GASTROESOPHAGEAL REFLUX DISEASE

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Definition

- Gastric contents reflux into esophagus, or higher, causing heartburn, sour taste, cough, etc.
- Nearly 40% of US population is affected
- Medical treatment costs nearly $6 billion/year
Symptoms

- Non-specific
- Co-existent with other medical diseases

Symptoms
- Heartburn
- Regurgitation
- Waterbrash
- Dysphagia
- Cough

Complications
- Esophagitis
- Ulcers
- Strictures
- Barrett’s Disease
- Chronic anemia
- Aspiration
Normal anti-reflux mechanism

- Everyone has reflux to some degree, not everyone has symptoms

- Refluxed components
  - Acid, pepsin, bile, pancreatic enzymes

- Prevented by:
  - Esophageal clearance
  - Lower esophageal sphincter
  - Gastric reservoir
Normal anti-reflux mechanism

- Refluxed contents are cleared by esophageal peristalsis
  - Primary waves – esophageal peristalsis created by swallowing
  - Secondary waves – localized reflex to clear remaining material
  - Tertiary waves – uncoordinated, ineffective peristalsis
Normal anti-reflux mechanism

- Reflux is prevented by lower esophageal sphincter (LES)
  - Abdominal location (hiatal hernia)
  - Length of sphincter (2.5cm)
  - LES resting pressure (10-15mmHg)
  - Angle of His
Normal anti-reflux mechanism

- **Gastric reservoir**
  - As the stomach distends, the LES is shortened and weakened
  - Caused by overeating and fried foods
  - Continued exposure of LES to reflux contents leads to worsening LES function and GERD

- Thus ALL reflux disease begins in stomach
Non surgical treatment

- Avoidance of:
  - Chocolate
  - Coffee
  - Fatty foods
  - Peppermint
  - Alcohol
  - Tobacco

- Non medical therapy
  - Avoid eating at bedtime
  - Avoid tight clothing
  - Elevate head of bed
  - Lose weight

- Medical therapy
  - Antacids
  - H₂-blockers
  - PPI
Diagnosis

- Important to make the diagnosis and exclude other causes of symptoms, especially cancer
- Complete H&P
- Trial of therapy for 8 weeks
  - $H_2$ blocker or PPI
Diagnosis

- If symptoms persist after 8 weeks
  - Obtain imaging studies
    - Barium Swallow
    - EGD with biopsy
    - Manometry
    - pH/Impedence testing
Medical therapy

- If symptoms improved after 8 weeks:
  - Continued H$_2$-blocker or PPI
  - Periodic evaluation for complications

Don't Let Heartburn Run Your Life Any Longer!
Surgical therapy

- Rudolf Nissen performed fundoplication in 1954
  - Of note, Nissen operated on Einstein (AAA repair)
- In 1987 12,000 procedures performed
- In 1991, laparoscopy introduced
- In 2010, laparoscopic Nissen fundoplication is standard operative therapy for GERD
  - Nearly 65,000 annually
Surgical therapy

- **Indications**
  - GERD responsive to medical therapy but patient desire
  - GERD not responsive to medical therapy
  - Complications of GERD (esophagitis, stricture, Barrett’s)
  - Para-esophageal hernia

- **Contra-indication**
  - Morbid obesity
  - Medical disease preventing operation
  - Previous upper GI tract surgery
  - Shortened esophagus
Surgical therapy

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Barrett’s Esophagus

- Defined as intestinal metaplasia of esophageal epithelium
  - Squamous epithelium becomes columnar epithelium with goblet cells

- Develops as consequence of chronic exposure to gastric reflux contents
Barrett’s Esophagus

- Degrees of metaplasia
  - No dysplasia – may benefit from surgery
  - Low grade dysplasia – may benefit from surgery, but requires annual surveillance
  - High grade dysplasia – requires esophagectomy

- Reflux surgery will stop but not reverse the chronic changes seen in Barrett’s
3 types of para-esophageal hernia

- **Type 1**
3 types of para-esophageal hernia

- Type 2
3 types of para-esophageal hernia

- Type 3
Morbid obesity

- Morbidly obese patients with uncontrolled GERD really need obesity surgery, not reflux surgery
Surgical approach

- Laparoscopic approach (over 80% of operations performed in US)
- Partial versus complete wrap based on pre-op manometry

Steps of operation
- Place ports
- Retract liver
- Dissect hiatus, mobilize esophagus
- Place bougie
- Repair diaphragm
- Divide short gastric vessels
- Perform wrap
Port placement
- Repair diaphragm
- Perform wrap
- Completed wrap

Nissen Fundoplication

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Other GERD operations

- **Abdominal approach**
  - Nissen (360° wrap)
  - Toupet (posterior partial wrap)
  - Dor (anterior partial wrap)

- **Thoracic approach**
  - Nissen (360° wrap)
  - Belsey (270° intussusception)
Anatomic goals of repair

- Re-engineered Lower Esophageal Sphincter (LES)
  - Angle of His re-established
  - LES reinforced
  - LES lengthened
  - LES re-positioned in abdomen
Outcomes

- More than 90% symptom improvement after Lap Nissen
- Complications less than 5%
- More cost effective than medical therapy if age < 49 years
Need for continuous drug treatment → Symptoms of GERD → Increasing doses of medication

Young patient
Financial burden
Noncompliance with drug therapy
Patient preference for surgery

24-Hour esophageal pH monitoring
Esophageal manometry
Endoscopy

Positive for GERD
Erosive esophagitis
Stricture
Barrett’s
Intractable GERD
Recommend antireflux surgery

Negative for GERD
Nonerosive GERD
Optional antireflux surgery

Pursue another diagnosis
Questions?