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LAPAROSCOPIC PYELOURETEROSTOMY IN LOWER MOIETY URETERO PELVIC JUNCTION OBSTRUCTION ASSOCIATED WITH PARTIAL Y DUPLICATION

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Abstract

We report a case of an 11-month-old girl with persistent hydronephrosis following antenatal diagnosis and a single episode of urinary tract infection (UTI). Investigations revealed a uretero pelvic Junction obstruction (UPJO) of the lower pole in a duplex however the ureteric anatomy was unclear. A retrograde pyelogram (RGP) revealed Y-duplication with UPJO close to the Y-junction. Laparoscopic excision of UPJ narrow segment was done along with an end to side pyeloureterostomy of lower pole pelvis to upper pole ureter. At 1 year follow up, the patient was asymptomatic with good resolution of hydronephrosis. We report this case for its rarity and to discuss laparoscopic pyeloureterotomy as a suitable option in UPJO of the lower pole with partial Y-duplication.

Key-words: Laparoscopy, Y-duplication, uretero pelvic junction Obstruction, Duplex kidney, Ureteropyelostomy

INTRODUCTION

The reported incidence of upper urinary tract duplication in literature is around 0.8% among urinary tract anomalies.[1] Duplication anomalies can be either complete or incomplete. Although uretero pelvic junction obstruction (UPJO) of lower pole of duplex kidney is reported, its association with a partial Y-duplication is rare. So far only 18 cases such cases have been reported.[2–5] Here we report an 11-year-old girl with a rare combination of lower moiety UPJ obstruction with Y-duplication managed via a laparoscopic approach.

Case History

An 11-month-old girl presented with persistent hydronephrosis following antenatal diagnosis and a single episode of UTI. Ultrasonogram revealed dilated calyces and pelvis of lower pole with a pelvic diameter of 22mm (figure 1a) suggesting a UPJO of lower moiety. Renogram showed obstruction of the right lower pole (figure 1b) and voiding cystourethrogram was normal. CT Urogram was again suggestive of lower pole PUJO however the ureteric anatomy distal to UPJO was unclear (figure 1c). Cystoscopy revealed a single ureteric orifice on the right side and a retrograde pyelogram revealed UPJO of lower moiety with narrow segment juxtaposed to the Y-junction and little or no distal lower pole ureter (figure 1d).

Laparoscopy via 5mm umbilical camera port and two 3mm lateral working ports confirmed UPJO with Y duplication (figure 2a). After excision of UPJ narrow segment there was no distal normal ureteric limb for conventional pyeloplasty (figure 2b). Therefore, the side of the upper pole ureter was opened (figure 2c) and end of the lower pole pelvis was anastomosed to the side of the upper pole ureter forming an end to side pyeloureterostomy (figure 2d) using 5-0 vicryl. An antegrade double J stent was kept across and urethral drainage was kept for 48 hours. The duration of surgery was 110 minutes and the postoperative period was uneventful. The patient was discharged on day 3 and the stent was removed after 6 weeks. At one year follow up the patient was asymptomatic with good resolution of hydronephrosis on ultrasound and renogram.

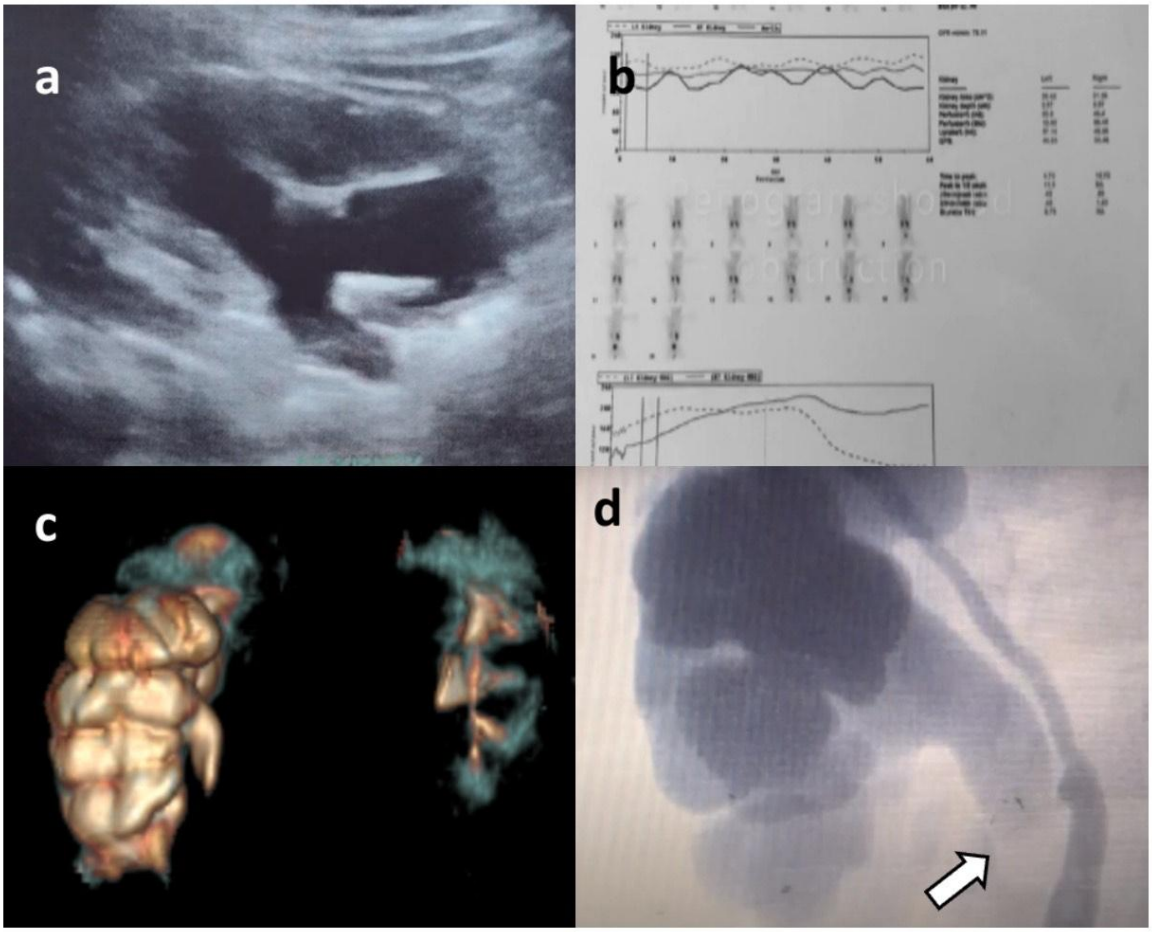

***Figure 1**: a) ultrasonogram showing lower pole hydronephrosis; b) Diuretic renogram revealing obstructed curve on the right side; c) CT urogram (3D reconstruction) revealing UPJO of lower moiety, but distal ureter anatomy was not seen well; d) retrograde pyelogram revealing UPJO of lower moiety with narrow segment juxtaposed to the Y-junction and little or no distal lower pole ureter (block arrow)*

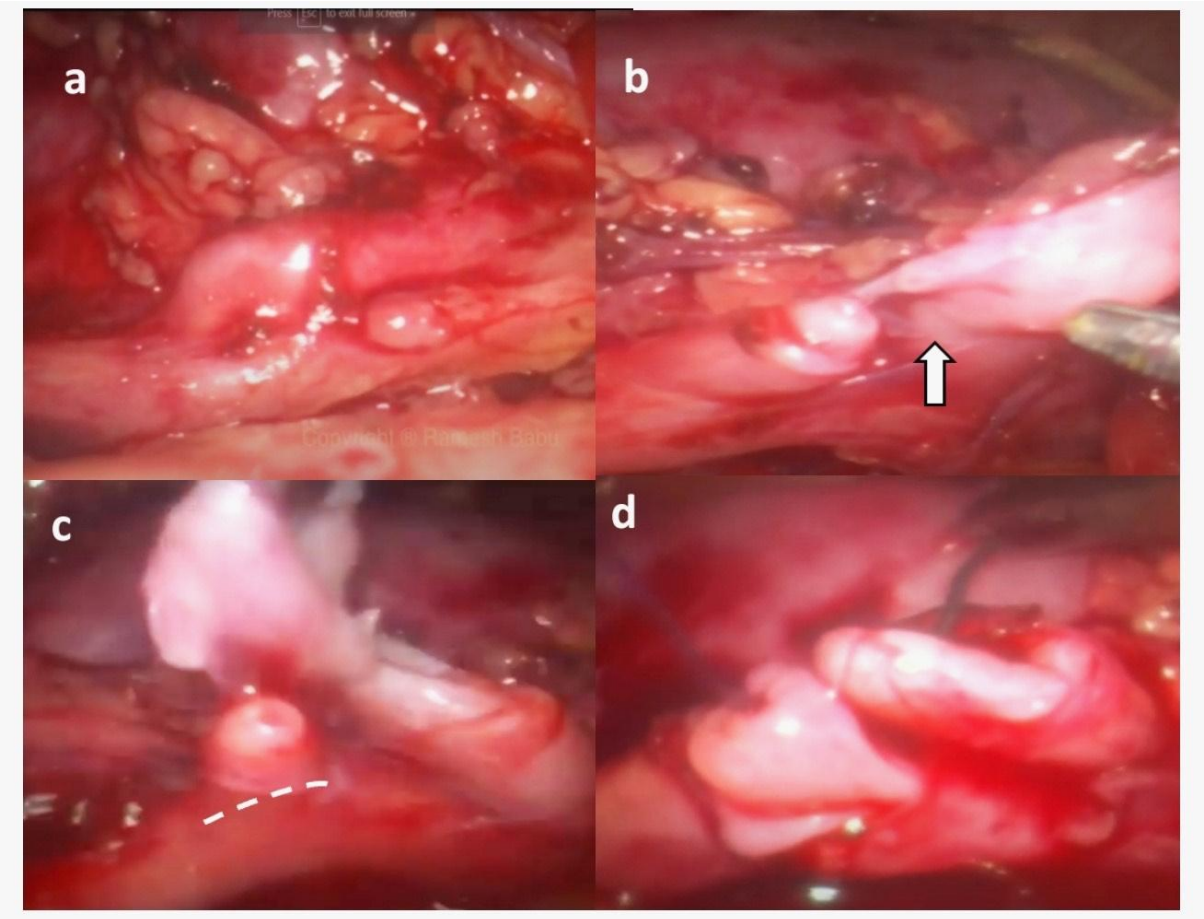

Figure 2:*a) Y duplication seen laparoscopically; b) after excision of UPJ narrow segment there was no distal ureteric limb for conventional pyeloplasty (block arrow); c) the side of the upper pole ureter was opened (dotted line); d) lower pole pelvis was anastomosed to the side of the upper pole ureter forming an end to side pyeloureterostomy*

DISCUSSION

Urinary tract duplication may be either complete or incomplete. The embryology of incomplete duplication is not well understood, but the anomaly may develop when a single ureteral bud branches just before it reaches the metanephric blastema. Although UPJ obstruction and incomplete ureteral duplication by themselves are not uncommon, the combination of UPJ obstruction with incomplete duplication is rare.[6] Proper knowledge of the site of obstruction along with the anatomy of both ureters should be obtained, preferably with an RGP, for planning a successful reconstruction.

Vanderbrink et al and Avlan et al, suggest that lower pole UPJO in incomplete renal duplication requires a proper understanding of the length of the lower pole ureter as that is the major determinant factor for individualizing the surgical management. Standard dismembered pyeloplasty is the most appropriate option in the complete or nearly complete duplex systems. [7] However, in patients with lower moiety UPJO with short limbed Y-duplication, Pyeloureterostomy has been reported to be a useful surgical option.[3,4] During pyeloureterostomy one needs to preserve the vascularity of upper moiety ureter and also avoid kinking to prevent recurrence.[5] This paper highlights the rare association and describes the steps of its laparoscopic management.

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