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Laparoscopic Partial Nephroureterectomy for Duplex Kidney and Ureter with Megaureter Serving a Hydronephrotic Excluded Upper Pole: A Case Report

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ABSTRACT

INTRODUCTION: Complete duplication of the collecting system is one of the most common congenital urologic anomalies that should be oriented with nephroureterectomy when symptomatic with urinary tract infection or flank pain. Until recently, nephroureterectomy involved a flank incision with significant morbidity and prolonged recovery time. In the last few years, there have been a few reports of partial nephroureterectomy, particularly in the pediatric population.

CASE PRESENTATION: A 25-year-old woman presented to our consult with a history of recurrent right pyelonephritis and a right duplicated kidney and ureter associated with atrophy of the hydronephrotic upper-pole and dilation of the entire respective ureter. Voiding Cystourethrography showed no vesicoureteral reflux. She elected to undergo laparoscopic transperitoneal upper-pole nephroureterectomy. There were no postoperative complications, and the cosmetic result was excellent.

CONCLUSION: To our knowledge this is one of the few reports of laparoscopic partial nephroureterectomy done in adults. This seems to be a safe and effective technique to be performed in adults, with admirable cosmetic and functional results.

KEYWORDS: Laparoscopic, Partial nephroureterectomy, Duplex kidney, Megaureter

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INTRODUCTION

Duplex kidney and ureter is a developmental condition of incomplete fusion of the upper and lower poles of the kidneys. Additionally, an accessory ureteral bud creates complete duplication of the excretory system, with the upper ureter usually protruding into the bladder more medially and inferiorly than the lower ureter (Weigert-Meyer law). Many duplex kidneys are incidental findings and are not the cause of symptoms, although duplex kidneys are more prone to urinary infection, reflux, and obstruction. The upper ureter is more likely to be associated with ectopic insertion, ureterocele, or obstruction, whereas the lower ureter is frequently associated with vesicoureteral reflux (VUR).

Complete duplication of the collecting system should be oriented with nephroureterectomy when symptomatic with urinary tract infection or flank pain. Until recently, it involved a flank incision with significant morbidity and prolonged recovery time. However, since the first laparoscopic upper pole heminephrectomy by Jordan and Winslow in 1993 [1], there have been reports of partial nephroureterectomy by both the transperitoneal or retroperitoneal approaches, particularly in the pediatric population [2,3]. This is a condition that can often go unrecognized until adulthood, and patients are only proposed to surgery at older ages.

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case observation

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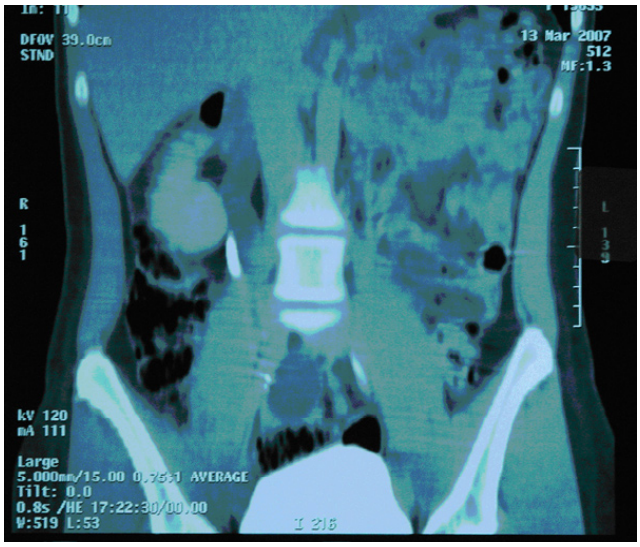

Figure 1. CT Abdomen showing Megaureter Serving a Hydronephrotic Excluded Upper Pole

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CASE REPORT

A 25-year-old woman with history of right pyelonephritis was referred to our consultation due to right duplicated kidney and ureter associated with ureterohydronephrosis of an atrophic upper-pole and respective ureter detected on an ambulatory renal ultrasonography. The patient had no current complaints, no palpable abdominal masses, and no family history of urologic disorders. CT Urography showed a right kidney and collecting system duplication with a severe hydronephrotic upper pole moiety and megaureter with no identification of an obstructive cause (Fig. 1). Voiding Cystourethrography showed no vesicoureteral reflux.

After discussing the benefits and risks of each therapeutic option, the patient elected to undergo laparoscopic transperitoneal partial nephroureterectomy. The patient was placed in left lateral decubitus. Pneumoperitoneum was achieved in a standard manner with a Veress needle, and four trocars were initially placed: a 10-mm trocar in the lateral border of the rectus at the level of the umbilicus to pass the endoscope, a 15-mm working trocar a third of the way between the umbilicus and the anterior superior iliac spine, a 5-mm working trocar 2 cm above the anterior superior iliac spine, and a working 10-mm trocar 3 cm under the costal margin at the mid-clavicular line. A 5-mm trocar was later placed lateral to the rectus muscle at the level of the 12th rib to introduce a hepatic retractor. The megaureter of the upper pole kidney was carefully dissected and followed by ligation with an endoscopic gastrointestinal automatic stapler (Endo-Gia) close to the bladder. The renal hilum was dissected, and the upper-pole renal artery and vein were ligated with clips. The duplicate ureter was transpositioned under the renal vascular pedicle. The upper kidney parenchyma was transected with Ultracision. No attempt was made to suture the renal capsule over the open parenchymal surface. The specimen was put in an impermeable bag and removed by the 15-mm trocar incision (Fig. 2). A closed suction drain was positioned, and all trocars sites were closed under direct vision.

The estimated blood loss was minimal, and no transfusions were necessary. Her postoperative convalescence was uneventful, and the patient was discharged on postoperative day three after the drain had been removed. Pathologic examination showed a ureter 15.5 cm long and 1.5 cm in diameter with pathological signs of chronic urethritis and a very thin kidney with signs of chronic pyelonephritis. The patient was well one month after surgery, and the cosmetic result was excellent (Fig. 3).

CONCLUSIONS

To our knowledge, this is one of the few reports of laparoscopic partial nephroureterectomy done in adults. Abouassaly *et al.* [4] recently reported a series of five adult patients who underwent laparoscopic upper pole partial nephrectomy for

Figure 2. Surgical specimen

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Figure 3. Final aesthetic result
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duplicated renal collecting systems. Their technique was similar to ours except that theirs included the catheterization of the lower pole ureter to help in the intraoperative distinction of the ureters. They transacted the ureter at the level of the iliac vessels, and the distal ureteral stump was kept unclipped if the patient did not present with ureteral reflux. We believe it is preferable to always perform the ureterectomy to avoid distal ureteral stump collection and urinoma.

This seems to be a safe and effective technique to be performed in adults, with admirable cosmetic and functional results if performed by urologists experienced in laparoscopic nephrectomy.

CONSENT

Written informed consent was obtained from the patient for publication of this case report and any accompanying images.

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