

# Benign esophageal disease

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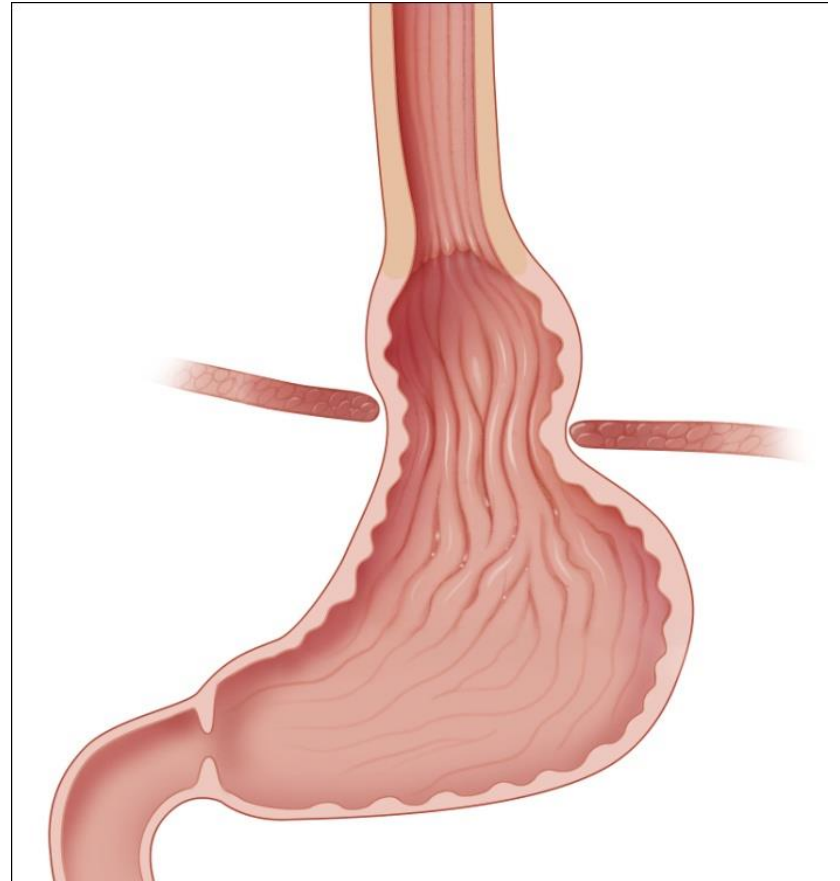
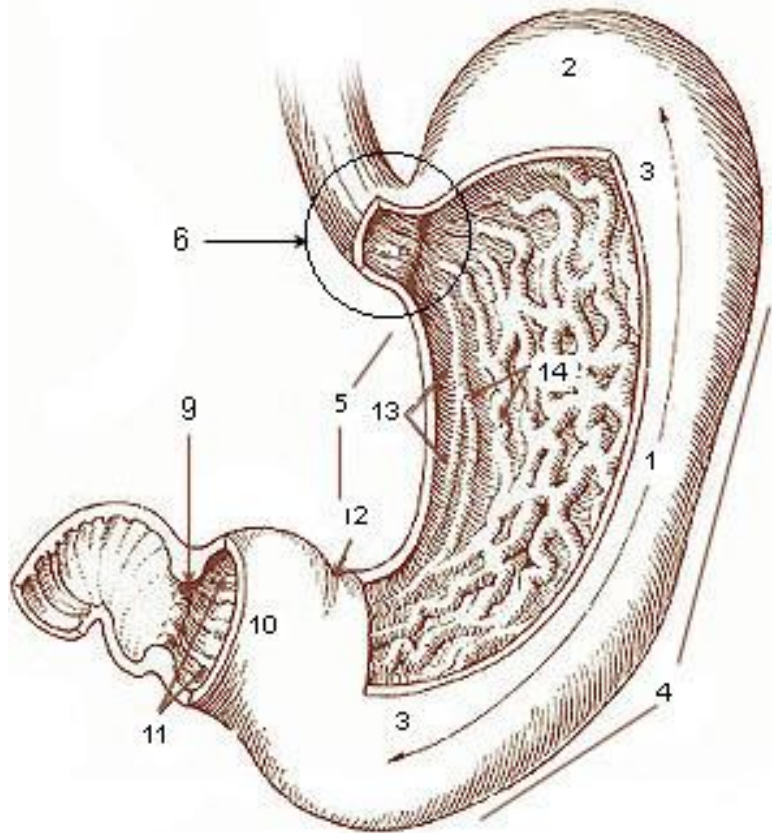
# GERD - pathophysiology

- **Failure of LES to prevent reflux**
- **3 Components to the LES**
  - Resting LES pressure (normal > 6mmHg)
  - Resting LES length (normal >2 cm)
  - Intra-abdominal LES length (normal >1cm)

**1 or 2 components = 75%  
chance of GERD**

**3 components = 93%**





# GERD

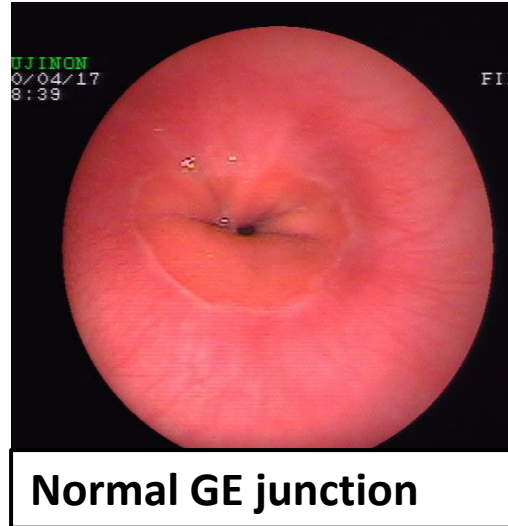
**60 yo man, complains of heartburn**

- **Typical/Atypical symptoms of GERD**
- **Lifestyle changes/Medical Management**
- **Indication for further workup**
  - **Failure of medical management**
  - **Immediate recurrence after withdrawal of therapy**
- **Diagnostic workup**
  - **EGD**

# Manifestations of GERD

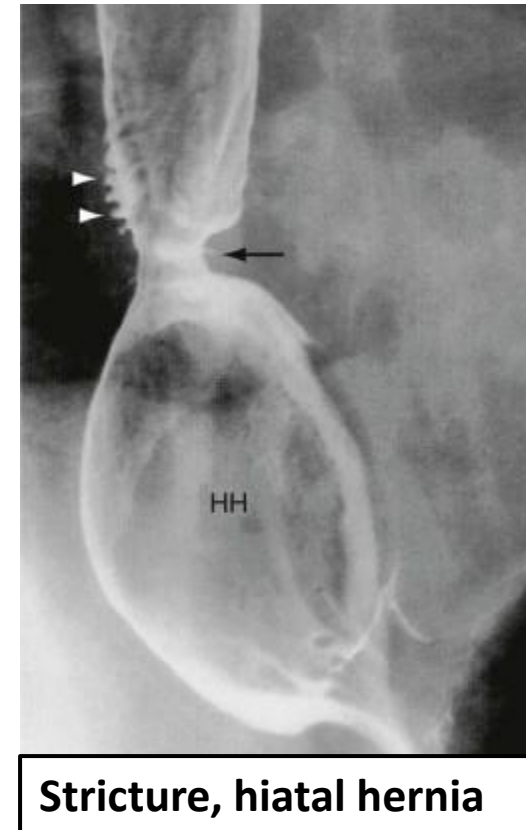
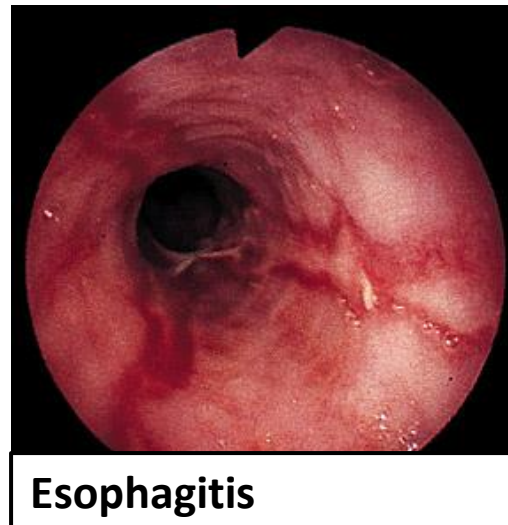
- **Esophageal**

- Normal
- Esophagitis
- Ulceration
- Stricture
- Barrett's



- **Extra-esophageal**

- Asthma
- Cough
- Aspiration
- Hoarseness



# GERD

- **Treatment**

- **Medical**

- **90% esophagitis heals with medical management**
    - **80% recur within 1 year of withdrawal**

- **Surgical**

- **Indications for surgery**

- **Failure of medical management**
      - **Primary treatment for reflux disease**
      - **Complications of GERD**

- » **Stricture, Barrett's, ulceration, aspiration, vocal cord edema**

- **Contraindications for surgery**

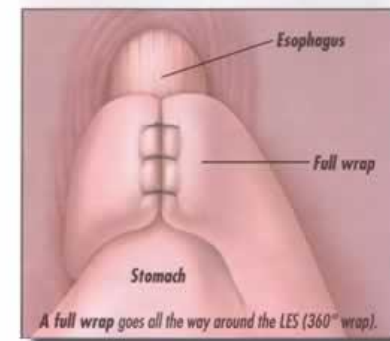
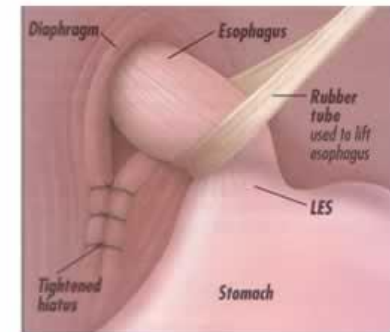
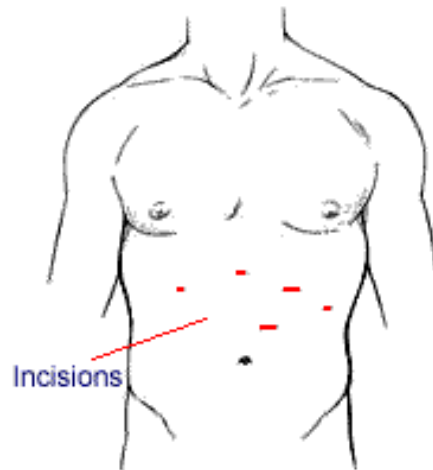
- **Morbid obesity - controversial**

# GERD

- **Preoperative workup**
  - **EGD (mandatory)**
  - **Esophagram (mandatory) → helps identify strictures/esophageal shortening**
  - **Manometry (mandatory) → detects esophageal motility disorders; examines lower esophageal sphincter**
  - **24h pH probe (mandatory if no other objective signs), remains Gold Standard for diagnosis of GERD.**

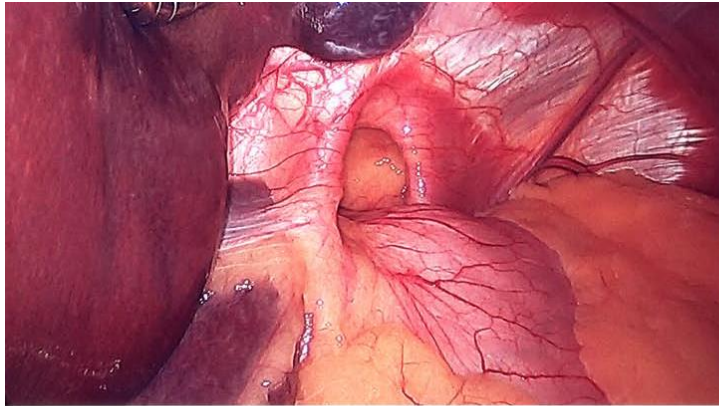
# Laparoscopic Anti-reflux Surgery

- Restore normal anatomy
  - GE junction to abdominal cavity
- Lengthen esophagus
- Repair diaphragm
- Perform wrap

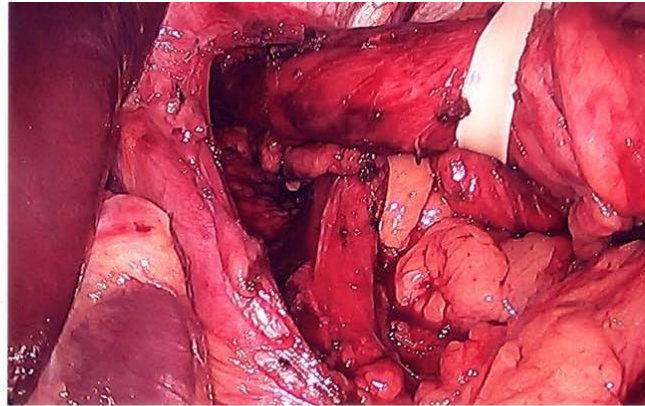




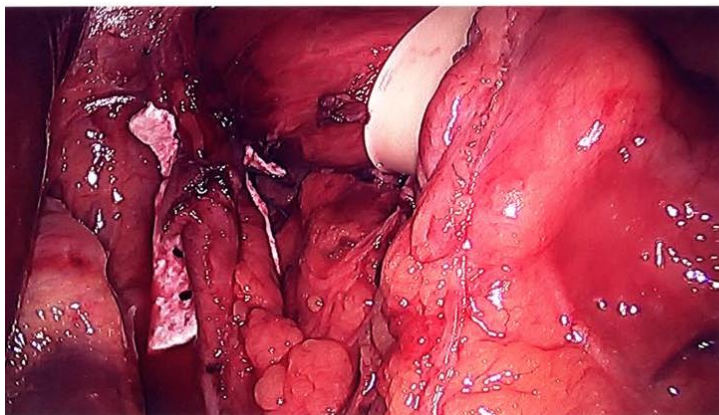
**Hiatal hernia**



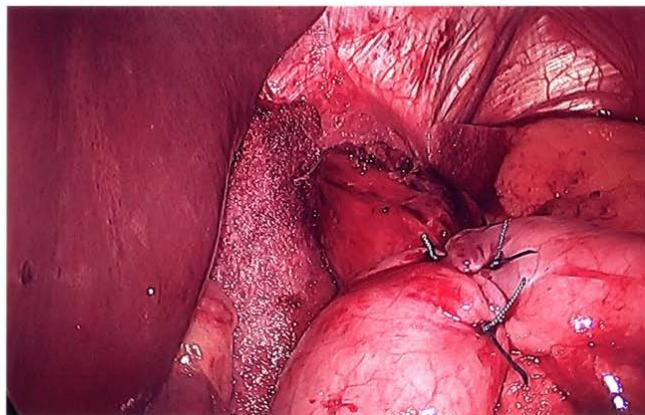
**Hiatal hernia (posterior crura)**



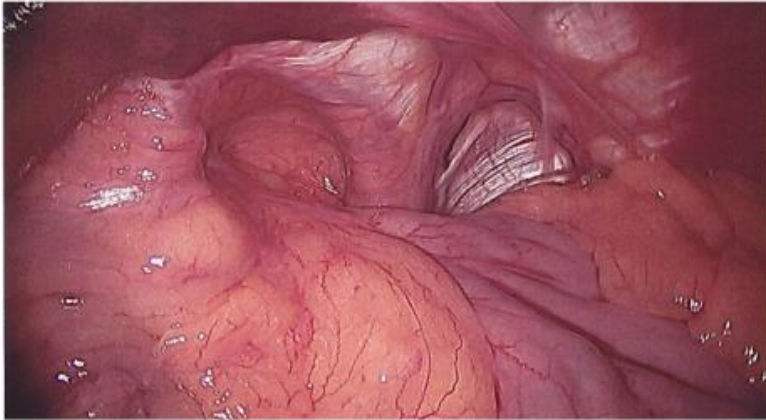
**Repair of posterior crura**



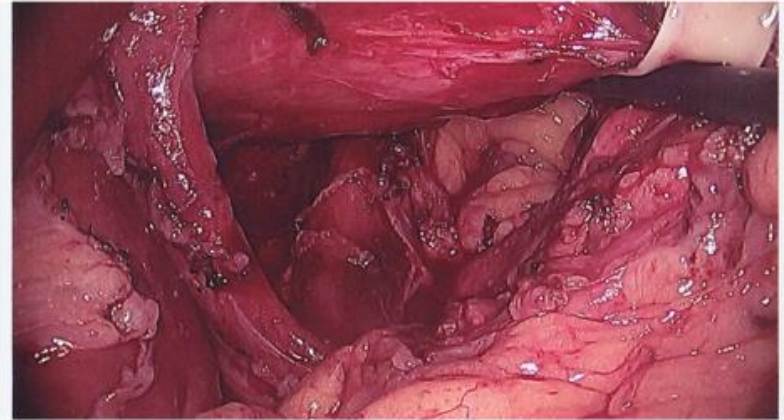
**360° Nissen fundoplication**



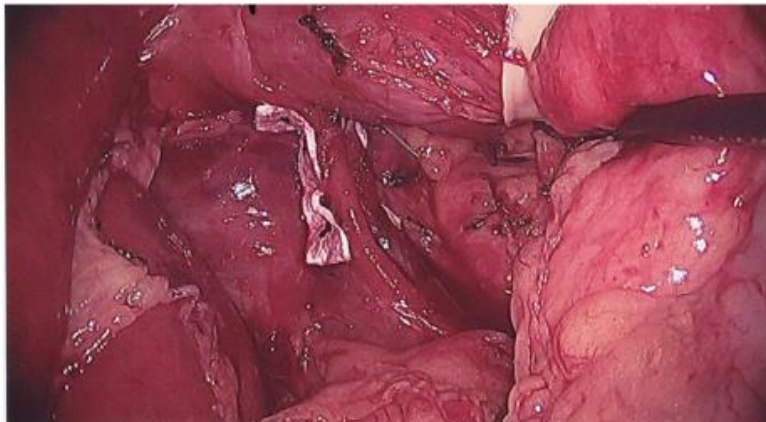
**Hiatal Hernia**



**Hiatal Hernia (view of posterior crura)**



**Hiatal Hernia repaired around esophagus**



**Partial (Toupet) fundoplication**



# Laparoscopic Nissen Fundoplication Outcomes

- **Low morbidity and mortality**
  - Perforation 1%, failure of wrap 1%
  - Dysphagia 2-10% with most improving with a single surgical dilation
- **85-90% symptom free at 10 years**

# Other complications

- **Dysphagia post-op -usually traumatic edema (2 weeks)**
  - Hematoma (4-6 weeks)
  - Wrap too tight
  - Poor peristalsis/pre-operative dysphagia
  - Stricture
- **Vomiting post-Nissen**
  - Usually disruption
- **Complications of Nissen**
  - Perforation (1%)
  - Recurrence mandating redo (3-5%)
  - Paraesophageal hernia (failure to close the crura)
  - Vagal nerve injury (less common)

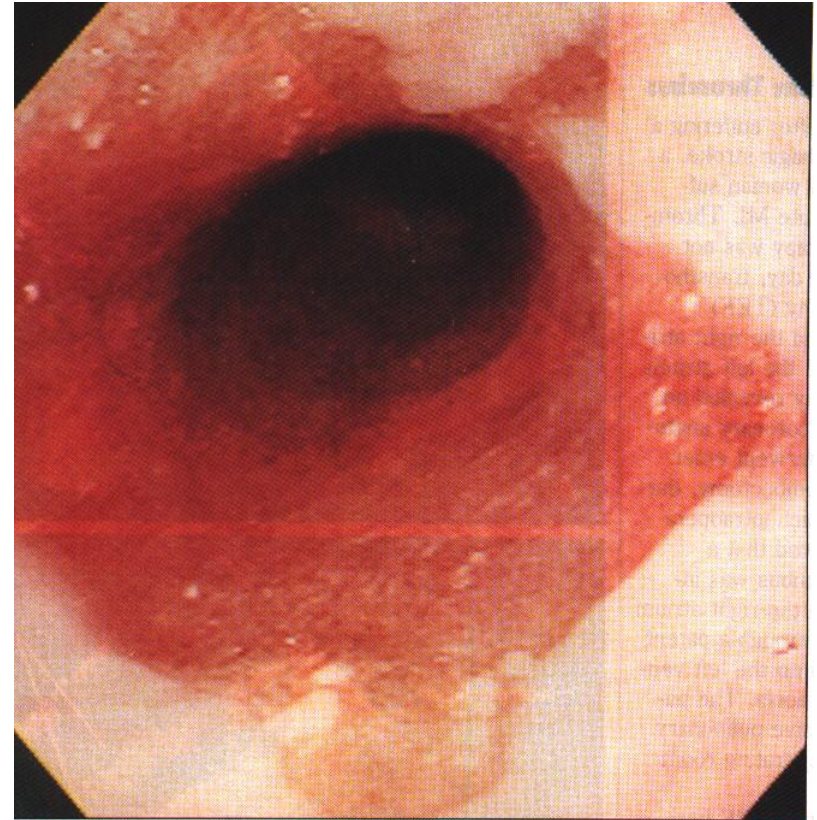
# **Medicine vs Surgery in GERD 2010 Cochrane Review**

- **4 randomized trials, 1232 participants**
- **Statistically significant improvements in health-related quality of life at three months and at one year in the surgical group**
- **All studies reported significant improvements in GERD-specific QOL after surgery**
- **Cost 3-6 x higher in surgical group at 1 year**



# Barrett's Esophagus

- Endoscopically visible segment of columnar mucosa with goblet cells
- Results from reflux-induced mucosal injury
- Considered premalignant
- Progression to cancer 0.5% per patient-year (range from 0.2-2.9%)



# Barrett's Esophagus

## Role of Antireflux therapy

Table 1 Medical therapy and surgery for limiting progression and causing regression of Barrett's esophagus *n* (%)

Publication	No. of patients	Follow-up (yr)	Adenocarcinoma	Dysplasia	Regression
<b>Medical therapy</b>					
Hillman <i>et al</i> <sup>[13]</sup> , 2004	279	4.7	7 (2.5)	5 (1.8)	NA
Cooper <i>et al</i> <sup>[9]</sup> , 2006	188	5.1	3 (1.6)	6 (3.2)	NA
Nguyen <i>et al</i> <sup>[14]</sup> , 2009	231	7.6	17 (7.4)	53 (23)	NA
Heath <i>et al</i> <sup>[10]</sup> , 2007	82	0.9	6 (7.3)	9 (11)	34 (41)
Horwhat <i>et al</i> <sup>[11]</sup> , 2007	67	3.8	2 (3.0)	21 (31)	13 (19)
Total	847	4.4	35 (4.1)	94 (11.1)	47 (31.5)
<b>Surgery</b>					
Hofstetter <i>et al</i> <sup>[15]</sup> , 2001	79	5.0	0	4 (5)	16 (20)
Bowers <i>et al</i> <sup>[16]</sup> , 2002	64	4.6	0	1 (2)	31 (48)
Mabrut <i>et al</i> <sup>[17]</sup> , 2003	13	3.8	0	0	6 (46)
Oelschlager <i>et al</i> <sup>[18]</sup> , 2003	90	2.6	1 (1)	3 (3)	30 (33)
Desai <i>et al</i> <sup>[19]</sup> , 2003	50	3.1	0	1 (2)	9 (18)
O'Riordan <i>et al</i> <sup>[20]</sup> , 2004	57	3.8	2 (4)	2 (4)	14 (25)
Abbas <i>et al</i> <sup>[21]</sup> , 2004	33	1.5	1 (3)	2 (6)	13 (39)
Zaninotto <i>et al</i> <sup>[22]</sup> , 2005	35	2.3	0	0	6 (17)
Ozmen <i>et al</i> <sup>[23]</sup> , 2006	37	1.6	0	1 (3)	6 (16)
Biertho <i>et al</i> <sup>[24]</sup> , 2007	70	4.2	0	3 (4)	23 (33)
Biertho <i>et al</i> <sup>[25]</sup> , 2009	23	4.5	0	0	14 (61)
Total	551	3.4	4 (0.7)	17 (3.4)	168 (30.5)

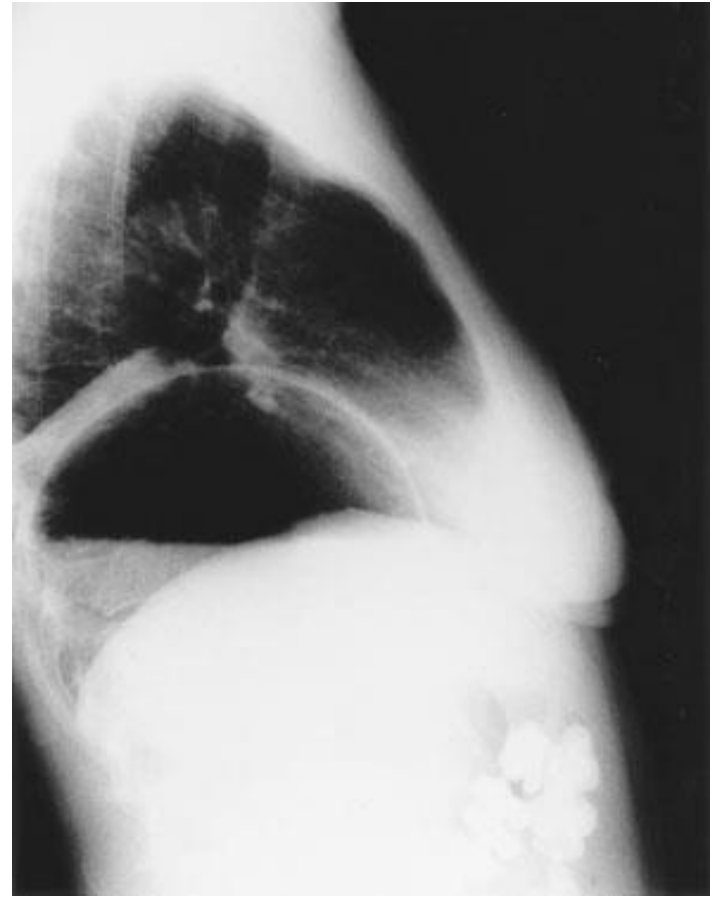
# GERD and Obesity

- **Direct correlation between BMI and GERD**
- **Surgery for both in severe, refractory cases**
- **Durability of fundoplication in obese patients is significantly lower than in non-obese**
  - **31.3% vs 4.5% recurrence rates**
    - **Remains controversial.**
    - **Higher rate of fundoplication failures**
  - **Hiatal hernia recurrence also more common**

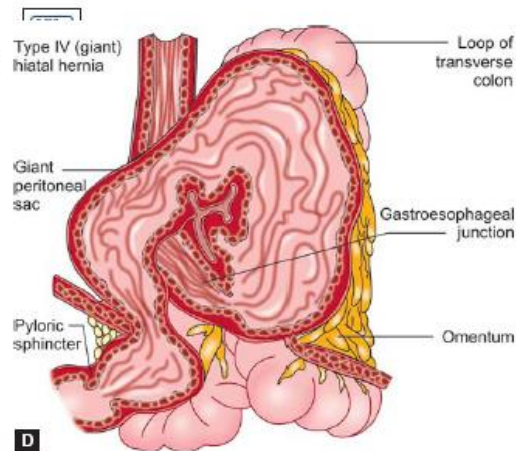
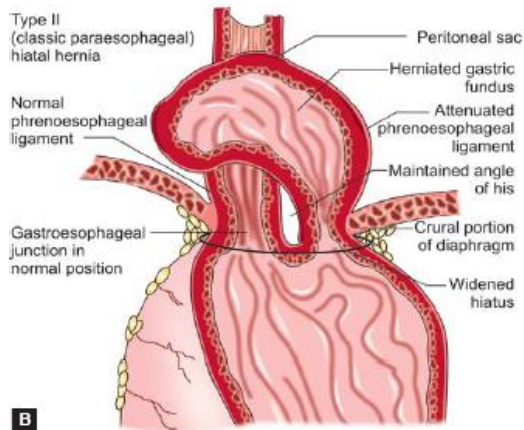
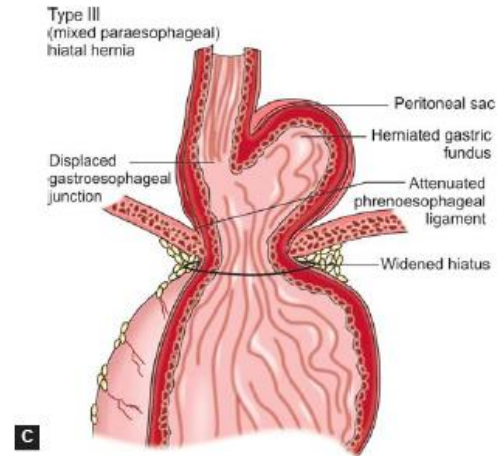
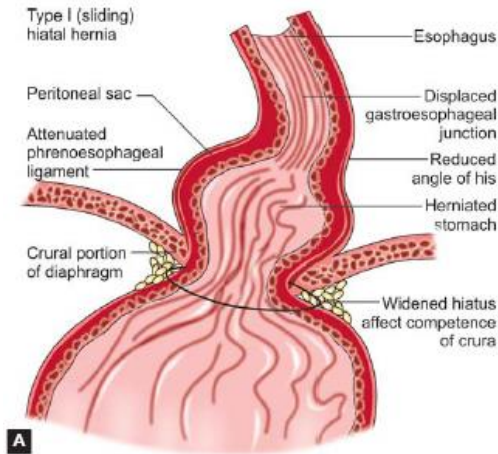


# Case 2

- 34 yo woman
- Dyspnea and postprandial fullness x 9 months
- Sudden onset of severe epigastric pain
- Hgb 11.5



# Types of Paraesophageal hernia



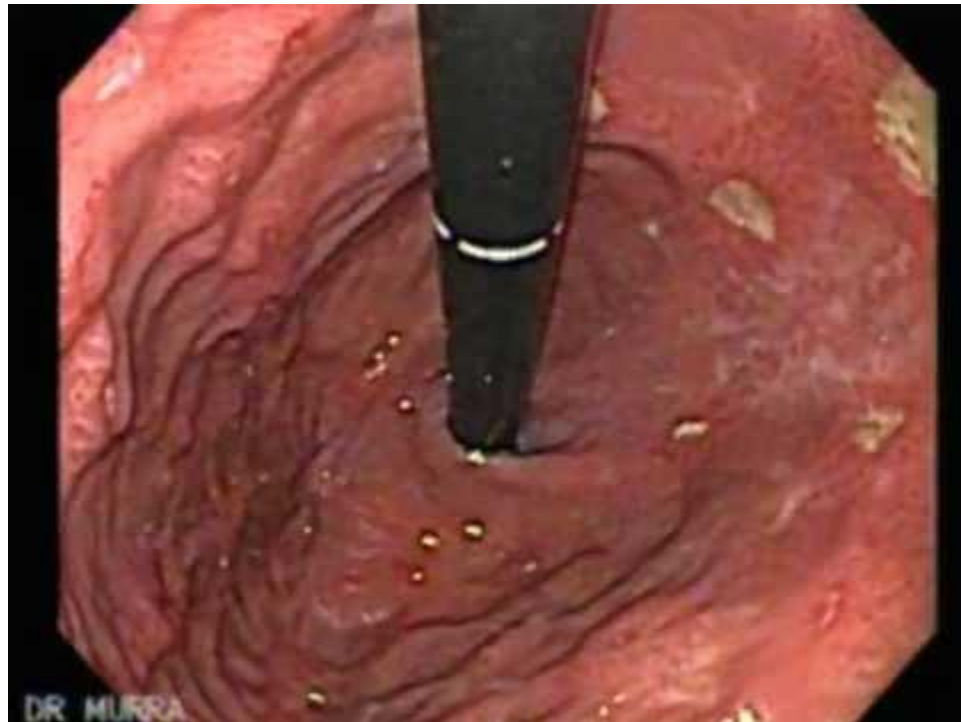
# Paraesophageal hernia

- Symptoms
  - Up to 50% asymptomatic
  - Epigastric pain, postprandial fullness, chest discomfort, heart burn, regurgitation, dysphagia, vomiting
  - Anemia from GI bleed
  - Pulmonary dysfunction
  - Acute symptoms (can mimic MI): Classic triad - Chest pain, retching but unable to vomit, unable to pass NGT

# Paraesophageal hernia

- Diagnosis/Workup:
  - CXR – retrocardiac bubble or intrathoracic stomach
  - Barium Swallow – large, intrathoracic upside down stomach
  - Endoscopy – ulcers, erosions, Barrett's, neoplasm
  - Manometry – LES status, function of esophagus (optional)





# Case 2

- Treatment
  - Repair if symptomatic, or on a selective basis in truly asymptomatic patients (previously all Type II and III were repaired)
- Surgery
  - Reduction sac
  - Excision sac
  - Repair defect
  - Antireflux procedure (usually partial)

# Case 3

- **47 yo man**
- **Dysphagia, worsening over 2 years**
  - Solids vs liquids
- **Workup**
  - Barium swallow



# Case 3



- Absent peristalsis
- Dilated esophagus
- Birds beak
- 90% of achalasia patients

# Case 3

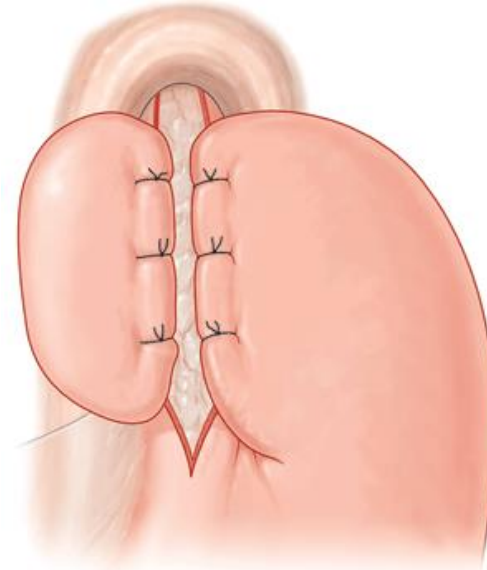
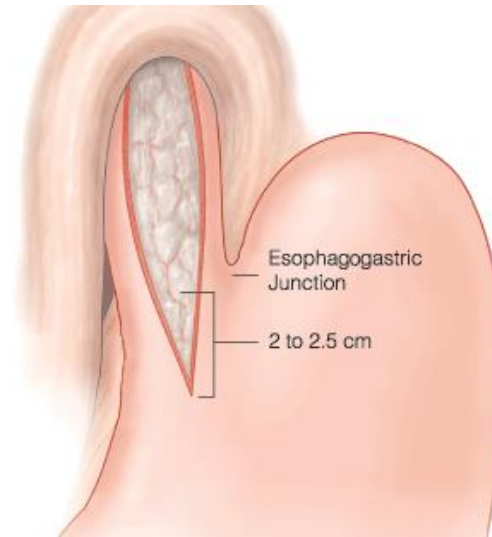
- **Further workup**
  - **EGD to r/o tumor (pseudoachalasia)**
    - Retained food/liquid, esophageal dilation, or normal
  - **Manometry (GOLD STANDARD)**
    - Aperistalsis and incomplete relaxation of LES
    - Increased LES pressures of >25 mmHg also seen

# Achalasia

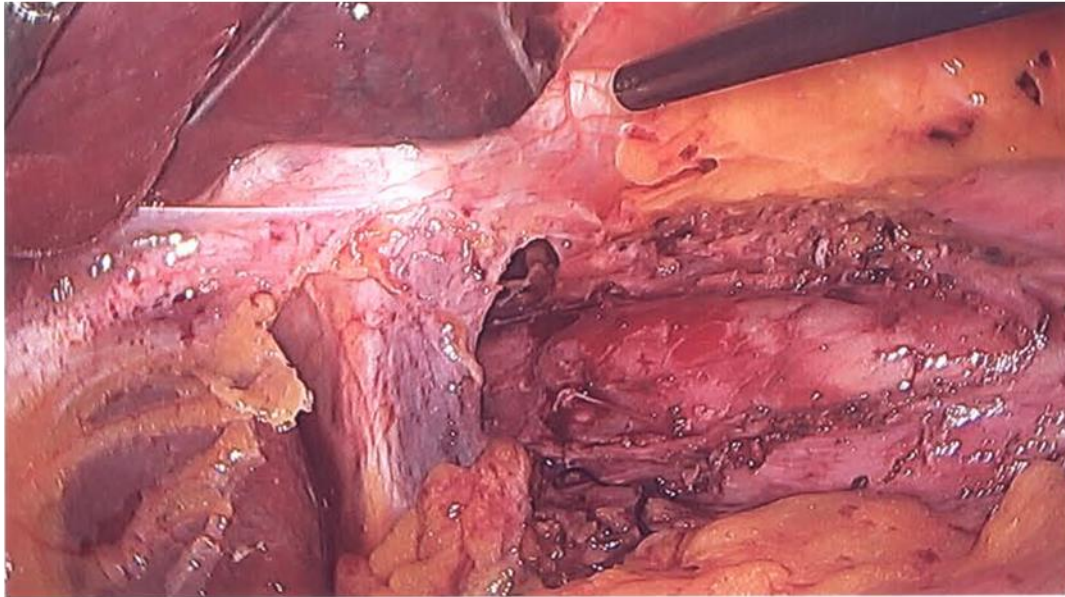
- **Nonsurgical treatment**
  - **Largely ineffective**
    - **Smooth muscle relaxants (CCB, nitrates)**
      - short-lived
    - **Esophageal dilation**
      - response rates 60-80%, high recurrence, scarring
    - **Botulinum toxin**
      - Relief in 80%, recurrence 50% within 6 months
      - Significant scarring → 30% perforation rate in surgery

# Achalasia

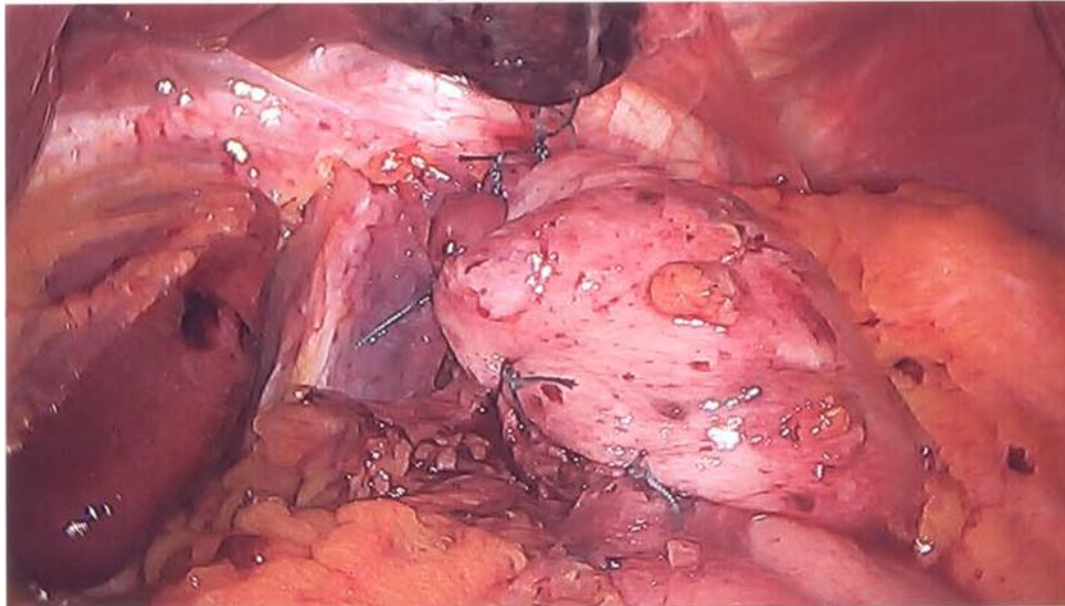
- **Treatment – Surgical - Heller myotomy**
  - Intraoperative EGD
  - Restore normal anatomy if necessary
  - Myotomy at 11 o'clock position
    - 2-2.5 cm onto gastric wall
    - 6 cm above GE junction
  - Partial fundoplication
    - Dor
    - Toupet



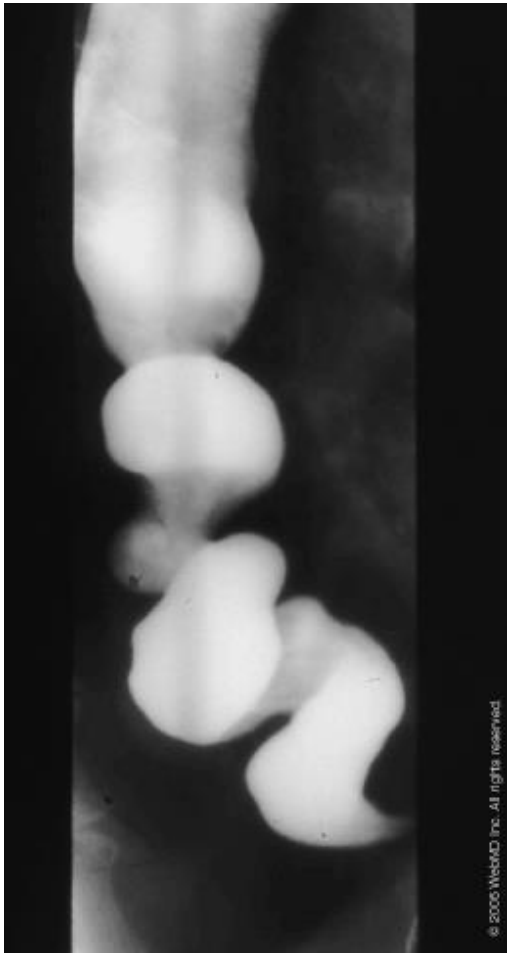
## Esophageal myotomy



## Anterior (Dor) fundoplication



# Spastic motility disorders



- Diffuse esophageal spasm
  - Dysphagia liquids and solids
  - High amplitude contractions with intervening periods of normal peristalsis
  - Medical management
    - Reassurance, CCB, Nitrates
  - Surgery less helpful
    - Myotomy
    - Botulinum toxin

Questions before we move on? 😊

