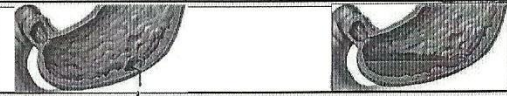


Objectives

- To understand
 - Presentations (hematemesis, melena, hematochezia, occult bleeding)
 - Types; (variceal and non-variceal bleeding)
 - Causes of GI bleeding.
- To know how to recognize the severity and prognosis of patients presented with GI bleeding.
- To know a systematic clinical approach in managing patient with GI bleeding.

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Gastrointestinal Bleeding



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Assistant Professor/Consultant
Gastroenterologist/hepatologist

For Medical students
1432/1433-2011/2012



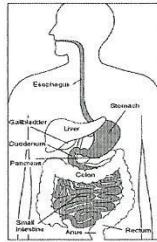
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Categories

Bleeding can occur from any site in the GI tract.

Upper GI bleeding
(UGIB)
• Variceal bleeding
• Non-variceal bleeding

Lower GI bleeding
(LGIB)



Suspensory muscle of the duodenum
(ligament of Treitz)



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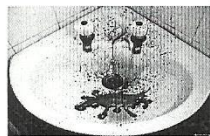
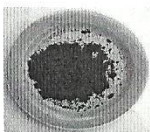
Epidemiology

- Annual incidence of hospitalization: 0.1%
- The incidence is double in males than females
- The incidence increases with age
- Upper GI bleeding is 5 times more common than Lower GI bleeding
- Overall mortality is about 10%
- But mortality in low risk groups like under 60 with no co-morbidities may be as low as <1%

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Hematemesis

- Bloody vomitus (bright red or coffee-grounds)
- Always means an upper source
- Coffee ground because the exposure of blood to gastric acid and oxidation of Fe



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Clinical Presentation

- Hematemesis
- Melena
- Hematochezia
- Occult bleeding
- Symptoms of anemia
(e.g., lightheadedness
or shortness of breath)

Mild ← --- → severe +- shock

Medical emergency

Reflection of bleeding:

- Site
- Rate
- Etiology

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Hematochezia

- Bright or maroon rectal bleeding.
- Means:
 - Lower GI source (most of the time)
 - Sometimes from brisk upper GI source (10 % of the cases)
- Usually associated with hemodynamic instability and decreasing hemoglobin concentration.

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Melena

- Black, tarry, foul-smelling stool.
- Usually means upper GI bleeding (sometimes from slow proximal colonic bleeding or lesion in the small intestine).
- Usually (>100 mL blood for 1 melanic stool)
- Blood remains hours in the gut. (at least 14 hours)
- Degradation into haematin and other hemochromes by colonic bacteria.
- Note: History of Fe therapy and bismuth may be confused with melena.

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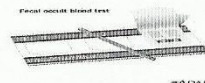
History

- Age
- Nature of bleeding
- Associated symptoms (Abd pain , Vomiting , change in bowel habit, wt loss. Fatigue, dizziness)
- Past GI history (GI bleeding, GI and liver diseases, abdominal surgery)
- Medications (e.g. aspirin, NSAIDS)
- Other co-morbidities

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Fecal occult blood

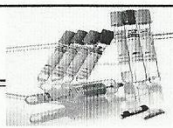
- Positive fecal occult blood test with or without iron deficiency anemia in absence of visible bleeding to patient and the physician.
- Result from small amount of bleeding at any site in the gut.



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Laboratory Tests

- CBC:
 - Hematocrit: Several hours to fall.
 - Normal or slightly depressed should not underestimate the severity of bleeding
 - MCV normal in acute, low indicates iron deficiency and possibly chronic bleeding.
- Coagulation profile.
- Blood group and cross-match blood. Packed RBCs 4-6 units (depends on the severity of bleeding and result of Haemoglobin)
- BUN: may increase in upper GI bleeding (breakdown of blood proteins by intestinal bacteria and mild reduction in GFR).
- LFT



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Examination

- Vital signs: orthostatic hypotension and tachycardia
- General:
 - Pallor
 - Jaundice
 - Stigmata of CLD
 - Cachexia
 - Lymphadenopathy
 - Skin or mucus membrane lesions (pigmented, vascular etc)
 - Extremities: cold clammy, thready pulse (if severe)
- Abdominal examination: (scar of previous surgery , dilated veins, tenderness, organomegaly, masses, hyperactive bowel sounds , etc)
- Rectal exam and color of stool

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Mechanisms of bleeding

Depends on the etiology, but generally due to

- Disruption of the gastrointestinal mucosa secondary to inflammation, infection, trauma, or cancer
- Vascular abnormalities, such as vascular ectasias or varices due to portal hypertension

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Poor prognostic variables

- Old age.
 - Co-morbid conditions(liver, cardiac, renal)
 - Shock or hypotension on presentation.
 - Red blood in the emesis or stool.
 - Requiring multiple units of blood transfusion.
 - Active bleeding at the time of endoscopy.
 - Variceal (versus non-variceal)
 - Bleeding from a visible or spurting vessels.
 - Bleeding from a large ulcer (>2cm)
- (Blatchford criteria , Rockall score etc)

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Common Causes of Upper Gastrointestinal Bleeding

- Peptic ulcer disease
 - Gastric ulcer
 - Duodenal ulcer
- Mallory-Weiss tear
- Portal hypertension
 - Esophagogastric varices

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Ulcerative or erosive		Portal hypertension	Tumors	Traumatic or post-surgical
Peptic ulcer disease	Esophagitis	Esophageal varices	Benign	Mallory-Weiss tear
Idiopathic	Peptic	Gastric varices	Leiomyoma	Foreign body ingestion
Drug induced	Infectious	Duodenal varices	Lipoma	Postoperative anastomosis
Aspirin	Candida albicans	Portal hypertensive gastropathy	Polyps	Aortoenteric fistula
NSAIDs	HSV	Arterial, venous, or other vascular malformations	Malignant	Post polypectomy
Infectious	Cytomegalovirus	Idiopathic angiodysplasia	Adenocarcinoma	Miscellaneous
Helicobacter pylori	Miscellaneous	Oster-Wichter-Rendu syndrome	Mesenchymal neoplasm	Hemobilia
Cytomegalovirus	Pill-induced	Dieulafoy's lesion	Lymphoma	Hemosuccus pancreaticus
HSV	Alendronate	Watermelon stomach (gastric antral vascular ectasia)	Kaposi's sarcoma	
Stress-induced ulcer	Tetracycline	Radiation-induced telangiectasia	Carcinoid	
Zollinger Ellison syndrome	Quinidine	Blue rubber bleb nevus syndrome	Melanoma	
	KCL		Metastatic tumor	
	Aspirin/ NSAIDs			

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Peptic ulcer disease (PUD)

- The most common cause of UGIB ~ 40%
- Risk: NSAIDs, H pylori
- DU is more common than GU
- BUT incidence of bleeding is identical for both.
- Due to; erosion of an artery in the base of the ulcer (most)
- In 80% bleeding stops spontaneously, but rebleeding can occur

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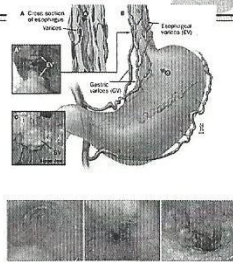
Causes of lower GI bleeding

- Diverticulosis
- Colitis
 - IBD (UC>>CD)
 - Ischemia
 - Infection
- Vascular anomalies (Telangiectasia)
- Neoplasia
- Anorectal
 - Hemorrhoids
 - Fissure
- Dieulafoy's lesion
- Varices
 - Small bowel
 - Rectal
- Aortoenteric fistula
- UPPER GI CAUSE
- Common causes (vary by age)

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Varices

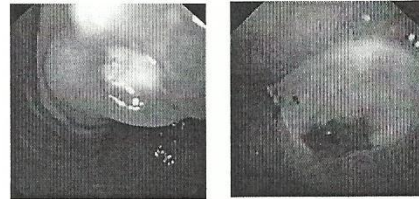
- Accounts for 10-20% of UGB
- 30% of compensated cirrhosis
- 60% of decompensated
- Usually bright red and cause hemodynamic instability



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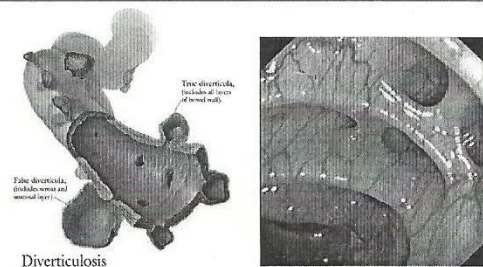
Peptic Ulcers

Stigmata of Recent Hemorrhage



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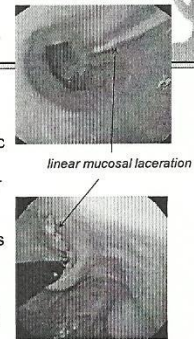
Diverticulosis



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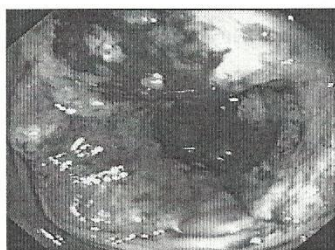
Mallory-Weiss Tear

- Accounts for 15% of UGB
- Results from: rapid increase in the gradient between intragastric and intrathoracic pressures (vomiting, retching, coughing, or straining)
- The depth of the tear determines the severity of the bleeding.
- Rarely, vomiting can result in esophageal rupture (Boerhaave syndrome)



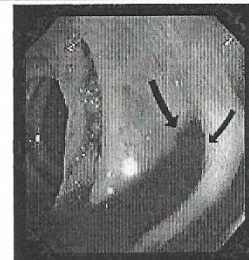
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Adenocarcinoma of colon



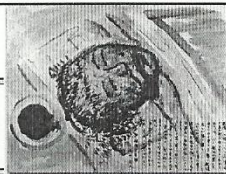
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Diverticular Bleeding



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Approach to patient with GI bleeding



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Hemorrhoids



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Resuscitation & stabilization

- Assess hemodynamic status
- Focused history and examination
- Obtain important laboratory tests, including cross matching blood
- Restoration of intravascular volume
- Correct coagulopathy
- Protect airway

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Approach to patient with GI bleeding:

- Resuscitation & stabilization.
- History/physical examination/investigations.
- Consult Gastroenterologist (? Surgeon)
- Diagnose /treat underlying cause
- Prevent recurrence.

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Restoration of intravascular volume (urgent)

- IV access:
 - 2 large-bore intravenous-access catheters (e.g., 16 to 18 gauge)
 - or central venous line for massive bleeding
- Fluids: Saline or Ringer lactate solution
 - Volume (depends on the hemodynamic status)
 - But be careful in elderly and patients with congestive heart failure)
- Blood transfusion: in patient with severe bleeding or low hematocrit



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Assess hemodynamic status

- The best tool for assessment of severity → hemodynamic status (Heart rate and blood pressure)

If baseline blood pressure (BP) and pulse within normal limits

→ check for **orthostatic hemodynamic changes**:
postural tachycardia (rise in pulse rate >15 beats/minute),
postural hypotension (drop in systolic BP >10 mm Hg) on sitting or standing from supine position

Orthostatic changes; loss of 10-20% of circulatory volume

- The hematocrit may not fall immediately, even with massive bleed

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Target of resuscitation:

1. Fall in pulse rate (improvement in tachycardia).
2. Rising BP OR CVP(5–10 cm H₂O) .
3. Adequate urine output(30 ml/h) .

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Blood transfusion



- Target hematocrit varies.
- In elderly or patient with IHD: ~ 30%
- Young can tolerate 20-25% (if no ongoing bleeding)
- Better not to exceed 27% in cases of portal hypertension
- Correction of coagulopathy: (Fresh frozen plasma and platelets transfusion)
 - Patient with abnormal coagulation or
 - those who require transfusion of more than 10 units of packed RBCs.

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Critical Care Admission

- Hemodynamic instability
- Massive bleeding
- Why?:
(For resuscitation and close observation with automated blood pressure monitoring, ECG monitoring, and pulse-oximetry).

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Constant monitoring or frequent assessment of vital signs is essential

- Adequate resuscitation is essential prior to endoscopy.
- The vigor of resuscitation is proportional to the severity of bleeding.
- Monitor v/s ,ECG,O₂ ,urine output.
- O₂& intubation (in some patients)
- ICU(if needed).
- Transfusion(if indicated).

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Other measures

- Naso-gastric tube
- Pro-motility drugs (e.g erythromycin....)
- Sengstaken tube (variceal bleed; rarely needed I)

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Intubation (when?)

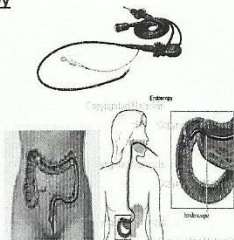
- Severe uncontrolled **variceal** bleeding
- Change in level of consciousness, severe encephalopathy
- Inability to maintain oxygen saturation above 90%
- Aspiration

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Diagnosis of GI bleeding

- Endoscopy (upper GI endoscopy, colonoscopy etc)

- Angiography
- RBC scan
- Capsule endoscopy
- Barium studies
- Surgery



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After resuscitation

- Detailed history
- Physical examination
- Check results of laboratory tests
- Consult gastroenterologist
- Start specific medication according to the case.
- Endoscopy

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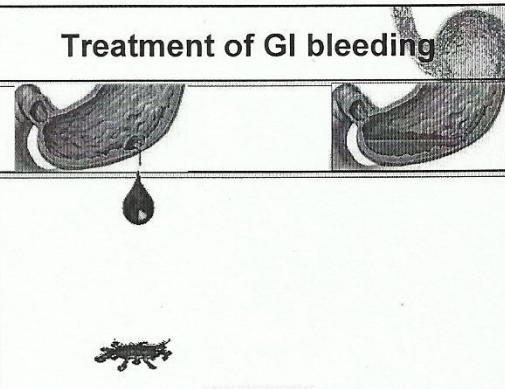
Treatment of GI bleeding

Remember: This is after adequate resuscitation and stabilization).

- Goal to stop bleeding and prevent rebleeding.
 1. Pharmacologic.
 2. Endoscopic (most important next step)
 3. Angiographic.
 4. Surgical.

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Treatment of GI bleeding



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Effect of acid suppression

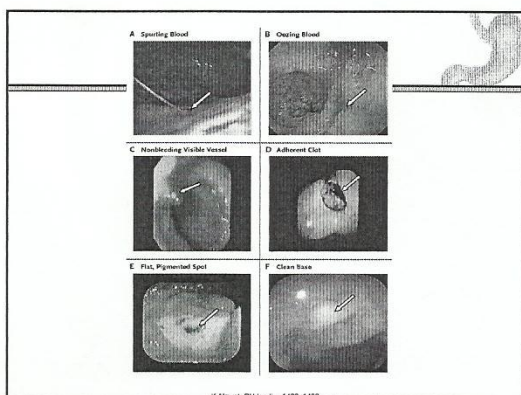
- Impair the effect of acidity:
- Acid is associated with
 - Decreased platelet aggregation, and platelet disaggregation (in vivo, and animal models) – ideal pH approximately 6.5.
 - Increased clot lysis due to pepsin activation by acid (in vitro)

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Pharmacologic

- Acid suppression therapy (usually IV): Proton pump inhibitors (e.g. omeprazole, pantazole, etc)
H2 blockers are less potent.
- For suspected varices (e.g. known patient with cirrhosis) start octreotide or terlipressin
- Antibiotics; any cirrhotic patient with GI bleeding
- For lower GI bleeding: no specific pharmacologic therapy unless upper GI cause is suspected

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Endoscopic Therapy

- Thermal
 - Bipolar probe
 - Monopolar probe
 - Argon plasma coagulator
 - Heater probe
- Injection
 - Epinephrine
 - Alcohol
 - Ethanolamine
 - Polidocanol
- Mechanical
 - Hemoclips
 - Band ligation

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Argon plasma coagulation (APC)

APC for treatment of colonic polyps. Endoscopic views of an adenomatous polypoid lesion being treated with the argon plasma coagulator (APC). The top panel illustrates the approach and the APC catheter tip. The bottom panel demonstrates the ability of APC to treat lesions regardless of their location. It is important to use the APC catheter prior to making any incision to prevent damage to the mucosa. Courtesy of Jonathan Cohen, MD.

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Endoscopic injection therapy

12123 80
10/16/2002
15:02:38
IMAGE MANAGER

12123 80
10/16/2002
15:02:38
IMAGE MANAGER

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Angiographic therapy

- Rarely required
- Severe, persistent bleeding when endoscopic therapy is unsuccessful or unavailable and surgery is too risky

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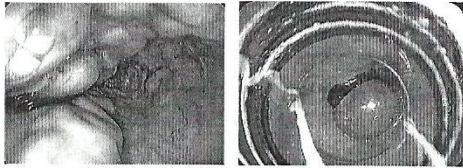
Clipping a visible vessel / oozes

IMAGE MANAGER

IMAGE MANAGER

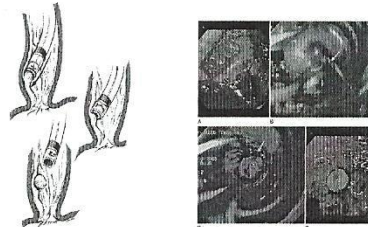
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Variceal Band Ligation



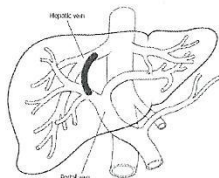
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Variceal Band Ligation



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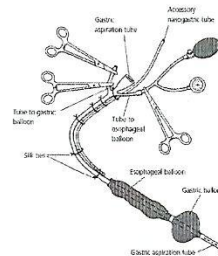
The transjugular intrahepatic portosystemic shunt (TIPS)



TIPS: metal expandable stent that is placed angiographically between branches of the hepatic and portal veins to create a nonsurgical shunt between the portal and systemic venous systems.

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Modified Sengstaken-Blakemore tube



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Long-term management of GI bleeding

- Treat underlying cause.
- Avoid risk factors (e.g. NSAIDs) or use with prophylaxis (proton pump inhibitor)
- Treat H. pylori
- For varices: repeat endoscopy for eradication, use B blockers, TIPS and transplant in some patients
- For lower GI bleeding: treat the underlying cause.

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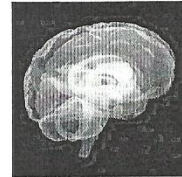
Surgery

- Need for surgery is steadily declining, probably as a result of the widespread use of acid-decreasing agents.
- For patient with bleeding difficult to control by endoscopy or recurrent bleeding

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Important to remember

- Definitions, Causes
- Risk stratification
- Approach
 1. Stabilization and resuscitation
 2. History/Examination
 3. Important lab
 4. Treatment (pharmacologic, endoscopic, angiographic, surgical)
 5. Prevent recurrence



K Ahlert, "Ultrasound 1457", 1493