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## Outcome of Laparoscopic Nephrectomy in Benign Renal Disease

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### ABSTRACT

**Introductions:** Laparoscopic surgery is rapidly emerging option in urology. With the advances in technology and instruments currently this is viable alternative to treat complex surgical diseases as well as reconstructive surgery.

**Methods:** This is a prospective observational study to analyze the outcome of laparoscopy nephrectomy. A total of 51 patients' had undergone laparoscopy nephrectomy over the period of five years. The variables analyzed were, age, sex, operative time, estimated blood loss, length of hospital stay, conversion rate and complication.

**Results:** The mean patient's age was 41.1 years (range 15 - 71 years). Indications of nephrectomy were non-functional kidney secondary to stone disease in 26 (50.98%). Mean operative time was 1.43 hours. Median hospital stay was 2.3 days.

**Conclusions:** Laparoscopy surgery is a safe and feasible treatment option for the benign renal disease with comparable outcomes. Non functional kidney secondary to renal stone was the major cause of nephrectomy in this study.

**Keywords:** benign renal disease, laparoscopic nephrectomy, nonfictional kidney, nephrolithiasis

## INTRODUCTIONS

Laparoscopic surgery is currently a viable alternative with decreased blood loss, shorter hospital stay, fast recovery, lower morbidity and rapid return to full activity compared to open surgery.<sup>1,2</sup>

Aim of this study was to analyze the indications, operative time, hospital stay and outcome of laparoscopy nephrectomy in local setup.

## METHODS

This was a cross sectional study to analyze the outcome of laparoscopy nephrectomy in case of benign renal disease. The study period was from October 2011 to October 2016. The variables included were, age, sex, operative time, estimated blood loss, length of hospital stay, conversion rate and complication.

Nephrectomy was done for non-functional kidney, chronic pyelonephritis, symptomatic atrophied kidney and renal tuberculosis. Routine DTPA (diethylenetriaminepentacetate) scanning was done before surgery in patients non excreting kidney.

Patient with history of previous multiple surgery in same side, history of laparotomy and patient refusal for laparoscopy were excluded. Only patients with performance status grade 0-2 (WHO classification) were included.

After pre-anesthesia checkup, surgery was planned on a given date. The surgery was performed under general anesthesia (GA). All patients underwent laparoscopy nephrectomy through transperitoneal approach. Surgery concluded by three ports techniques and one additional port created in right side for liver retraction and with or without one assistant port both side.

The decision regarding the conversion obtained during the surgery, based on intra operative finding. All procedure done by same

group of surgeons based on international and hospital protocol. Routinely we placed Foleys catheter and romovac drain of 16 F in all patients with Nasogastric tube in selected cases.

Patients were initially seen one week after surgery and then after 1 month and thereafter according to need. During the follow up patients were evaluated by complete physical examination, complete renal profile and blood picture and electrolytes, USG abdomen and pelvis whenever needed to see the status of contralateral kidney.

## RESULTS

The mean patient's age was 41.1 years (range 15 - 71 years). Nonfunctional kidneys secondary to stone disease 26(50.98%) were most common indication for nephrectomy. Pain was the common presenting symptoms in 32 (62.74 %) patients.

Median operative time was 1.43 hours. Five patients needed conversion. Median hospital stay was 2.3 days.

**Table 1. Patient Demographics and indication of laparoscopic nephrectomy**

Variables	Values
<b>Mean age</b>	41.1 ( 15 - 71) Years
<b>Male</b>	19 (37.25%)
<b>Female</b>	32 (62.74 %)
<b>Indication of Nephrectomy</b>	
<b>Chronic pyelonephritis</b>	11 (21.56 %)
<b>Nonfunctional kidney due to stone</b>	26 (50.98 %)
<b>Nonfunctional kidney due to PUJ obstruction</b>	11 (21.56 %)
<b>Others</b>	3 (5.8 %)
<b>Clinical presentation</b>	
<b>Flank pain</b>	32 (62.74 %)
<b>UTI</b>	8 (15.68 %)
<b>Incidental</b>	11 (21.56 %)

**Table 2. Outcome of laparoscopic nephrectomy**

Variables	Values
Median operative time	1.43 (1.25 to 3.5) hours
Blood transfusion	3 cases
Number of conversion	5 (9.8 %)
Median day of hospital stay	2.3(2 – 7) Days
<b>Perioperative complication (Clavien score)</b>	
1	42 (82.35 %)
2	5 (9.8 %)
3a	4 (7.27%)

## DISCUSSIONS

Minimally invasive approaches in urology have become common procedure. Numerous studies show the decreased blood loss, shorter hospital stay and lower patient morbidity of laparoscopy when compared with open surgery.<sup>3-5</sup>

When Clayman et al performed the first laparoscopic nephrectomy and this became milestone in minimally invasive surgery throughout the world. Since 1990 Laparoscopy helps in removing a large solid organ without need of incision.<sup>1</sup> Since then, many institutions have verified the utility of laparoscopic approach to deal different pathology of the kidney.

Laparoscopic surgery has its advantages but, like all other surgical therapeutic interventions, it carries a risk of complications. In fact, with increasing laparoscopic surgical experience the incidence and magnitude of complications increase because more complex procedures performing laparoscopically.<sup>6</sup> Meticulous dissection along with timely identification and management of complications is importance step in surgery, in case of delay can lead to significant patient morbidity.<sup>7</sup>

The overall surgical outcome of our study is comparable to other series. Several large series have demonstrated that laparoscopic nephrectomy compares favorably with open surgery with regards to decreased pain and

shorter convalescence. Hospital stay has been decreased by 50% and the time to full convalescence has been reported to be markedly less than with open surgery.<sup>8</sup> Median period of hospital stay in this series was 2.3 days.

Mean operative time in our study was 1.43 hours (range 1.25 to 3.5 hours). With growing experience current operative times have decreased dramatically and are comparable to those in the open group.<sup>9</sup> There is controversy in literature concerning the selection between transperitoneal and retroperitoneal laparoscopic access for nephrectomy. The chosen technique usually depends on the surgeon's own choice as a result of their expertise and training. Here all patients had undergone laparoscopy surgery through transperitoneal route.

Majority of patients in this study fall in Clavien score 1, only 9(17.64 %) patients have minor postoperative complication. The overall complication rate has ranged from 6–17% in contemporary series with minor complications encounter in predominant portion. In comparison, a review of urological reports gives a vascular complication rate of 0.03–2.7%.<sup>10,11</sup> In a multi-center analysis of 153 patients undergoing laparoscopic nephrectomy for benign conditions, Gill et al reported complications in 19 (12%) patients with most of the complications (n=12) occurring in the first 20 cases performed.

Five patients needed conversion in this series (9.80%), three patients due to bleeding and whereas adhesion in two cases. Conversion rates have also ranged from 5–12% with a large contemporary series by Gupta et al reporting the need for conversion in 22 out of 351 retroperitoneoscopic nephrectomies yielding a conversion rate of 6.3% with most of those occurring in the first 100 cases.<sup>12,13</sup> Five patients required conversion to open surgery, out of which 4 cases were amongst the first 20 that were performed in their study.<sup>14</sup> Other authors have also documented a learning curve for laparoscopic nephrectomy in terms of complication and conversion rates.<sup>15</sup> In this

study we have seen comparable result in different variables.

## CONCLUSIONS

Laparoscopic nephrectomy can be considered as safe and effective procedure with minimal morbidity. It has reduced postoperative pain, faster recovery and improved cosmetic results. The laparoscopic approach has become the standard approach for nephrectomy in our institution especially in benign renal disease.

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