Horse-Shoe Kidney, Duplicated Kidney and Uretero-Pelvic Junction Obstruction in a Child

Hong-Lin Cheng, M.D.

Department of Urology, National Cheng Kung University Medical College and Hospital, Tainan, Taiwan; E-mail: chenghl@mail.ncku.edu.tw

BRIEF HISTORY

An 8-month-old boy was detected to have prenatal hydronephrosis at the gestation age of 20 weeks. After delivery, he underwent a series of examinations including renal ultrasonography, computerized tomography (CT) scan, antegrade pyelography and cystoscopy. In summary of these results, these tests depicted a horse-shoe kidney with right duplicated hydronephrotic kidney and uretero-pelvic junction (UPJ) obstruction in the lower moiety.

IMAGING STUDY

Transverse sections of the CT scan revealed the lower moiety of right kidney with hydronephrosis directed to anterior lateral aspect, and bilateral renal parenchymas fused in the midline (Fig. 1), and the upper moiety of right kidney with hydronephrosis faced to anterior medial aspect. Initial antegrade pyelogram revealed the ureter of upper moiety drained into renal pelvis of lower moiety, left kidney communicated with the renal pelvis of right lower moiety through a small channel, but the ureter of lower moiety was not visualized (Fig. 2).

MANAGEMENT

Under the diagnosis of right UPJ obstruction, dismembered pyeloplasty was performed with a 3 Fr. ureteral catheter stenting through percutaneous nephrostomy at the age of 5 months (Fig. 3) . At the age of 8 months, a repeat antegrade pyelogram revealed contrast media flowed into the ureter of right lower moiety with a wide opening of UPJ (Fig. 4). The boy was followed up with a good condition for 5 months.

COMMENTS

Horse-shoe kidney, usually incidentally detected, occurs in 0.25% of the population [1]. Abnormal fusion of bilateral renal parenchyma accounts for this kidney malformation [2]. It is usually associated with UPJ obstruction resulting from high insertion of the ureter into renal

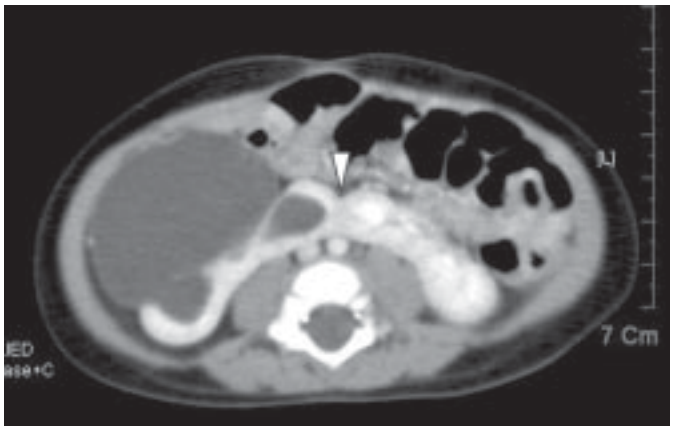

Fig. 1. Transverse section of computerized tomography (CT) scan showing right and left renal parenchyma fused in the midline (arrow head).

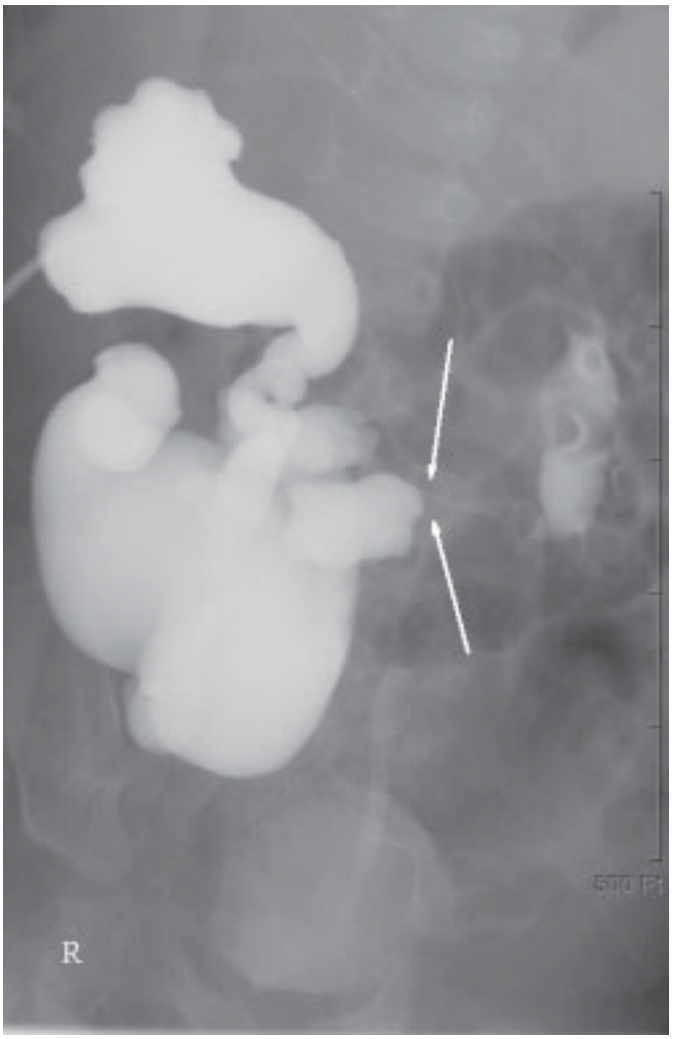

Fig. 2. Antegrade pyelogram demonstrating right and left kidney communicating through a small channel with faint contrast media (arrows) and right lower moiety ureter not appearing.

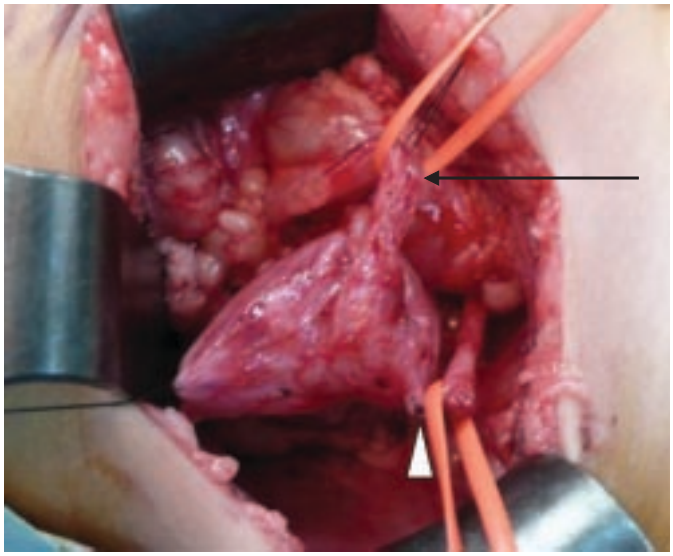

Fig. 3. Through right lower flank incision and retroperitoneal approach, it revealed right upper moiety ureter (arrow) inserted into lower moiety renal pelvis and right lower moiety uretero-pelvic junction (UPJ) (arrow head) was narrowed.

pelvis and duplication of the ureter, with an ectopic ureter resulting in urinary incontinence [3,4]. The kidney of this child consists of three parts joining together: left kidney with vertical axis and medial orientation, right upper moiety with vertical axis and medial orientation, and right lower moiety with horizontal axis and anterior orientation.

However, the type of UPJ obstruction in this case is different from the common type of high insertion ureter in the horse-shoe kidney.

REFERENCES

1. Campbell MF: Anomalies of the kidney, In: Campbell MF, Harrison JH, eds: Urology, vol 2,3rd ed. Philadelphia, WB Saunders, 1970, pp 1447-1452.
2. Bauer SB: Anomalies of the upper urinary tract, In: Campbell Urology, vol 3, 8th ed, WB Saunders, 2002, pp 1903-1908.
3. Whitehouse GH: Some urographic aspects of the horseshoe kidney anomaly: A review of 59 cases. Clin Radiol 1975; **26**:107-114.
4. Zondek LH, Zondek T: Horseshoe kidney in associated congenital malformations. Urol Int 1964; **18**:347-356.

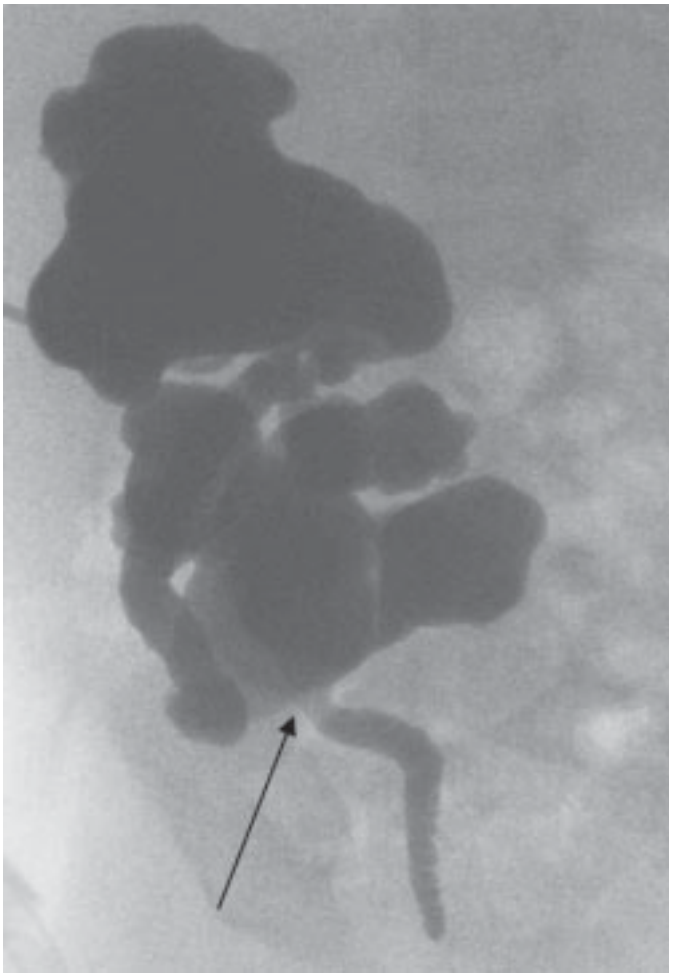

Fig. 4. After operation, antegrade pyelogram revealed contrast media drained into right lower moiety ureter through the wide opening of uretero-pelvic junction (UPJ) (arrow).