Abstract

Kidney lying outside renal fossa is referred as ectopic kidney. Hereby we are presenting a rare case of Pelviureteric junction obstruction in a malrotated ectopic kidney with concomitant lithiasis in a 16 year male. He presented with pain in lower abdomen intermittently. On CT scan, a left malrotated ectopic kidney was located in the pelvis near the midline with a 10 mm stone in the lower pole, and having obstructed pattern drainage with moderate hydronephrosis. Open Anderson-Hynes dismembered pyeloplasty was done.

Thorough clinical approach with delineating aberrant anatomy of ectopic kidneys and their vascular supply with consideration of unusual functional data on conventional functional renogram is necessary for intervening in malrotated ectopic kidney with concomitant lithiasis.

Keywords: Ectopic; lithiasis; Malrotated; Pelviureteric junction obstruction.

Case Report

Hereby we are presenting a rare case of Pelvi-ureteric junction obstruction in a malrotated ectopic kidney with concomitant lithiasis in a 16 year old male. The patient presented to us in OPD with complaints of pain in the lower abdomen intermittently. During evaluation, his blood parameters were found to be normal. On Computed Tomography, he had a left ectopic kidney which was malrotated with hilum facing anteriorly and located in the pelvic region just above the bladder near the midline having a stone in the lower pole of size 10 mm, and having obstructed pattern drainage with moderate hydronephrosis. The left renal artery was seen as a direct branch from left common iliac artery and renal vein was draining into left common iliac vein. However, the right kidney was normal. A functional renogram was done with F-15 protocol, which showed Glomerular filtration rate of 70 ml/minute of right kidney while 13 ml/minute of left kidney. However, a remark was made by the consultant that the left kidney which is located ectopically and is more anterior, the
quantitative information drawn using posterior gamma detector will not be accurate. Hence, repeat functional renogram was done using same F-15 protocol where the gamma detector was located on the anterior side and it reported a function of 25ml/minute on the left side and 29 ml/minute of the right side. Considering the different data and different positions of gamma detector, baseline GFR of left kidney was 25 ml/minute and of right kidney was 70 ml/minute. In view of patient being symptomatic with concomitant lithiasis, an open Anderson-Hynes dismembered pyeloplasty was done. Intraoperatively, an infraumbilical midline incision was taken and we tried to remain extraperitoneal. The left kidney was found near the midline above the bladder, dissection was done to trace the pelvis and the ureter. Pelvis and ureter were dismembered, and stone was removed intact, the lateral end of ureter was spatulated and anastomosed with the pelvis in a tension free water tight manner over a DJ stent. Post operative period was uneventful and patient was discharged and is currently in follow up.

**Discussion**

During the course of embryogenesis, when the kidney fails to ascend upwards from the pelvis in its metanephros phase, a number of anatomical abnormalities can be seen. Most commonly an ectopic kidney is seen inside the pelvis, opposite the sacrum and below the aortic bifurcation. However, most cases of pelvic kidney are asymptomatic, despite the risk of traumatic injury, urinary tract infections, renal calculi, and other urological problems; only 1 in 10,000 patients were clinically recognized. Our case had an ectopic kidney which was malrotated and located in pelvis and patient was symptomatic.

PUJO is seen in 22%–37% of ectopic kidneys. The ectopia is typically related to malrotated unit with possible vascular aberrations. Ectopic kidney may receive vascular access from a range of vessels like common iliac vessels, from the aorta, mid sacral vessels. Understanding this anatomy is vital for any urologist operating on patient with an ectopic kidney. An unusual anatomy with aberrant vascular supply poses difficulty in management, and it is, therefore, important to understand the anatomy and vasculature of pelvic kidneys. In our case the left renal artery supplying the kidney was arising from the left common iliac artery.

Concomitant lithiasis of the urinary tract is not always
unusual and whether it co-exists as a separate entity or is
the end result of a narrow renal outflow tract continues
to be debated. The occurrence of lithiasis in renal
malformations is believed to be higher than the general
population. In a retrospective analysis of 1639 patients
for the duration of forty-five years by Mayo Clinic, there
was 70-fold increased prevalence in malformed kidneys.
Overall, various factors seem to be responsible for lithiasis
in PUJO other than urinary stasis. Metabolic abnormalities
and genetic predisposition with associated urinary tract
infection plays a role.6 Our case also had an associated
calculus in the lower pole of left ectopic kidney.

On evaluation of PUJO with nuclear functional imaging
studies, further intervention should be done as per the
degree of obstruction, renal function, patient symptoms and
stone burden. Simultaneous treatment of PUJO and stone
should be considered.6 Our case underwent treatment of
PUJO with removal of the stone in the same sitting.

In 1949, Anderson and Hynes defined open dismembered
pyeloplasty method to treat PUJO. This was one of the
proven versatile, secure and effective technique having 95%
success rate. Till date, it is still regarded as gold standard
for pyeloplasty.4 Our case also underwent Anderson and
Hynes open dismembered pyeloplasty.

Conclusion
A thorough clinical approach with delineating aberrant
anatomy of ectopic kidneys and their vascular supply with
consideration of unusual functional data on conventional
functional renogram is necessary for intervening in
malrotated ectopic kidney with concomitant lithiasis so as
to prevent long term complications like chronic kidney
disease and non-functioning kidney.

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