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 > 1 cm)

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

Images:
- Normal GE junction
- Esophagitis
- Stricture, hiatal hernia
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
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

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<th>Publication</th>
<th>No. of patients</th>
<th>Follow-up (yr)</th>
<th>Adenocarcinoma</th>
<th>Dysplasia</th>
<th>Regression</th>
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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

A. Type I (sliding) hernia
- Esophagus
- Peritoneal sac
- Attenuated phrenoesophageal ligament
- Crural portion of diaphragm
- Widened hiatus affecting competence of crura

B. Type II (coincident paraoesophageal) hernia
- Peritoneal sac
- Attenuated phrenoesophageal ligament
- Gastroesophageal junction in normal position
- Widened hiatus

C. Type III (mixed paraoesophageal) hernia
- Peritoneal sac
- Displaced gastroesophageal junction
- Attenuated phrenoesophageal ligament
- Widened hiatus

D. Type IV (giant) hernia
- Loop of transverse colon
- Gastroesophageal junction
- Omentum
- Pyloric sphincter
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? 😊