



Esophageal Leiomyoma

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Abstract

Esophageal leiomyoma is a benign tumor originating from the muscularis propria. Patients complain of dysphagia or chest pain. Malignant transformation is rare. Surgical resection is recommended. Integrity of the esophageal mucosa during dissection is of utmost importance. A robotic approach with improved three-dimensional vision and dexterity might improve outcome in minimally invasive leiomyoma resection. We report our institutional approach to robotic leiomyoma resection and provide a stepwise instruction on how to perform the procedure.

Keywords

Leiomyoma • Robotic approach • Mucosal integrity

Leiomyomas account for 70% of all benign tumors of the esophagus [1]. They show an intramural growth pattern originating from the muscularis propria. Fifty percent of patients complain about dysphagia and atypical chest pain [2]. Malignant transformation is rare, but cannot be excluded. Thus, surgical resection is emphasized also for asymptomatic cases [3].

Open enucleation remains the “gold standard.” However, in recent years the video-assisted thoracoscopic surgical approach has shown to be a feasible alternative [4]. The use of the da Vinci robotic system allows for meticulous preparation and better preservation of the mucosal integrity, which is a crucial step of the operation [5].

Preoperative workup consists of esophagogastrosopy (EGD), endoluminal ultrasound (EUS) and CT scan. A barium swallow is helpful, but not mandatory. If preoperative findings are consistent, a needle biopsy should be omitted as endoscopic or EUS guided transmucosal biopsies complicate

dissection and result in a higher rate of intraoperative mucosal perforation [4].

The surgical approach in our institution is generally performed via a robotic-assisted thoracoscopy with the patient in a left lateral decubitus position. Ninety percent of the lesions are located in the middle or lower third of the esophagus. When the tumor is situated near the gastroesophageal junction, a laparoscopic approach in conjunction with a fundoplication is advised [2, 4].

The ten phases of the operation:

1. Positioning of the patient in a left lateral decubitus position
2. Introduction of the trocars and connection to the robot
3. Identification of the leiomyoma by endoscopic translumination
4. Circular dissection of the esophagus in the respective area
5. Incision of the muscular layer above the tumor (if still intact)
6. Grasping the leiomyoma anchored with a 0-silk stay suture or directly with a Cardiere forceps
7. Division of the tumor from the mucosal tube under direct view and/or translumination

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8. Saline submersion test to ensure mucosal integrity
9. Approximation of the muscular layers with single suture stitches
10. Introduction of a 24 Fr. chest tube with its inner end being loosely attached to the direct operating field

Typical endoluminal and CT view of a leiomyoma in the middle third of the esophagus. The tumor presents as a solid, bulging, intramural mass with intact mucosa (Fig. 28.1).

The patient is brought in a left lateral decubitus position. The Robot is approached from cephalad, slightly from the right side (11 o'clock position). The table-side surgeon sits on the ventral side of the patient. The camera trocar is introduced through the eighth intercostal space (ICS) in the anterior axillary line. The trocar for the right robotic arm is brought in through the sixth ICS more anteriorly, and for the

left arm through the ninth ICS in the posterior axillary line. An additional thoracoport for the suction device is performed between the camera and the left arm (Fig. 28.2).

After incision of the intact muscle wall, the tumor is anchored with a 0-silk stay suture or directly grasped with a Cardiere forceps (left robotic arm) and gently divided with the cautery hook (right robotic arm) from the mucosal tube (Fig. 28.3). The introduction of an gastroscope helps to identify the structures by translumination. Extensive care must be taken not to perforate the mucosal tube. If this happens, the mucosal defect is closed with stitches (Fig. 28.4).

The muscular layer is approximated after complete enucleation of the tumor by absorbable single stitch sutures. The creation of a stenosis must be avoided. In case, approximation of the muscle can be abandoned if the mucosal layer remained intact.

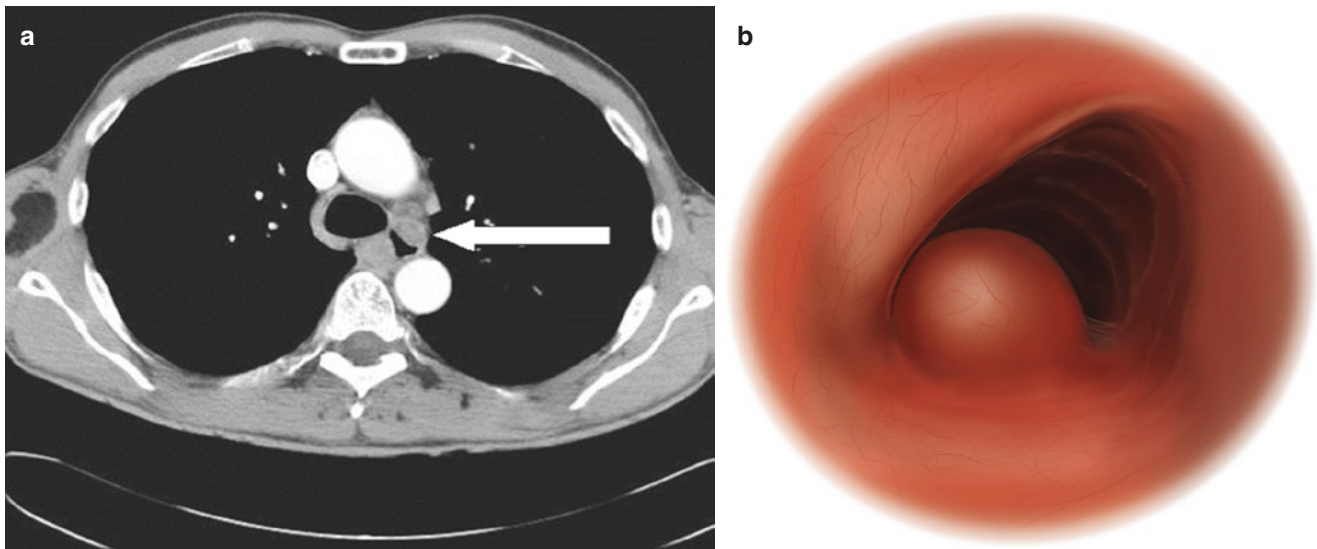


Fig. 28.1 Picture of endoluminal (a) and CT (b) view of the lesion

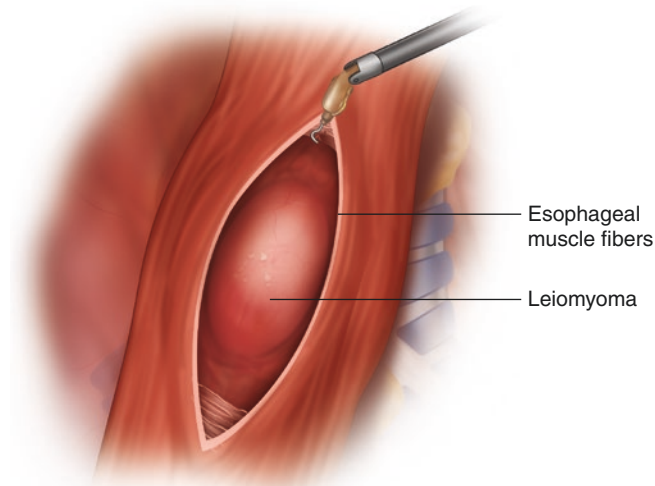


Fig. 28.3 Picture showing the excision of the leiomyoma with the robotic cauter hook

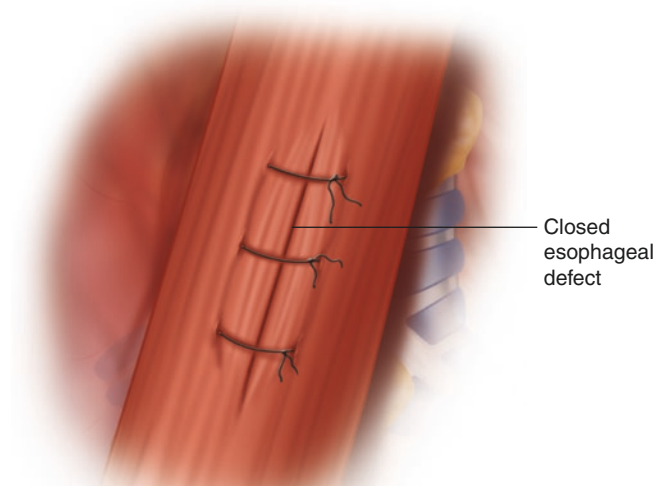


Fig. 28.4 Picture showing the final result with the muscular layer of the esophagus closed

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