



Surgical Evaluation for Benign Esophageal Disease

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Disclosures

No disclosures relevant to this presentation.



Objectives (for CME purposes)

- Identify studies/procedures used in the workup of benign esophageal disease
- Identify appropriate setting(s) in which to order the studies
- Apply results of studies to guide surgical intervention
- Name one study that must always be done prior to surgical intervention



- The Tests
- The tests as applied to GERD, Achalasia and Giant PEH
- Case studies



- **The Tests**
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THE TESTS

- EGD
- pH/impedance
- Bravo capsule
- Esophageal manometry
- Barium Swallow Study
- Solid Gastric Emptying (SGE)
- Chest CT





EGD

- **MUST** be done to evaluate for and rule out other pathology/cause of dysphagia, etc. prior to any surgery

- Malignancy
- Benign tumor/stricture
- Esophagitis (candida, EoE, etc)
- External compression?
- Bleeding ulcers
- Rule out pseudoachalasia

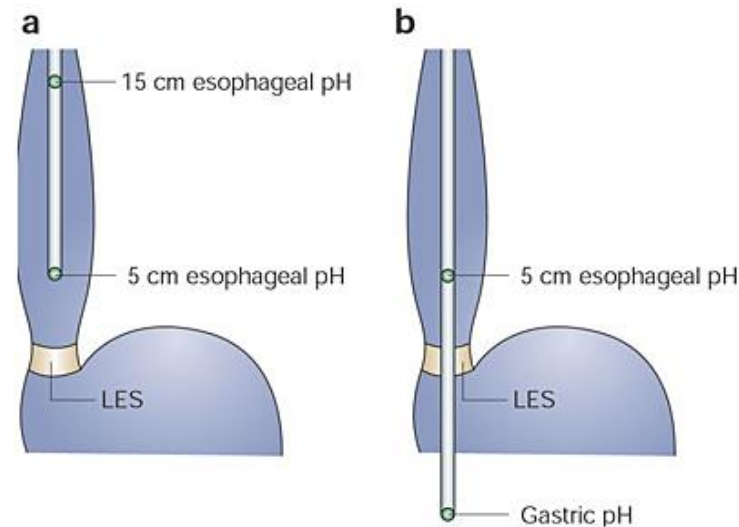




24 hour pH/impedance monitoring

24 hr pH monitoring-

- Dual probe catheter left in place for 24 hours
- Proximal and distal probes—5 and 15cm above the LES (1cm above the GE junction)
- Measurements recorded for both upright and supine positions
- Stop PPIs for 5-7 days

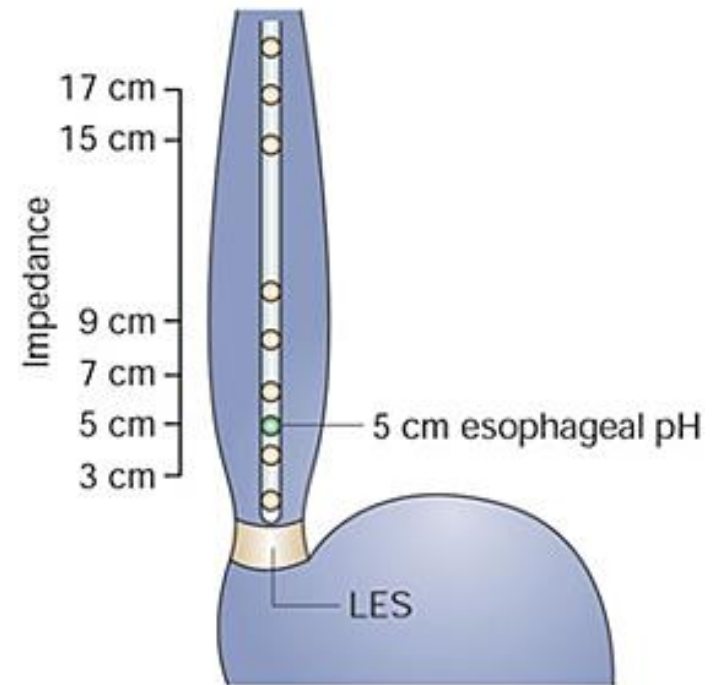




24 hour pH/impedance monitoring

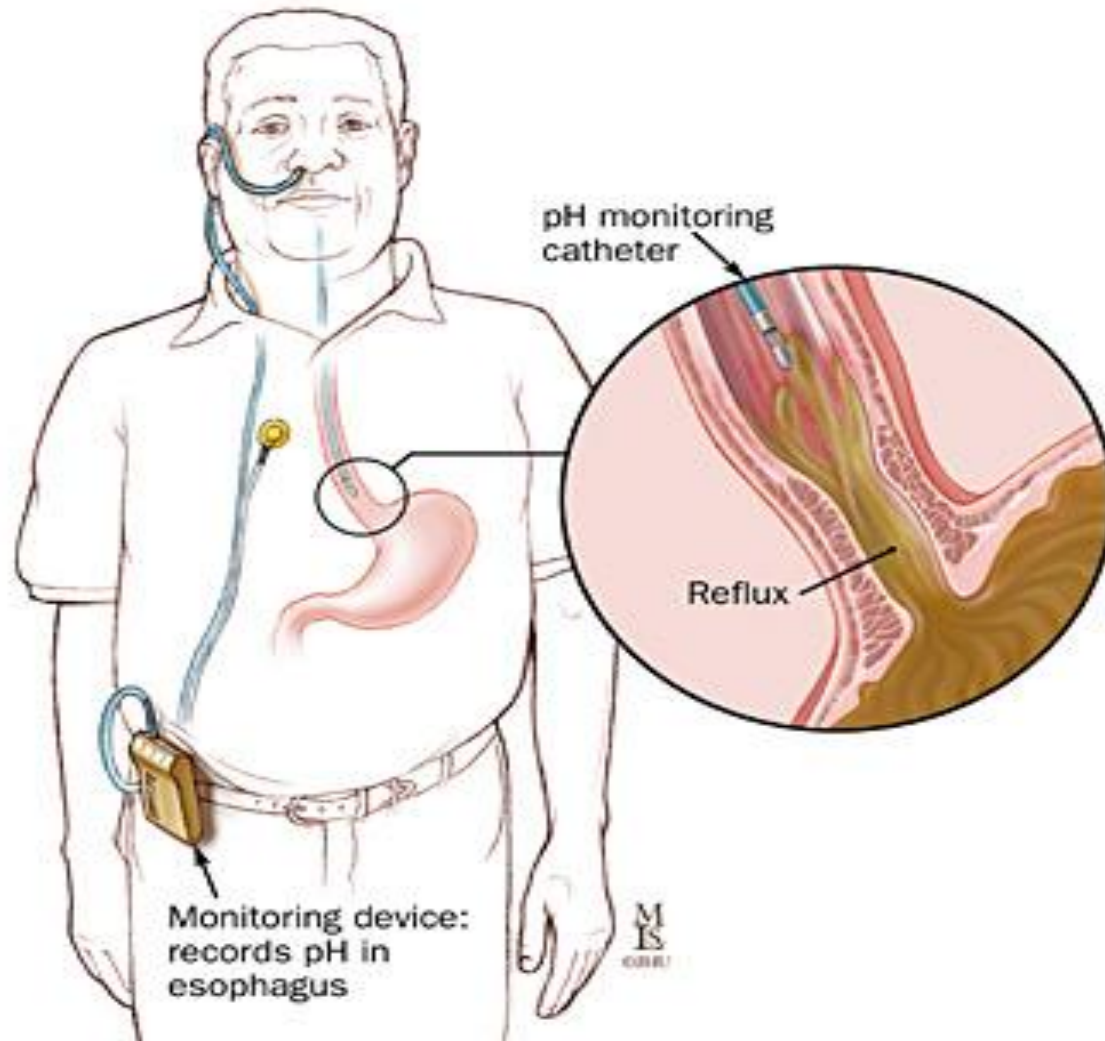
Impedance monitoring-

- Impedance= **non acid** reflux, measured by changes in resistance to alternating electrical current
- Multichannel = direction





Pro Tip: Patients do not like this test.





Bravo Capsule

- Stop PPIs for 5-7 days
- EGD
- 5cm above LES (6cm above GE junction)
- Records/transmits 48 hours
- Diary

- 1 week--passes
- Counsel regarding MRIs (30 days; assure capsule has passed)



Bravo Capsule



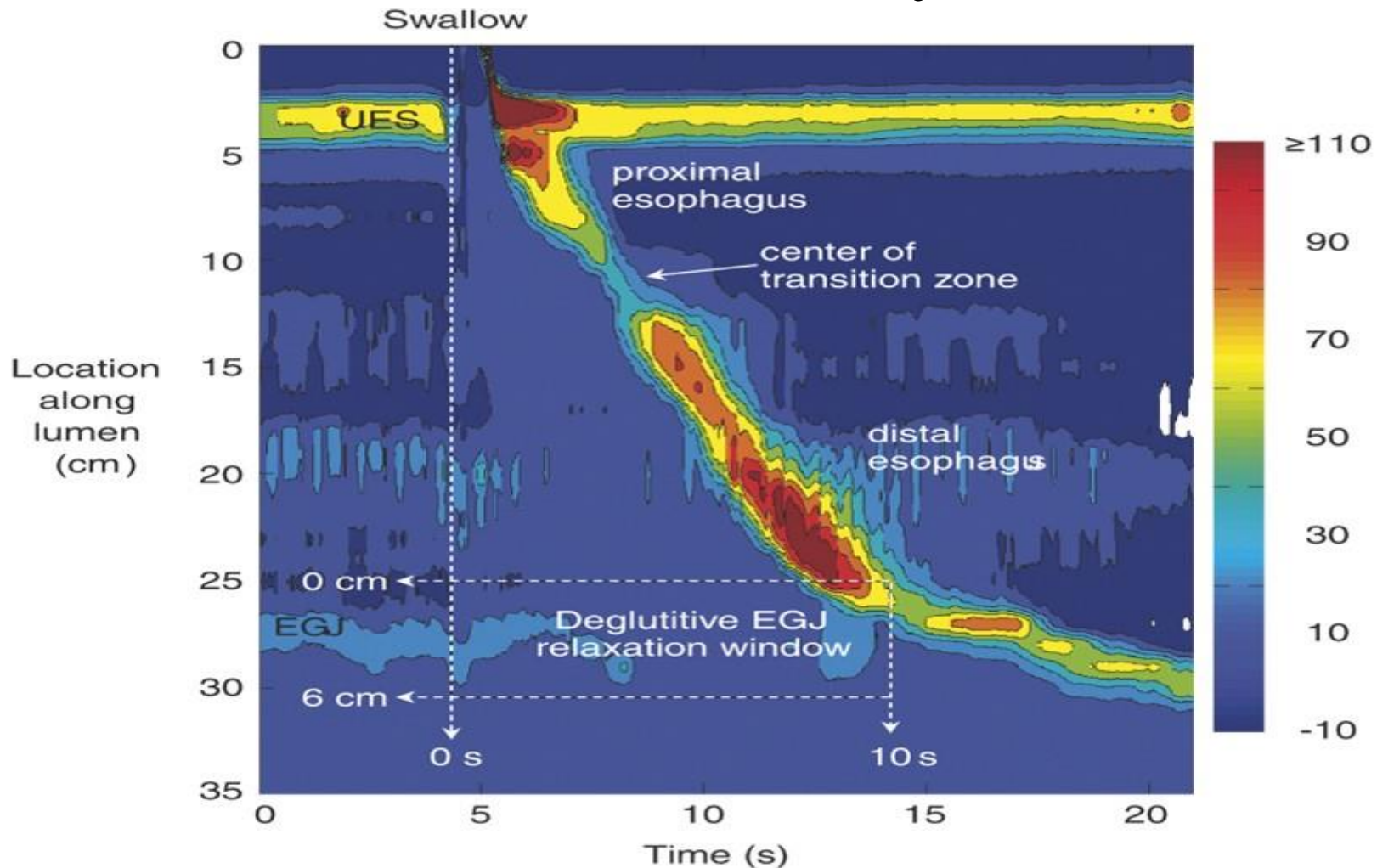


Esophageal Manometry

- GOLD STANDARD for motility disorders
- Measures contractility of esophagus
- Chicago Classification v3.0 currently in use and utilizes a hierarchical approach, sequentially prioritizing
 - 1) Disorders of esophagogastric junction (EGJ) outflow (**Achalasia subtypes I-III** and EGJ outflow obstruction)
 - 2) Major disorders of peristalsis (absent contractility, distal esophageal spasm, hypercontractile esophagus)
 - 3) Minor disorders of peristalsis characterized by impaired bolus transit



Hi-Res Manometry: Normal





Disorders of EGJOO

Chicago Classification v3.0

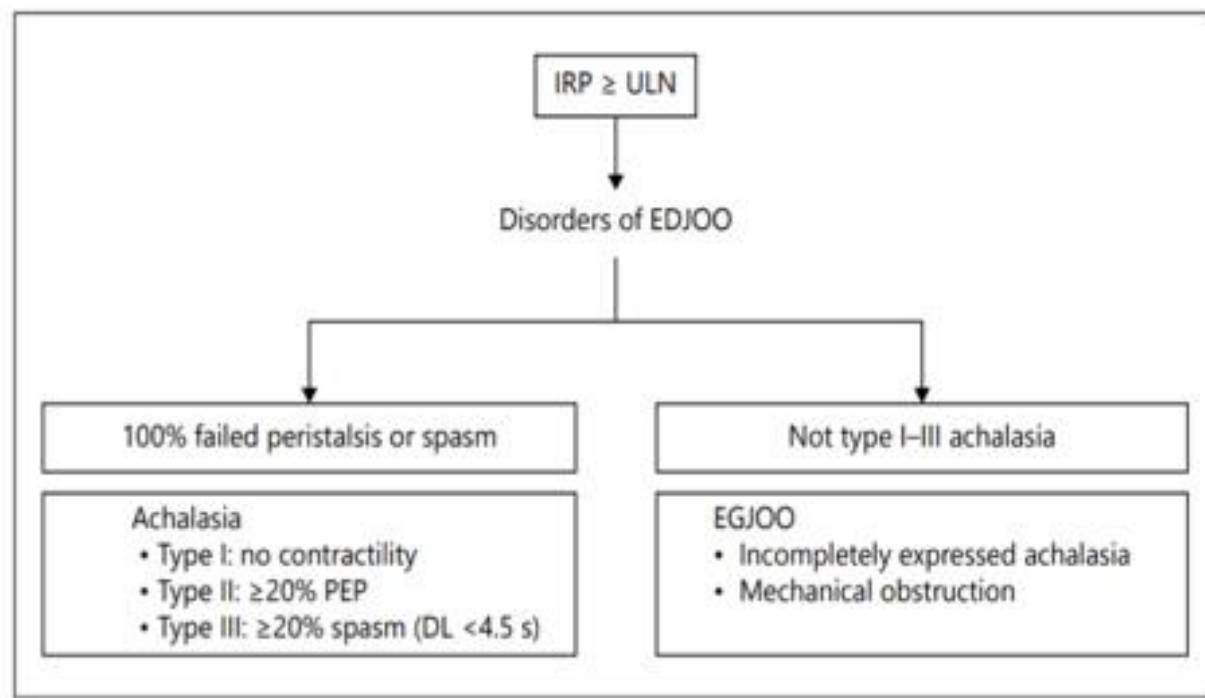
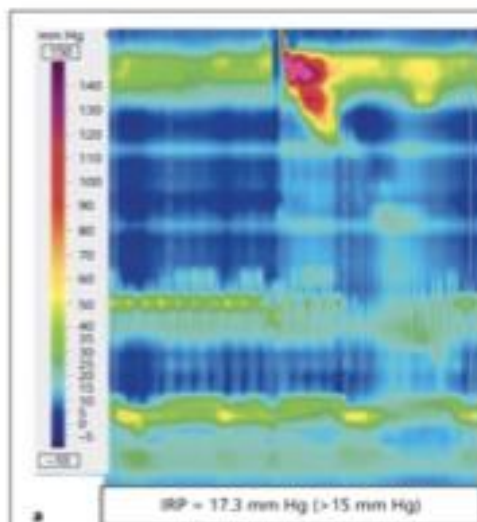


Fig. 1. Diagnosis of disorders of EGJOO according to CC ver3.0 (adapted from Collman et al. [3]). Disorders of EGJOO are classified into EGJOO and achalasia (types I, II and III), with or without esophageal body peristalsis, respectively. PEP = Panesophageal pressurization.

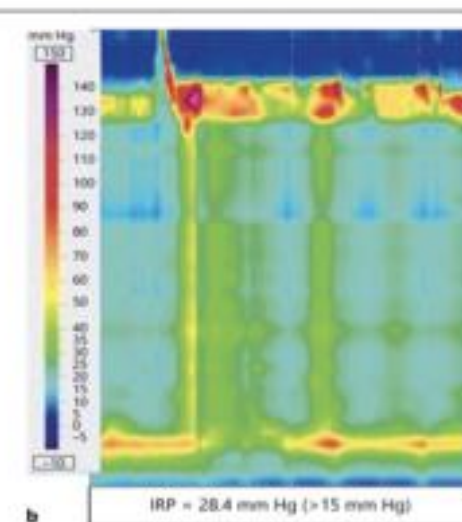


Disorders of EGJOO: Manometry

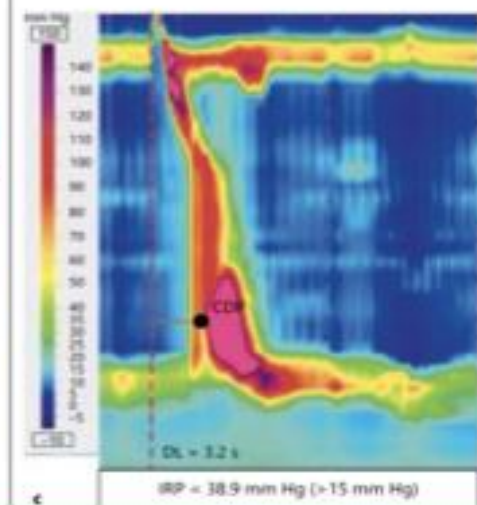
a) Type I



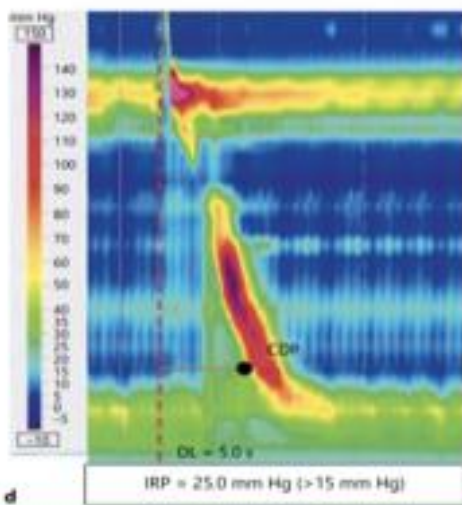
b) Type II



c) Type III



d) EGJOO



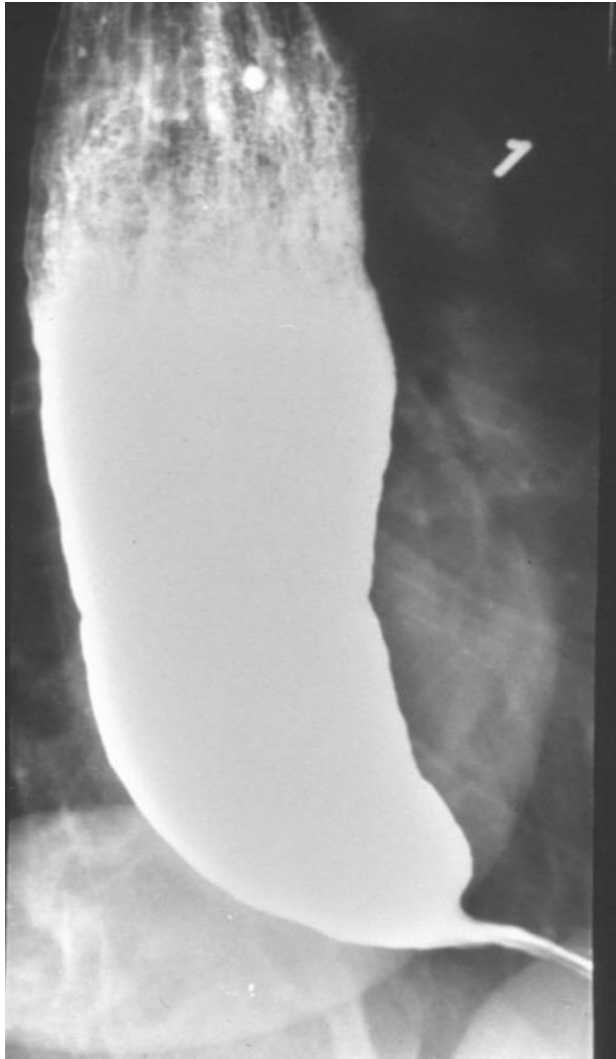


Barium Swallow Study

- AKA upper GI series
- Can be done with or without a small bowel follow-through
- Best for evaluating the following:
 - Filling defect/diverticulum
 - Strictures
 - Hiatal/paraesophageal hernias
- Can aid in evaluating the following to a lesser extent (leading to further study):
 - Motility disorders (such as achalasia)
 - Visualizing mass lesions



Achalasia

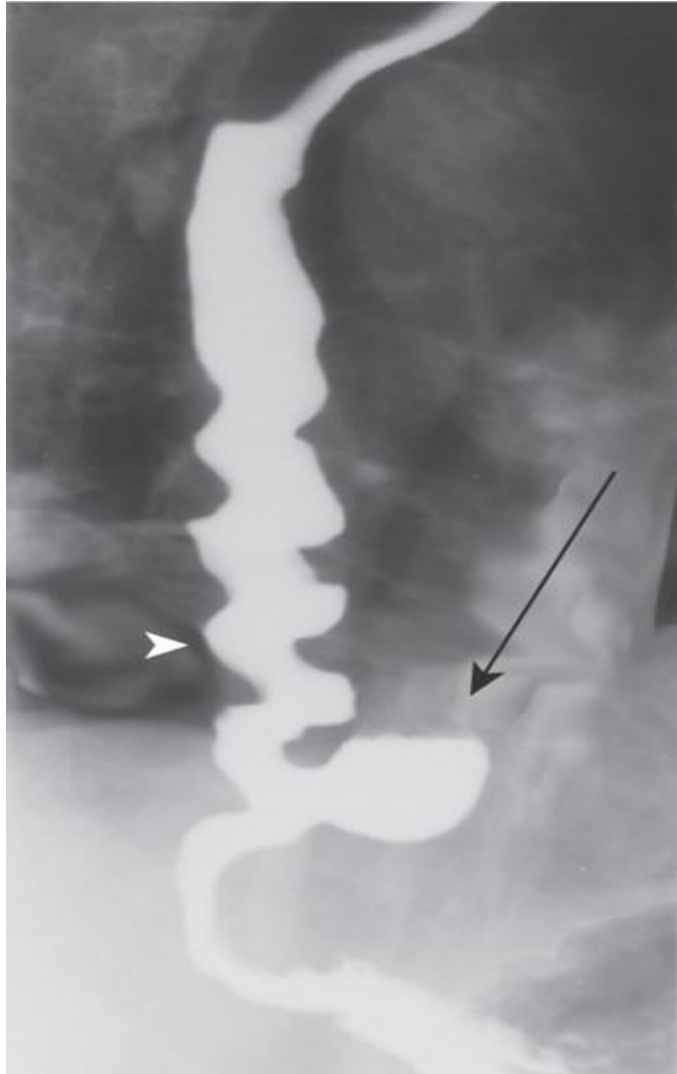


Stricture





Nutcracker Esophagus



Hiatal Hernia





Solid Gastric Emptying (SGE)

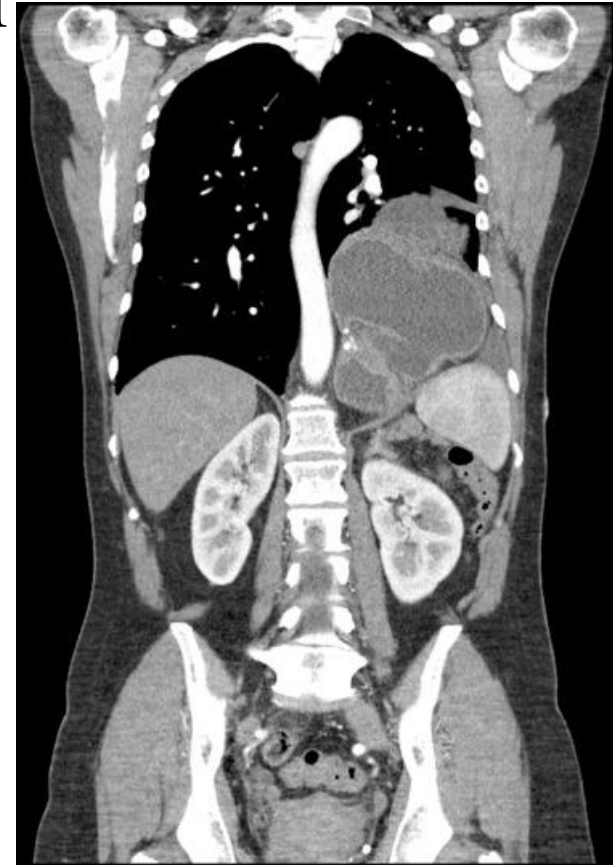
- Evaluates percent of stomach emptied at 3 time points compared to average (measured at ~60, 120 and 240 minutes)
- Often ordered when patient reports early satiety
- Significant abnormality may lead to pyloroplasty at the same time as anti-reflux procedure





Chest CT

- Concern of extrinsic compression
- Large/complex hernia
- Atypical chest discomfort
- Other-clinical judgement





EndoFLIP

Endolumenal functional lumen imaging probe

- Newer technology
- Balloon mounted on a thin catheter, done via endoscopy
- Measure of distension (as if a bolus was present)



Utility is TBD.



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- **The tests as applied to GERD, Achalasia and Giant PEH**
- Case studies



www.doctoroz.com

The 10-Day Plan to Stop Acid Reflux | The Dr. Oz Show

Day 11: Call Dr. Hartwig's office



GERD

- 24 hour pH/impedance or Bravo
- Manometry
- Barium (hernia?)
- EGD
- Other as clinically indicated



Achalasia

- Barium
- Manometry
- EGD



Giant PEH

- Barium Swallow +/- Chest CT
- Manometry**
- EGD



| | EGD | pH/impedance or Bravo | Manometry | Barium Swallow | SGE | Chest CT |
|---|------------|--------------------------------------|------------------|---------------------------|------------|-----------------|
| GERD | X | X | X | X | C | C |
| Achalasia | X | | X | X | C | C |
| Paraesophageal Hernia | X | | X* | X | C | +/- |
| Other (Diverticulum, NERD, slipped Nissen evaluation...) | X | C | C | C | C | C |



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CASE 1

- 53-year-old man referred for dysphagia x 1 year
- Solids initially, progressed to liquids
- 20 lb weight loss
- Back and chest pain with swallowing
- History of SCC of the head/neck treated with chemo and XRT

- Patient comes from OSH with barium swallow showing narrowing at the GE junction and slightly dilated esophagus

- How to proceed?



CASE 1 (cont.)

- EGD and manometry ordered
- EGD-shows small shatzki ring, dilated, no improvement of symptoms
- Hi-Res Mano shows Type II Achalasia
- Plan: Laparoscopic (robotic) Heller myotomy and Dor fundoplication



CASE 2

- 31 yo male reported to the ED with chest pain and had a Chest CT
- -Chest CT at ED shows a right paraesophageal mass measuring 6.2cm favored to represent a foregut duplication cyst.

Clinic presentation

- ROS elicits dysphagia and “acid reflux.”
- OTC antacids for several years.

What to order?



CASE 2 (cont.)

- Barium swallow and EGD ordered
- Barium swallow demonstrates mass effect on distal third esophagus from congenital duplication cyst. Related to this, there appears to be a fair amount of intraesophageal reflux and mild dysmotility.
- EGD shows no esophagitis or stricture.



CASE 2 (cont.)

- Patient underwent right robotic resection of duplication cyst.
- Post-operatively, improved swallowing and decreased reflux symptoms.



Case 3

- 46yo male with a history of bilateral lung transplant in October 2017 with objective evidence of GERD on 24 hour pH study and rejection
- Denies heartburn
- Reports significant early satiety months after transplant (original SGE abnormal)



Case 3 (cont.)

- Barium Swallow and repeat SGE ordered
- Barium Swallow shows mild provoked gastroesophageal reflux. No hiatal hernia seen. Barium tablet hesitates at the distal end of the esophagus but clears with additional swallow. Otherwise normal motility.



Case 3 (cont.)

- Repeat SGE shows the following:
 - Emptying at 61min is 3% (normal at 60 minutes is $>10\%$)
 - Emptying at 118min is 3% (normal at 120 minutes is $>40\%$)
 - Emptying at 266min is 8% (normal at 240 minutes is $>90\%$)



- Plan: Laparoscopic (robotic) fundoplication and pyloroplasty