

# Paediatric Laparoscopic Pyeloplasty

A/Prof Mali Vidyadhar K Prabhakaran, Chief  
Department of Paediatric Surgery, National University Hospital

Laparoscopic pyeloplasty is gaining acceptance for the treatment of pelviuretric junction (PUJ) obstruction in the paediatric population, with faster recovery and excellent success rates. We report our technique with a transperitoneal four-port approach in a teenage boy who is an active sportsman.

## History of Pyeloplasty

The first pyeloplasty was performed in 1891. The gold standard dismembered pyeloplasty that is so widely practised today was originally described by Anderson and Hynes in 1949. Laparoscopic dismembered pyeloplasty was first described in both adult and paediatric populations in 1993.

## Case Report

A 15-year-old regular squash player was detected to have hypertension on school health screening. Investigations revealed a normal heart (2D echo) and a left hydronephrosis (ultrasound kidneys). A diuretic MAG3 renal scan confirmed a left PUJ junction obstruction. It was decided to perform a pyeloplasty. After operation, he wanted to be able to return to active sports as soon as possible. Therefore, he opted for a laparoscopic approach to avoid the muscle-cutting flank incision that is employed in an open pyeloplasty.

A cystoscopy and retrograde pyelogram confirmed that the pelvis was extrarenal.



A laparoscopic dismembered pyeloplasty was performed using the transperitoneal four-port approach (as described below). The anastomosis was completed using a continuous suture of 4/0 vicryl over a double J stent that was inserted through a port in the flank region directly over the kidney.

Postoperatively, he required minimal analgesia that was discontinued after 24 hours. Feeds

were started on the second day and rapidly progressed to full diet. He started ambulating after 48 hours with hardly any discomfort

and was discharged well after 72 hours. He has returned to active sports within two weeks. He continues to be under follow-up for hypertension.

## Discussion

Although there are no strict indications for the laparoscopic approach to pyeloplasties in children; an ideal candidate is an older child with an ureteropelvic obstruction in an extrarenal pelvis.

The choice of approach is transperitoneal versus retroperitoneal. When a transperitoneal approach is used, one port is placed at the umbilicus, a second port in the midline superior to the umbilicus, and a third port in the midclavicular line, halfway between the umbilicus and the anterior superior iliac spine on the side of the affected kidney. An additional port may be placed directly above the lateral aspect of the kidney in the flank to facilitate insertion of a double J stent. Retroperitoneal access often is achieved with three ports along the lower edge of the twelfth rib. We preferred the transperitoneal approach, which has the advantages of a greater working space and easier approach to crossing vessels. A double J stent is inserted either cystoscopically at the start of the procedure or during the laparoscopic construction of the anastomosis.

Dissection and anastomosis of the UPJ is similar to the technique used in an open approach. A continuous suture may be employed to create the anastomosis taking care to avoid a concertina effect.

In younger children, the small diameter of the ureter makes the anastomosis technically difficult, especially within the confines of a small working space. On the positive side, the degree of magnification is greater than can be achieved in an open procedure.

Postoperatively, minimal pain relief is required and the children are discharged after an observation period of 24-48 hours.

## Conclusion

Our case illustrates the technical features and feasibility of laparoscopic pyeloplasty in children with low morbidity and excellent success rates. Continued improvements in instrumentation and innovative suturing techniques may help make the laparoscopic approach the standard method for pyeloplasty even in small children and should encourage further development of paediatric urological reconstructive laparoscopic techniques.