Horseshoe Kidney with a gigantic Staghorn Calculus-A Case Report
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ABSTRACT
The congenital anomalies of kidney are relatively uncommon with a prevalence of around 1 in 1000. Amongst them are renal fusion anomalies of which horseshoe kidney is a common variety with a prevalence of about 1 in 400 in US. In about 90% of cases the fusion occurs at the lower poles with a resultant U shaped kidney and the angulated ureters passing over the isthmus. Horseshoe kidneys are usually associated with a number of complications like PUJ obstruction, recurrent infections, recurrent stone formation, carcinoma and greater propensity to get traumatized. This condition may also be associated with other congenital anomalies particularly of the genitourinary tract. It can get diagnosed at any age but is more often diagnosed in children.

CASE
A 70 year old male, with past medical history significant for COPD and hypertension presented with the chief complaints of pain Right flank and back for 20 years which was mild, deep, dull, boring type, relieved by taking analgesics, associated with recurrent dysuria and fever. Physical examination was non specific except for asthenia. Abdominal examination revealed a hard mass approximately 7x 5 cm in the right lower abdomen, mobile and stony hard consistency.

INVESTIGATIONS
Hemogram, Blood Chemistry, ECG, Chest X-ray were within normal limits. USG horseshoe kidney with grade 3 hydronephrosis of right part with a staghorn calculus against L3 L4 vertebra. Prostate 35 gm and a single simple liver cyst [fig 1]. KUB Large radio-opaque shadow on right side against L3 L4 vertebra [fig 2]. IVP Shows lower pole calyces lying close to the midline with a big calculus on the right side [fig 3]. CECT abdomen horseshoe kidney with calculus with hydronephrosis [fig 4].

MANAGEMENT OF THE PATIENT
The patient was planned for open Pyelolithotomy with pyeloplasty after getting clearance from the anesthesiologists. Morris incision was not adequate for this surgery as the stone was lying lower down and somewhat anteriorly, so it was decided to go for the GRID IRON incision [fig 5]. Renal pelvis was dissected clear which showed a big calculus with stretched pelvis over it [fig 6]. Pyelotomy was done and stone extracted [fig 7, 8]. It weighed about 248gm [fig 9]. Pyeloplasty was done and redundant pelvis excised followed by 6 Fr. DJ stenting. Drain was kept in situ and incision closed back in layers.

POST OP PERIOD: It was uneventful ant the patient was discharged from the hospital on 5th post op day [fig 10].

DISCUSSION
The horseshoe kidney is the most common renal fusion abnormality. This results from an abnormal medial fusion of the metanephric blastema. This abnormal fusion causes failure of ascent and rotation. Ascent is arrested by the inferior mesenteric artery. The fused kidney therefore lies more caudal in position compared with normal kidneys and, because of incomplete rotation, the renal pelvis is anterior to all of the calyces. The calyces point posteriorly with the lower-pole calyces pointing caudally and medially. The malrotation of the fused kidney causes insertion of the ureters to be superior and lateral. In addition, the ureter is draped over the renal isthmus, resulting in an anterior deviation in its course several centimeters below the ureteropelvic junction1.

Although most horseshoe kidneys are asymptomatic, urolithiasis and ureteropelvic junction obstruction represent the most common complications requiring surgical intervention. The incidence of stone formation in horseshoe kidneys is as high as 20%. The most common location of stones is the medial, posterior lower-pole calyx, closely followed by the renal
pelvis. With the advent of noninvasive radiographic imaging, these stones are increasingly diagnosed incidentally on CT and ultrasonography performed for unrelated indications. When patients are symptomatic, they typically present with flank pain and renal colic similar to that experienced with stones in anatomically normal kidneys because the innervation of horseshoe kidneys is not anomalous. Because the surrounding structures of the kidneys are different, however, an atypical presentation, such as gross hematuria or abdominal pain with or without nausea or emesis, is not unusual.

Anatomical considerations, such as aberrant vasculature, adjacent bowel, medial location, and distorted pelvicalyceal architecture must be carefully considered in choosing a treatment modality. Various treatment modalities have been used to treat stones in a horseshoe kidney, including extracorporeal shock wave lithotripsy (ESWL), ureteroscopy, percutaneous nephrolithotomy (PCNL), and open surgery. Although adequate fragmentation can be achieved by ESWL in stone-bearing horseshoe kidneys, the anatomic abnormalities prevent fragment passage in a substantial number of patients. Ureteroscopic approaches are challenging and not universally recommended.

REFERENCES
Conflict of Interest: None

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