



HPB/UGI Surgery GP Symposium 2024

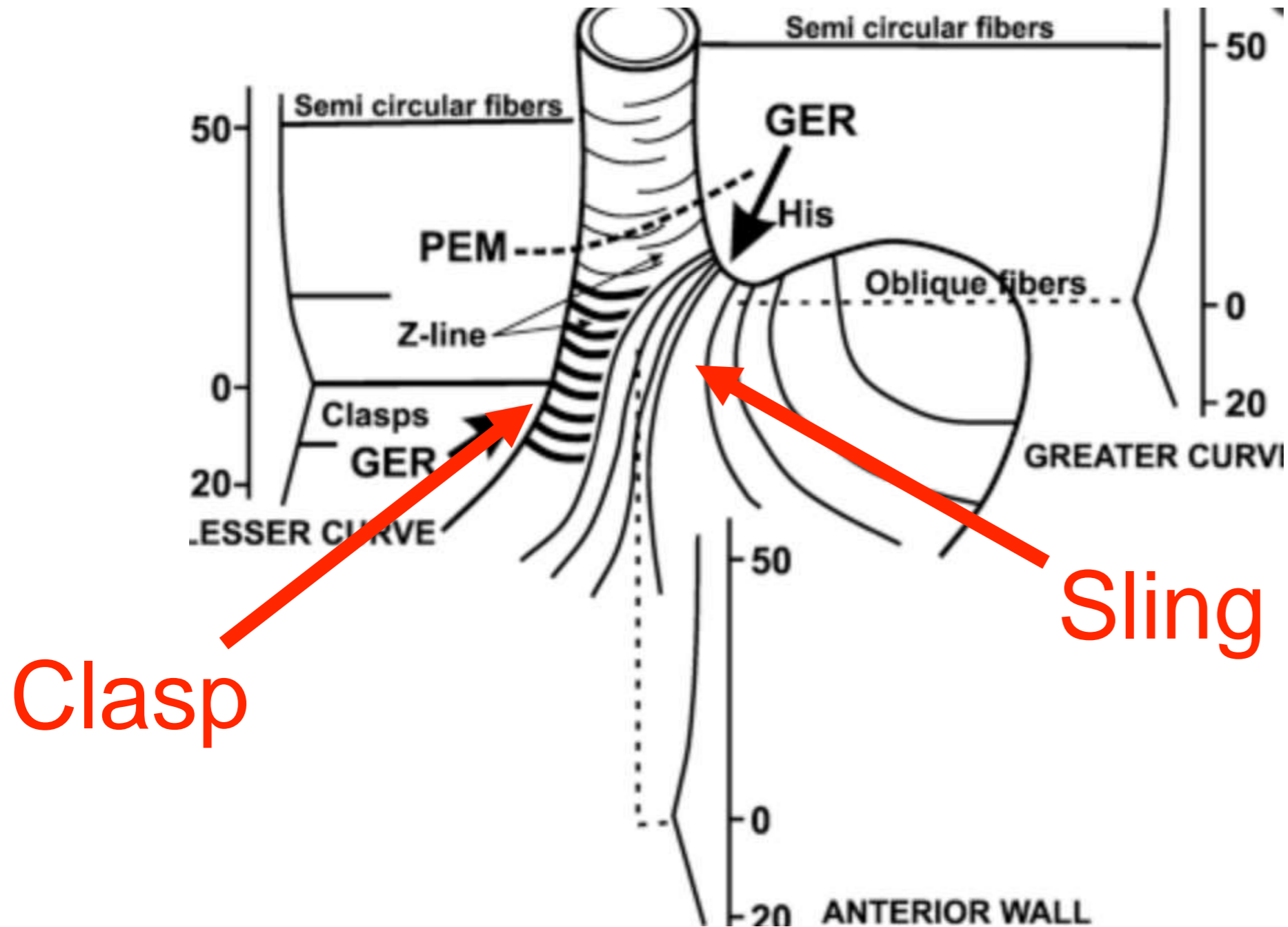
Universe Leung, General/UpperGI/HPB Surgeon

Gastroesophageal Reflux



Anatomy

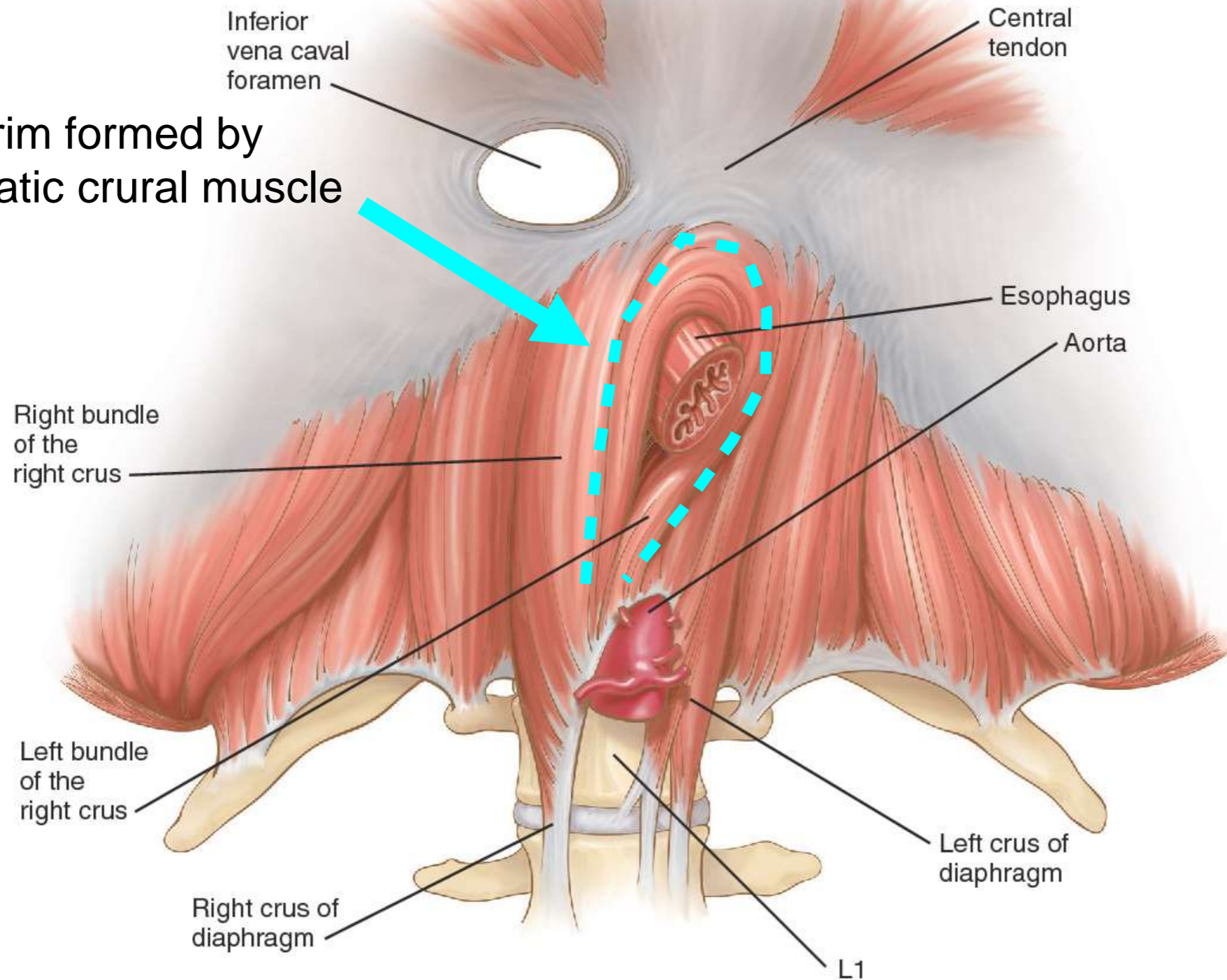
Lower Oesophageal Sphincter



Anatomy

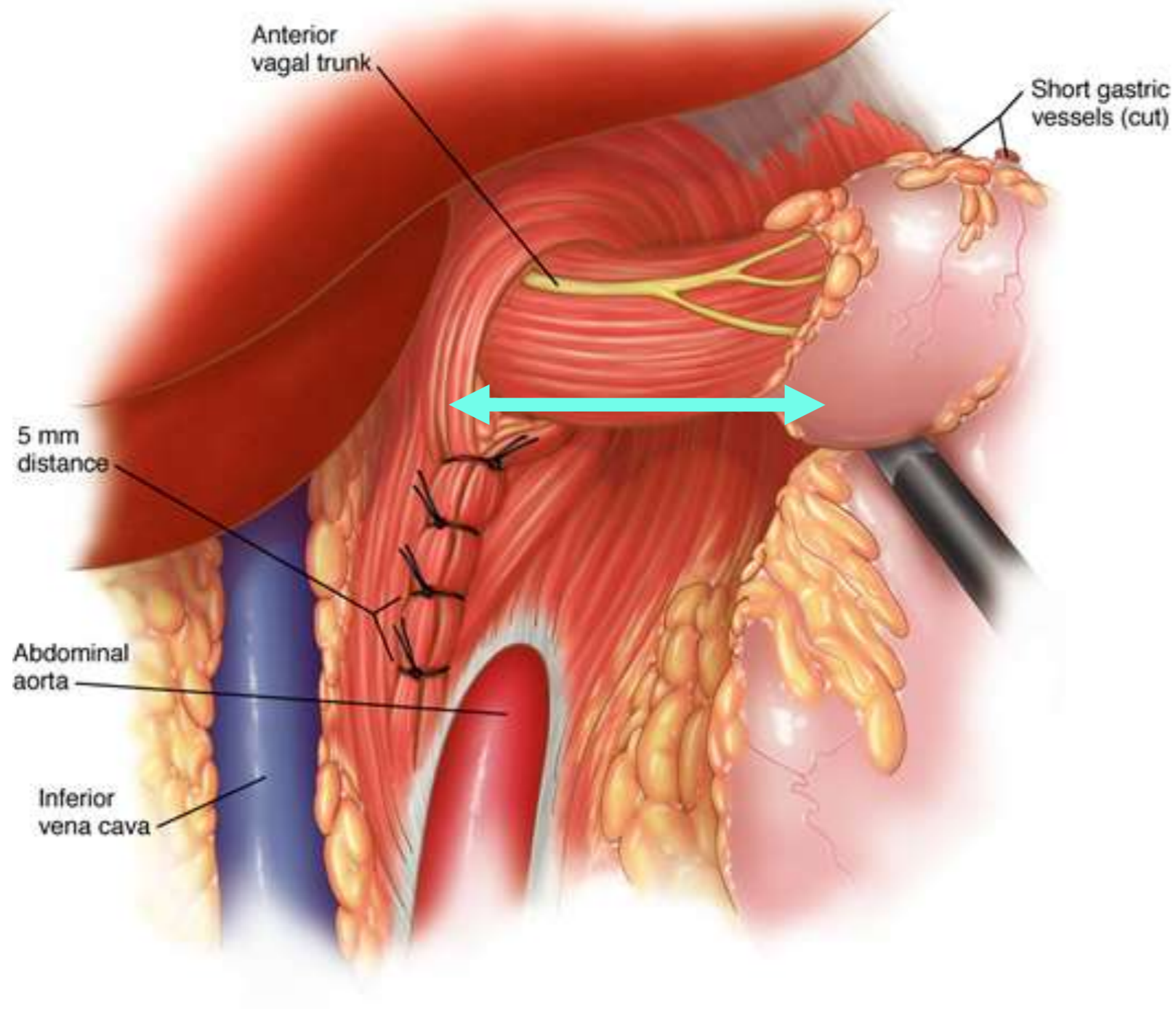
Diaphragmatic hiatus

Hiatal rim formed by diaphragmatic crural muscle



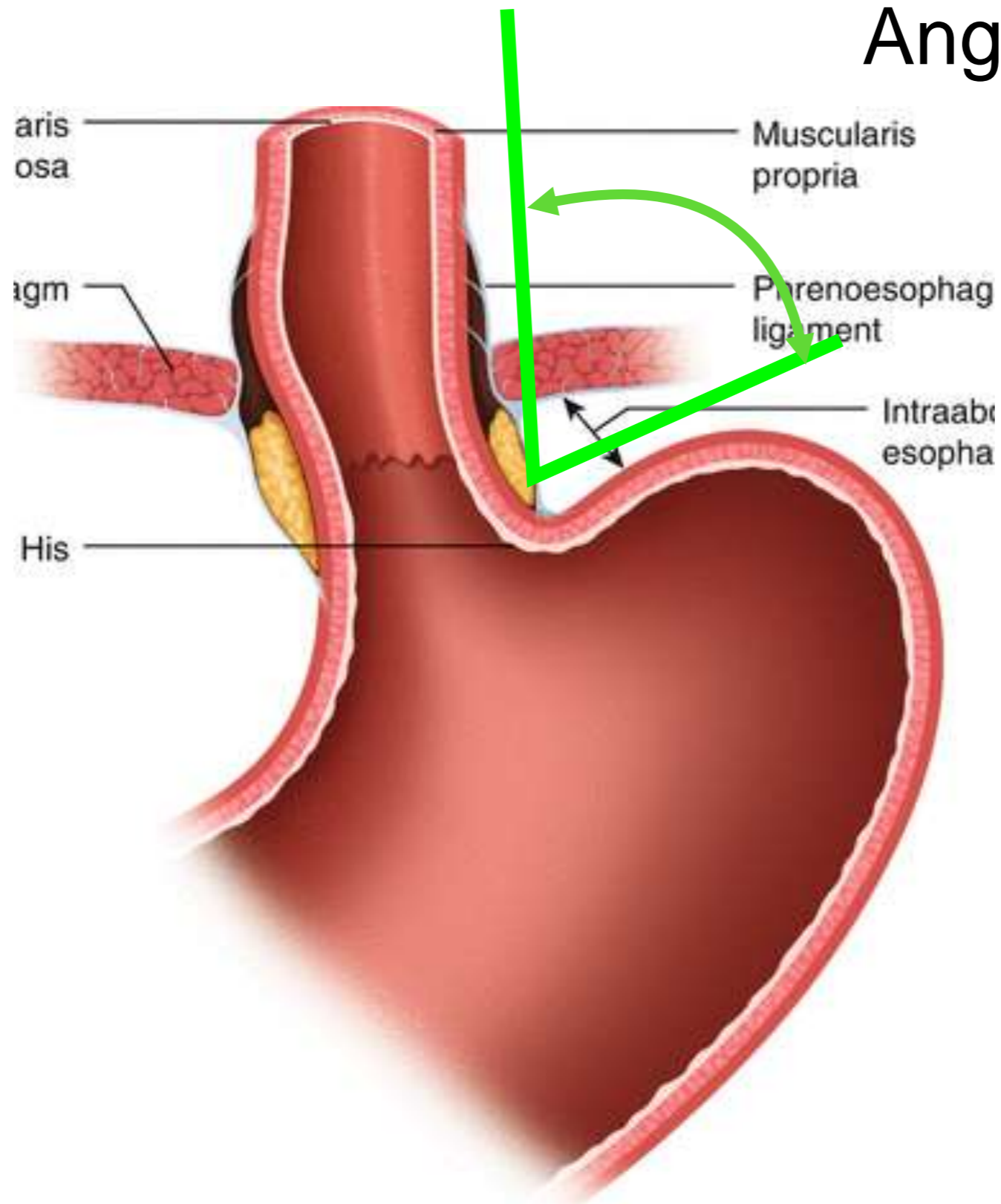
Anatomy

Intra-abdominal oesophagus



Anatomy

Angle of His



Pathophysiology of Reflux

Physiological factors

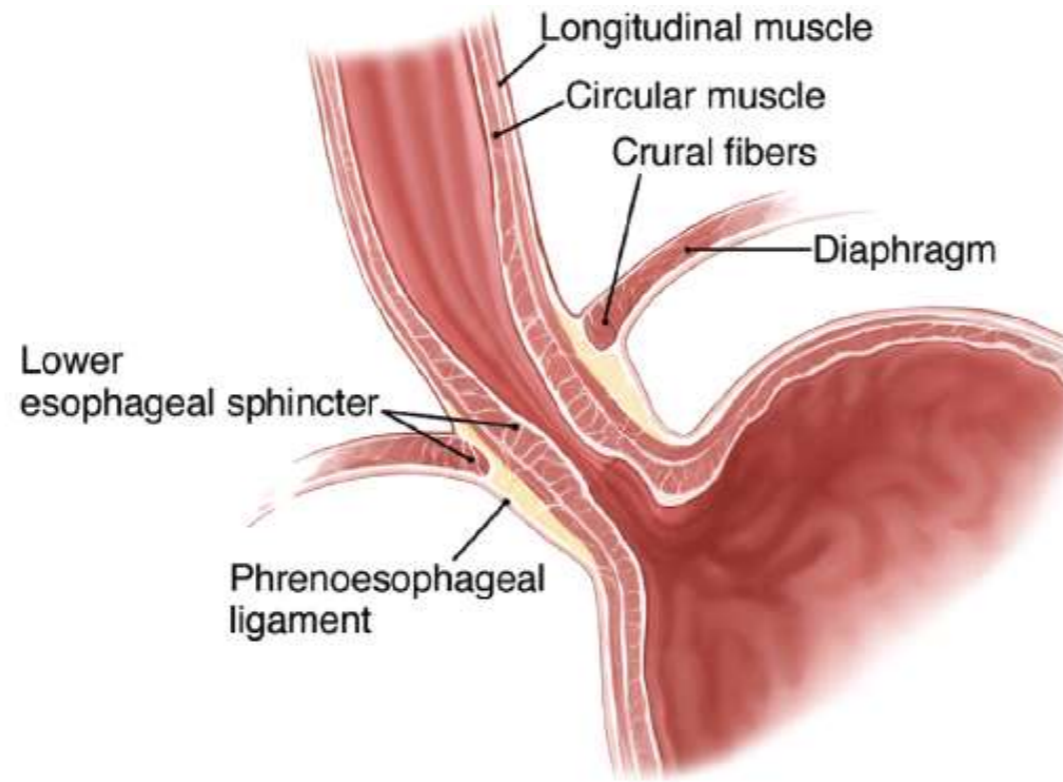
- Transient relaxation of lower esophageal sphincter
 - Normal physiological mechanism for burping air
 - More frequent with gastric distension eg. post-prandial
 - Abnormal when allow acid to reflux
- Weak sphincter pressure
- Ineffective esophageal motility reduces acid clearance and increases severity of esophagitis

Pathophysiology of Reflux

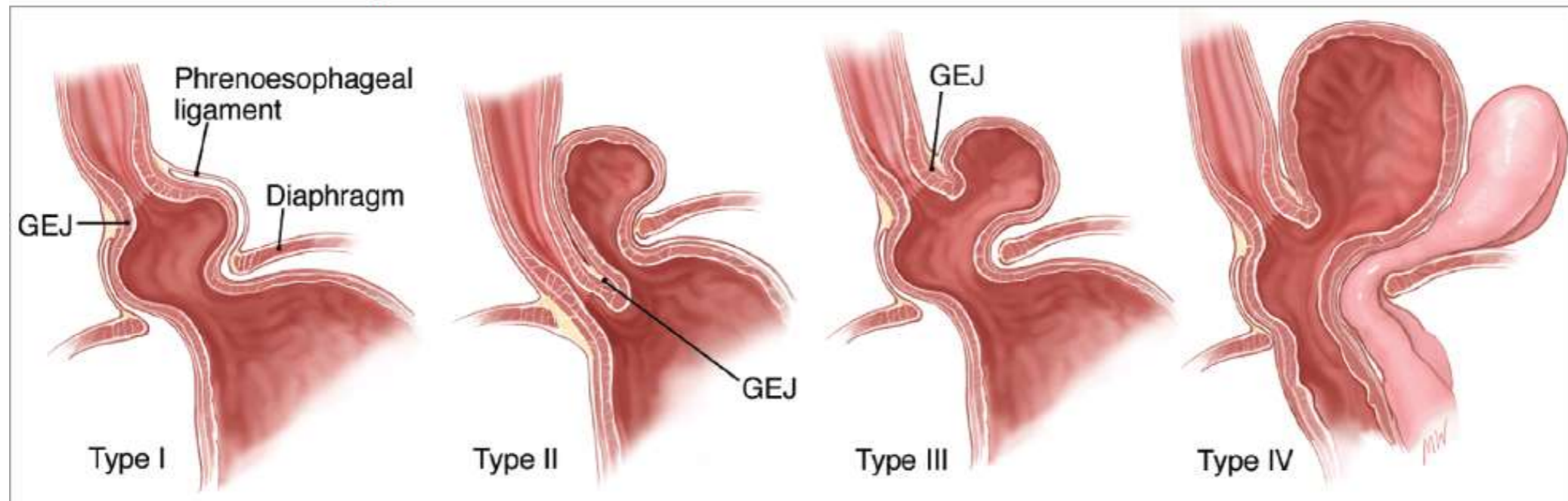
Anatomical factors

- Hiatus hernia
 - Reduces pinchcock mechanism of crura
 - Lower LOS pressure
 - Increased frequency of transient LOS relaxation
 - Reduced esophageal emptying
- Loose attachment of phrenoesophageal ligament between gastroesophageal junction and diaphragm
- Loss of GOJ flap valve

Hiatus Hernia



A



Clinical presentation

Typical

- Heartburn
- Acid regurgitation
- Dysphagia (longstanding reflux)
- Responds to acid suppression
 - 40-90% of patients with GORD symptoms respond to PPIs

Clinical presentation

Atypical

- Cough
- Shortness of breath/wheeze
- Sore throat / hoarse voice / globus
- Dental erosions
- Retrosternal chest pain
- Nausea

Clinical presentation

Non-acid / weakly acidic reflux

- Refluxate pH >4.0
- Unclear how it causes symptoms
- May account for up to 40% of patients with GORD symptoms who do not respond to PPIs
- Diagnose with 24hr pH/Impedance study (while on acid suppression)

Investigations

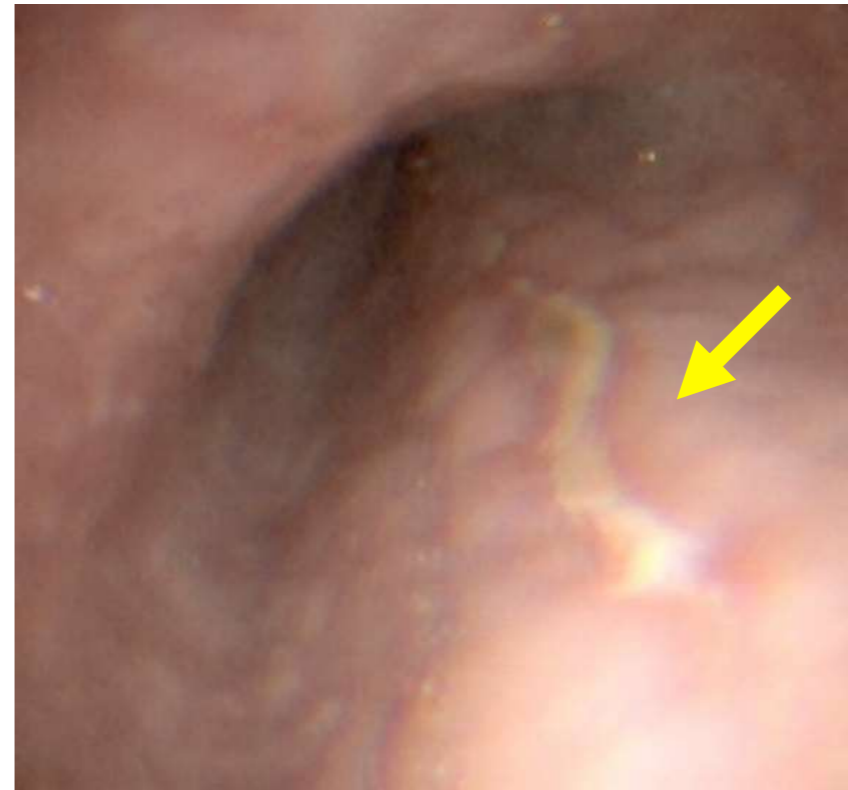
Gastroscopy

- Hiatus hernia
- Reflux esophagitis
 - 30% GORD patients have endoscopic esophagitis
 - Los Angeles grade
- Gastroesophageal junction flap valve
- Barrett's esophagus
 - Especially in age >50, white, obese males, with long standing GORD >5-10 years
- Benign esophageal stricture
- Exclude esophageal cancer

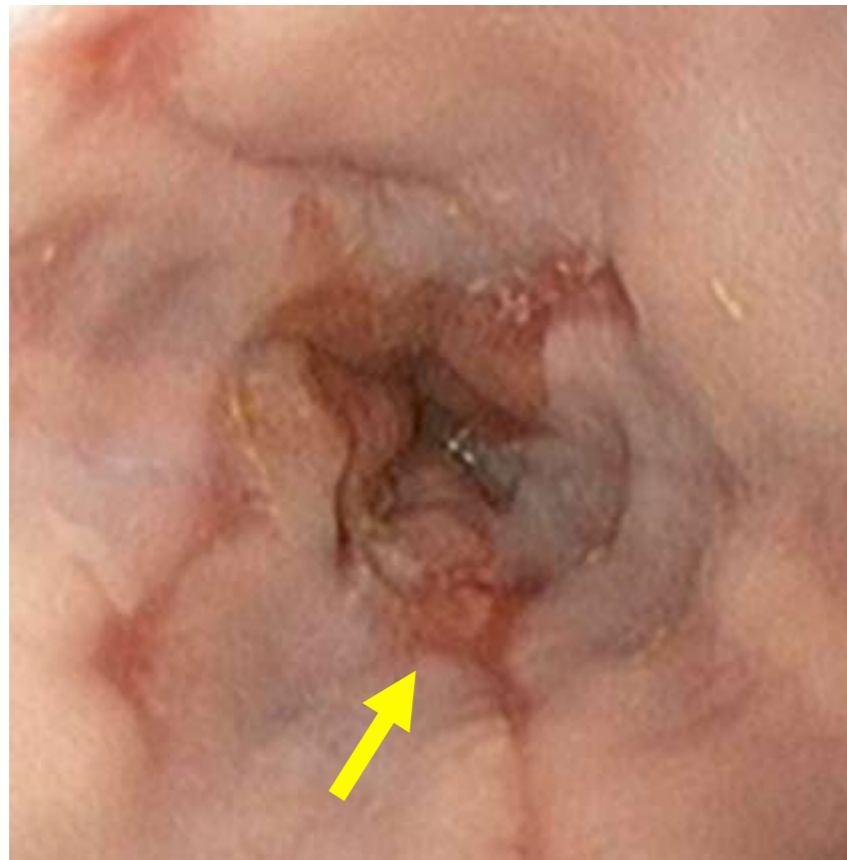
Los Angeles Grading for Esophagitis



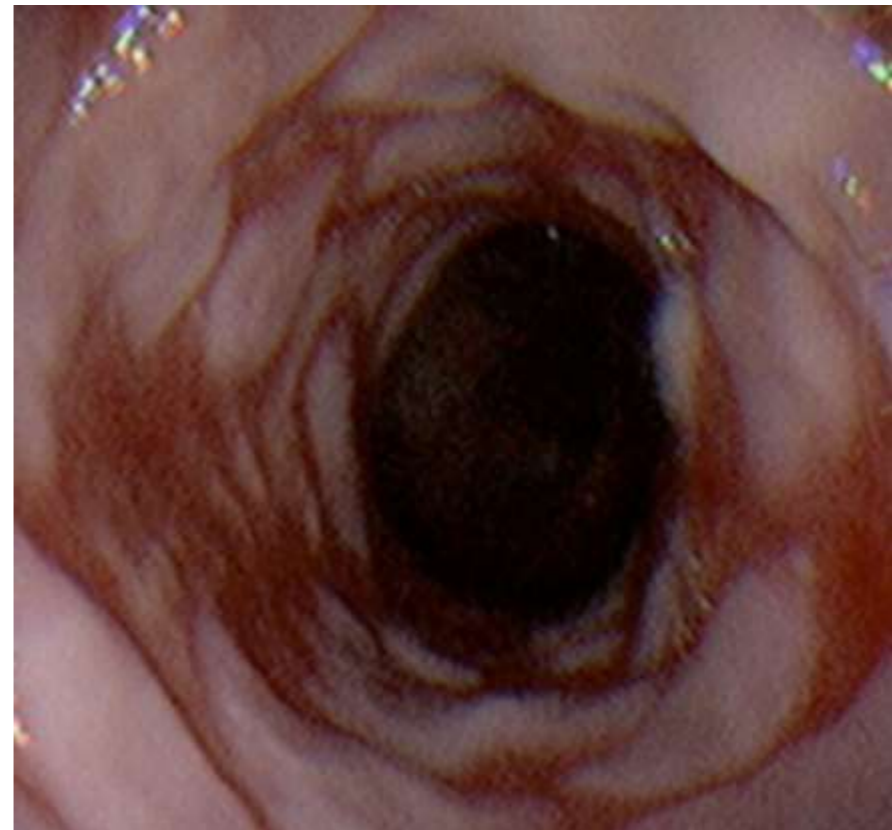
A



B

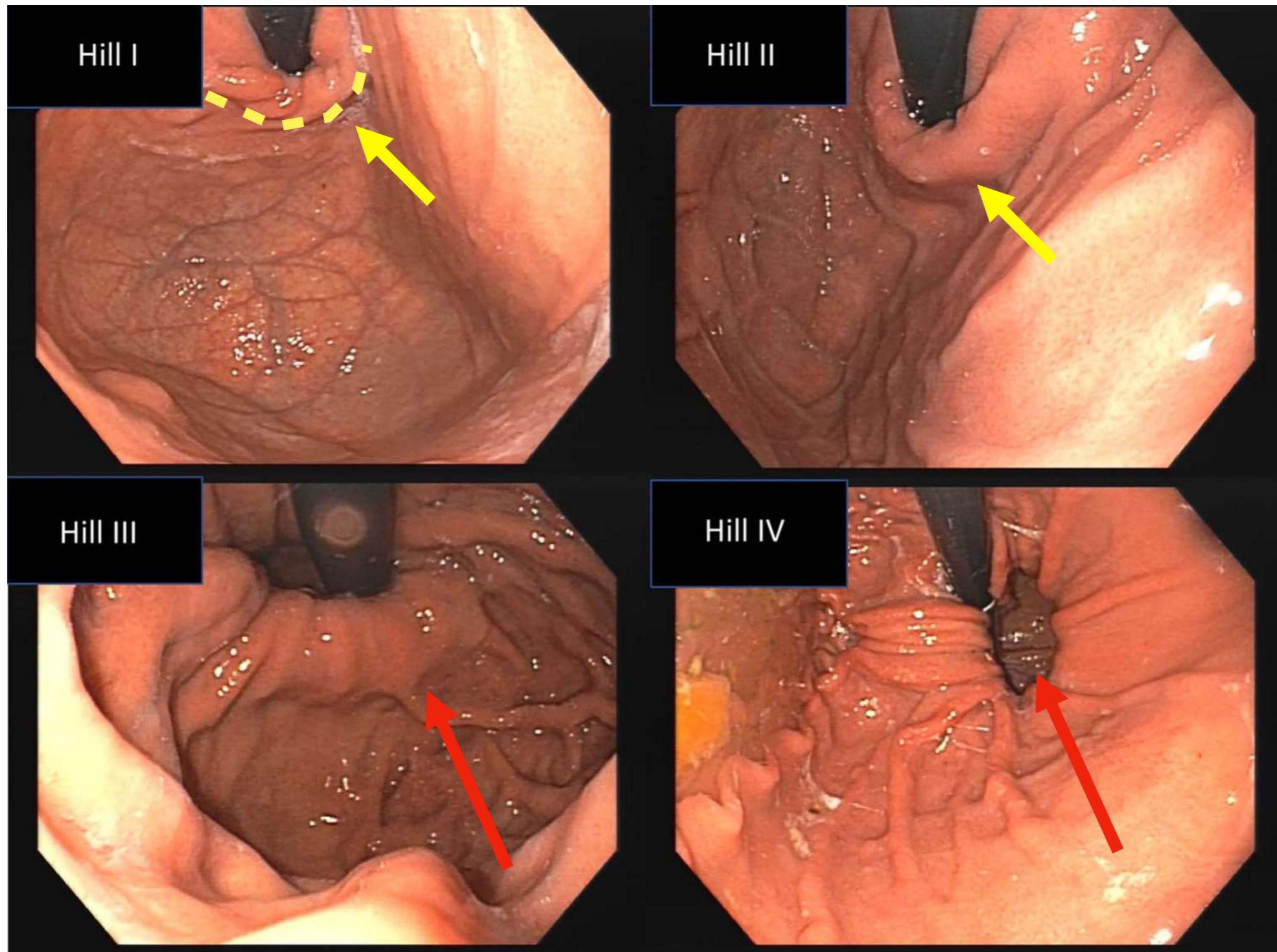


C



D

Hill Grading of Gastroesophageal Flap Valve



Investigations

pH/impedence study

- Placement of naso-oesophageal probe
- 24hr recording
- Measures acid and non-acid reflux
 - DeMeester score
 - Reflux events
- Symptom correlation
 - Symptom index
 - Symptom association probability

Investigations

Manometry

- Assess esophageal motility
- Not mandatory for all patients with GORD considered for surgery but useful for patients with dysphagia and with atypical symptoms (eg. chest pain)
- Exclude achalasia
- Some surgeons use manometry results to decide between total (Nissen) fundoplication vs partial fundoplication

Investigations

Bravo

- Wireless pH monitor placed in distal esophagus
- Measures acid reflux only
- 48 to 96hr recording, off PPI
- Longer period of monitoring increases diagnostic yield
- Requires endoscopic placement

Investigations

- Barium swallow
 - Limited utility
 - Look for dysmotility
 - Post-surgical anatomy for recurrent symptoms after surgery
 - Positive barium study can be present in 20% of normal asymptomatic patients
- CT
 - Giant paraesophageal hernia

Medical Management

- Lifestyle modifications
- Very mild and intermittent symptoms - antacids PRN
- Mild symptoms - “step-up” H2A or PPI
- Frequent symptoms +/- esophagitis on endoscopy - “step down”
 - Start with higher dose PPI then reduce after 6-8 weeks
 - Aim to stop if patients become asymptomatic
- Severe esophagitis (LA grade C or D), or Barrett’s - consider longterm maintenance PPI

Surgery

Who to refer?

- Patients with symptoms inadequately controlled on once daily PPI
- Patients who do not tolerate PPIs
- Patients who do not want to take longterm PPIs

Surgical Treatment

Ideal candidates

- Patients with typical symptoms, subjective evidence of acid reflux, and response to PPIs
- Patients with subjective evidence of acid reflux but atypical clinical features
 - atypical symptoms eg. cough
 - poor response to PPI
 - benefits less certain
- No conclusive evidence that antireflux surgery prevents esophageal cancer, or progression of Barrett's to esophageal cancer

Surgical Treatment

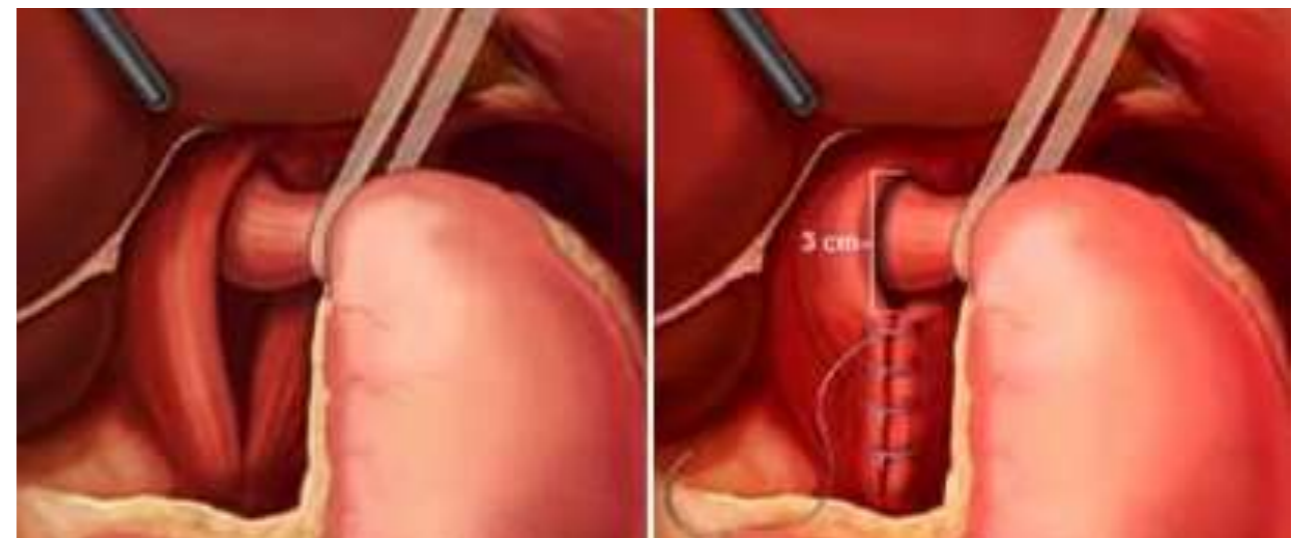
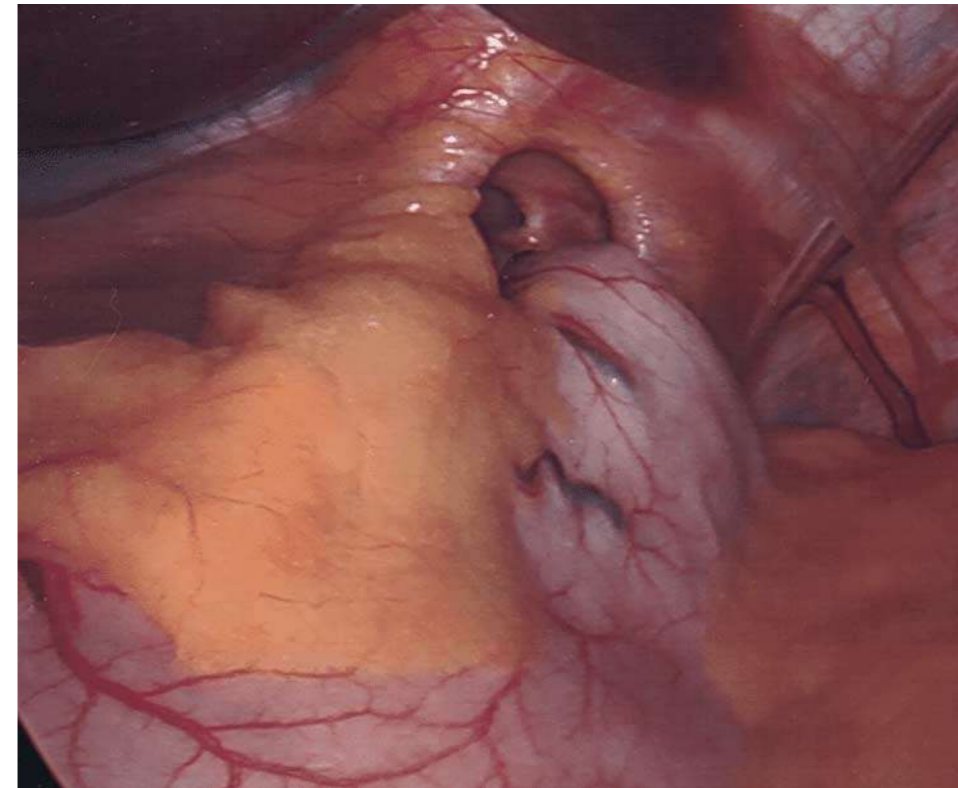
Pre-operative investigations

- Gastroscopy mandatory
- pH testing recommended, but not routinely needed if gastroscopy showed grade C/D esophagitis, Barrett's, or peptic stricture
- manometry - recommended routinely by some guidelines

Surgery

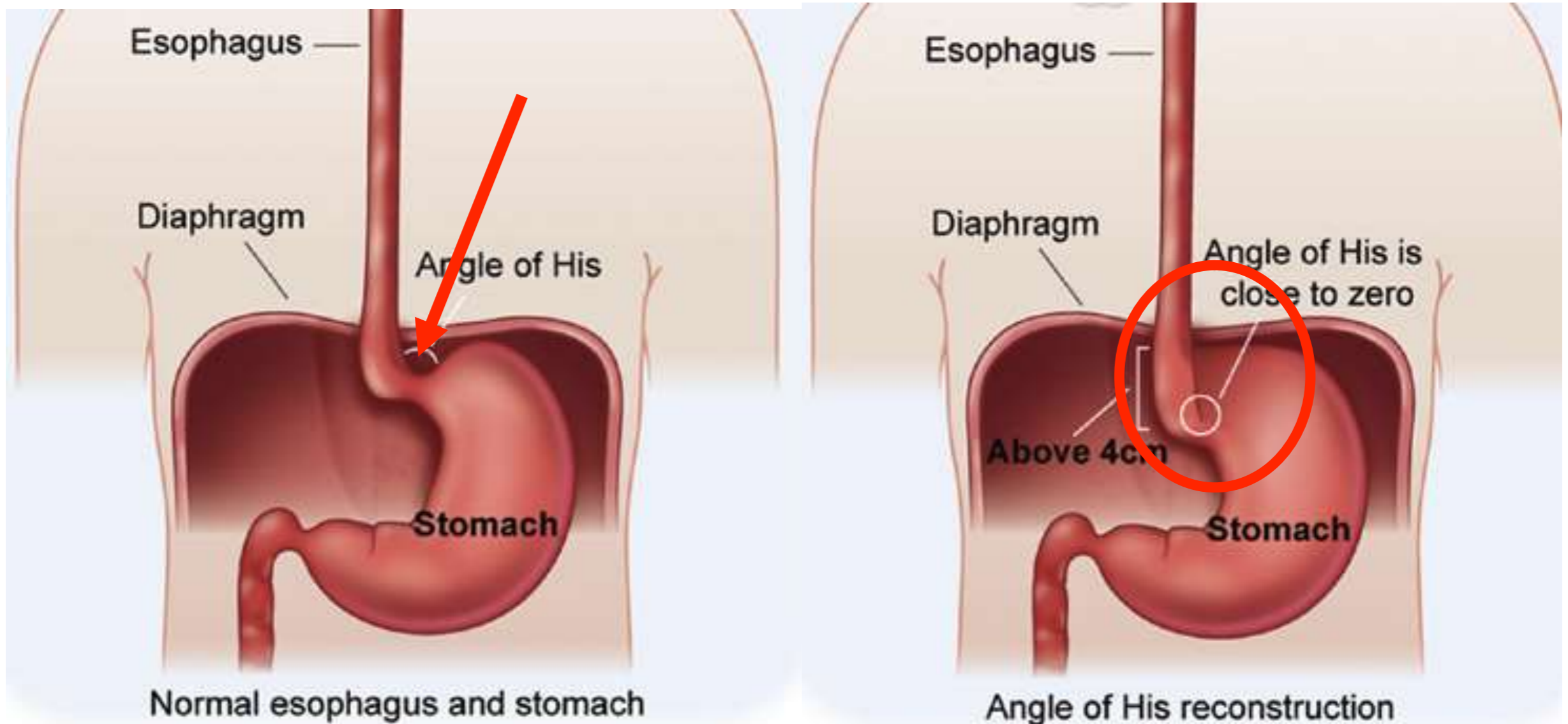
Laparoscopic antireflux surgery

- Reduction of any hiatus hernia
- Freeing of mediastinal adhesions
- Bring tension free length of esophagus into abdomen
- Cruroplasty
- Restoration of angle of His
- Fixation of gastroesophageal junction within abdomen
- Fundoplication



Surgery

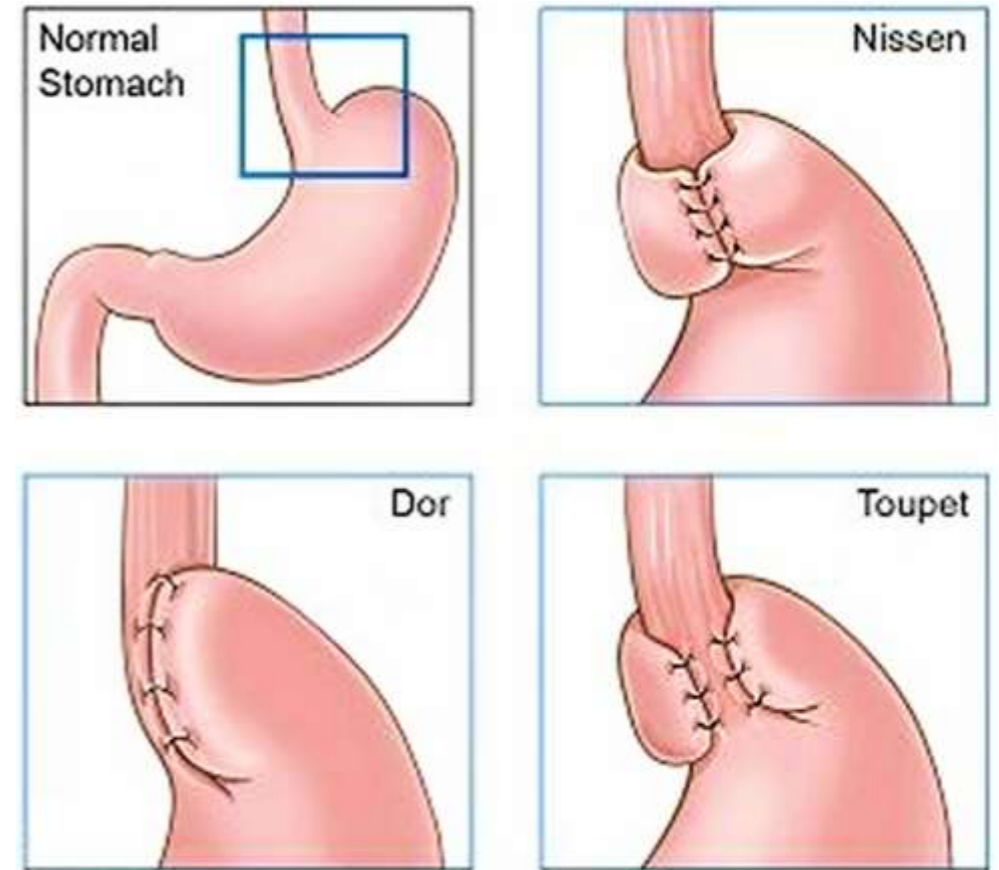
Angle of His

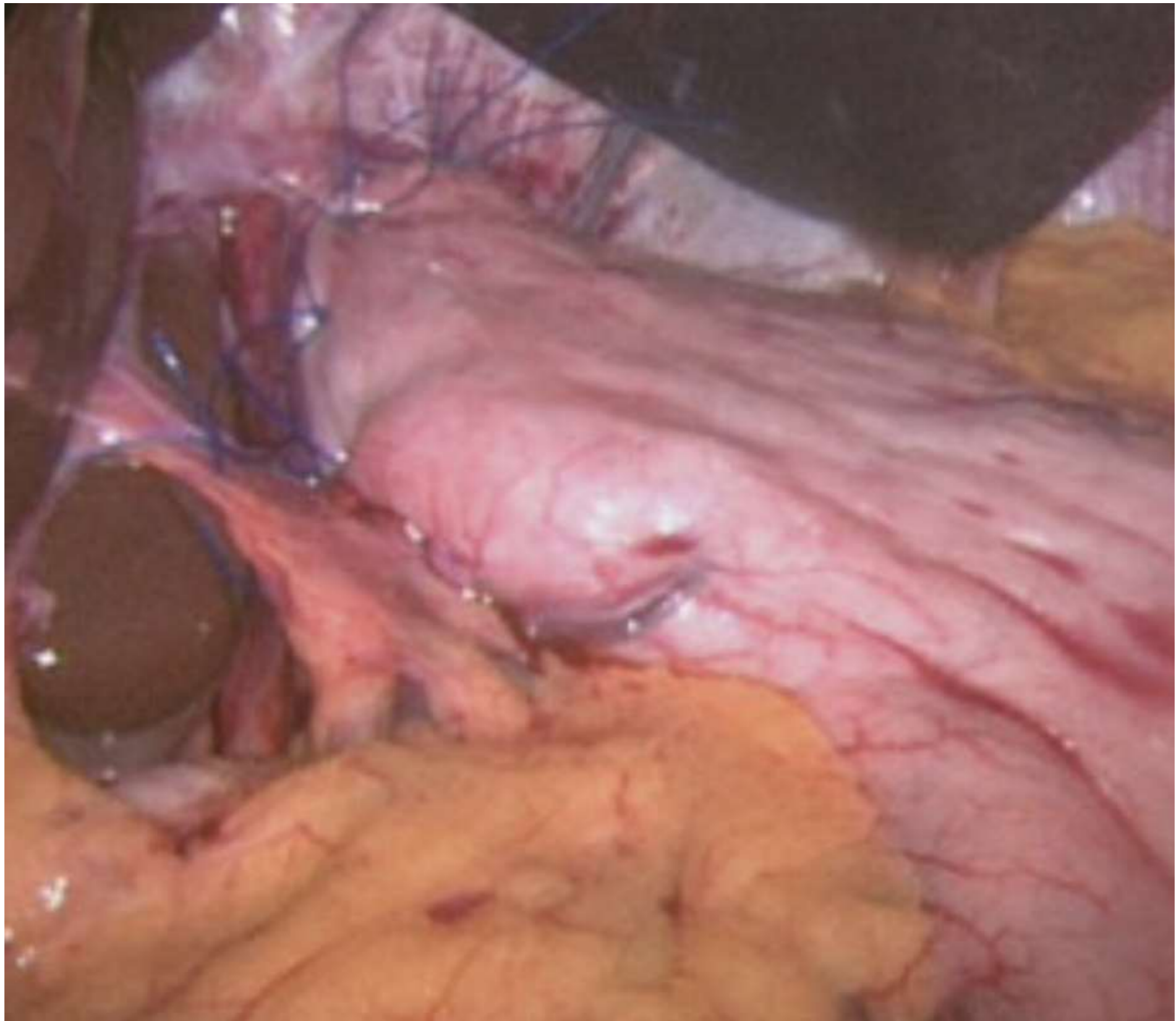


Surgery

Fundoplication - variations

- Nissen (360 degree)
- Partial
 - D'Or (anterior)
 - Toupet (posterior)
- Similar anti-reflux efficacy but partial fundo associated with less dysphagia and gas bloating
 - Lee et al, Surg Endosc 2023
- Operator dependent





Completed D'Or fundoplication

Surgery

Post-op care

- 1-2 nights in hospital
- 3-4 weeks pureed diet
- 4-6 weeks gradual return to normal diet
- Degree of dysphagia common in first 3 months
- Pre-operative dysphagia predicts post-operative dysphagia

Surgery

Outcomes

- Compared with medical therapy, some evidence that surgery gives better short to medium term reflux symptom control (Garg et al, Cochrane Database Syst Rev 2015)
- Typical reflux symptoms
 - >90% success
 - Can be instantly life-changing for some patients
- Atypical reflux symptoms
 - Chronic cough - 70-80% success
 - Laryngitis - controversial, but maybe up to 70% success if documented acid exposure
 - Asthma/wheeze - controversial

Surgery

Outcomes

- Complications uncommon <5%
 - Injury to esophagus, stomach, spleen
 - Pneumothorax
- Side effects
 - Dysphagia 10%
 - Gas bloating 40%

Surgery

Outcomes

- Longterm recurrence of symptoms not uncommon
 - 10-20%
- Reoperation possible in some patients
 - 5-10%
 - more technically difficult

Other treatment

- Magnetic sphincter augmentation
- Endoscopic mucosal ablation techniques (Stretta)
 - Efficacy less established
 - Not suitable if large hiatus hernia or severe esophagitis
- Roux-en-Y gastric bypass
 - Good option for obese BMI >35
 - Less recurrence
 - Resolves other metabolic issues



Thank you!