-old patient. For the second patient, too, who was an adult with atrophic testis, we applied orchiectomy.

The average amount of bleeding was 70.5 (30 to 250) ml. We did not encounter intraoperative complications in any of the patients, thus, we did not need to switch to open surgery. One patient required intraoperative blood transfusion while 3 patients needed transfusion in the postoperative period. We observed superficial wound infection in four cases, incisional hernia in two cases, and subileus occurred in one of the patients. Other than that, we did not have any mortality or major complications. The mean postoperative hospital length of stay was 2.26 (1-4) days.

DISCUSSIONS

Laparoscopic surgery in urology has shown rapid development in recent years and become widely applicable in many ways. The facts that there is no difference between laparoscopic surgery and open surgery in terms of success, that laparoscopic surgery requires shorter length of hospital stay, and that it provides quick recovery and return to normal life have all made laparoscopic interventions more preferable. However, lack of sense of touch and inability to display all instruments at once on the screen may cause tissue damage through electric current or sharp edges of its instruments. All these suggest that laparoscopic surgery requires a long period of training. Increased surgical skills and efforts to make laparoscopic instruments compatible with energy sources have decreased the number of complications and instances of switching to open surgery.

Laparoscopy is applied with transperitoneal or retroperitoneal approaches. Although retroperitoneal approach offers lower complication rates and shorter hospital stay, it is disadvantageous to operate in a restricted space (4). In the transperitoneal approach, however, surgeon has a wider operation area and better maneuverability. However, the choice of method also depends on surgeon's experiences and preferences. In all the cases in our study, we preferred the transperitoneal approach.

The duration of the operations were consistent with the literature. The literature shows that nephrectomy operations with transperitoneal approach take shorter operation time than those with retroperitoneal approach (5-7). In all our cases, we carried out transperitoneal surgery.

As with all other surgical interventions, complications are inevitable in laparoscopic surgery (8). Acquiring necessary and sufficient training and experience may minimise complication rates. Major complications can be divided into three groups; complications that occur during port fitting like damage to the liver and abdominal wall hematoma; complications that take place during operations like vascular injury, bowel injury, spleen injury, and unsuccessful organ extraction; and complications that develop postoperatively such as respiratory and gastrointestinal problems (9, 10).

Studies have shown that initial learning curve in the first 50 cases studies, duration of surgery, complication rates, and rate of switching to open surgery are all revealing in

terms of the development of surgeon's skills; indeed, it has been reported that the rate of switching to open surgery, which was 17% during training, can go down to 2% (11). In our series, we did not encounter any complications that would prompt switching to open surgery. It is probable that our attentive attitude in selecting laparoscopy method and having performed laparoscopy in selected cases may have been influential on this. We did not have any difficulties while placing the ports or during the intraoperative period, either. We only needed to perform blood transfusion for a patient before the operation and for 3 patients postoperatively. But we came across superficial wound infection in four cases, incisional hernia in two cases, and subileus occurred in one of the patients.

Retroperitoneal laparoscopy causes less organ damage and postoperative complaints than the transperitoneal method. However, the drawback of this method is its narrow operation area (12). In our case, we preferred the transperitoneoscopy simply because the surgeon was experienced in this method. The postoperative hospital stay of our patients was 2.26 (1-4) days. This rate was in accordance with the literature.

It can be concluded that laparoscopy has increasingly become a preferred and popular method in urology due to its less invasive nature, shorter hospital stay and recovery requirements, smaller incision scar, and success rate. Preoperative patient selection, good preparation, and team work should be considered in detail since these are significant factors in success especially for the training practitioners.

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