LAPAROSCOPIC HEMINEFRECTOMY FOR CROSSED FUSED KIDNEY WITH INFERIOR ECTOPIA

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Summary.- OBJECTIVES: Crossed fused renal ectopia is a rare congenital anomaly. We report the case of a 3 year old boy with diagnosis of right crossed fused renal ectopia, history of recurrent urinary tract infection and previous failure of surgical treatment.

METHODS: Three year old boy with diagnosis of right crossed fused renal ectopia of the inferior moiety underwent a laparoscopic heminephrectomy of the inferior renal unit, due to severe hidronephrosis and recurrent urinary tract infections.

RESULTS: A laparoscopic right heminephrectomy of the inferior renal moiety was performed uneventfully. Operation room time was 200 minutes and there were no perioperative complications. Patient was discharged 18 hours after the procedure. After 5 years of follow up patient remains asymptomatic with good renal function.

CONCLUSIONS: The laparoscopic approach is an acceptable option to treat this anomaly, with all the advantages of minimally invasive surgery.

Keywords: Congenital anomaly. Crossed fused renal ectopia. Laparoscopic heminephrectomy.

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Accepted for publication: January 3\textsuperscript{rd}, 2009.
INTRODUCTION

Crossed renal ectopia constitutes an infrequent congenital malformation, its incidence is about 1/1350 to 1/2000 births. The anomaly occurs more commonly in males in a ratio 2:1 and left to right ectopia is seen three times more frequently. The unilaterally fused kidney with inferior ectopia is the most common variety. (1,2) Patients usually remain asymptomatic until 4a-5a decade and at this point they present with urinary infection, urolithiasis, abdominal mass or abdominal pain (2). There are three patterns of renal fusion: fused horseshoe kidney, laterally fused horseshoe kidney, and crossed renal ectopia. An embryogenic pattern has been described to explain the asymmetric models of renal fusion which might be explained by the effects that the lateral flexion and rotation of the hind end in the 4 to 5 mm embryo yield on the positions of the nephrogenic cords and wolffian ducts (3). Crossed renal ectopia has been associated with synchronous congenital anomalies in 50% of the cases, being anomalies of the urinary tract most frequent (4). Work-up diagnosis can be performed by abdominal ultrasound, computed tomography and intravenous urography, based on specific imaging characteristics (5).

CASE REPORT

A 3 year old male patient with complicated urinary tract infection with pyelonephritis was evaluated. Patient had previous history of complicated recurrent urinary infections and the diagnosis of kidney crossed fused ectopia and bilateral hydroureteronephrosis had been done at the age of 4 months. Surgical history included both, an uneventful cutaneous ureterostomy in 1998 and a Cohen ureteroneocystostomy in 2000. The follow-up studies revealed adequate evolution for three months after this last procedure.

Patient relapsed with urinary tract infection and a radiological work-up showed a right kidney crossed fused ectopia, with severe hydroureteronephrosis in the inferior moiety (Figure 1). Laboratory parameters and creatinine were normal. Laparoscopic heminephrectomy was indicated.

We performed the procedure with three ports and a 0 degrees 5 mm endoscope. Patient was placed in left lateral decubitus and 12 mmHg pneumoperitoneum was created with Veress technique. The first 5 mm port was placed at the umbilicus. Two more ports were inserted, a 12 mm port in the right sub-costal region and a 5mm port in the lower right quadrant area (Figure 2).

The steps performed laparoscopically were:

1. Reflection of the right hemicolon.
2. Identification and dissection of the dilated ureter and the laterally rotated pelvis. The dilated ureter had 20 mm of diameter, and continued with an equally dilated pelvis.
3. Identification, dissection and vascular control of the inferior moiety vessels. Both, the artery and vein coursed towards the iliac vessels. Titanium single load clips were used.
4. Resection of the inferior moiety. Clear demarcation of the isquemic area was visualized and adequate resection of the renal parenchyma performed with the harmonic scalpel. (Ethicon Endosurgery).

FIGURE 1. Radiological work-up showing crossed fused renal ectopia with severe hydroureteronephrosis.
5. Endoscopic evaluation of surgical field. Lower calyx opening was verified and repaired intracorporeally with 4-0 absorbable poliglactin monofilament at this point.

6. Specimen extraction through a 3 cm incision performed right upon the previous Pfannenstiel surgical incision (Figure 3).

Operative time was 200 minutes with an estimated blood loss of 100 cc. Postoperative was uneventful. Minimal analgesic therapy was needed. Regular diet was given and tolerated 6 hours after the procedure. Patient was discharged 18 hours postoperatively. After a follow-up of 5 years, patient remains asymptomatic, without urinary tract infection. An intravenous pyelogram verified normal upper pole moiety of the crossed fused ectopy (Figure 4).

DISCUSSION

The treatment of patients with crossed fused renal ectopia represents a difficult surgical task. Advances in laparoscopy enhance the surgical approach and provide us with means of performing complex procedures with optimum results (6). Previous investigators have successfully reported laparoscopic treatment of crossed fused renal ectopia (6, 7).

Stanley et al. (7) have reported a laparoscopic heminephrectomy of the upper moiety of a crossed fused renal ectopia with adequate results in a 18 years old patient. Pietrow et al. (6) described the first laparoscopic hand assisted removal of a severely diseased polycystic crossed fused kidney.

Andersen et al. (8) described the first laparoscopic nephrectomy of the lower kidney for crossed fused ectopia in a 12 year-old girl who presented with a grade V vesicoureteral reflux surgically treated with...
a Politano-Leadbetter ureteroneocystostomy 3 years before. Surgical indication was a reflux nephropathy, pyelonephritic scarring and persistent renal colic. A nephrectomy of the lower moiety was performed previous ureteral catheter placement, using a bipolar electrocautery. In our case, we did not use a ureteral catheter, and heminephrectomy was accomplished with a laparoscopic three ports technique. We also practiced another position in the surgical table and used ultrasonic shears for section of the renal parenchyma. We remark the advantages on cosmetic results of using preexisting incisions, to remove the specimen. As for anybody else, in children population, the use of minimally invasive surgery has become a reality.

REFERENCES AND RECOMMENDED READINGS
(*of special interest, **of outstanding interest)