GHAPP

Gastroenterology & Hepatology
Advanced Practice Providers

2021 Fourth Annual National Conference

September 9-11, 2021

Red Rock Hotel – Las Vegas, NV

Annenberg Center For Health Sciences at Eisenhower
Imparting knowledge. Improving patient care.

Jointly provided by the Annenberg Center for Health Sciences at Eisenhower and Gastroenterology and Hepatology Advanced Practice Providers.

GHAPP
Gastroenterology & Hepatology Advanced Practice Providers

GHAPP
Gastroenterology & Hepatology
Advanced Practice Providers

Gastrointestinal Bleeding From Tip to Tail

Carol Antequera, DMSc, PA-C

Disclosures

All individuals in control of the content of continuing education activities provided by the Annenberg Center for Health Sciences at Eisenhower are required to disclose to the audience any real or apparent commercial financial affiliations related to the content of the presentation or enduring material. Full disclosure of all commercial relationships must be made in writing to the audience prior to the activity. All staff at the Annenberg Center for Health Sciences at Eisenhower and the Gastroenterology and Hepatology Advanced Practice Providers have no relationships to disclose.

Disclosures

Carol Antequera DMSc, PA-C

No financial relationships to disclose.

Objectives

1. Epidemiology of GI bleed
2. Identify presentation of GI bleeding
3. Initial management of GI bleed
4. Indications for emergent/urgent endoscopic evaluation/treatment

Epidemiology

- The incidence of upper gastrointestinal bleeding (UGIB) is approximately 100 cases per 100,000 population per year
- Bleeding from the upper GI tract is 4 times as common as bleeding from the lower GI tract
- Acute upper gastrointestinal bleeding is a common medical emergency that has a 10% hospital mortality rate.
- Despite changes in management, mortality has not significantly improved over the past 50 years.
  - Older, sicker population offsets endoscopic and pharmacologic advances

Gastrointestinal Bleeding Is the Most Common Reason for GI-Related Hospitalization

Reason for Hospitalization	Annual Hospitalizations in the U.S. (Total)
#1 GI Bleeding	512,925
#2 Cholelithiasis and Cholecystitis	347,985
#3 Pancreatitis	291,915
#4 Intestinal Obstruction	266,465
#5 Liver Disease/Viral Hepatitis	251,790

Peery AF et al. *Gastroenterology.* 2019;156(1):254-272.

Clinical Presentation

Acute GI bleed

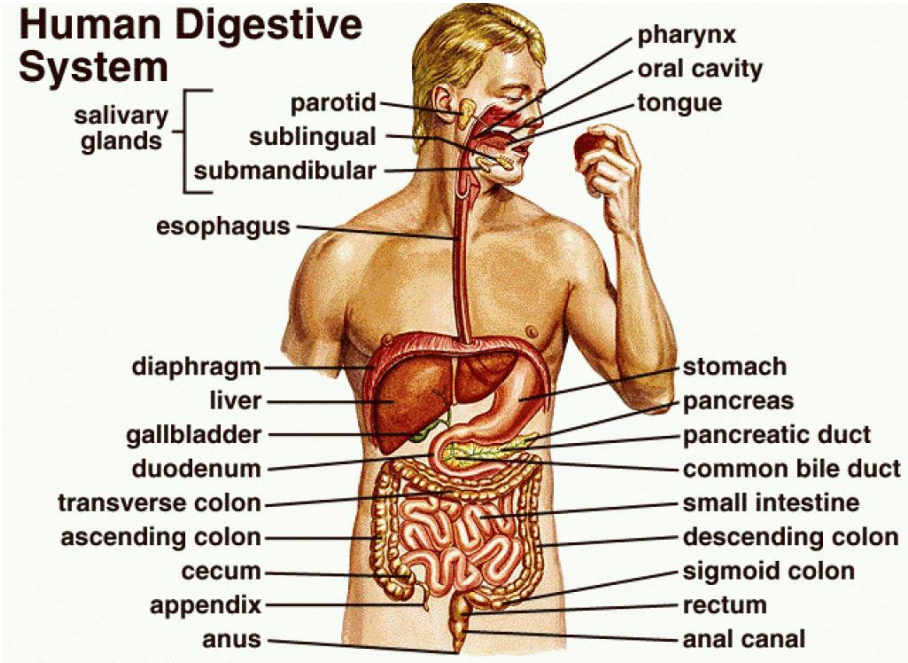
- Clinical presentations of GI bleeding **in general** include (either singularly or in combination):
  - Coffee-ground emesis
  - Hematemesis
  - Melena
  - Hematochezia/BRBPR

Non- acute GI bleed

- Heme + stool, with or without iron deficiency anemia
- Iron deficiency anemia with or without heme + stools

Upper vs. Small Bowel vs. Lower GI Bleeding

- Upper: Esophagus to Ligament of Treitz
- Small Bowel: Ligament of Treitz to Terminal Ileum
- Lower: Cecum to Anus

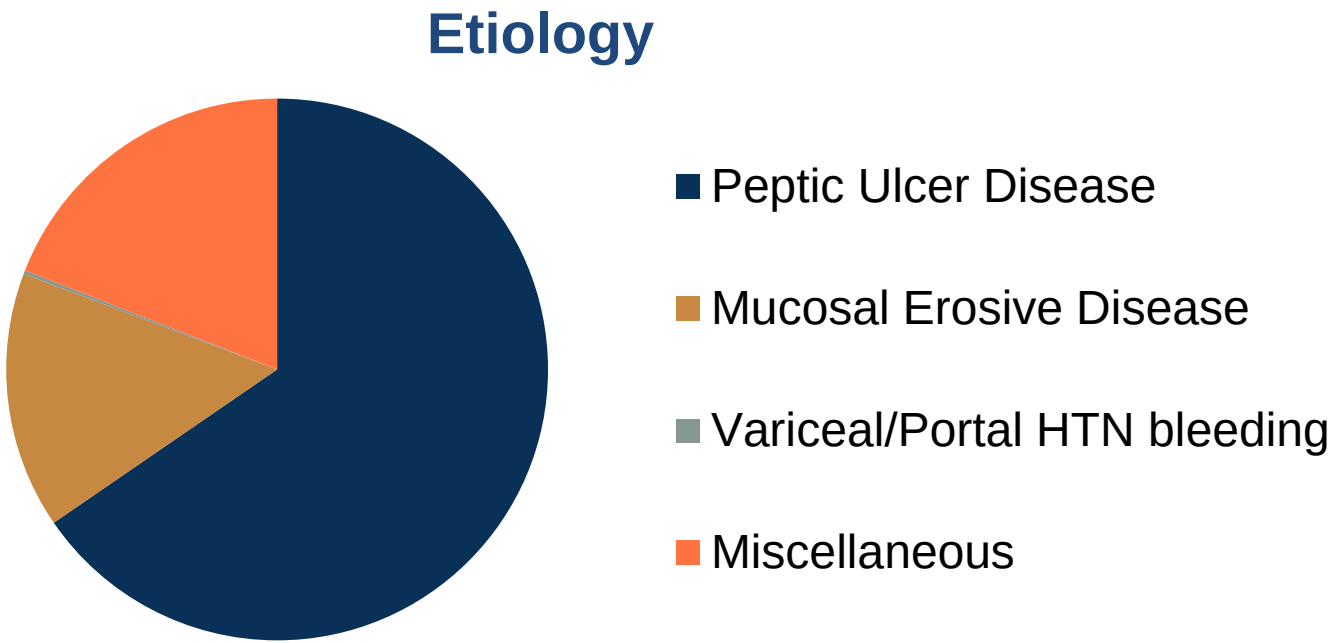


Clinical Presentation

The clinical presentation is dependent upon:

- Location of lesion, i.e., proximal or distal to the ligament of Treitz
  - Suggestive of an upper GI bleed
  - Ligament of Treitz less relevant in the era of capsule endoscopy and deep enteroscopy
- Volume of blood loss, i.e., effect on hemodynamic status
- Other factors including:
  - Duration of bleeding, i.e., acute or chronic
  - Presence of co-morbidities

Etiology



Longstreth GF. *Am J Gastroente*rol. 1995;90(2): 206-10.

Approach

- Assess the severity
- Resuscitate (IV fluids)
- Establish the site of bleeding
- Endoscopic intervention
- Reassess severity and decide on need for IR/Surgery
- Medical treatment +/- IR/Surgery

Laboratory Assessment

The initial hemoglobin level should be monitored every two to twelve hours, depending on the severity of the bleed

Serum chemistries, hepatic function, and coagulation studies

Upper GI Bleed

- Most common causes of Upper GI Bleed:
  - Peptic ulcer – Upper Abdominal pain
  - Esophagogastric varices – Jaundice, abdominal distention (ascites)
  - Arteriovenous malformation – Emesis, retching, or coughing prior to hematemesis
  - Malignancy – Dysphagia, early satiety, involuntary weight loss, cachexia
  - Esophageal (Mallory-Weiss) tear – Emesis, retching, or coughing prior to hematemesis

Upper GI Bleed

- Obtain a thorough H&P
  - Use of NSAIDS
  - Anticoagulants
  - Antiplatelet therapy
  - Alcohol abuse
  - Previous GI bleed
  - Liver disease and coagulopathy

Upper GI Bleed

- Mild to moderate hypovolemia
  - Less than 15 percent of blood volume lost – Resting tachycardia
- Blood volume loss of at least 15 percent
  - Orthostatic hypotension (a decrease in the systolic blood pressure of more than 20 mmHg and/or an increase in heart rate of 20 beats per minute when moving from recumbency to standing)
- Blood volume loss of at least 40 percent
  - Supine hypotension

Upper GI Bleed

- Symptoms that suggest the bleeding is severe include:
  - Orthostatic hypotension/dizziness
  - Confusion
  - Angina
  - Severe palpitations
  - Cold/clammy extremities

Upper GI Bleed: Glasgow-Blatchford Score

Admission risk factor	Score
Blood urea	
6.5–7.9	2
8.0–9.9	3
10.0–25.0	4
>25.0	6
Haemoglobin for men (g/L)	
120–129	1
100–119	3
<100	6
Haemoglobin for women (g/L)	
100–119	1
<100	6
Systolic blood pressure (mmHg)	
100–109	1
90–99	2
<90	3
Other markers	
Pulse ³100 bpm	1
Presentation with melaena	1
Presentation with syncope	2
Hepatic disease	2
Cardiac failure	2

Score ³6 associated with >50% likelihood of needing intervention.

Kurien M, Lobo AJ. Acute upper gastrointestinal bleeding. *Clin Med (Lond)*. 2015;15(5):481-485. doi:10.7861/clinmedicine.15-5-481.

Management of GI Bleed

- Early resuscitation significantly reduces mortality in UGIB.
- Hemodynamic stability should be restored using intravenous fluids (crystalloids or colloids) alongside blood transfusion.
- Oxygen therapy and correction of coagulopathy where appropriate.

GI Bleed

- Hemoglobin usually at baseline.
- Within 24 hours the hemoglobin level will decline as the blood is diluted by the influx of extravascular fluid into the vascular space.
- Patients with acute bleeding should have normocytic red blood cells. Microcytic red blood cells or iron deficiency anemia suggest chronic bleeding.
- Unlike patients with acute upper GI bleeding, patients with acute lower GI bleeding and normal renal perfusion should have a normal blood urea nitrogen (BUN)-to-creatinine or urea-to-creatinine ratio (<20:1 or <100:1, respectively).

Transfusion

- Red blood cell (RBC) transfusion with a threshold for transfusion at a hemoglobin of 7 g/dL for patients with UGIB
- restrictive transfusion policies reduced the number of patients receiving RBC transfusion by 43% with no evidence of an impact on clinically important outcomes

ACG Clinical Guideline: Upper Gastrointestinal and Ulcer Bleeding.
Laine, Loren; MD, FACG; Barkun, Alan; MD, FACG; Saltzman, John; MD, FACG; Martel, Myriam; Leontiadis, Grigorios; MD, PhD.

Transfusion

Table 3. Outcomes in randomized trials restrictive vs liberal transfusion strategy				
	Villanueva et al. (14)		Jairath et al. (15)[a]	
	Restrictive strategy (N = 444)	Liberal Strategy (N = 445)	Restrictive strategy (N = 257)	Liberal Strategy (N = 383)
Hemoglobin threshold (g/dL)	7	9	8	10
Further bleeding, n (%)	45 (10.1)	71 (16.0)	13 (5.1)	31 (8.1)
Relative effect size (95% CI)	Adjusted HR = 0.68 (0.47–0.98)		RR = 0.62 (0.33–1.17)	
Absolute effect size (95% CI)	Difference = –6% (–10% to –1%)		Difference = –3% (–7% to 1%)	
Mortality, n (%)	23 (5.2)	41 (9.2)	14 (5.4)	25 (6.5)
Relative effect size (95% CI)	Adjusted HR = 0.55 (0.33–0.92)		RR = 0.83 (0.44–1.57)	
Absolute effect size (95%)	Difference = –4% (–7% to –1%)		Difference = –1% (–5% to 3%)	

CI, confidence interval; HR, hazard ratio; RR, risk ratio.
aCluster randomized trial in which participating sites rather than individual patients were randomly assigned to a study arm.
ACG Clinical Guideline: Upper Gastrointestinal and Ulcer Bleeding.
Laine, Loren; MD, FACG; Barkun, Alan; MD, FACG; Saltzman, John; MD, FACG; Martel, Myriam; Leontiadis, Grigorios; MD, PhD.

PPI Therapy

- Pre-endoscopic PPI therapy may modestly reduce need for endoscopic treatment.
- The use of PPIs is widely accepted as the standard of therapy for both nonvariceal and variceal UGIB
- High dose PPI intravenous infusion therapy significantly reduces the rate of rebleeding compared with standard treatment in patients with bleeding ulcers.
- Oral and intravenous PPI therapy also decrease the length of hospital stay, rebleeding rate, and need for blood transfusion in patients with high-risk ulcers treated with endoscopic therapy.

Gibson W, Scaturo N, Allen C. *AACN Advanced Critical Care.* 2018. *29* (4), 369-376. doi: 10.4037/aacnacc2018644.

Post-Endoscopic Management: ACG 2021 Guidelines

- PPI IV Bolus and Infusion x 72h if high-risk stigmata present; oral daily PPI if flat spot/clean based ulcer
  - Question of benefit of PPI infusion (8mg/h) vs. intermittent 40mg IV q12h
  - Intermittent PPI (IV or oral) risk of further bleeding vs. placebo: RR 0.53 (0.35-0.78); no difference in surgery or mortality
    - Optimal PPI dosing data remains scarce and controversial
- Routine second-look endoscopy 24h post-EGD with endoscopic therapy is not recommended
- Repeat endoscopy if clinical evidence of recurrent bleeding preferred over angiography or surgery
- After second therapeutic EGD, if evidence of further bleeding (or if endoscopic control not achieved), recommend interventional radiology angiography/embolization over surgery

Medical Therapies

Medication	Route	Dosing	Administration	Adverse Effects	Monitoring
Proton Pump Inhibitors					
Pantoprazole	Continuous IV infusion	80 mg loading dose followed by 8 mg/h	Maximum rate 2 mg/min Peripheral or central catheter	Headache (all PPIs)	Injection site pain /thrombophlebitis Allergic/ anaphylactic reaction
Pantoprazole	Intermittent IV infusion	40 mg every 12 h			
Pantoprazole	Oral	40 mg daily	Do no crush or chew enteric-coated formulations		NA
Omeprazole	Oral	40 mg daily			
Antidiuretic Hormone					
Vasopressin	Continuous IV infusion	0.2–0.8 U/min	Central catheter preferred	Ischemia (cardiac, peripheral, and bowel), arrhythmias, hypertension, fluid retention	Anaphylaxis/ hypersensitivity reaction Arrhythmias Angina
Nitrate					
Nitroglycerin	Continuous IV infusion	40–400 µg/min to maintain SBP > 90 mm Hg	Peripheral or central catheter	Hypotension, headache	Hypotension Headache Allergic rections
Somatostatin Analogue					
Octreotide	Continuous IV infusion	25–199 µg loading dose followed by 25–50 µg/hour	Peripheral or central catheter	Bradycardia, palpitations, peripheral edema, hypertension, fatigue, headache, dizziness, hyperglycemia	Bradycardia Flushing Injection site pain/ thrombophlebitis Allergic/anaphylactic reaction

Abbreviations: IV, intravenous; NA, not applicable; PPI, proton pump inhibitor; SBP, systolic blood pressure.

Diagnostic Tools for Localization of GI Bleeding

- Upper Endoscopy (EGD)*
- Video Capsule Endoscopy
- Enteroscopy*
- Colonoscopy*
- CT Angiography
- Nuclear Medicine Bleeding Scan
- Angiography*
- Surgery*
  - **May be therapeutic as well

Timing of Upper Endoscopy: The 24-Hour Window

ACG 2021 Guideline Recommendation:[1]

- "Suggests that patients admitted or under observation in hospital with overt UGIB, whether predicted to be at low risk or high risk of further bleeding and death, undergo upper endoscopy within 24 hours of presentation." (removed < 12hr EGD recs for predicted high-risk)
- "Resuscitation and attention to other active comorbidities should be undertaken as necessary before endoscopy"

Better Outcomes if EGD Within 24 Hours: [2]

- Study of 1.8 Million UGI Bleeds in NIS 2007-13
- 3x increased risk of death without EGD (3.0 vs. 8.5%)
- 50% lower mortality if EGD within 24 hours vs. later
- Early EGD (< 24 hours) → decreased morbidity, shorter LOS, and lower total hospital costs

1. Laine L et al. *Am J Gastroenterol.* 2021;1116:899-917; 2. Garg SK. *Endoscopy International Open*. 2017;05:E376-86.

Small Bowel Bleeding Etiologies

< 40 y/o	> 40 y/o
Inflammatory Bowel Disease	Angioectasias (AVMs)
Meckel's Diverticulum	NSAID Ulcers, Erosions, Diaphragms
Neoplasms	Neoplasms
Dieulafoy's Lesions	Dieluafoy's Lesions
Polyposis Syndromes	

Barkin JA et al. *Gastroenterological Endoscopy.* 3rd Ed. Thieme. 2017; Gerson LB et al. *Am J Gastroenterol*. 2015;110(9):1265-87.

Small Bowel GI Bleed

- 5 to 10 percent of patients with GI bleed will not have a source identified with a standard endoscopic and radiographic evaluation.
- In approximately 75 percent of these patients, the source is in the small bowel.
- The most common first step in the evaluation of suspected small bowel bleeding is capsule endoscopy, provided the initial upper endoscopy and colonoscopy were complete examinations with good visualization.

Small Bowel Bleed

- Assessment of small bowel can be done with:
  - Wireless video capsule endoscopy
  - Deep small bowel enteroscopy
- Radiographic imaging:
  - Computed tomographic enterography [CTE]
  - Computed tomographic angiography [CTA]
  - Magnetic resonance enterography [MRE]
  - Intraoperative enteroscopy

Lower GI Bleed

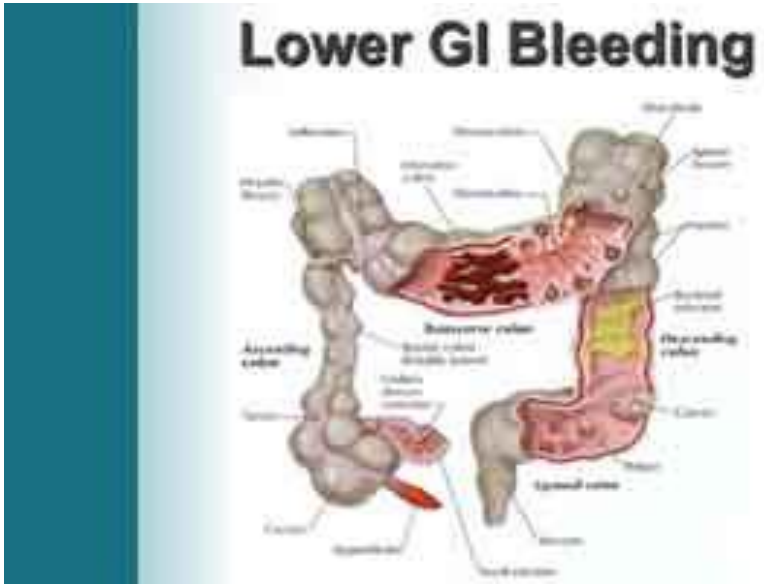
Etiology
Diverticular Bleeding
Ischemic Colitis
Angioectasias (AVMs)
Hemorrhoids
Colorectal Neoplasia/Malignancy
Post-Polypectomy Bleeding
Inflammatory Bowel Disease
Infectious Colitis
NSAID Colopathy
Radiation Proctopathy
Ulcer
Rectal Varices
Dieulafoy’s Lesions

Lower GI Bleed

- Recent prevalence data show that the most frequent cause of acute LGIB is
  - Diverticular bleeding (30-65% of cases)
  - Angiodysplasias (4-15% of cases)
  - Hemorrhoidal bleeding (4-12%)
  - Ischemic colitis (4-11%)
  - Inflammatory colitis including Inflammatory Bowel Diseases (IBD) (3-15%)
  - Post mucosectomy/submucosectomy (2-7%)
  - Rectal ulcer (0-8%)

Lower GI Bleed

- Lower GI bleeding represents around 20-30% of all GIB. Annual incidence in USA is esteemed to be around 20-27 cases per 100, 000.
- Lower GI bleeds will stop spontaneously in 80 to 85 percent of patients.
- Mortality rate is 2 to 4 percent



Gaiani F, De'Angelis, et al. Clinical approach to the patient with acute gastrointestinal bleeding. *Acta Biomed*. 2018;89(8-S):12-19. Published 2018 Dec 17.

Lower GI Bleed

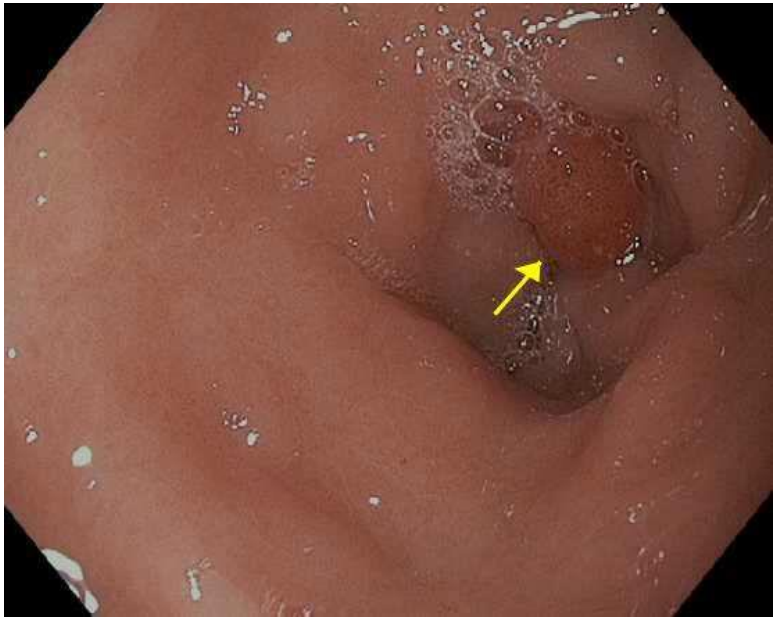
- Presentation
  - Hematochezia: (passage of maroon or bright red blood or blood clots per rectum).
  - Blood originating from the left colon tends to be bright red in color, whereas bleeding from the right side of the colon usually appears dark or maroon colored and may be mixed with stool.
  - Right sided colonic bleed will rarely have melena.

Case Study

- 78 y/o male with a hx of CKD, DMT2, HTN and presents to the ED with symptomatic severe anemia 5.5g/dL
- The patient was stabilized with IV fluids and transfused with 2 units of PRBC
- EGD was ordered and done during admission

Case Study

- EGD findings:
  - 10mm semi pedunculated polypoid lesion in the pre-pyloric region of the stomach
  - 2cm hiatal hernia
  - Gastric mucosal atrophy
  - Erythematous mucosa in the antrum and gastric body



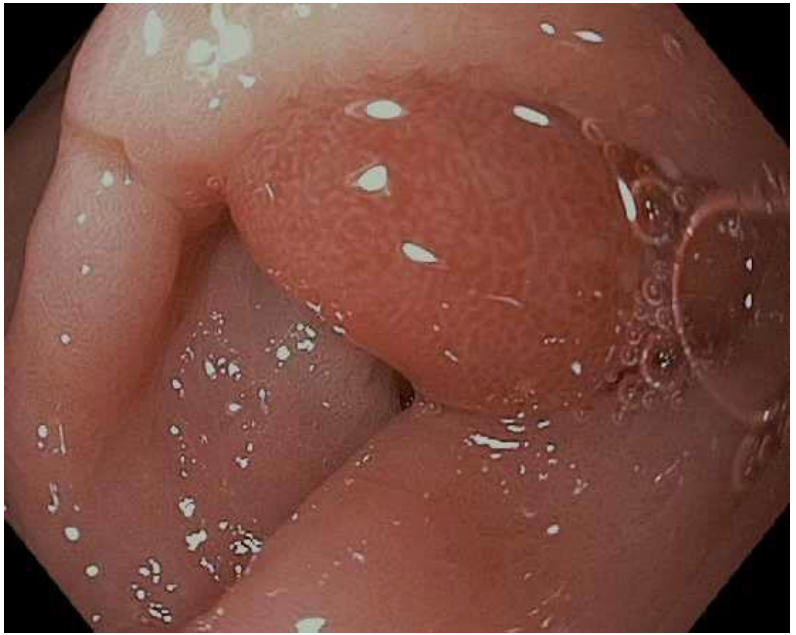
Pathology Report

- Pathology:

A. PRE PYLORIC POLYP:
Polypoid gastric antral-type mucosa with reactive gastropathy.
Negative for dysplasia.

B. RANDOM GASTRIC BIOPSY:
Gastric antral and transitional-type mucosa with chronic gastritis and intestinal metaplasia.

- Immunohistochemistry for Helicobacter pylori negative.
- Negative for dysplasia.



Discharge

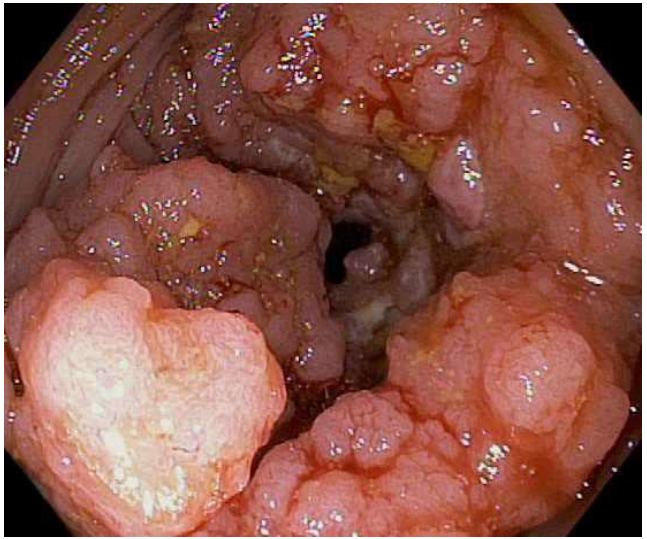
- The patient was discharged home on Pantoprazole 40mg daily
- Oral iron supplement daily
- Follow up outpatient clinic appointment in 1 week with plans to repeat labs and order screening colonoscopy to be done as outpatient

Case Study

- At follow up visit he had repeat CBC and was found to be anemic again and recommended to present to the ED for transfusion
- Upon admission hgb is 7.4g/dL
- The patient is again transfused with PRBCs
- Colonoscopy is ordered on this admission

Case Study

- Colonoscopy findings:
  - Likely malignant partially obstructing tumor in the ascending colon. Biopsied. Area just distal to mass was tattooed.
  - A frond-like/villous, fungating and ulcerated partially obstructing large mass was found in the proximal ascending colon.
  - The mass was circumferential. The mass measured five cm in length. No bleeding was present. This was biopsied with a cold forceps for histology.



INVASIVE MODERATELY DIFFERENTIATED ADENOCARCINOMA FORMING A 4 CM MASS. Carcinoma invades through the muscularis propria into pericolorectal tissue.

Case Study

- Patient informed of diagnosis and was scheduled for right hemicolectomy with colorectal surgeon
- Final pathology T3N0
- No need for adjuvant chemotherapy at this time
- Repeat CEA level in 3 months
- Surveillance colonoscopy
- Referral to survivorship clinic


Thank you!