

A comparative study of pyeloplasty in children with and without stenting

Dr. Pardeep Bhatia, Dr. Prateek Sethi, Dr Anmol Chabra, Dr. Jasmine Sandhu
Department of Paediatric Surgery, Sri Guru Ram Das Institute of Medical Sciences And Research, Vallah,
Amritsar, India

Abstract

Background: PUJ obstruction is the most common among the major obstructive pathologies in pediatric patients. The study aims to compare the benefits and drawbacks of stentless pyeloplasty in pediatric population with routine DJ stent insertion.

Methods: Data was collected for operated cases of PUJ obstruction and categorised into those who had DJ stent insitu and those without DJ stent. Complications associated with both these approaches was systematically assessed.

Results: In patients with DJ stent in situ the perinephric drain was minimal and hence most of the patients had their drain removed on the 2nd or 3rd day. In those patients without DJ stent in situ, the average duration for removal of drain was prolonged to about 7 days.

Conclusions: Routine use of Ureteric stenting with DJ stent in this series of patients was associated with decreased hospital stay and morbidity in patients without DJ stent.

Date of Submission: 13-02-2022

Date of Acceptance: 28-02-2022

I. Introduction

PUJ obstruction is the most common among the major obstructive pathologies in pediatric patients. Patients are routinely diagnosed on antenatal scans and postnatal evaluation helps in planning the need for surgical intervention. A progressive increase in anteroposterior diameter of the renal pelvis and thinning of parenchyma are indications for early intervention. A preoperative EC renal scan is mandatory to demonstrate an obstruction at the PUJ. Authors routinely carry out an MCU to rule out reflux and bladder outlet pathologies.

Routinely authors carry out open Andersen - Hynes pyeloplasty by anterior sub coastal approach.¹ Kidney is approached by retracting the peritoneum medially. The Gerota's fascia is cut and the renal pelvis is exposed. The ureter is identified and stay sutures are taken on the pelvis and ureter. The PUJ is excised. The cut end of the ureter is spatulated laterally and catheterized with 5 F infant feeding tube. The posterior layer of the pyeloplasty is completed with 5-0 vicryl. If DJ stent is to be placed, then using a suitable guide wire, appropriate sized DJ stent is placed. The stent should pass smoothly into the bladder. Prior inflation of bladder with fluid will allow some of it to come out from the upper end of the stent. If there is doubt in the placement of the stent, it can be confirmed with either intraoperative X ray or cystoscopy. After insertion of the stent the pyeloplasty is completed by suturing the anterior layer in a watertight manner. A perinephric drain and a foleys catheter in the bladder are placed and the incision is closed in layers. The Foleys catheter and the drain are removed sequentially based on amount of drainage from the perinephric drain and patient discharged accordingly. Patients with DJ stent were discharged on antibiotic prophylaxis. If a DJ Stent has been placed, then it is removed cystoscopically in 6 weeks time.

The aim of the present study was to compare the benefits and drawbacks of stentless pyeloplasty in pediatric population with routine DJ stent insertion.

II. Methods

Data acquisition was done by a retrospective method. Case papers of all cases diagnosed with pelvi-ureteric junction obstruction operated for pyeloplasty were collected. Data was collected for operated cases of PUJ obstruction and categorized into those who had DJ stent in situ and those without DJ stent.

DJ stent was placed in 10 patients. Average age of this group was 2.4 years. Ten patients were operated without DJ stent. Average age of these patients was 1.2 yrs. Those patients in whom the anastomosis was without tension and ureter could be catheterized with 5 F infant feeding tube were operated without a DJ Stent. In patient with narrow calibre ureters and significant tension on the anastomosis, an appropriate sized DJ stent was placed.

Inclusion criteria

- All the operated cases were serially included in the study to avoid selection bias
- Thus, presence of proven pelvi-ureteric obstruction and anaesthesia fitness for pyeloplasty were obvious inclusion criteria.

III. Results

In patients with DJ stent in situ the perinephric drain was minimal and hence most of the patients had their drain removed on the 2nd or 3rd day. 2 patients had their drain removed on the 4th day. Foleys catheter was removed on the 5th day and patient was discharged. 3 patients had to stay for 2 more days due to intermittent haematuria and pain. In spite of prophylaxis, 2 patients developed symptomatic UTI, which was managed conservatively.

All patients with DJ stent were admitted after 6 weeks for Cystoscopy and DJ stent removal. One patient had lower end of the DJ stent in the ureter, which had to be removed with a ureteroscope.

None of the patients had wound infection or any UTI after removal of the DJ stent.

In those patients without DJ stent in situ, the average duration for removal of drain was prolonged to about 7 days. 2 patients had prolonged drainage. One for 11 days and another for 17 days. Both these patients required replacement of perinephric drains due to blockage. One patient with persistent drainage had surgical site infection also.

All patients were discharged on prophylaxis. One patient developed immediate postoperative UTI which was managed conservatively.

Table 1: Profile of patients with DJ stent and without DJ stent.

	With DJ Stent	Without DJ stent
Number	10	10
Average age	2.1 years	1.2 years
Average hospital stays	6 days	10 days
Time to remove drain	3 days	7 days
Wound infection	Nil	1 patient
Persistent drainage	Nil	3 patients
Post-operative UTI	2 patients	1 patient
Second procedure	All (D J stent removal)	2
Average stay (All procedures)	7	13

IV. Discussion

Stenting the anastomosis after pyeloplasty is an established practice and has offered excellent results.² Surgeons performing Anderson- Hynes’ dismembered pyeloplasty especially feel the need for anastomotic stenting to maintain patency until healing is completed. and helps in ensuring a patent anastomosis until healing has completed. It also minimizes the risk for leakage, obstruction, and adhesions after pyeloplasty.³

Various forms of stent have been used for this purpose, the most popular being double J stent that is usually removed through cystoscopy, 2-4 weeks after surgery.⁴ Other stents such as feedings tubes, ureteric catheters, and purpose-built stents such as kidney internal splintage stent do not require a visit to Operation room for their removal.⁵

Although the stents help in achieving the results of a good pelviureteric anastomosis, they have some disadvantages such as cost of stent, removal under anesthesia, and complications such as infection, persistent hematuria, displacement/ migration, breakage, stone formation, prolapse, etc.^{6,7}

Fear of these complications has prompted many surgeons to perform stentless pyeloplasties. Improved surgical technique and ultra-thin, good quality suture material with routine use of intra-operative magnification has made stentless pyeloplasties more feasible. The previously feared complications of stentless pyeloplasty, such as stricture, leakage, urinoma formation, adhesions, and recurrence, can now be avoided in most cases. Still, these complications cannot be completely prevented and there is no guarantee of non-occurrence. Obstruction due to a blood clot can be unique complication of stentless pyeloplasty. Some studies do point

towards higher complications in stentless pyeloplasties.⁸

Authors observed persistent urinary drainage in 2 patients out of 10 patients who were operated without DJ stenting for pelvi-ureteric anastomosis. The stress of persistent urinary drainage and its management is cumbersome. The patient is required to be catheterized for a longer duration. Thus, persistent urinary drainage due to leak significantly and adversely affects the morale of both the patient and the caretakers. It does increase the hospital stay adding to the economic burden; the only advantage being that the patient does not require a second admission. Further, stent removal is a day care procedure and adds only one more day to the average stay. Thus, the risk-reward ratio seems to be skewed in favour of odds.

Infact, the need of admission and removal under anaesthesia can be easily circumvented by use of office removable stents. Transrenal pelvis transanastomotic stenting using a feeding tube has been shown to be a good option for diverting urine following dysmembered pyeloplasty in children.⁹

Kidney Internal Splint/Stent (KISS) stents offers the combined advantages of nephrostomy tube and internal stent while obviating the second anesthetic that would be necessary with an internal stent.⁵ Such a stent shall also reduce the need for urinary catheterization because it does not cross the vesico-ureteric junction. Routine use of Ureteric stenting with D J STENT in this series of patients was associated with decreased hospital stay and morbidity in patients without DJ stent,

Hence routine Insertion of STENT is a safe and beneficial step in management of pediatric PUJ obstruction. It reduces morbidity, hospital stay and increases chance of event free recovery.

Ethical approval: The study was approved by the Institutional Ethics Committee

References

- [1]. Anderson JC, Hynes W. RETROCAVAL URETER: A Case diagnosed pre-operatively and treated successfully by a Plastic Operation. *Br J Urol.* 1949;21(3):209-14.
- [2]. Houben CH, Wischermann A, Börner G, Slany E. Outcome analysis of pyeloplasty in infants. *Pediatr Surg Inte.* 2000;16(3):189-93.
- [3]. Jana IA, Hussain M, Khan E, Aurakzai HU, Hanif
- [4]. S. Stentless pyeloplasty for ureteropelvic junction obstruction in children. *Ann Pediatr Surg.* 2015;11(1):18-20.
- [5]. Ninan GK, Sinha C, Patel R, Marri R. Dismembered pyeloplasty using double 'J' stent in infants and children. *Pediatr Surg International.* 2009;25(2):191-4.
- [6]. VanderBrink BA, Cary C, Cain MP. Kidney internal splint/stent (KISS) catheter revisited for pediatric pyeloplasty. *Urol.* 2009;74(4):894-6.
- [7]. Kumar V, Mandhani A. Laparoscopic stentless pyeloplasty: an early experience. *Indian journal of urology: IJU: J Urolog Society of India.* 2010;26(1):50.
- [8]. Yiee JH, Baskin LS. Use of internal stent, external transanastomotic stent or no stent during pediatric pyeloplasty: a decision tree cost-effectiveness analysis. *J Urol.* 2011;185(2):673-81.
- [9]. Elmalik K, Chowdhury MM, Capps SN. Ureteric stents in pyeloplasty: a help or a hindrance?. *J Pediatr Urol.* 2008;4(4):275-9.
- [10]. Hung LT, Tram NT, Nhan HC, Linh NT. Transpelvic anastomotic stenting: a good option for diversion after pyeloplasty in children. *J Pediatr Urol.* 2011;7(3):363-6.

Dr. Pardeep Bhatia, et. al. "A comparative study of pyeloplasty in children with and without stenting." *IOSR Journal of Dental and Medical Sciences (IOSR-JDMS)*, 21(02), 2022, pp. 38-40.