

Case Report



# Management of an Iatrogenic Injury in a Crossed Ectopic Kidney Without Fusion

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Crossed renal ectopia is a condition in which a kidney is located on the side opposite of its ureteral insertion. Ninety percent of crossed ectopic kidneys are fused to their ipsilateral uncrossed renal unit. Crossed renal ectopia without fusion is rare, with only 62 patients reported in the literature to date. These kidneys may suffer iatrogenic injury during an unrelated surgical intervention. The injury, unless self-limiting, may necessitate the removal of the ectopic kidney. We present a unique case of a dual injury, renal as well as ureteric, in a crossed ectopic kidney without fusion that was successfully managed without surgical excision.

**Keywords:** Acute renal injury; Congenital abnormalities; Urogenital abnormalities

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## INTRODUCTION

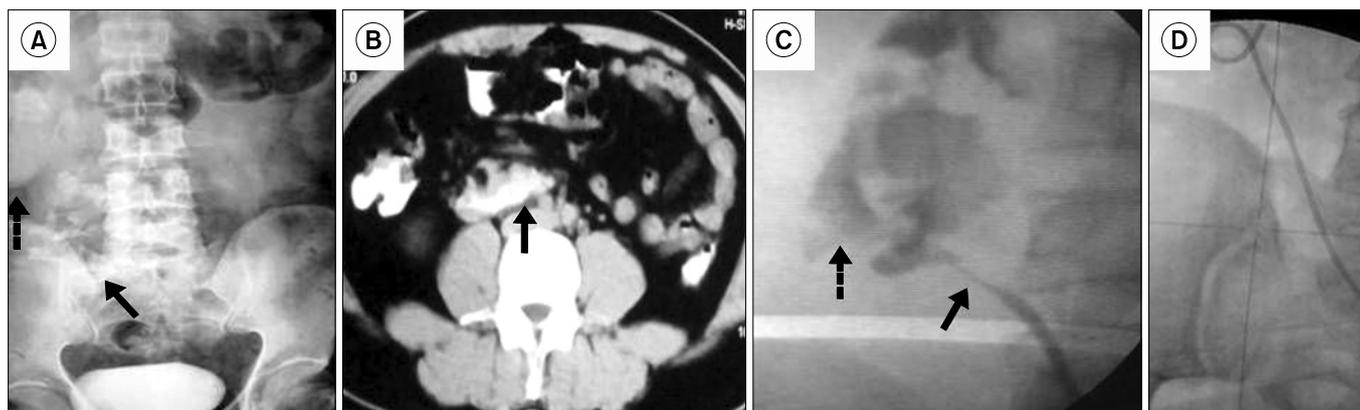
Crossed renal ectopia without fusion is a rare condition. These kidneys may suffer iatrogenic injury during an unrelated surgical intervention. The injury, unless self-limiting, may necessitate the removal of the ectopic kidney [1]. We present a unique case of a dual injury, renal as well as ureteric, in a crossed ectopic kidney without fusion that was successfully managed without surgical excision.

## CASE REPORT

A 40-year-old male patient was admitted to the Department of Urology, Calcutta National Medical College, with a complaint of clear fluid discharge from an intra-abdominal drain placed on the right side of his lower abdomen. He had a history of an open appendectomy done at a primary health care center 3 weeks previously for clinically suspected acute appendicitis. According to the operating surgeon's brief, there was a mass in the right iliac fossa. The appendix was inflamed and was densely adhered to the mass. The surgeon was able to dissect out the appendix with difficulty. During the dissection, the mass sustained an injury that resulted in clear discharge through it. The surgeon suspected a ureteral injury but was unable to repair it; hence, he inserted a drain and referred the pa-

tient to us for further management.

On examination, the patient was anxious but his clinical parameters, hemogram, renal function tests, and serum biochemistry were normal. The patient had no significant medical or surgical history apart from the present episode. There was an output of approximately 500 to 600 mL per day from the abdominal drain. Analysis of the drain fluid revealed a high creatinine level, which suggested that the output was urine. Ultrasound examination of the abdomen could not delineate the left kidney. The right kidney and ureter were normal on the intravenous pyelogram (IVP) but the left kidney was not seen in its anatomical position. On careful examination of the IVP, a faint shadow with areas of contrast excretion could be seen on the right side, especially in late films at the level of the fourth and fifth lumbar vertebrae (Fig. 1A). Considering the possibility of crossed renal ectopia, contrast enhanced computed tomography (CECT) was performed, which confirmed the diagnosis (Fig. 1B). The ectopic left kidney was small and showed excretion of contrast with evidence of hydronephrosis. The two renal units were not fused with each other. Cystoscopy revealed a normally placed left ureteric orifice. A retrograde pyelogram (RGP) on the left side showed a hydronephrotic kidney with distorted pelvicalyceal system. There was extravasation of the contrast from the kidney. There was also an area of narrowing in the ureter sugges-



**FIG. 1.** (A) Intravenous pyelogram showing the normally placed right kidney (dotted arrow) and the crossed ectopic kidney with excretion of contrast at the level of the fourth and fifth lumbar vertebrae (bold arrow). (B) Contrast-enhanced computed tomography scan showing the small, hydronephrotic ectopic left kidney (arrow) with excretion of contrast. (C) Retrograde pyelogram of the left side showing a hydronephrotic kidney with extravasation of the contrast from the kidney (dotted arrow). The ureteric narrowing is also seen (bold arrow). (D) Double J stent *in situ*.

tive of stricture, which presumably led to the hydronephrosis (Fig. 1C). The ureter above the narrowing was normal but tortuous. A micturating cystourethrogram did not show any reflux. The patient was diagnosed to have a dual injury, renal as well as ureteric.

A 5-Fr Double J (DJ) stent was placed in the ectopic kidney, albeit with some difficulty, under fluoroscopic guidance (Fig. 1D). The drain output decreased to 50 mL the next day. The drain was removed on the second postoperative day. Abdominal ultrasound, performed on the fifth postoperative day, did not reveal any abdominal collection. The DJ stent was removed in the sixth postoperative week. At the 9-month follow-up, the patient was doing well. The diethylene triamine pentaacetic acid (DTPA) scan performed in the follow-up period showed preserved renal function with prompt washout of the tracer with furosemide.

## DISCUSSION

A kidney located on the side opposite of its ureteral insertion is known as crossed ectopia [2]. The anomaly occurs more commonly in males, and left-to-right ectopia is three times as common as right-to-left ectopia. The embryological reason for crossed ectopia is not well understood. Abnormal umbilical arteries, ureteral abnormalities, induction of the contralateral nephronal anlage, malalignment, and abnormal rotation of the caudal part of the fetus have been postulated as possible causes [3-5].

Ninety percent of crossed ectopic kidneys are fused to their ipsilateral uncrossed renal unit. Crossed renal ectopia without fusion is rare, with only 62 patients reported to date. The uncrossed kidney is usually normal in size, anatomical position, and orientation, whereas the crossed, ectopic kidney lies inferiorly in a skewed position with an anteriorly placed pelvis. The two renal units are separated from each other by a variable distance, and each unit has

its own separate fascia of Gerota [6].

It is not unusual for crossed ectopic kidneys to remain undiagnosed throughout the life of a person, because they may function normally. They may be incidentally diagnosed when a patient is being evaluated for unrelated conditions [7]. In some cases, the ectopic kidney may be the cause of pain or urinary problems. Diagnosing a disease in such ectopic kidneys is often challenging. Ultrasonography, IVP, DTPA, CECT, and magnetic resonance imaging may be helpful in the anatomical as well as the functional evaluation of such kidneys [8]. Location of the ureteric orifices at cystoscopy supplemented by RGP may also be helpful in confirming the diagnosis. Owing to the rarity of this condition, it is not exceptional for a surgeon to be unmindful of this abnormality and to injure it during surgery. The injury may necessitate the removal of the ectopic kidney [1]. Ignjatovic et al. [9] also suggested that surgery in ectopic kidneys, if performed, should be done only once and should preferably be a nephrectomy. On the other hand, there are occasional reports of such injuries being managed conservatively [10].

In the case presented above, both the ectopic kidney and the ureter were injured during the appendectomy, leading to hydronephrosis and urinary leakage. To the best of our knowledge, this is the first case report of conservative management of a dual injury in a crossed ectopic kidney without fusion.

In conclusion, our case highlights that conservative management is possible in a crossed ectopic kidney without fusion and should be tried before contemplating surgery.

## CONFLICTS OF INTEREST

The authors have nothing to disclose.

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