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CASE REPORT

A Documented case of a Horseshoe kidney with Pelvi-ureteric junction obstruction due to high insertion of the ureter

Ojas Vijayanand Potdar*, Mohammed Ayub Karamnabi Siddiqui, Prashant Sarawade, Vivek Shaw, Kaustubh Vaidya, Ashish Chaubey and Amrita Vikram Patkar

Grant Government Medical College and J.J. Group of Hospitals, Mumbai Central, Mumbai, Maharashtra-400008

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Abstract

Horseshoe kidney is the most common genitourinary tract fusion abnormality at a frequency of 1 in 400-800 live births. PUJ obstruction is observed in up to one-third of these cases. The clinical presentation of the patients present will be either asymptomatic or may include stomach discomfort, persistent UTIs, and calculi. The PUJ obstruction is managed by surgery which can be carried out using a robotic, laparoscopic, or open technique. We hereby present a case of 16 hear old female with right sided PUJ obstruction due to high ureteric insertion in a horseshoe kidney which was effectively managed by open Anderson-Hynes Pyeloplasty.

Keywords: High ureteric insertion, horseshoe kidney, PUJ obstruction, pyeloplasty

*Corresponding author: Ojas Vijayanand Potdar
Email: ojaspotdar@yahoo.com

Introduction

The most prevalent kidney fusion anomaly is the horseshoe kidney (HSK), which affects about 0.25% of the general population. The male to female ratio for the occurrence of horseshoe kidney is 2:1 [1]. There is frequent occurrence of PUJ obstruction in horseshoe kidney. [1] Renal malrotation, fluctuating blood supply, high ureteric insertion lead to a high susceptibility to develop Pelvi-ureteric junction (PUJ) obstruction in up to one third of cases [2]. We hereby report a case of PUJ obstruction in horseshoe kidney in a 16-year-old female which was caused due to high ureteric insertion.

Case Presentation

A 16 hear old female presented to the urology outpatient department with lower abdominal pain sine 1 month. The pain was intermittent and colicky in nature and not associated with any febrile episodes or haematuria. Patient was further evaluated using biochemical parameters which revealed normal creatinine of 0.58 mg/dl and normal white blood cell count. She underwent ultrasound which revealed a HSK with right sided hydronephrosis. A Computerised Topography-Intravenous Urography (CT-IVP) revealed horseshoe kidney with the lower poles of bilateral kidneys fused at lower end of body of L3 vertebra with the right segment of the horseshoe kidney showing hydronephrosis with obstruction at pelvi-ureteric junction. The left kidney was normal in enhancement and excretory function (Figures 1-3).

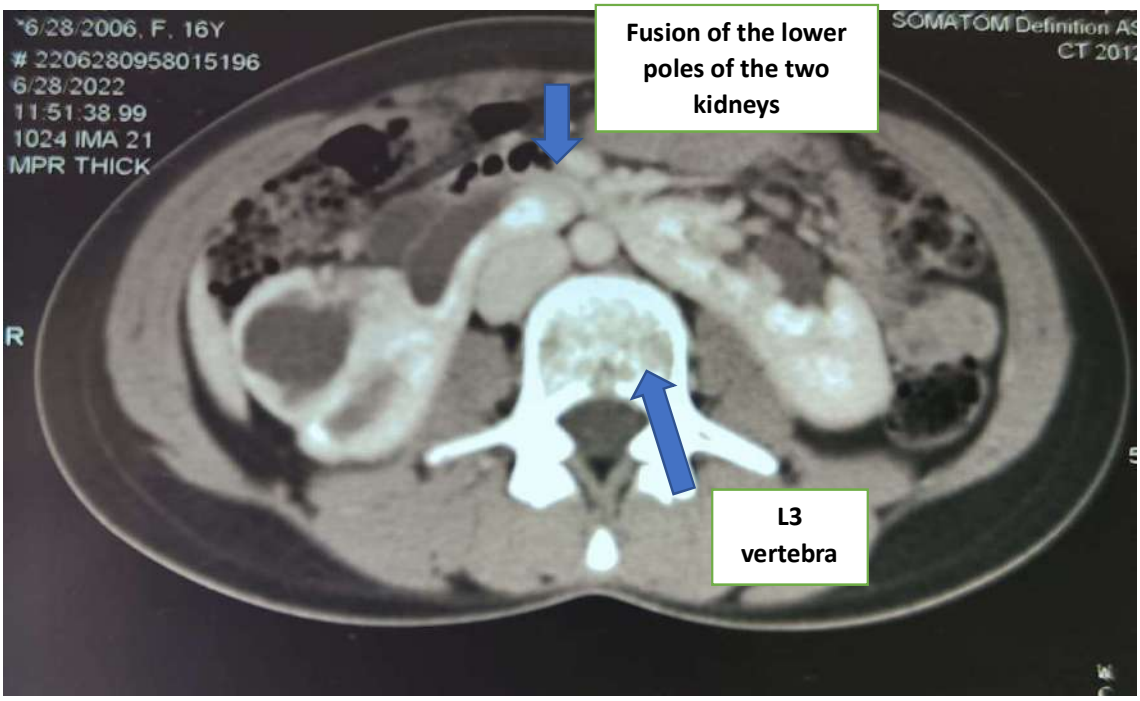

Figure 1. Axial section of CT-IVP images showing right sided hydronephrosis and the isthmus of the horseshoe kidney.

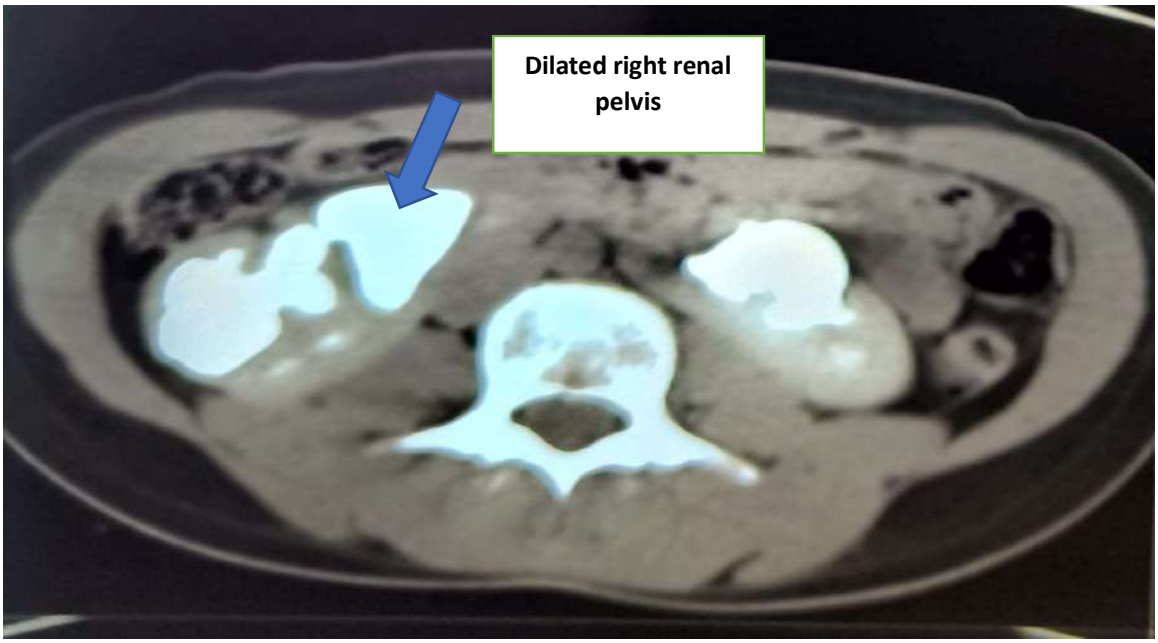

Figure 2. Axial section of excretory phase of CT-IVP showing right sided hydronephrosis and dilated right renal pelvis till the level of right PUJ.

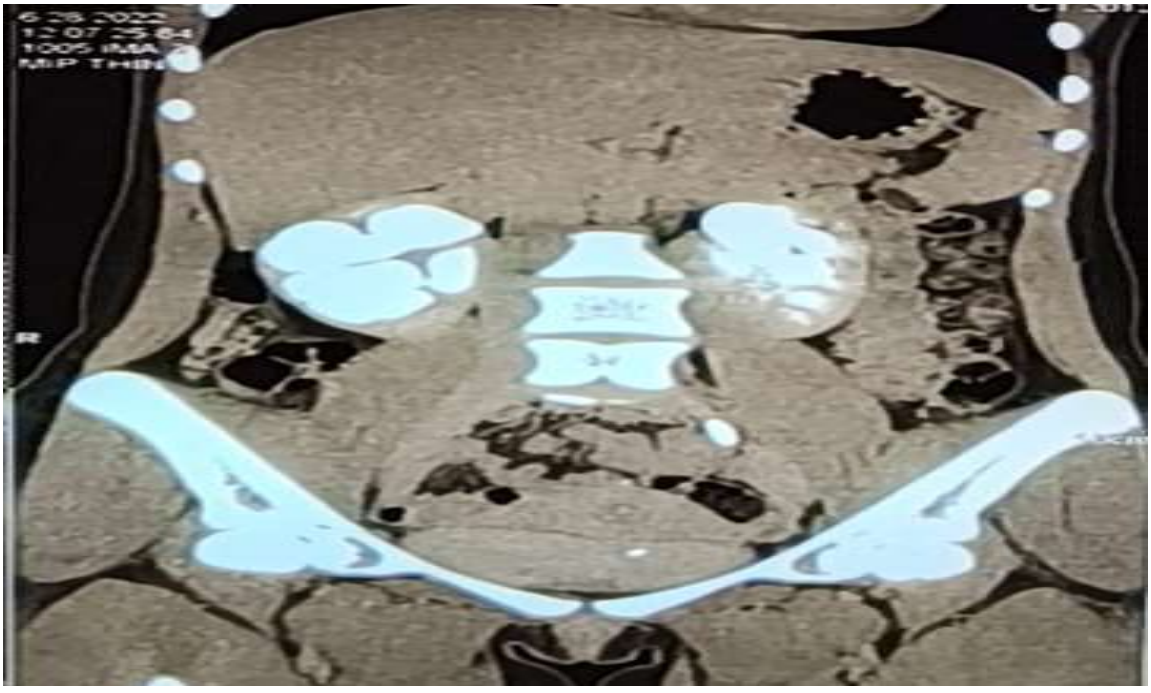

Figure 3. Coronal section of CT-IVP showing Grossly dilated right sided Pelvi-calyceal system till the level of Right PUJ

Patient was further evaluated with T-99 DTPA scan-F+0 protocol to determine the differential function of the two segments of the HSK. The right segment of the HSK showed type 2 O-Reilly curve with differential GFR of 28.9 ml/min (37%) with left segment showing normal enhancement and excretory function with differential function of 49.4 ml/min (63%) (Figure 4).

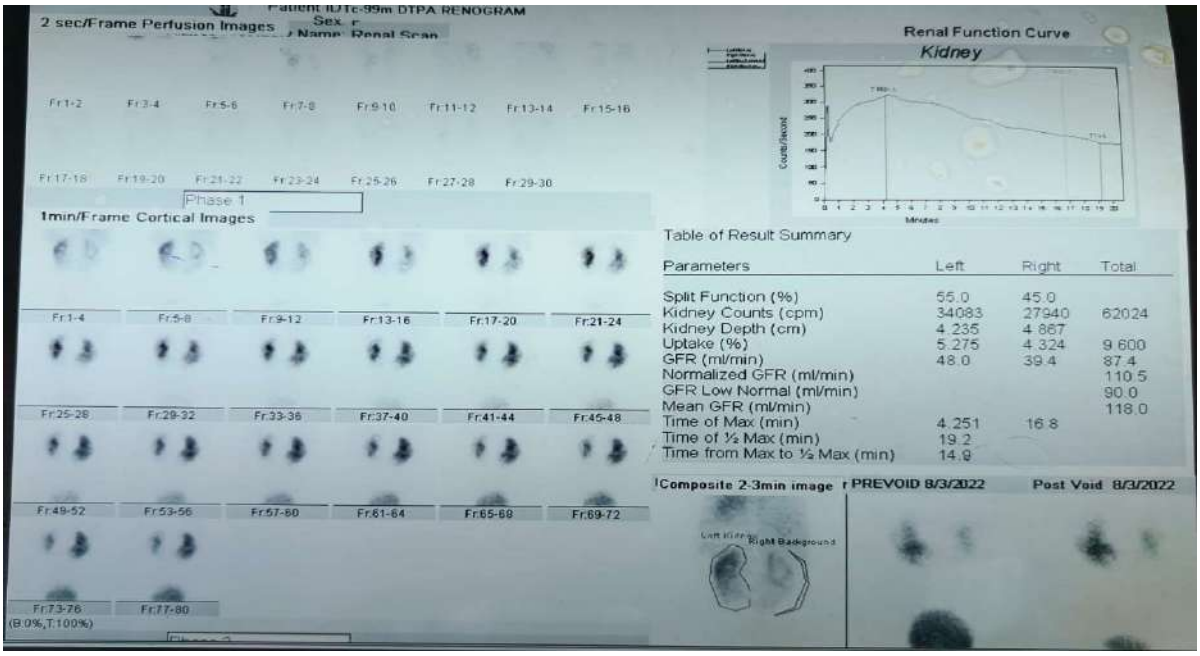

Figure 4. DTPA scan showing type 2 O-Reilly curve for the right kidney indicating obstructive drainage on the right side.

Hence, the patient was planned for open right sided Pyeloplasty. Through a lower midline vertical incision, the right segment of the horseshoe kidney was exposed along with the PUJ and the site of the obstruction. It revealed high insertion of the ureter being the cause of the obstruction. This was tackled using Modified Anderson Hynes Pyeloplasty to form a dependent funnel-shaped tension free anastomosis using 3-0 polydioxanone (PDS) suture with placement of 6/24 DJ stent (Figures 5-7). The incision was closed after placement of a pelvic drain. The patient was discharged after 5 days of admission in the hospital after removal of foley catheter and pelvic drain with a uneventful postoperative recovery.

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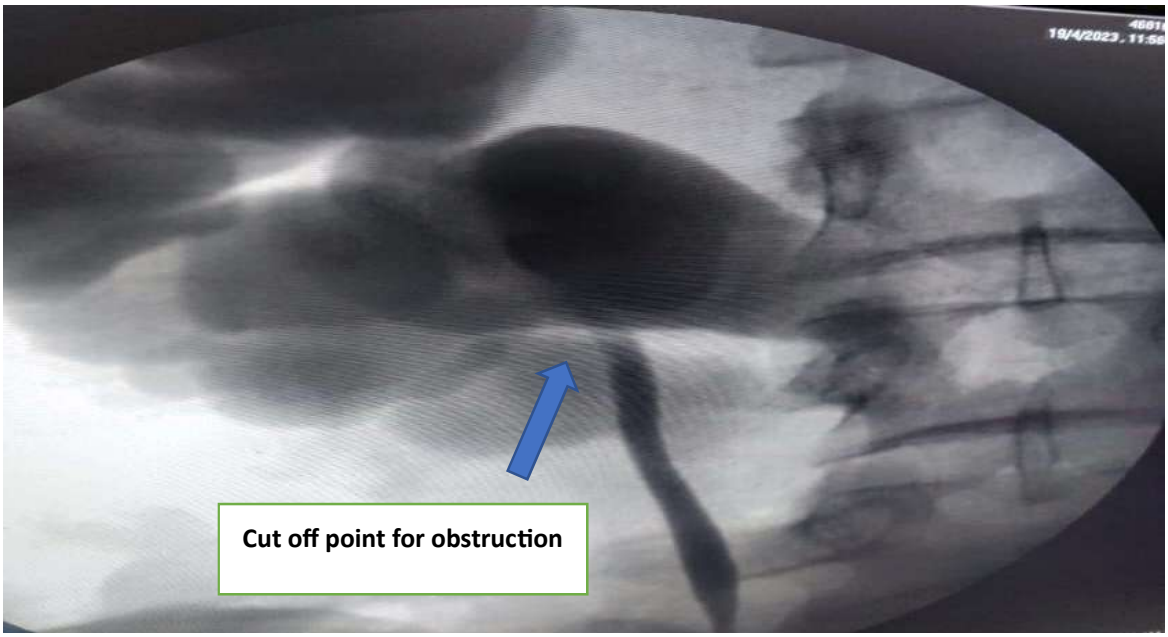

Figure 5. Right side Retrograde pyelography showing PUJ obstruction.

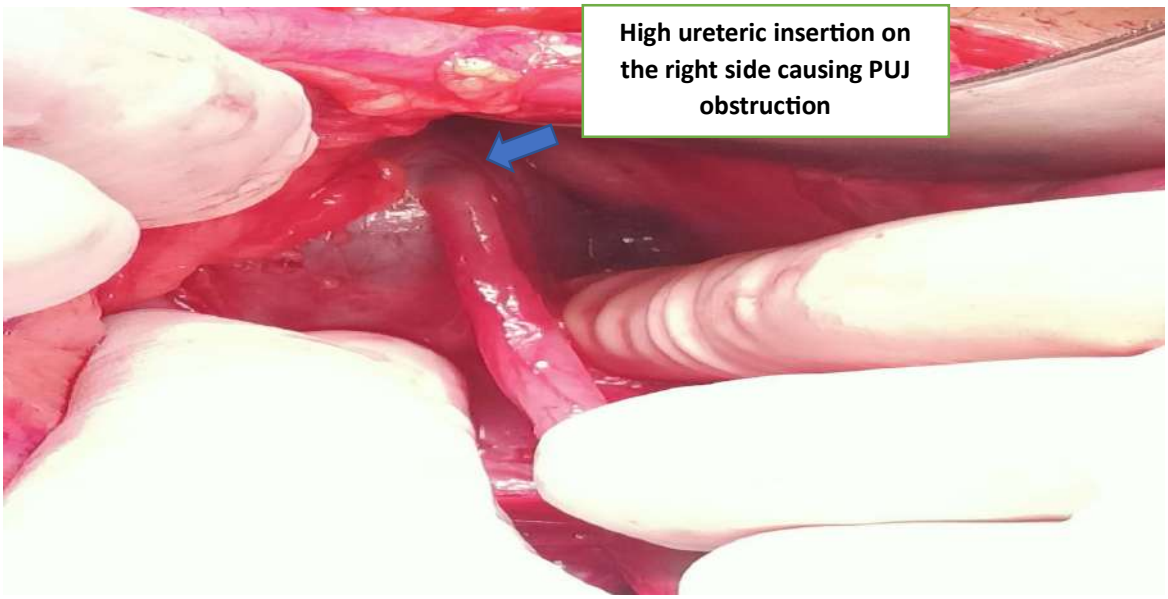

Figure 6. Intraoperative image showing high ureteric insertion on the right side causing PUJ obstruction.

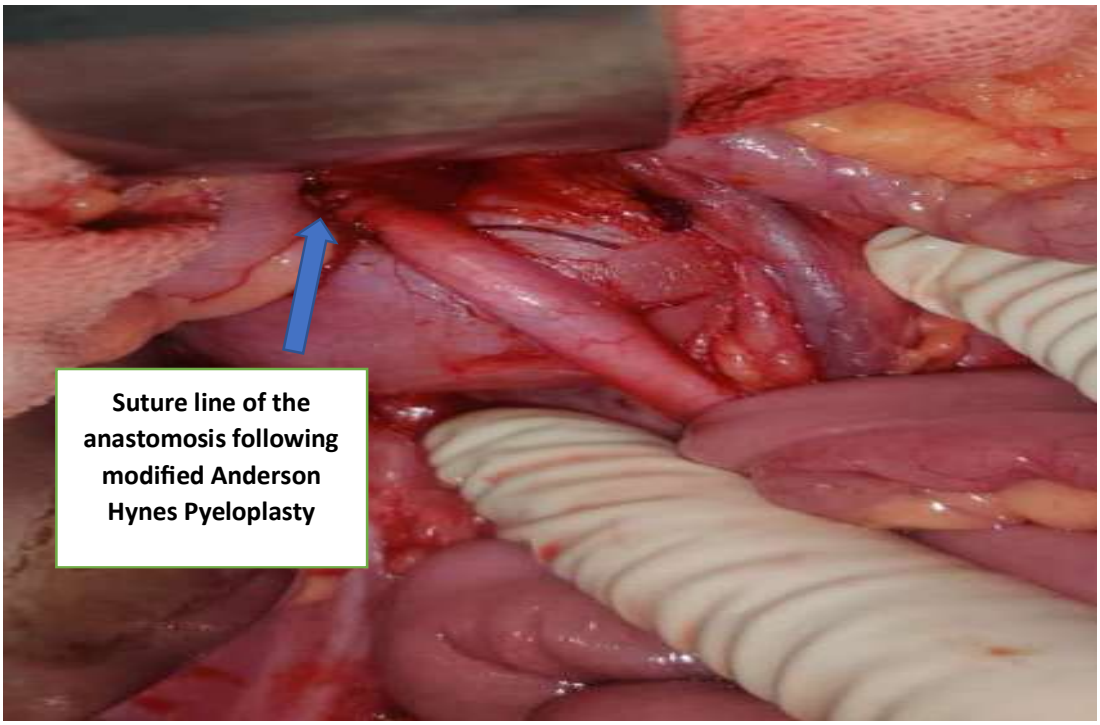

Figure 7. Intraoperative image of the Suture line following Modified Anderson Hynes Pyeloplasty using PDS 3-0.

The DJ stent was removed 6 weeks after the surgery and a retrograde pyelography performed at this stage revealed prompt excretion of contrast of the right sided pelvi-calyceal system. A DTPA scan at 3 months revealed relief of obstruction and good excretion of contrast with a normal excretory curve. Patient was last followed up at 6 months and has not reported any complaints and has been doing well.

Discussion

Horseshoe kidney is the most prevalent kidney fusion anomaly, which affects 0.25% of the general population [3]. The period between 4 and 8 weeks of development when the metanephric buds fuse, which prevents their normal rotation and cephalic migration results in this congenital abnormality [3]. The anterior location of hydronephrosis is frequently caused by the horseshoe kidney's renal pelvis and ureters, which have a propensity to kink and lie anterior to the isthmus [4]. Congenital stricture, high ureteral insertion, an irregular ureteral course through the isthmus, crossing vessels supplying the isthmus, or aberrant motility of the PUJ segment are all hypothesised to contribute to PUJ obstruction [5]. Hydronephrosis from PUJO occurs in about 14% to 35% of cases of horse shoe kidney [6,7]. The different presentation of the patients are those of infection, calculi, obstruction or tumour due to the abnormal anatomy. Urolithiasis and PUJ blockage are the two most frequent complications of the horseshoe kidney that require surgical intervention, with an incidence of 20–60% and 15–33%, respectively [8]. Preoperative imaging helps to assess the anatomical abnormalities one will encounter during the surgery. The basic surgical principles of management are excision of stenotic ureteropelvic segments, excision and refashioning of a redundant pelvis, transposition of aberrant vessels if any and a dependent water-tight

funnel-shaped ureteropelvic anastomosis [3]. Dismembered pyeloplasty is an effective treatment for horseshoe PUJ blockage brought on by an intrinsic stenosis, high ureteral insertion, or an irregular course of the ureter across the isthmus. The procedure of choice for treating PUJO in HSK is dismembered pyeloplasty [9]. The different approaches include trans-peritoneal approach by a lower midline or transverse incision or by the retroperitoneal approach via a flank incision provide excellent exposure of the PUJ in horse shoe kidneys [3,9]. The success rates following Anderson-Hynes pyeloplasty in horseshoe kidneys are equivalent to those in hydronephrotic kidneys that are located properly [9]. On the other side, the Foley Y-V plasty has a success rate that is close to 80% [7]. A vascular hitch or dismembered pyeloplasty can be used to treat a crossing vessel causing PUJ obstruction. A bigger number of sample size of case series will be required to establish guidelines for this condition but however, given the rarity of the condition, such studies are not available.

In our case, it reaffirms the fact that modified for the treatment of PUJ obstruction in HSK kidney, Anderson-Hynes pyeloplasty without extra division of the kidney's isthmus is a highly effective technique.

Conclusion

Thus, our case report affirms that adequate preoperative imaging is needed to evaluate the abnormal anatomy in case of horseshoe kidney and that PUJ obstruction in horseshoe kidney due to high insertion of ureter can be effectively managed by Modified Anderson-Hynes pyeloplasty.

Conflicts of interest

The authors declares that they do not have conflict of interest.

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