



# GHAPP

Gastroenterology & Hepatology  
Advanced Practice Providers

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**GHAPP**

Gastroenterology & Hepatology  
Advanced Practice Providers

# Gastroesophageal Reflux Disease (GERD) and Hiatal Hernias

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# Disclosures

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# Disclosures

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## **Mackenzie Jarvis, MPAM, PA-C, DMSc**

Speakers Bureau: Salix, Clinical Area- IBS-C, IBS-D, CIC

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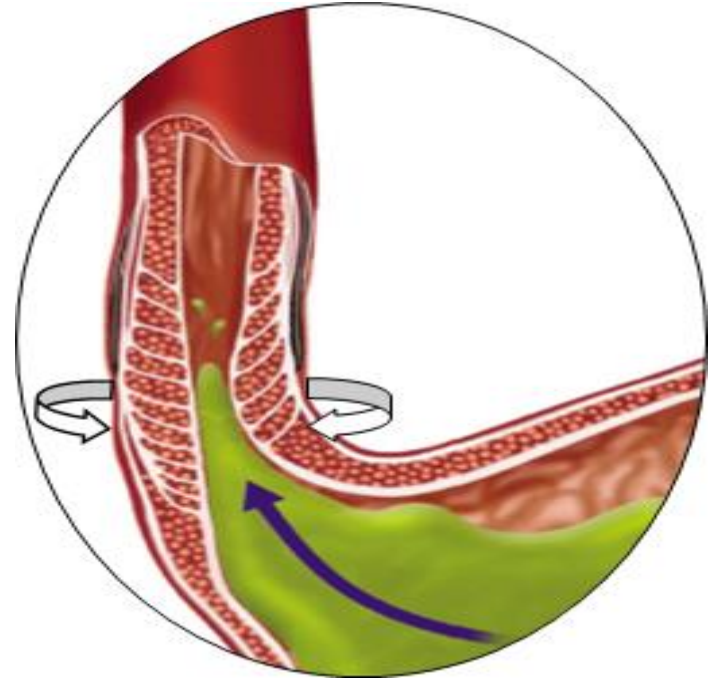
# Relationship of GERD and Hiatal Hernias

- Hiatal hernias may be discovered incidentally on upper endoscopy, CT, upper GI or esophageal manometry in patients with GERD
- Larger type 1 hiatal hernias may have symptoms of GERD, most common clinical features are heartburn, regurgitation and dysphagia
- Hiatal hernias should be suspected in patients with symptoms of GERD



# Gastroesophageal Reflux Disease (GERD)

- 60 million Americans are thought to experience heartburn symptoms once a month
- Over 15 million Americans experience heartburn symptoms each day

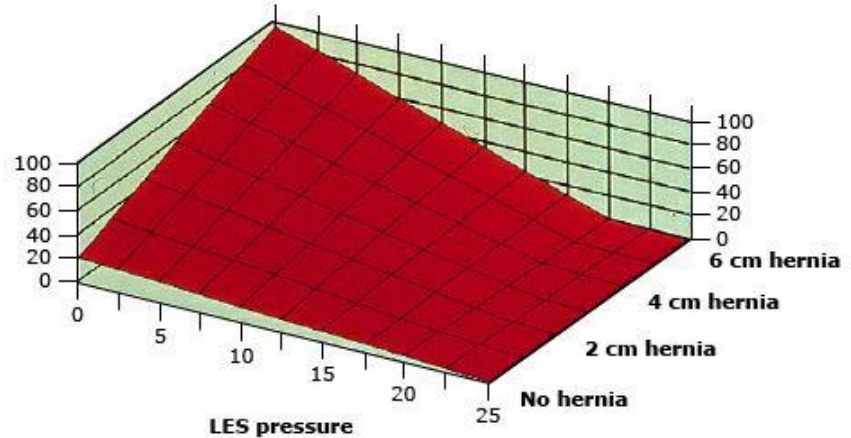


# Mechanism of GERD in Type I Hiatal Hernia

Radiographic and endoscopic studies revealed 50 to 94% of patients with GERD have a type 1 hiatal hernia as compared with 13 to 59% of normal population

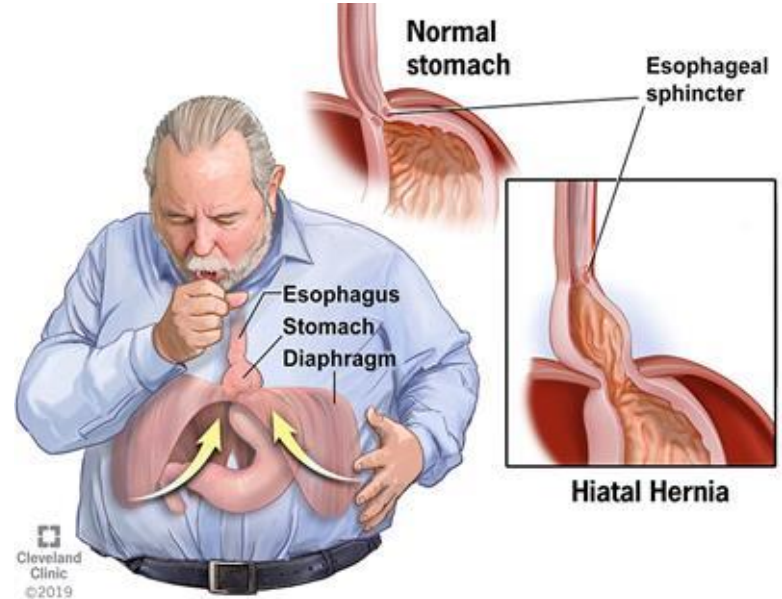
Symptomatic GERD tends to increase with the size of the hiatal hernia

Type 1 hernias affect the competence of the GE junction in preventing the reflux and the process of the esophageal acid clearance once reflux has occurred is compromised



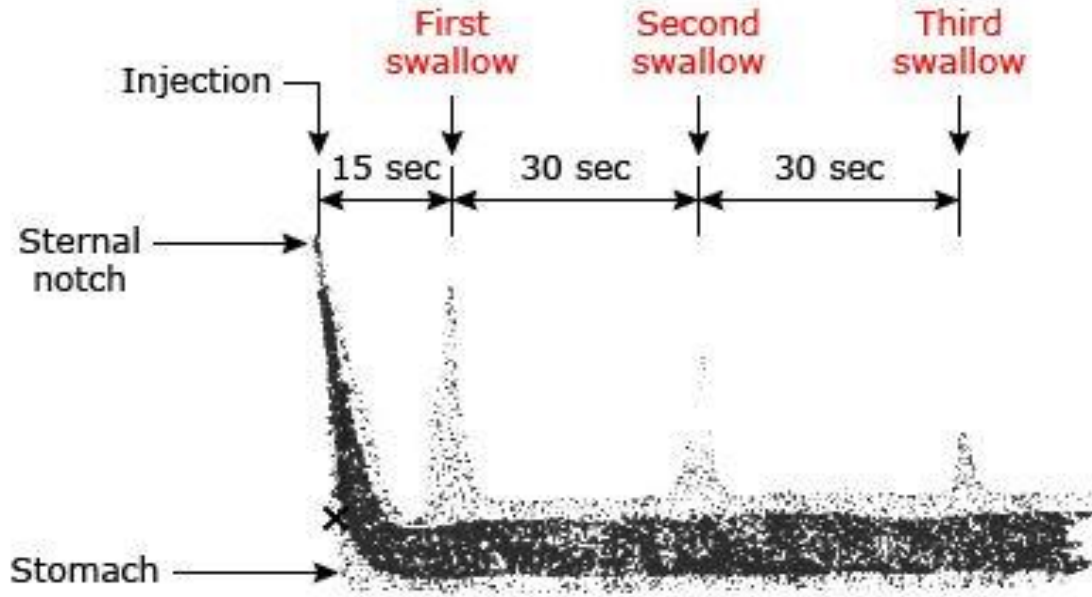
# Re-Refluxing

Patients with type 1 hiatal hernias have difficulty with acid clearance with “re-refluxing” from the hernia sac during a swallow



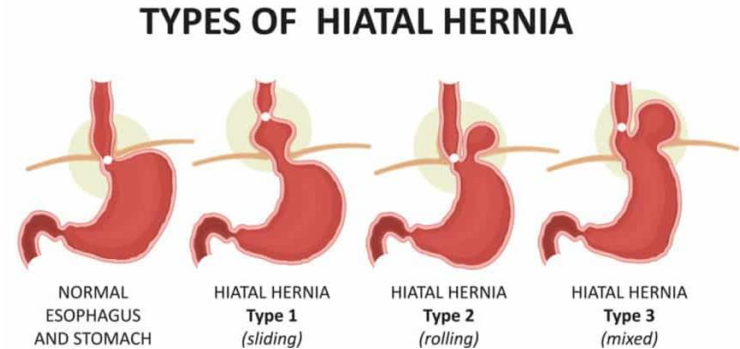


# Re-Refluxing With Hiatal Hernia



# Types of Hiatal Hernias

1. **Type I** hernias are sliding hiatal hernias, where the GE junction migrates above the diaphragm, stomach remains in its usual longitudinal alignment, fundus remains below the GE junction.
2. **Type II** hernias are pure paraesophageal hernias (PEH); GE junction remains in its normal anatomic position but a portion of the fundus herniates through the diaphragmatic hiatus adjacent to the esophagus.
3. **Type III** hernias are a combination of Types I and II, with both the GE junction and the fundus herniating through the hiatus. The fundus lies above the GE junction.
4. **Type IV** hiatal hernias are characterized by the presence of a structure other than stomach, such as the omentum, colon or small bowel within the hernia sac.

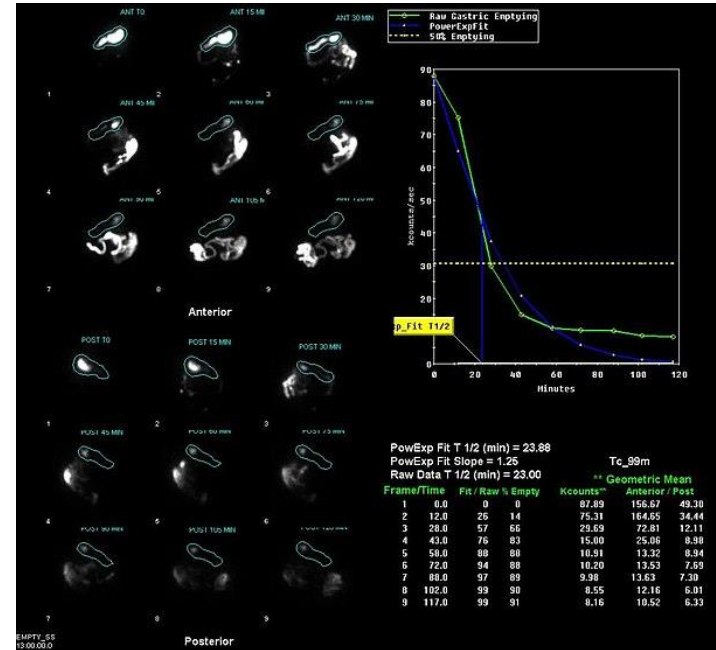


# Pre-Operative Workup

## Mandatory testing

- Upper endoscopy
- Upper GI series
- pH testing
- Esophageal manometry

May need gastric emptying study



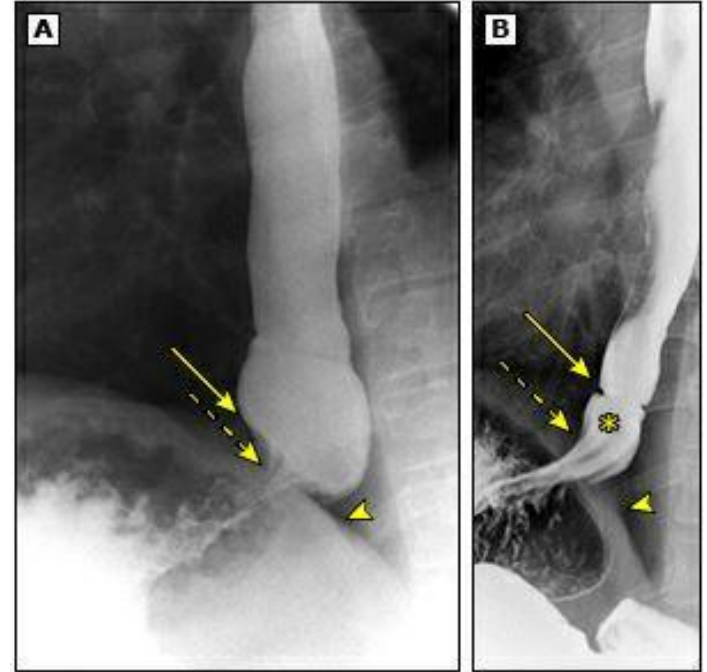
# Diagnostic Approach to Hiatal Hernias

**Table I. Current therapeutic approaches of hiatal hernia**

Diagnostic technique	Evaluation	Warnings
<b>Barium swallow X-ray</b> [1,3,5,6,13,14,16,17]	Size, location of hernia, motility dysfunction, stenosis, stricture related to GERD, short esophagus diagnosis	Contraindicated in pregnancy, barium or iodine hypersensitivity, exposure a to radiation
<b>Endoscopy</b> [1,3,5,6,13,14,16,17]	Analysis of esophageal mucosa, erosive esophagitis, Barret's esophagus, malignancy, Cameron's ulcers, swallowing difficulty	Air insufflation of the stomach may exaggerate hernia size, difficulty to assess massive hernias accurately
<b>Manometry</b> [1,3,5,6,13,14,16,17]	Integrity of esophageal peristaltis, motility disorders, achalasia	Difficulty in placing manometry catheter
<b>pH testing</b> [1,5,13,16,17]	Quantitative analysis of reflux episodes	
<b>CT</b> [3,13,16,17]	Gastric volvulus, perforation, pneumoperitoneum, pneumomediastinum	Unable to exactly define the configuration of the hernia, exposure to radiation

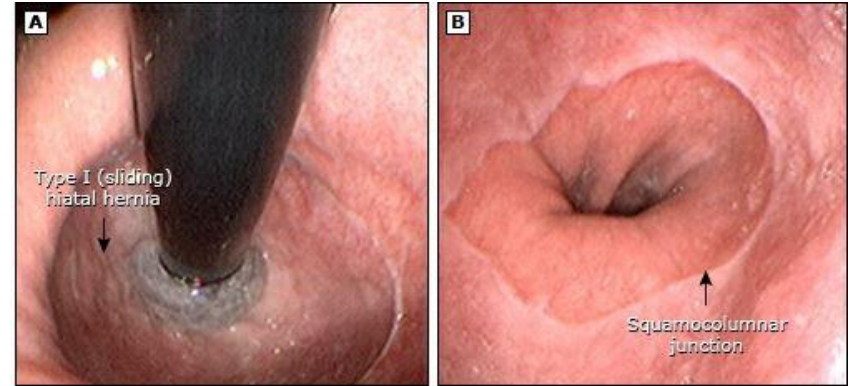
# Diagnosis of Hiatal Hernia

Barium swallow can aid in determining the anatomy and size of hernia, location of GE junction and orientation of the stomach



# Diagnosis of Hiatal Hernia

Upper endoscopy, defined as a greater than 2 cm separation between squamocolumnar junction and diaphragmatic impression





# pH Workup

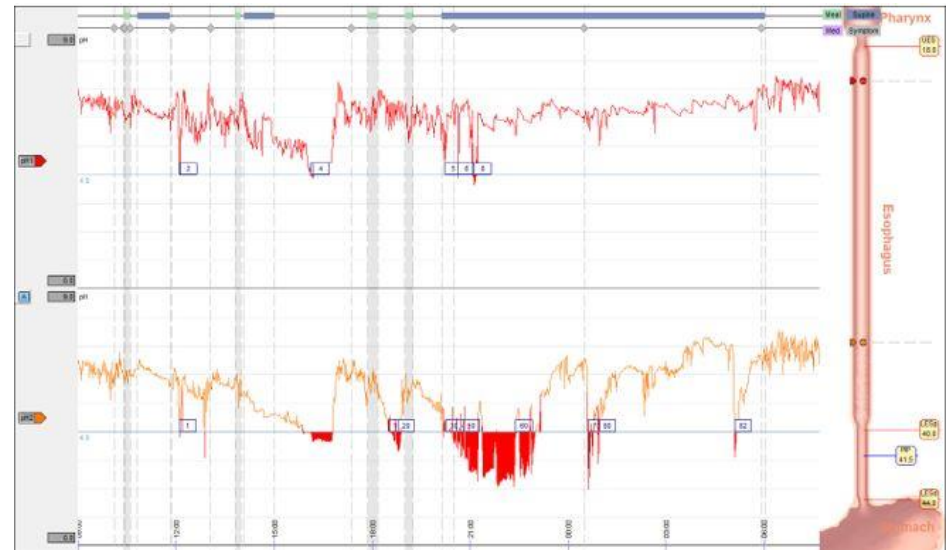
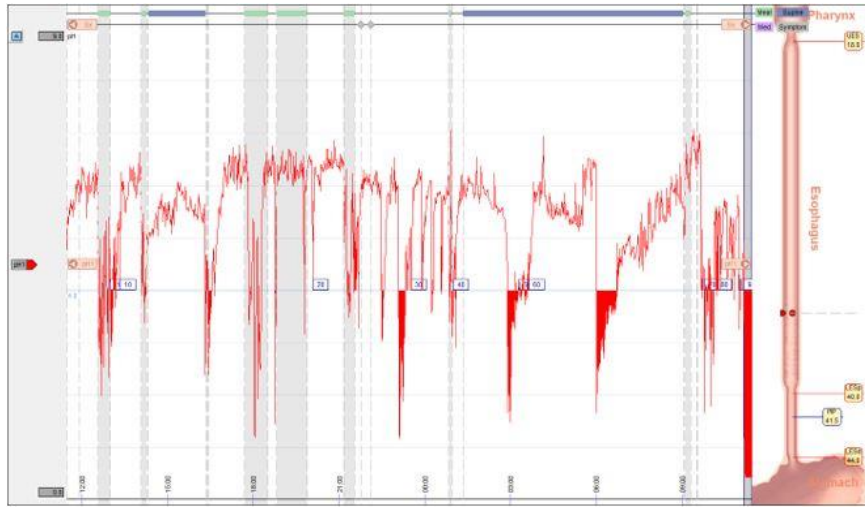
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Further evaluation prior to treatment includes evaluation for GERD with 24 hour pH study, impedance pH or Bravo pH

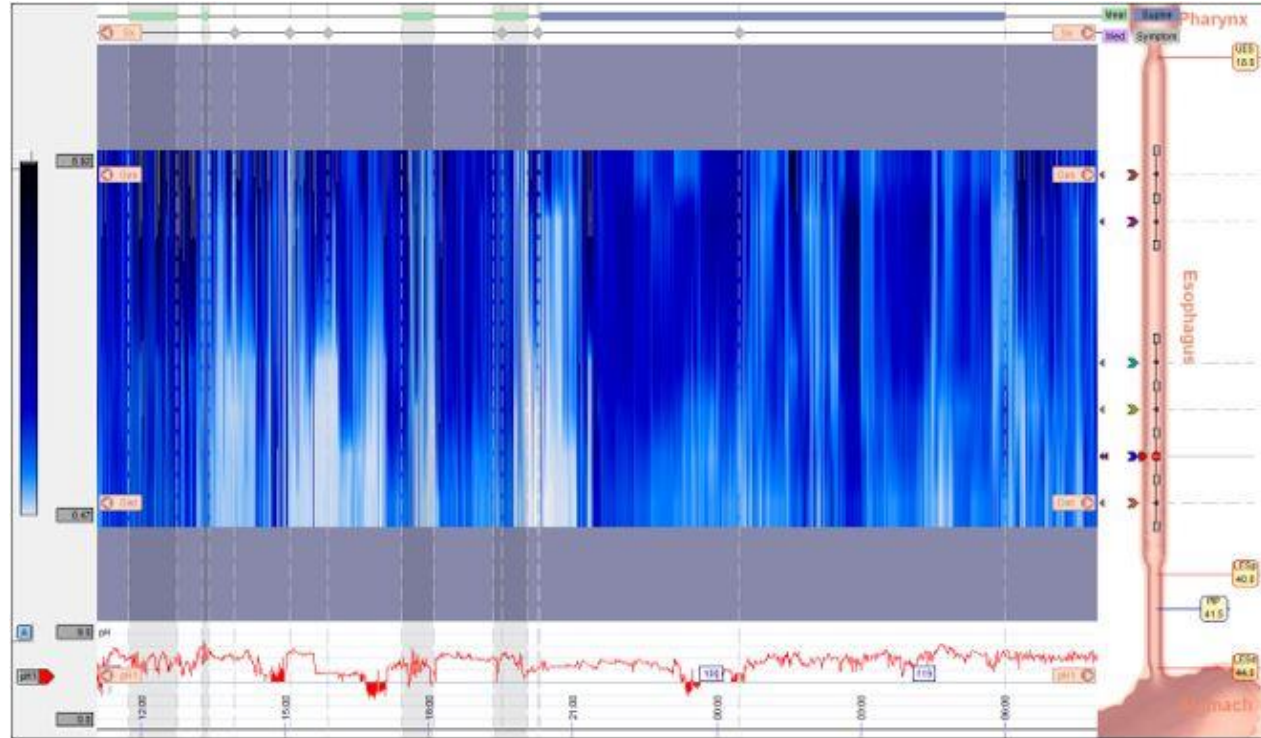
Important for preoperative evaluation prior to antireflux surgery or endoscopic antireflux procedures



# Single Channel vs Dual Channel



# Impedance pH



# Bravo pH



# Medical approach to GERD and Hiatal Hernia

## **1st line to address gastric acid secretion includes lifestyle modifications**

- Weight loss, avoidance of meals 2-3 hrs prior to bedtime, elimination of “trigger foods”, elevating head of bed

## **American College of Gastroenterology recommends 8 week course of PPI for symptom relief of GERD**

- Twice daily PPI may be recommended if inadequate symptom response to once daily PPI therapy
- Use minimal dose to control symptoms
- Alternatives include histamine 2 receptor antagonists and antacids

**Large hiatal hernias with gastric fundus migration above the diaphragm are at increased risk of obstruction and experience little to no relief with anti reflux medications including PPI therapy, H2 blockers or antacids**

# PPIs and COVID-19

Dr. Christopher Almario and Brennan Spiegel of Cedars-Sinai Medical Center in Los Angeles and Dr. William Chey of the University of Michigan conducted an online population-based survey of Americans from May 3 to June 24, 2020, amidst the COVID-19 pandemic

- 53,130 adults noted having upper GI symptoms
- 3386 (6.4%) reported having received a positive COVID-19 test
- Regression model found odds ratio of 2.15 for having a positive COVID-19 test in those on once-daily PPIs and odds ratio of 3.67 with twice daily use
- Lower dose H2-receptor antagonist was associated with slightly decreased odds of reporting a positive COVID test
- No association seen with higher dose of H2 receptor antagonist

# Surgical Approach to GERD and Hiatal Hernia

## Society of American Gastrointestinal and Endoscopic Surgeons (SAGES) guidelines in 2013

- Symptomatic patients with paraesophageal hernia, with obstructive symptoms and gastric volvulus require urgent surgery
- Sliding hernias with GERD symptoms, surgical approach can be considered when regurgitation persists despite medical treatment with PPI
- Strongly recommend not repairing type I hiatal hernias in absence of reflux disease/symptoms

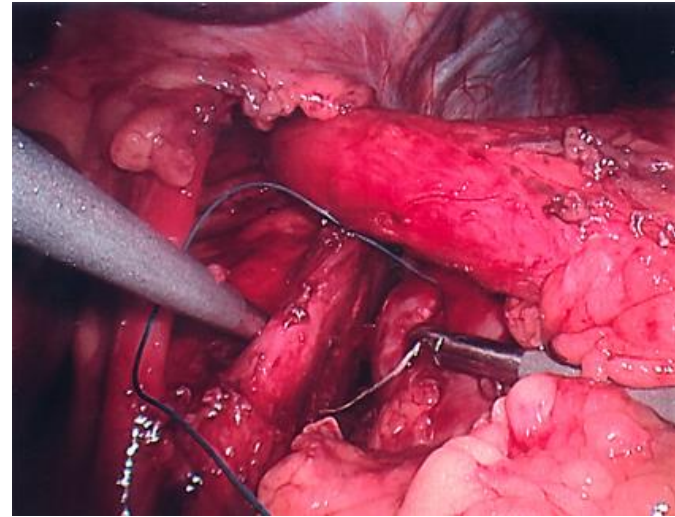
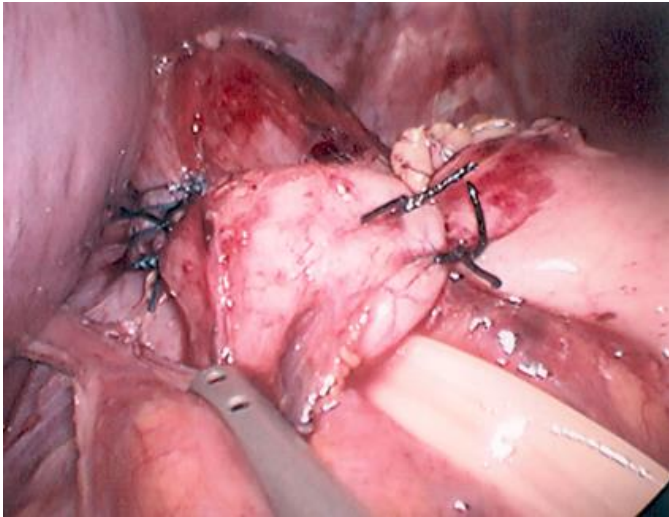
# Guidelines for Hiatal Hernia Repair

**Table II. Current therapeutic approaches of hiatal hernia**

<b>Type of hiatal hernia</b>	<b>First line</b>	<b>Second line</b>
<b>Type I (sliding) hernia</b>	PPI – once daily, 8 week course treatment Inadequate symptom control: PPI twice daily, 8 week course treatment	Laparoscopic fundoplication (Nissen or Toupet) – especially in the case of symptom persistence
<b>Types II, III, IV (paraesophageal) hernias</b>	Laparoscopic fundoplication (Nissen or Toupet) – definitive treatment	PPI, histamine receptor antagonists, antacids – for symptom relief

# Antireflux Surgery

## “Gastroplication” – Rudolph Nissen in 1956





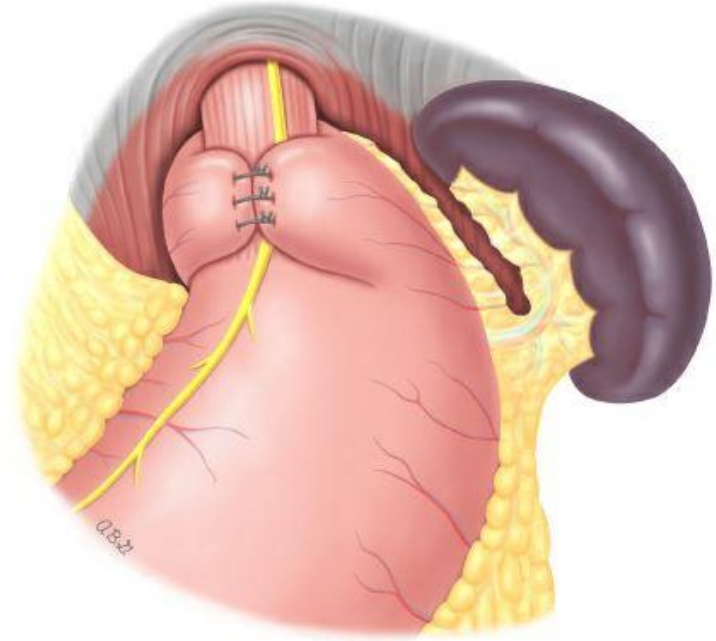
# Funduplications With Laparoscopic Hiatal Hernia Repairs

Funduplications are surgical approaches where a portion of the stomach wall is used as a wrap surrounding the lower esophageal sphincter to prevent acid reflux, this often includes a laparoscopic hiatal hernia repair



# Nissen Fundoplication (360 Degrees or Complete)

Provides a 360 degree “wrap” or collar around the esophagus, mobilization of the fundus generally accomplished by dividing the short gastric vessels to the spleen



# Side Effects of Nissen Fundoplication

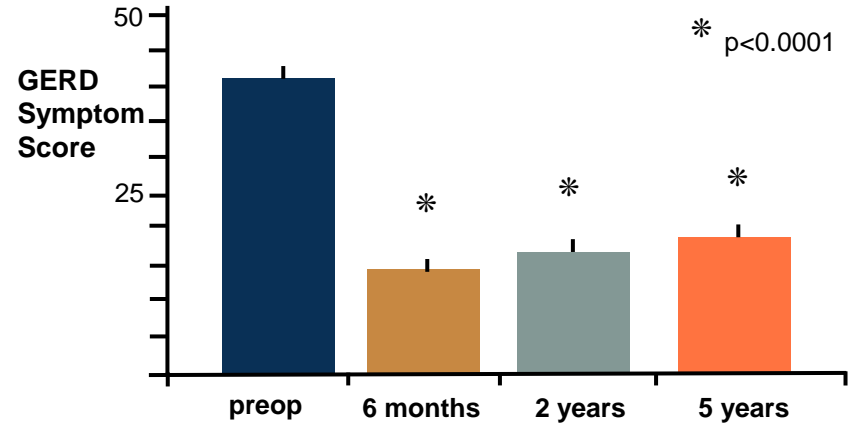
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80 laparoscopic Nissen patients with 20 month follow up

- 32% resumed acid suppression
- 67% with new symptoms including
  - Excessive gas in 47 %
  - Bloating in 26%
  - Dysphagia in 27%

# Five-Year Comprehensive Outcomes Evaluation in 181 Patients After Laparoscopic Nissen Fundoplication

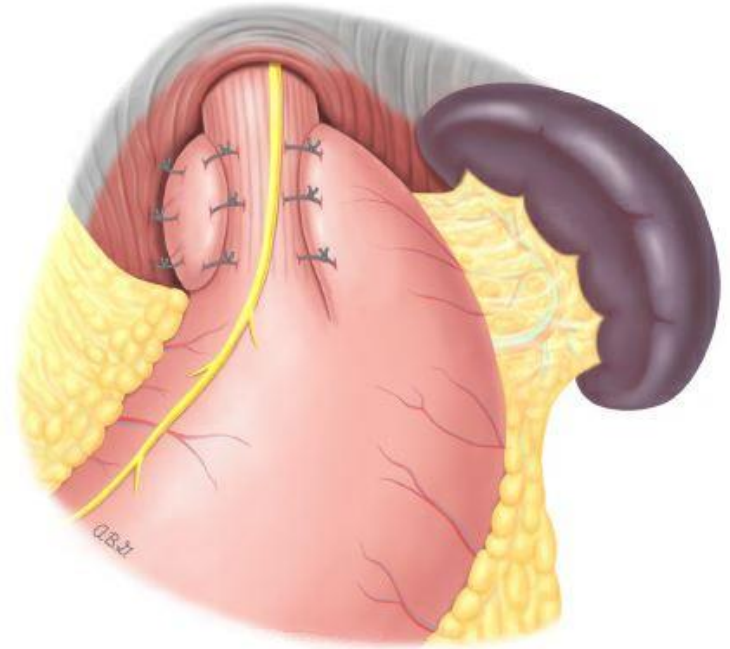
- 5% had abnormal pH studies
- 72% had dysphagia preoperative, 4.4% had dysphagia at 3 months
- 71% had bloating preoperatively, 57% at 6 months, 49% at 2 years and 42% at 5 years



**Figure 2.** Gastroesophageal reflux symptom scores before and after surgery. GERD, gastroesophageal reflux disease; preop, preoperative.

# Toupet Fundoplication (Partial)

Provides a collar of approximately 270 degrees around the esophagus posteriorly  
Patients with esophageal dysmotility based on esophageal manometry



# Fundoplication vs. PPI Therapy

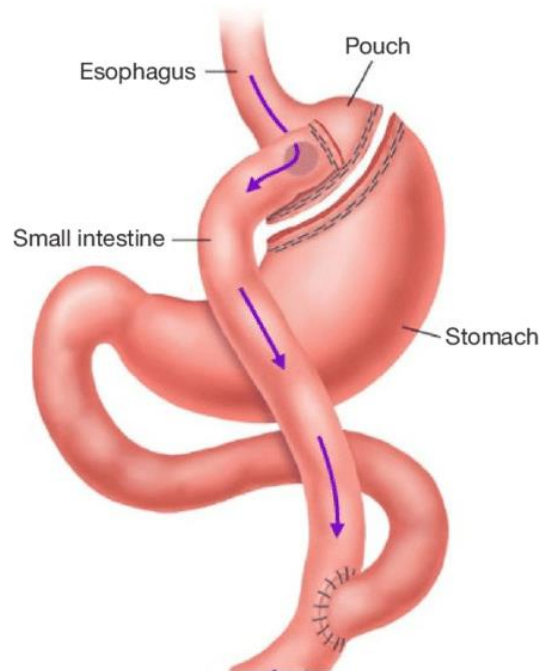
## Laparoscopic Antireflux Surgery vs. Esomeprazole Treatment for Chronic GERD (The LOTUS Randomized Clinical Trial)

- Remission rates a 5 years
  - 92% in PPI group
  - 85% in Fundoplication group
- No difference in heartburn
- Acid regurgitation
  - 13% in PPI group
  - 2% in Fundoplication group
- Dysphagia
  - 5% in PPI group
  - 11% in Fundoplication group
- Bloating
  - 28% in PPI group
  - 40% in Fundoplication group

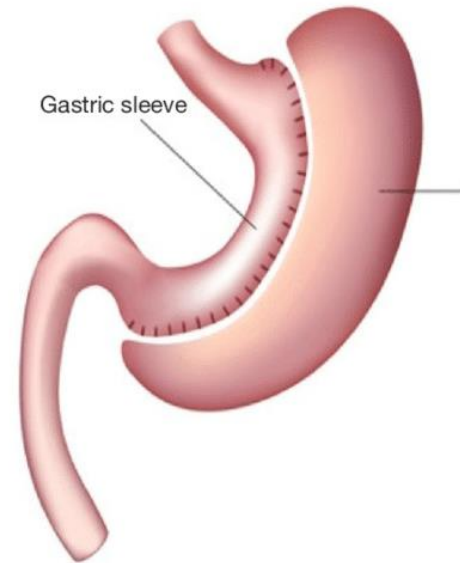


# Hiatal Hernia Repair Combined Bariatric Surgery

Roux en Y gastric bypass



Sleeve Gastrectomy



# Additional Antireflux Procedures

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- Full-thickness Plication- exclusion of hiatal hernia
- Radiofrequency Ablation (STRETTA)-inclusion of  $\leq 2$  cm hiatal hernia
- Magnetic Ultrasonic Surgical Endostapler (MUSE)- Inclusion of  $\leq 2$  cm hiatal hernia
- Lower Esophageal Sphincter (LES) Stimulation System- Inclusion  $\leq 3$  cm
- Transoral Incisionless Fundoplication (TIF)- Inclusion of  $<2$  cm hiatal hernia