



A horseshoe kidney with partial duplex systems

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ABSTRACT

During routine dissection, we identified a horseshoe kidney arrested inferior to the inferior mesenteric artery in a middle-aged male cadaver. On further dissection, the kidneys were fused inferiorly, both hila were wide and the kidneys had bilateral duplicated renal arteries and ureters. Horseshoe kidneys could be associated with bilateral duplex systems. © IJAV. 2011; 4: 55–56.

Key words [horseshoe kidney] [partial duplex systems]

Introduction

Horseshoe kidney is the most common fusion abnormalities in the kidney and occurs in 1 per 400 people with the male:female ratio of 2:1 [1–3]. Horseshoe kidneys may be a result of teratogenic factors, which may also be responsible for the known increase in the incidence of related congenital anomalies and nephroblastoma [4]. Horseshoe kidney is a non-fatal anomaly of renal development that often associated with hydronephrosis and renal calculi [5,6]. Furthermore, tumors that arise from the bridge of a horseshoe kidney may mimic the symptoms of an intra-abdominal disease process [4].

Horseshoe kidneys may occur as an isolated entity, but approximately a third are associated with other congenital anomalies [7]. The combination of horseshoe kidneys with bilateral ureteral duplication is a very rare entity. Only two cases have been reported till now [8,9]. We present a case of a horseshoe kidney with partial duplex systems.

Case Report

During the routine first year medical students anatomy dissection, we identified a horseshoe kidney in a 40-year-old male cadaver who had succumbed to septicemia. The kidney was retroperitoneal, with the bridge at the L2 vertebral

body level. We dissected the kidney, aorta, inferior vena cava, ureters and bladder in situ exposing their anatomy. We thereafter separated the inferior vena cava and the aorta, removing the whole horseshoe kidney for further dissection and photography (Figure 1).

The kidneys were fused inferior at their inferior poles just below the inferior mesenteric artery (IMA). The hila were wide and amorphous in both kidneys. There were two ureters that fused into one at the lower poles of both kidneys. Each kidney had a superior and inferior renal artery. The renal veins were duplicated on the right and while there was a single vein on the left. There were no anomalies in the aorta, inferior vena cava and the urinary bladder. There were no other gross variations in the cadaver.

Discussion

This is the second horseshoe kidney to be dissected by our students. We however highlighted this particular horseshoe kidney with partial duplex systems in the ureter, arteries and veins because it is a very rare congenital anomaly. Keskin et al. reported a horseshoe kidney with duplication of the ureters [9]. In their case, the vessels were not duplicated. This report is therefore the first case of a duplicated renal vessels and upper collecting systems which fuse at the inferior poles of both kidneys.

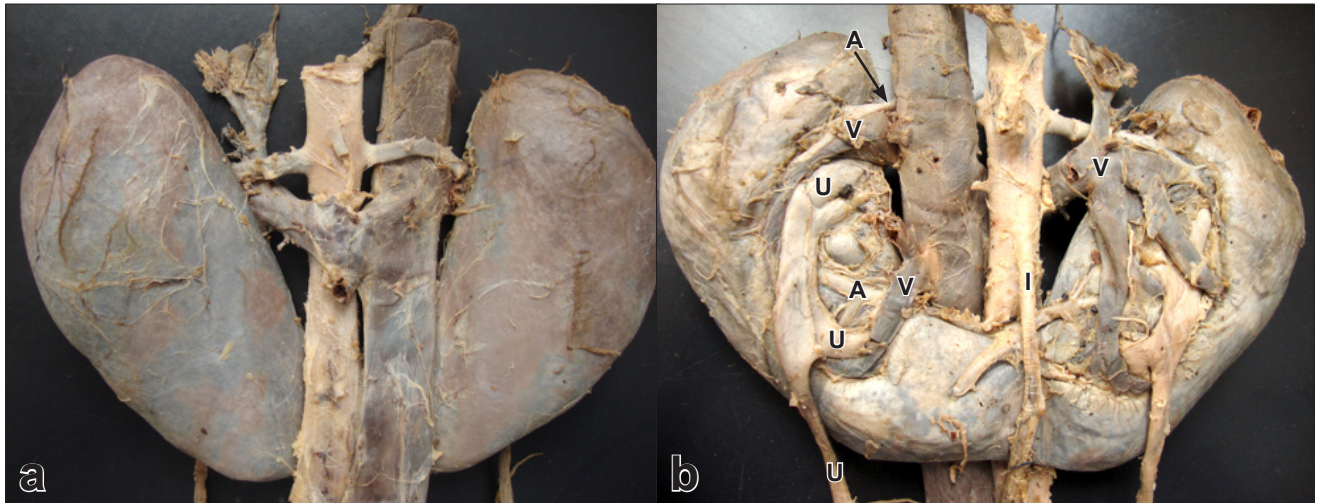


Figure 1. **a)** Posterior view of the horseshoe kidney. **b)** Anterior view of the horseshoe kidney. A horseshoe kidney with a wide hilum, fused inferiorly, below the *inferior mesenteric artery (I)* with double renal arteries (A). There are two renal veins (V) on the right with a single renal vein (V) on the left.

Careful attention to the anatomy, variant vasculature and drainage from renal pelvis, could assure good postoperative outcomes during kidney surgery, transplants, surgical and endovascular procedures on the aorta in an individual with horseshoe kidneys [10–13]. Knowledge of this variant

anatomy will therefore be important in diagnostic and interventional procedures on a patient with such a kidney.

In conclusion, clinicians should be conscious of partial duplex systems in horseshoe kidneys, which may pose a diagnostic and interventional challenge.

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