



# GHAPP

Gastroenterology & Hepatology  
Advanced Practice Providers

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**GHAPP**

Gastroenterology & Hepatology  
Advanced Practice Providers

# Esophageal Dysphagia

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GI Motility

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# Disclosures

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## **Mary Clarke, NP-BC**

- No financial relationships to disclose

## **Monica Nandwani, DNP, FNP-BC**

- No financial relationships to disclose

# Case Study #1

RA is a 70 year old woman

- PMH:
  - Asthma
  - Anemia
  - Angina
- HPI:
  - Dysphagia to solids x 5 years, progressively worsening
  - Regurgitation
  - Retrosternal chest pain
  - Chronic cough, aspiration of food particles
  - Shortness of breath



# Case Study #1: RA

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What else do you  
want to know?

# History Questions

Do you cough or choke when trying to eat?

Oropharyngeal dysphagia

What do you have trouble swallowing?

Solids only  
• **Ring, web, stricture, malignancy**  
• **Hiatal hernia**

Solids and liquids  
• **Motility disorder**  
• **Consider achalasia**

Any associated heartburn?

GERD, esophagitis, stricture, hypersensitivity, poor motility

Hiatal hernia

Any associated regurgitation?

Acidic or sour regurgitation  
• **GERD**

Bland regurgitation  
• **Achalasia, rumination**

Where does food get stuck?

Subxiphoid  
• **Distal esophageal process**

Mid chest  
• Diffuse process like **EoE or lichen planus**

Cervical  
• **Cricopharyngeal bar or distal process referred proximally**

# Case Study #1: RA

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What diagnostic testing  
do you recommend?

# Non-GI Diagnostic Testing

## Cardiac work up

- Normal EKG
- Normal echo

## CBC, iron studies

- H/H: 9.9/32
- Ferritin: 12

## Pulmonary testing

- Decreased FVC



# Diagnostic Testing Considerations

Barium swallow

High-Resolution Esophageal Manometry

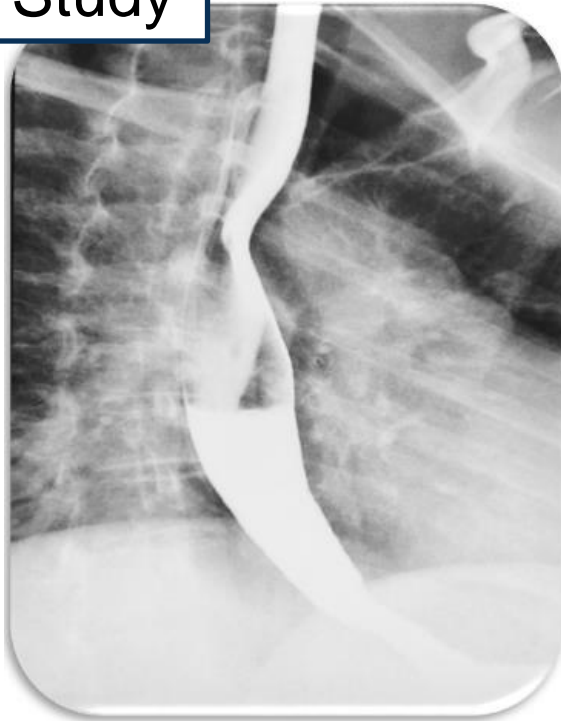
Upper GI endoscopy

pH study?

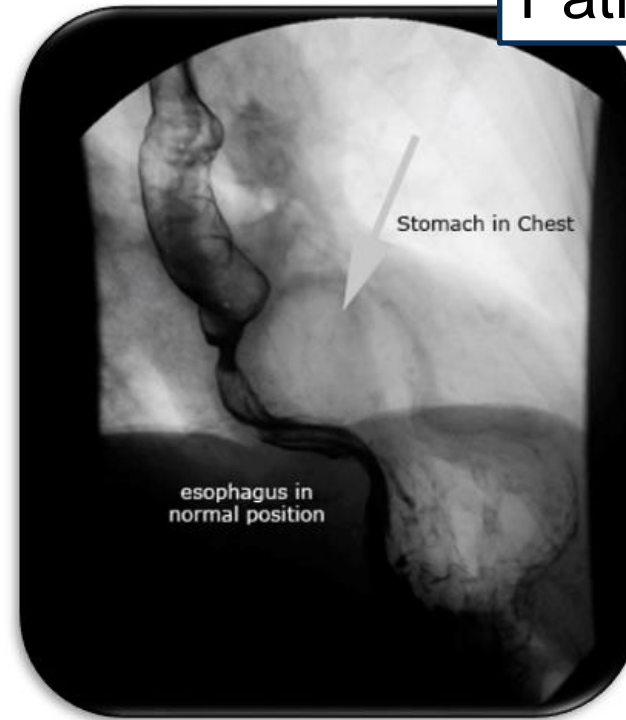
- Wireless pH probe
- 24 hour pH impedance

# Barium Swallow Comparison

Normal Study



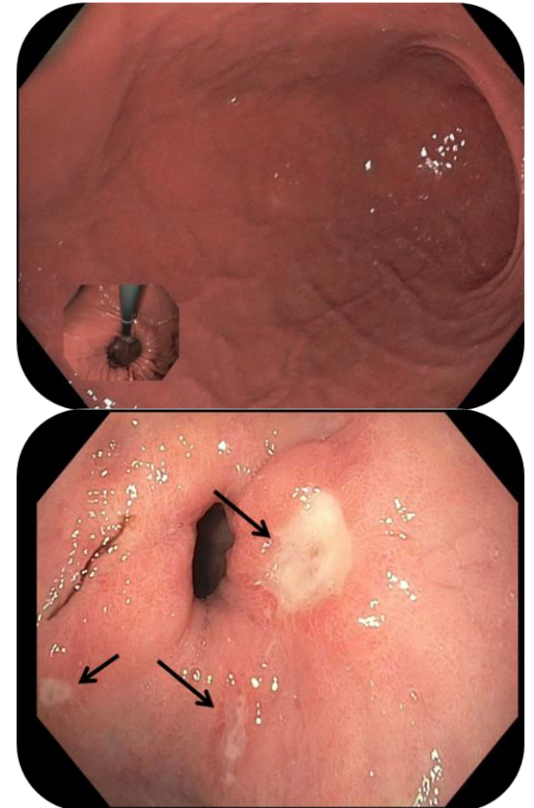
Patient RA



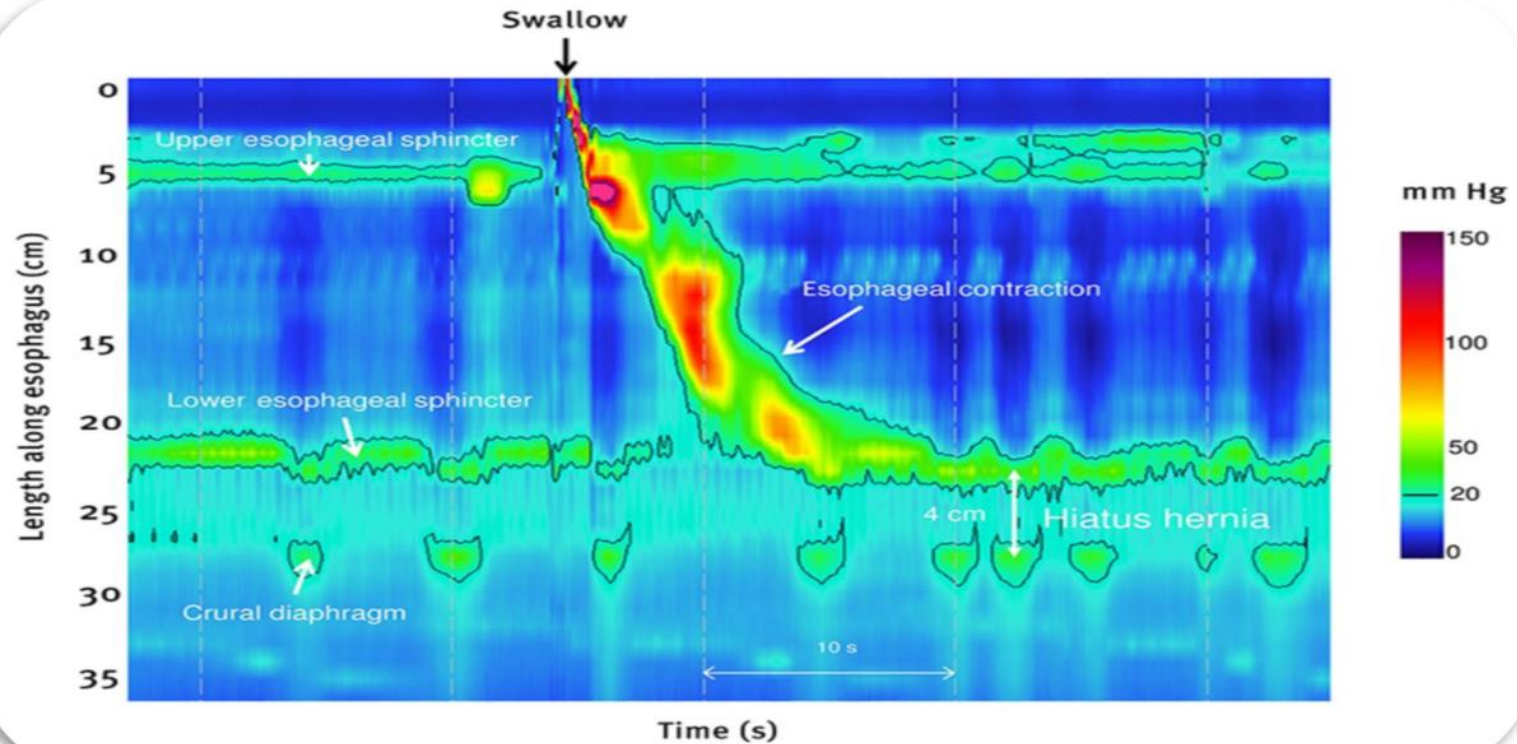
# Case Study #1: Endoscopy

## Diagnostic Testing: Upper Endoscopy

- Twisted gastric folds
- Difficulty advancing scope to distal gastric body
- Cameron's ulcers near GEJ



# Case Study #1: High Resolution Manometry



# Diagnostic Evaluation: Esophageal pH Testing

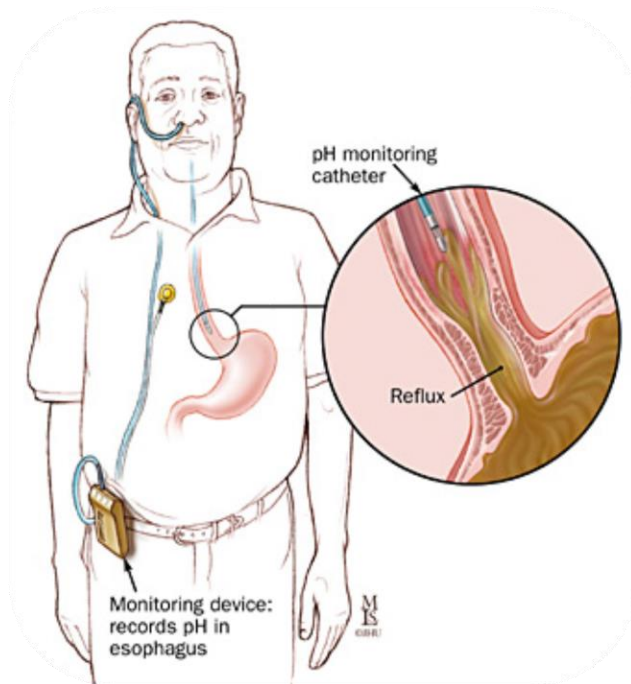
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## Wireless pH probe

- Records esophageal pH for 48-96 hours
- Acid Exposure Time (AET)
  - > 6% is conclusive for pathologic reflux
  - 4 – 6% is borderline
  - < 4% is normal

# Diagnostic Evaluation: Esophageal pH Testing

## 24 hour pH Impedance Testing



# Case Study #1: RA

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What is the diagnosis?

# Hiatal/Paraesophageal Hernia

## Prevalence

- Estimated 50% over age 60
- 15-20% pregnant women

10% experience symptoms

95% of hernias are type 1

## SAGES (Society of Gastrointestinal and Endoscopic Surgeons) Recommendations:

- Repair of type 1 in the absence of reflux is not necessary (**+++**, **strong**)
- All symptomatic paraesophageal hernias should be repaired (**+++**, **strong**)
- Routine elective repair of completely asymptomatic paraesophageal hernias may not always be indicated (**+++**, **weak**)
- Acute gastric volvulus requires reduction of the stomach with limited resection if needed (**++++**, **strong**)
- Iron deficiency anemia can be seen in up to 50% of patients with a paraesophageal hiatal hernia



# Hiatal/Paraesophageal Hernia Symptoms

Mild nausea

Bloating

Dysphagia

Retching

Pain

Dyspnea

Postprandial fullness

Gastric outlet obstruction

Severe gastroesophageal reflux

Anemia

Risk of progression from asymptomatic to symptomatic paraesophageal hernia:

- ~ 14%/year

Mortality rates

- Emergency repair: 0 – 5.4%

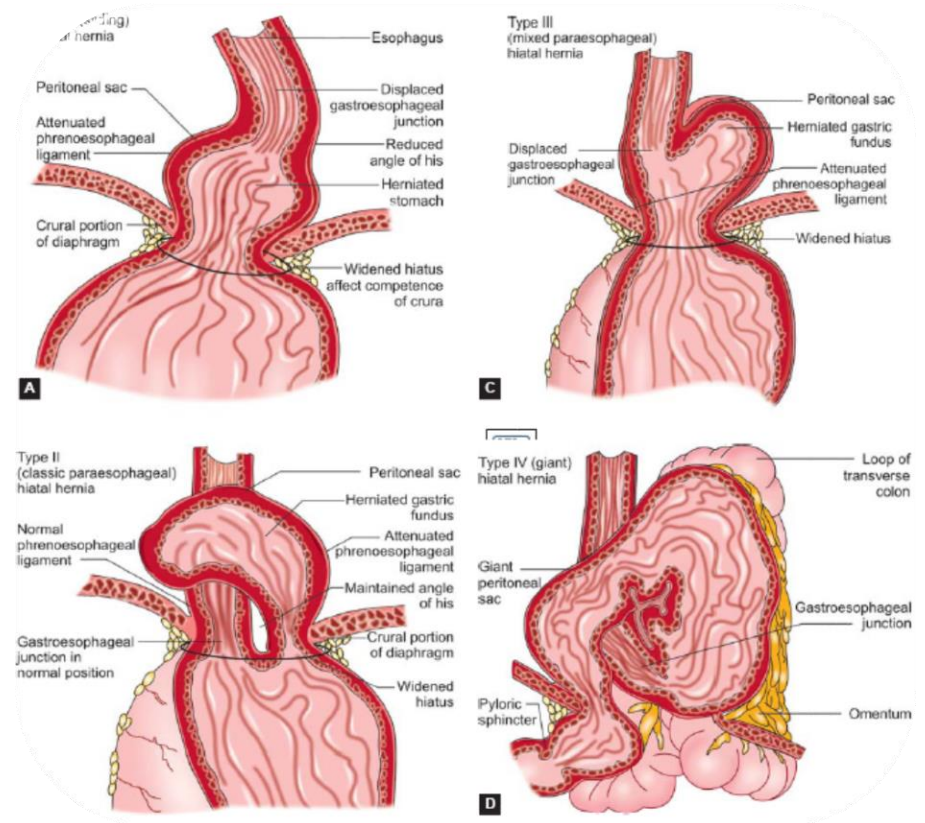
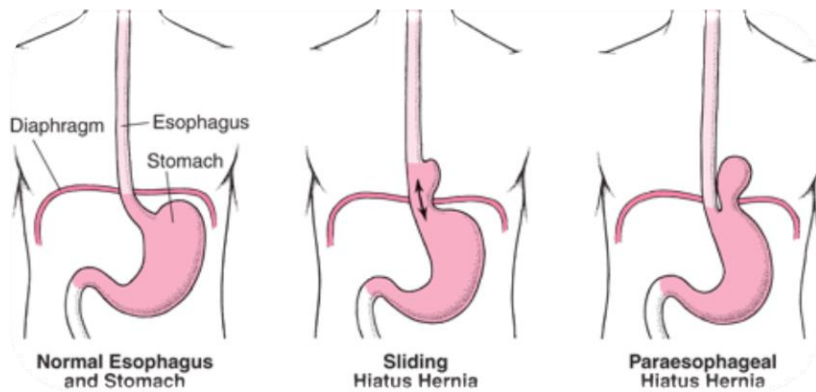
Risk of developing acute symptoms requiring emergency surgery :

- ~less than 2%/year

Average mortality rates for emergency hiatal hernia surgery:

- 17%
- Primarily related to pulmonary complications, thromboembolic events and hemorrhage

# Hiatal/Paraesophageal Hernia: Comparison



# SAGES Recommendations: When to Operate

Surgical Repair is reserved for patients with:

- Symptoms of gastric outlet obstruction
- Severe gastroesophageal reflux
- Anemia
- Possible gastric strangulation

Surgical repair of hernias for respiratory symptoms and symptoms of post-prandial fullness is less well studied

Elective laparoscopic hiatal hernia repair in asymptomatic patients might actually decrease the quality-adjusted life expectancy for patients aged 65 years and older

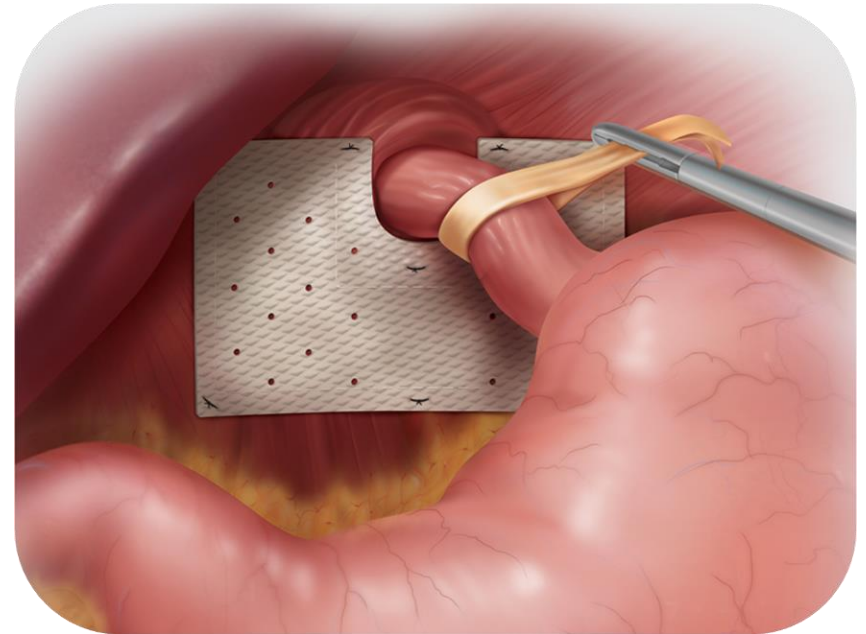
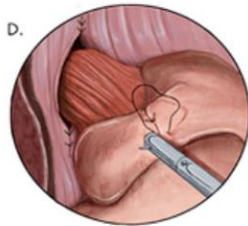
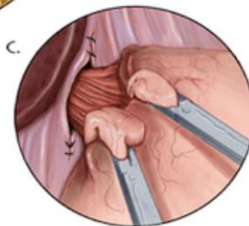
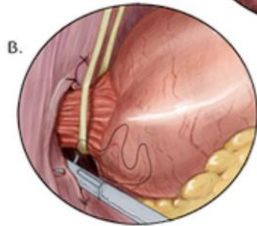
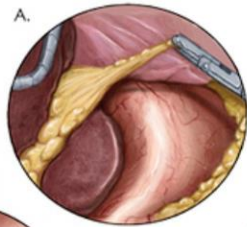
# Considerations

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- Postoperative nausea and vomiting should be treated aggressively to minimize poor outcomes (**++**, **strong**)
- Morbidity
  - Higher among elderly patients and those with co-morbidities
  - No increase in the recurrence rate based on age
- Mortality
  - High following emergency procedures among elderly patients undergoing PEH repair
- The larger the size of the hiatal hernia, as measured by the hiatal surface area, the more likely the recurrence

# Surgical Treatment

## Paraesophageal Hernia Repair



# Success With Hiatal/Paraesophageal Hernia Repairs

28 – 43% recurrence

Re-operation only if symptomatic

# Non-Surgical Management: Hiatal/Paraesophageal Hernia

Weight loss/maintaining normal BMI (21-25)

Avoid tight fitting clothing

PPI (treating GERD)

H<sub>2</sub> Blockers

Antacids

# Case Study #2

YZ is a 44 year old gentleman

- PMH
  - HTN
- HPI
  - Dysphagia to solids & intermittently liquids x 5 years
  - Nocturnal cough
  - Weight loss of 10 pounds
  - Episodic chest pain
  - Unable to belch
  - Travel to Mexico 1 month before symptom onset





## Case Study #2: YZ

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What else do you want  
to know?

Good history is



# History Questions

Do you cough or choke when trying to eat?

Oropharyngeal dysphagia

What do you have trouble swallowing?

Solids only  
• **Ring, web, stricture, malignancy**  
• **Hiatal hernia**

Solids and liquids  
• **Motility disorder**  
• **Consider achalasia**

Any associated heartburn?

GERD, esophagitis, stricture, hypersensitivity, poor motility

Hiatal hernia

Any associated regurgitation?

Acidic or sour regurgitation  
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Bland regurgitation  
• **Achalasia, rumination**

Where does food get stuck?

Subxiphoid  
• **Distal esophageal process**

Mid chest  
• Diffuse process like **EoE** or **lichen planus**

Cervical  
• **Cricopharyngeal bar or distal process referred proximally**

# History Questions

When did it start?

Recent onset, rapidly progressive, weight loss  
• **Malignancy**

Chronic, slowly progressive, no associated weight loss  
• **Non-malignant disease process**

Do you have a history of allergies?

Eosinophilic Esophagitis (EoE)

Medications?

Tetracyclines, bisphosphonates, potassium, NSAIDs  
• **Pill or caustic esophagitis**

Opiates  
• **Opioid-induced esophageal dysfunction (OIED)**

# Eckardt Score

Score	Symptom			
	Weight loss (kg)	Dysphagia	Retrosternal pain	Regurgitation
0	None	None	None	None
1	< 5	Occasional	Occasional	Occasional
2	5 – 10	Daily	Daily	Daily
3	> 10	Each meal	Each meal	Each meal
<b>Patient Response:</b>	<b>1</b>	<b>3</b>	<b>2</b>	<b>2</b>

**Total Eckardt Score:**

**8**



# Dysphagia



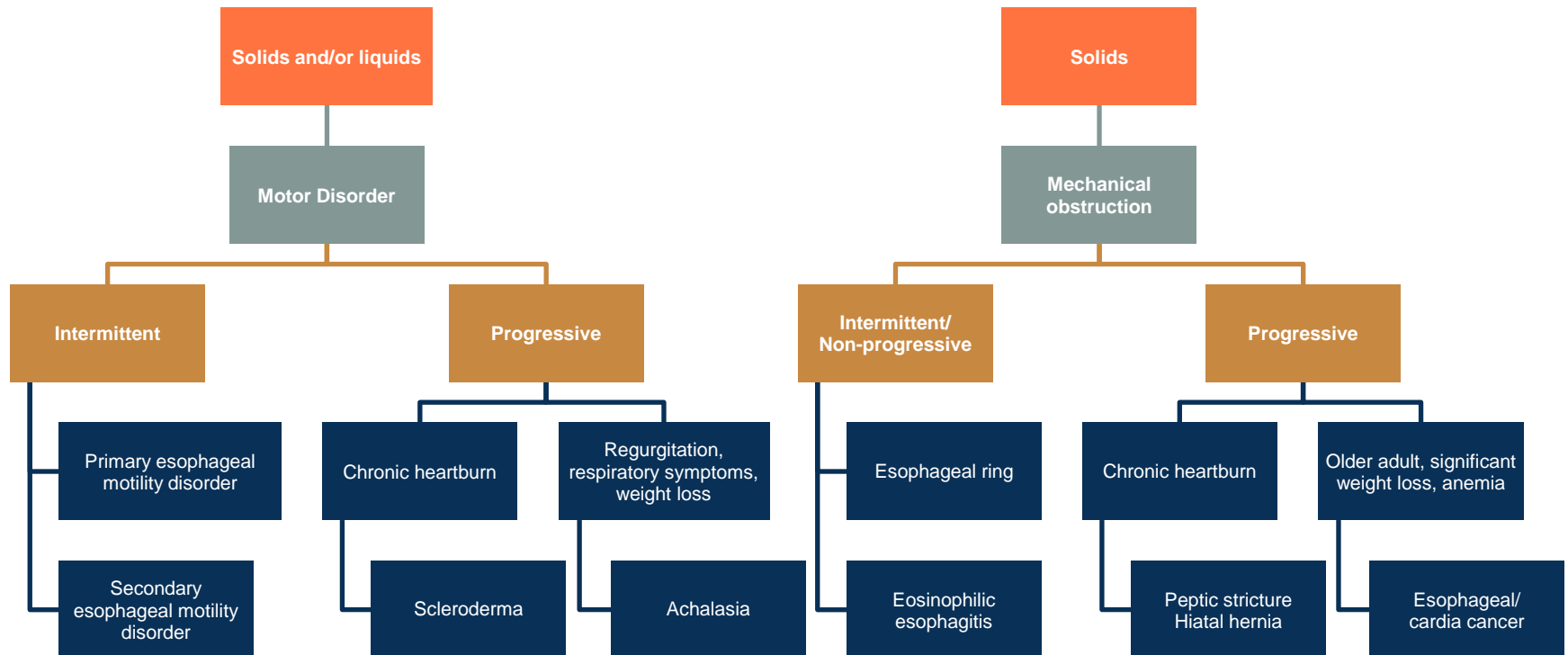
## Oropharyngeal

- ‘Transfer’ dysphagia
- Difficulty in transferring food from mouth to esophagus

## Esophageal

- Difficulty of food or liquid passage from the UES to stomach

# Esophageal Dysphagia



## Case Study #2: YZ

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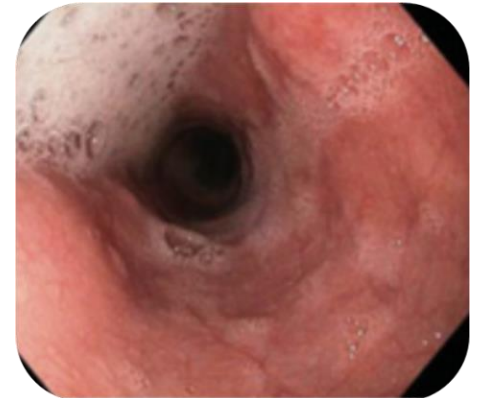
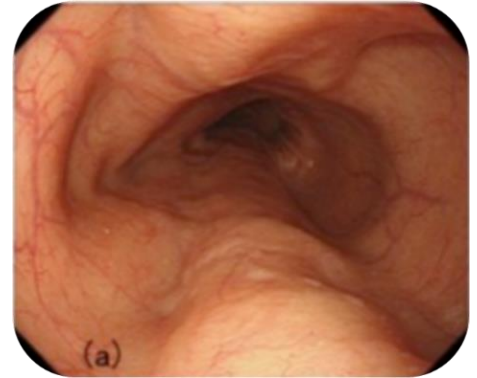
What diagnostic testing  
do you recommend?



# Case Study #2: YZ

Diagnostic  
Testing:  
**Upper  
Endoscopy**

- Mildly dilated esophagus
- Some retained saliva
- Tight gastroesophageal junction with no obvious stricture
- Biopsies show 5-10 eos/hpf



# Case Study #2: YZ

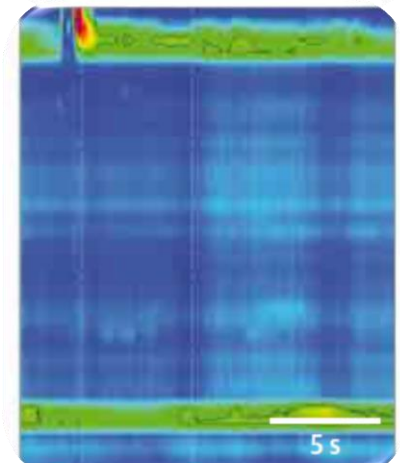
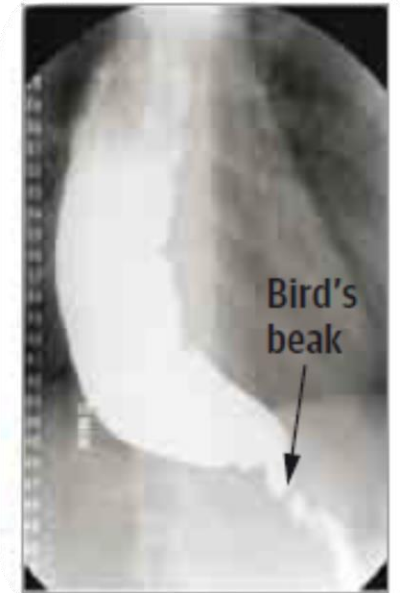
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What next?

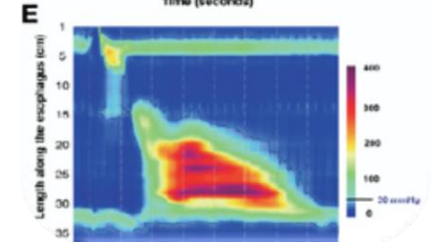
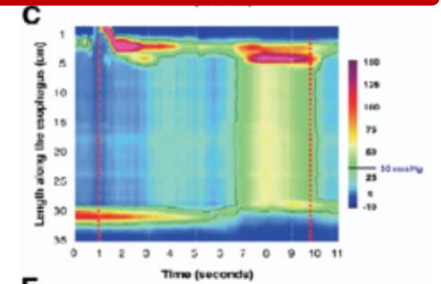
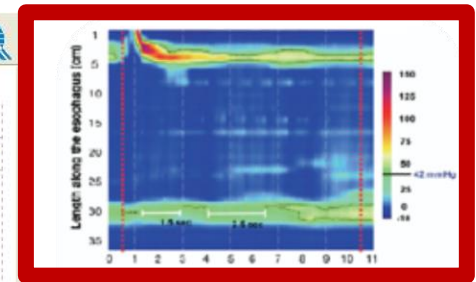
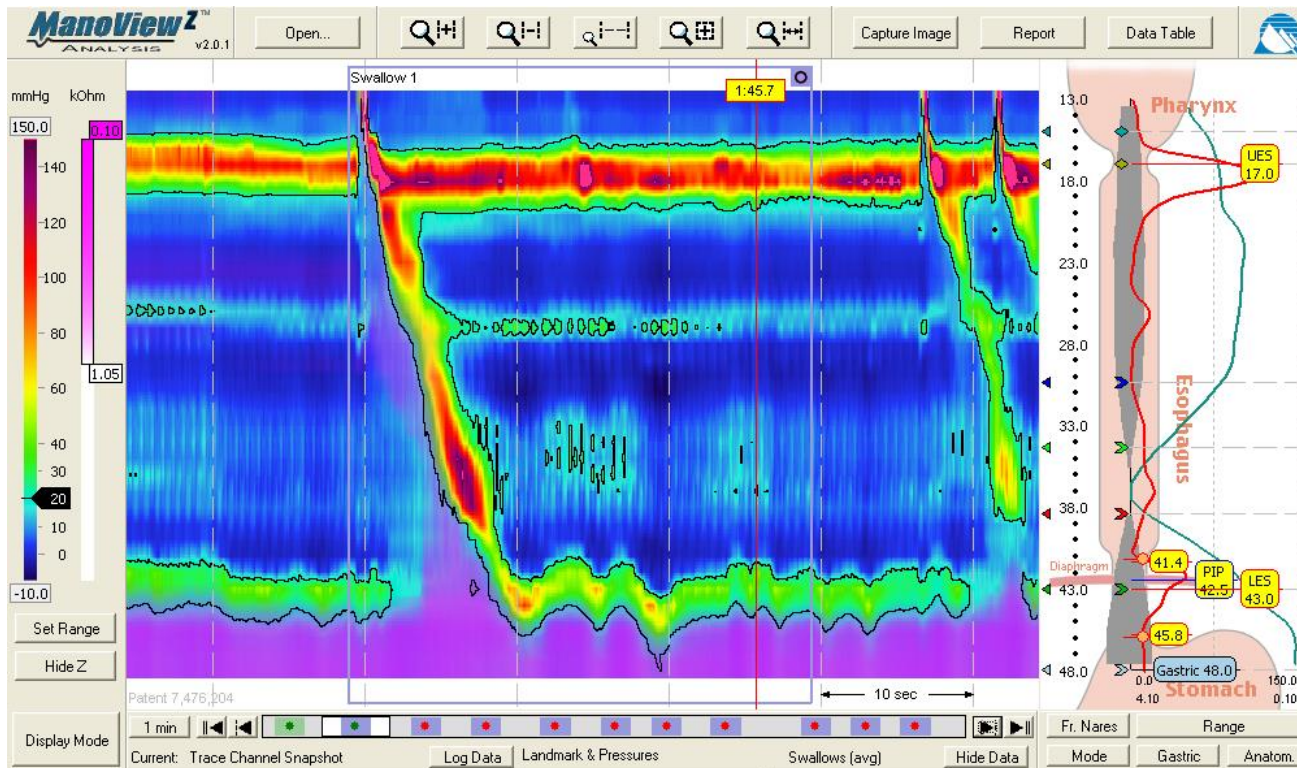
# Case Study #2: YZ

## Diagnostic Testing:

- **Barium Esophagram (timed)**
- **High Resolution Esophageal Manometry**



# High Resolution Esophageal Manometry (HRM)

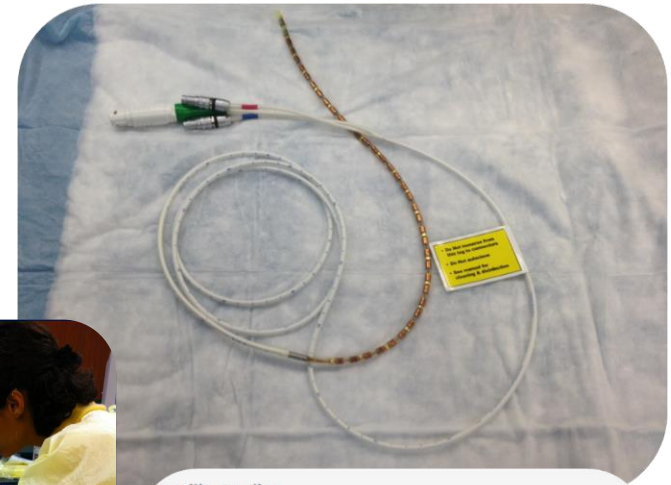
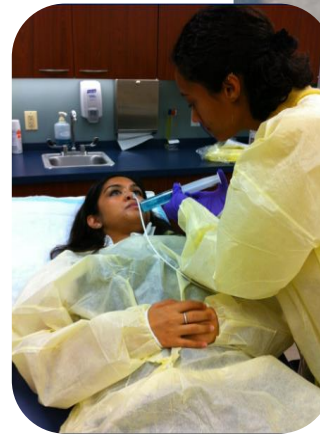


# High Resolution Esophageal Manometry (HRM)

Evaluates esophageal motility

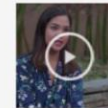
Establishes landmarks for pH probe placement

Recommended for preoperative evaluation prior to antireflux surgery



## Motility studies

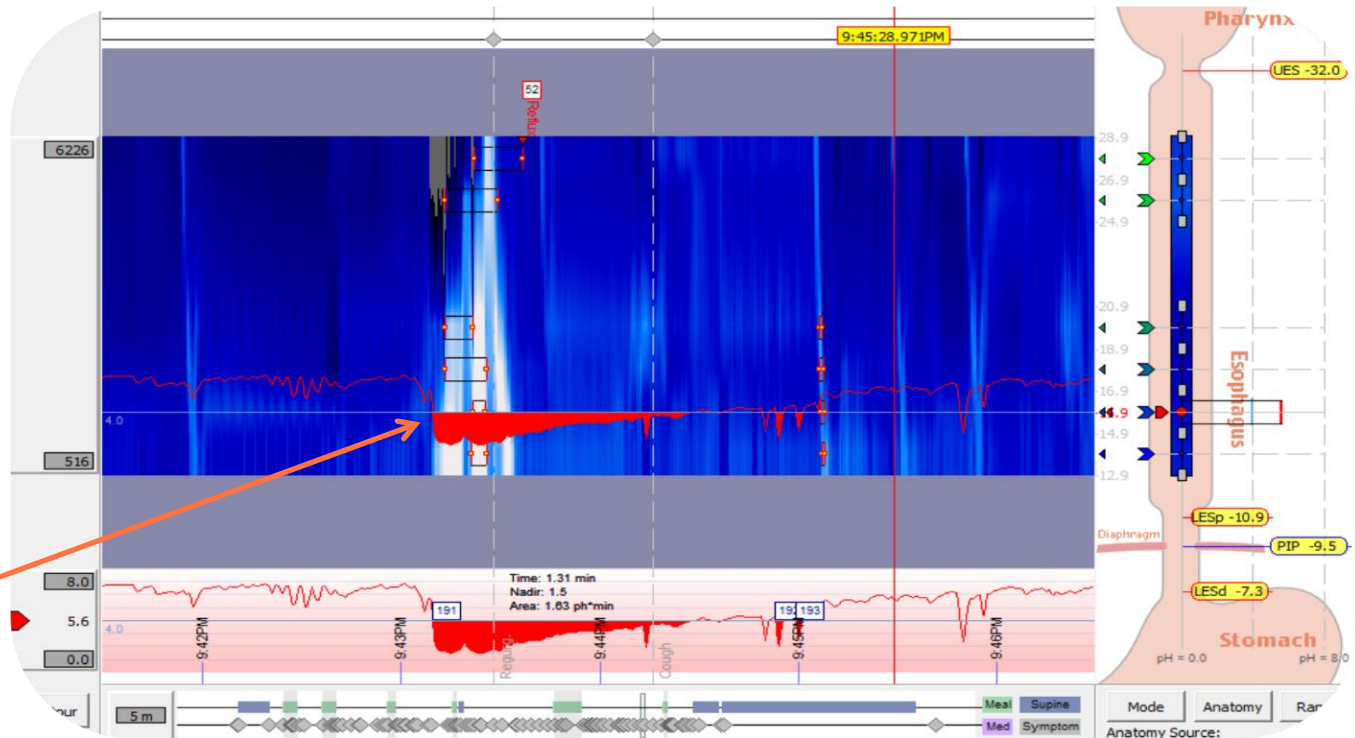
High-resolution esophageal manometry helps determine how swallowing certain foods and liquids brings on symptoms. Stanford experts have advanced training in using specialized techniques that bring on symptoms to help determine the cause of the problem.



What to Expect for Your Esophageal Manometry Procedure

Play Video | 4:16

# 24 Hour pH Impedance Testing



Below line =  
pH <4

# Impedance Planimetry

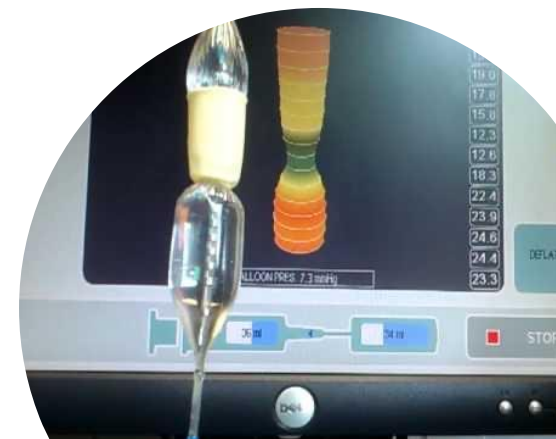
Provides real-time information about distensibility of the esophageal segments in the form of a distensibility index (DI)

Information about esophageal motility through FLIP topography

Tool that can help guide treatment and predict treatment response



Endolumenal Functional Lumen Imaging Probe



## Case Study #2: YZ

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What is the diagnosis?



# Achalasia

## Rare esophageal disorder

- Incidence: 1.6 cases per 100,000
- Prevalence: 10 cases per 100,000

Thought to result from inflammation and degeneration of neurons in the esophageal wall resulting in:

- Absence of relaxation of the LES
- Absence of peristalsis along esophageal body

# Achalasia

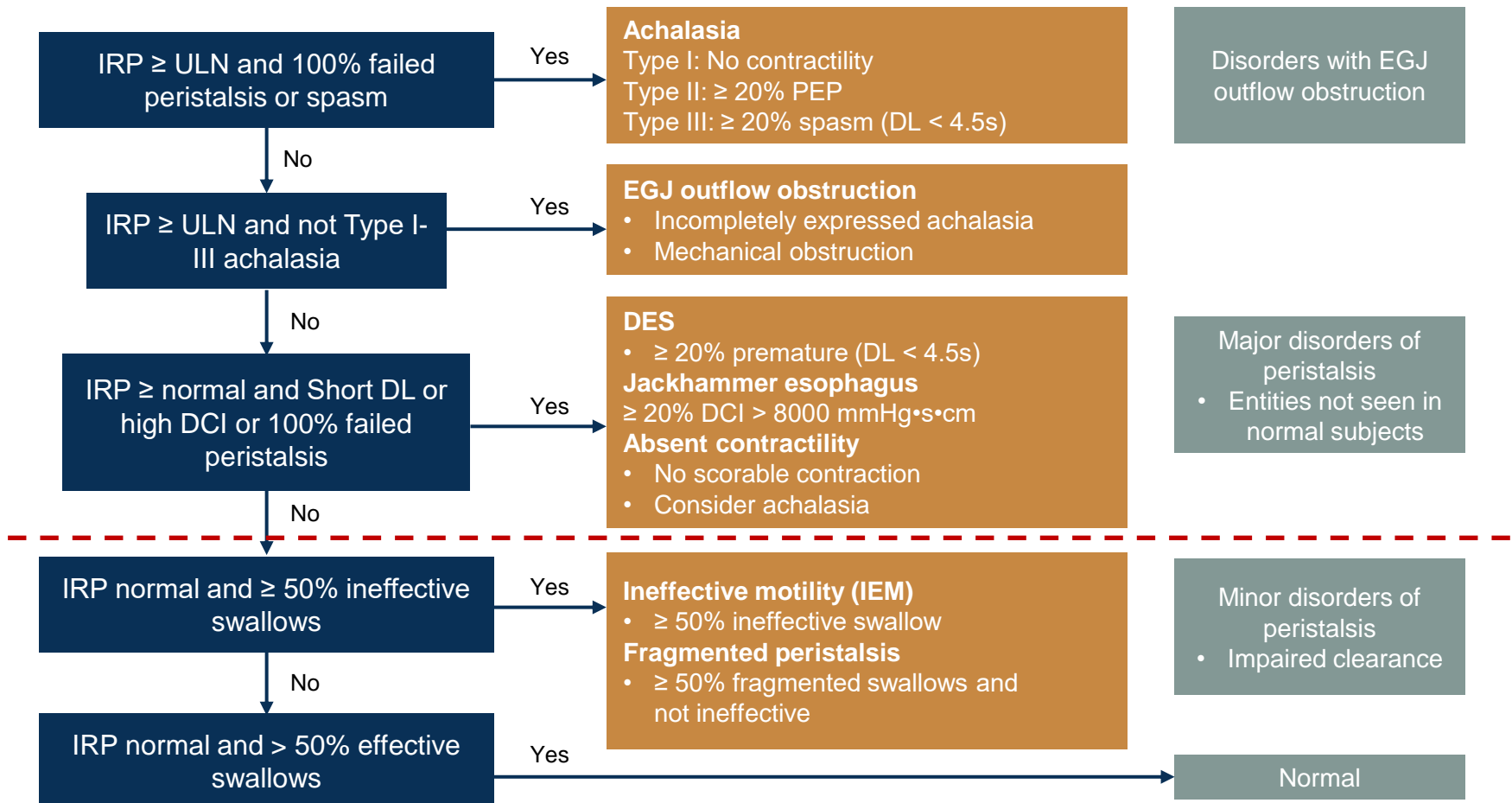
Progressive dilation of esophagus can develop without treatment

- Late- or end-stage achalasia is characterized by esophageal tortuosity, angulation, and megaesophagus (diameter >6 cm)

Increased risk for developing esophageal cancer

# Chicago Classification, v3.0

## The Chicago Classification v3.0 *Hierarchical Analysis*



# Chicago Classification, v3.0

Table 4. The Chicago Classification of esophageal motility v3.0

Achalasia and EGJ outflow obstruction	Criteria
Type I achalasia (classic achalasia)	Elevated median IRP (> 15 mmHg*), 100% failed peristalsis (DCI < 100mmHg*s*cm) <i>Premature contractions with DCI values less than 450 mmHg*s*cm satisfy criteria for failed peristalsis</i>
Type II achalasia (with esophageal compression)	Elevated median IRP (> 15 mmHg*), 100% failed peristalsis, panesophageal pressurization with ≥ 20% of swallows <i>Contractions may be masked by esophageal pressurization and DCI should not be calculated</i>
Type III achalasia (spastic achalasia)	Elevated median IRP (> 15 mmHg*), no normal peristalsis, premature (spastic) contractions with DCI > 450 mmHg*s*cm with ≥ 20% of swallows <i>May be mixed with panesophageal pressurization</i>
EGJ outflow obstruction	Elevated median IRP (> 15 mmHg*), sufficient evidence of peristalsis such that criteria for types I-III achalasia are not met†
Major disorders of peristalsis	(Not encountered in normal subjects)
Absent contractility	Normal median IRP, 100% failed peristalsis <i>Achalasia should be considered when IRP values are borderline and when there is evidence of esophageal pressurization</i> <i>Premature contractions with DCI values less than 450 mmHg*s*cm meet criteria for failed peristalsis</i>
Distal esophageal spasm	Normal median IRP, ≥ 20% premature contractions with DCI > 450 mmHg*s*cm*. Some normal peristalsis may be present.
Hypercontractile esophagus (jackhammer)	At least two swallows with DCI > 8000 mmHg*s*vm*,‡ <i>Hypercontractility may involve, or even be localized to, the LES</i>
Minor disorders of peristalsis	(Characterized by contractile vigor and contraction pattern)
Ineffective esophageal motility (IEM)	≥ 50% ineffective swallows <i>Ineffective swallows can be failed or weak (DCI &lt; 450 mmHg*s*cm)</i> <i>Multiple repetitive swallow assessment may be helpful in determining peristaltic reserve</i>
Fragmented peristalsis	≥ 50% fragmented contractions with DCI > 450 mmHg*s*cm
Normal esophageal motility	Not fulfilling any of the above classifications

Achalasia  
has 3  
phenotypes

\*Cutoff value dependent on the manometric hardware; this is the cutoff for the Sierra device. †Potential etiologies: early achalasia, mechanical obstruction, esophageal wall stiffness, or manifestation of hiatal hernia. ‡Hypercontractile esophagus can be a manifestation of outflow obstruction as evident by instances in which it occurs in association with an IRP greater than the upper limit of normal.

## Case Study #2: YZ

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What is the best treatment option for YZ?

# Achalasia: Treatment Options

## Medical

- Nitrates
- CCB
- Phosphodiesterase

Pharmacologic

## Botulinum Toxin Injection (BTI)

Endoscopic

## Pneumatic dilatation (PD)

## Peroral endoscopic myotomy (POEM)

## Alternative treatments

- Retrievable or absorbable stents
- Intraspincteric injection with ethanolamine oleate or polidocanol

## Laparoscopic Heller Myotomy (LHM)

Surgical

- With partial fundoplication

## Esophagectomy

- End stage achalasia

# Achalasia: Treatment Options

## Medical treatment with nitrates, CCB, phosphodiesterase inhibitors

- International Society for Diseases of the Esophagus (ISDE) Achalasia Guidelines recommend against use for treatment of achalasia
- No convincing evidence that these are effective for symptomatic relief
- 2020 ACG Clinical Guidelines for achalasia state that pharmacologic therapy should be reserved for those who have failed botulinum toxin injection and cannot undergo definitive therapy

# Achalasia: Treatment Options

## Botulinum Toxin Injection (BTI)

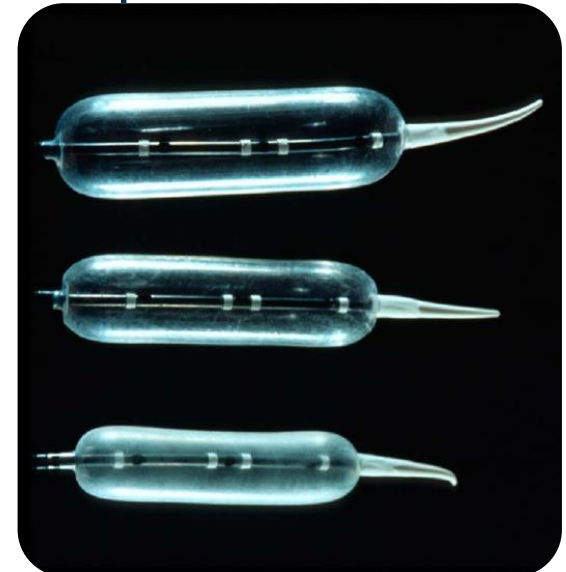
- Limited application in young patients (<50)
- Should be reserved for patient unfit for surgery
- Can be a bridge to more effective therapies
- Repeated treatments safe, but less effective
- 2020 ACG Clinical Guidelines for achalasia state that they recommend that treatment with BTI does **not** significantly affect performance and outcomes of myotomy



# Achalasia: Treatment Options

## Pneumatic Dilatation (PD)

- Serial PD is the most effective non-surgical treatment option
- Retreatment may be required ( $\frac{1}{4}$  to  $\frac{1}{3}$  of dilated patients will require redilation)
- Patients wishing long-term remission (without further dilation) may opt for surgical treatment
- Perforation is a potential serious complication



# Achalasia: Treatment Options

## Peroral Endoscopic Myotomy (POEM)

- Medium term follow-up (2-4 years) has shown similar outcomes to LHM or PD
- ISDE recommends that patients are informed of GERD risk post-POEM and that acid suppressive therapy is discussed
- No evidence that prior BTI or PD reduces feasibility
- Appropriate for symptom persistent/recurrence after LHM
- 2020 ACG Clinical Guidelines for achalasia suggest that POEM would be a better treatment option for Type III achalasia

# Achalasia: Treatment Options

## Alternative Treatments

- Little evidence to support stent placement or use of sclerotherapy as effective treatment
- ISDE & ACG guidelines recommend against these treatment options for achalasia

# Achalasia: Treatment Options

## Laparoscopic Heller Myotomy (LHM)

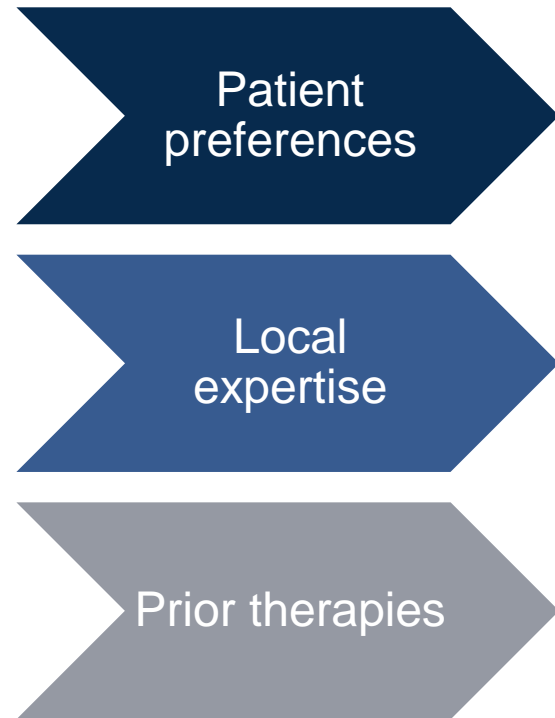
- Best outcomes are achieved in Chicago type I & II
- Partial fundoplication (Dor or Toupet) should be added to LHM to reduce GERD risk
- Should be considered as a first-line treatment option in achalasia patients with sigmoid esophagus

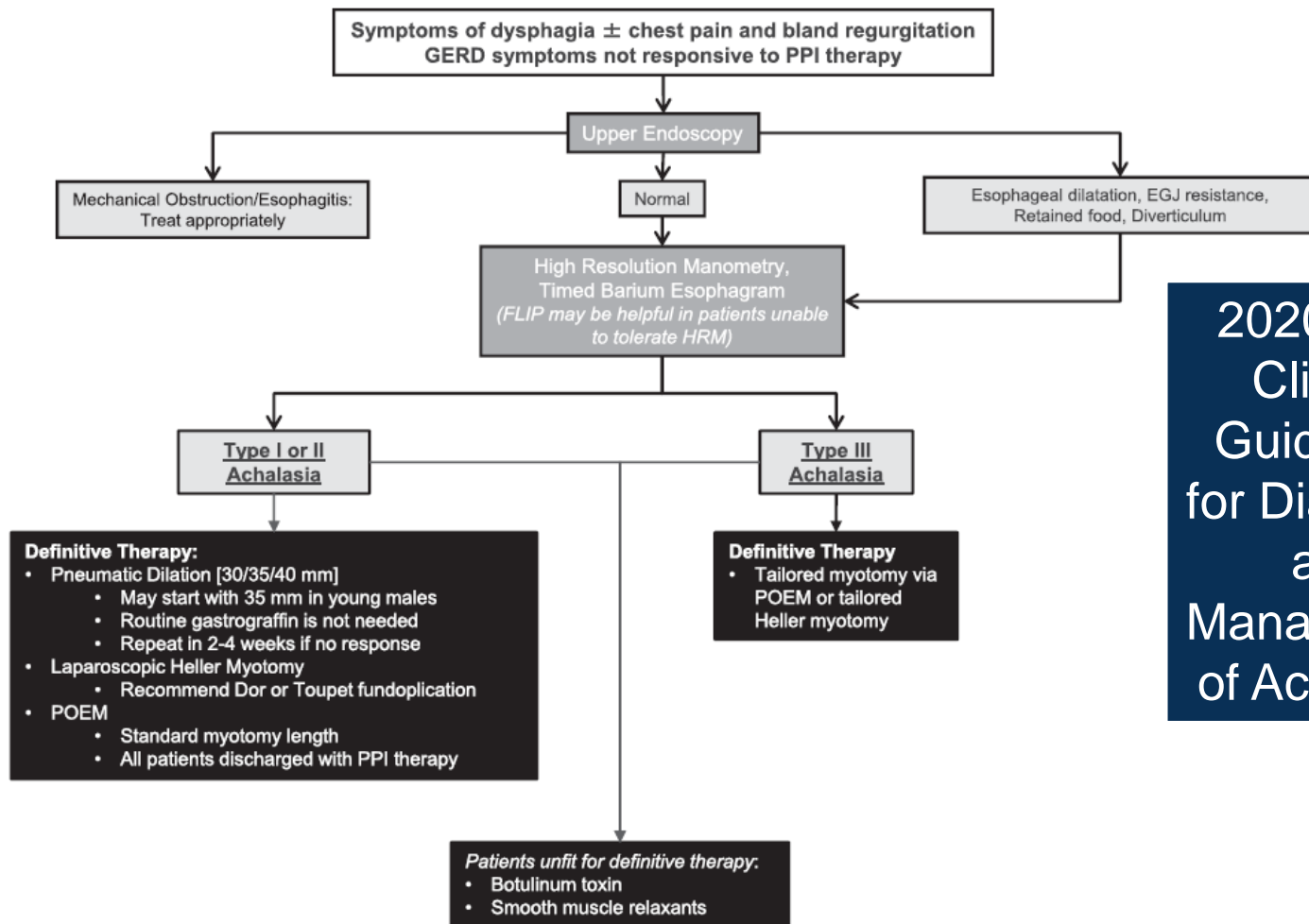
# Achalasia: Treatment Options

## Esophagectomy

- Last resort when conservative strategies failed
- Consider in those with megaesophagus (larger than 8 cm)
- Indicated in patients with persistent or recurrent achalasia after failure of PD, POEM, LHM and radiologic progression of disease
- Associated with high rate of complications and surgical mortality

# Case Study #2: YZ





**2020 ACG  
Clinical  
Guidelines  
for Diagnosis  
and  
Management  
of Achalasia**

Thank You!





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