



A Teaching Affiliate  
of Harvard Medical School

# REDO HELLER MYOTOMY

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Minimally Invasive and Novel  
Therapeutics (MINT) in Foregut  
Disease 2023

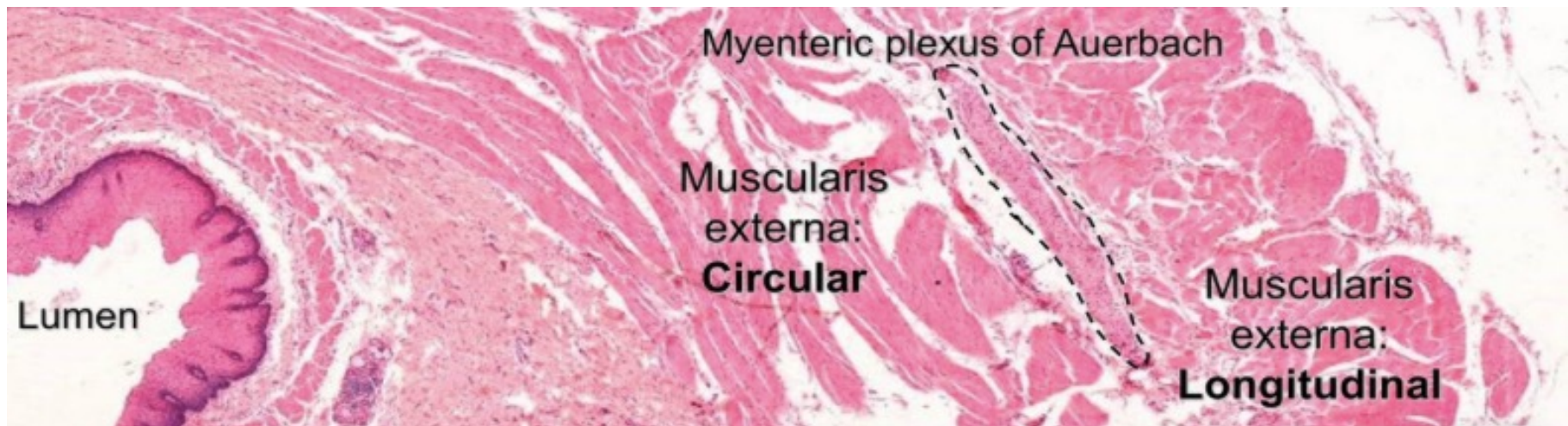


MASSACHUSETTS  
GENERAL HOSPITAL

THORACIC SURGERY

# Achalasia

- Achalasia is generally diagnosed between the ages of 25 and 60 years, with an incidence of 1.6 per 100,000
- Progressive degeneration of ganglion cells in the myenteric plexus leading to failure of relaxation of LES and loss of peristalsis



# HELLER MYOTOMY

- Myotomy: surgical division of all muscle layers of LES extending from esophageal body into the anterior gastric wall

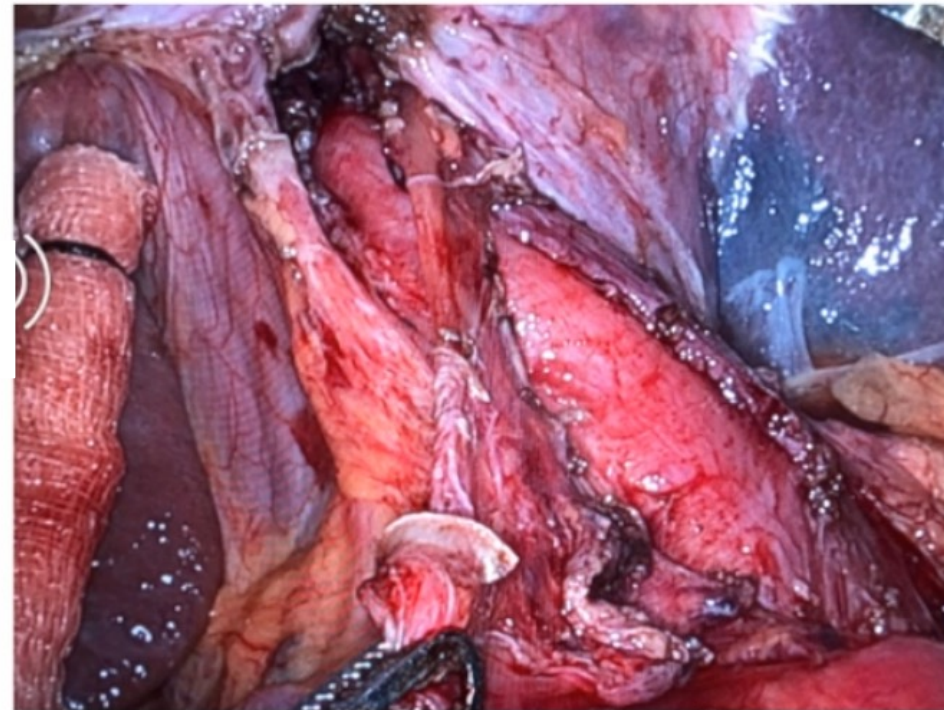
- *Heller's Myotomy*: German surgeon E. Heller (1913)

- Anterior and posterior incision

- Single incision: Groenvedeldt (1918) and Zaaijer (1924)

- Laparoscopic Heller : S. Schimi & A. Cuschieri (1991)

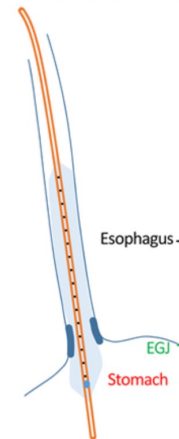
- Thoracoscopic esophagomyotomy: C. Pellegrini (1992)



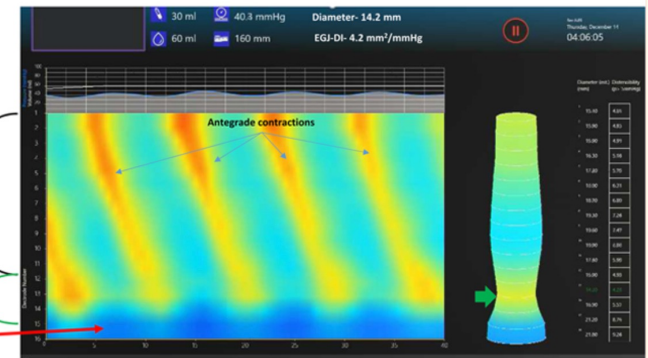
# Work up for Failed Myotomy

- EGD to evaluate pathologic reasons for dysphagia - Schatzki ring, slipped wrap, esophagitis, malignancy
- Repeat testing:
  - High Resolution Manometry
  - Endoflip
- Imaging – ct scan for pseudoachalasia
- Multidisciplinary discussion for management

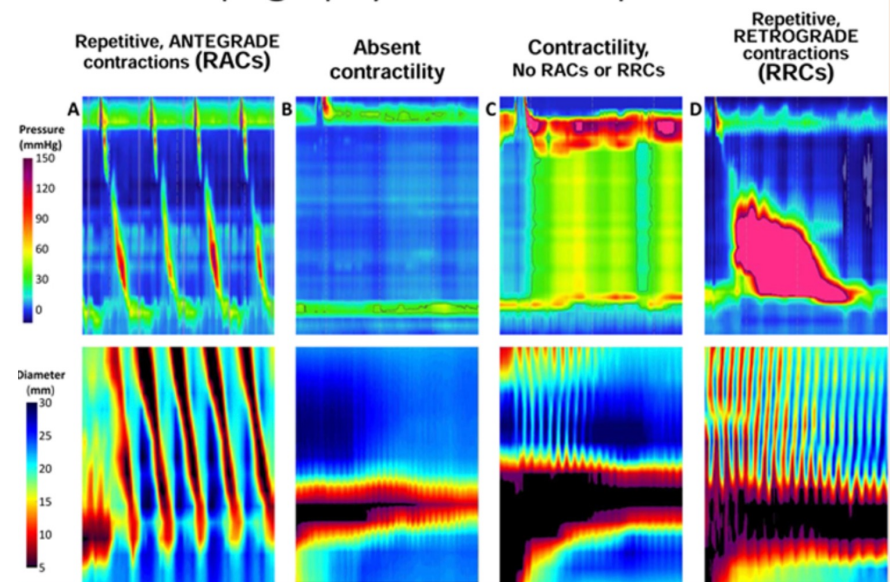
FLIP 2.0: Catheter



FLIP 2.0: Real-time FLIP-panometry



FLIP topography: Contractile patterns





# Mechanism of Failure of Heller Myotomy



failure rate ranges from 10% to 20%

incomplete myotomy – too short proximally or too short – most common cause of failure (33%)

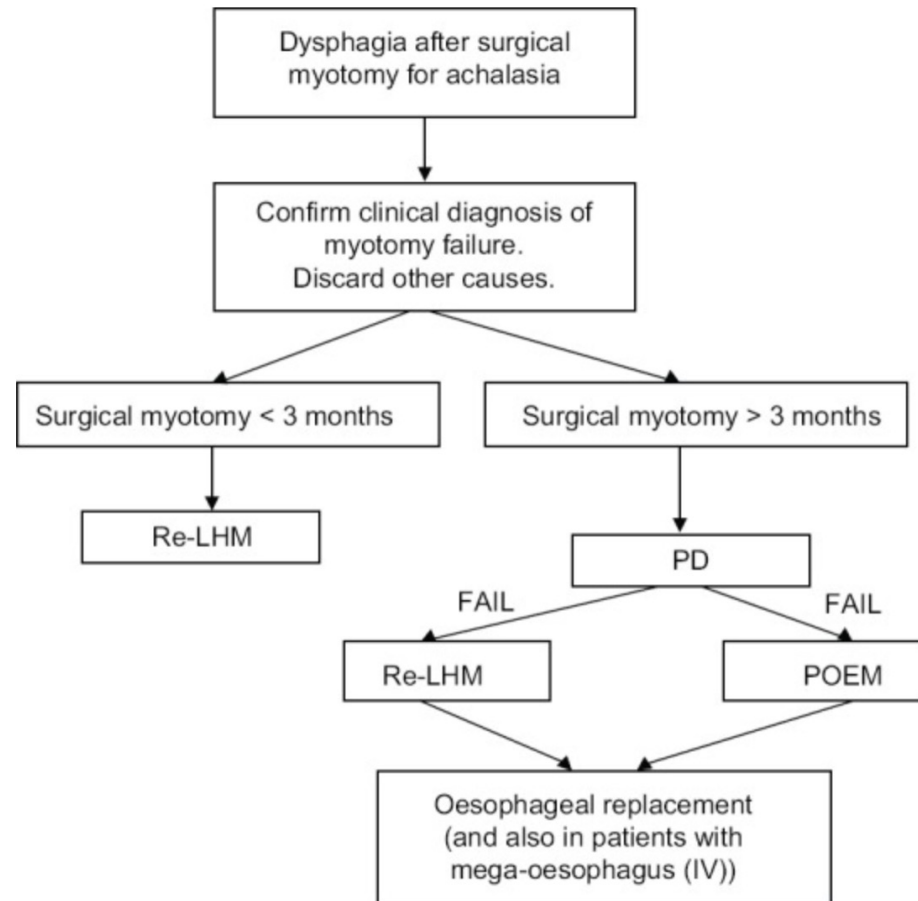
myotomy fibrosis (27%)

fundoplication disruption (13%), too tight fundoplication (7%)

combination of myotomy fibrosis and incomplete myotomy (20%)

# Treatment Options for Failed Myotomy

- ❖ Pneumatic dilation
- ❖ Redo surgical myotomy
- ❖ POEM
- ❖ Esophagectomy – as last resort



# Treatment Options for Failed Myotomy

- ❖ Laparoscopic re-operation for failed Heller myotomy is feasible and results are encouraging

- Significant symptoms improvement:

- ✓ Dysphagia 71%
- ✓ Regurgitation 89%
- ✓ Heartburn 58%
- ✓ Chest pain 40%

- Surgical outcomes:

- ✓ Two patients required conversion to open surgery (13%)
- ✓ Three patients (20%) failed the re-operation and required further revisional surgery
- ✓ intraoperative perforation in three (none of which resulted in postoperative morbidity)

## Revisional surgery after failed esophagogastric myotomy for achalasia: successful esophageal preservation

- All reoperations at our institution were performed laparoscopically (with two conversions)
  - ❖ 58 patients -3 ultimately required esophagectomy
- Inadequate myotomy was identified in 53 % of patients, fundoplication failure in 26 %, extensive fibrosis in 19 %, and mucosal stricture in 2 %
- Intraoperative esophagogastric perforation occurred in 19 % of patients and was repaired
- postoperative leak rate was 5 %





# Robotic vs. Laparoscopic Heller: Review

- In an analysis of 14 studies, reported rates of esophageal mucosal injury with laparoscopic myotomy in most studies varies between 5% and 15%.
- Review of 9 studies of Robotic Heller Myotomy, showed a significantly lower incidence, mostly zero, of esophageal perforation with robotic approach

Heller myotomy perforation: robotic visualization decreases perforation rate and revisional surgery is a perforation risk

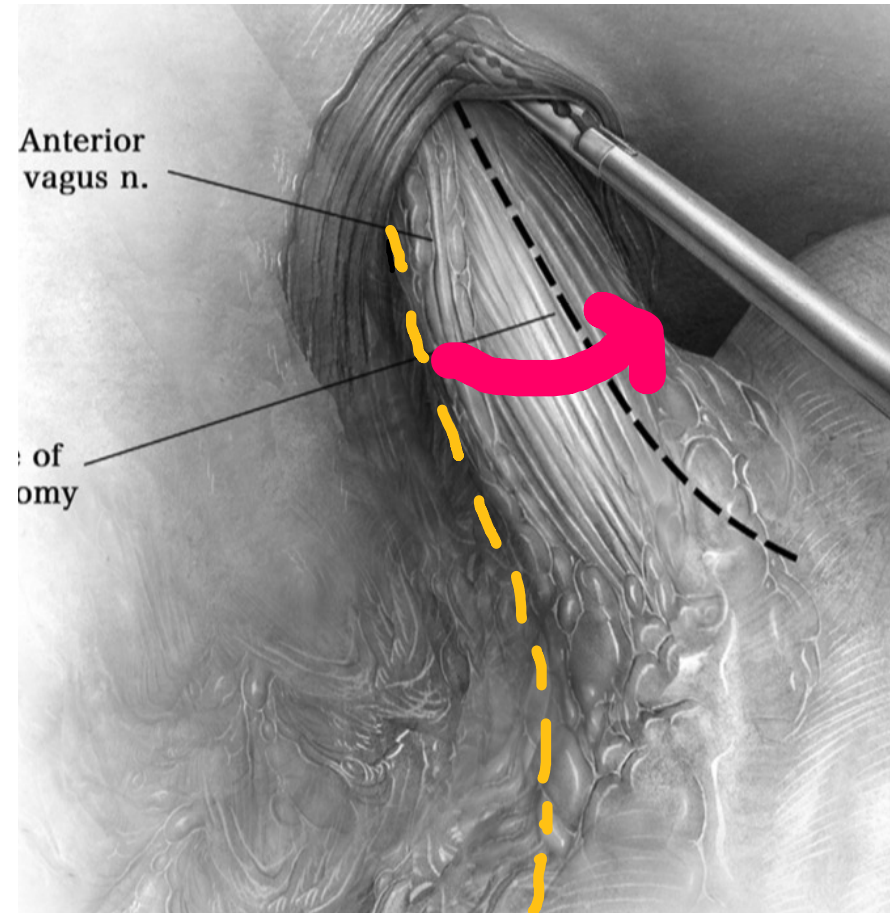
❖ **4x decrease in perforation rate**

## Redo laparoscopic Heller myotomy and Dor fundoplication versus rescue peroral endoscopic myotomy for esophageal achalasia after failed Heller myotomy: a single-institution experience

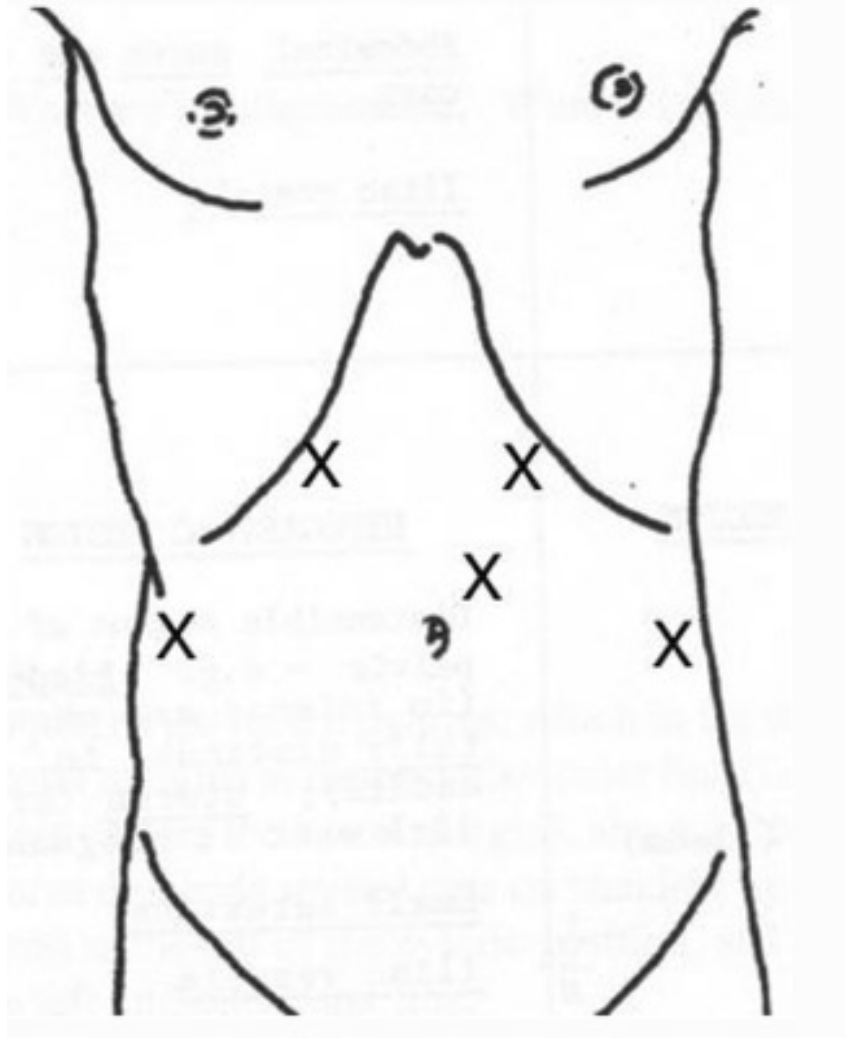
- 11 redo laparoscopic Heller-Dor procedure/14 rescue POEM
- Blood loss ( $p = 0.001$ ) and intraoperative complications rate ( $p = 0.003$ ) were lower in POEM group
- Patients who underwent POEM had a higher rate of postoperative reflux esophagitis ( $p = 0.033$ )
- the dysphagia symptoms were improved for both groups
- both groups expressed satisfaction with their respective procedures
- ❖ POEM - was associated with better surgical outcomes than redo laparoscopic Heller
- ❖ POEM had higher rates of postoperative reflux esophagitis

# Redo Heller Myotomy: Key Surgical Steps

- ❖ Take down prior fundoplication and **restore normal anatomy**
- ❖ Transmediastinal mobilization of the esophagus
- ❖ Rotate the esophagus to create a **posterior myotomy** (may need to mobilize vagus)
- ❖ Extend proximally 6 cm above GE junction and distally 2.5 cm onto gastric wall (total length is ~ 8.5 cm)



# PORT PLACEMENT FOR MINIMALLY INVASIVE HELLER MYOTOMY – ROBOTIC AND LAPAROSCOPIC





# REDO ROBOTIC HELLER MYOTOMY

- 59 yo Gentleman with a history of Type I Achalasia
- LHM with Dor Fundoplication 10 years ago
- Recurrent dysphagia with vomiting/regurgitation and weight loss
- Manometry consistent with achalasia possible pseudoachalasia (herniation of wrap?)





# REDO ROBOTIC HELLER MYOTOMY



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# Key Points

- Redo Heller Myotomy is safe and acceptable procedure for failed heller myotomy
- Multidisciplinary approach is important in the work up of failed myotomy
- Higher risk of perforation in redo heller myotomy over POEM however there is less reflux esophagitis
- Robotic Heller Myotomy appears to have a benefit over Laparoscopic Heller Myotomy but randomized trials have not been performed to this date



# THANK YOU

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