ORIGINAL ARTICLE

Study of Complications of Laparoscopic Nephrectomy for poor and non-functioning Pyonephrotic kidney at a tertiary care hospital

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ABSTRACT

Aim: To assess the complications of laparoscopic nephrectomy for pyonephrosis at tertiary care hospital.
Methods: This cross sectional study was conducted at Department of Urology, Sahiwal Medical College, Sahiwal and Quaid Azam Medical College Bahawalpur from August 2017 to December 2019.Total 150 patients of pyonephrosis having age ≥20 years either male or female were selected for this study.Post nephrectomy complications were assessed.
Results: In present study total 150 patients underwent nephrectomy for pyonephrosis. Mean age of the patients was 39.86±4.33years.In 90(60%) of patient's procedure was through trans peritoneal route while retroperitoneal access was used in 60(40%) patients. Male patients were 80(53%) and female patients were 70(47%).Total 93(62%) patients belonged to age group 20-40 years and 57(38%) patients belonged to age group 41-60 years.Major complications was noted in 22(14.67%) patients. Minor complications was seen in 36(24%) patients.
Conclusion: Results of present study showed male predominance undergoing nephrectomy for pyonephrosis. Most of the patients belonged to 3rd decade of life.Intraoperative bleeding was the most common major complication. Among patients with minor complications, fever was most common.
Keywords: Nephrectomy, complications, pyonephrosis, laparoscopy

INTRODUCTION

Surgical removal of kidneys due pathological processes is called nephrectomy.[1]Nephrectomy is a urological management of kidney tumors and upper urinary tract and for damaged kidneys with little or no contribution to the overall renal function.[2]

First laparoscopic nephrectomy was performed by Clayman in 1990. [3] Retroperitoneal and transperitoneal are the two approaches to perform laparoscopic nephrectomy. [4]Many studies have evaluated the complication rates associated with laparoscopic nephrectomy (LN) since few decades. The technique has rapidly evolved and taken various forms[5]. Outcomes reported by many centers have enabled to make comparisons between laparoscopic nephrectomy, and open surgery[6]. Laparoscopic nephrectomy (LN) has been shown to result in lesser postoperative pain, better cosmetic outcomes, and shorter hospital stay, and time to recovery[7].

Before there was no standardized reporting system for post-operative complications in urology and other surgical specialties. Clavien et al, in 1992 proposed the Clavien classification system to grade post-operative complications[8]. A modified version of system was published in 2004 which looked the therapeutic consequences to rank complications[9]. The modified version is divided into seven grades (Grade 1-5) with two subgroups for Grade 3 and 4 with Grade 5 representing the death of a patient. This system is simple, convenient, reproducible, comprehensive, and logical and has been used in numerous surgical fields[10,11]. It has also been used for many urological procedures and has been proposed as the current standard to assess post-operative complications. Gaur et al, realized the full scope of retroperitoneoscopy by retroperitoneal dissection using a balloon in 1993[12].

The growing interest in retroperitoneoscopy, which now accounts for half of all laparoscopic urological procedures was highlighted by Gill et al.[13] Nowadays laparoscopy have gained wider acceptance in urology that leads to more reports on the potential complications.[14] This study was conducted to evaluate the complications among the patients undergoing retroperitoneal and transperitoneal laparoscopic nephrectomy.

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MATERIAL AND METHODS

This cross sectional study was conducted at Department of Urology, Sahiwal Medical College, Sahiwal and Quaid Azam Medical College Bahawalpur from August 2017 to December 2019.Total 150 patients of pyonephrosis having age ≥20 years either male or female were selected for this study.Patients with acquired renal cystic disease, obstructive or reflux nephropathy, renal tuberculosis, symptomatic patients with autosomal dominant polycystic kidney disease were excluded from the study.Study was approved by the ethical committee and written informed consent was taken from every patient.

Laparoscopic nephrectomy was performed in all selected patients by adopting standard procedures. Demographic profile of all the patients was noted in pre-designed proforma.

Post-operative complications (Major/minor) were assessed and noted on pre-designed performa.

Major complications includes intra operative bleeding, post-operative bleeding, bowl injury, acute renal failure and inferior vena cava injury.Minor complications includes fever, hematoma formation,port site infection, paralytic ileas and chest infection.

All the collected data was entered in SPSS version 20 and analyzed.Mean and SD was calculated for age.Frequencies and percentages were calculated for major and minor complications.

RESULTS

Total 150 patients undergone nephrectomy were selected. Mean age of the patients was 39.86±4.33 years. In 90 (60%) of patient's procedure was through trans peritoneal route while retroperitoneal access was used in 60(40%) patients.

Male patients were 80(53%) and female patients were 70 (47%).(Fig. 1)Age range was 20-60 years.Selected patients were divided into two equal groups i.e. age group 20-40 years and age group 41-60 years.Total 93(62%) patients belonged to age group 20-40 years and 57(38%) patients belonged to age group 41-60 years.(Fig. 2)

Major complications was noted in 22(14.67%) patients. Total 16(72.73%) patients of Trans peritoneal group and 6(27.27%) patients of Retro peritoneal group found with major complications. In transperitoneal group, intra operative bleeding was seen in 6(37.5%), followed by Post-operative bleeding in 2 (12.5%), bowl injury in 3(18.75%) patients, Acute renal failure in 2 (12.5%) and Inferior vena cava injury in 3(18.75%) patients. Inretro peritoneal group, Intra operative bleeding was seen in 3(50%) patients, acute renal failure in 2(33.33%) patients and inferior vena cava injury in 1(16.67%) patient (Table 1).

Table 1: Major Complications

Complications	Trans peritoneal group N%	Retro peritoneal group N%	Total N (%)
Intra operative bleeding	6 (37.5)	3 (50)	9(40.91)
Post-operative bleeding	2 (12.5)	0	2 (9.09)
Bowl injury	3 (18.75)	0	3(13.64)
Acute renal failure	2 (12.5)	2 (33.33)	4(18.18)
Inferior vena cava injury	3 (18.75)	1 (16.67)	4(18.18)

Table 2: Minor Complications

Complications	Trans peritoneal group N%	Retro peritoneal groupN%	Total N (%)
Fever	8 (30.77)	3 (30)	11 (30.56)
Hematoma formation	2 (7.69)	4 (40)	6 (16.67)
Port site infection	5 (19.23)	1 (10)	6 (16.67)
Paralytic ileas	9 (34.62)	0	9 (25)
Chest infection	2 (7.69)	2 (20)	4 (11.11)
Total	26 (72.22)	10 (27.28)	36 (24%)

Minor complications were seen in 36(24%) patients. Total 26(72.22%) patients of trans peritoneal group found with minor complications.Fever was seen in 8(30.77%) patients followed by hematoma formation in 2(7.69%) patients, port site infection in 5 (19.23%) patients, paralytic ileas in 9(34.62%) patients and chest infection in 2(7.69%) patients.

In retro peritoneal group, minor complication was seen in 10(27.28%) patients. Fever in 3(30%) patients followed by hematoma formation in 4(40%) patients, port site infection in 1(10) patients and chest infection was seen in 2(20%) patients (Table 2).

Fig. 1: Gender distribution

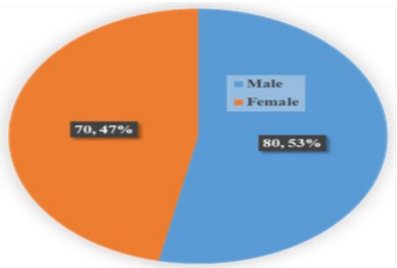
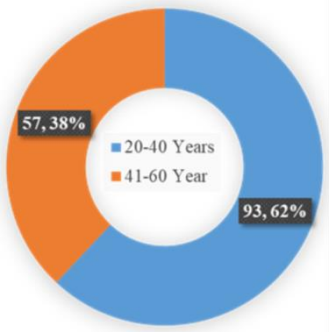


Fig. 2: Age distribution of patients



DISCUSSION

Laparoscopic urological surgery has developed rapidly and now includes a wide range of procedures.[15] There are inherent advantages in retroperitoneoscopy over transperitoneal laparoscopy[16] The direct approach to the retroperitoneum avoids peritoneal transgression; this minimizes the risk of intraperitoneal injury during colonic mobilization, postoperative adhesions and peritonitis if there is spillage of infected renal contents[17].

In present study total 150 patients underwent nephrectomy were selected.Mean age of the patients was 39.86±4.33 years. In 90(60%) of patient's procedure was through trans peritoneal route while retroperitoneal access was used in 60(40%) patients. Male patients were 80(53%) and female patients were 70(47%). Age range was 20-60 years. In one study 60 nephrectomies were performed. Among 50 patients nephrectomy was performed by retroperitoneal route in 10 patients by transadominal route. In this study male patients were 37 and female patients were 23 with mean age 18.5 +16.6 years[18].

In another study by Bryant[19] total 67 patients underwent nephrectomy, of which 36 patients were male and 31 patients were female.Male to female ratio of this study was not in accordance with our study. In one study by Belim et al[20] there was male predominance. Nephrectomy was performed in 120 male patients and 99 female patients, out of 120 male 85 underwent lap transperitoneal nephrectomy and 35 underwent lap retro peritoneal nephrectomy and in female 89, and 19 respectively. The mean age at surgery was 55 years.

In present study, major complications were noted in 22 patients. Total 16(72.73) patients of Trans peritoneal group and 6(27.27) patients of Retro peritoneal group found with major complications. In transperitoneal group, Intra operative bleeding was seen in 6(37.5), followed by Post-operative bleeding in 2(12.5), bowl injury in 3(18.75) patients, Acute renal failure in 2(12.5) and Inferior vena cava injury in 3(18.75) patients. In retroperitoneal group, Intra operative bleeding was seen in 3(50) patients, acute renal failure in 2(33.33) patients and Inferior vena cava injury in 1(16.67%) patients.

Total 26(72.22) patients of trans peritoneal group found with minor complications.Fever was seen in 8(30.77) patients followed by hematoma formation in 2(7.69%) patients, port site infection in 5(19.23%) patients, paralytic ileas in 9(34.62%) patients and chest infection in 2(7.69%) patients. In retro peritoneal group, minor complications were seen in 10(27.28%) patients. Fever in 3(30%) patients followed by hematoma formation in 4(40%) patients, port site infection in 1(10) patients and chest infection was seen in 2 (20%) patients.

In one study by Katz et al,[21] 185 laparoscopic nephrectomies were performed. Major complications were seen in 75 cases and minor complications were seen in 15 cases. Ricardo et al[22] performed 50 laparoscopic nephrectomies and found major and minor complications in 9% and 12% cases respectively .In study of Zaidi et al[18] total 2(3%) patients found complications in 1 patient wound infection was developed and 1 patient was found with haemotoma. Bleeding was noted in 11.6% patients.In a multi institutional study, Gill et al[23] reportedcomplication rate as 6%.In a study by Fahlenkamp,[24] total 2407 nephrectomies were performed and complications was developed in 8.3% patients. Keely et al[25] reported complication rate as 18% in 100 cases managed with laparoscopic nephrectomies.Recent studies have reported complication rates of 8.7% and 7.3% including injuries to spleen, inferior vena cava and aorta.[26-27]In another study by Kumar et al,[16]3.5% of the patients had a major complication and 15.8% hadminor complications.

CONCLUSION

Results of present study showed male predominance undergoing nephrectomy.Most of the patients belonged to 3rd decade of life.Intraoperative bleeding was the most common major complication. Among patients with minor complications, fever was most common.

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