



COMPARISON OF OPERATIVE TIME AND DURATION OF HOSPITAL STAY AMONG THE PATIENTS UNDERGOING RETROPERITONEAL & TRANSPERITONEAL LAPAROSCOPIC NEPHRECTOMY FOR PYONEPHROSIS

Surgery

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ABSTRACT

Introduction: Laparoscopic nephrectomy is performed through transperitoneal or retroperitoneal approach. Most often a nephrectomy is performed to treat kidney cancer or to remove a noncancerous (benign) tumour. In some cases, a nephrectomy is performed to deal with a diseased or irreversibly damaged kidney. The present study was conducted to compare the operative time and duration of hospital stay in patients undergoing Retroperitoneal & Transperitoneal Laparoscopic Nephrectomy for pyonephrosis.

Materials and methods : The study was conducted in department of urology Civil Hospital & B J Medical College Ahmadabad. A retrospective review of 219 database of laproscopic simple nephrectomies done for pyonephrosis between July 2001 to Feb. 2013.

Results: In our study transperitoneal route was used in 165 (75.3%) while retroperitoneal access was used in 54(24.6%) patients. The mean age at surgery was 55 years (range 3-77 years). Mean operative time in present study was 190 minutes in retro peritoneal group 150 minutes for transperitoneal group in our series. Mean duration of PCN placement was 15±2.1 days. The average hospital stay was 2.2 days now in last 24 cases we discharge patients in <24 hour routinely.

Conclusion: The present study indicated that the mean operative time for the transperitoneal group was less as compared to retroperitoneal group. The average amount of days spent in hospital was also less as compared to other studies.

KEYWORDS

Transperitoneal, retroperitoneal, laparoscopic, nephrectomy

INTRODUCTION

Most often a nephrectomy is performed to treat kidney cancer or to remove a noncancerous (benign) tumour. In some cases, a nephrectomy is performed to deal with a diseased or irreversibly damaged kidney. Nephrectomy can be performed through open or laparoscopic procedure.⁽¹⁾ In 1990 Clayman performed the first total laparoscopic nephrectomy since then there have been widespread interest in urologic laparoscopy.⁽²⁾

Laparoscopic nephrectomy is performed through transperitoneal or retroperitoneal approach. Retroperitoneal laparoscopic nephrectomy was introduced by Gaur et al in 1993⁽³⁾. Laparoscopic nephrectomy has proven to be beneficial as compared to open surgery in terms of lesser post-operative pain, a shorter hospital stay and a more rapid return to full activity.^(3,4)

In order to understand the feasibility of newer techniques in all settings it is important to report such results from different areas of the world with different surgeon experience. The present study was conducted to compare the operative time and duration of hospital stay in patients undergoing Retroperitoneal & Transperitoneal Laparoscopic Nephrectomy for pyonephrosis.

MATERIALANDMETHODS

The study was conducted in department of urology Civil Hospital & B J Medical College Ahmadabad. A retrospective review of 219 database of laproscopic simple nephrectomies done for pyonephrosis between July 2001 to Feb. 2013.

INCLUSION CRITERIA

All patients who underwent laparoscopic simple nephrectomy for pyonephrosis

EXCLUSION CRITERIA

Laparoscopic simple nephrectomy performed for other than pyonephrosis that include

- Obstructive or reflux nephropathy
- Renal tuberculosis
- Multicystic dysplastic kidney
- Reno vascular hypertension
- Acquired renal cystic disease
- Nephrosclerosis
- Symptomatic patients with autosomal dominant polycystic kidney disease.

PATIENT EVALUATION AND PREPARATION

All the patients were given light diet in the previous evening and

polyethylene glycol preparation for bowel wash out. Intravenous antibiotic regularly given at the time of induction. Informed consent must be obtained with discussion of possible complications including adjacent organ injury and unrecognized bowel injury the patient should be informed that conversion to open surgery might be necessary to safely complete the planned procedure.

OPERATIVE PROCEDURE

For laparoscopic nephrectomy, the patient is initially positioned supine for intra venous access, induction of general anesthesia and endotracheal intubation. A bladder catheter and nasogastric tube is placed for decompression of the bladder and stomach prior to insufflation. The subsequent steps and positioning of the patient depends on the approach for the procedure.

RETROPERITONEOSCOPIC NEPHRECTOMY

Patient is placed in the lateral flank position with elevation of the kidney bridge. Further, the table may be tilted anteriorly to allow the peritoneum and bowel to fall away from the proposed port site. The primary port is placed using a 1.5-cm incision, 2 cm below and posterior to the tip of the 12th rib in the posterior axillary line, deepened down to the thoracolumbar fascia. A balloon dilator was constructed as described by Gaur.⁽⁵⁾ This consists of a glove finger stall tied by silk over the end of a suction catheter. The balloon dilator was then inserted into the opening. Distension of the balloon with air rapidly and a traumatically displaces the adjacent fat and peritoneum, thereby creating an adequate working space for retroperitoneoscopic surgery within that area. A 10mm port was then placed in this opening and used as the camera port. The 2nd and 3rd ports were inserted under direct vision. An automatic insufflator was used to maintain the CO₂ pressure at 14mm Hg. The psoas muscle acts as a landmark and was sought immediately on entry with the laparoscope. The hilar vessels are dissected first and divided. The ureter is dissected and divided. The kidney is mobilized all round and delivered intact by extending a port or by joining two ports. A 18-F ryles tube drain is left behind in the retroperitoneal space through the 5-mm port site at the discretion of the surge

TRANSPERITONEAL LAPAROSCOPIC NEPHRECTOMY

The patient positioned in a modified lateral decubitus position and the umbilicus is placed over the break in the operating table. The table can be flexed as needed. An axillary roll is placed and padding used to support the buttocks and flank. The patient is taped in position with multiple strips of wide cloth tape so that the patient will remain securely in place while the table is rolled toward the surgeon to assist with retraction of the bowel. Before trocars are placed, the abdomen is

insufflated using a Veress needle. Trocars are usually inserted near the umbilicus, midway between the iliac crest and umbilicus, just below the costal margin in the midclavicular line, and 4th port at the anterior axillary line midway between the twelfth rib and the iliac crest. In general, 10/12 mm ports are used at the umbilicus and lower quadrant, whereas 5 mm ports are used at the costal and lateral margins.

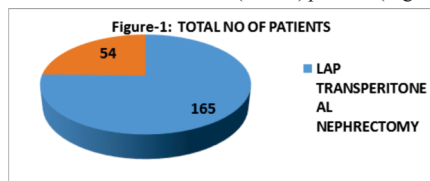
For a left nephrectomy, the white line of Toldt is incised from the level of the iliac vessels to above the spleen including the lienocolic ligament. During a right-sided nephrectomy, the peritoneal incision is carried cephalad, above the hepatic flexure including the right triangular and right anterior coronary ligaments. Medial traction on the colon reveals colorectal attachments that must be divided to complete the colon dissection. Adequate mobilization of the colon reveals the psoas muscle followed by the gonadal vessels and the ureter. The ureter is elevated and followed proximally to the lower pole and hilum of the kidney. The ureter is not divided at this time because it can be used to help elevate the kidney and identify the hilar vessels which are clipped and divided individually after a meticulous hilar dissection. Once the hilar vessels have been divided, the dissection continues posteriorly and superiorly to the upper pole and the adrenal gland is preserved. The ureter is divided and the kidney is removed intact by extending a 10 mm port. The muscle layer of the 10 mm trocar sites is closed with 2-0 vicryl sutures.

POST OPERATIVE CARE

The nasogastric tube is removed at the completion of the procedure. The patient can begin oral diet as tolerated after the bowel sounds return or next day morning. The Foley catheter is removed within 24 hour the patient is ambulating and a drain be removed within 24 hour or when the output is less than 50 ml in 24 hrs. The patient is discharged when tolerating a diet.

RESULTS

In our study transperitoneal route was used in 165 (75.3%) while retroperitoneal access was used in 54 (24.6%) patients (Figure -1)



The mean age at surgery was 55 years (range 3-77 years). Most of the patients undergoing transperitoneal nephrectomy were > 45 years of age. Most of the patients undergoing retroperitoneal nephrectomy were between 31- 45 years age group. Etiology was Renal stone/Pelviuretric junction stone in 98 (44.75%), Uretric stone 87 (39.72%), Pelviuretric junction obstruction in 23 (10.5%), Uretric stricture in 9 (4.1%), vesicoureteric reflux in 2 (0.9%). (Table-1)

In present study total 7 (3.2%) patients presented with alter renal function test ranging from (1.8 mg/dl – 3.5 mg/dl)

TABLE NO- 1: ETIOLOGY

ETIOLOGY				
RENAL/PUJ STONE	URETRIC STONE	PUJ OBSTRUCTION	URETRIC STRICTURE	VESICOURETIC REFLUX
98(44.75%)	87(39.72%)	23 (10.5%)	9 (4.1%)	2 (0.9%)

Mean operative time in present study was 190 minutes in retro peritoneal group 150 minutes for transperitoneal group in our series.

TABLE NO-2: PERCUTANEOUS NEPHROSTOMY (PCN IN SITU)

PERCUTANEOUS NEPHROSTOMY (PCN IN SITU)		
GROUP	LAP TRANSPERITONEAL	LAP RETRO PERITONEAL
TOTAL	165	54
(PCN IN SITU)	131(79.3%)	32 (59.2%)

In present study all patients were pyonephrotic and most of them require pre-operative drainage of infected pelvic calyx system. Indication for PCN placement was based on clinical examination (pain, fever, and/or tenderness), laboratory results (raised counts, altered renal function, and pyuria) and ultrasonography features

(hydronephrosis, internal echoes). Mean duration of PCN placement was 15±2.1 days

In our series the average hospital stay was 2.2 days now in last 24 cases we discharge patients in <24 hour routinely.

DISCUSSION

The present study was conducted to find out the operative time and duration of hospital stay among the patients undergoing Retroperitoneal & Transperitoneal Laparoscopic Nephrectomy for pyonephrosis.

The mean operative time of the present study was compared to the other studies done previously shown in the table 3. More over the slight increase in duration in initial 50 patients may be due to the learning curve.

TABLE NO-3 : OPERATIVE TIME

MEAN OPERATIVE TIME IN MIN.			
S NO	TRANSPERITONEAL GROUP	RETRO PERITONEAL GROUP	
1	ERAKY ET AL ⁽⁵⁾	186	HEMAL ET AL ⁽¹¹⁾
2	KEELEY ET AL ⁽⁶⁾	146	GAUR ⁽¹²⁾
3	ONO ET AL ⁽⁷⁾	265	DOUBLET ET AL ⁽¹³⁾
4	KERBL ET AL ⁽⁸⁾	355	ONO ET AL ⁽¹⁴⁾
5	RASSWEILER ET AL ⁽⁹⁾	206	RASSWEILER ET AL ⁽¹⁵⁾
6	PARRA ET AL ⁽¹⁰⁾	145	MCDUGALL ET AL ⁽¹⁶⁾
7	----	----	HEMAL ET AL ⁽¹⁷⁾
	PRESENT STUDY	150	PRESENT STUDY

The average hospital stay in the present study was 2.2 days in last 24 cases patients were discharged in <24 hour routinely. (Table-4)

HOSPITAL STAY	
SERIES	LENGTH OF STAY (MEAN: DAYS)
KEELEY ET AL ⁽⁶⁾	2.9
ONO ET AL ⁽⁷⁾	4.7
KERBL ET AL ⁽⁸⁾	10
RASSWEILER ET AL ⁽⁹⁾	3.6
PARRA ET AL ⁽¹⁰⁾	6.6
ERAKY ET AL ⁽⁵⁾	3.5
PRESENT STUDY	2.2

CONCLUSION

The present study indicated that the mean operative time for the transperitoneal group was less as compared to retroperitoneal group. The average amount of days spent in hospital was also less as compared to other studies.

REFERENCES

- Novick AC, Bishoff JT, Kavoussi LR. Open and laparoscopic surgery of the kidney. In: Wein AJ, Kavoussi LR, Novick AC, Partin AW, Peters CA, eds. Campbell-Walsh Urology. 9th ed. Philadelphia, PA: Saunders; 2007:1686-1810.
- Clayman RV, Kavoussi LR, Long SR, Dierks SM, Meretyk S, Soper NJ. Laparoscopic nephrectomy: initial report of pelviscopic organ ablation in the pig. J Endourol. 1990; 4:247-252.
- Gaur d d, agrawal d k, purohit k c. retroperitoneal laparoscopic nephrectomy: initial case report. J. Urol.1993; 149:103-5.
- Rozenberg h, bruyere f, abdelkader t, husset a, hamoura h. Transperitoneal laparoscopic nephrectomy. Prog urol 1999;9:1034-8.
- Eraky I, el-Kappany HA, Ghoneim MA. Laparoscopic nephrectomy: Mansoura experience with 106 cases. Br J Urol 1995;75:271-5.
- Keeley FX, Tolley DA. A review of our first 100 cases of laparoscopic nephrectomy: defining risk factors for complications. Br J Urol 1998;82:615-8.
- Ono Y, Katoh N, Kinukawa T, et al. Laparoscopic nephrectomy, radical nephrectomy and adrenalectomy: Nagoya experience. J Urol 1994;152(6 Pt 1):1962-6.
- Kerbl K, Clayman RV, McDougall EM, et al. Transperitoneal nephrectomy for benign disease of the kidney: a comparison of laparoscopic and open surgical techniques. Urology 1994;43:607-13.
- Rassweiler J, Frede T, Henkel TO, et al. Nephrectomy: a comparative study between the transperitoneal and retroperitoneal laparoscopic versus the open approach. Eur Urol 1998;33:489-96.
- Parra RO, Perez MG, Boullier JA, Cummings JM. Comparison between standard flank versus laparoscopic nephrectomy for benign renal disease. J Urol 1995;153:1171-4.
- Hemal AK, Gupta NP, Wadhwa SN, et al. Retroperitoneoscopic nephrectomy and nephroureterectomy for benign nonfunctioning kidneys: a single-center experience. Urology 2001;57:644-9.
- Gaur DD. Simple nephrectomy: retroperitoneal approach. J Endourol 2000;14:787-91.
- Doublet JD, Peraldi MN, Monsaint H, et al. Retroperitoneal laparoscopic nephrectomy of native kidneys in renal transplant recipients. Transplantation 1997;64:89-91.
- Ono Y, Katoh N, Kinukawa T, et al. Laparoscopic nephrectomy via the retroperitoneal approach. J Urol 1996;156:1101-4.
- Rassweiler J, Frede T, Henkel TO, et al. Nephrectomy: a comparative study between the transperitoneal and retroperitoneal laparoscopic versus the open approach. Eur Urol 1998;33:489-96.
- McDougall EM, Clayman RV, Fadden PT. Retroperitoneoscopy the Washington University Medical School experience. Urology 1994;43:446-52.
- Gassman D, Saint F, Barthelemy Y, et al. Retroperitoneoscopy: a laparoscopic approach for adrenal and renal surgery. Urology 1996;47:801-6.