

Retroperitoneoscopic left nephrectomy in a horseshoe kidney with the use of the harmonic scalpel

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Laparoscopy has greatly evolved over the years. More recently, retroperitoneoscopy has gained wide acceptance as the preferred approach for simple and complicated nephrectomies. We report on a 12 year-old girl who underwent a left nephrectomy on a horseshoe kidney through a retroperitoneoscopic approach using the

harmonic scalpel for dissection and isthmus division. The operation was successful, recovery uneventful, and the patient was discharged 24 hrs post operatively, with excellent cosmesis. Retroperitoneoscopy can be considered if ablative surgery is contemplated in a horseshoe kidney, with adequate preoperative evaluation and solid retroperitoneoscopic surgical experience. The use the harmonic scalpel was greatly beneficial for the overall success of this complicated intervention.

Key Words: retroperitoneoscopy, horseshoe kidney, children, nephrectomy

Introduction

Laparoscopy has now well recognized indications in urology. Minimally invasive techniques for simple nephrectomy in benign disease have become the preferred surgical option.^{1,3} Laparoscopic surgery include both transperitoneal and retroperitoneal approaches, and both have been shown to be effective in pediatric simple nephrectomies³⁻⁶ as well as partial nephrectomy,⁷⁻⁹ nephroureterectomy⁵

or pyeloplasty.¹⁰⁻¹² More recently, retroperitoneoscopy is emerging as the preferred approach in minimally invasive kidney surgery for benign diseases.^{5,13} However, complex renal anomaly may prevent the use of this approach and its benefit. We are reporting on a left nephrectomy on a horseshoe kidney in a 12 year-old girl.

Case report

A 12-year-old girl presented to our institution with acute pyelonephritis and a history of colicky abdominal pain. Her physical examination was unremarkable, except for the presence of obesity (69 kg for 1.51 m). A horseshoe kidney with associated left hydronephrosis was identified on

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ultrasonography and intravenous pyelography. Mag-3 Lasix renogram and DMSA scan confirmed a poorly functioning (10%) left moiety, with a functional isthmus. Retroperitoneoscopic left nephrectomy was the preferred treatment option.

Surgical procedure

The patient underwent standard retroperitoneoscopic approach, including right flank position, 1.5 cm incision under the 12th rib with insertion of one 10 mm trocar under direct vision, and two 5mm trocar incisions in a diamond shape position between the 12th rib and iliac crest. A pneumoretroperitoneum (13 mmHg) was then created without the help of any dilating device, using the blunt telescope and CO₂ pressure. The left moiety of the horseshoe kidney was identified and dissected. After clipping of the vascular pedicle, the isthmus was sectioned at the well-delineated ischemic margin using the harmonic scalpel, cauterizing small aberrant vascular branches at the same time. The gonadal vein was difficult to identify because of the abnormal anatomy of the left renal vein, but it was carefully dissected and clipped after proper dissection. Blood loss was 10 cc, and operative time was 3.5 hours, which may have been significantly less if the patient had not been overweight. Trocar sites were injected with marcaine 0.25% for analgesic purposes at the end of the procedure.

The patient had an uneventful recovery. She started oral intake on the same day, and was discharged at 24 hrs post op. During her hospitalization, she received three doses of morphine at the recovery room, then one dose of oral codeine and six doses of acetaminophen on the ward for analgesia. At 6 weeks post-op, her symptoms did not recur, her creatinine level was normal and DMSA showed no deterioration of the right moiety. Her only memories of the procedure were two 5 mm scars in the left lower quadrant and a 1.5 cm incision under the left 12th rib.

Discussion

Retroperitoneoscopy is a challenging approach in anomalous kidney, but it has been performed for complex surgery with good results.⁵ To our knowledge, this is the second report of pediatric retroperitoneoscopic nephrectomy in a horseshoe kidney,¹⁴ but the first using the harmonic scalpel. Advantages of the retroperitoneoscopic approach over open surgery include faster postoperative recovery and improved cosmesis. Another benefit of this

approach is that there is no need to retract or mobilize bowel, as in transperitoneal laparoscopic approach, which allows for rapid and excellent exposure of the kidney and its vascularization. We advocate caution when the isthmus overlying the iliac vessels is functional, as aberrant vessels injuries can lead to inadvertent blood loss. A pre-operative arteriogram should be obtained in such cases. The use of the harmonic scalpel is of immense benefit as it allows for rapid and effective dissection and hemostasis, particularly on the renal parenchyma. Its advantages also include the absence of iatrogenic electrical lesion or burns of the surrounding tissues, which was especially highlighted in our case during the dissection over the great vessels. Retroperitoneoscopy can be considered if ablative surgery is contemplated in a horseshoe kidney, with adequate preoperative evaluation and solid retroperitoneoscopic surgical experience. □

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