

## Horseshoe kidney with UPJ obstruction and stones: A case report

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*Horseshoe kidney is a nonfatal anomaly in renal development. This is a case report of horseshoe kidney complicated with UPJ obstruction and renal calculi. The mechanism of obstruction, stasis, infection and resultant calculous formation, was assumed to be operable in this case. Dismembered pyeloplasty, stone removal and division of isthmus were performed in this case without any complications.*

**Key words :** *Horseshoe kidney, UPJ obstruction, Renal calculi, Infection.*

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ภาวะไตผิดปกติรูปเกือกม้าเป็นความผิดปกติของไตตั้งแต่กำเนิด รายงานผู้ป่วยที่มีภาวะไตผิดปกติรูปเกือกม้า ซึ่งมีภาวะแทรกซ้อนด้วยการอุดตันของรอยต่อระหว่างกรวยไตและท่อไต ร่วมกับมีนิ่วในกรวยไต การอุดตันทำให้มีการคั่งของน้ำปัสสาวะ ทำให้เกิดการติดเชื้อ และเป็นผลทำให้เกิดนิ่วในกรวยไตตามมา ซึ่งจำเป็นต้องทำการรักษาด้วยวิธีผ่าตัด การผ่าตัด Dismembered pyeloplasty เป็นวิธีการหนึ่งที่สามารถแก้ไขการอุดตันระหว่างกรวยไตและท่อไต พร้อมกับนำนิ่วออกมาในการผ่าตัดครั้งเดียวกัน

The picturesque term "horseshoe kidney" describes two kidneys fused over the spine in the midline, usually at the lower pole. This congenital malformation was first recognized in an early autopsy study by De Carpi in 1552. Other associated urological findings which may occur in patients with horseshoe kidney are UPJ obstruction, ureteral anomaly, multicystic kidney, neoplasm and stones.

### Presentation

A 34 - year - old woman was admitted to a private hospital one month prior because of a month long upper urinary tract infection in which ultrasound showed a marked right hydronephrosis from UPJ obstruction or an obstruction from the renal calculi (Figure 1). The IVP revealed a 22 - mm diameter stone in the right renal pelvis with a marked right hydronephrosis with thinning of the renal cortex and malrotation in the right kidney. A prominent renal pelvis of the left kidney and malrotation was also



Figure 1. Ultrasound, marked right hydronephrosis with stone.

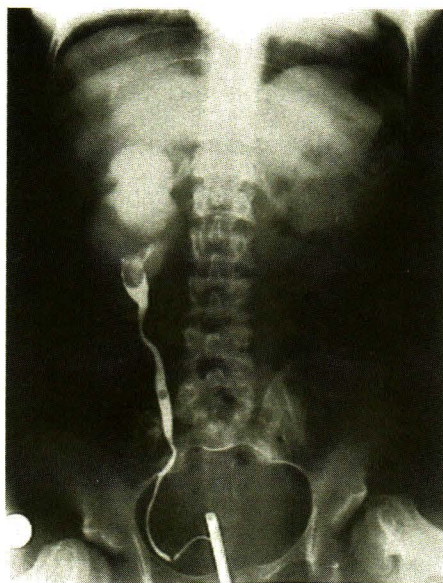
noted. Once her clinical status had improved, She asked to be transferred to a government hospital because of financial considerations.

She had no other underlying diseases and had normal growth development. Physical examinations revealed a healthy female shorter than average height but rather obese. An abdominal mass was palpable at both sides of the umbilical region with an estimated size of 8 cm. on each side. Blood count was normal. BUN and creatinine were 12 and 0.8 respectively. Urine analysis was normal.

Retrograde pyelogram (RP) revealed a narrowing right UPJ of the right side with a renal pelvic stone 22 cm. in diameter and a malrotation of both pelvicolalyceal systems (Figure 2). No UPJ obstruction or stones were found in the left side (Figure 3). The renal scan showed a horseshoe kidney with an abnormal accumulation in the upper tract of her right kidney.

An operation to remove the stone and correction of the UPJ obstruction was carried out through a lower midline transperitoneal incision. A horseshoe kidney was found with the left and right kidneys joined at the lower pole by a 1.5 centimeter parenchymatous isthmus. A right hydronephrosis with a thinning of cortex and high insertion of the right ureter to the renal pelvis causing an UPJ obstruction was discovered. No obstruction was found in the UPJ on the left side kidney.

A dismembered pyeloplasty with removal of stone were performed leaving a 6 Fr. J - catheter as an internal stent. A division of isthmus was also done. A penrose drain was inserted and the abdomen was closed in the usual manner.



**Figure 2.** Retrograde pyelography, right UPJ narrowing with stone.



**Figure 3.** Retrograde pyelogram, horseshoe kidney without stone in left side.

The pathological report stated that the right renal pelvis was dilated with chronic and acute inflammation. A follow-up ultrasound done one month post-operative still showed a marked right hydronephrosis but no residual stones and no perinephric collection. The double J - internal stent was then removed.

### Discussion<sup>(1-3)</sup>

A horseshoe kidney is one of the most common renal anomalies and is the most common form of fusion anomaly. The incidence is 1 in 400 to 1 in 1,800 persons and is more common in males. The abnormality usually develops in the fetus between the fourth and sixth weeks of gestation. It can be associated with anomalies in other systems and is often complicated by hydronephrosis, infection, or renal calculi,

Renal calculi have been reported in as many as 20 % of horseshoe kidney cases, but the exact cause is unknown. It is felt that increased incidence

may be due to abnormal drainage of urine, which may be caused by a high insertion of the ureter or the anterior crossing of the ureter over the renal substance. The possibility of associated metabolic abnormality in patients with horseshoe kidneys has also been noted.

Horseshoe kidney is compatible with life with less than 25 % of such patients requiring surgery for calculous or obstruction.

Horseshoe kidney with stones can be treated by percutaneous surgery. Because of their low position in the abdomen and the anterior location of the collecting system, if a patient is obese, the position of kidney may be too anterior or, if the stone is situated in the medial calyx at the lower pole, PCNL may not succeed. ESWL may fail in the same situation because stones in the medial calyx which are overlying the spine could prevent the shock waves from reaching them, and the stones may be too far forward for the focal point of the machine to reach them.

Today, open surgery should only be performed when there is definite outflow obstruction and the level of UPJ documented by a positive diuresis renogram. When open stone surgery is the only option, it is usually combined with pyeloplasty.

Division of the isthmus, however, was often believed to be necessary in conjunction with pyeloplasty for obstruction to improve drainage. Symphysiotomy as an isolated procedure is not frequently performed today because of the position of the kidneys, the cross of ureter and the effect on drainage are not significantly altered. The benefits of surgery do not appear to outweigh the associated risk.

Percutaneous endopyelotomy has been reported to be an effective and safe treatment for UPJ obstruction in horseshoe kidney.

We offered open surgery in this case because of limitations of instruments.

### Conclusion

In horseshoe kidney, ESWL or percutaneous

nephrolithotomy may be considered if stone burden is small and there is no UPJ obstruction. Open surgery is the only treatment option that allows stone removal in combination with pyeloplasty.

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