

Board Review 2019

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GI Surgery Review

disclosure

- ▶ none

Surgery for GERD

- ▶ Reserved for pts:
 - Complications from GERD
 - Refractory esophagitis**
 - Stricture
 - Barrett's
 - Persistent "reflux symptoms" despite acid suppression
 - Asthma

** most frequent

Surgical therapy is generally not recommended in patients who do not respond to PPI therapy. (Strong recommendation, high level of evidence) ACG

Pre-op Evaluation

- ▶ No consensus
- ▶ Useful tests in making surgical decisions
 - EGD
 - Esophageal manometry
 - All patients should undergo preoperative manometry to rule out achalasia or scleroderma-like esophagus.
 - 24–48 hour pH probe
 - Pre-operative ambulatory pH monitoring is mandatory in patients without evidence of erosive esophagitis.

(Strong recommendation, moderate level of evidence) ACG

Anti-reflux surgery

- ▶ For most pts with GERD laparoscopic Nissen fundoplication
 - Several advantages with similar efficacy and safety as an open procedure
- ▶ Surgical therapy is as effective as medical therapy for carefully selected patients with chronic GERD when performed by an experienced surgeon.

(Strong recommendation, high level of evidence) ACG



Fundoplication

Nissen fundoplication



Normal stomach

After surgery

Post-op Symptoms

- ▶ Dysphagia
 - Occurs in most pts
 - dilatation
- ▶ Gas bloat
 - Most pts improve over time
 - Mild → simethicone or charcoal tablets, avoid carbonation
 - Trial of metoclopramide
 - Persistent symptoms consider gastroparesis

Long-term efficacy


- ▶ Laparoscopic fundoplication
 - 90–95% of patients satisfied with the results
 - Experienced surgeons

Surgery for PUD

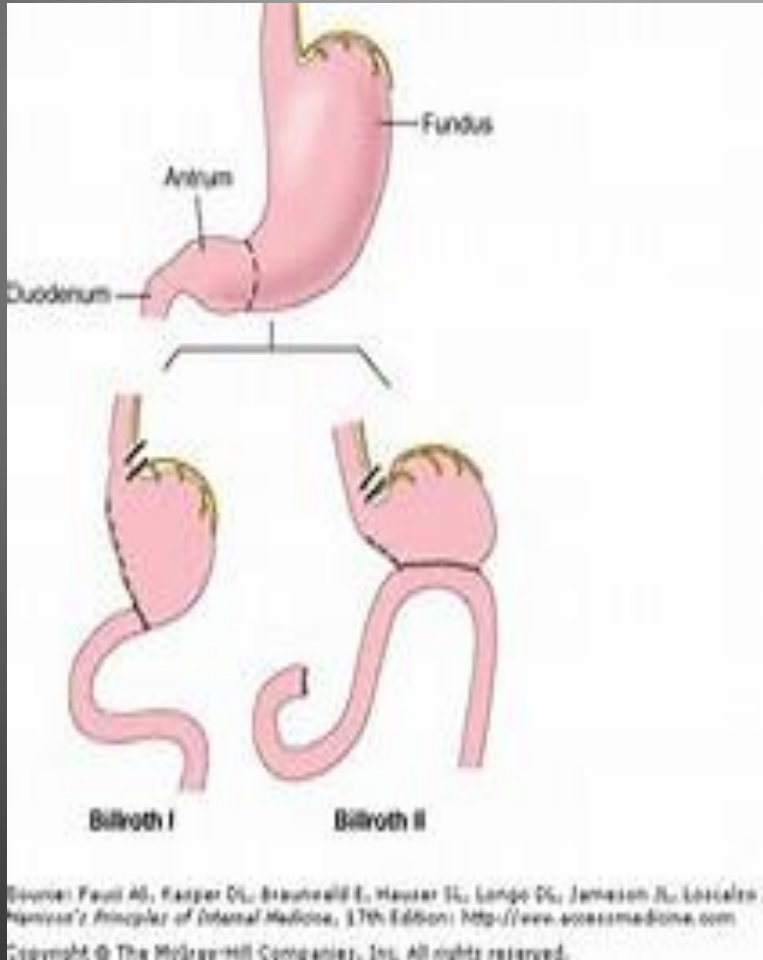
Indications

- ▶ Failure of non-operative management of ulcer complication
 - ▶ Suspicion of malignancy (usually gastric ulcer)
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Operation for duodenal ulcer

- ▶ Based on reduction of acid secretion
 - Sectioning of Vagus (vagotomy)
 - Eliminating hormonal stimulation from the antrum (antrectomy)
 - Decreasing the number of parietal cells (gastric resection)
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Billroth




- ▶ I: Pylorus removed
- ▶ II: Greater curvature of stomach connected to the jejunum in end-to-end anastomosis

Operation for gastric ulcer

- ▶ Difference from duodenal is that gastric ulcer may harbor malignancy and therefore must be excised or generously biopsied.

Post-gastrectomy syndromes

- ▶ Post-vagotomy diarrhea
 - ▶ Dumping syndrome
 - ▶ Alkaline reflux gastritis
 - ▶ Early satiety
- 

Post Vagotomy diarrhea

- ▶ 30% of pts
- ▶ Most self limiting
- ▶ Pathogenesis poorly understood
 - ?rapid passage of unconjugated bile salts
- ▶ Oral cholestyramine

Dumping syndrome

- ▶ ~20% pts after gastrectomy or vagotomy and drainage
- ▶ Symptoms:
 - Postprandial GI discomfort
 - +/- nausea, vomiting, diarrhea and cramps
 - Vasomotor symptoms
 - Diaphoresis
 - Palpitations
 - flushing

Dumping syndrome


- ▶ Precise mechanism not completely understood
- ▶ Attributed to rapid emptying of hyperosmolar chyme (particularly carbs) into the small bowel
 - Leads to net fluid retention
 - Leads to vasoactive hormone release
 - Serotonin and VIP

Dumping syndrome

- ▶ Treatment
 - Dietary changes
 - Rarely operative therapy needed
 - Octreotide may help with severe symptoms

Gallbladder

Acute Cholecystitis

- ▶ Typical presentation
 - RUQ pain
 - Fever
 - Leukocytosis
 - ▶ Associated with gallbladder inflammation,
 - Usually due to gallstone disease
 - ▶ Complications (can be life-threatening)
 - Gangrene
 - Gallbladder perforation
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Acute Cholecystitis–Treatment

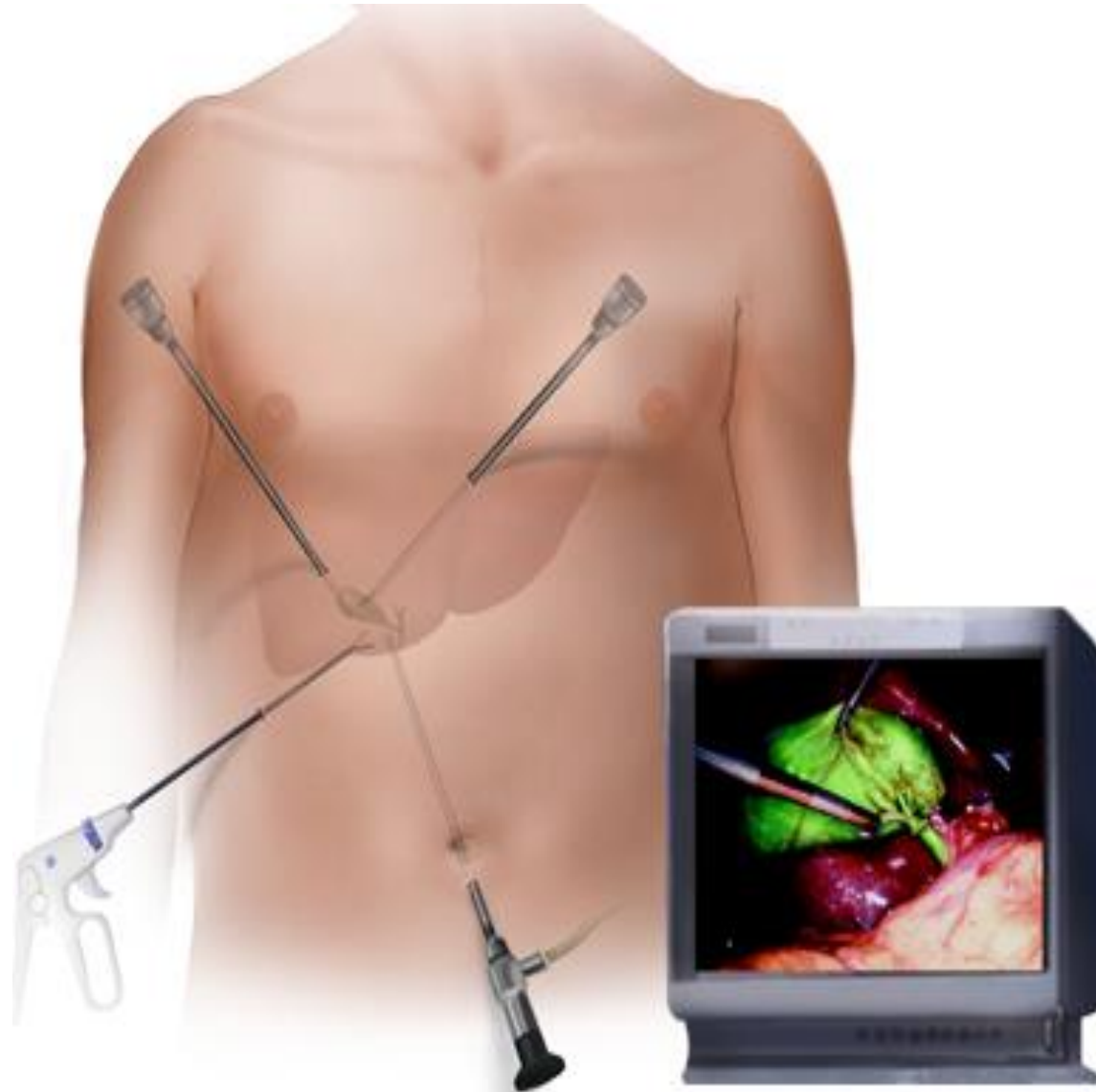
- ▶ Supportive
- ▶ Antibiotics
 - Secondary infection from cystic duct obstruction and bile stasis
 - Guidelines
 - Start antibiotics if infection suspected based on:
 - Lab (WBC >12,500)
 - Clinical (temp >38.5C)
 - Radiographic findings (air in gallbladder or wall)
 - Advanced age, diabetes, immunodeficiency

Infectious Diseases Society of America

Timing of surgery

- ▶ Asymptomatic gallstones should not be treated
- ▶ Low risk pts with clinical improvement
 - Elective cholecystectomy same hospitalization
- ▶ Low risk pts with deterioration
 - Emergent cholecystectomy
- ▶ High risk(ASA 3 and >) mortality 5–27%
 - Clinical deterioration– percutaneous cholecystostomy


Laparoscopic cholecystectomy



Complication of Laparoscopic Cholecystectomy

- ▶ Serious complications
 - Result in part from patient selection
 - Surgical inexperience
 - Technical constraints of minimally invasive approach

Bile duct injury

- ▶ Classified A–E based on type of injury
 - ▶ Repair should always be approached by an experienced multidisciplinary team
 - Surgeon
 - Diagnostic radiologist
 - Interventional gastroenterologist
 - Interventional radiologist
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Biliary leakage

- ▶ Suspect in pts with fever, abdominal pain, bilious ascites
- ▶ Large loculated collections
 - Percutaneous drainage, with catheter left in place for drainage
 - ERCP: define leak and place stent
- ▶ Severe pain, progressive intraabdominal sepsis
 - Operative exploration and washout


Other complications

- ▶ Bleeding
- ▶ Bowel injury
- ▶ Postcholecystectomy syndrome
 - Complex of symptoms including
 - Abdominal pain
 - Dyspepsia
 - Bile acid diarrhea

CASE

- ▶ 56 y/o obese female presents for gastric bypass surgery. She has failed multiple diets and medications. She doesn't have psychiatric issues other than depression due to condition. She has osteoarthritis of hips and knees, heartburn after large meals.
- ▶ PE: ht: 65" wt: 230lb BMI: 38.3kg/m². BP:150/100. abd: obese w/ palpable liver edge.
- ▶ Lab normal CBC, HgA1C 6.9, triglyceride 250mg/dL, AST 65, AlkPh0s: 140
- ▶ US: hepatomegaly and fatty changes

What criteria makes her eligible for bariatric surgery?

- a. Her BMI alone
 - b. Obesity related joint dz, with reduced mobility and quality of life
 - c. Her BMI together with the features of metabolic syndrome
 - d. Probable obesity-related liver disease
 - e. Probable obesity-related GERD
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NIH consensus conference

- ▶ BMI $>40\text{kg}/\text{m}^2$ OR
- ▶ $>35\text{kg}/\text{m}^2$ with additional evidence for metabolic syndrome:
 - DM type II
 - Hypertension
 - And/or hyperlipidemia
- ▶ Failure of prior medical management
- ▶ Absence of significant psychiatric condition

- ▶ Answer: c

Case: Same patient

- ▶ ~ 6 months after surgery she had lost a significant amount of weight, but was found to have significant normocytic anemia, with low levels of both serum B12 and iron.
- ▶ What is the likely mechanism for the development of both these micronutrient deficiencies?
 - a. Anastomatic ulcer with blood loss
 - b. Post-op dietary restrictions
 - c. Small intestinal bacterial overgrowth
 - d. Mechanical bypass of the gastroduodenal segment

Answer: d

- a. Anastomatic ulcer with blood loss
 - May account for iron losses but not B12
- b. Post-op dietary restrictions
- c. Small intestinal bacterial overgrowth
 - A possibility with surgically altered bowel.
 - B12 def so macrocytic anemia
- d. Mechanical bypass of the gastroduodenal segment

Post-op micronutrient deficiencies

▶ Iron

- Bypassing of the duodenum
 - Dominant site of iron absorption
 - Lack of gastric acid
 - Decrease absorption of iron

▶ B12

- Decreased gastric acid liberates B12 to bind R-protein which allows B12 to bind to Intrinsic Factor
 - Less acid = suboptimal absorption

Bariatric Surgery complications

Bleeding
Wound infection
Leaks
PE/DVT
CV complications
Pulmonary complications

Roux-en-Y:
gastric remnant
distension
stomal stenosis
marginal ulcers
cholelithiasis
ventral incisional hernia
internal hernia
short bowel syndrome
Dumping syndrome

Early Complications

Late Complications

Stomal stenosis (RYGB)

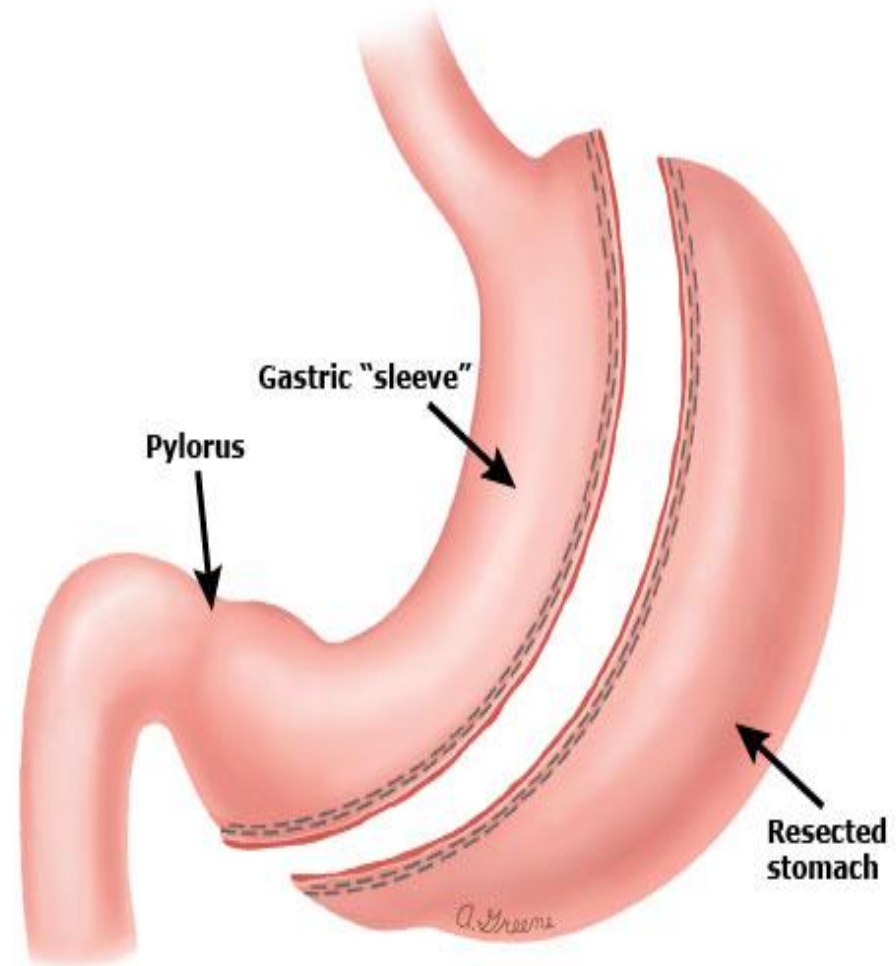
- ▶ 6–20%
- ▶ ?etiology
 - Ischemia or increased tension on anastomosis
- ▶ Nausea, vomiting, dysphagia, GERD
 - Several weeks after surgery
- ▶ Endoscopic balloon dilation usually successful

Marginal ulcers (RYGB)

- ▶ 1–16%
- ▶ Near gastrojejunostomy
- ▶ Causes
 - Poor perfusion, foreign material (staples), excess acid exposure, NSAIDs, H.pylori, smoking
- ▶ Nausea, pain, bleeding or perforation
- ▶ Tx: acid suppression +/- sucralfate (95% successful)

Sleeve gastrectomy

- ▶ “Sleeve” of stomach
- ▶ Removes large portion of greater curvature
- ▶ Produces a decrease in ghrelin levels
 - Reduce desire for food
- ▶ Low complications (3–24%) and mortality (0.4%)




Sleeve gastrectomy


- ▶ Most common complications
 - Bleeding
 - Usually at staple line
 - Most surgeons reinforce staple line
 - Stenosis
 - Can create gastric outlet obstruction
 - May be able to treat with endoscopic dilation
 - May need surgical intervention
 - Gastric leaks
 - One of most serious complication (5.3%)
 - GERD

Post Op Ileus

Definition

- ▶ Transient inhibition of normal GI motility in the post-op setting.
 - ▶ Presumably, the muscle of the bowel wall is transiently impaired and fails to transport intestinal contents.
 - ▶ Typically lasts 3–5 days.
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Clinical Consequences

- ▶ Worse pain
 - ▶ Nausea and vomiting
 - ▶ Delay in enteral nutrition
 - ▶ Prolonged hospitalization
 - ▶ Increased risk of complications
 - ▶ Increased health care costs
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Pathophysiology

- ▶ Poorly understood
- 1. Neural reflexes involving the sympathetic nervous system may inhibit motility
 - 1. Epidural anesthetic agents decreased duration of post op ileus.
 - 2. ? Due to blockade of neural reflexes at the spinal cord level.


Pathophysiology

2. Local and systemic inflammatory mediators may play a role.
 1. NSAIDs decrease POI
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Pathophysiology

3. Exacerbating factors
 1. Opioid analgesics
 2. Intraperitoneal surgery
 3. Degree of bowel manipulation
 4. Open vs. laparoscopic surgery
 5. Hypokalemia
- 


Clinical Presentation

- ▶ Abdominal pain
 - ▶ Nausea/vomiting
 - ▶ Anorexia
 - ▶ Abdominal bloating/distension
 - ▶ Absent bowel sounds
 - ▶ Lack of passage of flatus or stool
 - ▶ Tympanic abdomen
 - ▶ No visible peristalsis
- 

Clinical Presentation

- ▶ Pain is typically mild and constant
 - Mechanical obstruction usually severe

Physical exam

- ▶ Lack of bowel sounds
 - ▶ Increase abdominal girth
 - ▶ Lack of visible peristalsis
 - ▶ Tympanic abdomen
 - ▶ Xray: air–fluid levels or nonspecific patterns
- 


Ileus




Treatment–Pharmacologic

- ▶ Metoclopramide, cisapride, erythromycin
 - RCT don't show benefit
- ▶ Laxatives
 - Possible benefit
- ▶ Opiate antagonists
 - May show benefit, but more studies needed

Treatment–Pharmacologic

- ▶ Epidural anesthesia
 - ▶ NSAIDs
 - Probable benefit
 - Need to be cautious of SE
 - ▶ Multimodality therapy
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Treatment: Non-pharmacologic

- ▶ Nasogastric tube
 - No evidence of benefit, may increase pulmonary complication.
 - ▶ Early enteral nutrition
 - Appears safe and well tolerated.
 - ▶ Early mobilization
 - No change, but may decrease other complication
 - ▶ OMM
 - ▶ Chew gum
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Thank You
Good Luck!