

# Laparoscopic Pyeloplasty: An Initial Experience From A Regional Centre In Rural Australia.

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## Abstract

Open dismembered pyeloplasty is the current gold standard in the treatment of Pelviureteric Junction Obstruction (PUJO). However, laparoscopic pyeloplasty has been increasingly reported in the literature as a technique with equal efficacy. Additionally, laparoscopic surgery offers the advantage of being minimally invasive, which may result in less post-operative pain and shorter hospital stays. However, the availability of laparoscopic pyeloplasty is limited by the considerable learning curve required. We present our case series of 9 patients who underwent laparoscopic pyeloplasty at a regional centre. Average operating time was 159 minutes (117-192 mins) and median length of stay was 4 days (3-7 days). There were no conversions to an open procedure. There were no major complications noted. Additionally, 88.9% (8 out of 9) patients had complete alleviation of pain. Our case series represents the experience of a single urological surgeon working at a regional Australian centre and is comparable to that of other series in terms of mean operating times, conversion rates, median nights in hospital and success rates. Potential limitations include the low number of cases. Regardless, our series demonstrates that laparoscopic pyeloplasty is a safe and effective treatment in a regional centre.

## OBJECTIVE

To compare our initial experience with laparoscopic pyeloplasty at a regional centre with the current world literature

## INTRODUCTION

Open dismembered pyeloplasty is the current gold standard in the treatment of Pelvo-Ureteric Junction Obstruction (PUJO)<sup>1</sup>. However, laparoscopic pyeloplasty has been increasingly reported in the literature as a technique with equal efficacy as the open technique<sup>1</sup>. Additionally, laparoscopic surgery offers the advantage of being minimally invasive, which, may result in less post-operative pain and shorter hospital stays. However the availability of laparoscopic pyeloplasty is limited by the considerable learning curve required. The procedure is heavily dependent on extensive and accurate laparoscopic suturing, which is technically very demanding. More recently, robotic-assisted laparoscopic pyeloplasty has evolved as a technique that decreases the learning curve. However, there are significant costs involved in purchasing a robot and the disposables to perform the procedure. Laparoscopic pyeloplasty, on the other hand, does not require any additional equipment in addition to the standard laparoscopic set up. Here, we report

our case series of laparoscopic pyeloplasty from a regional centre and compare it to the world literature.

## MATERIALS AND METHODS

In the period from January 2007 to May 2011, 9 patients were treated with laparoscopic pyeloplasty for PUJO. All patients had symptoms of high grade obstruction and hydronephrosis. Diagnosis of PUJO was confirmed by DTPA + lasix scan prior to insertion of a ureteric stent. Obstruction was defined as a radionuclear tracer half-life of greater than 20 minutes post-lasix. These patients were then operated on by a single surgeon at two regional hospitals. A Hassan 3- or 4-port transperitoneal approach was used for all cases. Patients were positioned in the flank position over the break in the table with pressure points padded. The colon was first medialised followed by dissection of the upper ureter to the level of the pelvoureteric junction. An Anderson-Hynes dismembered pyeloplasty was then performed using 3-0 vicryl suture. In cases complicated by calculi, a ureteroscope was passed through a port and used to visualize the stones, which were then removed directly from the renal pelvis or collecting system. A Jackson-Pratt drain was then placed via port and the skin was closed in layers.

Postoperatively the urethral catheter was removed on day

one and the patient was allowed to mobilise. Once the drain output was less than 30 mL in a 24 hour period, the drain was removed. The ureteric stent was removed 6 weeks following surgery via flexible cystoscopy under local anaesthetic. Diethylene triamine pentaacetic acid (DTPA) scans were obtained 3 months following surgery. Success was defined by improved differential renal function as well as the absence of pain. Outcomes including operative time, conversion rate, length of stay and complications, were then prospectively collected and recorded.

**RESULTS**

Patient characteristics and results are presented in table 1. All 9 of our cases were for treatment of primary PUJO. Average operating time was 159 minutes (117-192 mins) and mean length of stay was 4 days (3-7 days). There were no conversions to an open procedure. There were no major complications noted. One patient developed post-operative fevers and rigors. Blood and urine cultures were negative and the fevers settled with broad spectrum antibiotics.

Follow up ranged from 3 to 12 months (mean 5 months) with 88.9% (8 out of 9) patients having complete alleviation of pain. All of these patients were noted to have stable or improved renal function. DTPA progress scans were performed on 44.5% (4 out of 9) patients at 3 months postoperatively. The other 5 patients did not have progress DTPA scans as they had complete resolution of their symptoms. One patient complained of recurrent loin pain 3 months postoperatively. However, subsequent DTPA imaging and retrograde pyelography demonstrated no evidence of recurrent obstruction and renal function was stable. One patient developed renal calculi at 3 month follow up which was treated with ESWL.

**Figure 1**

Table 1: Patient Characteristics

Patient Characteristics	Results
Male: Female	3: 6
Left sided: Right sided	6:3
Mean age (range) yrs	44 (20- 69) yrs
Mean Operative Time (range) mins	152 (117-192) mins
Average length of stay (range) day	4 (3-8) days

**Figure 2**

Table 2: Comparison of Case Series

Series	No. pts	Mean op time (min)	Conversion Rates	Median nights In hospital	Success rate
Turk et al <sup>3</sup>	49	165	0	3.7	97.7%
Soulie et al <sup>4</sup>	55	185	5.4%	4.5	88%
Inagaki et al <sup>5</sup>	147	246	0	3.1	95%
Moon et al <sup>6</sup>	170	140	0.6%	3	96.2%
Cheema et al <sup>7</sup>	54	133	0	3	87%
Dong et al <sup>8</sup>	73	218	1.3%	3	90.4%
Bryant et al <sup>9</sup>	67	153	3.0%	3	90.4%
Current	9	152	0	4	88.9%

**CONCLUSIONS**

Our case series represents the experience of a single urological surgeon working at a regional Australian centre. A search of the literature demonstrates that our case series is comparable to that of other series<sup>3,4,5,6,7,8,9</sup> in terms of mean operating times, conversion rates, median nights in hospital and success rates (Table 2). Potential limitations of our series include the low number of cases. Regardless, our series demonstrates that laparoscopic pyeloplasty is a safe and effective treatment in a regional centre.

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