

OUT-PATIENT PERCUTANEOUS ANTEGRADE BALLOON DILATION PYELOPLASTY FOR PELVI-URETERIC JUNCTION STENOSIS, AN ALTERNATIVE TO SURGERY

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ABSTRACT

A case is described in which an obviously hydronephrotic kidney due to congenital pelvi-ureteric junction stenosis was dilated with Gruntzig balloon catheter percutaneously and antegradely with resulting correction of the stenosis and Urodynamic confirmation of relief of the obstruction following the procedure. The technique is illustrated. The procedure is a new less invasive approach to Pyeloplasty and was performed under local anaesthetic and on an outpatient basis.

CASE REPORT

P.V. is a 20 year old male patient, who presented with pain in the left loin. An I.V. Urogram showed a grossly hydronephrotic left kidney (Fig. 1).

STEPS OF TECHNIQUE

1. Antegrade Pyelography was carried out (Fig. 2).
2. Catheterisation of the ureter (Fig. 3).
3. A straight floppy-tipped heavy-duty guide wire was fed gently through the catheter into the ureter.
4. Dilation of the tract (to Gauge 8 French in this case).



FIG. I Shows left hydronephrosis with no drainage down the left ureter. The renal bipolar diameters measure: 125 mms on the right side, 176 mms on the left side.

5. Insertion of the Balloon Catheter over the guide wire (Fig. 4).
6. Inflation of the Balloon Catheter (Fig. 5).

This was then dilated to 8 atmospheres twice for one minute each time.

A (Gauge 8F) pigtail nephrostomy catheter was then left within the renal pelvis for urinary diversion. No stenting was utilised. The patient was discharged on the evening of the day of the procedure.

On the tenth day post-pyeloplasty a Nephrostogram was performed, Fig. 6. This was followed by a Urodynamic test, which confirmed a non-obstructed pattern. After the procedure, the nephrostomy catheter was withdrawn.

Over one year after the procedure the patient had an I.V. Urogram which showed no restenosis, is asymptomatic and is reluctant to be investigated further.



FIG. II Shows hydronephrosis with pelvi-ureteric junction stenosis and a second stenosis about 1-2 cms distal to it. Note the acute angulation at the pelvi-ureteric junction.

DISCUSSION

Surgical Pyeloplasty involves a General Anaesthetic and a lengthy hospital stay, besides there being a significant mortality. This procedure admittedly involves needling, but this is not really comparable to an incision and does not result in the postoperative problems as a surgical incision would, as the tract was only dilated to Gauge 8 French. It was carried out on an outpatient basis and General Anaesthesia was avoided.



FIG. III Shows the cobra catheter tip within the ureter.



FIG. IV Shows Gruntzig balloon markers at the stenotic regions.



FIG. V Demonstrates full inflation of the Gruntzig balloon with dilation of the proximal stenosis and slight constriction of the balloon at the distal stenosis. (Balloon diameter is 8 mm).



FIG. VI Shows widened pelvi-ureteric junction post-pyeloplasty. The pelvicalyceal system is now undistended.



FIG. VII Follow up intravenous urogram six months after the procedure shows no restenosis at the pelvi-ureteric junction and no hydronephrosis.

The Technique used is similar to Percutaneous Transluminal Angioplasty pioneered by Gruntzig and Kumpe, . (1.)

The experience and technique of Percutaneous Transluminal Angioplasty was first utilised by Kadir et al. (2) to dilate a ureteropelvic junction obstruction retrogradely after a failed surgical pyeloplasty.

Other procedures used are cystoscopic or nephroscopic approaches to dilatation in the ureters with dilation to 10mms, and rupture of the ureter, as documented by O'Flynn et al. (3).

These later procedures, however require general anaesthesia and the cystoscopic approach has the advantage of not requiring a skin incision. The nephroscopic approach would require dilation to Gauge 28 French or 30 French.

CONCLUSION

As an alternative to Surgical Pyeloplasty, today there are three main methods of approach to ureteric dilation:

1. Percutaneous Antegrade Balloon Dilation Pyeloplasty. The first case undergone locally

is described as follow up is over one year. Other cases are being carried out to understand fully the long term effects of the procedure.

2. Antegrade endoballoon rupture and stenting (Nephroscopic Approach).
3. Retrograde endoballoon rupture and stenting (Cystoscopic Approach).

References

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