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Case report

Hybrid minilaparoscopic approach for the treatment of primary hyperaldosteronism: a report of two cases

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ABSTRACT

We report the cases of two patients, one 26-year-old male and one 43-year-old female, who had a history of high blood pressure and hypokalemia. The male also presented progressive tetraparesis six months before diagnosis. The female patient was diagnosed with systemic lupus erythematosus and Sjögren syndrome. After investigation, by ultrasonography and abdominal computed tomography, both patients presented hypodense and solid nodular lesions in the adrenal gland, compatible with adenoma. The surgical team opted for a hybrid minimally invasive approach. Providing a better visualization of the surgical field, less abdominal trauma, and greater technical dexterity, the use of minilaparoscopic instruments proved to be a safe and effective approach for these patients. After the surgeries, the patients presented a better control of blood pressure and electrolytes, being discharged early in good clinical conditions.

1. Introduction

Adrenal gland nodules that cause primary hyperaldosteronism (PH), and consequently secondary hypertension, are unusual conditions.[1] Adrenalectomy is the established approach for the treatment of unilateral adenomas, and the minimally invasive approach has been increasingly used.[2,3]

Early reports in the literature have showed the feasibility of minilaparoscopic instruments to perform adrenalectomies.[4,5] However, there are no reports in the literature regarding a hybrid minilaparoscopic approach.

2. Case report 1

A 26-year-old male diagnosed with systemic arterial hypertension (SAH) at 18 years presented progressive tetraparesis six months ago because of intense asthenia. In the investigation of secondary SAH, he presented hypokalemia, hypernatremia, and suppressed renin activity. Ultrasonography of the urinary tract showed no alterations, and computed tomography of the abdomen demonstrated a hypodense nodule with regular contours measuring 1.4 × 1.0 cm, with heterogeneous uptake after contrast in the left adrenal gland (Fig. 1). Diagnosis of primary hyperaldosteronism due to the nodule in the left adrenal was confirmed, and minimally invasive surgical resection was indicated.

3. Surgical description 1

The procedure was performed with the patient in right lateral decubitus position. One 5-mm trocar was used for the vessel-sealing device, and two 3-mm trocars on the left flank were used to pass the low-friction minilaparoscopic forceps. The pneumoperitoneum was created through the umbilical incision using the Hasson open technique, and a 10-mm optic was used.

The procedure started with the mobilization of the left colon. The lienophrenic ligament of the splenic flexure is dissected from

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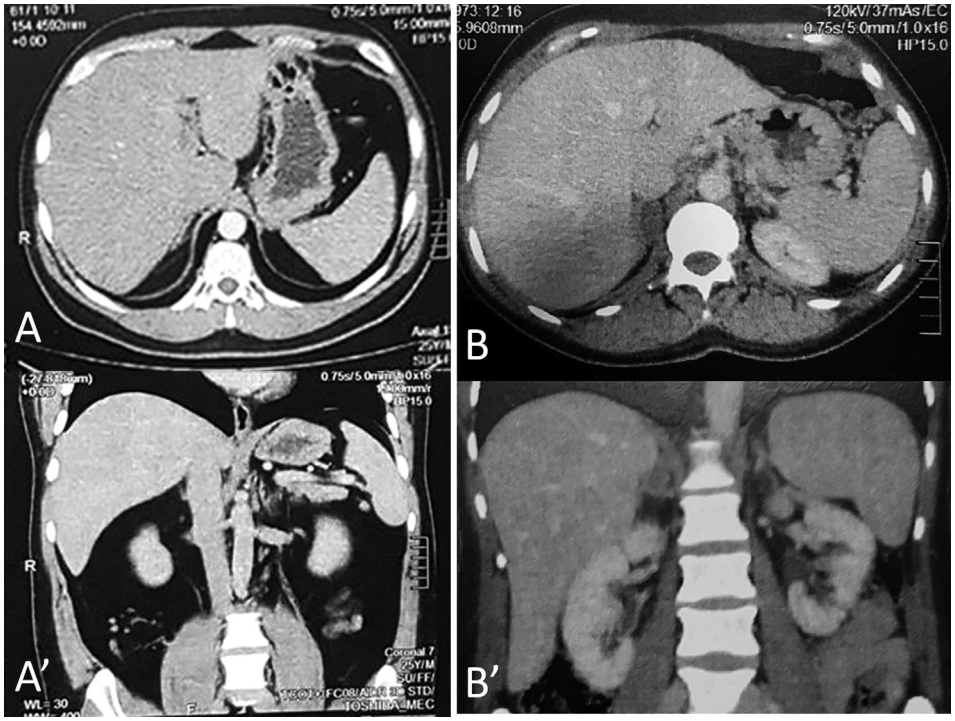

Fig. 1. Computed tomography. A and A': Hypodense nodule with regular contours measuring 1.4 × 1.0 cm, with heterogeneous uptake after contrast in the left adrenal gland; **B and B'**: Expansive lesion in the right adrenal gland measuring 3.2 × 2.6 × 2.2 cm, a hypodense, solid, regular contour with postcontrast enhancement venous and significant lavage in the portal and late phases.

the abdominal wall. The Toldt line was dissected downward, and the colon was medially mobilized. Then, the spleen is mobilized to distract it from the adrenal fossa, improving the operative field. The vessel-sealing device was used to allow a good dissection and hemostasis, removing the colon and spleen of the upper pole of the left kidney. After complete dissection of the adrenal, the piece was placed in an endobag and retrograde removed through the umbilical portal (Fig. 2).

The surgery had no complications, and the patient was discharged the next day. The anatomopathological study confirmed that it was an adenoma.

4. Case report 2

A 43-year-old hypertensive woman was diagnosed a year ago with systemic lupus erythematosus (SLE) and Sjögren syndrome. Previous investigation has identified high blood pressure and hypokalemia, in addition to metabolic alkalosis. In view of the clinical history suggestive of hyperaldosteronism, an abdominal computed tomography scan showed an expansive lesion in the right adrenal gland measuring 3.2 × 2.6 × 2.2 cm, a hypodense, solid, regular contour with postcontrast enhancement venous and significant lavage in the portal and late phases (Fig. 1), with findings compatible with adenoma. A minilaparoscopic adrenalectomy was then indicated.

5. Surgical description 2

The surgery was performed with the patient in the left lateral decubitus position. A 5-mm trocar was used in the right hypochondrium for the vessel-sealing device, and two 3-mm low-friction minilaparoscopic instruments on the right flank were used. The pneumoperitoneum and the optics were similar to those in the first case.

The ascending colon is dissected until exposure of the kidney. We used the vessel-sealing device to separate the liver from the adrenal, facilitating the exposure of the gland.

With the adrenal identified, we performed the dissection near its limit with the vena cava trailing the gland laterally. After ligation of the adrenal vein, we performed a complete resection of the gland, with a total surgical time of 45 minutes. In the postoperative period, the patient had a better control of blood pressure and electrolytes, being discharged after three days.

6. Discussion

PH is characterized by an excess of production of aldosterone.[3] Owing to the autonomy of the secretion of this hormone, there is abnormal functioning of the renin-angiotensin-aldosterone system and consequent increase of renal reabsorption of water, resulting in secondary SAH. The symptoms resulting from hypokalemia are weakness of muscle, fatigue, constipation, paresthesia, and arrhythmias.[1]

To determine PH subtypes and differentiate unilateral and bilateral diseases, various imaging modalities may be used. Computed tomography is the first choice because of its wide availability, allowing the visualization of anatomical details and excluding malignancy. Surgical intervention provides the only potentially curative treatment for patients with functioning adenoma. When surgical intervention is indicated, routine treatment is minimally invasive resection.[1,2]

Among the new minimally invasive techniques, minilaparoscopy has advantages when compared with traditional laparoscopy because it causes less trauma to the abdominal wall, leading to less postoperative pain and a shorter hospitalization time, as showed by Firme et al.[6] Minilaparoscopy has also been shown to be safe and effective for other complex approaches.[7–9]

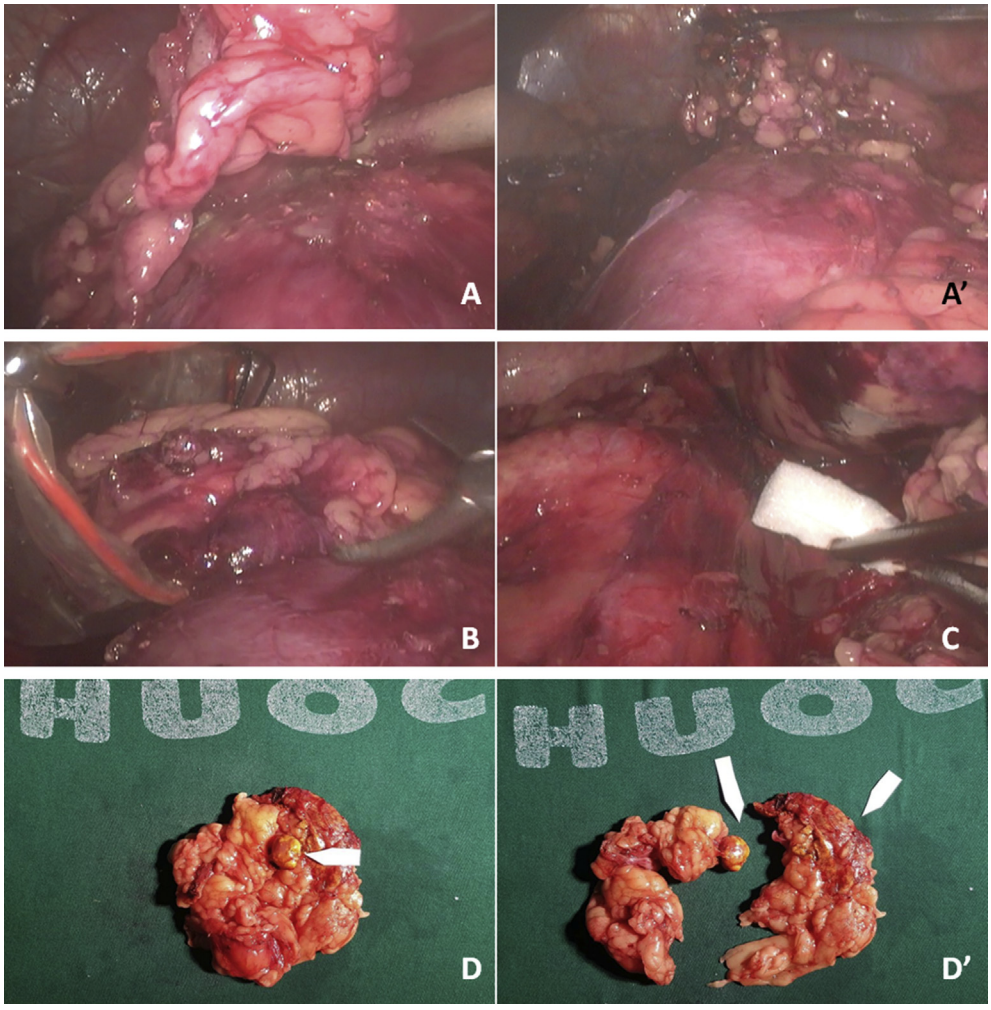

Fig. 2. A and A': Isolation and resection of the left adrenal gland with ultrasonic scalpel; **B**: Use of an endobag for retrograde removal of the surgical specimen through the 10-mm umbilical portal; **C**: Homeostasis and control of bleeding after resection of the gland; **D and D'**: Histological sections of the surgical specimen evidencing the adenoma.

These case reports describe the successful minimally invasive surgery to treat PH. We call this a hybrid procedure because of the use of a 5-mm vessel-sealing device. The hybrid minilaparoscopic approach proved to be a safe and effective method, and its advantages were useful for the procedures performed.

Conflict of interest

None.

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