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Crossed-fused renal ectopia: exploring the concerns of the asymptomatic

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INTRODUCTION

Crossed-fused renal ectopia is an anomaly where the kidneys are fused and located on the same side of the midline, with the opposite side empty. This was first described in 1654 by Dominicus Panarolus [1,2]. Another theory indicated that the anomaly may be due to arrest of kidney ascent, causing the kidneys to remain in the pelvis or meet on one side with subsequent fusion. Abnormal position of the umbilical artery influencing the cephalic migration of the kidneys to the contralateral side following a path of least resistance has also been proposed to lead to cross-fused renal-ectopia [3].

It becomes a single renal mass when there is fusion, which occurs in 90% of the cases. However, the urinary collecting systems remain separate. Wilmer is credited with first categorising the fusion anomalies of the kidney (1938). McDonald and McClellan 1957 modified the classification to include crossed ectopia with fusion, crossed ectopia without fusion, solitary crossed ectopia and bilateral crossed ectopia [4]. The current classification used comprises (i) Unilateral fused kidney (inferior ectopia), (ii) Sigmoid or S-shaped kidney, (iii) Lump kidney, (iv) L-shaped kidney, (v) Disc kidney and (vi) Unilateral fused kidney (superior ectopia) [4]. The current case is a unilateral fused kidney (inferior ectopia). The incidence is known to be 1 in 2000 births [2] and more common in males compared to females (3:2) [1,4]. A left-to-right positioning

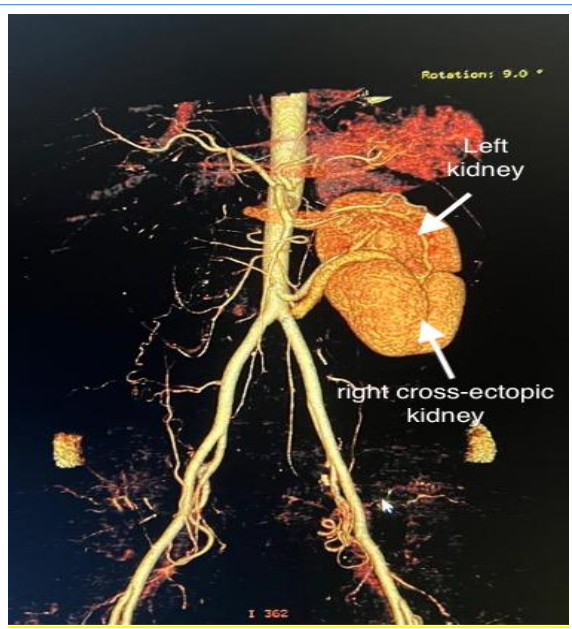

Figure 1. CT scan angiography showing a right to left crossed-fused renal ectopia (anterior-Posterior)

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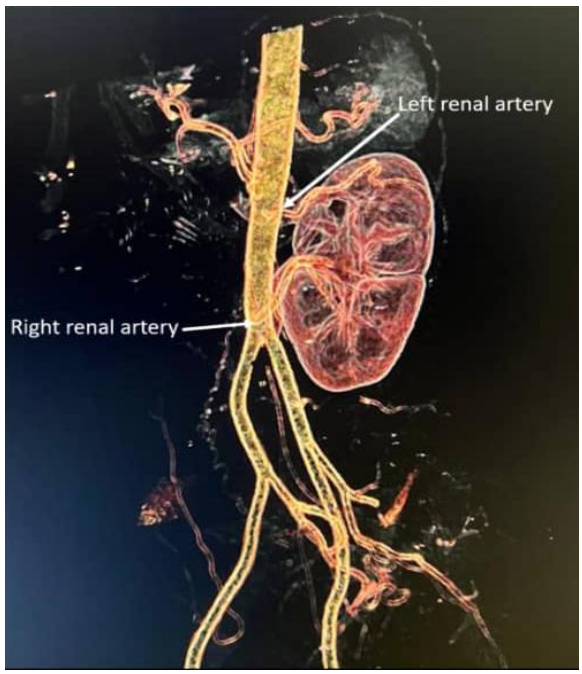

Figure 2. 3D Renal Angiography with Volume reconstruction (transparent) showing a right to left crossed-fused renal ectopia (Oblique)

is about three times more common compared to right-to-left [1,4]. This case of a right-to-left positioning is, therefore, rarer. About 50% of the patients present with symptoms such as urinary tract infection, hydronephrosis, and calculi formation [2,4]. It may also be associated with other urinary system abnormalities, such as vesico-ureteral reflux and pelvi-ureteric junction obstruction [3,5]. Clinically, most cases present in the paediatric age group.

The above patient was a 38-year-old female patient with an incidental finding on ultrasound of a crossed-fused left renal ectopia (fused kidneys, an anteriorly located notch, and differently oriented two collecting systems). She was not hypertensive and had normal renal function. A follow-up contrast-enhanced abdominal CT scan with CT angiography was performed to characterise it completely (Figures 1, 2 and 3). CT scan with CT angiography is considered the imaging modality of choice for the condition [4,6].

Magnetic resonance imaging could also serve as a useful alternative. These images are important when surgery is being contemplated due to variations in blood supply and the collecting systems. In this present case, the patient was adequately educated and reassured in accordance with standard practice, on possible complications that could arise and when to

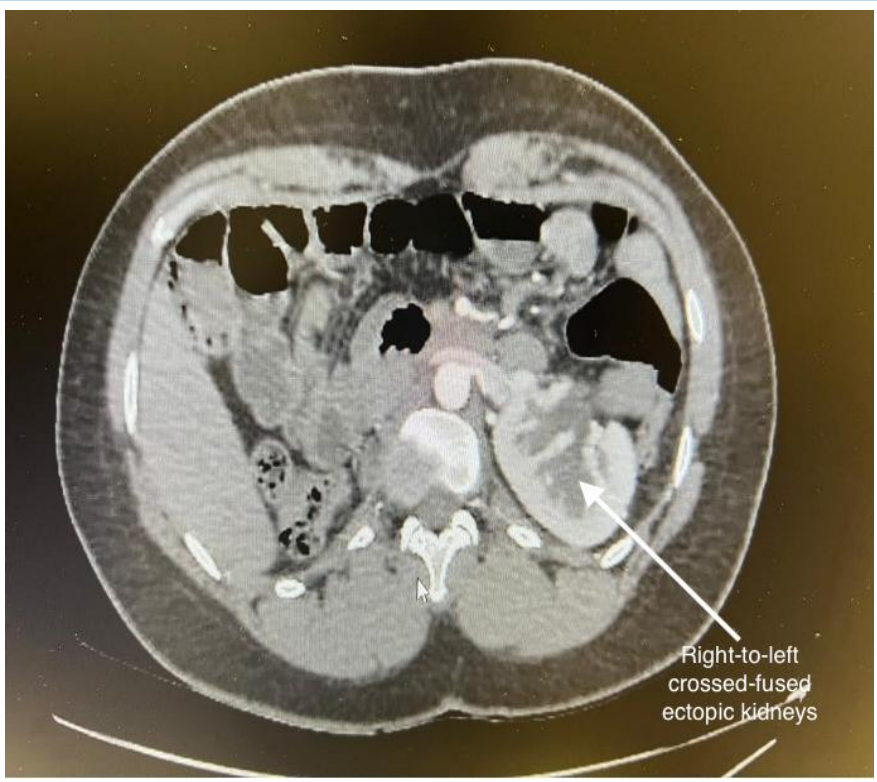

Figure 3. Contrast-enhanced abdominal CT scan showing a right-to-left positioning of the crossed ectopic kidneys with an empty right renal fossa.

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report back to the hospital for review. Indeed, it is important that patients with crossed-fused renal ectopia are educated on the possibility of developing urinary tract infections (especially if there is vesico-ureteric reflux), hydronephrosis from obstruction to urine flow and calculi formation. It may be necessary to exclude other abnormalities of the urinary system, such as vesico-ureteral reflux and pelvi-ureteric junction obstruction. Invariably, such medical conditions require long-term follow-up, as malignancies involving ectopic kidneys have been reported [7].

DECLARATIONS

Ethical consideration
Written informed consent was obtained from the study participant.

Consent to publish
All authors agreed on the content of the final paper.

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Competing Interest
The authors declare no conflict of interest.

Author contribution
All authors contributed equally to the study's conceptualisation, design, data collection, analysis, drafting and finalisation of the manuscript.

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Availability of data
Data is available upon request to the corresponding author.

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