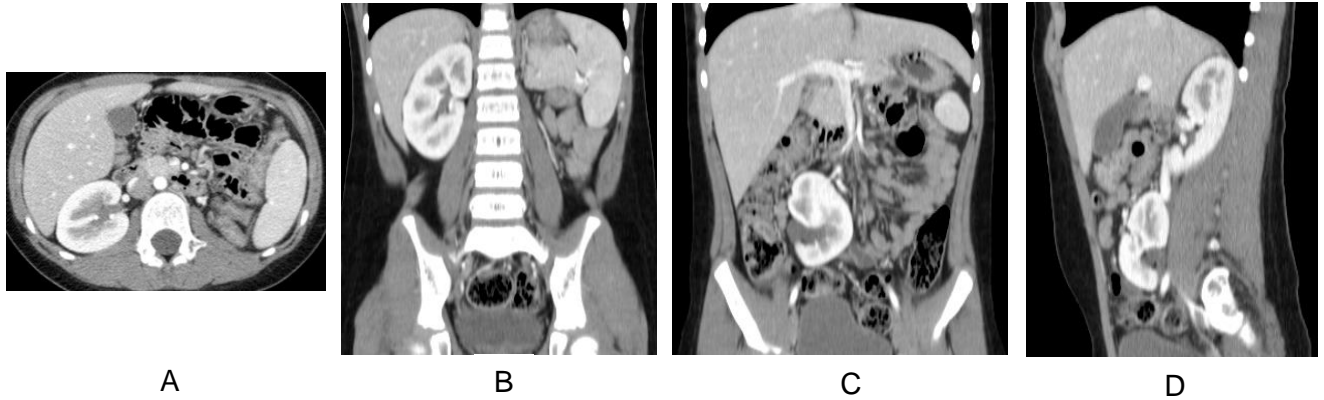


CROSSED RENAL ECTOPIA



Case #2. A 6-year old female came in for recurrent urinary tract infection. Work-up was done which included a contrast-enhanced CT scan.

Figures A and B appear to show a missing left kidney. However, figure C and D demonstrate that the left kidney is ectopically located to the right of midline, inferior to the right kidney, and is malrotated. No definite parenchymal fusion is observed. These are consistent with crossed renal ectopia.

Ectopic kidneys are often asymptomatic but may present with ipsilateral vesicoureteral reflux (VUR), ureteropelvic (UPJ) obstruction, and/or urolithiasis.

Embryologically, the kidneys are initially located inferiorly within the pelvis, but as the abdomen grows, the kidneys “ascend” and rotate 90°. By the 9th week of gestation, the kidneys attain their final position in the retroperitoneum near the adrenal glands.

Congenital anomalies of the urinary tract are common. Crossed renal ectopia is seen in 1:7500 children, and affects boys more often than girls. Approximately 85% of crossed kidneys are fused and encompassed by a common renal fascia. Crossed fused renal ectopia is a common fusion anomaly, second only to horseshoe kidneys.

An ectopic kidney can lie anywhere along the course of ascent. Most ectopic kidneys are located in the pelvis. Less commonly, it may cross the midline (crossed ectopia) such as in this patient. Thoracic kidneys have been reported but very rare.

On imaging, ultrasound shows an empty renal fossa, and the kidney may or may not be found depending on the status of the bowels. Cross-sectional imaging will easily identify the ectopia. Such kidneys may be nonrotated or malrotated, fused or unfused, and could have mild pelvicaliectasis, even in the absence of urinary tract obstruction or VUR. Doppler ultrasonography may help visualize the “urine jets” emanating from the ureterovesical junctions. CT and MRI will show two separate ureters, with the ureter from the lower kidney crossing the midline to insert into the bladder in its normal position.

The arterial supply and venous drainage of ectopic kidneys are usually anomalous, with renal arteries arising from nearby major arteries and renal veins draining to nearby major systemic veins.

References:

Caffey's Pediatric Diagnostic Imaging, 13th edition. Brian D. Coley, editor. Elsevier 2019.

Pediatric Radiology: Practical Imaging Evaluation of Infants and children. Edward Y. Lee, editor. Wolters Kluwer 2018.

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