CLINICAL CASE

Laparoscopic repair of a stapler-induced lesion in the vena cava during laparoscopic nephrectomy


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KEYWORDS
Nephrectomy; Laparoscopy; Lesion in vena cava; Laparoscopic repair; Mexico.

Abstract The first reports on laparoscopic nephrectomy appeared more than 2 decades ago and the great benefits of this surgical technique have been demonstrated in relation to open or conventional surgery. As is the case with open surgery, laparoscopic surgery is not exempt from complications, which can range from slight undetected lesions to severe or catastrophic ones. We present herein the case of a patient that, while undergoing laparoscopic nephrectomy, had the complication of a lesion in the vena cava, which was resolved during the same procedure with no need to convert to open surgery. It is our opinion that the experience of the laparoscopic surgeon is important for resolving this type of problem. Laparoscopic surgery generally is converted to open surgery in the face of severe lesions. Depending on the case and the experience of the surgeon, such events can be repaired without the need for conversion.

PALABRAS CLAVE
Nefrectomía; Laparoscopia; Lesión en vena cava; Reparación laparoscópica;

Reparación laparoscópica de una lesión de vena cava producida por una engrapadora durante una nefrectomía laparoscópica

Resumen La nefrectomía laparoscópica tiene más de 2 décadas, en las que empezaron los primeros reportes. Se han demostrado los grandes beneficios de esta técnica quirúrgica en relación a la cirugía abierta o tradicional. Al igual que la cirugía abierta, la cirugía laparoscópica no...
Vena cava injury can have a traumatic or iatrogenic origin. During nephrectomy, such lesions usually occur on the lateral wall. Customary management is primary repair with individual nonabsorbent sutures when the size of the lesion is less than 50% of the circumference; when lesions are greater than 50% of the circumference, they require a venous or peritoneal patch. Repair of posterior wall injury is more complex when there is massive destruction of the venous or peritoneal patch. Repair of posterior wall injury is sometimes complicated by the presence of a renal vein or artery. Adequate repair is established by the use of nonabsorbent sutures and vascular clamps, which are placed under direct vision. When lesions are less than 50% of the circumference, they require repair with nonabsorbent sutures, which are placed under direct vision. When lesions are greater than 50% of the circumference, they require repair with nonabsorbent sutures, which are placed under direct vision. When lesions are greater than 50% of the circumference, they require repair with nonabsorbent sutures, which are placed under direct vision.

The aim of this report was to describe our experience with the laparoscopic management of injury detected in the inferior vena cava.

Case presentation

A man in the sixth decade of life with no past medical history of chronic diseases was diagnosed with a right non-functioning kidney secondary to lithiasis. The proposed management was laparoscopic right simple nephrectomy.

Procedure description

After receiving the diagnosis and having the procedure explained to him, the patient gave his informed consent for the operation. The procedure began with the application of general anesthesia. A 16 Fr urethral catheter was placed, after which the patient was put in the right lateral decubitus position, supported by the articulated arms of the surgical table. Once the operating field was installed, a 1 cm incision lateral to the umbilicus was made to introduce the blunt-tip port. When adequate pneumoperitoneum (15 mmHg) was reached, the camera with a 30° lens was inserted. Diagnostic laparoscopy was carried out and 3 ports (one 10 mm and two 5 mm) were installed under direct vision: at the midpoint of the subcostal arch, midway between the anterior superior iliac spine and the camera, and another over the iliac crest. A bipolar electrocautery scalpel and radiofrequency electrocautery (Ligasure®) were used. First, the ipsilateral colon was separated in order to expose the retroperitoneum. En bloc dissection and freeing of the kidney initially located the ureter; it was sectioned and sealed with 10 mm clips. A more proximal dissection then reached the renal hilum, after which careful dissection and identification of the renal vein and artery were performed. The renal artery was ligated using Hem-o-lok® and the renal vein was stapled using an Ethicon Endosurgery ENDO-GIA™ ATW 45 mm stapler with a white reload for vascular use with 6 rows of staples. However, when the stapler was removed, it was found that the row of staples had not been adequately performed and there was an approximately 1 cm lesion in the lateral wall of the vena cava. Aspiration was immediately carried out, along with primary repair with 5-0 Prolene® double-armed sutures (fig.1). Adequate repair was verified. The procedure continued with the dissection of the upper pole, removing the surgical specimen. Hemostasis was verified, the ports were removed and a 1/8 drain was placed under direct vision. The port wounds were closed, ending the procedure.

Results

Surgery duration was 280 minutes and the repair time was 40 minutes. Quantified blood loss was 600 cc. Hospital stay was 5 days, postoperative pain was managed in the conventional manner, and the patient was ambulatory at 24 hours. Postoperative hemoglobin value was 9 g/dL. During the procedure one erythrocyte concentrate was applied. The drain was removed on the 4th day and the patient was released on day 6. His current follow-up at our service shows adequate control.
Discussion

Over the past 20 years, laparoscopy has had a great impact on the management of patients presenting with genitourinary problems thanks to its many advantages, such as reduced blood loss, less postoperative pain, shorter hospital stay, and rapid return to normal daily activities. However, it requires a learning curve, as well as a command of the complications derived from the procedure, such as problems related to trocar insertion and carbon dioxide pressure.3

The learning curve varies, depending on the procedure to be performed. In the case of nephrectomy, at least 50 are considered necessary; as a minimum, one procedure a week for the first year of training. It is well known that the number of complications decrease as experience increases.3 In a study reporting on the first 100 cases of laparoscopic nephrectomy, the complication rate was approximately 13.3%; it decreased to 3.6% as the procedures continued to be performed.3 In a meta-analysis published on the experience of different laparoscopic procedures, the most frequent intraoperative complication was blood loss at 1.4%; intestinal trauma was found in fewer than 0.5% of the cases, and trauma to a solid organ in less than 0.5%.7

A case series on complications related to nephrectomy stated that one of the complications produced by bleeding was due to poor technique in closing the stapler over the renal vein and required conversion to open surgery in order to be controlled.7

Finally, we can conclude that despite the fact that laparoscopic nephrectomy is an ideal method for the surgical management of renal pathology in selected cases, it is not exempt from complications; the most common one is intraoperative bleeding due to vascular injury. There are various factors that determine the possibility of laparoscopic repair: initially the laparoscopic urologic surgeon should be highly experienced in laparoscopic procedures and always open to the possible necessity of procedure conversion in order to have successful repair; another determining factor is the hemodynamic condition of the patient, never letting the laparoscopic approach compromise the stability of the patient and always being aware of the possibility of conversion; other important factors are having an adequate hospital infrastructure in relation to laparoscopic and surgical material and having the support of a blood bank, if needed; and an essential factor is adequate surgical team coordination, completely synchronized with the surgeon, so that there is active collaboration during the procedure.

Conclusions

In our experience with this patient there were various factors that determined the success of the primary repair, the most significant of which was the experience of the laparoscopic surgeon in the management of such lesions.

Conflict of interest

The authors declare that there is no conflict of interest.

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References