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

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Research article

Keywords: First Donor Nephrectomy, Laparoscopic Surgery, Nephrectomy, Transplantation

Posted Date: May 1st, 2020

DOI: <https://doi.org/10.21203/rs.3.rs-19960/v1>

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Abstract

Background

This study focuses on laparoscopic surgery experiences at Shahid Dharma Bhakta National Transplant Centre (SDNTC) which could enable the patients to gain knowledge regarding its benefits than conventional way of surgery. The present study finds out the frequency of various forms of nephrectomy based on laparoscopic surgery. Moreover, this study accomplishes lap donor nephrectomy of kidney transplantation which is of its first kind in this part of country.

Methods

We retrospectively reviewed the in-patient medical records at SDNTC from November 2017 to January 2019. Laparoscopic surgery was performed in 50 patients. The demographic data, indication for surgery, duration and peri-operative outcomes were analyzed.

Results

Out of 50 cases, 34 (68%) had undertaken lap simple nephrectomy, 6 (12%) were lap pyeloplasty, 6 (12%) nephro ureterectomy, 1 (2%) radical nephrectomy, 1 (2%) lap donor nephrectomy for kidney transplantation, 1 (2%) heminephrectomy and 1 (2%) nephrectomy of hydronephrotic non functioning left crossed ectopia. The lap donor nephrectomy of a case for kidney transplantation is the first laparoscopic donor nephrectomy of Nepal undertaken by Nepalese team at SDNTC. Amongst all nephrectomy, 27 (54%) patients were operated on right side while 23 (46%) patients on left side. The median age of the patients was 38.56 years comprising of 32 (64%) male and 18 (36%) female. Transperitoneal approach was used in all 50 (100%) cases. The respective median operative time and hospital stay was 122.3 minutes and 5 days. The mean estimated blood loss was 74.1 cc where two patients required blood transfusion intra-operatively. Post-operatively, 1 (2%) patient had hematoma which was managed conservatively. Two cases (4%) patients were converted to open surgery.

Conclusions

Laparoscopic surgery is feasible and safe procedure at our government setup hospital with least cumbersome procedure and minimum complication associated with it.

Background

In 1990, first lap nephrectomy was performed by Ralph Clayman.¹ Laparoscopic surgery has significant advantages over conventional incisional surgery. Because of this, there has been increasing number of successful laparoscopic radical and simple nephrectomies, partial nephrectomy, laparoscopic donor nephrectomy in case of renal transplantation, excision of renal cyst, ureteral reimplantation, pyeloplasty, stone surgery, ureterolysis and bladder neck suspension²⁻⁴. Reports have proven efficacious with minimal morbidity, reduced post operative pain, reduced chest and wound complication; decreased length of hospital stay, rapid return to normal activities and improved cosmetics compared to open urologic surgery.²⁻⁴ In present study, an initial burgeoning experience of fifty cases undertaken lap surgery was shared indicating the first healthy donor nephrectomy for kidney transplantation in Nepal at our centre SDNTC.

Methods

Over a period of 14 months commencing from November 2017 to January 2019, fifty laparoscopic cases (32 male, 18 female age ranging from 10-60 years) were performed. We analyzed the demographic data, indications for surgery, route of approach and preoperative outcomes. The lap surgery was carried out in well set-up at SDNTC by using Ethicon Endo-surgery machine procured from Guaynabo, Puerto Rico 00969 USA.

Patient's Preparation and Laparoscopic Surgery Procedure

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 a camera port. Laparoscopic nephrectomy was performed using 3 to 4 ports 10 mm camera port, other 10 mm and 5 mm working port in subcoastal region, or in hypogastric region (depending 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, vein and ureter were secured with hemolock clips (size 10 mm, 5 mm) and divided with scissor. After finishing the procedure, the specimen was extracted through an extension of incision to 4-5 cm of 10 mm (lower or lateral) 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 those cases 27 (54%) right and 23 (46%) left sided surgery were performed. Transperitoneal approach was performed in all 50 (100%) cases. The surgery was performed for various disease conditions. The indications were non functioning kidney in 34 patients (68%), Pelvi-Ureteric Junction (PUJ) obstruction in 6 (12%), renal cell carcinoma in 1 (2%), Vesico Ureteric Junction (VUJ) stricture with VUJ stone leading to non functioning kidney in 6 patients (12%), non functioning crossed ectopia of left kidney in 1 (2%), non functioning left horseshoe kidney in 1 (2%) and 1 (2%) is laparoscopic healthy donor for renal transplantation (Table no. 2).

Table 1: Patients' 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)
Lap Surgery Approach	
Transperitoneal n (%)	50 (100)

Table 2: Indications of Lap Surgery

Renal Pathology	Number (%)
Non Functioning Kidney	34 (68)
PUJ Obstruction	6 (12)
Renal Cell Carcinoma	1 (2)
VUJ Stricture	6 (12)
Non Functioning Crossed Ectopia	1 (2)
Non Functioning Horseshoe Kidney	1 (2)
Healthy Donor For Kidney Transplantation	1 (2)

Surgical data are 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%) patients were converted to an open nephrectomy because of massive adhesion and bleeding but only 2 pint of blood was transfused in one patient. 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 of 50 patients received adequate analgesic medication viz a viz paracetamol and tramadol. The median hospital stay was 4.64 days (IQR: 2–8).

Table 3: Lap Surgery Outcome of the Patients

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 taken as a safe, attractive and viable alternative to conventional open surgery. In comparison to open surgery the advantage of a less invasive surgical approach to urological disease is based on improved cosmetic results, patient comfort and shorter convalescence.^{1,5,6,7,8}

In the present study, the transperitoneal approach has been taken as we were more familiar with this approach; it represented the standard access during laparoscopic training. The significant difference was not detected while comparing the transperitoneal to retroperitoneal laparoscopic approach, which is similar to other comparative studies.^{9,10} The operating time depended mostly on the individual pathological condition like number of renal arteries, size of the kidney, perirenal adhesion, previous surgeries, BMI of the patient and experience of surgeon rather than the laparoscopic access technique used.

In adult patients, prospective^{11,12} and retrosepective^{13,14} comparisons between open and laparoscopic nephrectomies have shown that chest complications, hospital stay, analgesic requirement, and time required to return to normal activities are reduced in laparoscopically treated patients. However, these reports have stated that laparoscopic procedure have significantly longer operative time (135–335 min). In our study, the median operative time was 122.3 minutes.

In 1992, Bolhme et al reported, 490 living donor nephrectomies series in which a major complication rate was 1.4% and a minor complication rate 13.6%.¹² In our study, we did not face any major complication but had 4% of minor complication

which was managed conservatively. We have started laparoscopic donor nephrectomy for kidney transplant patient and this is the only centre doing laparoscopic donor nephrectomy in Nepal till date.

Conclusions

Laparoscopic surgery is safe and feasible procedure at our government setup and also challenging for urologists which requires surgical skills and laparoscopic expertise for consistently good outcomes. Regarding the inherent benefits for patients in terms of reduced pain level, faster recovery and improved cosmetic result, it has become the standard approach for urologic surgery at our institution.

Abbreviations

PUJ

Pelvi-Ureteric Junction; SDNTC:Shahid Dharma Bhakta National Transplant Centre;

VUJ

Vesico Ureteric Junction (VUJ)

Declarations

Acknowledgement

I would like to thank all patient participants who had undertaken lap surgery as their part of procedure for renal problems. I would like to thank Dr. Narayan Prasad Bhusal who has helped me during surgery. I would like to give an immense acknowledgement for the thorough revision of this article by Mr. Narayan Gautam, Department of Biochemistry, Universal College of Medical Sciences, Bhairahawa, Nepal.

Authors' contributions

BMK proposed the protocol and procedural functioning of the whole study. KJK and PCS supported in the procedural functioning of the study subjects. SK contributed to statistical analysis and manuscript writing. All authors read and approved the final manuscript.

Funding

No funding was obtained for this study

Availability of data and materials

The datasets used during the current study are available from the corresponding author on reasonable request.

Ethics approval and consent to participate

This retrospective study was conducted in the national transplant centre in a governmental setup under the auspices of the Director of SDNTC (Dr. Pukar Chandra Shrestha) who is the co-author of this manuscript as well. All patients were notified regarding the procedure they were going to intervene and their verbal as well as written consent were taken before nephrectomy.

Consent for publication

Not applicable.

Competing interests

The authors declare that they have no competing interests.

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