

# Our Initial Laparoscopy Surgery Experiences in Urinary System: 97 Cases

## Üriner Sisteme Yönelik Laparoskopik Cerrahide İlk Deneyimlerimiz:97 Vaka

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**Geliş Tarihi/Received:** 02 December 2018

**Kabul Tarihi/Accepted:** 25 March 2019

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### Öz

**Amaç:** Bu çalışmada üriner sisteme yönelik gerçekleştirdiğimiz 4 yıllık laparoskopik cerrahi deneyimlerimizi literatür eşliğinde sunmayı amaçladık.

**Hastalar ve Yöntem:** Ocak 2014-Ekim 2018 tarihleri arasında kliniğimizde 97 hastaya üriner sisteme yönelik laparoskopik cerrahi girişim uygulandı. 54 hastaya sağ, 42 hastaya sol laparoskopik cerrahi girişim ve 1 hastaya da radikal prostatektomi uygulandı. Hastalar sağ ve sol olmak üzere iki gruba ayrılarak operasyon süresi, ortalama kan kaybı, intraoperatif ve postoperatif komplikasyonlar, hastanede kalış süresi ve dren kalma süresi açısından retrospektif olarak incelendi.

**Bulgular:** Hastaların ortalama yaşı 44(16-67) idi. Erkek/Kadın oranı 54/43 idi. Radikal prostatektomi hariç 54 hastaya sağ, 42 hastaya sol laparoskopik cerrahi girişim uygulandı. Tüm girişimlerde ortalama ameliyat süresi 145(40-210) dakika, ortalama dren alınma süresi 3.1(1-10) gün, yatış süresi 3.4(1-14) gün, kanama miktarı 150(20-500) cc olarak hesaplandı. Pyelolitotomi yapılan 1 hastada ve radikal prostatektomi yapılan 1 hastada drenenden uzamış idrar drenajı gözlemlendi. Tüm girişimler gözönüne alındığında ortalama komplikasyon oranı %5.1 olarak bulundu. Sağ laparoskopik cerrahi girişim ile sol laparoskopik cerrahi girişim arasında karşılaştırılan parametreler açısından herhangi bir fark gözlemlenmedi.

**Sonuç:** Laparoskopinin ilk öğrenme döneminde olan bir cerrahın başlangıçta nispeten daha basit prosedürler seçmesi ancak bu süreyi çok uzatmadan daha kompleks ameliyatlara geçmesi öğrenme süresini hızlıca kısaltabilir. Uygun hasta seçimi ve yeterli ekipman ile perifer merkezlerde de laparoskopik cerrahi güvenle uygulanabilir.

**Anahtar Kelimeler:** Laparoskopi, üriner sistem, cerrahi, deneyim, prostatektomi

### Abstract

**Aim:** Our objective in this study was to present our four years of experience in laparoscopic surgery for urinary system accompanied by literature.

**Patients and Methods:** Between January 2014 and October 2018, laparoscopic surgical intervention was made on urinary system for 97 patients in our clinic. 54 patients had right and 42 patients had left laparoscopic surgical intervention and 1 patient had radical prostatectomy. Patients were retrospectively examined for operation duration, average blood loss, intraoperative and postoperative complications, hospitalization duration and drain installation time after separating into two groups as right and left.

**Results:** Average age of the patients was 44(16-67). Male/Female rate was 54/43. Apart from radical prostatectomy, 54 patients had right and 42 patients had left kidney laparoscopic surgical intervention. Average operation duration was 145 (40-210) minutes, average drain removal time was 3.1 (1-10) days, hospitalization duration was 3.4 (1-14) days and bleeding amount was 150(20-500) cc in all interventions. Lengthened urinary drainage was observed from the drain in one patient who had pyelolithotomy and one patient who had radical prostatectomy. When all interventions were considered, the average complication ratio was found 5.1%. No differences were observed in the parameters compared among right and left laparoscopic surgery interventions.

**Conclusion:** For a surgeon in the first learning phase of laparoscopy, choosing relatively simpler procedures in the beginning but passing to more complex operations without much delay may quickly shorten the learning phase. Through the selection of suitable patients and adequate equipment, laparoscopic surgery can also be applied safely in peripheral centers.

**Key words:** Laparoscopy, urinary system, surgery, experience, prostatectomy

## INTRODUCTION

Laparoscopic surgical interventions recently became applicable also in peripheral hospitals in our country. In 1990, first laparoscopic lymphadenectomy was made in urology field (1) and then the first laparoscopic nephrectomy was made by Clayman (2). First pediatric laparoscopic nephrectomy was made by Erlich et al. (3) in 1992. Then its usability also in reconstructive urology was shown by Lipsky et al. (4) with transperitoneal laparoscopic urethrolithotomy and by Schuessler et al. (5) with laparoscopic pyeloplasty in 1993. In 1994, Gaur et al. (6) made retroperitoneal laparoscopic urethrolithotomy. In a series of 601 cases, Akin et al. (7) laparoscopically made all kinds of urological operations including radical, reconstructive and continence surgeries. In complex renal calculi, Chao Qin et al. (8-9) had 75 Retroperitoneal laparoscopic cases and Aydođdu and Silay had pediatric laparoscopic series. Today, urological laparoscopic surgery has become preferable over open surgery in almost all procedures today although the learning curve is long especially in reconstructive urology. Our objective in this study was to present our four years of experience in laparoscopic surgery for urinary system accompanied by literature.

## PATIENTS AND METHODS

Laparoscopic surgical intervention was applied for 97 patients in our clinic between January 2014 and October 2018. Apart from radical prostatectomy operation, 54 patients had right and 42 patients had left laparoscopic surgical intervention. Laparoscopic simple nephrectomy was made for 48 patients (28 right, 20 left), cyst excision for 21(13 right,8 left), Radical Nephrectomy for 11 (5 right, 6 left), Pyelolithotomy for 5 (3 right, 2 left), Pyeloplasty for 7 (3 right, 4 left), Ureteroneocystostomy for 1, Ureterolithotomy for 3(1 right, 2 left) and Radical Prostatectomy for one patient. (Table 1). ). Patients were separated into two groups as right and left and were compared for operation time, intraoperative bleeding amount, drain time, complication rate and hospitalization time. (Table 2). Statistical analysis was made with SPSS program. P<0.05 was regarded as significant.

**Surgical technique:** All operations other than radical prostatectomy were made by inserting standard three ports after providing pneumoperitoneum with veress needle transperitoneally in lateral decubitus position. 4 ports were inserted in reconstructive cases when required. Covidien ligasure and Ultrasonic energy source (Ethicon-Harmonic, Enseal) was used

**Table 1.** Details on laparoscopic surgical interventions

Applied operation	Number	Operation Duration (Minutes)	Drain duration (day)	Hospitalization duration (day)	Bleeding (cc)	Complication (number of patients)	
Simple nephrectomy	Right	28	90(60-130)	3.2(2-5)	3.4(3-5)	120(100-500)	1*
	Left	20					
	Total	48					
Cyst excision	Right	13	75(40-110)	1.4(1-2)	1.6(1-3)	50(20-80)	-
	Left	8					
	Total	21					
Radical nephrectomy	Right	5	135(115-200)	3.8(2-6)	4.1(3-8)	150(100-300)	2*
	Left	6					
	Total	11					
Pyelolithotomy	Right	3	120(100-130)	4.2(3-9)	4.3(4-9)	75(50-100)	1**
	Left	2					
	Total	5					
Pyeloplasty	Right	3	160(150-210)	5.1(4-9)	5.4(5-9)	110(50-130)	-
	Left	4					
	Total	7					
Urethrolithotomy	Right	1	115(95-130)	4.6(3-7)	5.6(4-8)	90(50-110)	-
	Left	2					
	Total	3					
Ureteroneocystostomy	1 (Right)	165	4	5	100	-	
Radical prostatectomy	1	360	10	14	200	1**	
Total	97	145(40-360)	3.1(1-10)	3.4(1-14)	150(20-500)	5(5.1%)	

\* Starting open operation    \*\* Lengthened drainage

**Table 2.** Laboratory parameters of the study population (Mean± standard deviation and median; min; max values).

	Right	Left	P value
Number	54	42	0.295
Operation duration (mins)	140(60-200)	135(40-210)	0.648
Bleeding amount (cc)	140(30-250)	150(20-500)	0.812
Drain time (days)	3.0(2-8)	2.9(1-9)	0.596
Hospitalization duration (days)	2.8(1-6)	2.9(1-9)	0.639
Complication	2(3.70%)	2(4.08%)	0.413

in operations. In upper urinary system interventions, colon was medialized by dissecting starting from told line. Then finding and slinging the ureter, renal pedicle was reached in nephrectomies and ureteropelvic junction was reached in pyelolithotomy and pyeloplasties. In nephrectomies, renal artery and then renal vein were clipped and cut and specimen was extracted after taking in endobag.

In a patient who had right ureteroneocystostomy with ureterovesical stricture diagnosis, the intervention was made after inserting four ports transperitoneally in lateral decubitus position. Right ureter was found in iliac transverse level and released up to bladder through resection. Then right ureter was tied and cut from the place it entered bladder and re-anastomosed to the bladder through Lich-Gregoir method. Calculi was removed by incising the part housing the calculi using scalpel in ureterolithotomy operation and then the incision was covered with 4/0 vicryl after inserting DJ catheter.

5 fr ureter catheter was inserted in patients in lithotomy position at the beginning of the operation in cystectomies. Then the patient was located in lateral decubitus position and after completely exposing the cyst laparoscopically, the cyst was emptied and excised starting from normal parenchymal border. Pelvicaliceal system integrity was checked after giving methylene blue from the catheter inserted before. No cyst relation was detected in any patient. A patient who was applied pyelolithotomy had horseshoe kidney anomaly. To reach the 8 mm calculi in kidney lower pole after transperitoneally applied laparoscopic pyelolithotomy, an 8 mm calculi was extracted from the lower pole entering through the kidney with flexible ureteroscope inside the port. After extracting the calculi in all pyelolithotomy, DJ catheter was located before closing the incision in pelvis.

Radical prostatectomy operation was made by locating 5 ports in supine 15 degrees trandenburg position. After completing prostatectomy,

vesicourethral anastomosis was made with 3/0 vicryl.

## RESULTS

Average age of the patients was 44 (16-67). Male/Female rate was 54/43. Apart from radical prostatectomy, 54 patients were applied right and 42 patients were applied left kidney laparoscopic surgical intervention. Average operation duration was 145 (40-210) minutes, average drain removal time was 3.1 (1-10) days, hospitalization duration was 3.4 (1-14) days and bleeding amount was 150(20-500) cc in all interventions. One patient who had simple nephrectomy and another one who had pyelolithotomy had horseshoe kidney anomaly. Shortest average drain duration belonged to cyst excision patients and the longest belonged to Radical prostatectomy patients. Open operation was started as renal pedicle couldn't be reached in two patients who had radical nephrectomy and one patient who had simple nephrectomy. Lengthened urinary drainage was observed from the drain in one patient who had pyelolithotomy and one patient who had radical prostatectomy. When all interventions were considered, the average complication ratio was found 5.1%. Details on laparoscopic surgical interventions are available in Table 1.

## DISCUSSION

Rapid advancement in technology also influenced urology and in recent years, almost all operations in urology can be made laparoscopically. Important advantages are fast recovery after laparoscopic surgery, less analgesic requirement, shorter hospitalization duration and fast returning of patients to their daily activities (10). Laparoscopic interventions are applied as transperitoneal and retroperitoneal approach. Compared to retroperitoneal approach, wider operating area, clear anatomic borders and large distance between ports are the advantages of transperitoneal approach (11). As we believe that we are more experienced in transperitoneal approach,

we preferred this method in all patients in our clinic.

In the series of Nadu et al, average operation duration was reported as 125 minutes (12). In the study by Demir et al, average operation duration was reported as 173 minutes (13). In our study, average operation duration in all interventions was found 145(40-360) minutes but it was considered that this changed based on the type of the surgical intervention made. Although these are our first experiences in laparoscopy yet, we think that our operations were completed in durations in line with literature because we observed that the operation duration became significantly shorter in latter cases as our surgical experience increased.

In a study by Fahlenkamp et al on 2407 patients, the complication ratio was reported as 4.4% (14). In a study by Siquera et al, it was reported that they passed to open surgery in 6.1% of the patients (15). Major complication ratio was reported as 3% and open surgery passing ratio was reported as 2% in a study by Gill et al (16). In a study made by Daggülü et al in our country, open surgery passing ratio was reported as 5% (17). In a current study on 411 cases containing different urological laparoscopic procedures, total complication ratio was found 13.4% (18). In the series of Demirel et al containing 228 cases, major vascular injury which is a major complication was found 3.5% and organ injury was 0.87% (19). No major vascular injuries or organ injuries were observed in our study. In 2 patients having radical nephrectomy and 1 patient having simple nephrectomy, we passed to open surgery in our study and the complication ratio was found 3.0%. Including lengthened urinary drainage from the drain which we regard as a minor complication, total complication ratio we found in our study was 5.1%.

Long learning curve is one of the difficulties in laparoscopic surgery. Although it was reported that minimum 50 cases are required for the first learning curve in a study by Vallancien et al (20), we think that this can change based on individuals and the type of the operations made. For a surgeon who is new in laparoscopy, training courses participated and practicing on training boxes before meeting the patient in operating room shorten learning duration (21-22). Although the first 10 cases on which we started to apply laparoscopy in our clinic were relatively simpler procedures and our average operation duration was 90 (80-110) minutes and we worked on more complex cases later, our operation duration was calculated as 145(40-360) min in all procedures and we observed

that this duration shortened severely. We think that in addition to the experience of a surgeon increasing with the number of laparoscopic surgeries attended in a clinic, increasing experience of the health staff assisting during the surgery is an important factor for shortening operation durations.

## CONCLUSION

Compared to open surgery, as larger visual area is available and less assistance is needed for the surgeon for eliminating during operation, we think that laparoscopic surgery becomes easier. While learning can be provided completely through mentor system for specialty students in open surgery, with the visual media devices, model of learning by watching has become an important part of learning in laparoscopic surgery. Through the selection of suitable patients and adequate equipment, we think that laparoscopic surgery can also be applied safely in peripheral centers.

**Conflict of interest:** Authors declare that there is no conflict of interest between the authors of the article.

**Financial conflict of interest:** Authors declare that they did not receive any financial support in this study.

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