CLINICAL OUTCOME OF LAPAROSCOPIC PYELOPLASTY IN A TERTIARY HOSPITAL

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ABSTRACT

Laparoscopic pyeloplasty is preferred surgery to treat patients with pelvi-ureteric junction obstruction (PUJO). The main objective of the study was to assess outcome of laparoscopic pyeloplasty in our university hospital. This was retrospective descriptive observational study which included 36 patients diagnosed with PUJO by Computed Tomography (CT) intravenous urography (IVU) and diuretic DTPA (Diethylenetriamine pentaacetic acid) renogram presented to Dhulikhel hospital from 1st January 2023 to 30th January 2025. Patient were reviewed in terms of demographic characteristics, clinical presentation and radiological findings. Statistical correlation with the presence of crossing vessels was analyzed using student's t-test and Fisher's exact test. Mean age was 30.03±10.66 years, 17 (47.22%) female and 19 (52.78%) male patient. Most of the patient were asymptomatic 38.89% followed by pain 33.33%. Crossing vessel compression was noted in 10 patient (27.78%). Mean operative duration was 174.17±18.80 minutes. Mean hospital stay was 2.67±0.48 days. A statistically significant correlation was noted between the presence of crossing vessels and gender, as well as kidney stones. Recurrence noted in 1 patient (2.78%) managed with redo laparoscopic pyeloplasty. Laparoscopic pyeloplasty is safe, effective option for treatment of PUJO with comparable success rate, less post operative pain, short hospital stay however operative duration is prolonged.

KEYWORDS

DTPA, laparoscopy, PUJO, pyeloplasty

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INTRODUCTION

Pelviureteric Junction obstruction is one of the most common cause of hydronephrosis in both children and adults. It is twice more common in male than female.[1] Bilateral obstruction occur in 10-15%.[2] It is functional and anatomic obstruction of urinary outflow. Usually patient present with flank pain due to pressure effect and eventually leading to permanent kidney damage.[3] In majority of patient it resolve spontaneously without any surgical intervention.[4] Though open pyeloplasty originally described by Anderson and Hynes[5] have high success rate of about 90% it is associated with high morbidity due to bigger incision and long recovery period. With the advancement in minimal invasive surgery like Laparoscopy which was first described by Schuessler *et al*[6] and robotic assisted surgery have shown improved efficiency.[7] Laparoscopy can be done by intraperitoneal and retroperitoneal approach. Though endoluminal approach like antegrade and retrograde endopyelotomies are less invasive they have poor outcome than laparoscopic approach due to high risk of bleeding and high recurrence rate.[8] Existing articles have shown Laparoscopic approach has less morbidity than open approach.[9] Laparoscopic pyeloplasty have less morbidity than open approach but still we lack concrete data on various parameters like post-operative pain, quality of life and wound infection.[9-11]

MATERIAL AND METHODS

This was retrospective observational descriptive study in a patient who underwent laparoscopic pyeloplasty from 1st January 2023 to 30th January 2025 at Dhulikhel Hospital / Kathmandu University School of Medical Sciences (KUSMS). All surgery was done by single surgeon. Ethical clearance was obtained from Institutional Review Committee of KUSMS with Ref. No.: 160/25.

All the patient undergoing elective laparoscopic pyeloplasty within study period were included in this study. Inclusion criteria were patient diagnosed PUJ obstruction by Computed Tomography (CT) Intravenous Urography (IVU) and diurectic DTPA renogram, age above 18 years.

Surgical technique: After induction with general anesthesia, foley's catheterization was done and patient was placed in lateral position (right lateral for left pyeloplasty and left lateral for right pyeloplasty). Pneumo-peritoneum created with veress needle, intra-abdominal pressure maintained at 12-14 mmhg. Three ports were inserted for left pyeloplasty and four ports for right pyeloplasty, camera port 10 mm at

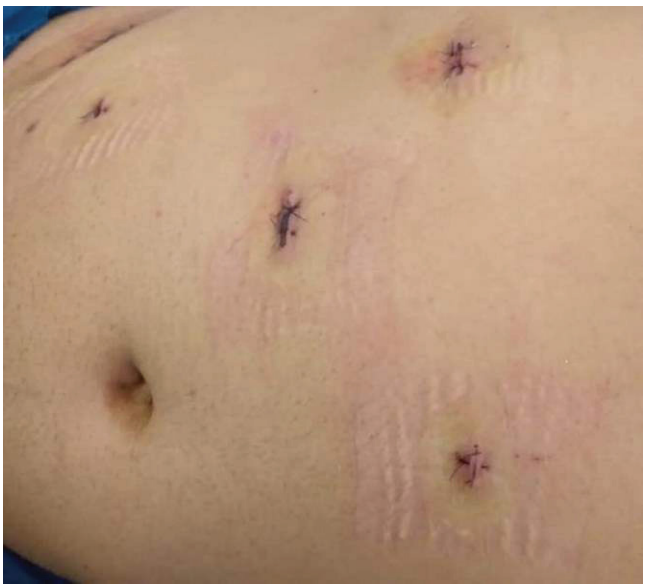

Fig. 1: Right lap pyeloplasty port placement

paramedian at the level of umbilicus, 10 mm working port at left mid spinoumbilical line (for left) 5 mm port at mid clavicular subcostal region, for right its 10 mm midclavicular subcostal region 5 mm mid spinoumbilical line and one extra 5 mm port epigastric region for liver traction. Colon mobilized, gonadal packet was isolated, proximal ureter mobilized,

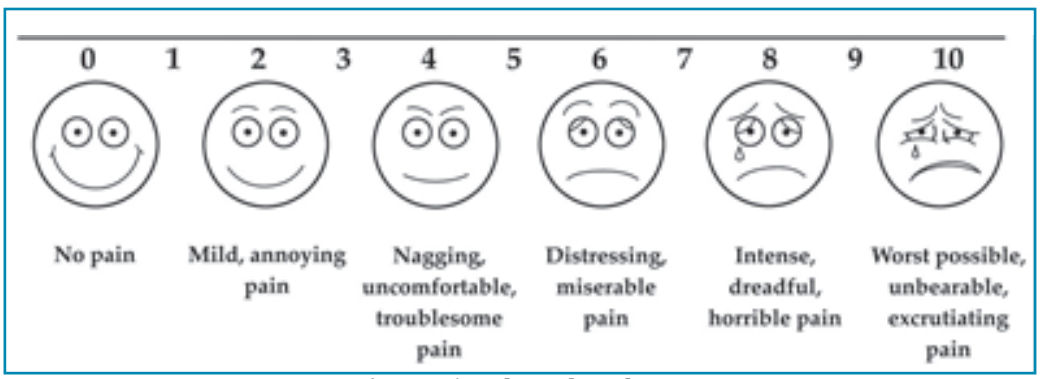

Fig. 2: Visual Analog chart

stenotic part was mobilized proximally and distally. Dismembered pyeloplasty was done with vicryl 4-0, 6fr DJ stenting done in all cases. DJ was removed after 6 weeks. Review ultrasound was done before removing DJ stent to access for hydronephrosis.

Post operative pain was assessed with visual analogue score every 6 hourly for 24 hours. Patient were followed up after 2 weeks, at 3 moths, 6 months, then yearly for 24 months.All data were analysed using SPSS-20.Qualitative data was analyzed with spearman and pearson test. Quantitative data was analyzed with mean and standard deviation. The p-value less than 0.05 was considered statistically significant.

RESULTS

There were total 36 cases with 17 females (47.22%) and 19(52.78%) males. The age ranged from 18 years to 55 years with mean age of 30.03 ± 10.66. Majority of the patients were in the age group of 30-40 years of age in female and 20-30 years of age in male group.

Out of 36 cases 19(52.78%) patient were of right PUJO and 17(47.22%) were of left side. Most of the patient were asymptomatic 38.89% followed by pain 33.33%. Crossing vessel were seen in 10 patient (27.78%). Associated nephrolithiasis noted in 5 patient (13.89%). All of those patient with nephrolithiasis had crossing vessel.

Table 1: Demographic and clinical characteristics

Variables	n
Mean age	30.03±10.66 years
Gender	
Male	19 (52.78%)
Female	17 (47.22%)
Operative side	
Right	19 (52.78%)
Left	17 (47.22%)
Clinical presentation	
No sysmptoms	14 (38.89%)
Pain	12 (33.33%)
Stone	5 (13.89%)
UTI	5 (13.89%)
Concomitant renal abnormality	11 (30.56%)
Crossing vessel	10 (27.78%)
Kidney stone (all in crossing vessel)	5 (13.89%)
Solitary kidney	1 (2.78%)

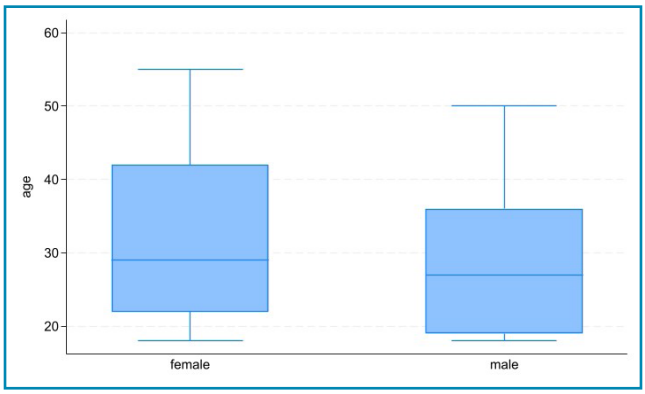

Fig. 3: Age distribution according to gender

Table 2: Operative and post operative status

Variables	n
Mean operative duration	174.17±18.80 minutes
VAS score	3.22±0.68
Mean hospital stay	2.67±0.48 days
Return to normal work	6.56±0.5 days
Recurrence	1 (2.78%)
Approach	All colon reflecting transperitoneal
Technique	All dismembered

Table 3: Correlation between crossing vessel and demographic data

variables	Crossing vessel	No crossing vessel	p
Age (years, mean)	33.6±11.35	28.65±10.28	0.22*
Gender			
Male	9	13	0.05**
Female	1	13	
Side			
Right	6	11	0.46**
Left	4	15	
Kidney stone/s	5/10	0/26	0.001**

**student's t-test, **Fisher's exact test*

The mean operative duration for laparoscopic pyeloplasty was 174.17±18.80 minutes. The mean post operative VAS score was 3.22. The mean hospital stay was 2.67 days.

The mean return to normal work was 6.56 days. There was one recurrence (2.78%) in this study which was managed with redo-laparoscopic pyeloplasty. All procedure was dismembered

laparoscopic transperitoneal colon reflecting technique.

A statistically significant correlation was noted between the presence of crossing vessels and gender, as well as kidney stones (Table 3).

DISCUSSION

Laparoscopic pyeloplasty is good alternative for open pyeloplasty. Laparoscopic pyeloplasty is usually preferred by experienced laparoscopic urologists. Every surgical technique has its own merits and demerits, whether it is open, laparoscopic or robotic pyeloplast either transmesocolic or colon reflection approach. Many recent studies have shown that minimal invasive surgery like laparoscopic pyeloplasty reduce the financial burden by shortening hospital stay and enabling early return to work. In our study there was one recurrence with success rate of 97.22% which is comparable to most of the recent studies done by experience surgeons from western world.[12-14]

Most of the patients were asymptomatic in our study usually diagnosed during other routine investigation as described in other article.[15] In our study 14 (38.89%) were asymptomatic, 12 (33.33%) presented with pain, 5 (13.89%) presented with UTI and 5 (13.89%) presented with stone/s.

As per other articles 30.0% of patient with PUJO presented with crossing vessel which correlate with our series that was 27.78%.[16] Dismembered pyeloplasty was done in all cases in our study which is most preferred technique for pyeloplasty.[17]

Out of 36 patients 5 (13.89%) presented with renal stone/s. In three patients we cleared lower pole stone with laparoscopic assisted mini PCNL. In our study DJ stenting was done in every cases, however,there are many articles showing safe stent less laparoscopic pyeloplasty.[18-20]

The mean operative duration in our study was 174 minutes which is comparable with other series and it is obviously prolonged than open pyeloplasy.[11,21] Post-operative pain is significantly reduced in laparoscopic pyeloplasty.[9,10] The mean post-operative VAS score in our series was 3.22.

There were no any serious intra-operative and post-operative complications in our study. There was one recurrence which was managed with redo-laparoscopic pyeloplasty. Patient were followed up to 24 months. During follow up, patient were assessed with ultrasound to look for hydronephrosis. Diuretic DTPA renogram is done only in case of increasing hydronephrosis.

Study limitations: This is retrospective study. All the surgery was done by single surgeon in single centre.

In conclusion, laparoscopic pyeloplasty is safe, effective option for treatment of PUJO with comparable success rate, less post-operative pain, short hospital stay however operative duration is prolonged.

Conflict of interest: None

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