Hand-Assisted Laparoscopy for the Removal of an Esophageal Leiomyoma

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ABSTRACT

The patient is a 39-year-old male who presented with noncardiac chest pain. His evaluation disclosed an esophageal leiomyoma. In this paper we will demonstrate the pre-operative findings and technique for removal of a benign esophageal tumor using hand-assisted laparoscopy. The patient was discharged home 2 days postoperative and returned to work 2 weeks postoperative with complete resolution of his symptoms. Hand-assisted laparoscopy provides a postoperative course that parallels the recovery from conventional laparoscopy. Additionally, the tactile sense that a surgeon looses from conventional laparoscopy is regained by this technology.

Key Words: Hand-assisted laparoscopy, Esophageal leiomyoma.

INTRODUCTION

The use of hand-assisted laparoscopy is rapidly gaining recognition is the laparoscopic community. Surgeons loose their ability to "feel" the tissue and organs they are performing surgery on and are therefore at risk of not being able to identify abnormal structures and the normal variants. Handoscopy allows a surgeon to regain this ability. This case illustrates how a hand-assisted laparoscopy allows the direct palpation of the tissue pathology and easy dissection that would have otherwise been a tedious laparoscopic procedure with a high potential for an esophageal injury.

CASE REPORT

The patient is a 39-year-old male who presented to his family physician with chest pain. After a negative cardiac workup, he had a barium swallow that revealed an extraluminal filling defect 3 cm proximal to the gastroesophageal junction **(Figure 1)**. He subsequently underwent an esophagogastroduodenoscopy that demonstrated a benign extraluminal tumor consistent with an esophageal leiomyoma **(Figure 2)**.

The location of the tumor would have been difficult to approach from a thoracoscopic access and equally difficult to localize from either a thoracic or an abdominal approach. With the use of handoscopy, the operator was able to correct for all of these shortfalls.

The patient was placed in the lithotomy position just as for a Nissen fundoplication. A single "hand" (Dexterity Pneumosleeve Blue Bell, PA) port was used in the right upper quadrant, a 10-mm midline port for the camera, a 10-mm left subcostal lateral clavicular line port, and a 10-mm left mid clavicular line port **(Figure 3)**.

After the esophageal hiatus was exposed, by sharp and blunt dissection, the tumor was easily palpated and grasped with the operator's fingers. This allowed for identification and stabilization of the tumor. As the dissection proceeded with the harmonic scalpel (Ethicon Endosurgery, Cincinnati, OH), the leiomyoma was gently removed with caution from the esophageal wall so as not to injure the esophagus **(Figure 4)**.

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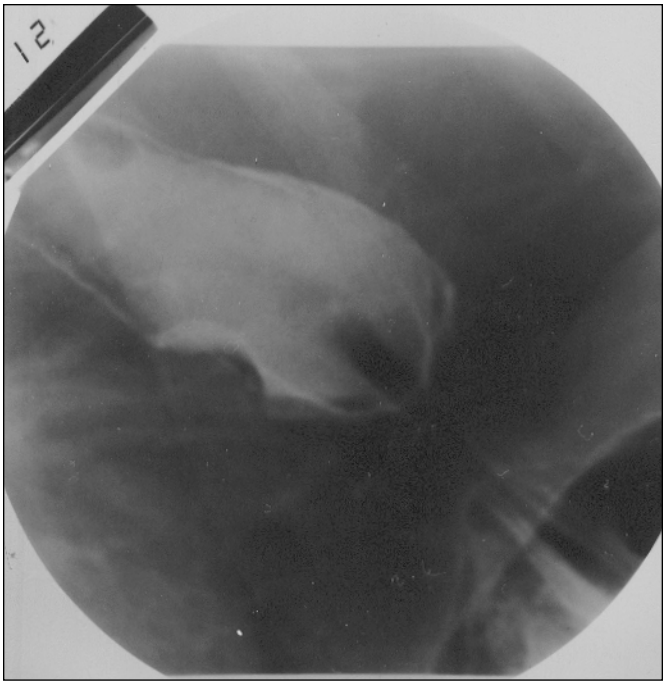

Figure 1. Barium swallow with filling defect.

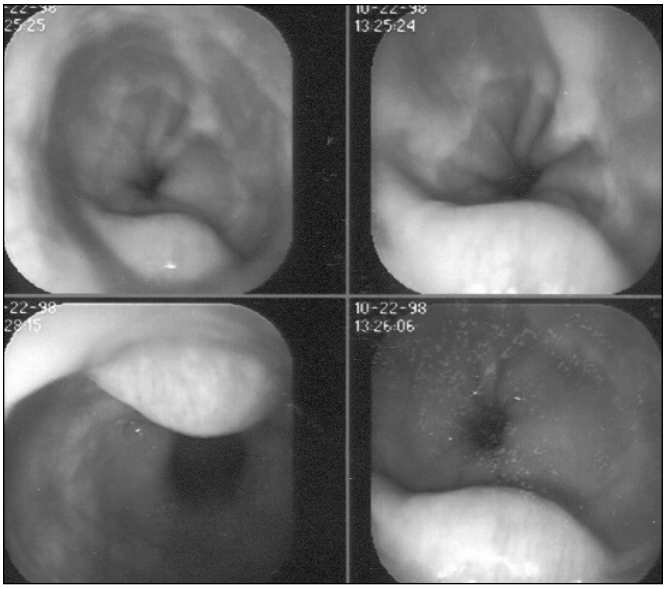

Figure 2. EGD view.

Additionally, sutures could easily be placed and tied with the operator's hand. Once the 2-cm tumor was removed, the esophagus could be palpated for any residual disease. The esophageal repair was tested for leaks by placing a naso-gastric tube into the proximal stomach under direct palpation and inflating the stomach and distal esophagus with 500 cc of air in an "underwater environment" and observed for the absence of air bubbles. The operation took 50 minutes. The laparoscopic and "hand" port fasciae were closed with zero-absorbable sutures, and the skin was closed in a subcuticular manner with 4-0 absorbable sutures.

The patient was able to tolerate liquids on the first postoperative day and was discharged home on the second day postoperatively. He returned to full activity and work as a laborer after 2 weeks.

DISCUSSION

Esophageal leiomyoma is the most common benign tumor of the esophagus.[1,2] Until recently these tumors were resected via a thoracotomy or laparotomy. Thoracoscopy can be used in lesions of the upper and midesophagus.[3,4] Laparoscopy can be used for lower esophageal lesions, but is tedious and frequently fails to determine whether a perforation or complete resection has occurred during the dissection.[5] The benefits of handoscopy for malignant esophageal and other intraperitoneal diseases are being established.[6,7] The authors believe this technique can be applied to benign disease as well.

Another concern about handoscopy has been the argument over the incision used in handoscopy defeating the benefits of laparoscopy. The authors and others have noticed that the recoveries of patients that have undergone a hand-assisted procedure recover at the same rate as those that have undergone a "pure" laparoscopic procedure.[8] Hand-assisted techniques can also be used as a bridge between a pure laparoscopic and an open procedure.[9] This patient in particular had a tremendous decrease in operative time compared with the lead author's prior experience with a pure laparoscopic excision of an esophageal leiomyoma that requires 3 to 4 hours of operative time. Additionally, when a difficult laparoscopic procedure does arise, a total conversion to an open technique can be prevented when a hand-assist-

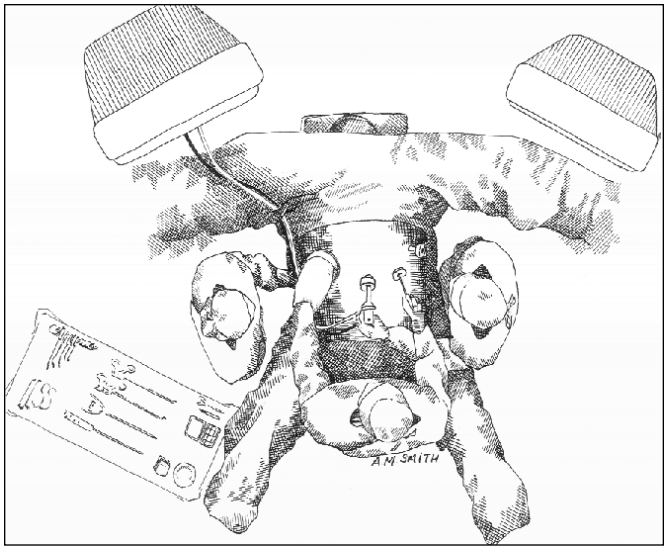

Figure 3. Operating room set up.

Figure 4. Laparoscopic view of leiomyoma.

ed device is available. The continued benefits of hand-assisted laparoscopic surgery (HALS) has also been used in other surgeries, ie, donor nephrectomy, complex pelvic surgery, and other solid organ surgery.[10-12]

We hope that this technology will continue to grow and be used by more surgeons to provide patients with the benefits of laparoscopic surgery without the downfall of loosing the tactile advantage of an open procedure.

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The authors received no financial support for this project.

This case report was first presented at the 8th International Meeting of Laparoendoscopic Surgeons, SLS Annual Meeting, Endo Expo '99, December 6, 1999, New York City, USA.