

Trauma and reconstruction

Lower ureteric obstruction by crossing vessel - Is it possible?

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1. Introduction

Ureteral obstruction can occur due to various pathologies. Ureteral calculus is one of the commonest causes. Extra luminal and less commonly intra luminal Ureteral obstruction can occur due to malignancy. Unrecognised Ischemic injuries during gynaecological surgery can cause ureteric stricture and obstruction at a later date. Traumatic injuries have also been documented as an important cause of ureteric obstruction. Infections particularly Tuberculosis in the developing countries remains a significant cause. It is significant to note that there are very few cases of lower ureteric obstruction when compared to that of obstruction of upper ureter. Peri-ureteral fibrosis due to vascular causes like abdominal and iliac artery aneurysms has also been described uncommonly as causative. A detailed search of literature revealed only around ten cases of distal ureteric obstruction due to arterial vascular anomalies like persistent umbilical artery and umbilical ligament. Here in we describe a rare case of distal ureteric obstruction which we

presume to be the first of its kind, due to an aberrant gonadal vein with special emphasis on the diagnostic and management aspects.

2. Case presentation

38 years man presented with recurrent episodes of UTI and colicky pain in right flank. IVP 3 years ago revealed lower ureteric obstruction (Fig. 1A), for which an urologist elsewhere had done retrograde ureteric dilatation with DJ stenting. On stent removal, patient developed recurrent episodes of pain with infection. Hence, patient was subjected to repeated ureteric dilatation with stenting. A recent IVP (Fig. 1B) revealed persistent obstruction with preserved renal function. Due to economic constraints, patient wanted no further investigation. He wanted only definitive surgical management. Patient underwent retrograde pyelography which revealed significant lower ureteric obstruction. Subsequently, he underwent Laparotomy by extra-peritoneal approach. An anomalous vessel, probably an aberrant gonadal vein was compressing the lower ureter causing narrowing with upstream dilatation (Fig. 2). A single large vessel was observed coursing along with the cord structures and then taking an angulated turn to compress the lower ureter at the pelvic brim, consistent with the site of obstruction on the IVP. Hence, we presumed it to be an aberrant Gonadal vein due to its proximity to cord structures. The strictured ureteric segment was resected and patient underwent ureteroneocystostomy (UNC) with preservation of crossing vessel. Patient had uneventful post-operative recovery. Histopathology of the resected ureteric segment revealed significant fibrosis in the lamina propria and intramuscular regions (Fig. 3). Patient underwent subsequent DJ stent removal and has had no recurrent obstructive symptoms till one year follow-up.

3. Discussion

Ureteric stricture has numerous known and unknown causes. Among the known causes, compression by aberrant vessels has been documented as a common cause of PUJ and upper ureteric obstruction. Lower ureteric obstruction by crossing vessels has not been described so frequently.

The earliest report by Devine et al. had 6 cases and 7 ureteric

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Fig. 1. A (Left) - An old IVP shows mild hydronephrosis, B (Right) - recent IVP showing similar findings with preserved function.

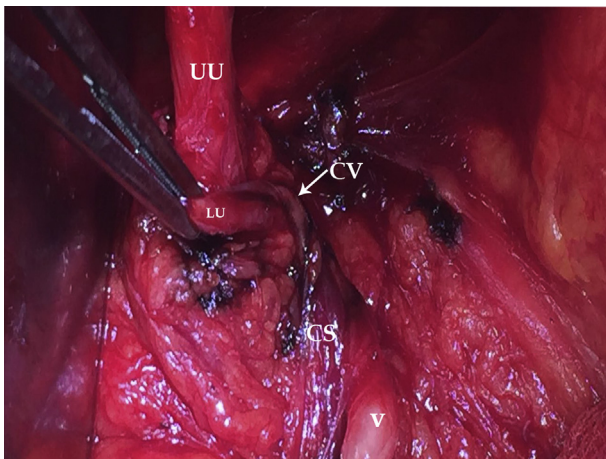


Fig. 2. Intraoperative picture showing dilated upper ureter (UU) with narrowed lower ureter (LU) caused due to compression by crossing vessels (CV). The Crossing vessels lie in close proximity to Cord structures (CS) and the Vas deferens (V).

obstructions in which 4 needed Ureteroneocystostomy and 3 improved with transection of vessel.¹ Although the authors opined that some cases may improve with only transection of vessels, we differ. We postulate that simple transection of the anomalous vessel without ureteral reconstruction may lead to recurrent obstruction and also may jeopardise any tissue being supplied by the anomalous vessel. Fibrosis plays an important role in causing obstruction. Ureteral peristalsis is reported to occur due to the intermuscular connections in the muscular layer. Significant fibrosis as seen in our case disrupts the intermuscular connections as a result of which the

ureter will lose its elasticity and hence its contractility. Significant fibrosis also causes the ureter to have a pipe stem appearance as seen in our case. So, in the present case, the degree of fibrosis seen make us presume that UNC without vessel transection has twofold advantage. It completely relieves obstruction by removing the severely fibrotic segment and also there is also no fear of hypoxic or congestive tissue injury due to transection of the anomalous vessel.

Grifoni reported 11 cases (including Devine's cases) of lower ureteric obstruction by crossing vessels. They concluded that uncommon anomalies of umbilical artery should be considered as a rare cause of extrinsic lower ureteric obstruction.² The ureter is normally crossed anteriorly only by Umbilical artery or the obliterated umbilical ligament in the pelvis. So obstruction by them can be expected. But here the structure was a vein because there was no pulsatility. Also, since it was close to the cord structures, we had to presume that it was an aberrant gonadal vein. Hence, we feel that the present case is the first case of obstruction due to an aberrant gonadal vein. Though Grifoni opined that arterial anomalies should be considered, we propose to modify this statement to say that even venous anomalies should be considered in differential diagnosis.

Gupta et al. described a case of persistent umbilical artery.³ They concluded that the diagnosis is usually made at Laparotomy following failed endourological treatment. Though our own patient had a similar course, we feel that a pre-operative CT with reconstruction would have helped in diagnosing this entity pre-operatively and better planning of surgery (Laparoscopic instead of open).

The other differential diagnosis to be considered in lower ureteric obstruction is obstructive megaureter. But these cases are

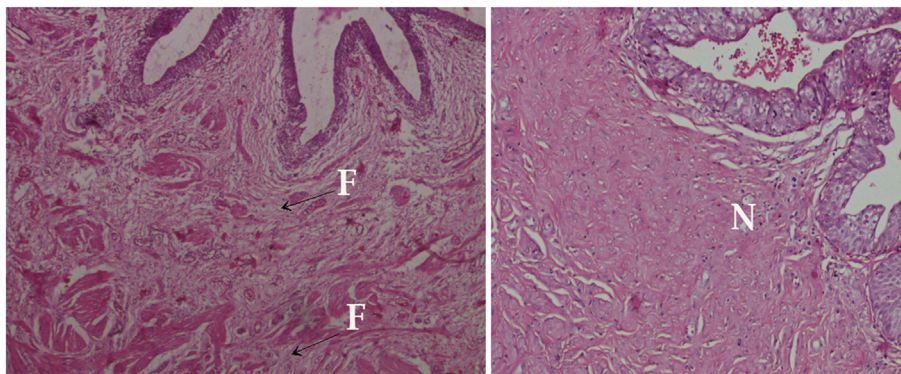


Fig. 3. Histopathology specimen of resected ureter showing significant lamina propria fibrosis and intramural fibrosis (arrows with F) on the left. A normal ureter (N) for comparative purposes depicted on the right.

usually seen at a much younger age and become quiescent by puberty. Also, in these cases the obstructive segment is rarely segmental as seen in our case. Congenital ureteric stricture is another cause of segmental ureteric obstruction. Here, the presentation is in childhood and this commonly affects the mid-ureter and never the pelvic ureter.

4. Conclusion

Uncommon vascular anomalies must be considered as an important cause in differential diagnosis of lower ureteric obstruction, which have failed endoscopic management repeatedly. Contrast enhanced CT will help in pre-operative identification and help avoid intra-operative surprises, thus helping in better planning of surgery.

Conflicts of interest

None.

Appendix A. Supplementary data

Supplementary data related to this article can be found at <https://doi.org/10.1016/j.eucr.2017.11.026>.

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