

An Unusual Pattern of Trauma to Horse-Shoe Kidney: Report of a Rare Case

Jineesh Thottath^{1*}, Aswathy AN², V R Rajendran³, Naufal Perumpalath¹, Nasmin Ilyas⁴

¹Assistant Professor, ³Professor and Head, ⁴Junior Resident, Department of Radiodiagnosis,
²Consultant Radiologist, HLL MRI center,
Government Medical College, Kozhikode, Kerala, India.

ABSTRACT

Horse shoe kidney is the commonest of renal fusion anomalies and the condition is associated with other anomalies as well as susceptible for various complications. Renal trauma in a previously undiagnosed complicated horse shoe kidney as the initial presentation is quite a rare event and here we present one such case. How the knowledge of the various associations and complications helped in accurately assessing the details of the renal injury thus playing a key role in management is highlighted.

Key words: Horse-shoe kidney, Renal injury, Staghorn calculus, Computed Tomography, Duplex collecting system, Bifid renal pelvis.

INTRODUCTION

A 64 year old previously healthy man came with complaints of abdominal pain following a road traffic accident and was subjected to plain and contrast CT evaluation of abdomen.

On probing further after viewing the images the patient did concede in having experienced occasional bouts of trivial right lower quadrant pain.

The CT images (Figures) showed horse-shoe kidney with bilateral duplex collecting systems and bifid renal pelvis. A staghorn calculus was noted lying in the right proximal ureter extending to the superior and inferior pelvicalyceal systems with dilatation of the upper and lower moieties. The upper moiety showed evidence of rupture with urinary ascites and a laceration was noted in the right half of the isthmus.

Based on the CT findings a diagnosis of horse-shoe kidney with bilateral duplex collecting system and staghorn calculus causing right hydronephrosis complicated by traumatic rupture of right upper moiety with urinary ascites and isthmic laceration with perinephric hematoma was made.

The patient was subjected to laparotomy, the findings were confirmed and corrective procedures namely; segmental resection of duodenum along with right pyeloplasty and removal of the staghorn calculus were carried out. The isthmic laceration was managed conservatively.

*Correspondence to:

Dr Jineesh Thottath,
Sisiram, Angadippuram,
Cherakkaparamba post,
Malappuram district, Kerala.

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Fig 1: Scanogram showing staghorn calculus towards the right lower quadrant

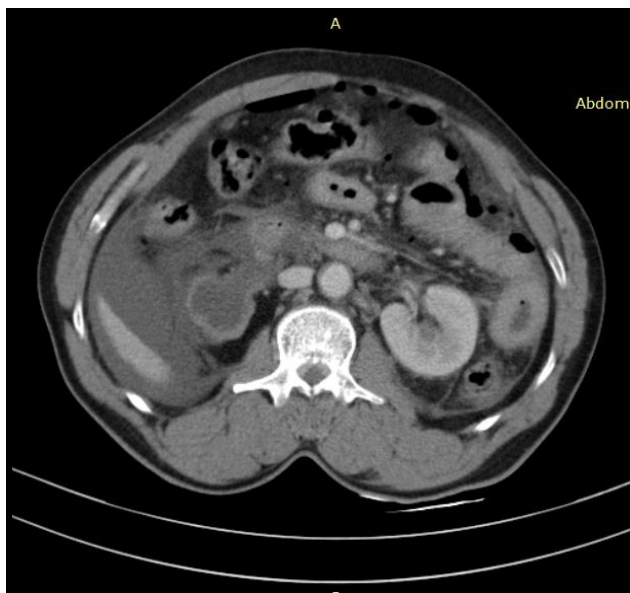


Fig 2: Axial CT post contrast image at the level of upper pole of kidneys showing normally enhancing left kidney and a decompressed dilated pelvicalyceal system of the upper moiety of right kidney with parenchymal thinning and dehiscent pelvic outline in the anteromedial aspect with urinary ascites. In addition perforation of the second part of duodenum with pneumoperitoneum was noted.

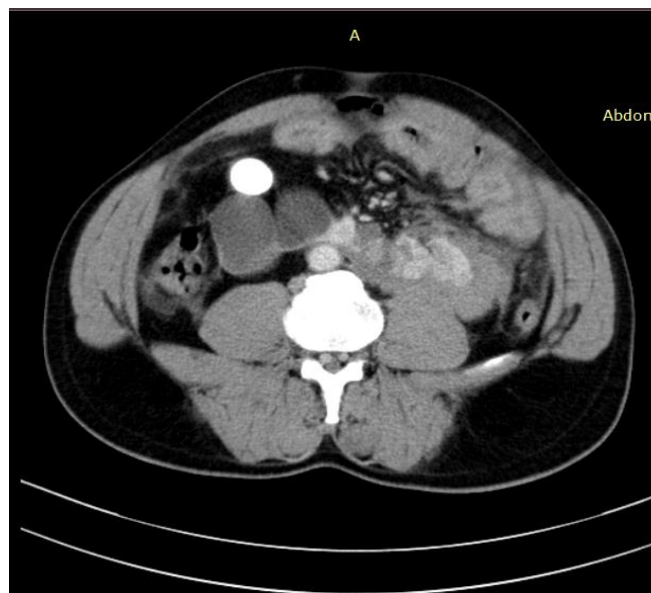


Fig 3: Axial CT post contrast image at the upper isthmic level showing laceration of the left half of isthmus with peri nephric hematoma. The right half shows dilatation of pelvicalyceal system of the lower moiety and a calculus obstructing the dilated right upper ureter.

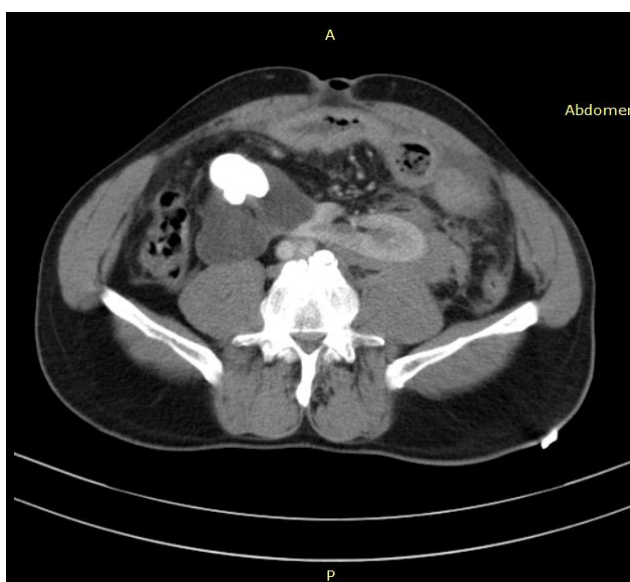


Fig 4: Axial CT post contrast image at the lower isthmic level showing dilated pelvicalyceal system of the lower moiety with staghorn calculus on the left side and normally enhancing parenchyma on the right side.



Fig 5: Coronal post contrast CT image showing the dilated pelvicalyceal system of the left lower moiety and laceration of the superior isthmus towards the right side.

DISCUSSION

Horse-shoe kidney is the commonest of renal fusion anomalies and has prevalence of 0.25%¹. Though the majority remains asymptomatic the condition predisposes to various complications and hence may present clinically.²

A horse-shoe kidney is prone for infection, calculus formation and hydronephrosis secondary to pelviureteric junction obstruction; apart from its location rendering the kidney more susceptible to trauma.^{2,3} Calculus formation is considered secondary to urinary stasis and resultant infection due to the inherently abnormal pelviureteric junction or due to the abnormal ureteric course anterior to the isthmus and staghorn calculi are encountered

occasionally.⁴ Almost two third of the patients have associated genitourinary anomalies which include vesicoureteric reflux, duplex collecting systems, duplicated ureter, ectopic ureterocele, retrocaval ureter, cystic renal diseases like multicystic dysplasia and adult polycystic kidney disease, hypospadias, cryptorchidism, bicornuate uterus, and septate vagina.²

Bilateral partial duplication with right sided pelviureteric junction obstruction was illustrated in our case where the strategically located staghorn calculus meant that the upper moiety was selectively decompressed following trauma leaving the lower moiety distended and intact.

Further neoplasms like Wilm's tumor, transitional cell carcinoma and renal carcinoid are found to have increased incidence among horse-shoe kidneys than in normal kidneys.⁵

CONCLUSION

Patients presenting with trauma to a previously unsuspected horse-shoe kidney is a rare occurrence and optimal management depends on early recognition. The knowledge of the common associations of the horse-shoe kidney enables the radiologist to estimate accurately the true nature and extent of injury thus providing the surgeon ample data to tackle the situation adequately.

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