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A Large Calculus in Crossed Renal Ectopia without Fusion: A Case Report

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ABSTRACT

Crossed renal ectopia is a congenital malformation that occurs either in fused or non-fused form. Only 10% are of the non-fused variety. Most cases remain undiagnosed because they remain asymptomatic. We report a case of crossed left-to-right renal ectopia with stones and successful management.

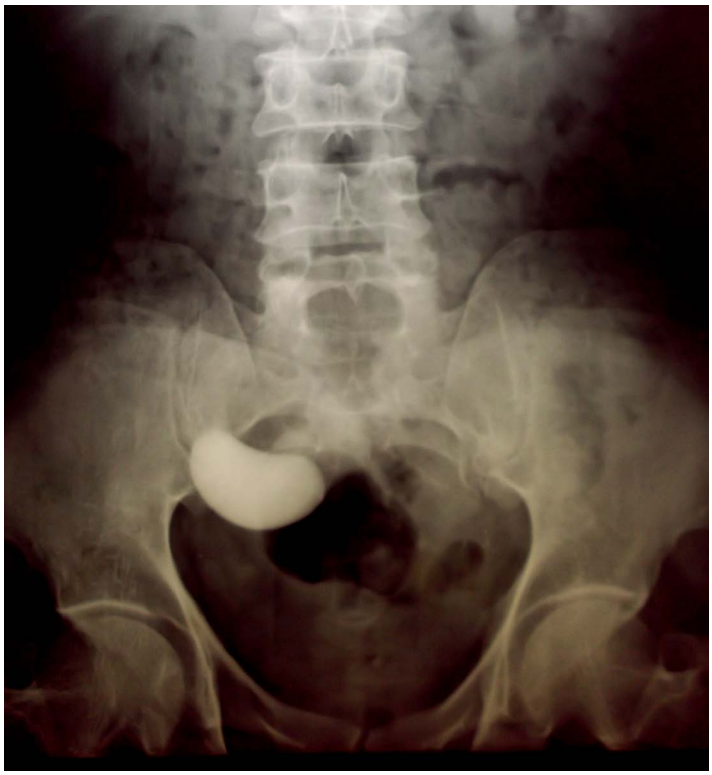
INTRODUCTION

Crossed renal ectopia is a congenital malformation that occurs either in fused or non-fused form. Only 10% are of the non-fused variety. Most cases remain undiagnosed because they remain asymptomatic [1]. We report a case of crossed left-to-right renal ectopia with stones and successful management.

CASE REPORT

A 50-year-old male presented with complaints of right lower abdominal pain for 2 years. The pain was dull and intermittent. There was no history of hematuria, graveluria, increased urinary frequency, or urgency. There was a palpable lump in the right lower abdomen. Urinalysis revealed microscopic hematuria, while the urine culture was sterile. His hematological and biochemical profiles were normal. The abdominal ultrasound revealed a large calculus about 4 cm x 4 cm in the left-to-right crossed ectopic kidney, casting a posterior acoustic shadow. The right kidney was malrotated. A plain abdominal X-ray showed a large radio-opaque shadow over the lower border of the right side of the ala of the sacrum (Figure 1). Intravenous urography revealed a normally functioning, malrotated orthotopic right kidney with a non-dilated pelvicalyceal system. The left-to-right crossed ectopic kidney showed a large calculus with a dilated pelvicalyceal system (Figure 2). Computed tomography showed a left-to-right crossed ectopic kidney with dilated pelvicalyceal

Figure 1. Plain abdominal X-ray showing a heart-shaped radio-opaque shadow over the lower border of right side of the ala of the sacrum.



KEYWORDS: Crossed ectopia, kidney without fusion, calculus

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system and malrotated orthotopic kidney (Figure 3 and Figure 4). A micturating cystourethrogram showed no reflux. Cystoscopy showed normal bilateral ureteric orifices.

Bilateral ureteric catheterization was done. Right pyelolithotomy was done in the supine position with a 300 tilt using an extraperitoneal approach. The overlying fascia was opened with sharp dissection, and peripelvic dissection was carried out. The ureter of the orthotopic right kidney was present just lateral to the pelvis of the crossed ectopic kidney. A liberal pyelolithotomy was done. A stone (4 cm x 4 cm x 2 cm) was delivered with little manipulation (Figure 5 and Figure 6). A DJ stent was placed in the left-to-right cross-ectopic ureter (Figure 7). The postoperative period was uneventful.

DISCUSSION

Simple renal ectopia refers to a kidney that is located on the proper side of the abdomen but is abnormal in position. Crossed

Figure 2. Intravenous urography revealed malrotated orthotopic right kidney and crossed ectopic kidney with hydronephrosis.

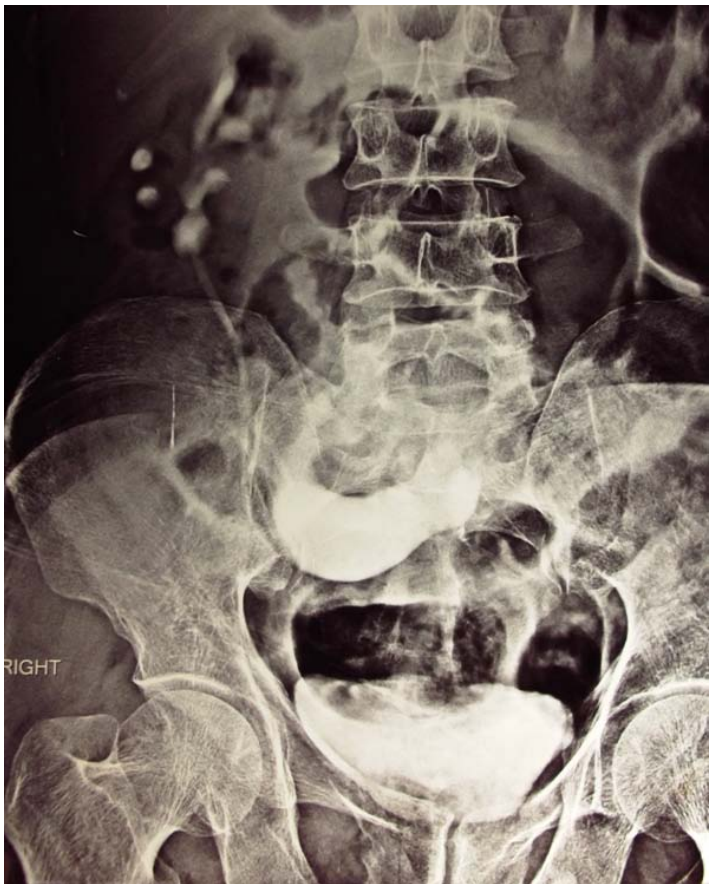


Figure 4. Computed tomography showed a left-to-right crossed ectopic kidney.

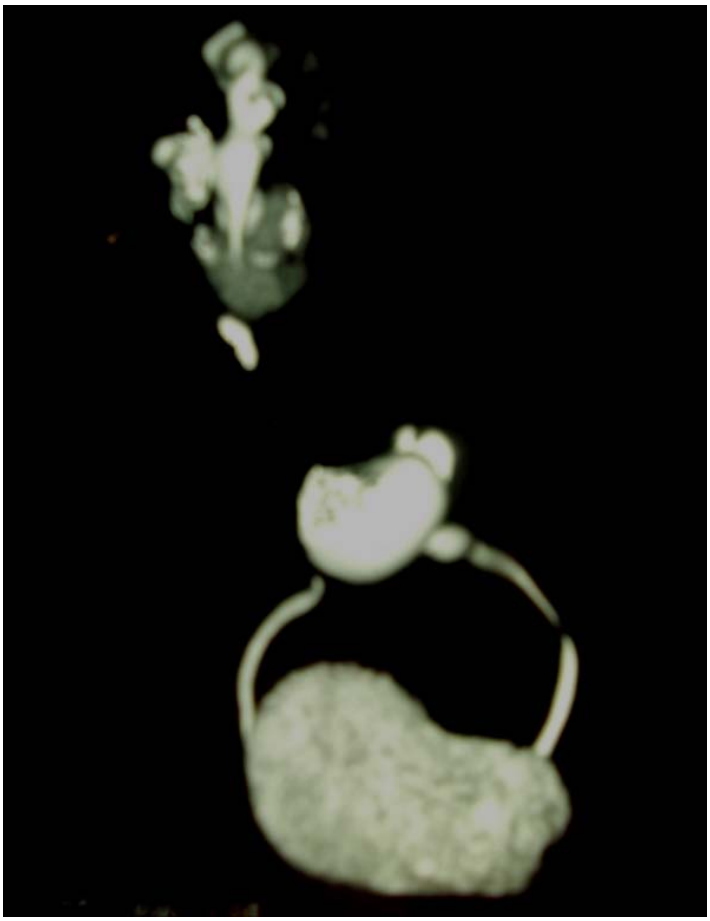


Figure 3. Computed tomography showed a left-to-right crossed ectopic kidney with a dilated pelvicalyceal system.

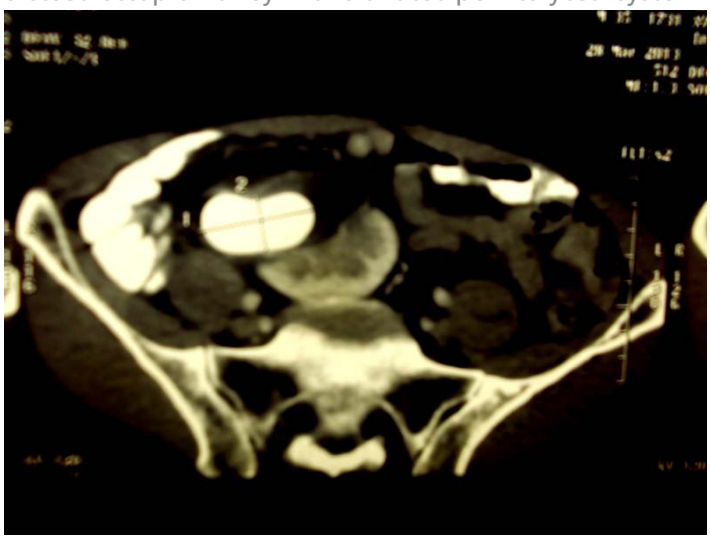


Figure 5. Operative photograph showed a heart-shaped calculus.

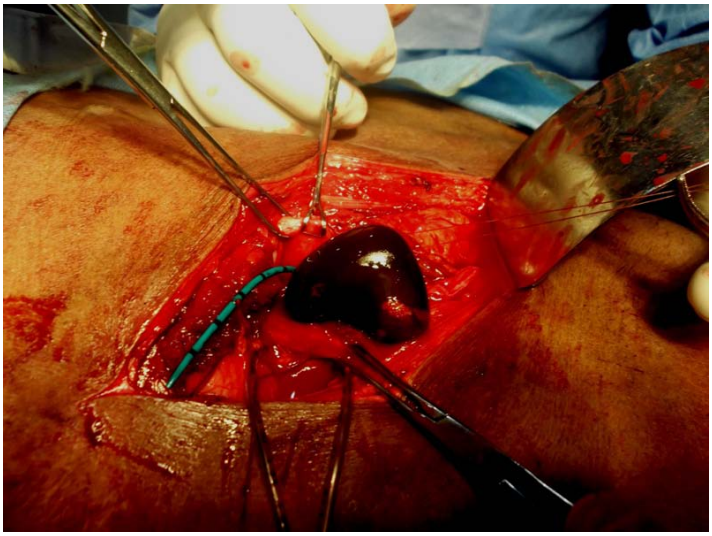


Figure 6. A heart-shaped stone.

renal ectopia on the other hand refers to a kidney that has crossed from left to right or vice versa and was first described by Pamalorus in 1954 [2,3].

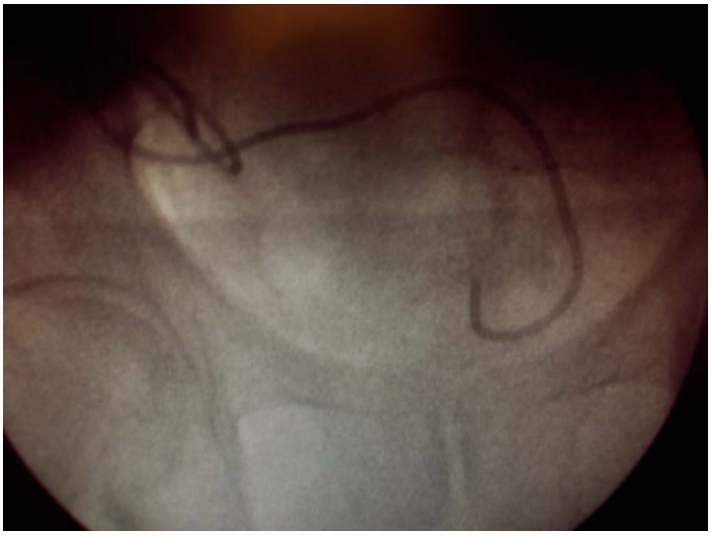
Fusion anomalies of the kidney were first categorized by Wilmer, but McDonald and McClellan re-fixed and expanded this classification to include crossed ectopia with fusion, crossed ectopia without fusion, solitary crossed ectopia, and bilaterally crossed ectopia [4].

A total of 62 patients with crossed ectopia without fusion have been reported [5]. This constitutes 10% of all crossed ectopic kidneys. The anomaly occurs more commonly in males, with a ratio of 2:1, and left-to-right ectopia is 3 times more common than right-to-left ectopia. The un-fused variety has been reported as 1 in 75,000 autopsies [6].

The cause of crossed renal ectopia is not known. Wilmer suggested that crossover occurs because of pressure from abnormally placed umbilical arteries that present cephalad migration of the renal unit, which then follows the path of least resistance of the opposite side. Genetic influence may play a role because familial inheritance of crossed renal ectopia has been reported [7].

The ectopic kidney is inferior, with either a diagonal or horizontal position with an anteriorly placed renal pelvis. A variable but definitive distance usually separates the 2 kidneys and each one is surrounded by its own Gerota's fascia. In every case of crossed renal ectopia without fusion, the ureter from the normal kidney enters the bladder on the same side,

Figure 7. The postoperative photograph showed a DJ stent in situ.



whereas that of the ectopic kidney enters the bladder on the contralateral side [8].

Most cases of crossed renal ectopia are asymptomatic and noted incidentally during autopsy, screening tests, or during investigation for unrelated causes [1,6]. Urinary tract disease such as vesicoureteral reflux, urinary tract infections, ureteroceles, renal calculi, and renovascular hypertension can coexist with ectopic kidneys, which are likely to be complicated by ureteropelvic junction obstruction because of their frequent abnormal shape, malrotation, and aberrant vasculature [9].

Other congenital anomalies may accompany crossed renal ectopia such as unilateral agenesis of the fallopian tubes and ovaries, skeletal abnormalities, an imperforate anus, and cardiopulmonary anomalies [9]. There was no congenital anomaly in our patient.

The diagnosis is made by ultrasonography and intravenous urography. An ultrasound can detect concomitant urinary pathology and cystic changes [10]. Anatomic delineation is best achieved by intravenous urography. Besides function, it can give an idea about ureteric displacement [11]

Other imaging modalities such as retrograde and intraoperative antegrade ureterography, renal cortical scintigraphy using 99m Tc-dinercaptosuccinic acid scans, computed tomography, and magnetic resonance imaging have been shown to be useful in the diagnosis of renal ectopia and ectopic ureters [12]. Generally, no treatment is needed for an ectopic kidney if renal function is normal and no complication such as urethral tract infection, stones, or obstruction are found. Even in the absence of these, patients need to be followed up closely [3].

Calculi in renal ectopia could be managed with shock wave lithotripsy (SWL), ureteroscopy, percutaneous nephrolithotomy, laparoscopic-guided percutaneous nephrolithotomy, laparoscopic pyelolithotomy, and open pyelolithotomy [13-17].

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