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Gastroesophageal Reflux Disease (GERD) and Hiatal Hernias

Mackenzie Jarvis, MPAM, PA-C, DMSc
Atrium Health-Gastroenterology/Motility
Charlotte, NC
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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

American College of Gastroenterology. [https://gi.org/topics/acid-reflux/](https://gi.org/topics/acid-reflux/). Accessed September 13, 2020
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.

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

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

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

Diagnosis of Hiatal Hernia

On High Resolution Esophageal Manometry (HREM).

Hiatal hernias are seen by the separation of the diaphragm from the lower esophageal sphincter. This can be seen by pressure patterns.

HREM gives real-time localization of EGJ component to determine sliding hiatal hernias and gives the ability to measure the size of the hernia.

pH Workup

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

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

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

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

“Gastroplication” – Rudolph Nissen in 1956

Fundoplications 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.

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

- 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