

Pyeloplasty in Children with and Without Stenting: A Comparative StudyNarendra Kumar¹, Sujoy Neogi², Simmi K. Ratan³¹Senior Resident (M.Ch.), Department of Pediatric Surgery, Maulana Azad Medical College and associated Lok Nayak Hospital, New Delhi²Associate Professor, Department of Pediatric Surgery, Maulana Azad Medical College and associated Lok Nayak Hospital, New Delhi³Director Professor & Head, Department of Pediatric Surgery, Maulana Azad Medical College and associated Lok Nayak Hospital, New Delhi

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Abstract:**Background:** The most prevalent of the major urinary obstructive diseases affecting pediatric patients is obstruction of the pelvic ureteric junction (PUJ). In the pediatric population, the study intends to compare the advantages and disadvantages of stentless pyeloplasty with conventional Double J stent (DJ stent) placement.**Methods:** For PUJ obstruction cases that underwent surgery, data was collected and divided into two groups: those with an in situ DJ stent and those without. A systematic evaluation of the drawbacks of both of these methods was conducted.**Results:** Since the perinephric drain in patients with DJ stents in situ was small, the majority of these patients had their drains removed on the second or third day. The average time for drain removal in patients without an in situ DJ stent was increased to almost 7 days.**Conclusion:** In this group of patients, routine usage of ureteric stenting with DJ stent has been related to lower hospital stays and lower rates of morbidity in patients without DJ stent.**Keywords:** Anderson Hynes, Double J Stent, Pyeloplasty, Paediatric, and Perinephric Drain.This is an Open Access article that uses a funding model which does not charge readers or their institutions for access and distributed under the terms of the Creative Commons Attribution License (<http://creativecommons.org/licenses/by/4.0>) and the Budapest Open Access Initiative (<http://www.budapestopenaccessinitiative.org/read>), which permit unrestricted use, distribution, and reproduction in any medium, provided original work is properly credited.**Introduction**

Of the primary obstructive diseases that affect pediatric patients, PUJ obstruction is the most prevalent. Prenatal scans are frequently used to diagnose patients, and postnatal evaluation aids in the planning of surgical intervention when necessary. Early intervention is indicated by a gradual increase in the renal pelvis' anteroposterior diameter and parenchymal thinning, associated with a declining differential renal function. To prove that there is an obstruction at the PUJ, a preoperative EC renal scan is required. In order to rule out reflux and bladder outlet diseases, authors frequently do an MCU.

The peritoneum is retracted medially to reach the kidney. The renal pelvis is seen once the Gerota's fascia is severed. After identifying the ureter, the pelvis and ureter are sutured. The PUJ is removed. A 5 F newborn feeding tube is used to catheterize the ureter's cut end after it has been spatulated laterally.

Via 5-0 or 6-0 vicryl, the posterior layer of the pyeloplasty is finished. If a DJ stent is to be inserted, the right sized DJ stent is inserted using a suitable guide wire. The stent ought to should enter

the bladder without any problems. [1] A portion of the fluid may exit the upper end of the stent if the bladder has previously been inflated with fluid. Cystoscopy or intraoperative X-ray can be used to confirm the stent's placement if there is any uncertainty. The anterior layer is sutured watertight to finish the pyeloplasty after the stent has been inserted. The incision is covered in layers and a foleys catheter and perinephric drain is inserted into the bladder. Depending on the amount of drainage from the perinephric drain, the Foleys catheter and the drain are withdrawn in turn, and the patient is then discharged. Patients who had been given a DJ stent were discharged with antibacterial prophylaxis. If a DJ Stent has been placed, then it is removed cystoscopically in 6 weeks.

Material and Methods

This study was conducted at Department of Pediatrics Surgery, Maulana Azad Medical College and associated Lok Nayak Hospital, New Delhi from August 2021 to January 2023.

Retrospective methodology was used to collect the data. All cases with a diagnosis of pelvi-ureteric

junction obstruction that underwent pyeloplasty had their case files gathered. Information was gathered for surgical instances of PUJ obstruction and divided into groups according to whether a DJ stent was implanted or not.

Ten individuals had the DJ stent implanted. This group's average age was 2.4 years. DJ stent was not used during surgery in 10 patients. These patients were 1.2 years old on average. Patients who had a tension-free anastomosis and a ureter that could be catheterized with a 5 F infant feeding tube underwent surgery without the use of a DJ Stent. DJ stent of the proper size was implanted in a patient with limited caliber ureters and significant anastomosis strain.

To prevent selection bias, the study included all operated cases in serial fashion. The existence of established pelvi-ureteric blockage and anesthesia suitability for pyeloplasty were clear inclusion criteria.

Results

Since the perinephric drain in patients with DJ stents in situ was small, the majority of these patients had their drains removed on the second or

third day. On the fourth day, the drains of two patients were removed. On the fifth day, the patient's Foley's catheter was taken out, and they were discharged. Due to discomfort and sporadic haematuria, three patients needed to stay for an additional two days. Two patients experienced symptomatic UTIs despite receiving prophylaxis; these were treated conservatively.

After six weeks, all DJ stent patients were admitted for a cystoscopy and DJ stent removal.

Following the removal of the DJ stent, none of the patients experienced any UTIs or wound infections.

The average time for drain removal in patients without an in situ DJ stent was increased to almost 7 days. Two patients experienced protracted drainage. Eleven days, and seventeen days, respectively. Because of blockage, both of these patients needed their perinephric drains replaced. Infection at the surgical site also occurred in one patient with prolonged discharge.

Prophylactic antibiotics were given to every patient. One patient experienced an acute postoperative urinary tract infection that was treated conservatively.

Table 1: Parameters for comparison between DJ stent and Non DJ stent group

	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	-	1 patient
Persistent drainage	-	3 patients
Post-operative UTI	2 patients	1 patient
Second procedure	All (D J Stent removal)	2
Average stay (All procedures)	7	13

Discussion

After pyeloplasty, stenting the anastomosis is a well-established procedure that has shown outstanding outcomes. [2] Anastomotic stenting is particularly necessary, according to many authors doing Anderson-Hynes' dismembered pyeloplasty, to preserve patency until healing is finished. This aids in maintaining a patent anastomosis till the healing process is finished. Additionally, it reduces the possibility of adhesions, obstructions, and leaks following pyeloplasty. [3]

Three different types of stents have been utilized for this purpose; the most widely used type is the double J stent, which is typically removed by cystoscopy two to four weeks following surgery. [4] Other stents, like feeding tubes, ureteric catheters, and specially designed stents like kidney internal splintage stents, can be removed without needing to go to the operating room. [5] While stents aid in obtaining the desired outcomes of a successful

pelviureteric anastomosis, they are not without drawbacks. These include the stent's expense, the need for anesthesia for removal, and the possibility of consequences like infection, chronic hematuria, migration, displacement, breaking, stone development, prolapse, etc. [6, 7]

Apprehension about these consequences has led numerous surgeons to execute pyeloplasties without stents. Stentless pyeloplasties are becoming more practical thanks to advances in surgical technique, ultra-thin, high-quality suture material, and common intra-operative magnification.

Most of the time, it is now possible to prevent the hitherto feared stentless pyeloplasty problems, like stricture, leakage, urinoma development, adhesions, and recurrence. However, there is no guarantee that these issues won't arise and they cannot be totally avoided. One rare side effect of stentless pyeloplasty may be obstruction brought on by a blood clot. Certain research indicates that stentless

pyeloplasties are associated with more problems. [8]

Out of ten patients who underwent pelvic-ureteric anastomosis surgery without DJ stenting, the authors noted that two of them had prolonged urine outflow. The burdensome nature of managing continuous urine discharge is stressful. A lengthier period of catheterization is necessary for the patient.

As a result, ongoing urine drainage brought on by leaks has a negative impact on the patient's and the caregivers' mood. The patient does not need a second admission, which is the only benefit; nevertheless, it does lengthen the hospital stay and raise the financial burden. Furthermore, the typical stay is only extended by one day with stent removal, which is a day care surgery. The risk-reward ratio appears to be biased in favor of odds as a result.

The use of office detachable stents can actually easily avoid the necessity for admission and removal under anesthesia. Urine diversion after dysmembered pyeloplasty in children can be effectively achieved with transrenal pelvis trans anastomotic stenting with the use of a feeding tube. [9] The Kidney Internal Splint/Stent (KISS) system eliminates the need for a second anesthesia and provides the benefits of both internal stents and nephrostomy tubes in one convenient package. [5] Given that it avoids crossing the vesico-ureteric junction, this type of stent will also lessen the requirement for urinary catheterization. In this patient series, routine use of DJ STENT for ureteric stenting was linked to lower hospital stays and lower rates of morbidity in patients without DJ stent.

Conclusion

When treating pediatric PUJ obstruction, the insertion of a STENT is a secure and helpful procedure. It raises the likelihood of an event-free recovery and lowers morbidity and hospital stays.

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