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Undetected duplex moiety with ureteropelvic junction obstruction: A case report

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ABSTRACT

Although ureteropelvic junction obstruction and duplex kidney are common anomalies in child age group, the combination of these two anomalies is a rare association and infrequently reported. A 2 month old male patient antenatally diagnosed as having hydronephrosis of right kidney, was brought to us for follow up. Renal scans and ultrasonography suggested ureteropelvic junction obstruction. It was only intra-operatively, at the time of pyeloplasty that we found he had duplex system of the same side, not picked up in any of the earlier investigations. Pyeloplasty was done over a double J stent. Patient was discharged and called for follow up.

Keywords: Duplex moiety; ureteropelvic junction obstruction; renal scan.

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Introduction

Ureteropelvic junction obstruction (UPJO) is more common in girls than in boys. Most of the cases are diagnosed antenatally in the form of antenatal hydronephrosis [1]. Duplex system with UPJO is rare with an incidence of 2-7% [2]. The diagnosis and management of this complex pathology can be difficult due to factors such as anatomic difference, severity of obstruction, and clinical implications [3]. In addition, surgical correction may be challenging in such patients [3,4]. We describe a case where the duplex system was not detected on any investigation and was found as an intra-operative surprise.

Case report

A 2 month old male patient brought for follow up as an antenatally detected case of right hydronephrosis was investigated with ultrasonography (USG) of the renal system and renal scans (Ethylcysteine scan and Dimercaptosuccinic acid scan). The patient was asymptomatic. There was no history of dysuria, pyuria, hematuria or straining at

micturition. The USG showed hydronephrosis of right renal pelvis with anteroposterior diameter (APD) of 2.3cm. Ureter was not dilated. Left kidney, ureter and bladder were normal. Ethylcysteine scan showed the right kidney having an end renal plasma flow (ERPF) of 223ml and time to half peak (T1/2) was not achieved (NA). The excretory curve also suggested obstruction.

Micturating cystourethrogram was normal. There was no ureteric reflux. Posterior urethra was normal. Bladder outline was smooth. On the basis of these investigations, the patient was posted for right modified Anderson-Hyne's pyeloplasty.

A transverse right dorsal lumbotomy incision was given. Intra-operatively, the renal pelvis was found to be dilated. There were two ureters, one joining the renal pelvis at the lower pole in a narrow ureteropelvic junction, suggesting it to be obstructed. The upper ureter was traced towards the upper pole, with as much mobilization of the kidney as possible, but could not be traced to its origin. It was decided to do a contrast study by injecting Angiograffin dye into both ureters separately, towards the renal pelvis, while occluding the ureter below. On injecting contrast into the lower ureter, a dilated renal pelvis and pelvi-calyceal system was delineated [Fig. 1].

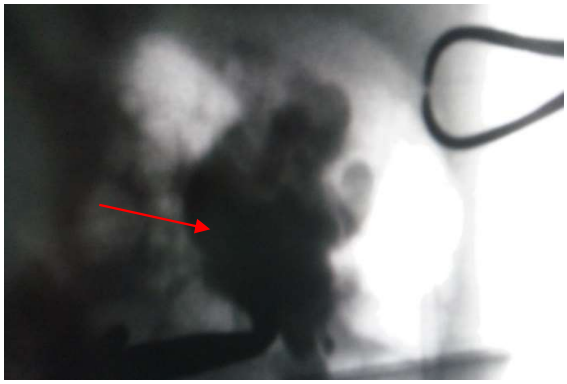

Fig. 1. Red arrow showing dilated renal pelvis and PCS.

On injection of contrast into the upper ureter, a completely separate renal pelvis was seen, not communicating with the earlier seen pelvis [Fig. 2].

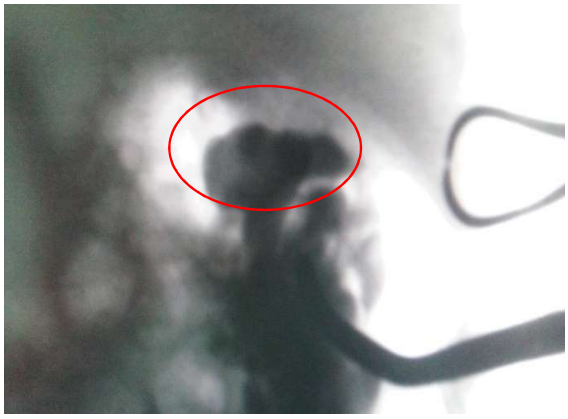

Fig. 2. Red outline showing separate renal pelvis of upper moiety.

It was decided to go ahead with a modified Anderson-Hyne's pyeloplasty of the lower moiety over a double J (DJ) stent. The ureters were traced in the common sheath till the normal lower moiety ureter. A perinephric drain was kept for 3 days and patient discharged after its removal

Discussion

Ureteropelvic junction obstruction in a duplex system occurs in around 2-7% patients. The entity was first described by Freyer and Deming in 1942 [2]. There have been many cases as well as case series describing UPJO in duplex systems. Most commonly, obstruction occurs at the lower moiety [5,6]. However, obstruction of the proximal ureter of the upper moiety is also known to occur [7,8]. Anatomically, the lower segment is the analogue of a single renal system with usually about two-thirds of the parenchyma and at least two calyces and a true renal pelvis [9,10]. That explains the predilection of UPJO for the lower moiety [10]. In cases of upper pole UPJO, it is

more analogous to infundibular stenosis or calyceal diverticulum [11].

These patients can have varying clinical presentations like pain in abdomen, urinary tract infections and a palpable lump [10]. Most of them however, are asymptomatic and have antenatally diagnosed hydronephrosis. These patients are routinely subjected to undergo renal scans, [generally ethylcysteine scan (EC) scan, according to our institutional protocol] which are able to delineate the two systems, if present. Ultrasonography is a subjective investigation, requiring a highly experienced radiologist, hence two moieties may not always be picked up. But renal scans, more often than not, are able to delineate two separate systems. It is very rare for renal scans to not detect a duplex moiety. But since the lower system forms an analogue of the entire renal system in many of these cases, rarely the upper moiety may not be detected on renal scan.

That may be the reason why the duplex was not pre-operatively detected in our patient and it turned out to be an intra-operative surprise. The procedure of choice remains the same, a modified Anderson-Hyne's dismembered pyeloplasty.

Conclusion

Duplex kidney and UPJO coexistence is a condition challenge in terms of diagnostic and surgical treatment. Then, it's requires careful evaluation and treatment should be individualized based on site of obstruction and function of the affected segment, as our case.

Compliance with ethical statements

Conflicts of Interest: None.

Financial disclosure: None.

Consent: Written informed consent was obtained from the parent of the patient.

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