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PYELOPLASTY IN BIFID RENAL PELVIS WITH OBSTRUCTION OF THE LOWER MOIETY

MilePetrovski[1,2] , Lazar Todorovikj[1,2], Zoran Aleksovski[1], Aleksandar Tanev[1] , Natalija Coklevska[1,2]

[1]University Clinic For Pediatric surgery, Skopje, R. North Macedonia, [2]Faculty of Medicine, Ss. Cyril and Methodius University in Skopje, R. North Macedonia

Abstract

Duplications in the urinary collecting system and pyeloureteral junction obstruction (PUJO) are common, but the simultaneous presence of both anomalies is rarely encountered. In duplicate incomplete systems, PUJO usually affects the lower moiety of the kidney.

We present a case of a 2- year old boy with left bifid renal pelvis and hydronephrosis of the lower moiety of the kidney.

Keywords: pyeloplasty, bifid renal pelvis, hydronephrosis, Anderson Hynes.

Introduction

Duplications of the urinary collecting system are the most common anomalies of the upper urinary tract with a reported incidence of 1 in 125 (0.8%) [1]. Duplications can be complete or incomplete and associated with other anomalies such as vesicoureteral reflux, ureterocele and ectopic ureter.

Obstruction of the pelviureteric junction (PUJ) is the most common anomaly of the upper urinary tract which requires surgical approach. Although duplications and obstructions of the ureteropelvic junction are common, the simultaneous presence of both anomalies is rarely encountered. In incomplete duplicated systems, the obstruction of ureteropelvic junction usually affects the lower moiety of the kidney.

Diagnosis and management of this condition can be different because of the wide anatomic variants.

We report the case of a 2-year-old boy with left bifid renal pelvis and obstruction of the pelviureteric junction of the lower moiety of the kidney, treated with Anderson Hynes pyeloplasty.

Case presentation

A 2 year old boy was admitted with hydronephrosis on the left side. The boy was born on term. Prenatally, in 27 g.w., hydronephrosis was presented on the left side.

Dilatation of the left pelvis was detected on a screening ultrasound at six month of age (antero-posterior diameter APD 11 mm.) [1] (Fig.1).

The child was asymptomatic and the pediatrician was set-up on a 6 month conservative follow-up. At 18 months of age the ultrasonography follow-up documented a progressive increase of the pelvic dilatation (APD 14 mm) (Fig.2). At 24 months of age the ultrasonography follow-up documented almost triple the increase of the pelvic dilatation (APD 42 mm) (Fig.3).

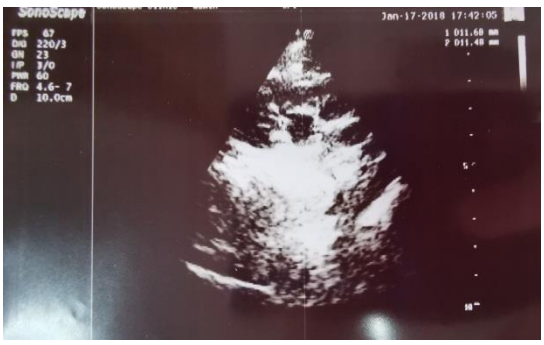


Fig. 1. US at 6 months of age

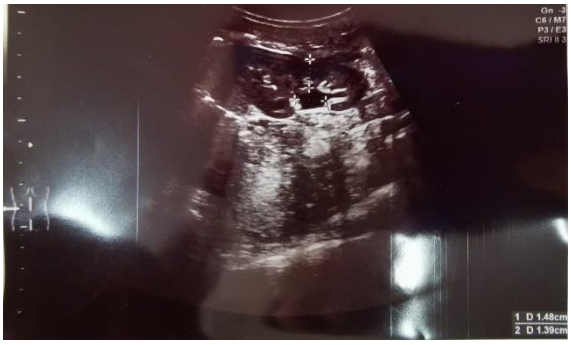


Fig. 2. US at 12 months of age

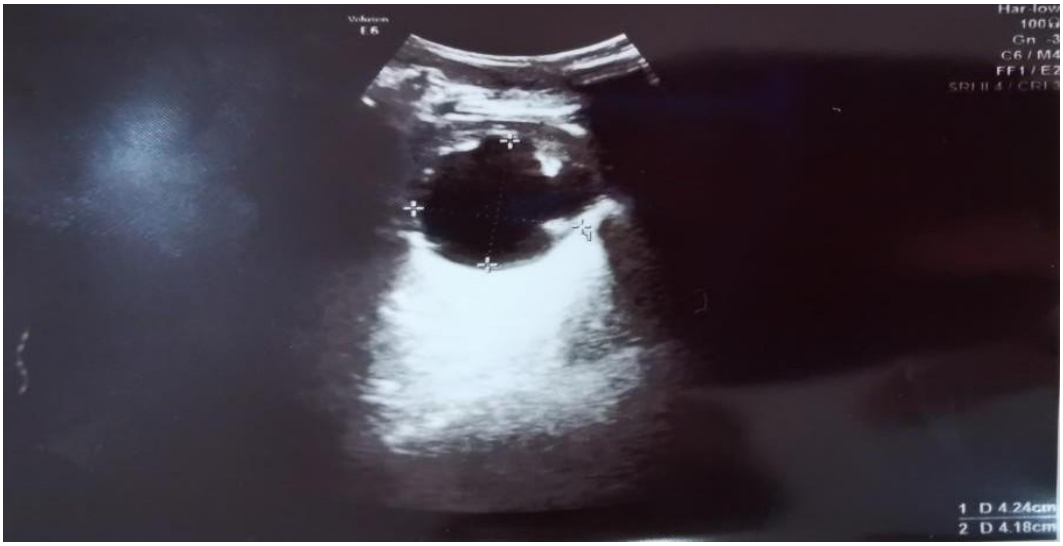


Fig. 3. US at 18 months of age

A voiding cystourethrogram was indicated to rule out a vesicoureteral reflux and other lower tract causes of hydronephrosis, such as posterior urethral valves. At 24 months of age DTPA was made, in which was shown hipoperfusion of the lower moiety of the left kidney with reduced parenchyma, and obstructive chart after giving diuretic (Fig.4).

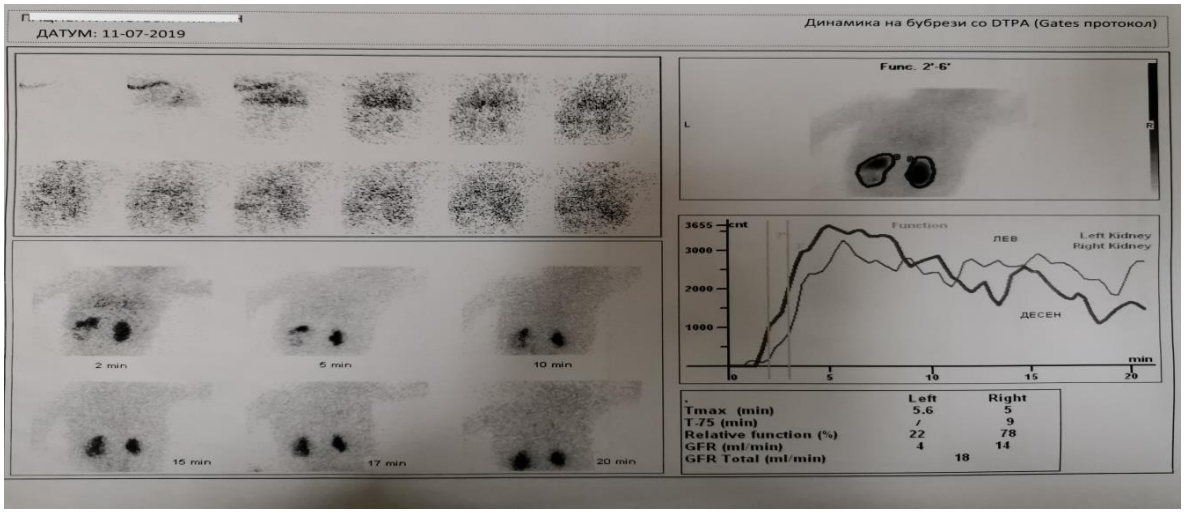
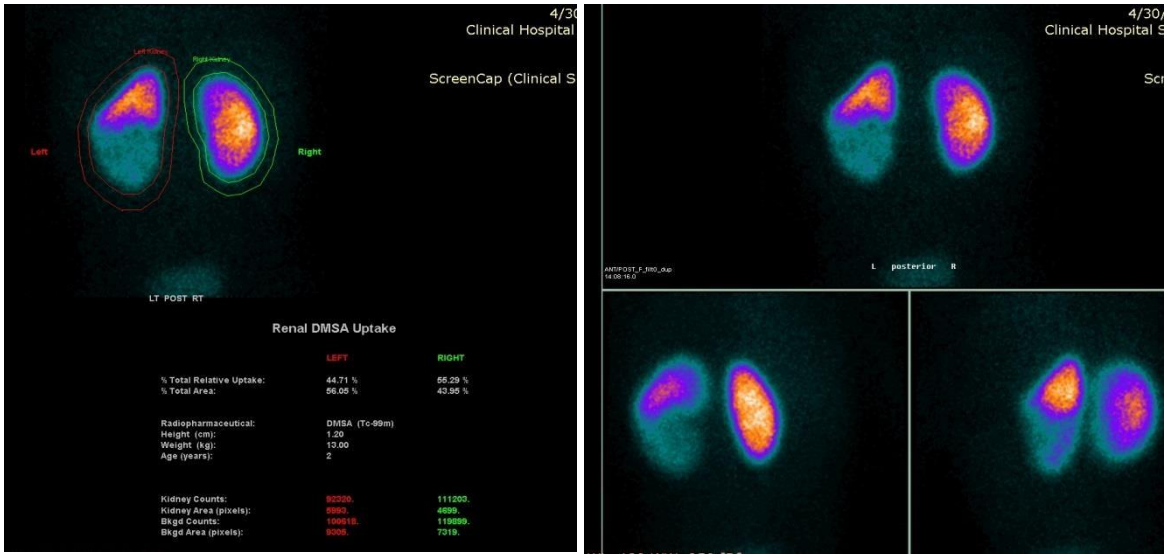


Fig. 4. DTPA renal scan

On DMSA renal scan examination, the left kidney was shown with inhomogeneous distribution of the radionuclide, with hypofixation part in lower medial border of the left kidney. Relative fixation was L-45% and R-55%. It was identified reduction of the parenchyma of the lower moiety of the left kidney (Fig.5).

Fig. 5. DMSA renal scan



After that, MR Urography was made. It was shown the existence of bifid renal pelvis with hydronephrosis of lower moiety of the left kidney (Fig.6).

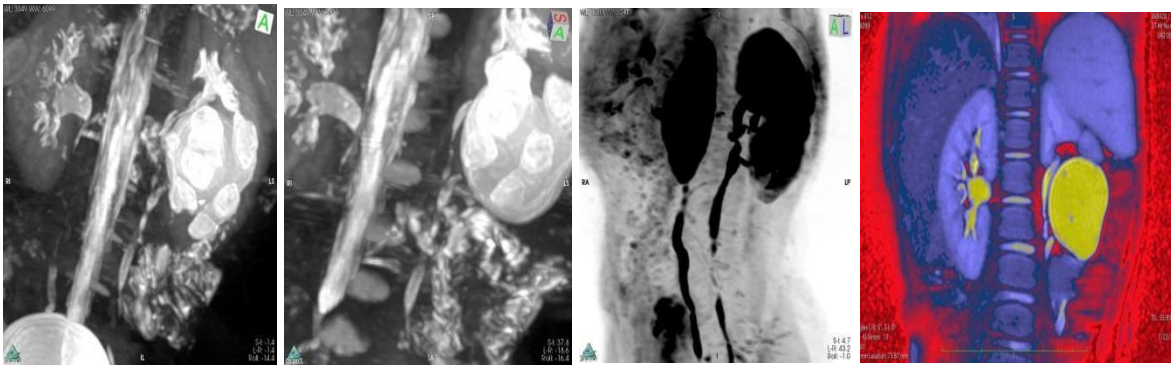


Fig. 6. MR Urography - 3D reconstruction

In sight of these findings and having considered the age of the patient, the worsening of the dilatation and obstructive pattern on DTPA scan, reduction of the parenchyma of the lower moiety, we decided for an operative treatment for removing the obstructive part of the lower ureter and making pyeloplasty.

With left subcostal transverse incision through retroperitoneal space we accessed the left kidney. It was identified dilated pelvis, next carefully the ureter was mobilized and after that it was identified bifurcation of the double ureter, when we mobilized lower ureter we realized that the obstruction was caused by an aberrant vessel (Fig.7).

Preoperatively we had a few ideas for treating depending on the length of the lower ureter. Intraoperatively it was shown that we have enough length for pyelo ureteral anastomosis between lower ureter and dilated pelvis after Anderson Hynes method. Anastomosis was made with 6-0 interrupted Vicryl sutures.

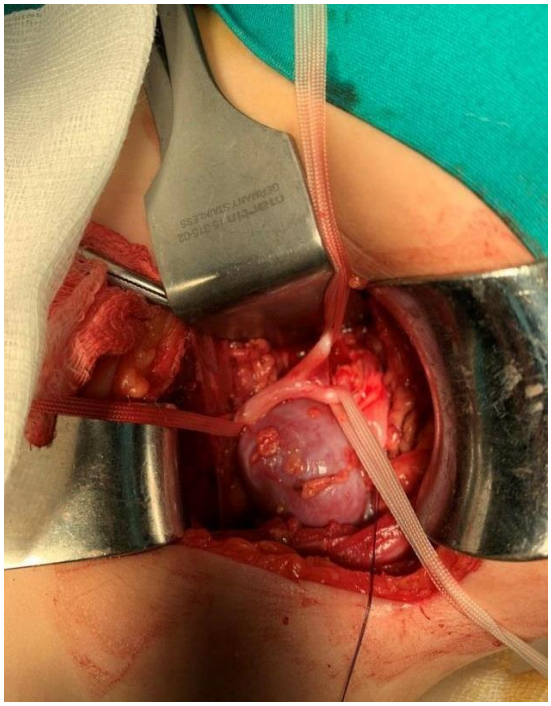


Fig. 7. Intraoperative findings

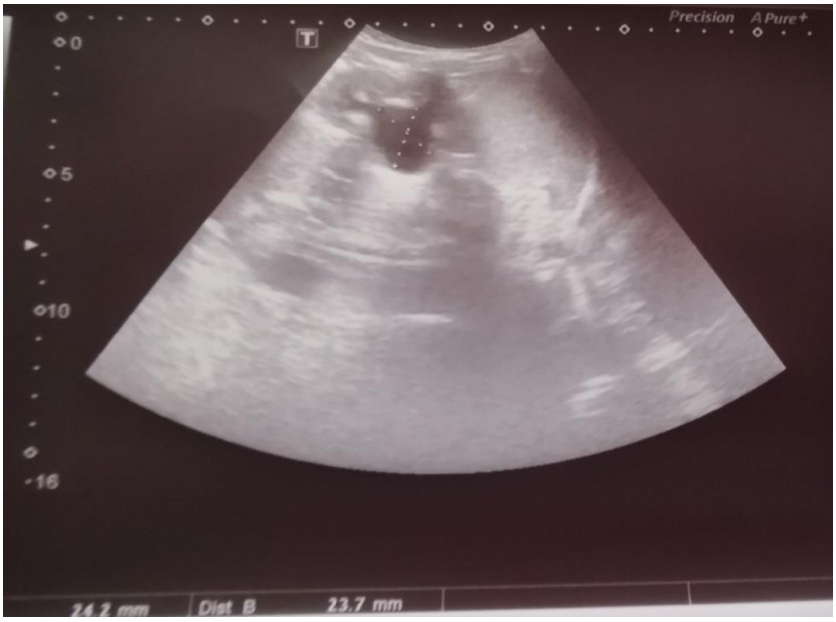


Fig. 8. Postoperative US

Because of the danger for eventual obstruction of the upper ureter we didn't place double J stent. It was placed nephrocutaneus drain. In the renal site we place drain.

Operative incision was closed in two layers with 1-0 PDS loop. Local plastic of the skin incision was made with 5-0 Vicryl intradermal interrupted suture. At 12 months postoperative follow-up, the ultrasonography documented decrease of the pelvic dilatation (APD 24 mm) (Fig.8).

Discussion

Uretero Pyelo Anastomosis was first described by Kummel in 1913 as reported by Diaz-Ball [2]. In 1993 Suzuki et al introduced laparoscopic nephrectomy in a child with a duplicated system [3].

Laparoscopic and robotic uretero pyelo anastomosis in the treatment of the duplex system in children was first described by Kutikov et al in 2007 [4].

We then decided for a surgical procedure because of a worsening of dilation and obstructive pattern.

The treatment of PUJ obstruction in a duplex system may include observation, pyeloplasty or heminephrectomy, according to the severity of obstruction, residual function of the affected moiety and anatomical variants. In our case, the patient was treated conservatively as he was asymptomatic and renal function was stable.

After coming to our facility, we did US and radionuclide renal tests. Other authors suggest preoperative retrograde ureteropyelography to obtain anatomical details. [1] We usually perform preoperative MR urography with which we confirm the existence of bifid renal pelvis and obstruction of the lower moiety with consecutive hydronephrosis and suspect aberrant vessels.

After these findings surgical procedure was indicated. Because of the age we were not able to make laparoscopic pyeloplasty.

In cases of conserved function of the affected moiety, potential surgical treatments are pyeloplasty, uretero pyelo anastomosis or ureterocalicostomy [5].

In incomplete duplications, length of the ureter between dilated pelvis and junction of the upper and lower ureter have crucial importance for surgical technique we use. In our case we had good length to make Hynes Anderson pyeloplasty at distal UPJ.

Conclusion

Reconstructive options in incomplete duplicated urinary system can be different because of the wide anatomic variants. Individualized treatment on the basis of pre and intraoperative findings is mandatory to obtain effective treatment.

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