



ORIGINAL RESEARCH PAPER

Urology

LAPAROSCOPIC SIMPLE NEPHRECTOMY FOR BENIGN NON FUNCTIONING KIDNEYS- A SINGLE CENTER EXPERIENCE.

KEY WORDS: laparoscopic nephrectomy, benign non functioning kidney, early recovery

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ABSTRACT

Objective: To report our early experience of laparoscopic nephrectomy in patients of benign non functioning kidney. **Patients And Methods:** We performed transperitoneal laparoscopic nephrectomy in 10 patients with benign non functioning kidney. **Results:** The mean operative time was 190 minutes. The mean blood loss was 320 ml. The resumption of oral intake was within 24-30 hours and removal of drain was done on 2nd post operative day. Intra-operative complications were in the range of 10%. Post operative complications were in the range of 5-10%. Mean hospital stay was around 3.2 ± 1.22 days. **Conclusion:** Laparoscopic nephrectomy for benign non functioning kidney has proven a boon to patients in terms of reduced blood loss, postoperative complications, hospital stay and cosmetic outcome.

INTRODUCTION

Laparoscopic urology has evolved rapidly since the mid-1990s through advances in video technology and instrumentation design and is currently a useful alternative to treat complex surgical diseases encompassing ablative as well as reconstructive urology.

In 1990, Clayman et al performed the first laparoscopic nephrectomy for a 3 cm renal mass in an elderly patient. This accomplishment represents one of the milestones in minimally invasive surgery because it provided the solution for removing a large solid organ without the need for an incision.¹

Although the laparoscopic operation takes longer than open surgery, there are considerable reductions in the length of postoperative hospital stay and the time taken to return to normal activities and to full recovery.²⁻⁴

Here we report our early experiences of laparoscopic nephrectomy in benign non functioning kidney.

Patients And Methods

This was a prospective study conducted in our department. The indication for nephrectomy was benign renal diseases in which permanent loss of renal function has occurred. These diseases included chronic pyelonephritis, obstructive or reflux nephropathy & renal tuberculosis. Patients who had previous abdominal surgery were excluded from laparoscopy.

Pre-operatively, patients had renal ultrasound, Serum creatinine, urea and full blood count assessments. Patients had functional renograms to confirm the presence of a poorly functioning kidney (< 10% of split function).

Surgical Technique:

The bowel was prepared using polythene glycol given the evening before the operation. A broad-spectrum intravenous antibiotic was administered on induction of general anaesthesia.

Transperitoneal Nephrectomy:

The patient was positioned in a modified lateral decubitus position. Approximately 30 degrees of rotation of the chest and abdomen was used. Pneumoperitoneum was established by open technique and insufflated to an intra-abdominal pressure of 15 mmHg. The first trocar (10 mm) for the introduction of endocamera, was placed periumbilically through a horizontal skin incision. After inspection of abdominal cavity additional trocars were placed under direct vision. A 10-mm and a 5-mm trocar were placed lateral to the rectus at the level of the umbilicus; and in the midline between the umbilicus and the xiphoid process, respectively. Additional trocars needed were used as necessary.

The operation began with the incision of the peritoneum along the white line of Toldt for reflection of the colon medially. The psoas muscle and psoas tendon were identified and the psoas muscle followed medially, to reveal the gonadal vessels. These were swept laterally and the ureter identified. The ureter was elevated and followed proximally to the lower pole and hilum of the kidney. The ureter was not divided at this time and used to help elevate the kidney. Medial retraction of the colon and bowel by an additional retractor and/or lateral retraction of the kidney by lifting it out of the renal fossa placed the hilar vessels under tension and helped in the dissection of the renal hilum. Layer-by-layer anterior dissection was performed until the renal vein was uncovered.

Careful dissection using right angled pedicle dissector was done to identify the renal artery. The artery was clipped with Hem-O-Lok™ clips and divided first, followed by the vein. Once all the hilar vessels had been divided, the dissection was continued posteriorly and superiorly to the free the kidney of all the attachments. Finally the ureter was clipped and transected. The specimen was retrieved through one of the port sites, after extension, or through a small 5 cm incision in the groin. Pneumoperitoneum was reduced and the renal fossa inspected for any bleeding. A tube drain was kept and the trocar sites were closed in layers.

Postoperative Care:

The orogastric tube was removed at the conclusion of the procedure. The Foley catheter was removed once the patient was comfortably ambulating. For the immediate post-op pain relief injectable diclofenac sodium 50 mg intramuscular was used. Later oral diclofenac 50 mg tab was used. Patients were made ambulatory on the same day of operation at evening. Orals were usually started on the 1st post operative day. After discharge from hospital patients were called for follow-up at 1 week, 4 weeks, 12 weeks, and 6 monthly thereafter.

The following parameters were recorded in a pre-structured Proforma. Information on gender, age, body mass index, comorbidities and past surgical history, procedure used, indication of surgery, side of disease, kidney size, differential function, estimated blood loss, transfusions. Operative time was recorded from the time of incision to closure of skin and port sites. Intra operative complications were noted if any. Pain was evaluated by visual analogue scale and the number of analgesic doses required. Infection was assessed by clinical examination and treated as appropriate. Postoperative hospital stay was noted (the day of surgery being day zero).

RESULTS

From March 2022 to August 2023, 10 laparoscopic nephrectomies were performed on 7 male and 3 female patients with a mean age of 40.2 (standard deviation, 9.4) years. The mean body mass index was 19.9 kg/m². Indications

for nephrectomy included non-functioning kidneys. Out of the 10 nephrectomies performed, 6 were on right kidney and 4 on the left. The mean operating time was 290 minutes. The estimated mean blood loss was 320 mL. One patient had intra-operative bleeding but haemostasis was achieved laparoscopically.

One of the patient had iatrogenic colonic perforation which went undetected during surgery. He presented with pain at one of the port sites, nausea with low grade fever on 4th postoperative day. He required exploration with a small perforation found in ascending colon. It was managed by freshening the margins and primary closure of the perforation. Postoperative course was uneventful. Drains were placed in all patients and were removed on the second postoperative day if the output was less than 50 ml for 24 hours.

DISCUSSION

Since the introduction of laparoscopic nephrectomy in 1991, this procedure has been widely popularized as a standard approach for nephrectomy. The advantages of decreased blood loss, reduced postoperative pain, short hospital stay and rapid convalescence had been demonstrated in several reports,^{5,6,7}

Laparoscopic nephrectomy can be performed either transperitoneally or retroperitoneally. Most laparoscopic surgeons are familiar with the transperitoneal route because it is the standard technique used during the laparoscopic training. The transperitoneal approach allows a large operating space, and the anatomical landmarks are easier to identify. We routinely adopted the transperitoneal approach for nephrectomy. For the transperitoneal approach, open placement of the first port and careful adhesiolysis helps to reduce visceral injury in the presence of peritoneal adhesion. Higher complication rates were found if only the Veress needle was used for the first access to a previously operated abdomen.¹²

Laparoscopic nephrectomy is difficult in tuberculous kidneys and was considered as a relative contraindication due to severe fibrotic adhesions between Gerota's fascia and the renal parenchyma with a higher conversion rate.^{6,8} Recently with improved instrumentation and surgical skill, laparoscopic nephrectomy for a tuberculous kidney can be done with minimum perioperative and postoperative complications and with the same hospital stay as in laparoscopic nephrectomy for benign kidney diseases.^{9,10,11} Laparoscopic nephrectomy for renal tuberculosis is a safe, effective, less invasive treatment modality and should be used as an initial approach.

The combined incidence of bowel injury is 1.3 in 1000 cases and as many as 69% of those are not recognized intraoperatively.¹³ Patients with unrecognized bowel injury after laparoscopy typically present with persistent and increased trocar site pain at the site closest to the bowel injury. Later signs and symptoms include nausea, diarrhea, anorexia, low grade fever, persistent bowel sounds and a low or normal WBC count. The patient's condition can rapidly deteriorate to hemodynamic instability and death if the injury is not quickly recognized and treated. CT is the initial diagnostic modality of choice and open exploration is usually required to evacuate bowel spillage and perform the necessary repair.¹⁴

CONCLUSION

Thus with lower postoperative pain and complications, early resumption of orals and early ambulation, reduced hospital stay and advantages in terms of lesser blood loss, better cosmesis, and ability to do the procedure in obese patients without increased morbidity, the laparoscopic nephrectomy has gained wide acceptance and should be considered the standard of care for the treatment of benign non-functioning kidneys.

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