CASE REPORT

Laparoscopic Nephrectomy for a Nonfunctioning Pelvic Kidney in Preparation for Renal Transplantation

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ABSTRACT

Pelvic kidneys pose a problem for any planned surgical intervention given their anomalous blood supply. Although minimally invasive approaches have been described for the management of benign conditions, only a handful of reports have described the use of laparoscopy for removal of ectopic or fused kidneys. We describe the laparoscopic removal of a symptomatic pelvic kidney in a patient before renal transplantation.

Key Words: Pelvic kidney, Laparoscopy, Transplantation.

INTRODUCTION

Renal pelvic ectopia is a relatively rare occurrence, with a reported incidence of 1 in 3000 autopsies.[1] Although no significant difference exists in the incidence among the sexes, a slightly higher propensity is present for the left side over the right. The majority of patients remain asymptomatic, with most ectopic kidneys discovered as incidental findings during radiological evaluation. However, surgical intervention is often required for those patients who suffer from recurrent infection, symptomatic ureteropelvic junction obstruction, calculi, or chronic pain.

Laparoscopic and laparoscopic-assisted approaches to pelvic kidneys and those for fused, crossed renal ectopia have previously been described for the treatment of calculi and for the removal of nonfunctioning kidneys.[2–8] Herein, we describe our technique for the removal of a symptomatic, pelvic kidney in a patient with end-stage renal disease (ESRD) before a living-related renal transplant.

CASE REPORT

A 58-year-old-man with ESRD was referred by the renal transplantation service for removal of a symptomatic, pelvic right kidney before undergoing a planned living-related renal transplantation (LRRT). The patient had been undergoing hemodialysis for 2 years and had a longstanding history of vague lower abdominal pain secondary to nephrolithiasis within the pelvic kidney and recurrent urinary tract infections. Physical examination revealed a soft abdomen with a palpable mass in the right lower quadrant. Contrast-enhanced computed tomography (CT) of the abdomen and pelvis with 3-dimensional (3-D) reconstructions revealed the left kidney to be within its normal anatomical location and a sizable pelvic right kidney (8×5.5×2 cm) with mild hydronephrosis containing a 2.5-cm calculus **(Figure 1)**. Further imaging revealed the right renal artery to arise from the right common iliac artery, with the right renal vein draining into the left common iliac vein. Several smaller accessory veins were also demonstrated to drain into the right internal iliac vein. The patient underwent a laparoscopic pelvic nephrectomy via a 3-port approach **(Figure 2)**. At the discretion

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Figure 1. Contrast-enhanced computed tomographic scan of the pelvis, demonstrating the right pelvic kidney with a stone within the renal pelvis.

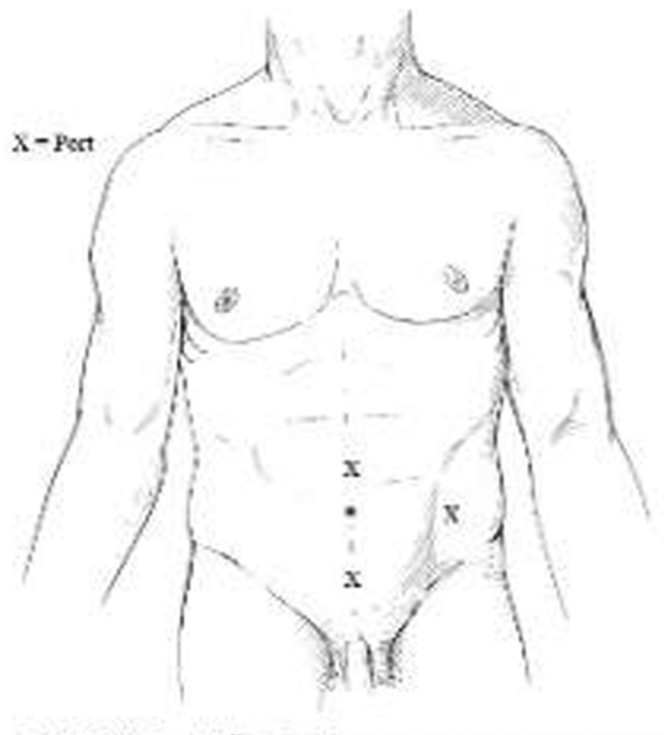

Figure 2. Diagram illustrating the port placement for laparoscopic excision of the pelvic kidney.

of the renal transplant service, concomitant allograft renal transplantation was deferred secondary to concern over infection. Following initial laparoscopic inspection, the pelvic right kidney was easily identified under the peritoneal reflection just anterior to the sacral promontory. The right external iliac artery was identified, and the parietal peritoneum incised along the root of the small bowel mesentery. Dissection was continued over the kidney until the anteriorly located renal pelvis and ureter were identified. Utilizing sharp and blunt dissection, the kidney was mobilized circumferentially. Anomalous vessels were isolated and divided between surgical clips **(Figure 3)**. The ureter was then divided, and the kidney freed from any remaining retroperitoneal attachments and placed within an endocatch bag. Given the size of the pelvic stone, the specimen was not morcellated but was left intact within the endocatch bag. The specimen was removed via the supraumbilical port site. All ports were closed in the standard fashion. Total operative time was 80 minutes, with an estimated blood loss of 80 mL. The patient was discharged home on postoperative day 3 and received an LRRT 6 weeks after having undergone the laparoscopic pelvic nephrectomy.

DISCUSSION

Ectopic kidneys pose a problem for any planned surgical intervention given their anomalous blood supply. As such, adequate preoperative imaging is crucial, whether by 3-D CT scan or magnetic resonance angiography (MRA). In this instance, laparoscopy afforded the well-established benefits of diminished blood loss, shortened operative time, and faster convalescence versus a traditional open procedure. More importantly, the laparoscopic approach to the pelvic kidney avoided violation of the right iliac

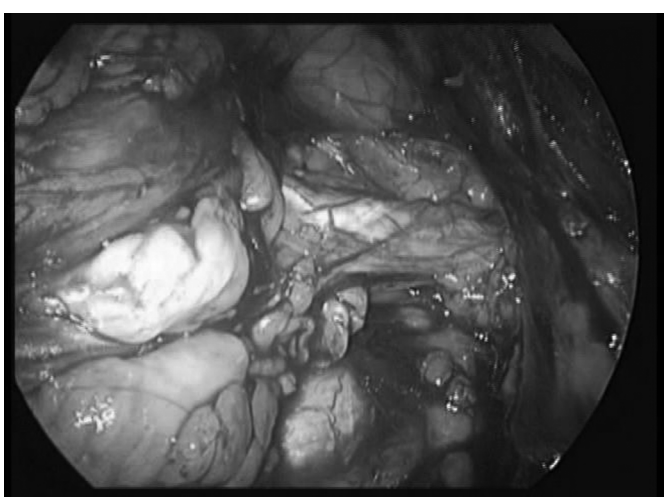

Figure 3. Laparoscopic image demonstrating right renal artery arising from right common iliac artery.

fossa, which was later used for renal allograft transplantation.

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