

Laparoscopic Surgeries in Urology: Initial Burgeoning Experience at National Transplant Centre, Nepal

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ABSTRACT

Background

This study focuses on experience of laparoscopic surgery at Shahid Dharma Bhakta National Transplant Centre (SDNTC), Nepal; which could enable us to gain knowledge regarding its benefits over conventional surgery. The present study revealed the frequency of various forms of laparoscopic surgeries done at our centre. Moreover, this study accomplishes laparoscopic donor nephrectomy “a historical milestone achieved in Nepal for kidney transplantation on 18th November 2018” which was the first Laparoscopic donor nephrectomy done in Nepal by Nepalese team.

Objective

The present study assesses the feasibility and safety of laparoscopic surgery at government hospital of Nepal.

Method

This hospital based cross-sectional study included all patients of age group 10 to 60 years, coming to outpatient department of SDNTC and those having indications for nephrectomy. We excluded patient having previous history of open surgeries of kidney, bleeding disorders, uncontrolled Diabetes Mellitus and uncontrolled Hypertension. The study duration was 15 months from November 2017 to January 2019. The total number of patients enrolled in the study was fifty where transperitoneal laparoscopic surgery was performed in all 50 patients. The demographic data, indications for surgery, duration of surgery, complications of surgery and perioperative outcomes were analyzed.

Result

Out of 50 cases, 34 (68%) underwent simple lap nephrectomy, 6 (12%) were lap pyeloplasty, 6 (12%) lap nephrectomy along with ureterectomy of long segment of diseased ureter, 1 (2%) lap radical nephrectomy, 1 (2%) lap donor nephrectomy for kidney transplantation, 1 (2%) lap heminephrectomy and 1 (2%) lap nephrectomy for hydronephrotic non functioning left crossed ectopia. Amongst all nephrectomies, 27 (54%) patients were operated on right side while 23 (46%) patients on left. The median age of the patient was 38.56 years. Out of total cases 32 (64%) were male and 18 (36%) female. The median operative time and hospital stay was 122.3 minutes and 5 days respectively. The median estimated blood loss was 74.1 cc. Only one patient required blood transfusion intra-operatively. 2 (4%) patients were converted to open surgery.

Conclusion

Laparoscopic surgery is feasible and safe procedure in government setup hospital with less cumbersome procedure and minimum complications associated with it.

KEY WORDS

First donor nephrectomy, Laparoscopic surgery, Nephrectomy, Transplantation

INTRODUCTION

In 1990, first lap nephrectomy was performed by Ralph Clayman.¹ Laparoscopic surgery has significant advantages over conventional open surgery. Because of this, there has been increasing number of successful laparoscopic radical and simple nephrectomies, partial nephrectomy, laparoscopic donor nephrectomy, excision of renal cyst, ureteral reimplantation, pyeloplasty, stone surgery, ureterolysis and bladder neck suspension.²⁻⁴ Reports have proven efficacious with minimal morbidity, reduced post operative pain, reduced chest and wound complications; decreased length of hospital stay, rapid return to normal activities and improved cosmetic compared to open urologic surgery.²⁻⁴ In present study, an initial burgeoning experience of fifty cases of lap surgeries were revealed including lap donor nephrectomy for kidney transplantation.

METHODS

In this hospital based cross-sectional study over a period of 15 months commencing from November 2017 to January 2019, fifty laparoscopic surgeries were performed at SDNTC. The ethical committee approval was obtained with the research reference number 74/75. We analyzed the data including indications for surgery, route of approach and postoperative outcomes. The data was entered in the microsoft excel and analyzed by statistical program for the social sciences (SPSS) version 22. The lap surgery was carried out in well equipped set-up at SDNTC by using Ethicon Endo-surgery machine procured from Guaynabo, Puerto Rico 00969 USA.

The patients were placed in a lateral (kidney) position. Pneumoperitoneum was created with visual trocar of 10 mm about 2.5 cm superolateral to umbilicus which was also used as a camera port. Laparoscopic surgery was performed using 3 or 4 port technique, 10 mm camera port, other 10 mm and 5 mm working port is placed in sub-costal region and in hypogastric region (5 or 10 mm port placement depends on left or right side getting operated) and other 10 mm port was placed as per requirement for bowel, kidney and liver retraction. The renal artery, renal vein and ureter were secured with hem-o-lock clips (size 10 mm and 5 mm) and divided with scissors. After finishing the procedure, the specimen was extracted through an extension of 10 mm working port.

RESULTS

Patient characteristic features were presented in table 1. There were 32 males and 18 females with a median age of 38.56 years (IQR: 10-60). In this study, 27 (54%) cases were operated on right side while 23(46%) on left side. Transperitoneal approach was performed in all 50 cases. The surgery was performed for various disease conditions.

Table 1. Patient's Characteristic Features and Access of Lap Surgery

Characteristics	Lap Surgery Cases (n=50)
Median Age in years (IQR)	38.56 (10-60)
0-20 years n (%)	5 (10)
21-40 years n (%)	21 (42)
41-60 years n (%)	24 (48)
Gender (Male: Female : 1.7:1)	
Male n (%)	32 (64)
Female n (%)	18 (36)
Kidney Side	
Left n (%)	23 (46)
Right n (%)	27 (54)
Approach of surgery	
Transperitoneal n (%)	50 (100)

The indications of lap surgery were shown in table 2 where non functioning kidney (NFK) in 34 patients (68%) secondary to medicorenal disease, stone disease, pelvi-ureteric junction (PUJ) obstruction leading to gross hydronephrosis and pyonephrotic kidneys who underwent simple lap nephrectomies; PUJ obstruction which may be incidental finding or presented with pain and deranged function of that kidney in six patients (12%) who underwent lap pyeloplasties; renal cell carcinoma in 1 patient (2%) who underwent radical nephrectomy; vesico-ureteric Junction (VUJ) stricture with VUJ stone or VUJ reflux leading to non functioning kidney in 6 patients (12%) who underwent lap nephrectomy with ureterectomy of diseased part upto distal ureter; non functioning unfused crossed ectopia of left kidney in one patient (2%) who underwent lap nephrectomy of crossed ectopic non functioning kidney; non functioning left horseshoe kidney in one patient (2%) who underwent lap heminephrectomy of non functioning part and 1(2%) is laparoscopic healthy donor nephrectomy for renal transplantation.

Table 2. Indications of Lap Surgery (n=50)

Renal Pathology	Number (%)
Simple, NFK	34 (68)
PUJ Obstruction	6 (12)
Renal cell carcinoma	1 (2)
VUJ Stricture leading to NFK	6 (12)
Non functioning crossed ectopia	1 (2)
Non functioning horseshoe kidney	1 (2)
Healthy donor for kidney transplantation	1 (2)

Abbreviation: non functioning kidney (NFK); pelvi-ureteric junction (PUJ)

Surgical data were shown in table 3; operating time, the rate of intraoperative complications and the rate of conversion to open surgery. The median operating time was 122.3 minutes (IQR: 45-255). Two (4%) cases were converted to open nephrectomy. First case was converted due to

massive adhesions of kidney to bowel and surrounding tissues; second case had to be converted due to excessive bleeding after clipping and division of renal artery and vein, as accessory renal artery supplying upper pole was missed. Two units of blood transfused intra operatively in second case. The median estimated blood loss was 74.1 cc (IQR: 20-350) whereas median drain was projected to be 137.1 cc (IQR: 0-340). All 50 patients received adequate analgesic medication mainly intra venous acetaminophen and tramadol. The median hospital stay was 4.64 days (IQR: 2-8)

Table 3. Lap Surgery Outcome of the Patients (n=50)

Outcome	Lap Surgery Cases (n=50)
Operating time (minutes), median (IQR)	122.3 (45-255)
Hospital stay (days), median (IQR)	4.64 (2-8)
Intraoperative complications, number (%)	2 (4)
Conversion to open surgery, number (%)	2 (4)
Blood loss (cc), median (IQR)	74.1 (20-350)
Drain (cc), median (IQR)	137.1 (0-340)

DISCUSSION

Laparoscopic surgeries can be regarded as an attractive, safe and viable alternative to conventional open surgery. The benefit of a less invasive surgical approach to urological disease is based on patient comfort, improved cosmetic results and shorter convalescence as compared to open surgery.^{1,5-8}

In the present study, we have chosen transperitoneal route, as we were more familiar, comfortable and trained in this approach. It represents the standard access in laparoscopic surgery. Theoretically there is no significant difference to retroperitoneal laparoscopic approach in comparison to amount of blood loss, duration of surgery and post operative complications, which are similar in various comparative studies.^{9,10} The operating time depend mostly on pathological conditions; number of renal vessels, perirenal adhesion, type of surgery and experience of surgeon, rather than the type of laparoscopic access used.

In adult patients, prospective and retrospective comparisons between laparoscopic and open nephrectomies have shown that analgesic requirement, chest complications, hospital stay and time required to return to normal daily activities are reduced in laparoscopically treated patients.^{2,11-13} However, these reports have stated that the operative time was significantly longer for the laparoscopic procedures (135-335 minutes) in comparison to open surgeries. In our study, the median operative time was 122.3 minutes.

Simon et al. reported a series of 285 laparoscopic nephrectomies with a major complication rate of 5.6 % and a minor complication rate of 9.47%.¹² In our study, we did not face any major complication but had 4% of minor complication which was managed conservatively. Our complications rate seems to be low in comparison to above study. This may be due to small sample size and narrow selection criteria with exclusion of extreme ages and redo cases.

CONCLUSION

Laparoscopic surgery is safe and feasible procedure in government setup with steep learning curve for urologists. This requires surgical skills and laparoscopic expertise for consistently good outcomes. Regarding the inherent benefits for patients in terms of reduced post operative pain, faster recovery and improved cosmetic outcome, it has become the standard approach for urologic surgery at our institution.

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