Minimally Invasive Surgery for GERD
Who Should Have It and How Do You Decide?

Charles J. Stanton, MD, FACS
Director of Minimally Invasive Surgery, Surgery Institute
Sacred Heart Medical Center, Springfield, Oregon
Financial Disclosure Statement

No financial interests or affiliations to disclose.

Charles J. Stanton, MD, FACS
Director of Minimally Invasive Surgery, Surgery Institute
Sacred Heart Medical Center, Springfield, Oregon
Definition of GERD
Failure of the anatomy of the anti-reflux barrier to prevent esophageal exposure to gastric contents

Lower Esophageal Sphincter (LES)
Diaphragmatic Crura
Phrenoesophageal Ligament
Angle of His
Angle of His

Phrenoesophageal ligament

Columnar-Lined Esophagus

SCJ

GEJ
Hiatal Hernia
Obesity
Esophageal dysmotility
Triggers of LES dysfunction:
  Caffeine
  Alcohol
  Acid foods
  Tobacco
## GERD: Symptoms

<table>
<thead>
<tr>
<th>Typical</th>
<th>Atypical</th>
</tr>
</thead>
<tbody>
<tr>
<td>Heartburn</td>
<td>Cough</td>
</tr>
<tr>
<td>Regurgitation</td>
<td>Hoarseness</td>
</tr>
<tr>
<td>Dysphagia</td>
<td>Laryngitis</td>
</tr>
<tr>
<td></td>
<td>Aspiration</td>
</tr>
<tr>
<td></td>
<td>Asthma</td>
</tr>
<tr>
<td></td>
<td>Dental Carries</td>
</tr>
</tbody>
</table>
Diagnosis of GERD

Active erosive esophagitis
Peptic stricture
Evidence of impaired esophageal acid clearance
Evidence of non-acid reflux
Barrett’s esophagitis
Evaluation of GERD

- **EGD-Upper Endoscopy**
  - Most important exam
  - Document esophagitis, stricture, Barrett’s
  - Observe visible reflux, hiatal hernia
  - Rule out neoplasm, gastric pathology

- **24 Hour pH Study**
  - Gold standard test for reflux
  - Must be off PPIs
  - Documents acid in distal esophagus and correlates symptoms
  - Impedance testing indicates non-acid reflux
Evaluation of GERD

- **Barium Swallow**
  - Estimation of esophageal motility
  - Can detect visible reflux
  - Identify para-esophageal hemias and organo-axial rotation
  - Of value if achalasia suspected

- **Esophageal Manometry**
  - Can document low LES pressure
  - Identify and characterize esophageal dysmotility
  - Rule out achalasia and hypertensive LES
  - Preoperative tool
Medical Treatment of GERD
Goal: Acid reduction in the esophagus

PPIs- the mainstay of treatment
Compliance

Lifestyle Modifications
Avoidance of triggers that decrease LES pressure
Timing of meals

Physical Measures
Elevate HOB
Positional avoidance

Weight Control
Treatment of GERD

Medical Tx = Manage Symptoms
Palliative

Surgical Tx = Restore Anatomy
Curative
Goals of Anti-reflux Surgery

Replace the LES in the abdomen

Repair the hiatal defect

Construct a fundal wrap that will prevent reflux without impairing esophageal motility
Surgical Indications

Refractory to PPIs
- Persistent symptoms on maximal dosage
- Poor compliance/Side effects
- Severe positional reflux

Quality of Life
- Freedom from long term medical management

Respiratory Symptoms
- Cough, hoarseness, asthma, aspiration

Obstructive Symptoms
- Para esophageal and giant hiatal hernias

Special Problems
- Barrett’s esophagitis
- Cameron’s ulcers/anemia
- Non-acid reflux
Established Surgical Options in GERD

Nissen- Total fundoplication
“Gold Standard” in better risk patients
Best long term outcomes
Increased post-op risk of dysphagia & “gas bloat”
Established Surgical Options in GERD

Toupet- Partial fundoplication
- Increased long term failure risk
- Reduced post-op dysphagia
- Better outcomes in esophageal dysmotility
Established Surgical Options in GERD

Roux-y-Gastric bypass

BMI > 40
BMI > 35 (co-morbidities)

Treats GERD and morbid obesity
Lap Band contraindicated
Objective
- Elevated LES pressures
- Decreased esophageal acid exposure

Subjective
- Patient Satisfaction:
  - 80-95% at 5 years
- Resolution Heartburn and Regurgitation:
  - 90+% at 5 years, 70-80% at 7 years
- Dysphagia:
  - <10% at 5 years
- Atypical symptoms: Cough
  - 50% resolved, 90% improved at 1 year
Surgical Predictors of Positive Outcome

- Compliance with and response to Medical/PPI Tx
- Absence of significant (<3cm) hiatal hernia
- Absence of significant psychiatric disease
- Typical vs atypical symptoms
- Good esophageal motility/lack of preoperative dysphagia
- Age
- Hypertensive LES
- Esophageal stricture
17 centers in 11 European countries
554 patients randomized to PPI or laparoscopic fundoplication
Minimum 5 year follow-up (endoscopy)

90+% remission at 5 years (healed esophagitis)
QOL scores essentially the same, patient satisfaction high
Lasting post-op issues (dysphagia) were rare: 5-10%
No difference in Barrett’s progression to carcinoma, slight surgical advantage for regression
Surgery better at controlling regurgitation and heartburn symptoms
PPI better at avoiding dysphagia and bloating
Re-operation rate was low (5-10%)
Surgical Outcomes - Complications

Dysphagia
- Pre-op dysphagia most common predictor
- Will usually resolve at 12 weeks
- Lower incidence in partial wrap
- Bougie dilation, reoperation as a last resort

Gas-Bloat Syndrome
- Related to aerophagia, smaller stomach, longer/total wrap
- Treated with diet, simethicone, time and erythromycin (severe)

Esophageal Spasm
- Efforts of esophagus to overcome wrap resistance
- Treated with Ca++ blockers

Recurrent “Reflux”
- Up to 50% placed back on PPI w/o documented reflux: Ba Swallow
- 5-10% will need revision: “Slipped” Nissen, recurrent hiatal hernia
Endoscopic Procedures for GERD

1. Radiofrequency energy
   Stretta System

2. Endoscopic plication or suturing
   Bard EndoCinch Endoscopic Suturing System
   Endoscopic Suturing Device (ESD)
   Surgical Endoscopic Plication System (EPS)
   EsophyX™ System (TIF procedure)
EsophyX- Endoscopic Fundoplication

FDA approval in 2009
Patient Selection
- Minimal or no hiatal hernia
- PPI responsive
- Minimal esophagitis on EGD
- No atypical symptoms

Drawbacks
- Very limited follow-up (2yrs)
- Higher complication rate
- No significant difference in post-op pain or LOS
- Outcomes dependent on operator/experience

Cadiere, et al (Brussels) 84 pts, cured GERD in 56%, better in 80% at 1 yr. 4% perforation rate.  *WJSurg 2008*

Demyttenaere, et al (OhioSt U) 26 pts, GERD cured in 32%, reduced PPI dose in 21% at 1yr  *SurgEndo 2010*

Barnes et al (Salem, KY) 110 pts, retrospective study 75% symptoms improved, 83% satisfaction, 93% off PPI at 7 mo.  *SurgInnov 2011*

“No of the endoscopic therapies has been completely effective in normalizing acid exposure, healing esophagitis, controlling reflux symptoms, or allowing patients to be off of all of their antisecretory medications.”  *Up to Date, July 2010*
Laparoscopic anti-reflux surgery is a reasonable alternative to lifetime medical treatment in the appropriately selected patient.

Opting for anti-reflux surgery is a quality and not quantity of life decision.

Appropriate GI evaluation and medical treatment are important prior to considering surgical options for GERD.

Upper endoscopy is essential.

24-hour pH study is the ‘gold standard’, but is not vital if reflux diagnosis confirmed by endoscopy and clinical history.

Need for preoperative manometry equivocal.

No perfect operation for GERD, it must be individually tailored.

Good risk patients have the best long term surgical outcomes: Good pre-op PPI response/compliance, ‘typical’ symptoms, no psych issues, minimal hiatal hernia, normal esophageal length and motility.
Surgery and medical treatment have a cost effective breakeven point at 5-8 years.

Surgery may have a slight advantage in Barrett’s regression, but decreased progression to carcinoma is not documented and long term surveillance remains necessary.

Roux-y-gastric bypass is preferable in the morbidly obese, resulting in weight loss and reflux control.

Robotic surgery has no advantage over traditional laparoscopic surgery and is more expensive.

Endoscopic approaches (EsophyX) show promise for the future but have limited application, offer no advantage to lap Nissen and proof of long term efficacy awaits randomized trials.
"Ah, Mr. Smith! We'll get started as soon as I finish my warmup."