



## OUR EXPERIENCE WITH LAPROSCOPIC PYELOPLASTY IN PELVIURETRIC JUNCTION OBSTRUCTION

### Urology

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### ABSTRACT

**Aims and objectives:** To present our experience with laparoscopic dismembered pyeloplasty for pelviuretric junction obstruction.

**Materials and methods:** A retrospective review of all cases who underwent laparoscopic dismembered pyeloplasty during January 2014 to July 2017 at Nizam's institute of medical sciences, Hyderabad was done. A Total of 25 cases with 10 males and 15 females were evaluated with respect to age at presentation, preoperative renogram, surgical details and outcomes in terms of post operative recovery time, wound healing, return to work and improvement in T½ on renogram during followup after laparoscopic dismembered pyeloplasty for pelviuretric junction obstruction.

**Results:** All the cases could be completed laparoscopically without any intra operative complications. The operative time ranged from 2 1/2 to 4 hours. All the cases except one had antegrade dj stent placed. In one case DJ stent could not be placed due to kink in lower ureter-in this case dj was placed by cystoscopy after completion of pyeloplasty.

**Conclusion:** Laparoscopic Dismembered pyeloplasty in pelviuretric junction obstruction shows improvement in functional status of the kidney with better perioperative and post operative recovery with minimal morbidity. Hence, Laparoscopic Dismembered Pyeloplasty stands first option in management of pelviuretric junction obstruction .

### KEYWORDS

#### INTRODUCTION:

Pelvi-uretric junction (PUJ) obstruction is partial or complete blockage to urinary outflow from the renal pelvis into the ureter causing dilatation of the collecting system and potentially progressive renal damage, if left untreated.<sup>1</sup> PUJ obstruction accounts for 80% of all cases causing upper urinary tract obstruction. Though it has been believed to be congenital, its symptoms can manifest at any age.<sup>1</sup> Acquired PUJ obstruction has also been described secondary to some diseases such as stone, urethelial tumours, or previous surgery.

PUJ obstruction over time may deteriorate the renal function depending upon pressure gradient across obstruction. The decrease in renal function can be demonstrable by a technetium 99m diethylenetriamine pentaacetic acid (Tc99m DTPA) scintigraphy.

The surgical management of a kidney with obstruction at the ureteropelvic junction has many variations with respect to approach, degree of invasiveness and timing of surgery.<sup>1,2,3</sup> The objectives of surgery remain the same, i.e. to relieve the obstruction and thus preserve or improve overall renal function, and to return to normalcy, with less morbidity and without compromise of the surgical outcome.

Anderson-Hynes first described the dismembered pyeloplasty technique more than 50 years ago and was the gold standard, with an overall success rate of 90%.<sup>4</sup> To decrease the morbidity and hospital care costs treatment has been directed in developing minimally invasive surgical techniques to reduce morbidity while preserving excellent success rates.<sup>3,4</sup> Application of Endopyelotomy has successfully reduced morbidity, but long-term follow-up revealed a lower success rate in comparison with the open procedure. It was In 1993, Schuessler<sup>3</sup> first introduced laparoscopic pyeloplasty (LP), which has been shown to reduce hospital stay while offering success rates equivalent to those of the open procedure.

Thus, we hereby, intended this study to study the usefulness of laparoscopic pyeloplasty in management of pelviuretric junction obstruction.

#### Materials and methods :

A retrospective review of all cases who underwent Laproscopic dismembered pyeloplasty during January 2010 to July 2017 at Nizam's institute of medical sciences, Hyderabad was done. A Total of 25 cases with 10 males and 15 females were evaluated with respect to age at

presentation, preoperative renogram, surgical details, postoperative recovery and improvement in T½ during follow up on DTPA . Preoperative and postoperative split renal function on renogram has been compared to assess the outcome.

#### SURGICAL PROCEDURE

Retrograde ureterography was done to mark the site on skin corresponding to the level of PUJ for ergonomic placement of laparoscopic ports.

#### Position for laparoscopy

Place the patient in a modified lateral decubitus position with ipsilateral side up and little obliquity from horizontal. The table is flat, without flexion. All pressure points are well padded. The ipsilateral arm over the chest and fix it in a neutral position with support.

#### Procedure

We have performed the transperitoneal laparoscopic dismembered pyeloplasty in all our patients, for a right-sided transperitoneal laparoscopic pyeloplasty. A pararectal 10mm port is placed superolateral to umbilicus by open Hasson's technique for the laparoscope camera, abdomen is insufflated with carbondioxide gas up to 15mm Hg pressure, 30 degree scope is placed through this port and abdomen is inspected for injury and two working ports of 5mm each placed one subcostal and other in iliac fossa equidistant to each other assuming the form of an equilateral triangle. The fourth port of 5/10mm is placed in few cases in a lateral position, in line with the umbilicus where necessary.

Reflection of colon is done by incising the white line of tolted, gerotas fascia is incised and reflected to visualize the medial aspect of lower pole of kidney and proximal ureter. Proximal-ureter is followed up to identify the area of pelviuretric junction obstruction and PUJ is exposed by careful preservation of crossing vessels if any.

Anderson-Hynes dismembered pyeloplasty was done by making an initial incision into the renal pelvis with a scissors placed through the cephalad port. First, the anterior pyelotomy is created, cutting from the upper medial aspect of the renal pelvis toward the lateral corner of the UPJ, leaving enough tissue on the bottom of the renal pelvis for the subsequent repair. The cephalocaudad placement of this incision determines the amount of renal pelvic tissue to be excised. The lateral spatulation of the proximal ureter is performed after completing the

anterior pyelotomy. The final part of the dismemberment is creation of the posterior pyelotomy in line with the anterior pyelotomy. This completely dismembers the UPJ. Leave the flap of renal pelvic tissue that will eventually be discarded on the ureter for now; it serves as a "handle" for manipulating the ureter so that direct grasping of the ureter can be avoided. Move the renal pelvis and ureter in front of the crossing vessels (when present). Adjust the tissues until a satisfactory position for the repair is established. Additional mobilization of the proximal ureter and/ renal pelvis may be necessary. free-needle suturing, and knotting is greatly simplified. If any of these qualities are deficient, however, then we use free-needle suturing, because the needle is smaller and can be placed more delicately and at more angles. Place the first suture of the Anderson-Hynes pyeloplasty outside-in at the inferior apex of the renal pelvis, and then inside-out at the inferior apex of the ureteral spatulation. The first knot is very important, because it sets up the remaining repair. A simple knot will suffice if there is no tension, but making the first throw a surgeon's knot or a slipknot will ensure good tissue coaptation. Throw this first knot with the suture anterior to the renal pelvis and then transfer the needle lateral to the ureter to move the suture to the posterior aspect of the renal pelvis (we find it easier to do the posterior aspect of the repair first). Run the suture to complete the posterior anastomosis of the spatulated ureter to the renal pelvis. The bites should be fairly close to each other to allow for a watertight closure. At the completion of the repair, the renal pelvis is tapered, and the UPJ is dependent and has a funnel shape.

Patients were discharged when comfortable. Removal of the ureteral stents was done cystoscopically 6 weeks postoperatively. Trimethoprim-sulfamethoxazole per oral was continued until the double J catheter was removed. Patients were followed at 1,3, 6 and 12 months postoperatively. Diuresis renography and serum creatinine levels were obtained at 3, 6 and 12 months after surgery. Retrograde ureteropyelography and ureteroscopy were performed when the renographic findings were equivocal or obstructive to investigate the patency of the ureteropelvic anastomosis.

Success was defined by the presence of each of three criteria: A falling renographic excretion curve or proven anastomotic patency according to the methods described, improved or stable renal function and symptomatic relief.

### Results:

All the cases could be completed laparoscopically without any intra operative complications. The operative time ranged from 2 1/2 to 4 hours. All the cases except one had antegrade dj stent placed. In one case DJ stent could not be placed due to kink in lower ureter-in this case dj was placed by cystoscopy after completion of pyeloplasty. Drain out put was minimal ranging from 50-75mlk per day and was removed on 2<sup>nd</sup> postoperative day. Patients were discharged on 3<sup>rd</sup> or 4<sup>th</sup> post operative day after removal of urethral catheter. Most of the patients were returned to work 3-4 weeks after surgery. 20 out of 25 patients showed reduction in T ½ at three months follow up but, all patients were relieved of their loin pain.

### Discussion:

Laparoscopic Pyeloplasty was first introduced in 1993 by Schuessler et al<sup>3</sup>, and it has emerged as an first-line option with success rates comparable to those of the open approach.<sup>4,5</sup> Our present study also has similar results with the transperitoneal approach over the past few years, and continue to use it as the standard approach at our institution.

The advantages of minimally invasive procedures over traditional open pyeloplasties include a decreased hospital stay and a significant reduction in morbidity that includes a large incision and associated pain.<sup>5</sup>

In our present study all cases were approached by transperitoneal route. The transperitoneal approach offers a larger work space, which makes dissection, anastomosis and ureteral displacement easier, particularly if a crossing vessel is encountered.

Laparoscopic Pyeloplasty is once considered a difficult procedure is now a standard procedure can be performed with ease that requires considerable proficiency in intracorporeal suturing.<sup>6-8</sup> Intraoperatively, we have encountered significant periureteral fibrosis, which has contributed to the difficulty of the approach, and has increased the operative time and blood loss.<sup>8</sup>

The cause of the failure in these cases was considered to be insufficient spatulation length at the narrow segment in the initial treatment. Laparoscopic pyeloplasty is technically challenging and has a long learning curve.

### Conclusion:

Laparoscopic Dismembered pyeloplasty in pelviuretric junction obstruction shows improvement in functional status of the kidney with better perioperative and post operative recovery with minimal morbidity. Hence, Laparoscopic Dismembered Pyeloplasty stands first option in management of pelviuretric junction obstruction.

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