Bilateral Hand-Assisted Laparoscopic Adrenalectomy for Pheochromocytoma

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Abstract

Introduction: Laparoscopic adrenalectomy is the gold standard for resection of adrenal tumors. Limitations include adherence to adjacent tissues, loss of tissue planes, and risk of conversion to laparotomy.^{1,2} A hand-assisted technique may prevent conversion.³ There is limited description of this technique for laparoscopic adrenalectomy.^{1,4} The aim of this video is to describe this technique in a case of bilateral adrenalectomy for pheochromocytoma.

Case: A 69-year-old woman with a history of hypertension developed new-onset supraventricular tachycardia in the setting of malignant hypertension. Biochemical workup revealed elevated urinary metanephrines (13,310 $\mu\text{g}/24$ hours) and normetanephrines (10,139 $\mu\text{g}/24$ hours). CT scan revealed 8.2 $\times$ 7 cm left adrenal and 4 $\times$ 3.5 cm right adrenal masses. She had no family history of endocrinopathies. She consented for laparoscopic bilateral adrenalectomy. She was positioned in right lateral decubitus position for the left adrenalectomy. The abdomen was entered with the optical trocar in the left upper quadrant. A 12-mm trocar was placed in the midclavicular line, and two 5-mm trocars were placed medially and laterally. The splenocolic and splenorenal ligaments were divided. After superficial dissection, tissue planes between the mass and the renal hilum posteriorly were indistinct. Additionally, large tumor size prevented adequate traction. These reasons led to a hand-assisted approach. An 8 cm left subcostal incision was made and a gel-port was placed. Using hand-assisted traction and tactile feedback, the left adrenalectomy was completed. The patient was repositioned in left lateral decubitus position. Pneumoperitoneum was obtained with optical entry in the right upper quadrant. Two 5-mm trocars were inserted medially and laterally, and a 12-mm trocar was placed in right lower quadrant. The triangular ligament was mobilized and the retroperitoneum entered. After superficial dissection, planes between the mass and the renal hilum and the mass and the inferior vena cava were unclear. Given success with the left side, a hand-port was placed via an 8 cm incision in the right posterior axillary line. This allowed for optimal traction with the surgeon's nondominant hand, and the right adrenalectomy was

completed. The total procedure time was 8 hours. Estimated blood loss was 200 mL. Pathology confirmed pheochromocytoma, right side – 8 cm and left side – 9.5 cm. The patient met criteria for discharge on postoperative day 2. Genetics results for multiple endocrine neoplasia, hereditary paraganglioma–pheochromocytoma, and von Hippel–Lindau syndromes were negative. She was disease free biochemically and clinically at 6 months on hydrocortisone 20 mg/day and fludrocortisone 0.5 mg/day. Her blood pressure has been stable on doxazosin mesylate 2 mg/day and lisinopril 20 mg/day.

Conclusion: This case illustrates the technical details of hand-assisted laparoscopic adrenal surgery. Indistinct posterior tissue planes risk conversion to laparotomy. Hand-assisted surgery may prevent conversion by optimizing traction and tactile feedback. There are minimal data on this technique, and this video shows the details of port placement and dissection. This technique allowed for completion in a minimally invasive manner and for the patient to have a rapid recovery.

All authors declare no conflict of interest.

Runtime of video: 7 mins 17 secs

Cite this video

Priya Iyer, Cem Dural, Muhammet Akyuz, Eren Berber, Bilateral Hand-Assisted Laparoscopic Adrenalectomy for Pheochromocytoma, J VideoEndocrinology. 2014, DOI: 10.1089/ve.2014.0008.

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Original Publication Date: 2014