Advances in the treatment of Gastroesophageal Reflux Disease

Mary Kirk, NP
Disclosures

• Nothing to disclose
Gastroesophageal Reflux Disease: GERD

- Gastroesophageal Reflux Disease
  - Stomach acid backflows into esophagus
  - Causes irritation of lining
  - Need for medication at least twice a week - indication to seek treatment
  - Prevalence: 10% general population
GERD

• Extra-esophageal Symptoms
  – ESTABLISHED ASSOCIATION
    – Reflux cough
    – Laryngitis
    – Asthma
    – Dental erosions
  – PROPOSED ASSOCIATION
    – Sinusitis
    – Pulmonary Fibrosis
    – Pharyngitis
    – Otitis Media
GERD: Symptoms

- Heartburn: burning sensation in chest (70-85%)
- Chest pain (33%)
- Regurgitation of food or sour liquid (60%)
- Dysphagia
- Recurrent vomiting
- Sour taste in mouth
- Dry cough
- Hoarseness/sore throat
- Water brash
- Globus sensation in throat
GERD: Symptoms

• Causes
  – Weak Lower Esophageal Sphincter
  – Gastric emptying disorder
  – Failed esophageal peristalsis
Risk Factors/Contributors

- Overweight
- Hiatal hernia
- Pregnancy
- Smoking
- Asthma (cause vs exacerbation)
Hiatal Hernia
PROGRESSION OF GERD

NORMAL 'LES'

GERD

ESOPHAGITIS

EROSIVE ESOPHAGITIS

PEPTIC STRicture (DYSphAGIA)

10-20%

BARRETT'S ESOPHAGUS

0.5-10% (40 TIMES INCREASED RISK)

DRUGS DO NOT DECREASE CANCER RISK AS REFLUX PERSISTS

ESOPHAGEAL ADENOCARCINOMA

FASTEST GROWING CANCER IN U.S.

500% INCREASE IN PAST 30 YEARS

85% MORTALITY RATE

UC San Diego
MEDICAL CENTER
Complications of GERD

- Narrowing of esophagus
- Esophagitis
- Aspiration pneumonia
- Barrett’s esophagus
Conservative Treatment

- Diet modifications
- Small, frequent meals, thickened
- Upright after eating
- Elevate HOB 6 inches
- Loose fitting clothing
Medical Treatment

- Antacids
- H2 Blockers:
  - Parietal cells (stomach epithelial cells)
  - Inhibit gastric secretion - blocks the binding of histamine to H2 receptors, reducing intracellular cyclic AMP and secretion of gastric acid
- Examples:
  - Cimetadine (Tagamet), famotidine (Pepcid), nizatidine (Axid), rantidine (Zantac)
Medical Treatment

• Proton Pump Inhibitors:
  – Lumen of stomach
  – Binds to proton pump; suppresses secretion of hydrogen ions into gastric lumen.
  – inhibits proton pump, final step in secretion of gastric acid
  – Examples:
    • Omeprazole (Prilosec), lansoprazole (Prevacid), pantoprazole (Protonix), esomeprazole (Nexium), rabeprazole (Aciphex), dexlansoprazole (Dexilant)
  – Long term use
Stomach Lining
Reasons for seeking surgery

• Does not want to stay on medication
• Barrett’s Esophagus
Other possible causes of GERD type symptoms

Gallbladder disease, achalasia, hiatal hernia, tumor

Need to rule out cause of symptoms

• Elevated pH scores
• Esophageal manometry- LES pressure
• Check peristalsis
Testing

- Upper GI Series/Barium Swallow
- Esophageal Manometry
- Upper GI Endoscopy
- pH Study- Bravo 48 hr or 24-48 hr pH probe
  OFF MEDICATION
- Off PPI for 7-10 days before study)
Esophageal Manometry
pH Study

Bravo probe system
Endoscopy

Esophagogastroduodenoscopy (EGD or upper endoscopy)

- Esophagus
- Endoscope
- Light
- Stomach

Interior of Stomach
- Endoscope
- Light
- Stomach Lining

Biopsy Sample
- Stomach Lining
Test Results

• pH score
  – Above 14.72

• Esophageal Manometry
  – Weak LES
  – Perastaltic movement

• Barium swallow
  – Reflux
  – Masses
  – Dilation

• Upper GI Endoscopy
  – Erosions
  – Salmon colored tissue
  – Ulcers
  – Gastritis, esophagitis, duodenitis
Surgical Options

- Fundoplication - wrap stomach around esophagus to create new valve - Nissen vs Toupet
- LINX - magnetic device around LES to augment
- TIF - Transoral Incisionless Fundoplication - reconstructs valve using EsophyX device
- SRS Endoscopic stapler (Medigus) - Incisionless surgery - anterior fundoplication
Fundoplication

Fundoplication involves wrapping the fundus around the esophagus.

Hiatal Hernia
The fundus is pushed through the diaphragm and into the chest cavity.

GERD
Harmful acids travel up into the esophagus.

Fundoplication
The fundus is sewn together, tightening the esophagus. The new configuration prevents the stomach from being pushed through the diaphragm. Now acid cannot flow upward.
LINX

- Magnetic Device
- Approved by FDA 2012
- Magnets around esophagus
- Open and close for bolus of food
- Close to prevent acid into esophagus
LINX Surgery

1. LINX is implanted around the weak native lower esophageal sphincter (LES).

2. The force of attraction of the magnetic beads helps keep the weak valve closed, preventing reflux.

3. The force of a swallow, belch or vomiting opens the beads.
LINX Intra-op
Quality of Life and Satisfaction
Proton Pump Inhibitor Use, Regurgitation, Dysphagia, Esophagitis Severity
Post Surgical Diet

• Traditional Approach: Nissen/Toupet
  – 6 week post-op esophageal diet
  – 2 weeks liquid, 2 weeks pureed, 2 weeks soft

• LINX
  – Regular diet immediate post-op
  – “challenge” the beads
How does Stretta work?

- Endoscopic approach
- Stretta- thin catheter with balloon on end
- 4 probes- discharge radio frequency energy to LES and gastric cardia
- Creates thermal lesions to targeted areas
- When lesions heal, LES muscles tighten to reduce possibility of acid reflux into esophagus
Esophagus- open LES
Stretta Device Inserted
Stretta Intra-op
Stretta- Post procedure
Stretta Data

- 48 month follow up: multicentered, Europe
- 56 patients evaluated (69 treated)
- GERD and quality of life scores improved significantly
- 41 of 56 patients able to go off PPI
- Appears Stretta is effective and durable

- Dughera, et al 2011
SAGES Recommendations

• Stretta is considered appropriate therapy for patients being treated for GERD who are:
  – 18 years or older
  – Symptoms of heartburn, regurgitation for 6 or more months
  – Have been partially or completely responsive to antisecretory pharmacologic therapy, and who have declined laparoscopic fundoplication

Quality of evidence: (++++)
Grade of recommendation: Strong
EsophyX

- Transoral Incisionless Fundoplication (TIF)
- Plicates the fundus around the GE junction (270 degrees)
- Restor intra-abdominal esophageal length
- Recreate the angle of His
- Augment high-pressure zone of esophagus
- Reduces hiatal hernias <2 cm
EsophyX

- General anesthesia
- 1-2 hours
- H-fasteners in between stomach and esophagus
**STEP 1:** The specially designed EsophyX device enters the esophagus through the mouth and is positioned at the junction of the stomach and esophagus.

**STEP 2:** The EsophyX device pulls and fastens a tissue fold.

**STEP 3:** Step 2 is repeated multiple times to reconstruct a robust, tight valve that prevents the reflux of stomach content up into the esophagus, resulting in the effective elimination of GERD.
EsophyX: Results

- 2 years
- Retrospective study: 110 patients
- 93% patients symptom free
- 79% free of daily PPIs
- Healed reflux esophagitis in 83%
- No adverse events in the first 2 years

Barnes, W.E., Hoddinott, K.M. et al Transoral Incisionless Fundoplication offers high patient satisfaction and relief of Therapy-resistant typical and atypical symptoms of GERD in community practice
SAGES Recommendations

• Long term data is not yet available for Esophyx
• In short term follow up, from 6 months- 2 years, Esophyx may be effective in patients with hiatal hernia~ 2 cm with typical and atypical GERD
• Further studies are required to define optimal techniques and most appropriate selection criteria, and to further evaluate device and technique safety
• Quality of evidence: (++)
• Grade of recommendation: Weak
SRS Endoscopic Stapler/Medigus

- Incisionless Treatment of GERD
- FDA cleared
- Device measures the thickness of the tissue before firing staples
SRS Endoscopic Stapler/Medigus
SRS Procedure Overview

Overtube placed
Stapler inserted; retroflexed
Tissues clamped and staples fired
Procedure Goal:
Anterior Fundoplication
Partial Efficacy Data

• Data from India, San Diego, Indianapolis completing 6 month follow up
• 80% subjects improved GERD HRQL > 50% (primary success criterion)
• 90% of subjects reduced PPI use by 50%
SRS Stapler/Medigus

• Next Steps
  – 3-5 year follow up for cohort study
  – Improved device received CE mark and 510K clearance
  – Optimize procedure; international registry

Conclusions
Results likely to improve as experience grows
Single operator device
FDA trial in US
Halo Ablation Device

- Created by Barrx
- Uses radiofrequency ablation to create “shallow burn” of Barrett’s
- Indications
  - Treatment of Barrett’s Esophagus
  - Dysplasia
Halo Ablation
Halo Ablation Device

- Safety
- Chest pain
- Nausea
- UGI bleed: 1 patient
- Stricture: 6% requiring dilation
Halo Ablation Device

- Multicenter Randomized Sham Controlled Study:
  - 127 patients
  - 90.5% ablation group complete eradication of dysplasia
  - 77.4% complete eradication of intestinal metaplasia
  - 81% complete eradication of high grade dysplasia
The coexistence of Barrett’s esophagus with gastroesophageal reflux symptoms is considered by many a clear indication for antireflux surgery [24]. Surgical intervention for asymptomatic Barrett’s esophagus is more controversial, however. While the metaplastic changes of Barrett’s have been reported to regress to a greater degree in the post-surgical population compared with medically treated patients, to date there is no demonstrable improvement in esophageal adenocarcinoma rates [25, 26].


SAGES (Society of American Gastrointestinal & Endoscopic Surgeons)

CASE STUDY
Case Study

- 50 year old gentleman
- Presents with cough, reflux

- Questions to ask patient
  - Social history
  - Weight
  - Medications
Case Study

• What tests to order?
• What options based on results?
Case Study

- Results
- pH score: DeMeester: 76
- Manometry: weak LES
- Barium swallow: reflux
- EGD: gastritis, esophagitis
- Biopsy results
Conclusion

• 3 promising endoscopic techniques
• Stretta- strong support from SAGES
• TIF- weak support
• SRS Endoscopic Stapler/Medigus- further evaluation