



Massachusetts General Hospital
Founding Member, Mass General Brigham

Robotic Esophagectomy

Surgical Anatomy for the APP

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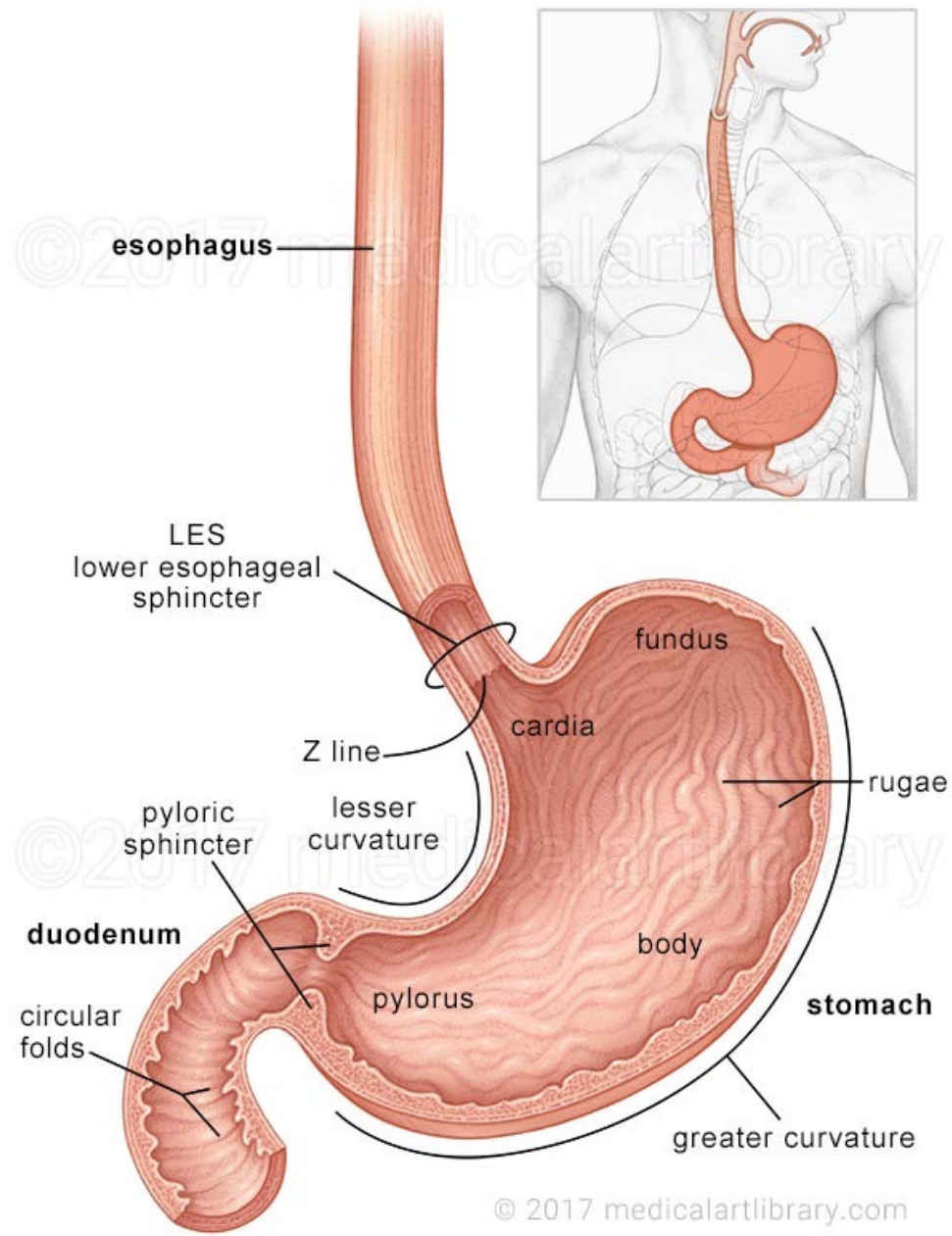
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Disclosures

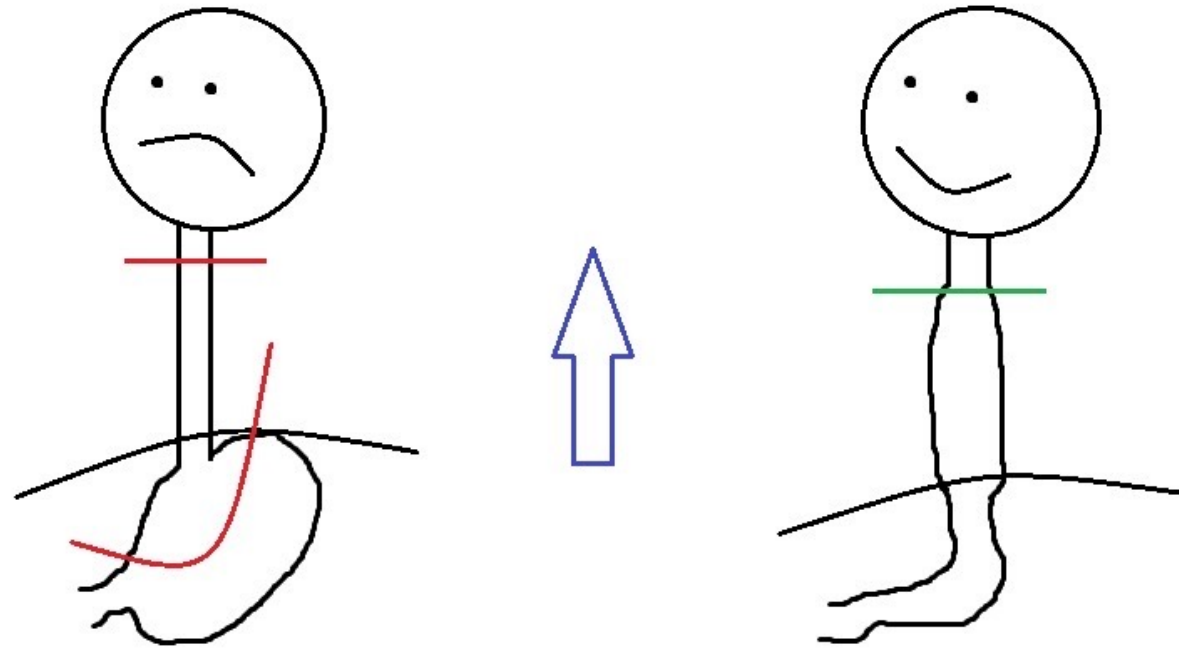
- None relevant to talk



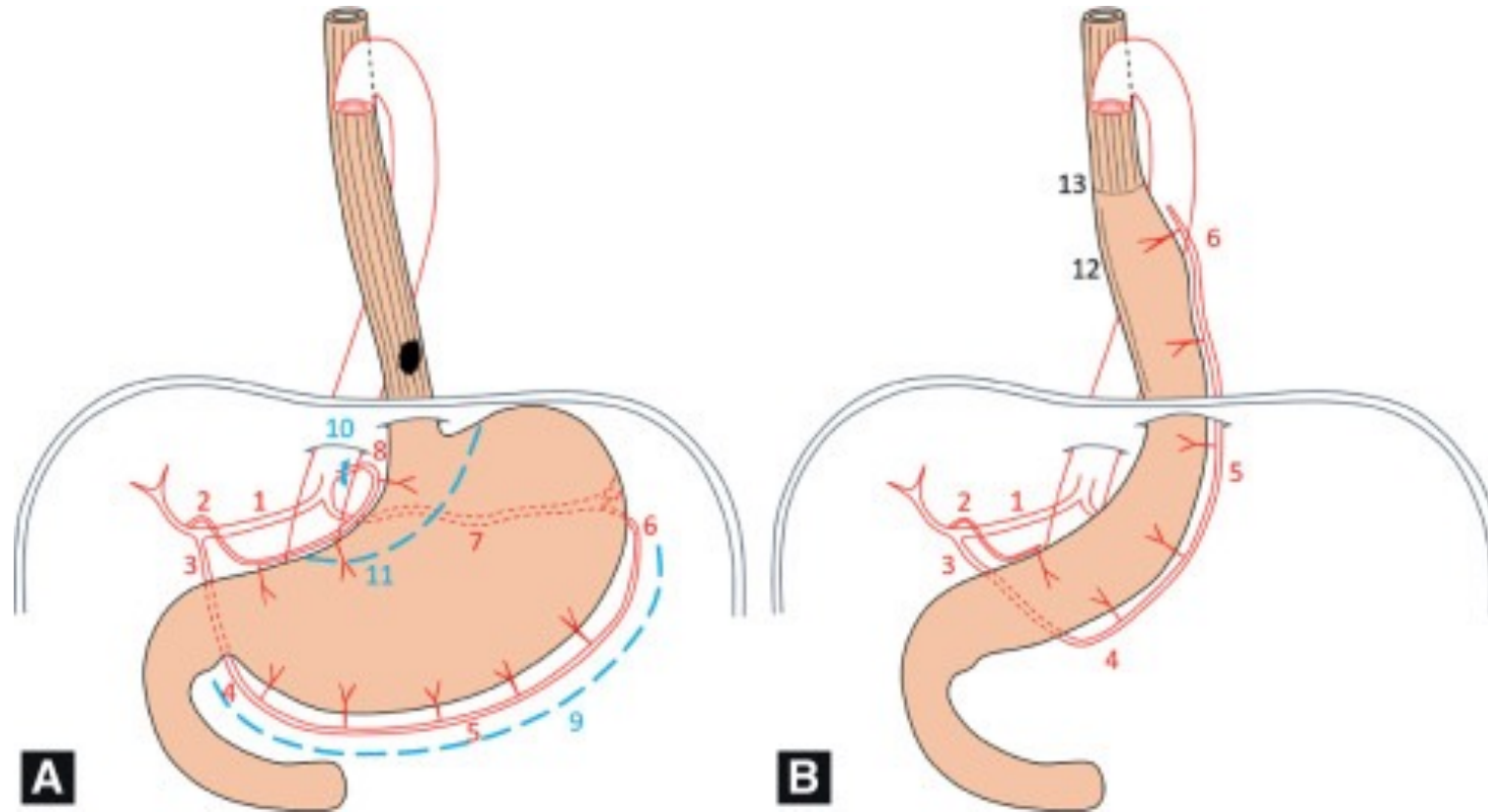
Old Anatomy



New Anatomy



New Anatomy



PRINCIPLES OF SURGERY

- Prior to surgery, clinical staging should be performed to assess resectability with CT scan of the chest and abdomen, whole body FDG-PET (integrated FDG-PET/CT is preferred), and EUS.
- Prior to starting therapy all patients should be assessed by an esophageal surgeon for physiologic ability to undergo esophageal resection.¹ Esophageal resection should be considered for all patients who are physiologically fit with resectable esophageal cancer (>5 cm from cricopharynx).
- Siewert Classification
 - ▶ Siewert tumor type should be assessed in all patients with adenocarcinomas involving the EGJ.^{2,3}
 - ◊ Siewert Type I: adenocarcinoma of the lower esophagus with the epicenter located within 1 cm to 5 cm above the anatomic EGJ.
 - ◊ Siewert Type II: true carcinoma of the cardia with the tumor epicenter within 1 cm above and 2 cm below the EGJ.
 - ◊ Siewert Type III: subcardial carcinoma with the tumor epicenter between 2 cm and 5 cm below the EGJ, which infiltrates the EGJ and lower esophagus from below.
 - ★ ▶ The treatment of Siewert types I and II is as described in the NCCN Guidelines for Esophageal and EGJ Cancers, and a variety of surgical approaches may be used.
 - ▶ Siewert type III lesions are considered gastric cancers, and thus the [NCCN Guidelines for Gastric Cancer](#) should be followed. In some cases additional esophageal resection may be needed in order to obtain adequate margins.^{2,4,5}
- Laparoscopy may be useful in select patients in detecting radiographically occult metastatic disease, especially in patients with Siewert II and III tumors.¹
- Positive peritoneal cytology (performed in the absence of visible peritoneal implants) is associated with poor prognosis and is defined as M1 disease. In patients with advanced tumors, clinical T3 or N+ disease should be considered for laparoscopic staging with peritoneal washings.
- Cervical or cervicothoracic esophageal carcinomas <5 cm from the cricopharynx should be treated with definitive chemoradiation.
- ★ • Resectable esophageal or EGJ cancer:
 - ▶ T1a tumors, defined as tumors involving the mucosa but not invading the submucosa, may be considered for EMR + ablation or esophagectomy in experienced centers.⁶⁻¹⁰
 - ▶ Tumors in the submucosa (T1b) or deeper may be treated with esophagectomy.
 - ▶ T1–T3 tumors are resectable even with regional nodal metastases (N+), although bulky; multi-station lymphatic involvement is a relative contraindication to surgery, to be considered in conjunction with age and performance status.
 - ▶ T4a tumors with involvement of pericardium, pleura, or diaphragm are resectable.
- ★ • Unresectable esophageal cancer:
 - ▶ cT4b tumors with involvement of the heart, great vessels, trachea, or adjacent organs including liver, pancreas, lung, and spleen are unresectable.
 - ▶ Most patients with multi-station, bulky lymphadenopathy should be considered unresectable, although lymph node involvement should be considered in conjunction with other factors, including age, performance status, and response to therapy.
 - ▶ Patients with EGJ and supraclavicular lymph node involvement should be considered unresectable.
 - ▶ Patients with distant (including nonregional lymph nodes) metastases (stage IV) are unresectable.

Note: All recommendations are category 2A unless otherwise indicated.
Clinical Trials: NCCN believes that the best management of any patient with cancer is in a clinical trial. Participation in clinical trials is especially encouraged.

[Continued](#)
[References](#)

ESOPH-C
1 OF 3



PRINCIPLES OF SURGERY

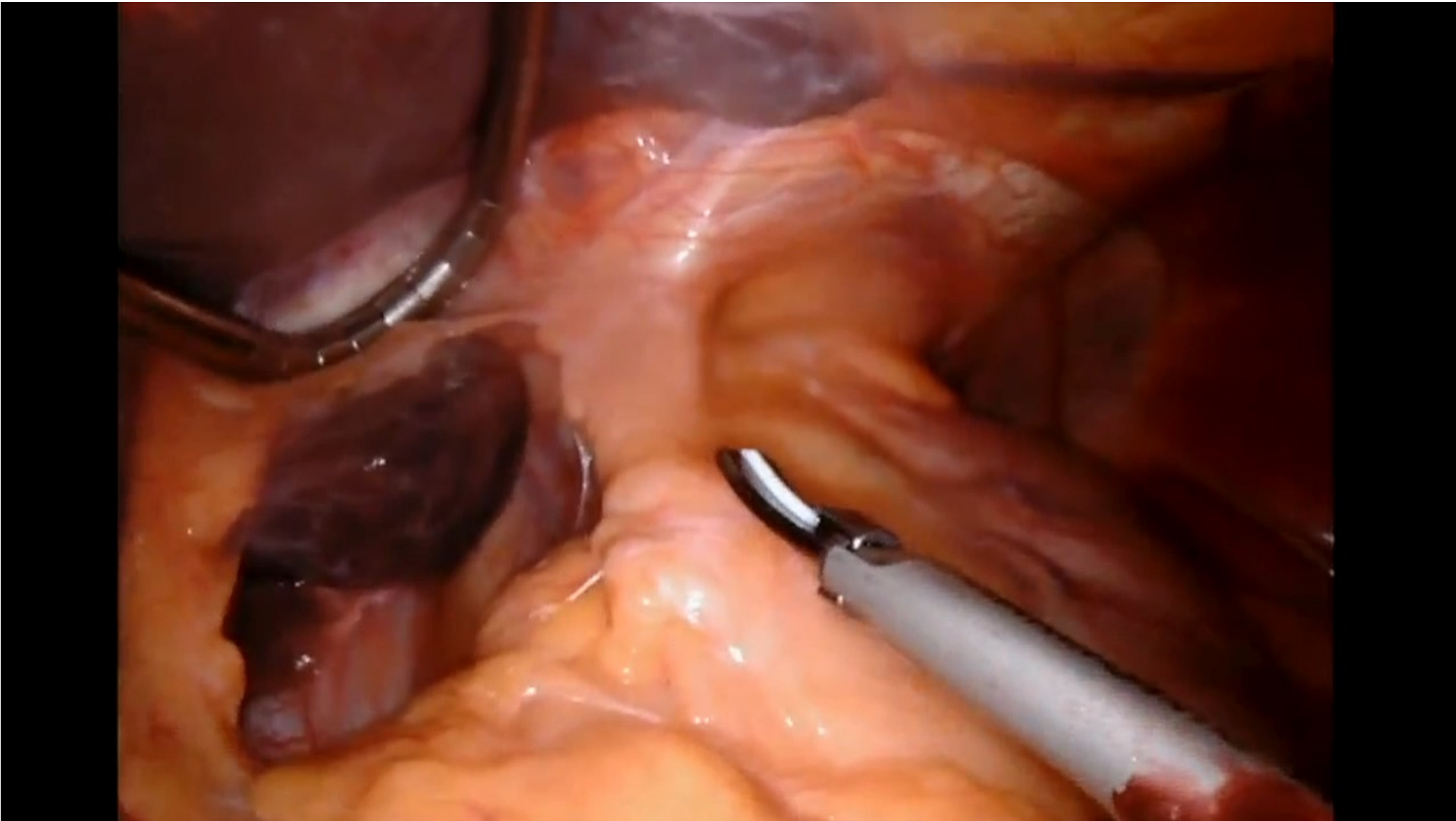
- The type of esophageal resection is dictated by the location of the tumor, the available choices for conduit, as well as by the surgeon's experience and preference and the patient's preference.
- In patients who are unable to swallow well enough to maintain nutrition during induction therapy, esophageal dilatation or a feeding jejunostomy tube (J-tube) are preferred to a gastrostomy (which may compromise the integrity of gastric conduit for reconstruction).
- Acceptable operative approaches for resectable esophageal or EGJ cancer:
 - ▶ Ivor Lewis esophagogastrectomy (laparotomy + right thoracotomy)
 - ▶ McKeown esophagogastrectomy (right thoracotomy + laparotomy + cervical anastomosis)
 - ▶ Minimally invasive Ivor Lewis esophagogastrectomy (laparoscopy + limited right thoracotomy)^{11,12}
 - ▶ Minimally invasive McKeown esophagogastrectomy (right thoracoscopy + limited laparotomy/laparoscopy + cervical anastomosis)
 - ▶ Transhiatal esophagogastrectomy (laparotomy + cervical anastomosis)
 - ▶ Robotic minimally invasive esophagogastrectomy
 - ▶ Left transthoracic or thoracoabdominal approaches with anastomosis in chest or neck
- ★ Acceptable conduits:
 - ▶ Gastric (preferred)
 - ▶ Colon
 - ▶ Jejunum
- Acceptable lymph node dissections¹³:
 - ▶ Standard
 - ▶ Extended (en-bloc)
- In patients undergoing esophagectomy without induction chemoradiation, at least 15 lymph nodes should be removed and assessed to achieve adequate nodal staging. The optimum number of nodes after preoperative chemoradiation is unknown, although similar lymph node resection is recommended.¹⁴
- Patients who develop localized, resectable esophageal cancer after definitive chemoradiation can be considered for esophagectomy if they do not have distant recurrence.¹⁵
- Patients with potentially resectable esophageal cancer should undergo multidisciplinary review. Esophageal resection, EMR, and other ablative techniques should be performed in high-volume esophageal centers by experienced surgeons and endoscopists.¹⁶

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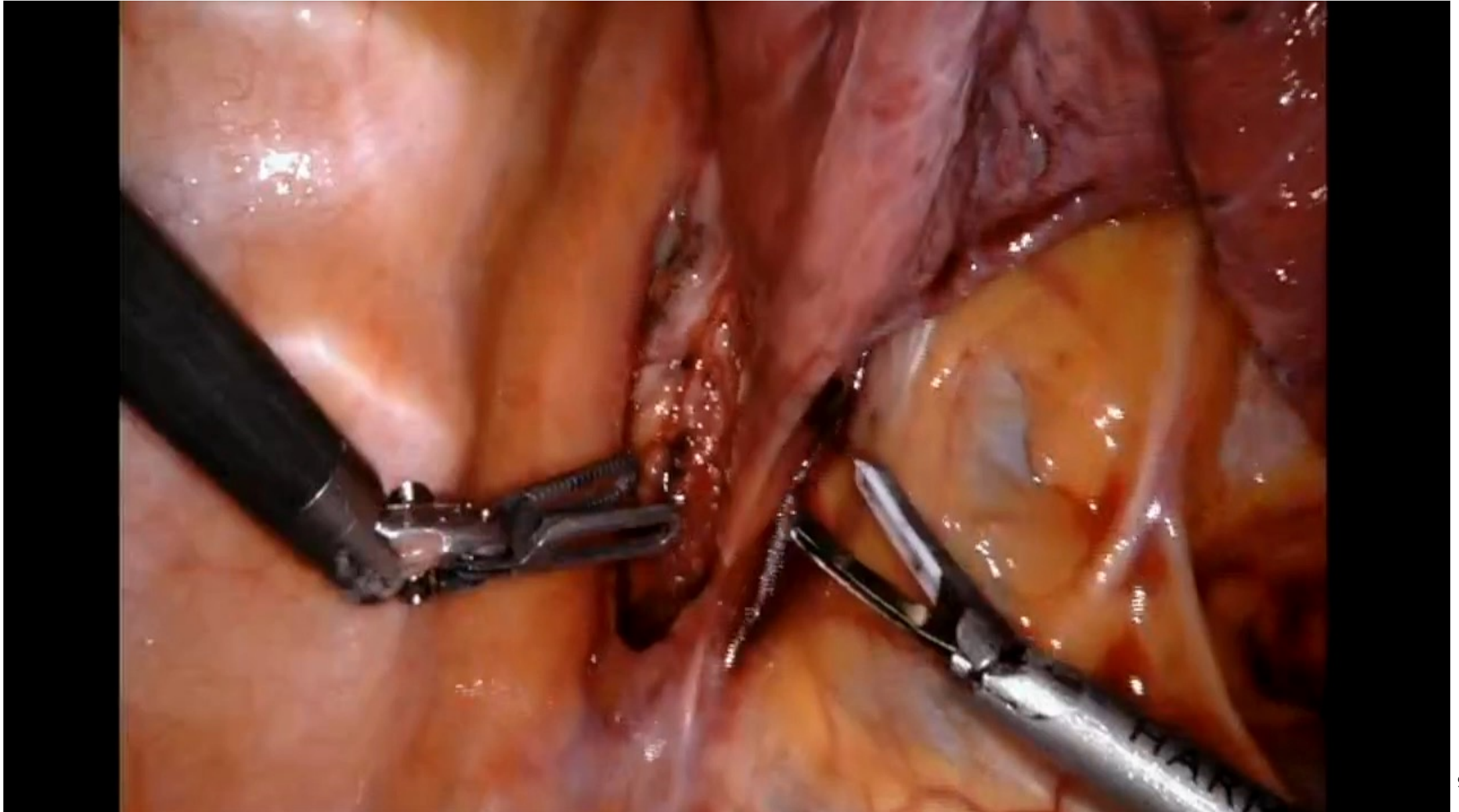
References



Robotic Esophagectomy – Abdomen



Robotic Esophagectomy – Chest





Thank you.

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