

## Pelviureteric Junction Obstruction: A Surgical Experience

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**Objective:** To describe the experience in the management of patients with intrinsic pelviureteric junction obstruction in the town of Mombasa, Kenya.

**Methods:** This was an evaluation of the patients operated upon by the authors between 1995 and 2003. The thirteen patients subjected to surgery are presented.

**Results:** Thirteen patients with pelviureteric junction obstruction aged 2 to 38 years, with a mean age of 20 years were studied. Male: female ratio was 10:3. The left side was more commonly affected in a ratio of 8:5. Six patients had Y-V pyeloplasty, five had dismembered pyeloplasty and two had nephrectomy. Seven patients had double 'J' stents inserted. Two patients had complications; one had prolonged urine leak of one month after unstented dismembered pyeloplasty, and the other had a broken stent. Two boys with a tentative diagnosis of pelviureteric junction obstruction turned out to have a right renal carcinoma, and a variant of polycystic kidney on the left. Both had nephrectomy, and excluded from the study.

**Conclusion:** Pelviureteric junction obstruction is an uncommon condition. Results of reconstructive surgery are good with few complications. Despite clinical and radiological features suggesting intrinsic pelviureteric junction obstruction, the possibility of other pathology should always be borne in mind.

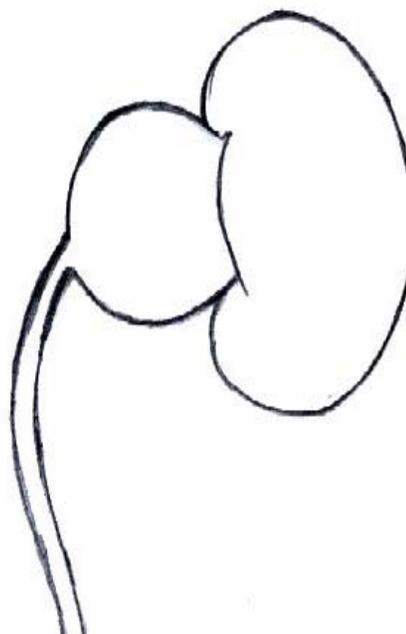
### Introduction

Pelviureteric junction (PUJ) obstruction is a common site of urinary obstruction in children and is a frequent site of obstruction in adults of all ages<sup>1</sup>. Obstruction may be caused by a functional abnormality of the proximal ureter (intrinsic obstruction), which is the subject of this presentation. It may also be caused by intraluminal lesions, external compression, usually by an aberrant renal vessel (extrinsic obstruction) or may be secondary to vesico-ureteric reflux (secondary obstruction).

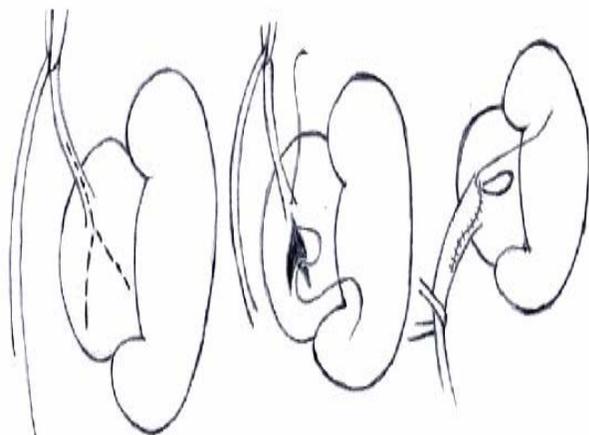
Intrinsic obstruction accounts for more than 90% of cases, is more common in males than females and affects the left kidney more than the right<sup>2</sup>. Bilateral involvement occurs in about 15% of cases.

Patients with PUJ obstruction are more likely to have associated congenital anomalies; some of those in the urinary tract being anomalies of position and fusion. Associated primary vesicoureteric reflux; ipsilaterally or contralaterally has been described<sup>3</sup>.

The pathology of intrinsic PUJ obstruction is characterized by a persistent, narrow, aperistaltic segment of ureter 2-10mm long immediately below the PUJ (Fig 1).

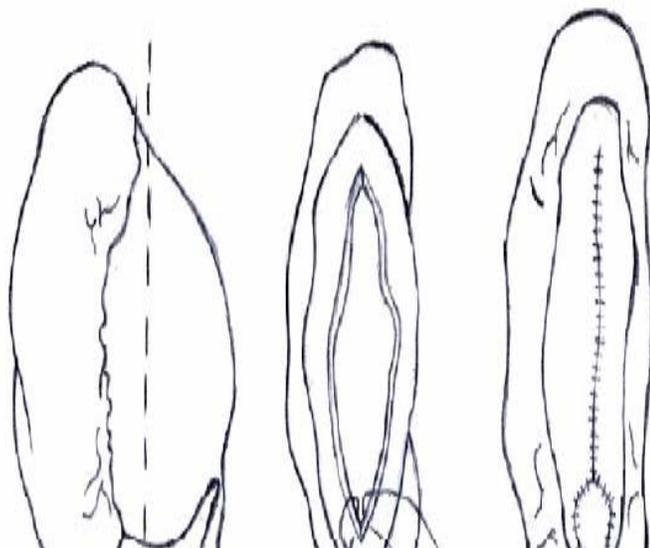


**Fig. 1:** PUJ obstruction. The renal pelvis is dilated but the ureter is normal



**Figure 2.** Y-V Pylleoplasty

**Fig. 3:** Dismembered pyeloplasty (Below)



The nature of the functional obstruction within this segment is undetermined. Various histological changes have been described within the narrow segment including an increase in the collagen-muscle ratio, thickening of the lamina propria, circular muscle arrangement rather than the normal predominant longitudinal; but it is uncertain if these changes are primary or secondary.

Presentation in infancy is most commonly with urinary infection. Sometimes the finding is incidental and occasionally presentation is with a renal mass, haematuria, failure to thrive or persistent vomiting. Most of the adults present with episodic loin pain. In some younger patients the pain may be located in periumbilical region. In many children, however the lesion is found incidentally. Investigations aim at determining the anatomy of the lesion. These are ultrasonography and intravenous urography (IVU). Where the anatomy is in doubt retrograde ureterography may be done. Cystography is restricted to patients with urinary infection or who show distal ureteric dilatation on ultrasound or IVU. This checks for vesico-ureteric reflux.

Management may be expectant in children with good function. Follow up is done with regular ultrasound examinations. Surgery by open pyeloplasty is the usual means of correcting PUJ obstruction. The main techniques employed are Y-V plasty (Foley)<sup>4</sup> and dismembered pyeloplasty (Anderson – Hynes)<sup>5</sup>. An outline of the procedures is shown (Fig 2, Fig 3).

The technical results are good in more than 90% of cases<sup>2,6,7</sup>. Currently, laparoscopic pyeloplasty is the method of choice in many centres<sup>8,9</sup>. Retrograde balloon dilatation and endopyelotomy<sup>11</sup>, involving a cold-knife incision of the ureteric segment using an endoscope passed via a nephrostomy tract, represent alternative minimally invasive procedures. They have shown early satisfactory results, but their eventual role is yet to be defined. Robotic pyeloplasty has also been done<sup>12</sup>.

### Patients and Methods.

An evaluation of 13 patients with PUJ obstruction, who were operated upon by the authors between 1995 and 2003 was made. Their ages ranged

between 2 and 38 years. Mean age was 20 years. Male: female ratio was 10:3.

The left side was affected in 8 patients and the right side in 5 (Table 1). Presentation was mainly with loin pain. The 2 youngest patients aged 2 and 4 years were presented by the parents with an abdominal mass. A 14-year-old patient with bilateral pelvic kidney presented with right lower abdominal pain corresponding to the hydronephrotic kidney. Another 14-year-old boy presented with left flank pain after injury at a football match. This turned out to be traumatic determinism for the PUJ obstruction. All the patients had an abdominal ultrasound examination and an IVU.

A 4-year-old child had a micturating cystourethrogram (MCU) to check for vesico-ureteric reflux, but this was absent.

3 patients had retrograde ureteric catheterization and ureterography as the ureter was not outlined on IVU. The ureters were normal. In 2 children aged 2 and 7 years, the affected kidney was not outlined on IVU but ultrasonography had shown hydronephrosis. Exploration was done; the younger patient had nephrectomy for a grossly hydronephrotic kidney and the other had Y-V plasty.

Y-V plasty was done on 6 patients, dismembered pyeloplasty on 5 and nephrectomy on 2 (Table 2). Stenting of the repairs with a double-J-stent was done in 7 patients. The operations were done via extraperitoneal lumbar approaches except in the patient with pelvic kidneys where a peritoneal approach through a Pfannenstiel incision was made. Two patients who underwent renal exploration with a tentative diagnosis of PUJ obstruction turned out to have different pathology. A 7-year-old boy had a right renal cell carcinoma, and a 4-year-old boy had a variant of polycystic kidney on the left side. In both cases nephrectomy was done, and they were excluded from the study.

One patient with dismembered pyeloplasty had a broken double 'J' stent. This device had long expired. The patient voided small fragments of the stent over a long period of time. Eventually 2 small fragments were left in the kidney on follow up IVU. The renal function and results of the affected side was good. He will require ureteroscopic removal of these fragments to

prevent eventual calculi formation. The patient with pelvic kidneys has dismembered pyeloplasty for PUJ obstruction of the right kidney. He had prolonged urine leak of about 1 month. The repair was not stented.

The results of the pyeloplasty were therefore good.

**Table 1.** Patient Characteristics

AGES	SEX	AFFECTED	TOTAL
2,4,7,14,14,18,20,21,26,31,32, 36,38	Male: 10	Right: 5	13
Range 2 – 38	Female: 3	Left: 8	
Mean: 20			

**Table 2.** Results Of Surgery

Operation	No	Stented	Complications
Y-V pyeloplasty	6	3	-
Dismembered pyeloplasty	5	4	1 prolonged leak 1 broken stent
Nephrectomy	2	-	-
TOTAL	13	7	2

## Discussion

PUJ obstruction in the patients studied occurred principally on the left, with male preponderance and a wide age range, concurring with findings in the literature<sup>1</sup>. Abnormalities of position or rotation were seen in 2 patients; one with bilaterally malrotated kidneys and the other with pelvic kidneys. No bilateral disease was found. This demonstrated the wide range of disease<sup>13</sup>

The retrograde ureterographic studies and MCU did not demonstrate any ureteric abnormality with which this may be associated<sup>14</sup>. The operations of pyeloplasty were open, as contrasted with laparoscopic, which has gained ground both in children and adults<sup>8,9</sup>. Nevertheless the results were good, which compares well with the literature<sup>2,6,7</sup>.

The broken double –J- stent was long expired and this calls for caution in the use of articles with long expiry. It is advisable to test the tensile strength of such an appliance before use. Although a double 'J' stent reduces the duration of urine leakage, its use is a waning, in preference for non-stented pyeloplasties, with their attendant absence of stent related complications<sup>15</sup>.

The 2 youngest patients are the ones who had nephrectomy demonstrating the varied nature of this entity<sup>13</sup>. The finding of a renal carcinoma and polycystic kidney demonstrate the need to always consider other possibilities despite clinical and radiological suggestions of PUJ obstruction.

### Conclusion

The results of pyeloplasty are good in relieving the symptoms and preventing renal deterioration in selected patients. Complications are few if meticulous surgical technique and general care is applied. The possibility of other pathology as differential diagnosis should always be borne in mind.

### Acknowledgement.

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