

Preventing and Treating GERD

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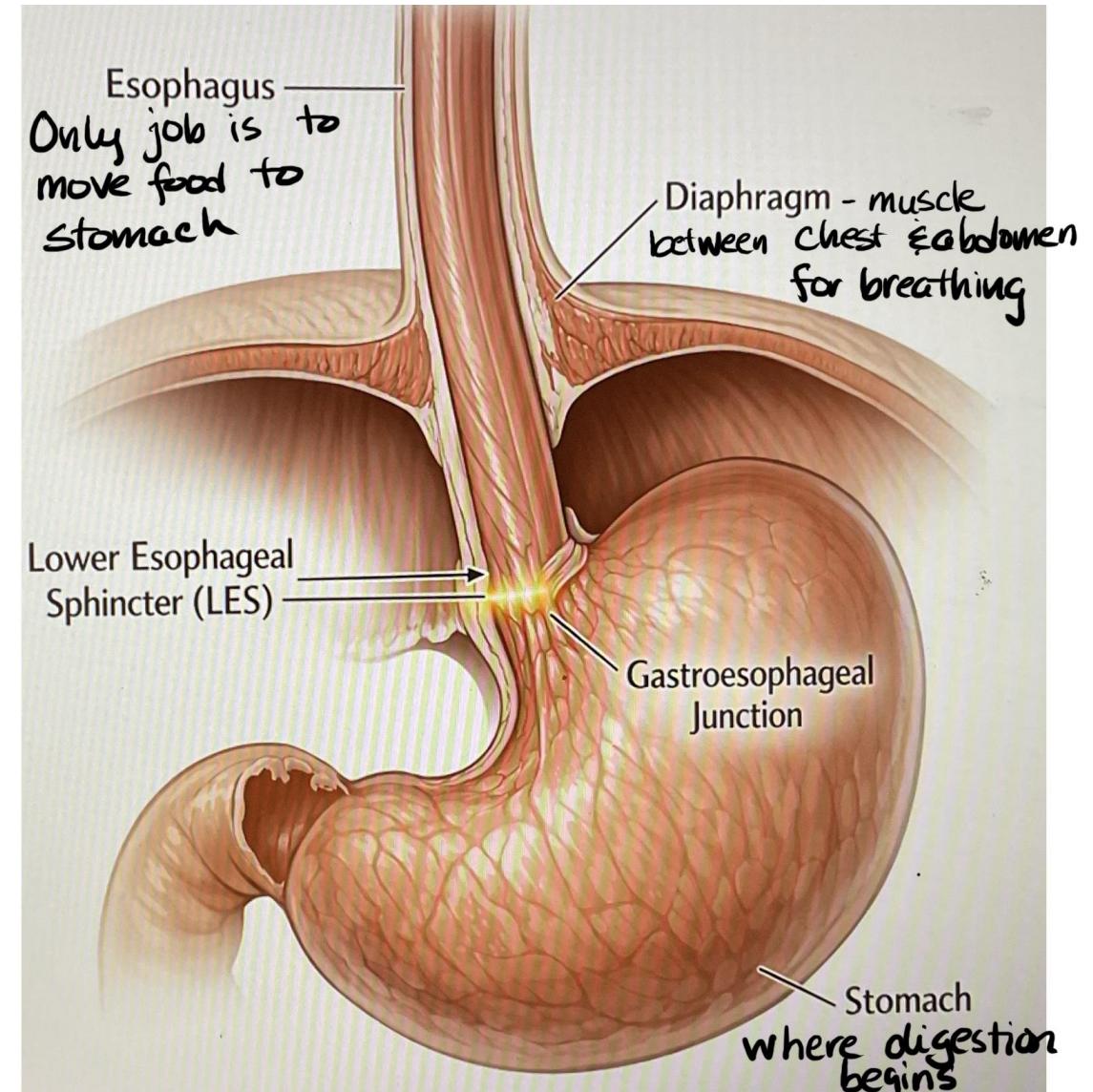
Gastroesophageal Reflux Disease

- 20% of the population seeks treatment for GERD
- 12 billion dollars in annual treatment costs (And that was before inflation!!)
- 15 million Americans use PPIs (4.5% of population)



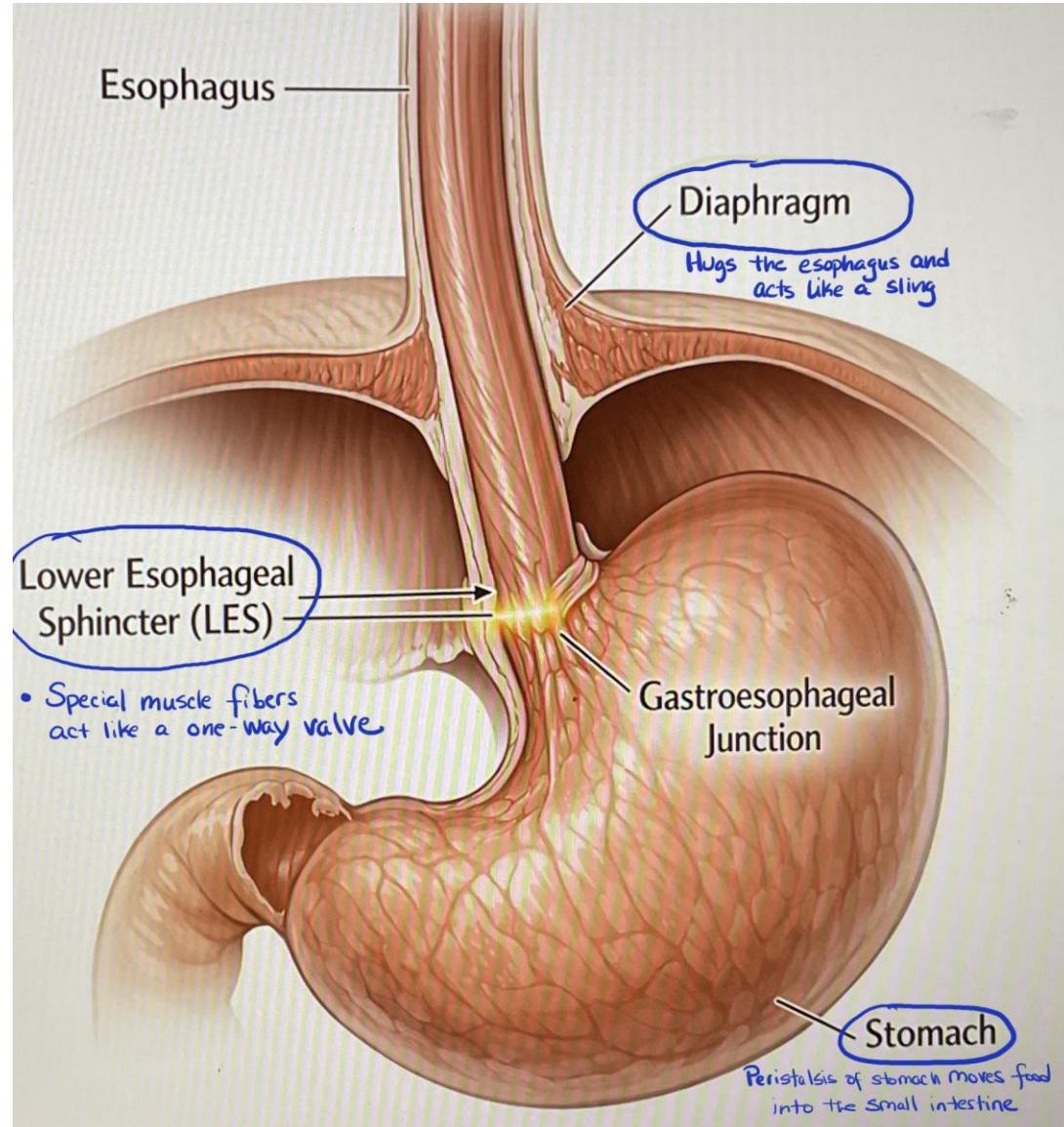
Relevant Anatomy

- Esophagus
 - Peristalsis
- Diaphragm
- Stomach
 - Produces chemicals, including acid, to begin digestion of food
 - Moves food forward into the small intestine



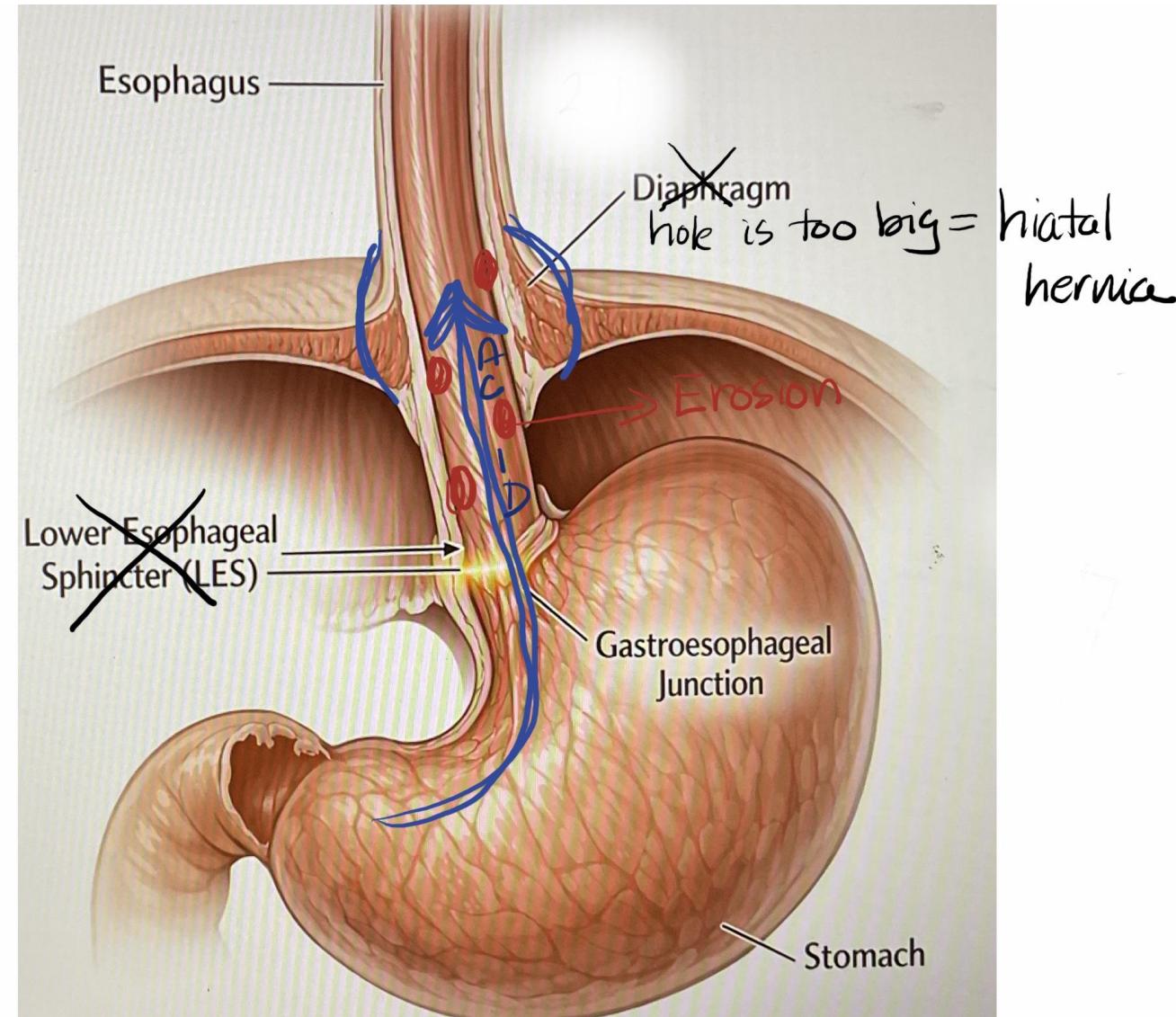
What Normally Prevents GERD?

- Esophagus
 - Lower esophageal sphincter (LES)
- Diaphragm
 - Appropriate size of hole for the esophagus
- Stomach
 - Motility



Gastroesophageal Reflux Disease

- Definition: Abnormal exposure of esophagus to acid, pepsin and bile from the stomach, which causes troublesome symptoms and complications.





Typical Symptoms:

- Heartburn
- Retrosternal chest pain
- Liquid material coming back up (regurgitation)
- Difficulty swallowing-food gets stuck on the way down

Prevention of Symptoms

- Try dietary changes
 - Eat more frequent, smaller meals
 - Certain foods may cause more symptoms
 - Coffee, chocolate, spicy foods
 - Alcohol
 - Eat slowly
 - Fewer simple carbohydrates



Prevention of Symptoms

- Nighttime symptoms
 - Finish eating 4 hours before lying down
- Sleep positions
 - Head elevated with bed wedge
 - On your left side
 - Semi-upright in a recliner



Prevention of Symptoms

- Smoking cessation
 - Smoking increases GERD complications
- Control stress and anxiety
 - 33% of GERD patients suffer from anxiety
 - GERD symptoms are worse with increased anxiety
- Breathing exercises
 - Diaphragmatic breathing
- Weight loss
 - Direct relationship between GERD symptoms and weight gain

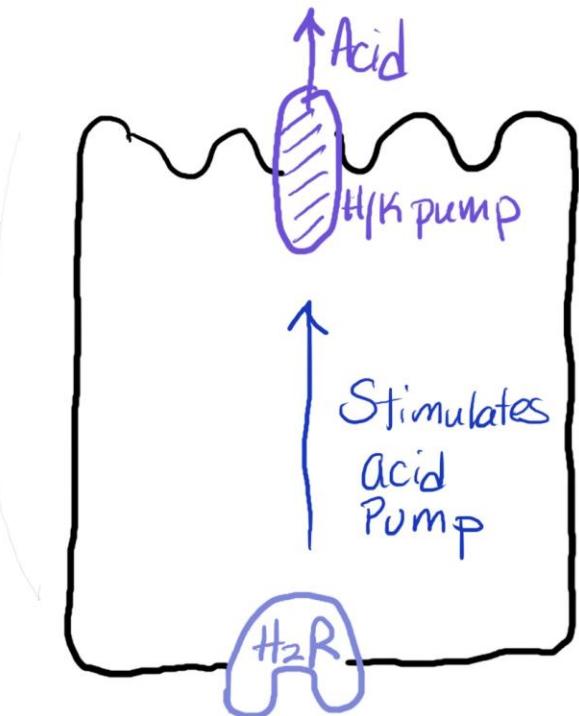
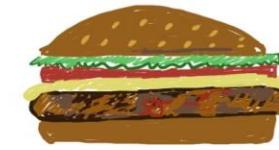
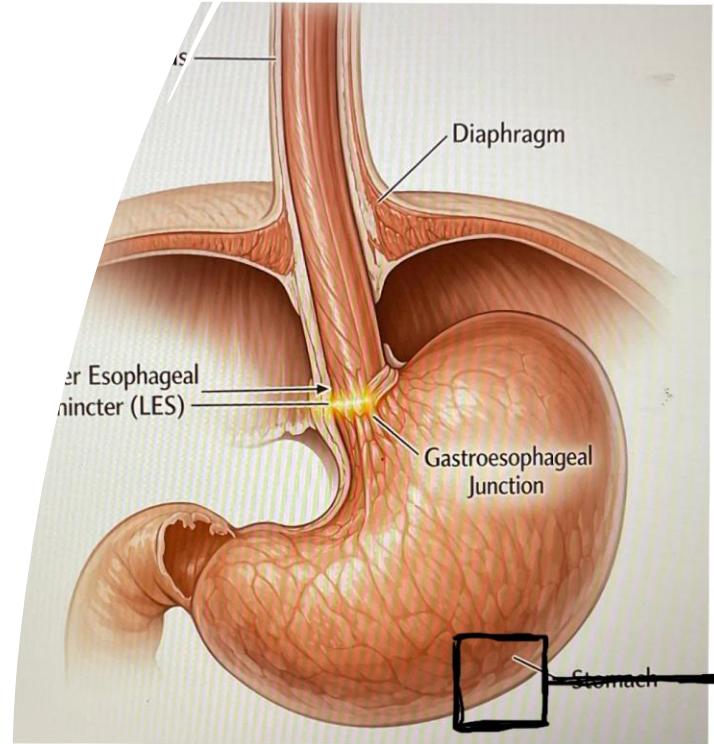


Over-the-Counter Medications to Treat Symptoms



Why so many ??

What happens in the stomach at the cell level?



Parietal Cell
Produces acid to
mix with food

Antacids

- How it works: Neutralizes acid from the stomach; also binds with bile acids
- Good for immediate treatment of symptoms
- May affect absorption of other medications



Alginates

- How it works: Forms a gel that settles at the top of the stomach and creates a “raft-like” barrier
- Especially good for nighttime symptoms
- Good option for symptoms in pregnancy because it doesn’t absorb into the bloodstream



H2 Receptor Antagonists



- How it works: Reduces the amount of acid produced by the stomach
- Can be used to treat active symptoms but also can be taken to prevent symptoms
- Can lose efficacy if used everyday

Proton Pump Inhibitors (PPIs)



- How it works: Prevents the parietal cells in the stomach from producing acid
- Very effective
- Should be taken on an empty stomach
- Have a long list of side effects



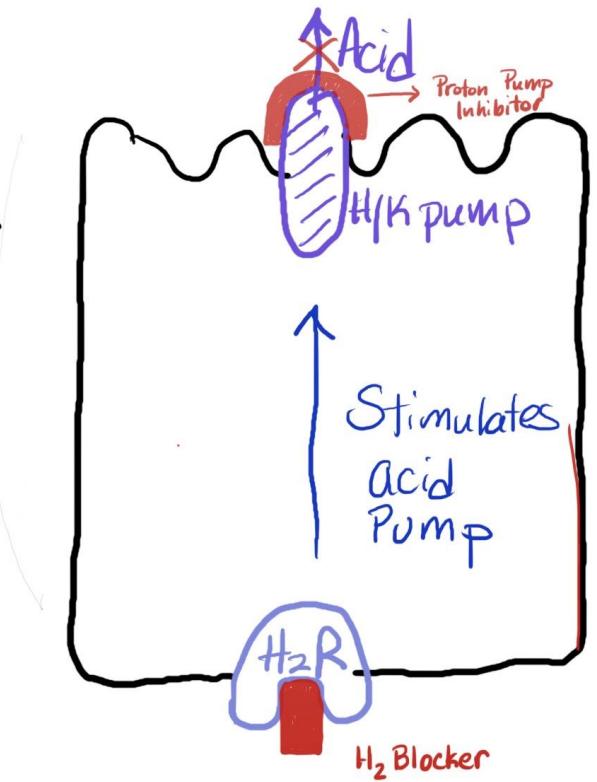
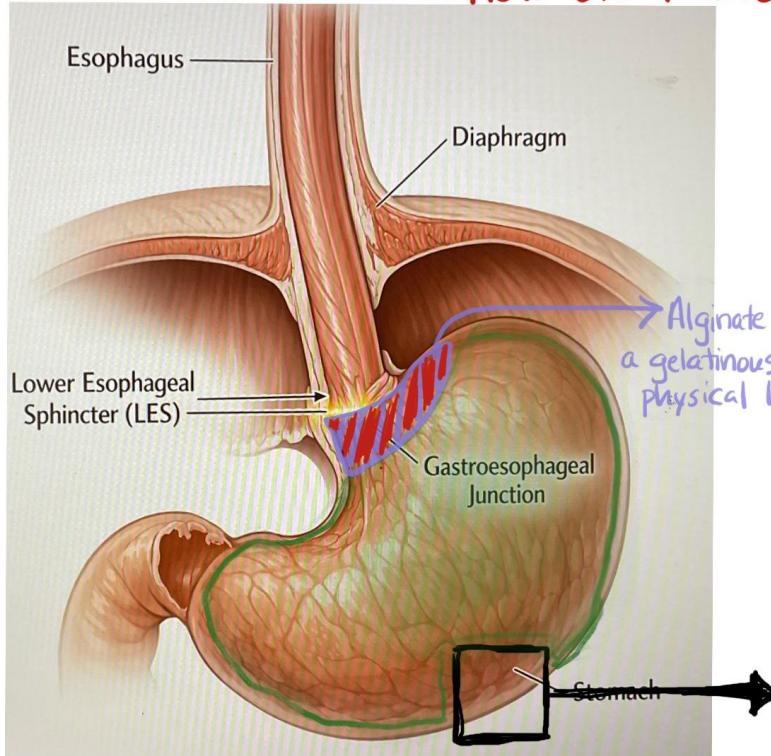
Potential Side Effects of PPIs

- Overall risk of PPI side effects is low
 - Diarrhea, nausea, constipation, abdominal pain, headache, flatulence
 - Can change how other vitamins, minerals and medications are absorbed
 - Other potential side effects with long term use



How do the medications work at the cellular level?

HOW EACH MEDICATION WORKS



When to see a doctor about your symptoms



- You are vomiting blood
- Food has gotten stuck and was painful
- Unintended weight loss
- You've tried over-the-counter medications and are still having symptoms



Further Testing May Be Needed



- Your doctor will review your symptoms, the lifestyle modifications and medications you may have tried
- New medications may be tried
- You may be referred to a specialist
- GERD is very common...but so are other things like heart disease



- GERD or something else
 - Further testing may be necessary to ensure correct diagnosis
 - The results can help us choose an appropriate treatment

Differential Diagnosis (what else your symptoms could be)

Eosinophilic Esophagitis

Angina

Jackhammer esophagus

Rumination syndrome

Anxiety attack

Achalasia

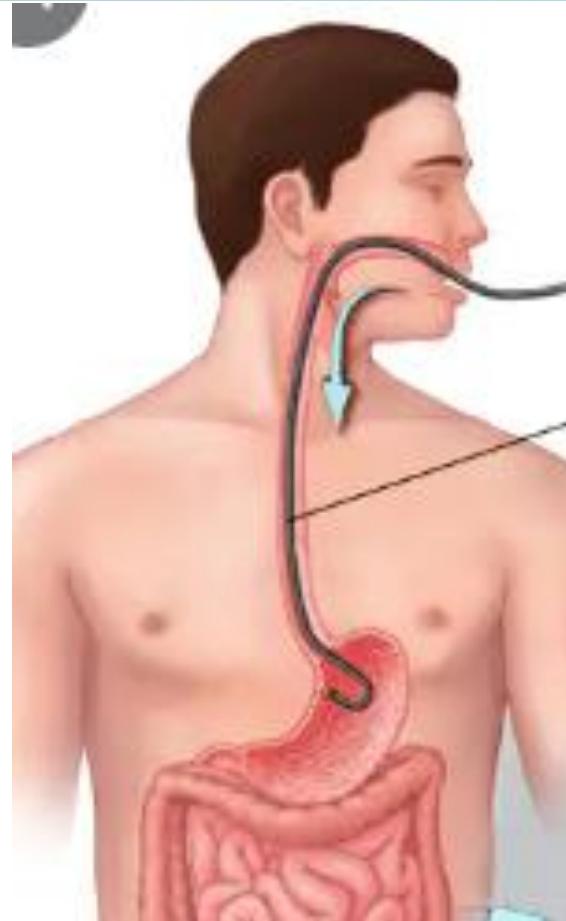
etc

Tests that may be ordered:

- Upper GI series
- EGD (Esophagogastroduodenoscopy – upper endoscopy)
- Esophageal Acid Testing
- Esophageal motility testing (HREM)
- Gastric emptying study



- EGD or endoscopy
 - Outpatient procedure usually involving IV sedation – 30 minutes
 - Performed by a physician who inspects the lining of the esophagus for damage caused by GERD

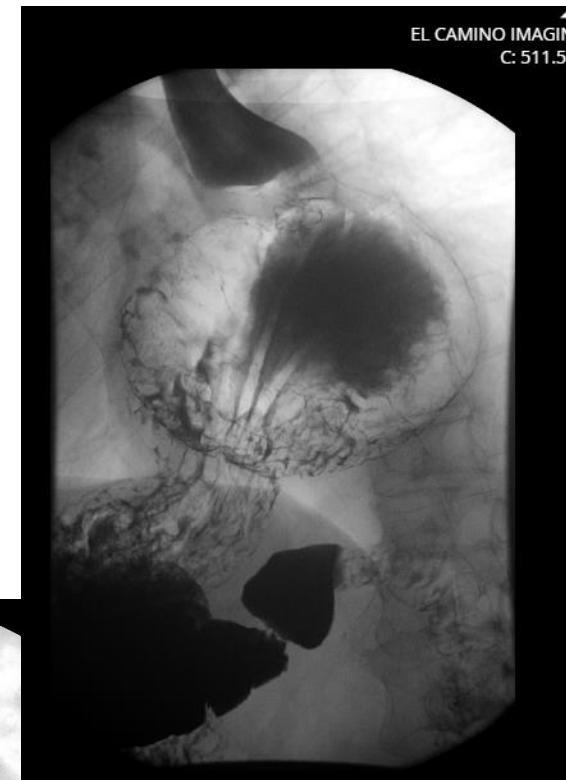


Investigating Symptoms (Radiology)



Boulder Community Health

- Upper GI or Esophagogram
 - Video X-ray study
 - Looks at the anatomy and mobility of the esophagus, stomach and first part of the small intestine



Lossy



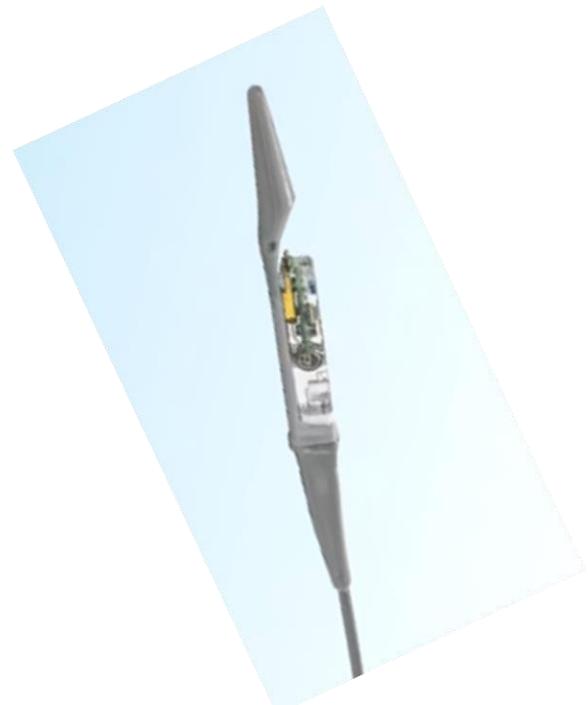
- Esophageal acid testing
 - Wireless capsule –attached to the wall of the esophagus and gives 4 days of data
 - Helps to determine if symptoms are related to acid backing up into the esophagus

Reflux Symptom Index (Impedance)

<u>Symptom</u>	<u>Acid</u>	<u>Nonacid</u>	<u>All Reflux</u>
Heartburn	0%	100%	100%
Regurgitate	25%	75%	100%
Abdominal pain	0%	100%	100%

Reflux Symptom Association Probability (Impedance)

<u>Symptom</u>	<u>Acid</u>	<u>Nonacid</u>	<u>All Reflux</u>
Heartburn	0%	100%	99%
Regurgitate	0%	100%	97%
Abdominal pain	0%	100%	99%



Investigating Symptoms (Radiology)



Boulder Community Health

- Gastric emptying study
 - Nuclear medicine study
 - Patient drinks/eats radiolabeled food –
 - Test lasts 4 hours
 - Assesses percent of food evacuated from the stomach at 1, 2 and 4 hours after ingestion and compares to normal



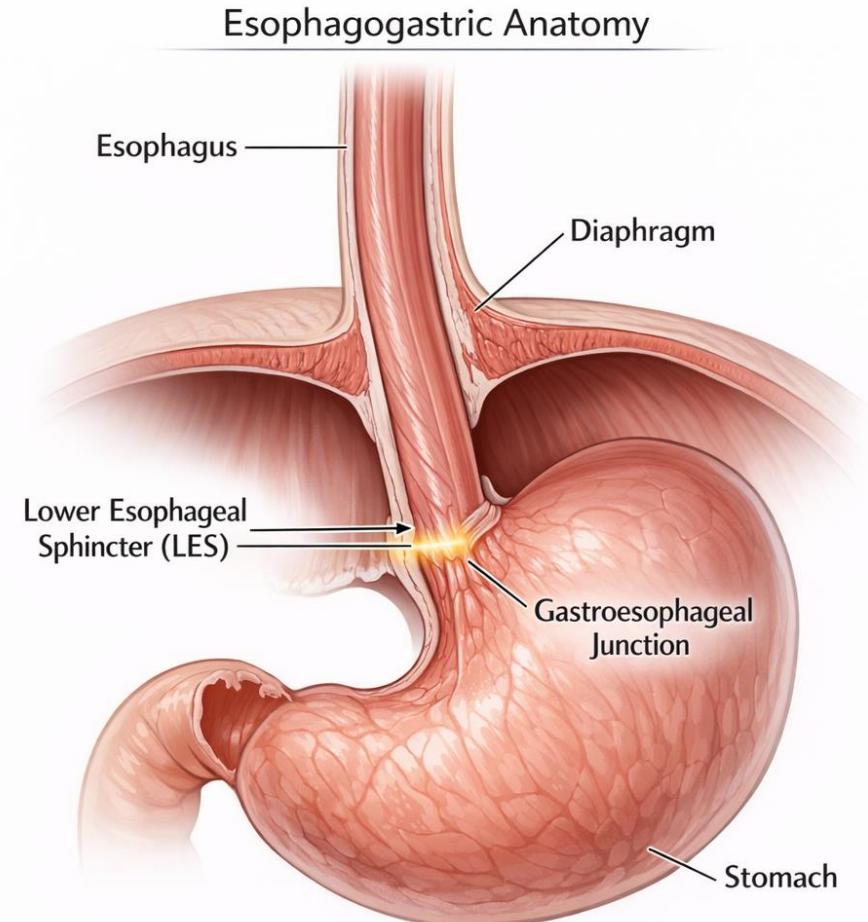
2Hr Ant

2Hr Post

4Hr Ant

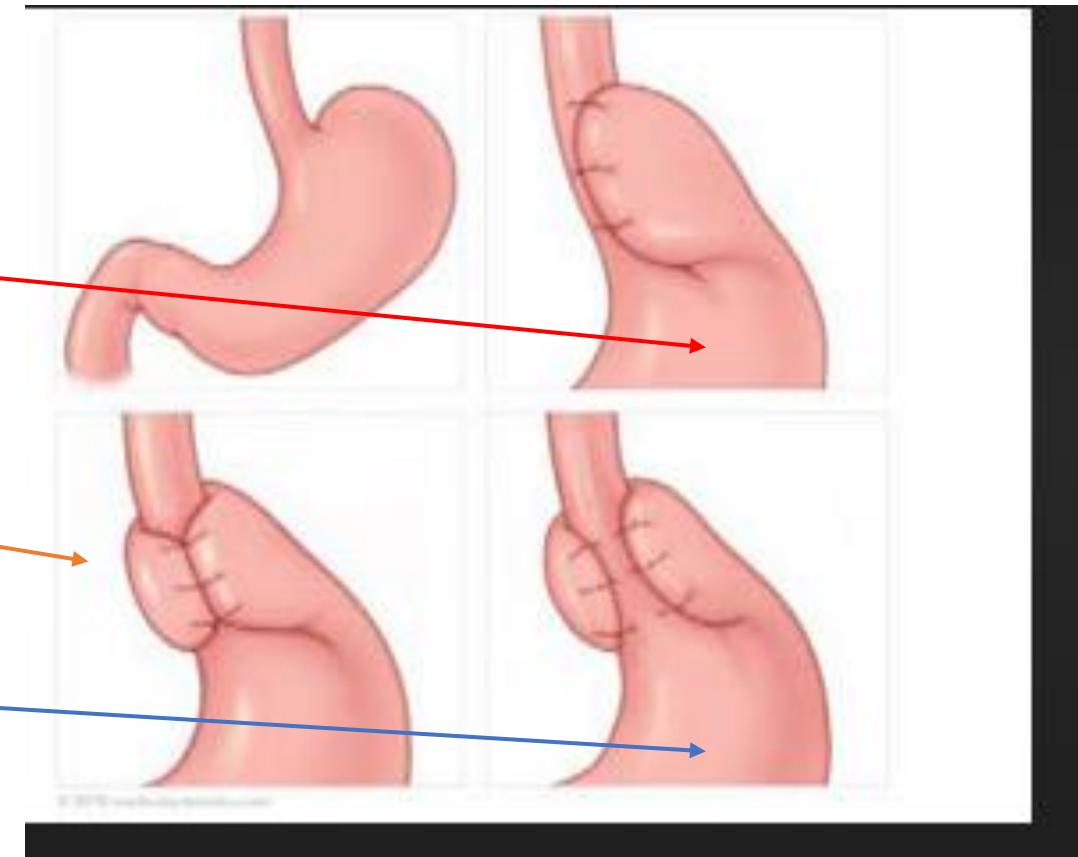
4Hr Post

- Look for a mechanical solution
 - Re-establish a valve between the esophagus and stomach
 - Correct the diaphragmatic anatomy if there is a hernia



Surgical Treatment of GERD

- Laparoscopic fundoplication or wrap
 - Dor (180 anterior wrap)
 - Least common in US
 - Nissen (360 degree wrap)
 - Most common in US
 - Toupet (180-270 degree posterior wrap)
 - Increasingly popular



- Best outcomes
 - Typical symptoms with complete response to PPI
 - Good symptom correlation on pH monitoring
 - Regurgitation as a dominant symptom
- Downfalls
 - Many patients will go back on PPI (25% at 5 years)
 - Difficulty swallowing
 - Gas bloat
 - 10% rate of re-operation

Evidence Supporting Surgical Treatment

- NEJM 2019
 - VA patients randomized to lap Nissen vs best medical therapy
 - “Treatment success” achieved **in 67% surgical group vs 28% in best medical therapy**
 - Treatment success defined as reduction in GERD-HRQL score by 50%



GERD-Health Related Quality of Life Questionnaire (GERD-HRQL)

Institution: _____ Patient ID: _____ Date ____/____/____

On PPIs Off PPIs If off, for how long? _____ days / months

Scale:

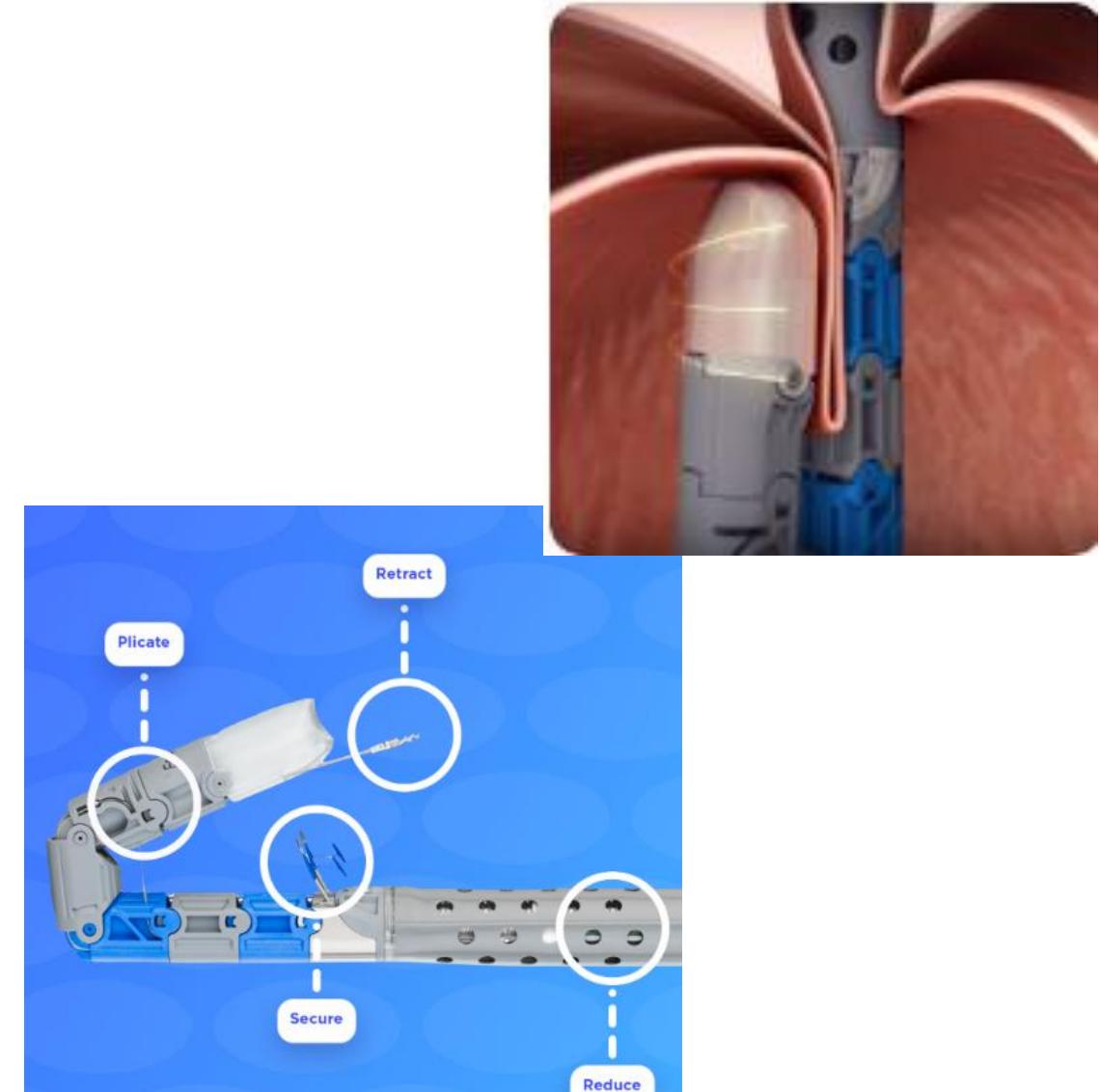
0 = No symptom
1 = Symptoms noticeable but not bothersome
2 = Symptoms noticeable and bothersome but not every day
3 = Symptoms bothersome every day
4 = Symptoms affect daily activity
5 = Symptoms are incapacitating to do daily activities

Please check the box to the right of each question which best describes your experience over the past 2 weeks.

1. How bad is the heartburn?	<input type="checkbox"/> 0 <input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5
2. Heartburn when lying down?	<input type="checkbox"/> 0 <input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5
3. Heartburn when standing up?	<input type="checkbox"/> 0 <input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5
4. Heartburn after meals?	<input type="checkbox"/> 0 <input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5
5. Does heartburn change your diet?	<input type="checkbox"/> 0 <input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5
6. Does heartburn wake you from sleep?	<input type="checkbox"/> 0 <input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5
7. Do you have difficulty swallowing?	<input type="checkbox"/> 0 <input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5
8. Do you have pain with swallowing?	<input type="checkbox"/> 0 <input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5
9. If you take medication, does this affect your daily life?	<input type="checkbox"/> 0 <input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5
10. How bad is the regurgitation?	<input type="checkbox"/> 0 <input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5
11. Regurgitation when lying down?	<input type="checkbox"/> 0 <input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5
12. Regurgitation when standing up?	<input type="checkbox"/> 0 <input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5
13. Regurgitation after meals?	<input type="checkbox"/> 0 <input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5
14. Does regurgitation change your diet?	<input type="checkbox"/> 0 <input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5
15. Does regurgitation wake you from sleep?	<input type="checkbox"/> 0 <input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5
16. How satisfied are you with your present condition?	<input type="checkbox"/> Satisfied <input type="checkbox"/> Neutral <input type="checkbox"/> Dissatisfied

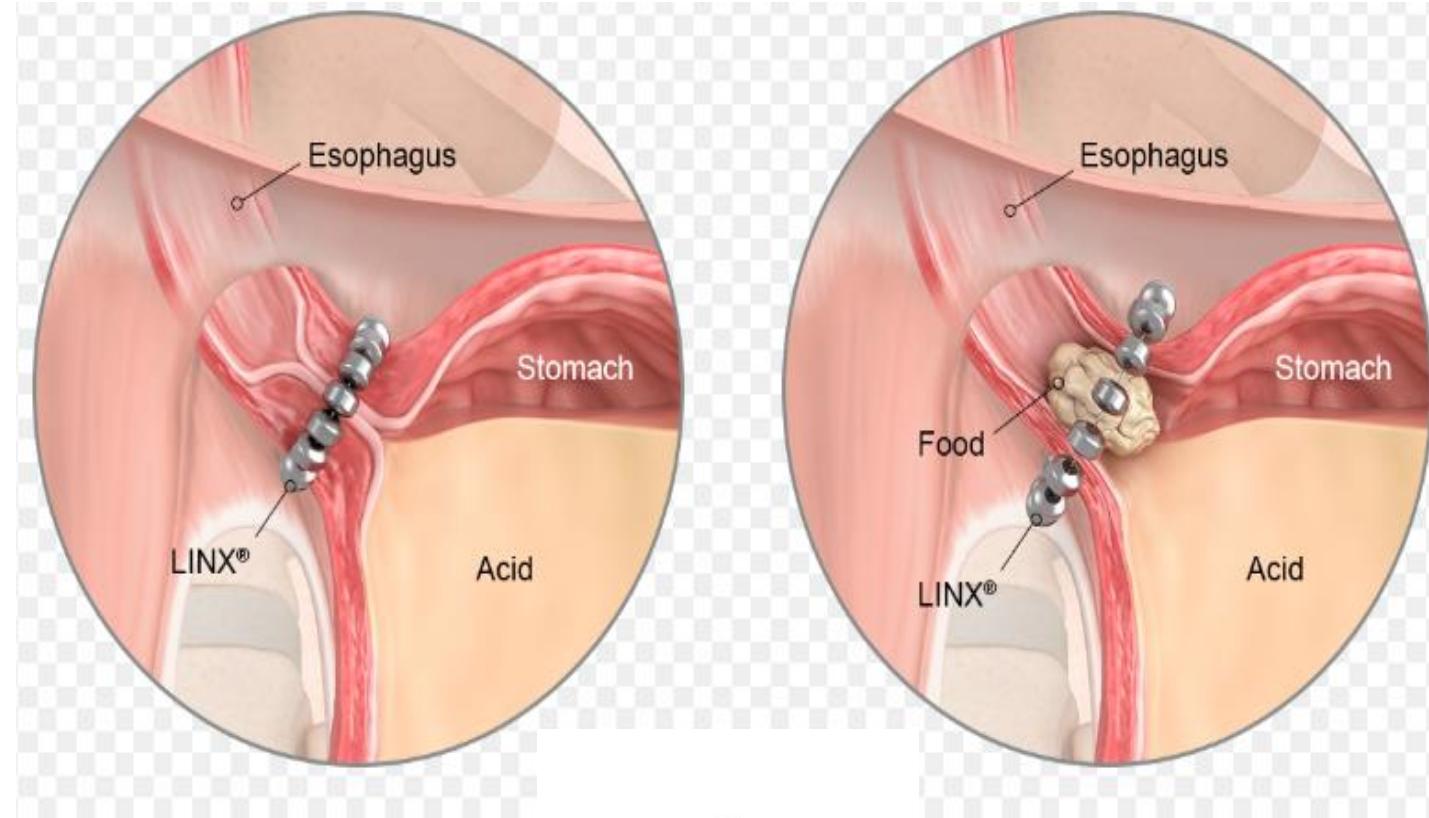
Endoscopic Treatment of GERD

- TIF procedure (Transoral Incisionless Fundoplication)
 - Esophyx device
 - Endoscopic creation of a 270 degree fundoplication
 - Cannot be done with a moderate to large hiatal hernia
 - Rate of satisfaction post-procedure is 70%; rate of PPI use post procedure 54-76%
 - Normalization of heartburn and regurgitation scores 73% and 86%



Surgical Treatment of GERD

- Magnetic Sphincter Augmentation
 - LINX™ procedure
 - Laparoscopic procedure that inserts a collar of magnets at GE junction
 - Creates a mechanical barrier to reflux of gastric contents into esophagus
 - MRI cannot be performed after placement

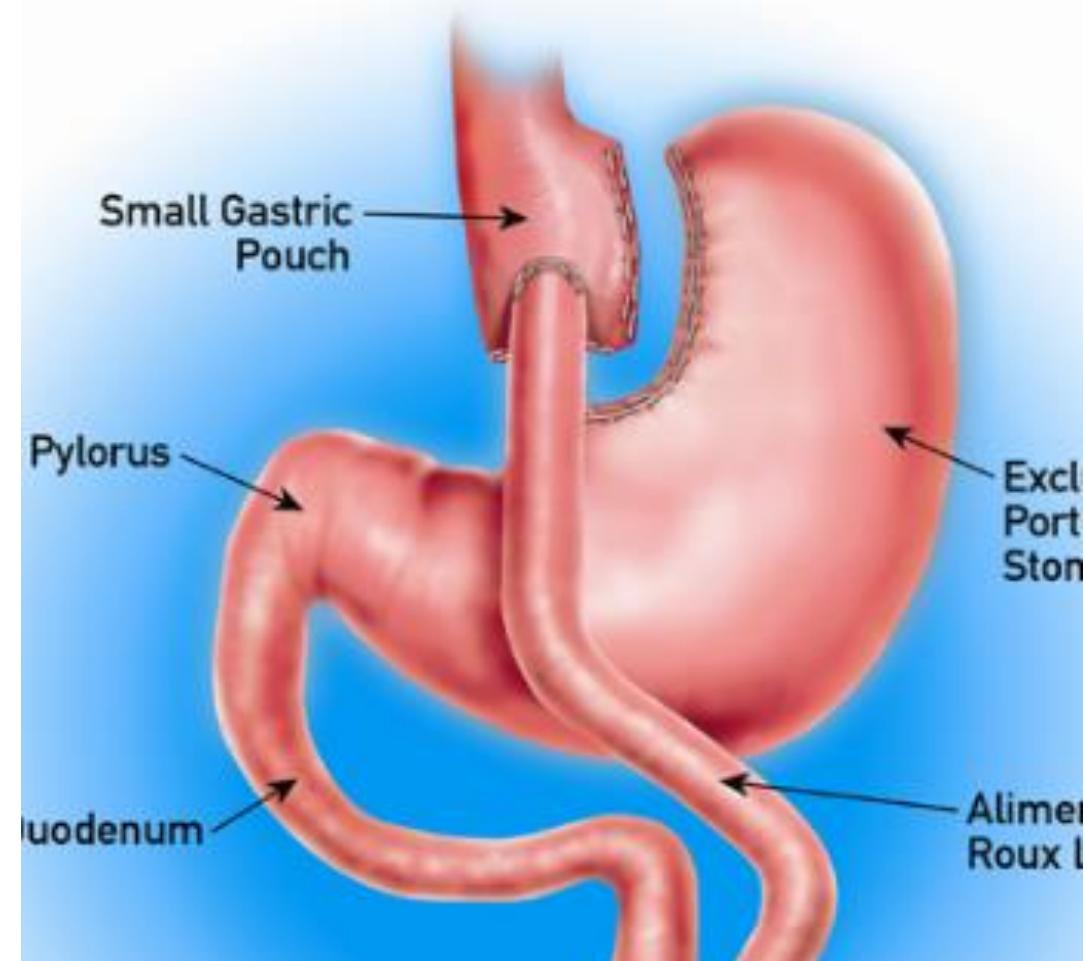


Surgical Treatment of GERD – BMI > 35

- Bariatric surgery

- Mechanisms of action
 - Sustained weight loss
 - Reduced volume of stomach that is able to reflux
- Laparoscopic Roux-en-Y gastric bypass is surgical treatment of choice for patients with BMI > 35

Roux-en-Y Gastric Bypass Surgery



- Treatments in the development/testing phase:
 - PCABs
 - New medications that are more effective in inhibiting acid production
 - Endoscopic treatments
 - ARM – anti reflux mucosectomy
 - ARMA – anti-reflux mucosal ablation

Conclusions



- Gastroesophageal reflux is a common problem
- Start with lifestyle modifications and over-the-counter medications
- See your doctor if you have persistent, bothersome symptoms
 - Start with your PCP
 - Consider requesting a consultation with gastroenterologist
- The vast majority of patients are well treated with meds alone
 - Procedures and surgery for GERD are appropriate for selected individuals

Do giraffe's have gastroesophageal disease?



Other questions?



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