Simplified Open Approach to Surgical Treatment of Ureteropelvic Junction Obstruction in Young Children and Infants

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Abbreviations and Acronyms

MAG3 = mercaptoacetyltriglycine

UPJO = ureteropelvic junction obstruction

Purpose: Indications for laparoscopic pyeloplasty for ureteropelvic junction obstruction are steadily growing but there is still a group of young children in whom open surgery continues to be the procedure most performed by pediatric urologists. We report our results in young children and infants with dismembered pyeloplasty done through a small flank incision on an outpatient basis or during a short hospital stay.

Materials and Methods: Between April 2001 and July 2009, 45 patients with a median age of 11.2 months (range 1 to 50), of whom 72.9% were male, with confirmed ureteropelvic junction obstruction underwent classic Anderson-Hynes dismembered pyeloplasty thorough a 2.5 to 3.5 cm flank incision. Obstruction was on the left side in 51.2% of the patients. Pyeloureteral anastomosis was performed with a continuous 7-zero polydioxanone suture over a 7Fr multiperforated pyelostomy self-designed catheter in 89% of the patients. A Double-J® catheter was used in only 4 patients with other associated conditions. The stent was removed in the office 7 to 12 days after surgery.

Results: Mean operative time was 92 minutes (range 60 to 150). Median hospital stay was 11.5 hours (range 6 to 35) in the whole group but it decreased to 9.4 hours in the last 22 cases. There was no reoperation due to recurrent ureteropelvic junction obstruction. Mean postoperative followup was 47.5 months.

Conclusions: Ureteropelvic junction obstruction surgery in small children can be done safely through a small incision with a short hospital stay without morbidity and with good cosmesis. We believe that open pyeloplasty will continue to be the best standard treatment for ureteropelvic junction obstruction surgery in small children until miniaturization and better laparoscopic instruments allow us to reproduce these results.

Key Words: kidney; ureter; obstruction; infant; surgical procedures, operative

Ureteropelvic junction obstruction is the most common congenital urinary obstructive pathology in children. Today periodic ultrasound examinations during pregnancy enable us to diagnose and investigate after birth a greater number of neonates who are usually asymptomatic despite severe unilateral urinary obstructive pathology. Surgical treatment is only done in early infancy in those with moderate to severe functional renal impairment due to urinary obstruction and echographic, persistent grade 4 hydronephrosis with an obstructive pattern that shows no response to furosemide injection on ^{99m}Tc-MAG3, and in rare symptomatic young children and infants.[1–3]

Although today many surgical techniques and approaches are available for small children,[4–6] we report our

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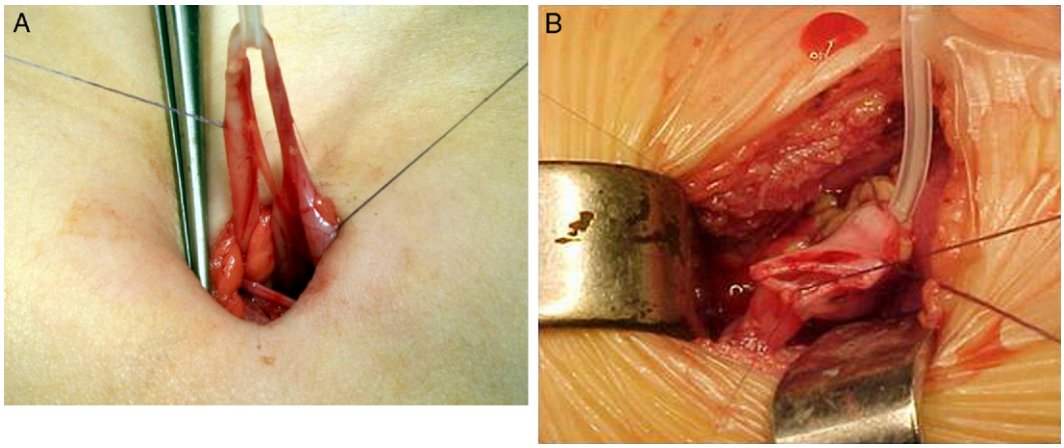

Figure 1. *A*, pyeloplasty through 2 cm lumbar incision in 6-month-old patient. *B*, pyelostomy with multiperforated transanastomotic silicone catheter fixed with 5-zero polyglycolic acid purse-string suture.

results of a simple, safe, inexpensive open approach through a small incision in a short hospital stay setting.

MATERIALS AND METHODS

Between the 91 months from January 2001 to July 2009 dismembered open pyeloplasty was done through a 2 to 3.5 cm subcostal open incision in 45 patients, of whom 72.9% were male, between ages 1 and 50 months (median 11.2) with confirmed unilateral UPJO (fig. 1, *A*). UPJO was on the left side in 51.2% of patients. A prenatal diagnosis was made in 39.9% of cases.

The patient was hospitalized at 7:00 a.m. When possible, surgery was scheduled at 8:00 a.m. to avoid an overnight hospital stay. Patients who remained overnight after surgery did so due to parental decision. If a Double-J catheter was used, a bladder catheter was maintained in place in a double diaper for 48 hours.

Epidural blocking anesthesia was used in the first 8 patients (17.7%). It was discontinued later and replaced by local and regional bupivacaine 0.25% (maximum 3 mg/kg per dose), administered by the surgeon in combination with inhalation sevoflurane, and intravenous fentanyl and prophylactic antibiotics with a single cefazoline dose (50 mg/kg).

Retrograde pyelogram was performed through a 3Fr ureteral catheter before surgery in the last 36 patients (80%) to determine the size and position of the ureteral meatus in the bladder, and identify the site and length of obstruction (fig. 2).

A wide Anderson-Hynes pyeloureteral anastomosis was formed with continuous 7-zero polydioxanone over a 7Fr multiperforated, transanastomotic, self-designed pyelostomy catheter. Leaving the pelvis on a stab wound 1 to 2 cm above the anastomosis, the catheter was fixed with a 5-zero polyglycolic acid purse-string suture. Care was taken to avoid leaving any knot in contact with the catheter to avoid breakage or difficulty during catheter removal (fig. 1, *B*).

Between 6 and 8 hours postoperatively patients were discharged from the hospital on ibuprofen (10 mg/kg) or paracetamol (25 mg/kg) for analgesia. They returned home the same afternoon or remained at a local facility depending on the distance from home to hospital. The pyelostomy catheter was maintained in place between 7 and 12 days after surgery to drain urine into a double diaper (fig. 3). It was retrieved in the office after 24 to 48 hours of catheter occlusion if the patient continued asymptomatic with minimum residual urine into the pelvis. No antibacterial postoperative prophylaxis was used on a reg-

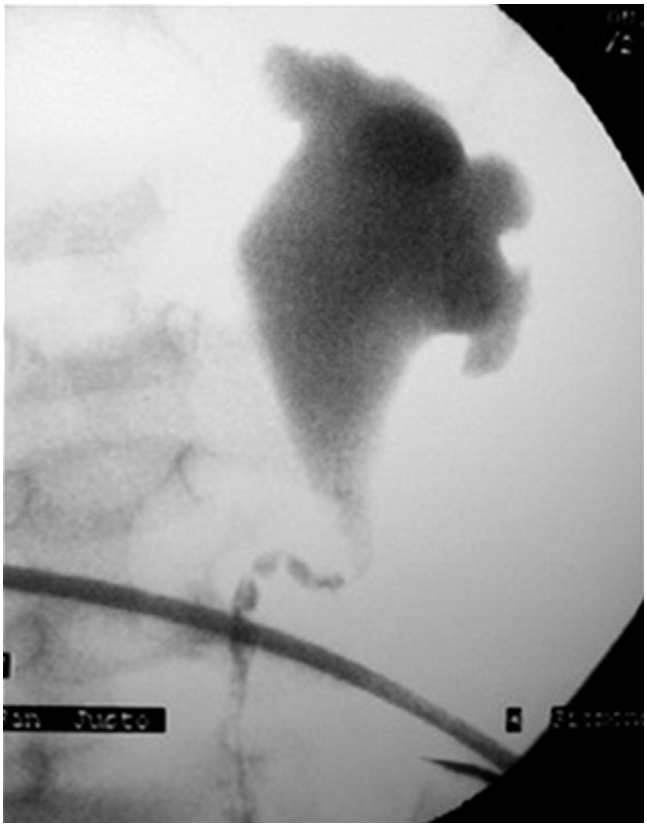

Figure 2. Retrograde pyelogram reveals low UPJO obstruction with long, narrow proximal ureter.