

Ureteric Obstruction due to Aberrant Vessel Masquerading as Retrocaval Ureter

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ABSTRACT

Aberrant vessels, although rare, may extrinsically compress ureter which on imaging may masquerade as retrocaval ureter. The exact cause of obstruction in such atypical cases can be confirmed intraoperatively. We are presenting a case which on basis of radiological features was diagnosed as a case of retrocaval ureter, however, intraoperatively it was found to be a case of ureteric obstruction due to an aberrant vessel. Thus, whenever on imaging an atypical feature of retrocaval ureter is found, differential diagnosis of aberrant vessels should also be kept in mind.

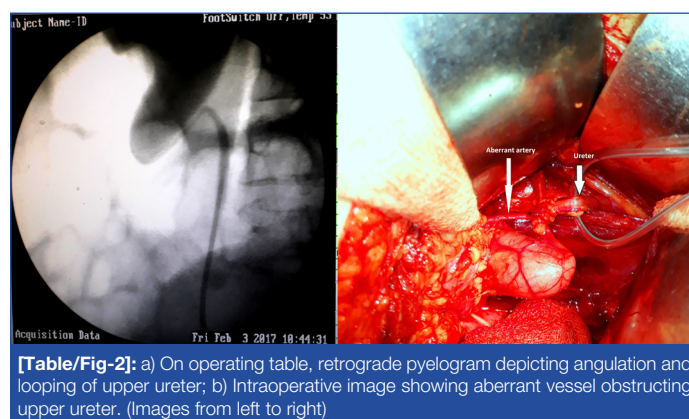
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CASE REPORT

A 42-year-old female presented to the outpatient clinic with complaints of dull aching, intermittent pain in right loin region from last two years. She was a known case of recurrent urinary tract infection.

General physical examination was unremarkable. Urine examination revealed 3-5 pus cells per High-power Field (HPF) and occasional red blood cells per HPF. Biochemical indices including urea, creatinine, and electrolytes were within normal limits. Ultrasound of Kidney Ureter Bladder (KUB) region showed right sided hydronephrosis with dilated upper ureter. She was further evaluated with Computed Tomography (CT) urography, which showed hydronephrosis in right kidney and proximal part of right ureter was dilated and deviated medially. Ureter appeared to pass posterior to lower Inferior Vena Cava (IVC) at the L3-L4 vertebra and come out laterally at L5 and S1 vertebral junction [Table/Fig-1]. Retrocaval ureter was strongly suspected on the basis of imaging and absence of other abnormal findings. Thus, an open retroperitoneal approach was planned for her.

On the operation table, Retrograde Pyelogram (RGP) revealed looping and extrinsic compression of upper ureter, about 4 cm distal to ureteropelvic junction. Intraoperative findings revealed an aberrant vessel originating from aorta which was obstructing the upper ureter [Table/Fig-2]. The ureter was severely narrowed at constriction site. The narrow part of ureter was excised and pyeloureterostomy was done over ureteric stent, after repositioning of ureter in front of the aberrant vessel.



Recovery of the patient was uneventful. Follow up excretory urogram showed normalisation of renal and ureteral anatomy.

DISCUSSION

Kidneys ascent from sacral region to definitive lumbar location during embryological development. During this ascent, kidney receives blood supply from the aorta in a ladder-like pattern. As vessels are gained superiorly, those more inferiorly are shed. Unfavourable ureterovascular relationship may occur if there is an interruption in the normal process. This may lead to extrinsic compression of pelviureteric junction or rarely ureter. Besides intrinsic aetiology, aberrant vessels have a potential role in aetiology of ureteropelvic junction and ureteric obstruction. In normal kidneys, these aberrant vessels are found in about 20% of cases whereas in cases of ureteropelvic junction obstruction, they have been noted in 63% cases [1]. Error in the embryogenic development of IVC may lead to a rare congenital anomaly called retrocaval ureter or preureteral vena cava with reported incidence of 1 in 1500 with a 2.8- fold male predominance [2,3].

The IVP and RGP were commonly used to diagnose this condition; however, spiral CT is now considered an investigation of choice for diagnosis of retrocaval ureter and other IVC abnormalities [4-6]. According to the new classification, retrocaval ureter is of two types based on radiologic imaging [7]. In the present case imaging revealed a typical 'S' shaped type-1 deformity of the ureter with point of obstruction placed at the level of third lumbar vertebra. Intraoperatively, the cause of ureteric obstruction was found to be aberrant vessel arising from the aorta. Aberrant vessels may obstruct upper, mid or even lower ureter [8]. To identify such crossing vessels



numerous modalities have been used like angiography, endoluminal ultrasound, doppler ultrasound, CT scan, and magnetic resonance imaging [9]. Out of these, helical CT scan with three-dimensional reconstruction seems most suitable in preoperative assessment of crossing vessels [10].

Preoperative diagnosis of presence of aberrant vessel although does not change the management modality, however, it helps in precisely planning and selecting appropriate surgical approach which ultimately would lead to significant reduction in intraoperative complications.

CONCLUSION

Ureteric obstruction due to aberrant vessels may masquerade as preureteral vena cava on imaging. Aberrant vessels may have a profound effect on treatment outcome, thus it should not be ignored as a differential diagnosis in cases of preureteral vena cava. Preoperative identification of aberrant vessels is of utmost significance as it may influence treatment approach, intraoperative complications and clinical outcome.

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