

CRUNCHO TIME



GASTRO

Alcoholic Liver Disease

Jennifer Farah, MD, and Mel Herbert, MD

Various stages and forms exist:

Alcoholic Steatosis (fatty liver)

Background

- Chronic ethanol ingestion
- Deposition of fats in hepatocytes

Clinical Findings

- Nontender hepatomegaly
- Mild liver function test elevation

Management

- Resolves in 4-6 wk with abstinence from alcohol

Alcoholic Hepatitis

Background

- Acute inflammatory condition of the liver
- Ranges from mild illness to hepatic failure

Clinical Findings

- Jaundice
- Tender hepatomegaly
- Fever
- Labs
 - Markedly elevated aspartate aminotransferase (AST) >> alanine aminotransferase (ALT) (classically at least 2:1)
 - Can also see
 - Macrocytic anemia
 - Leukocytosis
 - Thrombocytopenia
 - Elevated bilirubin and alkaline phosphatase
 - Prolonged prothrombin time

Management

- Alcohol cessation, nutrition management, supportive care

Alcoholic Cirrhosis

Background

- Irreversible liver damage/scarring over long term
- Formation of hepatocytic nodules and fibrous tissue
- Hepatic flow disrupted → portosystemic shunting → portal hypertension

Clinical Findings

- Jaundice
- Spider angiomas
- Palmar erythema
- Gynecomastia
- Muscle wasting
- Ascites
- Abnormal labs:
 - Thrombocytopenia
 - Elevated international normalized ratio
 - Low albumin
 - Elevated alkaline phosphatase
- Possible complications
 - Esophageal varices +/- bleeding
 - Encephalopathy
 - Hepatorenal syndrome
 - Spontaneous bacterial peritonitis
 - Hepatocellular carcinoma

Management

- Alcohol cessation, supportive care

How You Will Be Tested

- Ascites is the most common complication of alcoholic cirrhosis
- Know the details of the above complications

Alcoholic Ketoacidosis

Background

- Multifactorial
- Person not eating much

Clinical Findings

- Acidosis

Management

- Supportive
- Fluids and glucose

How You Will Be Tested

- Remember glucose as part of the treatment (either in fluids or have the patient eat)

Anal Fissures & Fistulas

Jennifer Farah, MD, and Jessica Mason, MD

Anal Fissures

Background

- Caused by constipation/hard stools
- Most common cause of painful rectal bleeding

Clinical Findings

- Patients often complain of pain with defecation
- Streaks of blood on stools
- Fissures usually posterior midline

Management

- Stool softeners
- Sitz baths

How You Will Be Tested

- Fissures that are not in the posterior midline indicate a more serious pathology (eg, inflammatory bowel disease)

Anal Fistulas

Background

- Tract between anal canal and skin
- Causes
 - Perirectal abscess
 - Inflammatory bowel disease
 - Cancer
 - Radiation therapy

Clinical Findings

- Persistent purulent/bloody discharge
- Presents as abscess if blocked

Management

- Incision and drainage of abscess
- Surgical excision of tract

How You Will Be Tested

- Note that it might be part of inflammatory bowel disease complication

Aortoenteric & Tracheoesophageal Fistulas

Mel Herbert, MD, and Stuart Swadron, MD

Aortoenteric Fistula

Background

- Connection between the aorta and the gastrointestinal (GI) tract
- Any patient with recent aortic or mediastinal surgery who has GI bleeding = aortoenteric fistula until proven otherwise

Clinical Findings

- GI bleeding (massive or minor)

Management

- Immediate surgical referral

How You Will Be Tested

- Classically, will be a patient status post abdominal aortic aneurysm repair with GI bleeding

Tracheoesophageal Fistula

Background

- Connection between trachea and esophagus
- Two types: congenital and acquired

Clinical Findings

- Congenital
 - Infants with episodes of choking or cyanosis during feeds
- Acquired
 - Post-radiation, surgery, trauma, cancer patient with recurrent bouts of pneumonia

How You Will be Tested

- Recurrent pneumonia patient with risk factor

Appendicitis

Jennifer Farah, MD, and Jessica Mason, MD

Background

- Classic presentation
 - 10- to 30-y-old male
 - Vague periumbilical abdominal pain that localizes to right lower quadrant (RLQ) within 24 h
 - Fever, nausea/vomiting, and anorexia
- Typical presentations
 - Right low back pain (retrocecal appendix)
 - Pelvic pain (appendix near ovary)
 - Dysuria (appendix near bladder)
 - Right upper quadrant pain (pregnant women)
 - RLQ pain on rectal exam (retrocecal appendix)

Clinical Findings

- Commonly tested despite low sensitivity and specificity
- Psoas sign = RLQ pain with passive extension of right hip
- Obturator sign = RLQ pain on passive internal rotation of flexed right hip
- Rovsing's sign = RLQ pain on palpation of LLQ

Management

- Supportive care
- Antibiotics
- Surgery
- Tests
 - Complete blood count: NOT definitive but likely to show leukocytosis
 - Ultrasound versus CT

How You Will Be Tested

- Know the “signs” above (psoas, obturator, Rovsing's)

Bariatric Surgery

Mel Herbert, MD, and Stuart Swadron, MD

Background

- Variety of different procedures

Clinical Findings

- Potential complications
 - Obstructions
 - Strictures
 - Adhesions
 - Internal hernia (subtle presentation, serious morbidity)
 - High risk for closed loop obstruction and ischemic bowel
 - Pulmonary embolisms
 - Anastomotic leaks: present with peritonitis
 - Gastrointestinal tract bleeding from staple line, anastomosis site or ulcers

Management

- Supportive care, rehydrate
- CT with contrast
- Consult surgery
- Do not place nasogastric tube due to risk for bowel perforation
- If suspect internal hernia, image immediately and call surgery

How You Will Be Tested

- Concentrate on complications: bleeding, obstruction, leaking
- Expect a patient with vague abdominal pain after bariatric surgery to have an internal hernia and need aggressive work up

See **EM:RAP 2017 April - Little Tubes, Little Labs**

See **EM:RAP 2012 November - Post Bariatric Surgery Patients in the ER**

Caustic Ingestions

Jennifer Farah, MD, and Jessica Mason, MD

Background

- Acids and alkali
- Lye (alkali) - most common ingestion, causes liquefactive necrosis of the esophagus
- Acids cause coagulative necrosis of the stomach
- Lye is worse (liquefaction is worse than coagulation; melting is worse than clotting)
- Detergent pods (mixed contents)

Clinical Findings

- Damages oropharynx; patient presents with drooling, voice changes, stridor, plus abdominal pain
- Complications
 - Perforation
 - Delayed stricture (days or weeks after ingestion)
 - Alkali: esophagus
 - Acid: stomach

Management

- Protect the airway; may need intubation
- Need endoscopy; early gastrointestinal consult
- Avoid cathartics and neutralization agents (eg, charcoal, lavage)

How You Will Be Tested

- Child with detergent pod ingestion: protect the airway and obtain endoscopy (same as for any caustic ingestion)
- Recognize that endoscopy is urgently needed to see the extent of the injury

Cholecystitis & Cholangitis

Jennifer Farah, MD; Mel Herbert, MD; and Jessie Werner, MD

Background

- Inflammation of the gallbladder is usually caused by obstruction of the cystic or common bile duct with a stone
- Patients with diabetes are a high-risk group
- Infected biliary tree = cholangitis
- Acalculous cholecystitis: sick patients (often in intensive care unit setting) due to sludging generally with comorbidities like burns, trauma, diabetes, and advanced age

Clinical Findings

- Right upper quadrant (RUQ) pain radiating around to the back (if straight through, consider pancreatitis)
- Nausea and vomiting
- Associated with fatty meals “in textbook descriptions”
- Vomit may be green “in textbook descriptions”
- +/- fever
- Elevated white blood cell count, bilirubin, and liver function tests
- Diagnosis by ultrasound (gold standard)
- Acalculous cholecystitis presents like a routine cholecystitis but no stone is visible
 - Patients are at increased risk of perforation and gangrene
- CT with gas in the gallbladder wall (“emphysematous cholecystitis”) suggests gangrene; extremely high risk
- Charcot’s triad = fever/chills, jaundice, RUQ pain
- Reynold’s pentad = Charcot’s triad, plus altered mental status and shock
- Presence of jaundice localizes the obstruction to the common bile duct, seen in cholangitis
- No jaundice localizes to the cystic duct, seen in cholecystitis

Management

- Give IV fluids
- Make comfortable
- Surgical consult
 - IV antibiotics
 - Drainage with endoscopic retrograde cholangiopancreatography (ERCP) or cholecystectomy
 - Medical treatment alone is possible but not via the ED

How You Will Be Tested

- Be prepared to identify this on ultrasound
 - Pericystic fluid
 - Enlarged gallbladder wall
 - Positive Murphy's sign when pressing with the probe
 - Murphy's sign: wince or catch when patient inhales while RUQ is compressed; positive with cholecystitis but negative in cholangitis and nonbiliary disease; sign is sensitive but not specific
- Video review: [Point-of-care ultrasound for cholecystitis](#)

Crohn's Disease & Ulcerative Colitis

Stuart Swadron, MD, and Mel Herbert, MD

Background

- Chronic inflammatory diseases of the bowel
- Toxic megacolon - dangerous complication

Clinical Findings

- Weight loss, crampy abdominal pain, fever, bloody diarrhea
- Diagnosed by endoscopy and biopsy
- Ulcerative colitis
 - Limited to colon
 - Gastrointestinal (GI) bleeding common
 - Patients often on immunosuppressants and immunomodulators
 - Surgery can be curative
- Crohn's disease
 - Presents with fistulas and abscesses
 - Can affect any segment of the GI tract from mouth to anus
 - Involves "skip lesions"
 - Transmural, even to the adventitia, allowing fistulas to form (bowel to bowel, bowel to urinary tract, bowel to gyn tract, even to skin)
 - Patients often on immunosuppressants and immunomodulators
 - Cannot be cured with resection
 - Complications
 - Fistula formation
 - Intra-abdominal abscess formation
 - Extraintestinal manifestations with arthritis, uveitis, hepatitis

Management

- ED manages complications: GI bleeding, obstruction, fistulization, and abscesses
- May require IV steroids for acute exacerbation (in consultation with gastroenterology)
- Many require emergency surgery for
 - Actual perforation
 - Suspected perforation or
 - Prevention of perforation
- Plain abdominal film showing dilated loops of colon = surgical emergency (consider toxic megacolon)
 - Abdominal films can show
 - >6 cm dilated colon,
 - Loss of haustra

- “Thumbprinting” from bowel wall edema
 - IV fluids
 - Antibiotics
 - Immediate surgical consult
- May present with complications of immunosuppression

How You Will Be Tested

- Expect an abnormal abdominal film

Diverticular Disease

Jennifer Farah, MD, and Jessica Mason, MD

Background

- Diverticula
 - Sac-like herniations in the mucosa, most often in the sigmoid colon and where the vessels are
 - A low-fiber diet contributes
- Diverticulosis: many diverticula
 - Most common cause of gastrointestinal bleeding
- Diverticulitis: infected diverticula
 - Occurs when sacs become obstructed with feces

Clinical Findings

- Diverticulosis
 - Painless profuse bleeding, often self-limited
- Diverticulitis
 - Left lower quadrant pain
 - Mixed diarrhea/constipation
 - Fever and leukocytosis

Management

- For bleeding
 - Need endoscopy
 - May need angiography to rule out an arteriovenous malformation
 - Treat with embolization or surgery if necessary
- For diverticulitis
 - High-fiber diet
 - Stool softener
 - Pain medications
 - Antibiotics
 - Admit elderly, patients with comorbid conditions, or immunocompromised patients for IV antibiotics
 - Discharge if otherwise stable
 - Recurrent flares may be treated surgically

How You Will Be Tested

- Expect different degrees of severity on presentation from asymptomatic incidental finding to shocky, acutely ill patient

Drug Packers & Stuffers

Jennifer Farah, MD, and Jessica Mason, MD

Background

- Transporting illicit drugs
 - “Packers” swallow prepackaged baggies
 - “Stuffers” quickly swallow small drug bags in an unplanned way to avoid apprehension by law enforcement
 - Bags can leak or rupture

Clinical Findings

- Symptoms may be delayed
- Individuals may be completely well and asymptomatic

Management

- Supportive care - definitive care depends on the drug ingested
- Always admit for observation because the patient may absorb an overdose unpredictably
- Endoscopy may be deferred because of the risk of rupturing a package

How You Will Be Tested

- Know that these patients must be admitted

Dysphagia & Odynophagia (Achalasia, Spasm, Webs, & Rings)

Jennifer Farah, MD, and Jessica Mason, MD

Background

- Dysphagia: difficulty swallowing
- Odynophagia: pain with swallowing
 - Function of swallowing not impaired
 - Suggests infection or inflammatory process

Clinical Findings

- Need to assess which stage of swallowing is impaired
 - First stage of swallowing suggests oropharynx involved
 - Infections: pharyngitis, aphthous ulcers, epiglottitis
 - Botulism, tetanus
 - Serious neuromuscular disorders
 - Myasthenia gravis, multiple sclerosis, scleroderma, myositis, stroke
 - Lead poisoning, magnesium deficiency
 - Upper esophagus
 - Obstructive lesions
 - Usually progressive; initially problem with solids and later liquids
 - Neoplasm
 - Webs: iron deficiency anemia
 - Lower esophagus
 - Obstructive lesions
 - Neoplasm
 - Achalasia
 - Increased tone of lower esophageal sphincter
 - Solids and liquids equally affected
 - Stricture from reflux
 - Spasm
 - Painful
 - Precipitated by extremes of hot or cold
 - Relieved by nitroglycerin - easily mistaken for cardiac pain

Management

- Deciphering which phase of swallowing is difficult but helps identify source of problem
- Endoscopy

How You Will Be Tested

- Clinical picture will be presented, challenging you to determine the etiology

Esophageal Foreign Bodies

Jennifer Farah, MD, and Jessica Mason, MD

Background

- Esophageal foreign bodies (FB) are usually lodged in the narrowest part of the esophagus
 - Typically a coin or battery in children and food in adults
 - Near cricopharyngeus muscle (C4; neck) or T4 (level of the aortic arch) in kids
 - Near lower esophageal sphincter (T10-T11; at the diaphragm) in adults

Clinical Findings

- Patient feels like they're gagging, may be nauseated, vomiting
- May complain of neck pain, throat pain, dysphagia, odynophagia, foreign body sensation
- Patient can usually point to the exact location of the foreign body
- Imaging: X-ray neck and chest
 - If flat FB (eg, coin) is in esophagus it will be oriented in the frontal (coronal) plane and will appear on face in an anteroposterior (AP) X-ray
 - If flat FB (eg, coin) is in the trachea it will be in sagittal plane and will appear on edge in an AP X-ray
 - A normal X-ray doesn't rule out FB - the FB may be radiolucent

Management

- A button battery in the esophagus → remove ASAP (urgent retrieval before it bursts)
- A button battery in the stomach is not an emergency and can wait for follow up within 48 h to ensure passage unless patient is severely symptomatic
- If sharp object or object greater than 5 cm × 2 cm → remove with endoscopy
- If X-ray is normal and history indicative of an FB, need endoscopy for diagnosis

How You Will Be Tested

- A common question is the typical locations of FB lodging
- Must be able to distinguish on AP film if the FB is in the trachea (on edge) or esophagus (on face)
- Know what to do about button batteries

Esophageal Trauma, Mallory Weiss Tears, & Boerhaave's

Jennifer Farah, MD; Jessica Mason, MD; and Jessie Werner, MD

Background

- Esophageal trauma
 - Most common cause is usually iatrogenic, eg, endoscopy
 - Can be caused by caustic ingestions, foreign bodies, or trauma
- Mallory-Weiss tear
 - Partial thickness tear of esophagus
 - Due to repeated vomiting caused by
 - Alcohol
 - Hiatal hernia, gastritis, esophagitis
- Boerhaave's syndrome
 - Complete rupture of esophagus
 - Occurs after severe retching

Clinical Findings

- Mallory-Weiss tears
 - Present with gastrointestinal bleed after vomiting
- Boerhaave's syndrome
 - Present with chest pain and mediastinitis, maybe no bleeding
 - Patients are very sick/septic
 - Pneumomediastinum on chest X-ray

Management

- Supportive management, nil by mouth, IV fluids, broad-spectrum antibiotics
- Call surgery

How You Will Be Tested

- Recognize that the major complication of all of the above is mediastinitis
 - Toxic, septic, ill
 - If the question describes retching and sepsis, think of mediastinitis

Esophagitis (Candida, CMV, HSV, & Pill)

Jennifer Farah, MD; Jessica Mason, MD; and Jessie Werner, MD

Background

- Many causes of esophagitis:
 - Corrosive ingestions
 - Radiation treatment
 - Medications (eg, nonsteroidal anti-inflammatory drugs, iron supplements, antibiotics)
 - Infections (especially if immunocompromised)
 - Human immunodeficiency virus
 - Cytomegalovirus
 - Herpes simplex
 - Varicella zoster
 - *Candida*
 - Mycobacterial

Clinical Findings

- Patient presents with chest pain and odynophagia
- (in contrast to oral candidiasis, which doesn't have odynophagia)

Management

- In an immunocompromised patient, always consider *Candida* and try fluconazole
- Treat esophageal candidiasis with oral fluconazole (not nystatin or clotrimazole)
- Advise patients with suspected "pill" esophagitis to drink a whole glass of water with the medication to dislodge the pill from esophagus and dilute

How You Will Be Tested

- Test may try to confuse oral candidiasis with esophageal infection, which is more severe and occurs in immunocompromised hosts, and is treated differently

Food Impactions

Jennifer Farah, MD, and Jessica Mason, MD

Background

- Adults frequently suffer from food impactions (commonly meat)
- Tends to be distal at lower esophageal sphincter

Clinical Findings

- Should be obvious

Management

- IV glucagon (1-2 mg)
- Nitroglycerin sublingual or nifedipine to relax smooth muscle
- Carbonated beverages, if there is no concern for perforation
- If all fails, endoscopy

Gastric Foreign Bodies

Jennifer Farah, MD; Jessica Mason, MD; and Jessie Werner, MD

Clinical Findings

- Most will show up on X-ray

Management

- Objects larger than 5 cm × 2 cm
- Sharp objects
- Failure to pass after expectant management requires esophagogastroduodenoscopy
- Multiple magnets are dangerous

How You Will Be Tested

- Memorize 5 × 2 cm!
- Multiple magnets must be removed

GERD, PUD, & Gastritis

Jennifer Farah, MD, and Jessica Mason, MD

Background

- Gastroesophageal reflux disease (GERD): gastric acid refluxes up into esophagus
- Peptic ulcer disease (PUD):
 - Focal mucosal lesions
 - 20% occur in stomach, 80% in duodenum
 - Predisposing factors: nonsteroidal anti-inflammatory drug (NSAID) use, steroid use, *Helicobacter pylori* infection, cigarette use, alcohol, caffeine, emotional stress, type O blood
 - Zollinger-Ellison
 - Gastrinoma (tumor) overproducing acid
- Gastritis: generalized gastric mucosal irritation

Clinical Findings

- GERD:
 - Very common
 - Presents as chest pain
 - Can mimic acute coronary syndrome
 - Sometimes patients get a sour taste (“water brash”)
 - Exacerbated by lying supine - similar to pericarditis
 - May have increased salivation
- PUD
 - Epigastric burning temporally related to meals
 - Immediate pain with eating is more associated with gastric ulcer while delayed pain is more associated with duodenal ulcer
 - Pain radiating to back suggests duodenal location or pancreatitis
- Complications
 - Bleeding (upper gastrointestinal [GI] bleed)
 - Perforation - can see free air under the diaphragm
 - Scarring at gastric outlet causing obstruction (pyloric obstruction)

Management

- Can suspect etiology but must send patient for endoscopy for definitive diagnosis
- Empiric treatment:
 - Antacids
 - H₂ blockers
 - Proton pump inhibitors
 - Diet modification

- Bismuth (Pepto Bismol)
- Sucralfate
- *H. pylori* requires triple therapy (clarithromycin + amoxicillin + omeprazole)

How You Will Be Tested

- For testing purposes, epigastric pain during eating is gastric PUD, whereas pain delayed 2-3 h after a meal is duodenal PUD
- Because pain can be of many etiologies, board will likely include other predisposing factors like NSAID use
- Know that the most common cause of upper GI bleeding is PUD
- Chest X-ray with free air under the diaphragm: think PUD with perforation

Hemorrhoids

Jennifer Farah, MD; Jessica Mason, MD; and Jessie Werner, MD

Background

- Predisposing factors
 - Chronic constipation with straining
- Internal hemorrhoids are above the dentate line
 - Are a painless cause of bleeding
- External hemorrhoids
 - Painful
 - Are at risk of thrombosis

Clinical Findings

- Bright red blood per rectum, especially in the setting of constipation and straining
- Can cause significant rectal pain
- Complications
 - Can prolapse
 - Can thrombose (clot in the hemorrhoid)
 - Very painful
 - Purple and tender to touch

Management

- Must rule out blood arising higher up and from more ominous causes
- Pain relievers, sitz baths, stool softeners, suppositories
- Reduce prolapse if present
- Thrombosed hemorrhoid requires incision and drainage if in the first 72 h ([video review](#))
 - Numb it
 - Elliptical incision
 - Extract clot
 - Pack or don't pack
 - Leave it open
 - Reduces pain and occurrence of skin tags
- Consult surgery for
 - Intractable pain
 - Suspected strangulated or incarcerated prolapse
 - Continued bleeding

How You Will Be Tested

- Know treatment and indications for surgical consultation

Hernias

Jennifer Farah, MD; Jessica Mason, MD; and Jessie Werner, MD

Background

- Types
 - External, eg, umbilical hernia
 - Internal, eg, diaphragmatic
 - Incisional (very common)
 - By location:
 - Inguinal hernia
 - Direct
 - Protrudes through Hesselbach triangle (aka inguinal triangle; defined by the lateral border of the rectus muscle, the inferior epigastric vessels, and inguinal ligament)
 - Is medial to the inferior epigastric vessels
 - Occurs more in the elderly
 - Rarely incarcerates (usually reducible)
 - Indirect
 - Most common form
 - More common in men than women
 - More common in younger than older patients
 - Goes through the inguinal ring into the inguinal canal
 - Is lateral to the inferior epigastric vessels
 - Often associated with a congenital defect
 - Frequently incarcerates
 - Femoral hernia
 - Protrudes below the inguinal ligament
 - More common in women
 - Frequently incarcerates
 - Umbilical hernia
 - Belly button protrudes
 - Frequently seen in newborns; often closes spontaneously
 - Rarely incarcerates
 - Ventral hernia
 - Protrudes through the anterior abdominal wall
 - These often occur through a previous surgical site (ie, are incisional hernias)
 - Rarely incarcerate
 - Obturator hernia
 - Rare

- Protrusion on the medial thigh
- Seen in older women
- Spigelian hernia
 - Rare
 - Occur at the lateral edge of the rectus abdominis muscle
 - High risk of strangulation

Clinical Findings

- May be reducible or irreducible
- If irreducible, it's incarcerated (bad)
- If the blood supply is cut off, it is strangulated (worse)
 - Patient appears ill
 - Pain out of proportion
 - Puking
 - Peritonitis

Management

- In reducing hernias, be aware that the break in the fascia isn't where the bulge is; you have to go slightly remotely from it to reduce the hernia
- If you can't reduce it, refer to surgery

How You Will Be Tested

- Know the difference between a direct and indirect inguinal hernia
- Know that indirect and femoral hernias are the ones most likely to incarcerate; these are the most likely targets of testing since they require surgical consultation
- Know that patients who have had bariatric surgery are at high risk of internal hernias

Ileus, Small Bowel Obstruction, & Large Bowel Obstruction

Stuart Swadron, MD, and Mel Herbert, MD

Background

- Ileus
 - Loss of peristalsis without obstruction
 - Causes:
 - Bowel manipulation during surgery (normal occurrence)
 - Spinal injury/nerve damage
 - Opioid use
 - Electrolyte imbalance including calcium
 - Diabetic ketoacidosis
 - Systemic illness from any cause
- Small bowel obstruction (SBO): Caused by a mechanical or functional obstruction
 - Causes:
 - Adhesions
 - Hernias
 - Volvulus
 - Intussusception
- Large bowel obstruction (LBO): Caused by a mechanical or functional obstruction
 - Causes
 - Colon cancer (gradual onset)
 - Diverticular disease
 - Sigmoid and cecal volvulus

Clinical Findings

- Abdominal pain, nausea and vomiting, may become bilious, distension, no flatulence (obstipation)
- Plain abdominal film: >6 air-fluid levels
 - Ileus
 - No transition point; whole bowel is involved
 - SBO
 - Tend to be central
 - Small diameter bowel loops
 - Valvulae conniventes extending across wall of bowel are present
 - LBO
 - Haustral markings do not extend across the bowel wall

Management

- Supportive: Bowel rest, nil by mouth (NPO), nasogastric (NG) tube, IV fluids

- Treat underlying cause
- For adhesions, try conservative management first
- LBO → surgery
- SBO → try conservative management (NPO, NG tube) and avoid surgery if possible

How You Will Be Tested

- Should be able to distinguish LBO from SBO on plain film
- Recognize that SBO can often be treated conservatively, whereas LBO will require surgery

Irritable Bowel Syndrome

Jennifer Farah, MD, and Jessica Mason, MD

Background

- Very common
- Functional cause of abdominal pain with motility issues and no anatomical problem
- Usually affects 20- to 40-y-old women who have psychosocial stressors

Clinical Findings

- Usually presents as crampy abdominal pain with alternating constipation and diarrhea
- Symptoms improve with flatus or bowel movement
- Be sure to distinguish from diverticular disease, which can have a similar presentation
- Diagnosis of exclusion
- Rome criteria
 - Recurrent abdominal pain at least 3 d of the month for the last 3 mo
 - Two of the following
 - Change in appearance or frequency of bowel movements
 - Improvement of symptoms with bowel movement

Management

- Eliminate stressors
- Follow high-fiber diet
- Symptomatic treatment with medication for diarrhea or constipation
- Primary care follow-up

How You Will Be Tested

- Recognize the Rome criteria if embedded in a question

Upper Gastrointestinal Bleed

Jessica Mason, MD, and Jennifer Farah, MD

Background

- Different levels of severity
 - If moderate bleeding with stable vital signs, consider
 - Mallory-Weiss (esophageal) tear
 - Foreign body in the esophagus
 - If massive bleeding with unstable vital signs, consider
 - Ruptured varices (in cirrhosis)
 - Arterial bleed associated with peptic ulcer disease
 - Esophageal rupture (may be little or no hematemesis)

Clinical Findings

- Clues for perforation include
 - Peritonitis signs
 - Subcutaneous emphysema
 - Chest X-ray
 - Left-sided pleural effusion
 - Left-sided pneumothorax
 - Free air under diaphragm

Management

- Identify unstable patients
- Resuscitate with
 - IV fluids
 - Antibiotics (ceftriaxone)
 - Treat coagulopathy (likely present if there's liver disease) with blood products
 - Octreotide drip and intubation
 - Proton pump inhibitors
 - May need or wish to use vasopressin
 - While waiting for consult, may need to place tamponade balloon/Blakemore tube, Minnesota tube, or Linton tube
 - Temporizing until endoscopy can be done
 - Better to use earlier in course rather than later
 - Call gastroenterology or surgery ASAP; may need band ligation

How You Will Be Tested

- Expect severe gastrointestinal bleeder that requires resuscitation

- A patient with esophageal rupture may present with just pain and a left-sided pleural effusion

See **EM:RAP HD 2016 April - Placement of a Blakemore Tube for Bleeding Varices**

See **EM:RAP HD 2016 April - Placement of a Minnesota Tube for Bleeding Varices**

See **EM:RAP HD 2016 April - Placement of a Linton Tube for Bleeding Varices**

Lower Gastrointestinal Bleed

Mel Herbert, MD, and Stuart Swadron, MD

Background

- Many causes:
 - Hemorrhoids
 - Malignancy
 - Ischemia
 - Post radiation
 - Inflammatory bowel disease
 - Infections
 - Post procedure
 - Diverticulosis
 - Angiodysplasia/arteriovenous malformation (AVM)
- Diverticulosis and angiodysplasia are the 2 most common causes

Clinical Findings

- Unless a question specifically states that this is a lower gastrointestinal (GI) bleed, remember that a massive lower GI bleed might originate in the upper tract, eg, bleeding varices
- May require esophagogastroduodenoscopy (EGD) to rule out upper-tract bleed
- Bleeding from diverticulosis is a distinct entity not indicative of diverticulitis, which presents with pain and abdominal tenderness
- Patients with AVM tend to be very elderly

Management

- Resuscitate with fluids and blood products
- Next, the patient needs angiography and interventional radiology
- If bleeding is not brisk, a red cell scan may suffice
- Always ask
 - Quality/quantity of blood
 - Recent beet ingestion (a common “red” herring!)
 - Recent procedures
 - Cancer
 - Inflammatory bowel disease
 - Anticoagulants
- As a general rule, the darker the blood, the further the source is from the rectum
- **But**, a very brisk upper GI bleed can cause bright red blood per rectum
- Physical exam
 - Vitals and other signs of shock

- Abdominal exam and digital rectal exam with hemoccult
- Labs
 - Complete blood count, type and screen, +/- coagulation panel
 - Stool culture if possibly infectious
- Imaging options
 - Very institution-dependent
 - Radionuclide imaging
 - Angiography/CT angiography to identify source of active bleeding
- Colonoscopy
 - Therapeutic and diagnostic
 - Requires preparation, and patients must be stabilized first
- Disposition
 - Almost all patients are admitted
 - If insignificant hemorrhoidal bleeding or something similar → discharge

How You Will Be Tested

- Review management

Mesenteric Ischemia

Jennifer Farah, MD, and Jessica Mason, MD

Background

- Generally seen in patients >50 y with underlying vascular disease
- Most common cause: emboli to the superior mesenteric artery or its branches from atrial fibrillation or valvular heart disease
- Other causes:
 - In situ occlusion from severe atherosclerosis
 - Venous thrombosis (same symptoms, different pathology)
 - Hypercoagulable states (thrombophilia)
 - May occur in younger patients
- Nonocclusive disease
 - Relative arterial insufficiency
 - For example, from congestive heart failure
 - Following trauma with hypovolemia/anemia

Clinical Findings

- May present with sudden-onset severe abdominal pain (due to embolization)
- Other major presentation: postprandial pain (“abdominal angina”)
- Signs of bowel infarction
 - Fever
 - Leukocytosis
 - Elevated lactic acid, elevated phosphate
 - Tender, distended abdomen
- Imaging
 - Plain film
 - May see free air
 - Pneumatosis intestinalis - air tracking along the intestine with swollen bowel wall
 - CT angiography is gold standard
 - ECG to check for atrial fibrillation (A-fib)/flutter (undiagnosed A-fib increases risk for thromboembolic events)

Management

- Supportive care
- Resuscitate as needed
- Broad-spectrum antibiotics
- Nasogastric tube
- Anticoagulation with heparin

- Papaverine - opiate antispasmodic used in mesenteric ischemia
- Intra-arterial vasodilator for nonocclusive disease
- Early surgical consultation

How You Will Be Tested

- Boards emphasize both pathophysiology and management because the disease is so deadly
- If the question mentions “atrial fibrillation,” start thinking of mesenteric ischemia
- If the question mentions a young person “with history of DVT,” start thinking of venous thrombosis
- CT angiography is the gold standard
- ECG to check for A-fib/flutter (undiagnosed A-fib increases risk for thromboembolic events)

Pancreatitis

Jennifer Farah, MD, and Mel Herbert, MD

Background

- Most common causes:
 - Gallstones and alcohol
- Most common cause of chronic pancreatitis: alcohol
- Other etiologies
 - Medications (thiazides)
 - Hypercalcemia
 - Mumps
 - Scorpion bites
 - Iatrogenic (endoscopic retrograde cholangiopancreatography [ERCP])

Clinical Findings

- Symptoms/signs
 - Epigastric pain radiating through to the back
 - Nausea/vomiting
 - Dehydration
 - Signs of hemorrhagic pancreatitis (in retroperitoneal area):
 - Grey-Turner sign (bluish discoloration of flanks)
 - Cullen's sign (bluish discoloration of the periumbilical area)
- Labs
 - Elevated lipase (>3× upper limit of normal)
 - Elevated amylase
 - Hypocalcemia (due to saponification)
- Imaging
 - Chest X-ray may show acute respiratory distress syndrome or left pleural effusion
- Ranson's criteria to determine prognosis (unlikely to be asked exact score)(1 point each):
 - Age >55 y
 - Glucose >200 mg/dl
 - White blood cell count >16,000 cells/mm³
 - Lactate dehydrogenase >350 mg/dl
 - Aspartate aminotransferase >250U/L

Management

- IV fluids
- Nil by mouth
- Analgesics

- Antiemetics

How You Will Be Tested

- Be aware that scorpion bites can cause pancreatitis
- Know
 - Grey-Turner sign (bluish discoloration of flanks)
 - Cullen's sign (bluish discoloration of the periumbilical area)
- If questioned about an unvaccinated child with swollen face and abdominal pain, think of mumps and pancreatitis
- Hypocalcemia is a major clue to diagnosis
- Ranson's criteria: if elevated, send patient to intensive care unit
- Question of giving steroids (or not) or antibiotics (or not) - too controversial to be on exam

Perirectal Abscess & Pilonidal Cyst

Jennifer Farah, MD; Jessica Mason, MD; and Jessie Werner, MD

Background

- Pain on defecation
- May be febrile
- Perirectal abscess: glands at base of anal crypts can become obstructed and infected
- Pilonidal cyst: occur from ingrown hairs → sinus tract forms → gets blocked → forms abscess
- Associated with inflammatory bowel disease
- Radiation therapy
- Sexually transmitted diseases
- Tend to be polymicrobial

Clinical Findings

- Rectal exam: palpate in all directions to localize area of tenderness
- Perirectal abscesses
 - Can occur in many locations
 - Can form a fistula and be deep
- Pilonidal cysts
 - Usually located on midline/superior edge of buttock crease

Management

- Antibiotics
- Perirectal abscess
 - If perianal → incision and drainage (I&D) in the ED
 - If perirectal (deeper) → surgical consultation
- Pilonidal cyst
 - I&D abscess at the bedside
 - Sinus tract requires elective excision by a surgeon

How You Will Be Tested

- Expect to be questioned on presentation and what to do about it

Rectal Foreign Body

Jennifer Farah, MD, and Jessica Mason, MD

Background

- Must distinguish between simple foreign body (FB) and FB with perforation

Clinical Findings

- X-rays can identify composition or number of rectal FBs
- X-rays are not definitive for identifying perforation

Management

- Attempt to remove manually or can attempt with Foley catheter inflated distal to the FB and gently retracted, +/- sedation, +/- perianal nerve block

How You Will Be Tested

- Test will emphasize that, because of the risk of perforation, not all FBs can be removed in the ED
- Rectal FB and abdominal pain: must consider perforation and consult surgeon
- Clinical exam and observation (6-12 h) after removal is key

Rectal Prolapse

Jennifer Farah, MD, and Jessica Mason, MD

Background

- Rectal prolapse (proctientia) usually occurs in either
 - Very young (consider cystic fibrosis)
 - Very old (mostly women)

Clinical Findings

- Patient complains of a bulging mass after valsalva
- Appearance of concentric rings help differentiate it from prolapsed hemorrhoids

Management

- Manual reduction
 - No magic – “just push it in”
 - Can attempt to reduce swelling with sugar solution
 - Benzodiazepines or pain medications before reduction
- If concern for vascular compromise (mucosa pale instead of pink) → surgery
- If recurrent, needs surgery for definitive repair

Viral Hepatitis

Stuart Swadron, MD, and Mel Herbert, MD

Background

- Acute and chronic forms
- Hepatitis viruses A through F
- Also consider cytomegalovirus (CMV), Epstein-Barr virus (EBV), yellow fever
- Any of these can have a fulminant form
- Hepatitis A
 - Contagious via fecal-oral route, contaminated food (seafood, water)
 - No chronic form
 - Vaccine good for about 10 y
 - Most patients recover fully in 2 mo
 - Immunoglobulin available for acute exposure
- Hepatitis B
 - DNA virus
 - Acute and chronic forms
 - Blood, sex, tattoos, mother-child vertical transmission
 - Vaccine-preventable
 - Immunoglobulin available for acute exposure
 - Acute form can result in acute hepatic failure but this is rare
- Hepatitis C
 - RNA virus
 - Blood, sex, tattoos
 - Chronic form → cirrhosis but might be asymptomatic carrier for years
 - No vaccine currently available; no acute intervention available in the ED
 - Refer to gastroenterology for medical treatment (newer medications are available that can cure hepatitis C)

Clinical Findings

- General symptoms/signs
 - Fever
 - Jaundice
 - Right upper quadrant pain
 - Significant elevation in aspartate aminotransferase (AST) and alanine aminotransferase (ALT) (into the 1000s)
- Elevated international normalized ratio, elevated bilirubin; encephalopathy/asterixis heralds onset of fulminant hepatitis
 - Can be fatal
 - Need intensive care unit admission
 - Liver consult

- Some may need transplantation

Management

- Assess for severity and determine if admission is warranted
- Isolation if indicated
- Post-exposure prophylaxis if indicated

How You Will Be Tested

- For accidental needlestick in a health care provider, be aware that post-exposure immunoglobulin and vaccine are available for hepatitis B and HIV prophylaxis
- For hepatitis C, there is no acute intervention, but patient should be tested for it later and can receive long-term definite treatment
- For a patient presenting with hepatitis A (eg, following consumption of seafood or unclean water), expect questions relating to isolation from other household members

Volvulus

Jennifer Farah, MD, and Jessica Mason, MD

Background

- Loop of bowel twists on itself
- Causes obstruction
- Can cause mesenteric ischemia and infarction
- Sigmoid volvulus
 - Majority (two-thirds) of cases
 - Usually occur in a bedridden, nursing home patient with chronic constipation
- Cecal volvulus
 - Healthy, younger patients (20-40s)
 - Caused by an embryologic abnormality

Clinical Findings

- Abdominal pain, distension, vomiting, no bowel movements (all suggesting obstruction)
- Tympanitic to percussion
- Sigmoid volvulus = dilated loop of bowel near left side of abdomen on X-ray
- Cecal volvulus = dilated bowel on the right side of the abdomen, with associated dilated small bowel on X-ray

Management

- Pain control
- IV fluids
- Nasogastric tube
- Antibiotics
- Sigmoid volvulus: treat with insertion of rectal tube or surgery if unsuccessful
- Cecal volvulus: treat surgically

How You Will Be Tested

- Know the demographics: elderly = sigmoid, younger = cecal
- Fever and elevated lactate: consider mesenteric ischemia complication