Pelviureteric Junction Obstruction—Stented Versus Unstented Pyeloplasty

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Pelviureteric junction obstruction (PUJO) is one of the commonest causes of hydronephrosis in pediatric patients. Pyeloplasty is the standard surgical method of treatment. However, the debate continues over the superiority of intubated or non-intubated pyeloplasty. Both methods have their own merits and demerits. We present the retrospective analysis of our experience. Seventy children were operated for PUJO between the age group of 3 months and 8 years over a period of 9 years. Dismembered Anderson-Hynes pyeloplasty was performed in all the patients except in one case of horseshoe kidney where Y-V plasty was performed.

In 31 patients only perinephric drain was kept. Thirty seven patients were operated with trans-anastomosis stent, nephrostomy and perinephric drain. Two patients had a double J stent kept one for horseshoe kidney and one for a single kidney.

Overall long-term results were comparable in two groups with one repeat pyeloplasty in the intubated group and one percutaneous nephrostomy in the non-intubated group. But there was a definite high incidence of Urinary tract infection (UTI) in the intubated group (56.41%) p = <0.001, prolonged hospital stay and longer duration of intravenous antibiotics p = 0.001.

Keywords: Pelviureteric junction obstruction (PUJO), Pyeloplasty, Nephrostomy, Trans-anastomotic stent, DJ stent.

Pyeloplasty is the surgical procedure of choice for functional PUJO, the commonest cause of hydronephrosis in children. Modified Anderson-Hyne's procedure (MAHP) is the most commonly used procedure. Other procedures in vogue are endopyelotomy, retrograde pyeloplasty and laparoscopic pyeloplasty. Anderson Hynes

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pyeloplasty, which was initially described as a non-intubated procedure, has stood the test of time and is still the procedure of choice.

There is always a debate between the advantages and disadvantages of tube versus tubeless pyeloplasty. We had patients operated by both the techniques. We have reviewed our records and compared the two procedures with emphasis on UTI, length of hospital stay and duration of antibiotics required and break-through infection.

Materials and Methods

In 9 years 70 pyeloplasty operations were performed for PUJ obstruction. All except one was performed by dismembered Anderson Hynes principle. One patient was operated by Foley Y-V plasty for horseshoe kidney with unilateral PUJ obstruction.

Preoperative work-up included Renal function tests, Urine routine and microscopy, culture sensitivity, USG, IVU, DTPA, DMSA scans, and MCU (in bilateral cases). We still rely on IVU as it gives exact delineation of the function as well as the anatomy to the surgeon, not only to plan surgery but also helps for a comparison on follow-up.

Intubated pyeloplasties were done by anterior approach reflecting peritoneum anteriorly, while non-intubated pyeloplasties were done by standard posterior renal incision. The principle of pyeloplasty in both groups was the same Anderson Hynes method with slight modification in pelvic incision. We cut the redundant pelvis straight. Lower ureter patency was always confirmed by passing a small sized infant feeding tube (IFT) and flushed with saline.

In cases of intubated pyeloplasty an IFT was kept as a trans-anastomotic stent, a Malecot’s catheter through the lower calyx as nephrostomy along with a perinephric corrugated rubber drain. Stent was kept clamped and nephrostomy was kept open till the fifth day. Then stent gram was done to confirm lower ureter patency following which the stent was removed and nephrostomy clamped from the 6th day for gradually increasing time. The patient was observed during this period and USG was done to see for any perinephric collection following which nephrostomy was removed on day 8. We did not do nephrostogram routinely for all patients. Corrugated drain

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<thead>
<tr>
<th>Table I : Results</th>
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<tr>
<td>UTI</td>
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<td>Duration of IV Antibiotics (Average days)</td>
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<td>Hospital stay (days)</td>
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<td>Revision</td>
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* Two patients, who had D-J stent kept, were included in-group B.
came out on day 10. In tubeless repairs, only a perinephric Malecot's catheter drain was kept, which was removed on day 8.

After removing all tubes, urine examination was done and the patient was discharged provided urine report was normal, otherwise intravenous antibiotics were continued.

In 1 patient we did Y-V plasty for a horseshoe kidney with unilateral PUJO where D-J stent was kept. Another patient who had a D-J stent kept, was the one with a single kidney. The D-J stents were removed after 6 weeks by cystoscopy. There were 2 patients with bilateral PUJJ obstruction, operated one at a time at an interval of 3 months between 2 surgeries.

All patients were followed up with urine routine and microscopy report at 1 week, 1 month and 3 months, USG at 1 month, renal scan at 3 months, 1 year and SOS. IVP was done at 6 months after surgery and SOS.

Results

Seventy patients who underwent pyeloplasty were divided into 2 groups, Group A comprised of tubeless pyeloplasty cases where only a Perinephric drain was kept. Group B comprised of the intubated pyeloplasty cases where trans-anastomotic stent, nephrostomy and perinephric drain were kept.

The results were compared on basis of complications mainly urinary tract infection, hospitalization and duration of intravenous antibiotics (Table I).

Of group B only 4 patients (12.90%) had postoperative UTI. The average duration of IV antibiotics in these patients was 7 days and average hospital stay was 8 days (Table I). One patient in this group developed a leak, which responded to conservative management in 2 weeks, and the patient was kept in the hospital for 20 days. One patient had wound infection.

The urine examination done routinely after removal of all tubes showed presence of UTI in 22 patients (56.41%) in-group B. This prolonged the duration of IV antibiotics and hospital stay of these patients (Table I). The average period of IV antibiotics in this group was 15 days and the average hospitalization period was 16 days, maximum was one and half months. Three patients in this group required a revision pyeloplasty.

Long term results: Oral antibiotics were stopped by 1 month in all but 2 cases who had break-through infection in group A requiring antibiotics for 2 months and 3 months each. Average duration of oral antibiotics in group B was 3 months with break-through UTI in cases requiring antibiotics for 6 months.

Discussion

There has been an ongoing debate on the merits of intubated versus non intubated repair of pelvi-ureteric junction (PUJJC) obstruction. It is of interest that when Anderson commented on his technique, he noted that he did not drain the renal pelvis or use a trans-anastomotic tube/stent.\(^1\) Many authorities recommend tube for the fear, that edema at the anastomotic site leads to occlusion of the lumen postoperatively. The aim of stenting is to allow the healing of renal pelvis to occur while preventing anastomotic leak and maintaining anastomotic patency. Many types of diversions have been described using a
nephrostomy and separate transrenal ureteric stent, although more recently in adults the D'J catheter has been used. There are increasing reports of internal D-J stents being used in the pediatric age group.

Others who feel drainage is necessary, state that it increases postoperative morbidity and hospital stay. The patency of anastomosis is best ensured by long pelvi-ureteric anastomosis (about 2 cms) and encouraging urine to pass through as early as possible.

Persky and Tynberg mention that 2 tubes are not required if a watertight closure of PUJ was achieved. Nonintubated procedures have less infection rate, reduced hospital stay and early patient mobilization. Austin et al reported use of nephrostomy tube alone without drain with good results. There is an increasing trend towards the use of non-intubated pyeloplasties.

The presence of nephrostomy and splint acts as a foreign body and leads to an increase in incidence of urinary tract infection in the postoperative period. Bacteria play a significant factor in producing pyelitis, ureteritis and foreign body inflammatory response. If infected urine leaks through the suture line into the peripelvic area, further inflammatory processes could be initiated. It has been shown that polyglycolic acid sutures dissolve rapidly in the presence of proteus or pseudomonas infection, with obvious implications regarding anastomotic leakage. Chronic catgut suture is much more tissue reactive than polyglycolic acid suture, but far more resistant to dissolution by bacteria.

Smith and Butler reported that a nephrostomy has a direct risk of brisk hemorrhage during placement of tube. Bejjani and Belman have reported that a nephrostomy tube overlying and obstructing the lumen was a direct cause of anastomotic stenosis.

The degree of postoperative morbidity was reflected in the length of hospitalization. Bejjani and Belman reported an average hospitalization of 4.8 days after nonintubated, dismembered repair compared to 15 days after intubated repair.

Our review indicated that nonstented, dismembered pyeloplasty is safe and that results are as successful as after intubated pyeloplasty in long-term follow-up of primary PUJ obstruction. The advantages of this procedure over tube repair are decreased postoperative morbidity due to urinary tract infection p = <0.001, use of IV antibiotics p = 0.001 and prolonged hospitalization. We recommend non-intubated pyeloplasty as the procedure of choice.

References


5 Macmullin N Khor T, King P. Internal ureteric


