

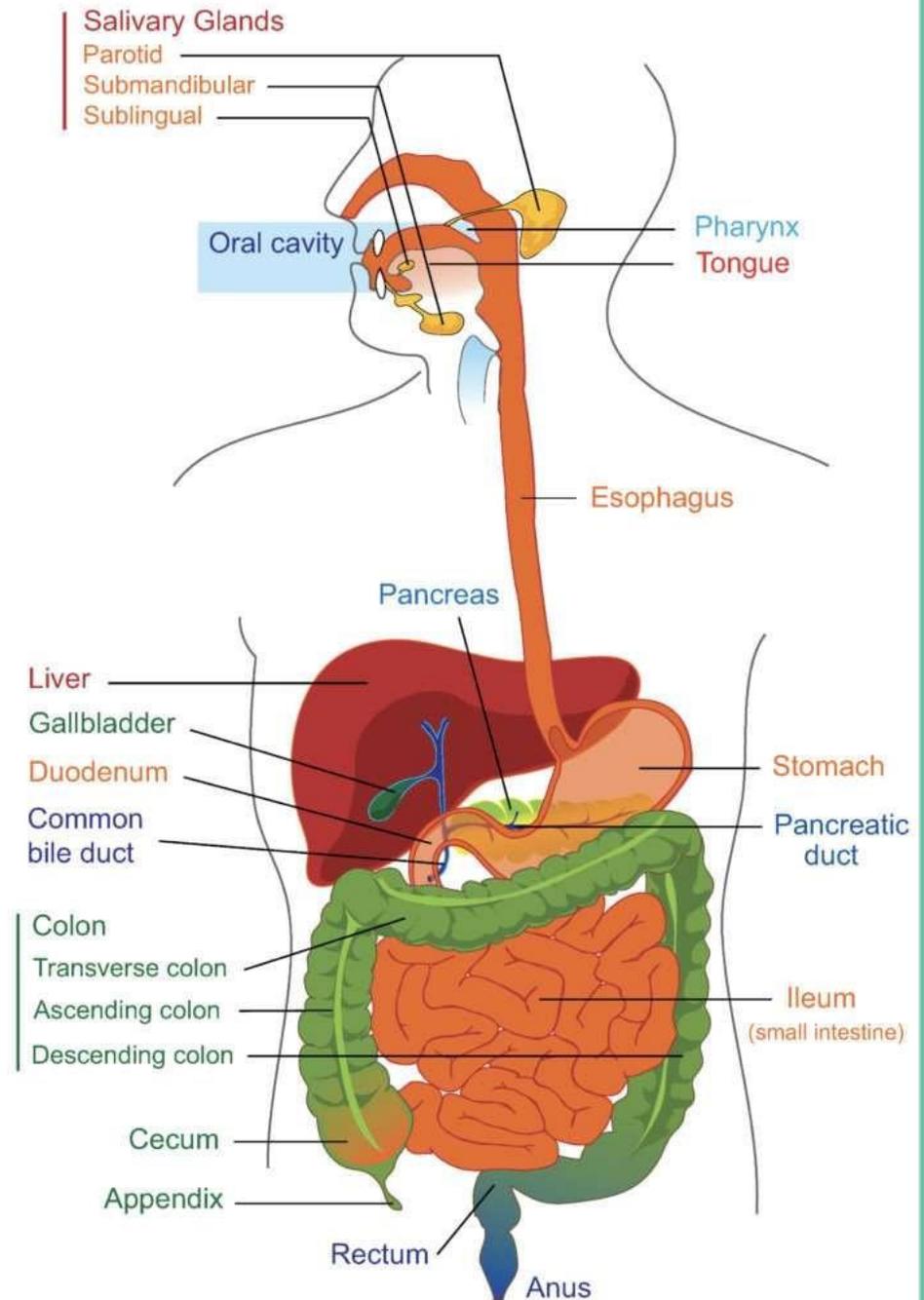
Upper Gastrointestinal Bleeding

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Outlines

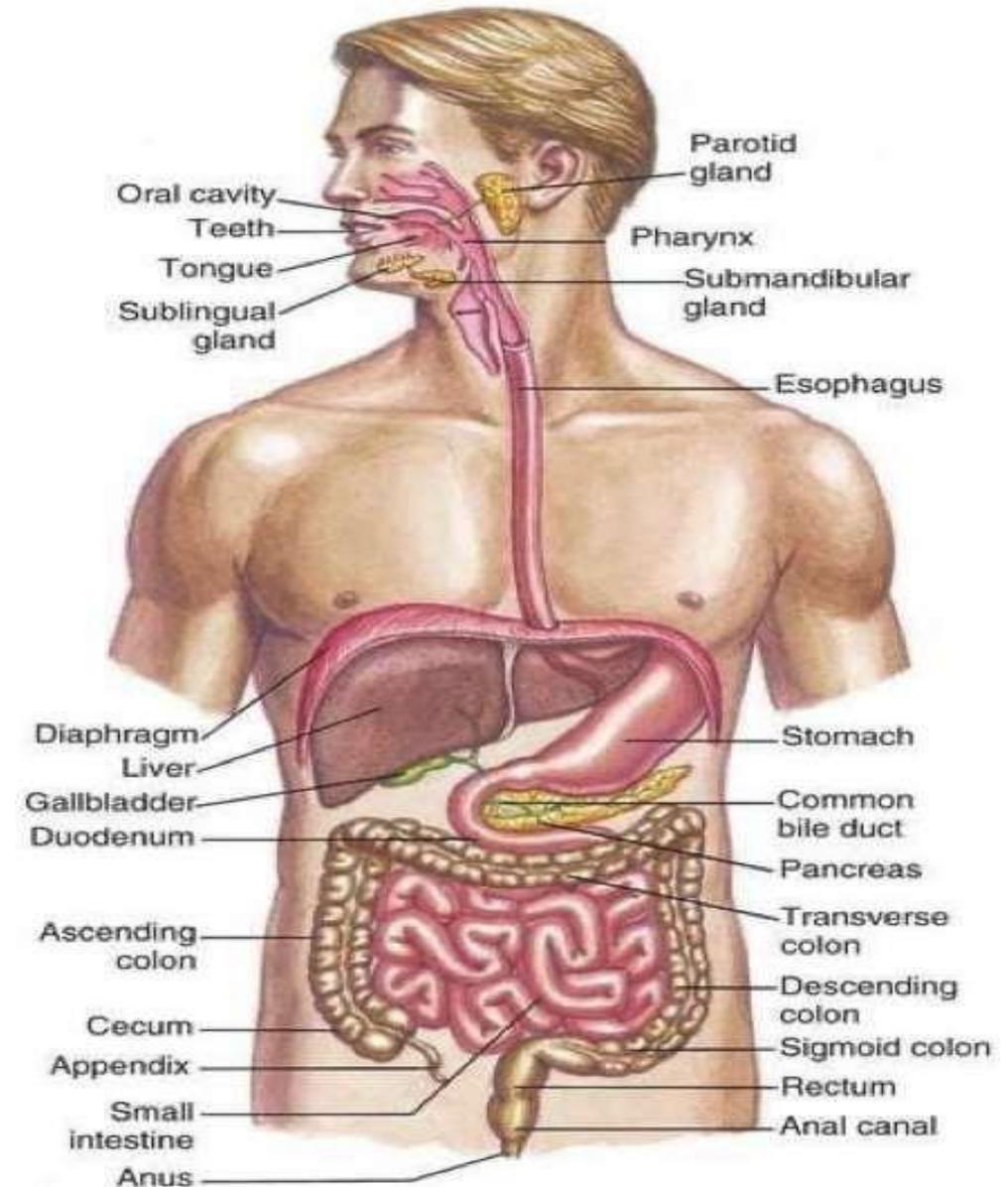
- 1 Anatomy of GI system**
- 2 What is upper gastrointestinal system**
- 3 Causes of Upper gastrointestinal bleeding**
- 4 History and Physical Examination in UGIB**
- 5 Management of upper gastrointestinal bleeding**

Recap: Anatomy of GIS



Anatomy of GI

- Extends from the mouth to the anus and comprises several organs with distinct functions.
- Separating the organs are independently controlled thickened sphincters that assist in the gut compartmentalization.
- Gut wall: is organized into well-defined layers that contribute to the functional activities in each region.

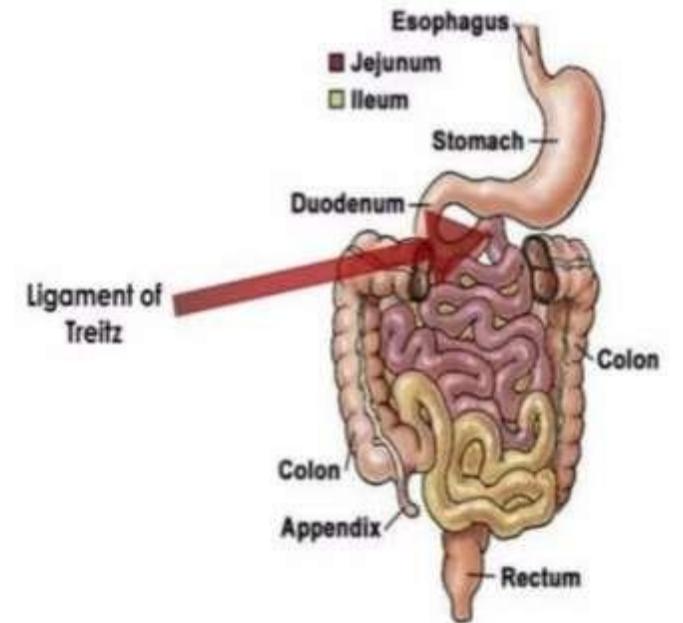


Landmark for GI tract

- One of the most important cut – off for upper and lower GI tract is ligament of Treitz.
- It is located in the 4th portion of the duodenum (the last 2 inches)
- It connects the fourth portion of the duodenum to the diaphragm near the splenic flexure of the colon .

Upper vs. Lower GI bleed

- UGIB = proximal to ligament of Treitz
- LGIB = distal to ligament of Treitz



What is Upper gastrointestinal bleeding(UGIB)?



UGIB - Definition

- Abnormal hemorrhage into the lumen of the bowel from source proximal to (above) the ligament of Treitz
- Significant morbidity and mortality so need early intervention to improve this
- The upper GI bleeding is 5 times as common as bleeding from lower GI
Upper GI bleeds can occur in the:
 - I. Esophagus
 - II. Stomach
 - III. Duodenum, the initial part of the small intestine

Acute gastrointestinal bleeding is a potentially life-threatening abdominal emergency that remains a common cause of hospitalization

UGIB-classification

- The most common causes of the upper gastrointestinal bleeding :
- **Non-variceal**: Any previous history of PUD, NSAIDs, anticoagulants, dyspeptic symptoms.
- **Variceal Bleeding**: Bleeding related to Portal hypertension
- Variceal: Look for evidence of chronic liver disease such as jaundice, spider naevi, ascites and so on.

UGIB Anatomical Classifications

1. Esophagus causes

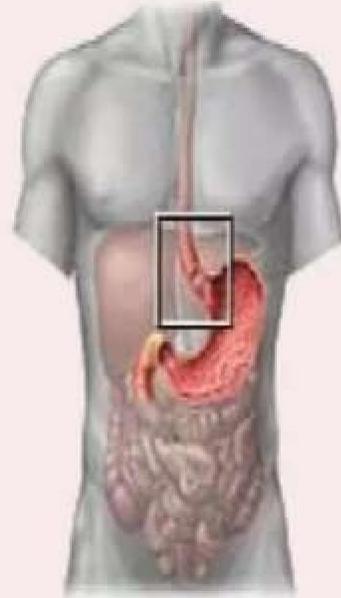
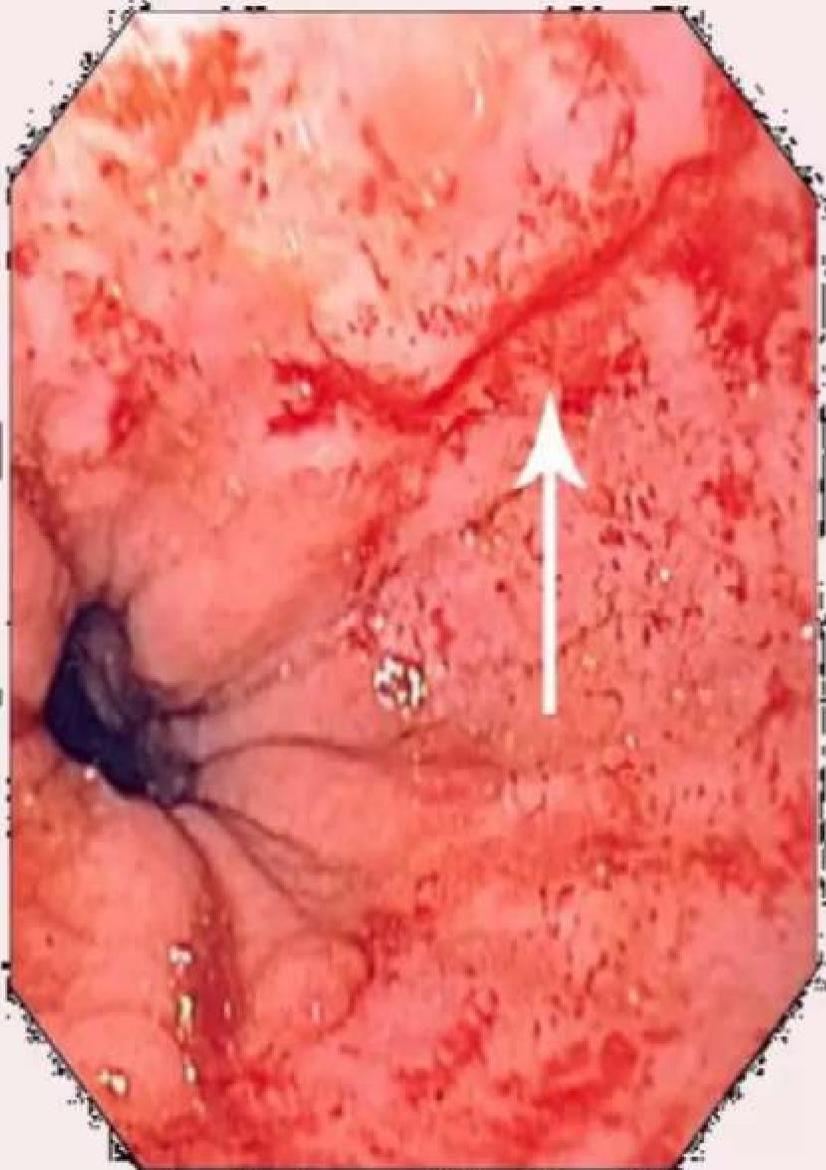
- Esophageal varices
- Esophageal cancer
- Esophageal ulcer
- Esophagitis Mallory– Weiss tear

2. Stomach causes

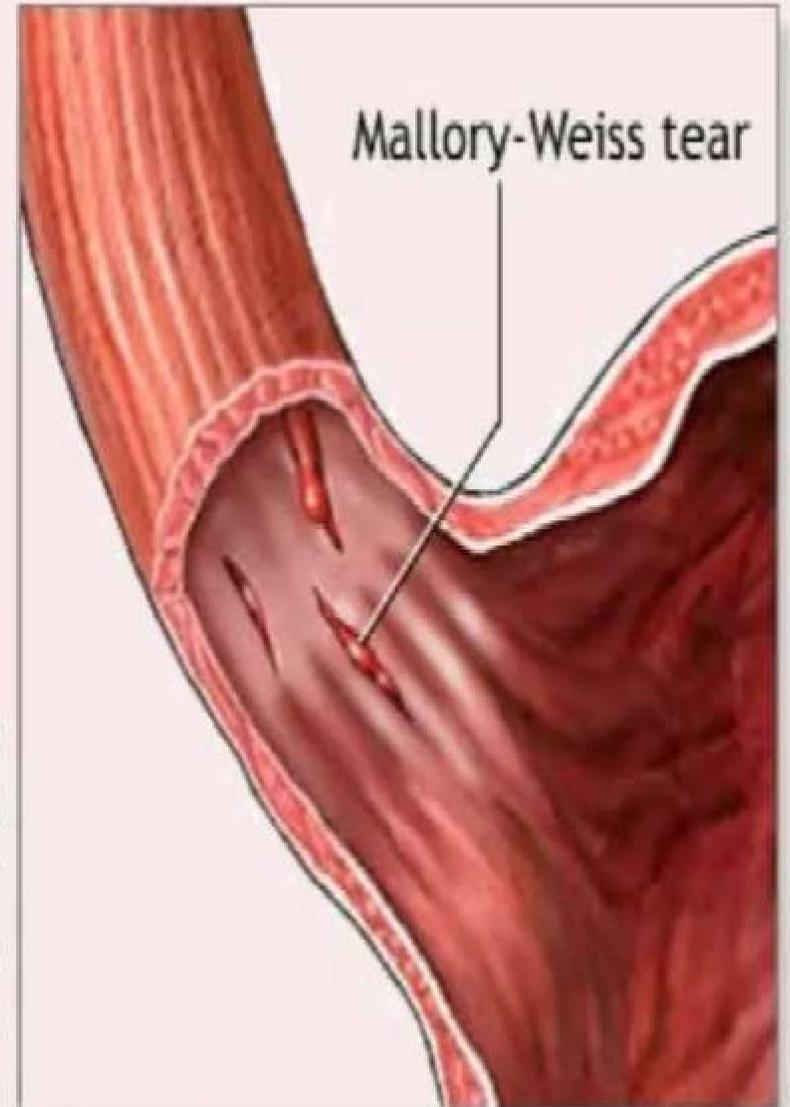
- Gastric ulcer
- Gastric cancer
- Gastritis
- Dieulafoy lesion → Artery at gastric fundus may bleed heavily
- Gastric varices

3. Duodenum causes

- Duodenal ulcer
- Aorto-enteric fistula (vascular malformation)
- Severe superior mesenteric artery syndrome

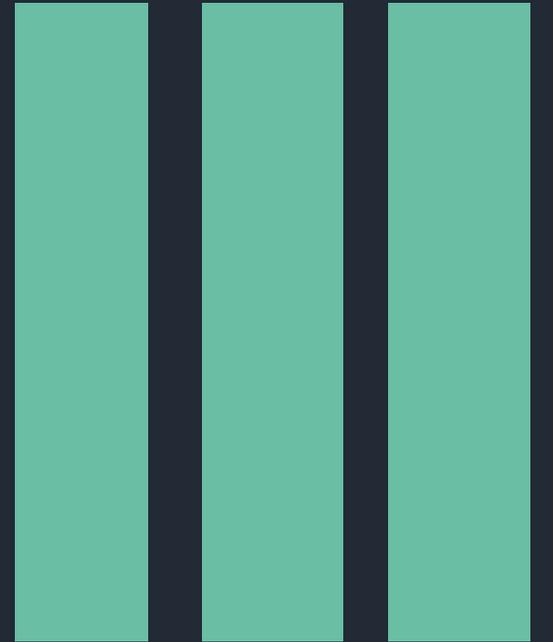


A Mallory-Weiss tear is a tear in the mucosal layer at the junction of the esophagus and stomach



Epidemiology

- ❖ **More** in male than female
- ❖ The incidence **increases** with age
- ❖ Using **NSAIDS** increase the risk of bleeding
- ❖ The most cause is peptic ulcer **DU>GU**
- ❖ Acute UGIB is **most common** GI in emergency



Acute UGIB vs Chronic UGIB?

- Acute bleeds are sudden and severe, while chronic bleeding lasts for a longer period and is typically less obvious.
- Both can cause serious health complications if a person does not receive treatment.

UGIB Risk factors

Acute illness:

- Shock
- Respiratory failure
- Head trauma
- Thermal injury (burns)

Chronic Conditions:

- Renal dysfunction
- Liver diseases
- Coagulopathy
- Helicobacter pylori

Drugs:

- Anticoagulants
- Antiplatelet agents
- NSAIDs
- SSRIs
- Alcohol
- Cigarettes

Devices:

- Mechanical ventilation
- Renal –replacement therapy
- Extracorporeal life support

Risk factors for death following UGIB

Age > 60

Shock

>5 units of PRBC [Packed red blood cell]

Concomitant health problems

Causes of Upper gastrointestinal bleeding

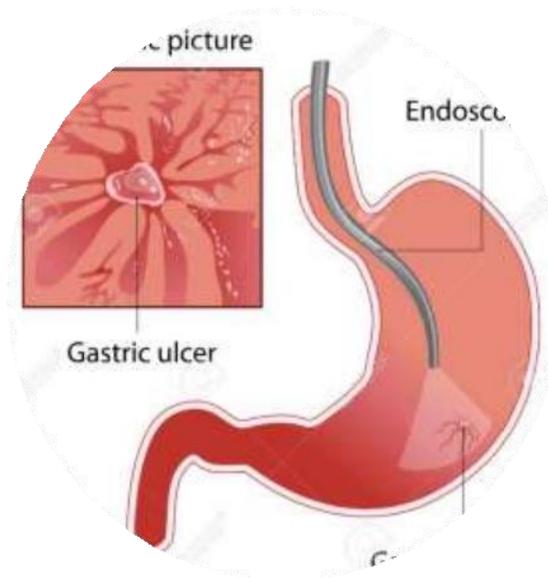
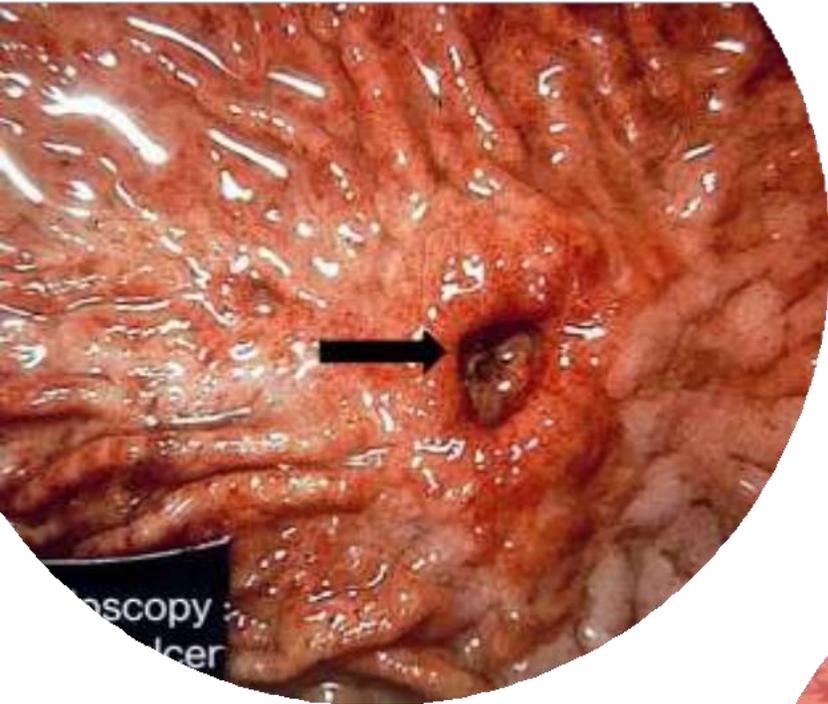
Causes of UGIB

Most common causes of UGIB

- PU bleeding
- Acute erosive gastritis
- Esophageal varices rupturing
- Mallory-Weiss tear
- Esophagitis

Others causes

- Dieulafoy disease
- GI tumors
- Aortioenteric fistula



Causes of UGIB

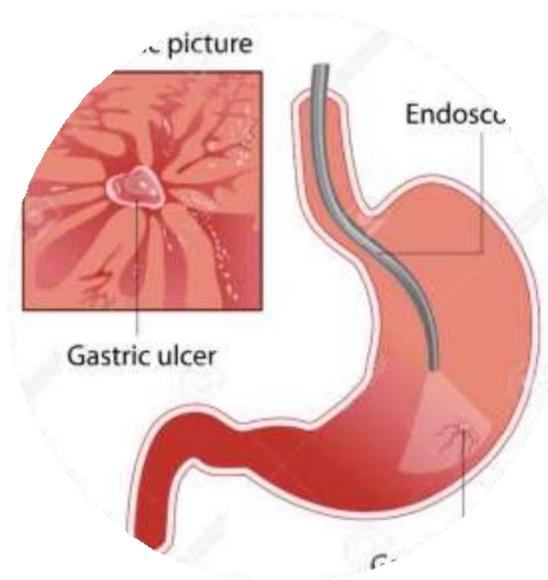
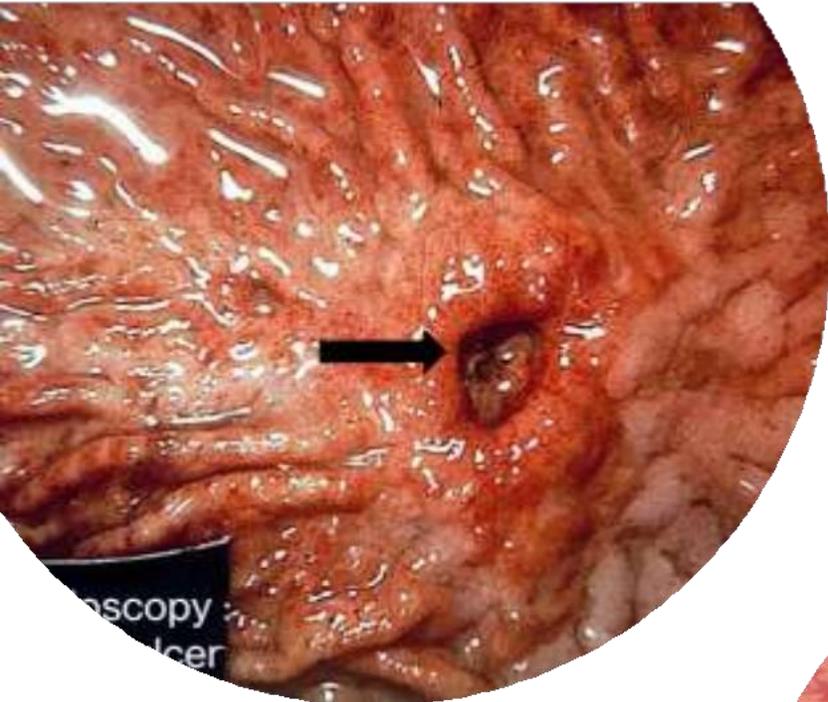
1- PU bleeding

Most common cause of UGIB with DU being more common than GU to cause large bleeding

It can only be diagnosed after endoscopic exploration or sometimes angiography, a previous history of PU bleeding, H. Pylori infection, NSAIDs and aspirin use, and abdominal pain related to food intake all favor PU as the cause of the bleeding

Medical treatment:

Proton pump inhibitor



Causes of UGIB

1- PU bleeding

Endoscopic therapy (hemostasis):

Injection therapy: Adrenaline (1/10,000) or sclerosant injection.

Heat probes.

Bipolar diathermy.

Laser photocoagulation: using the Nd-YAG laser.

Metallic clips application

Angiographic therapy:

Angiographic Embolization.

Surgical treatment; indications:

Continued bleeding.

Recurrence of bleeding after endoscopic therapy.

Patient > 60 yr. who need > 6 units of blood for stabilization.

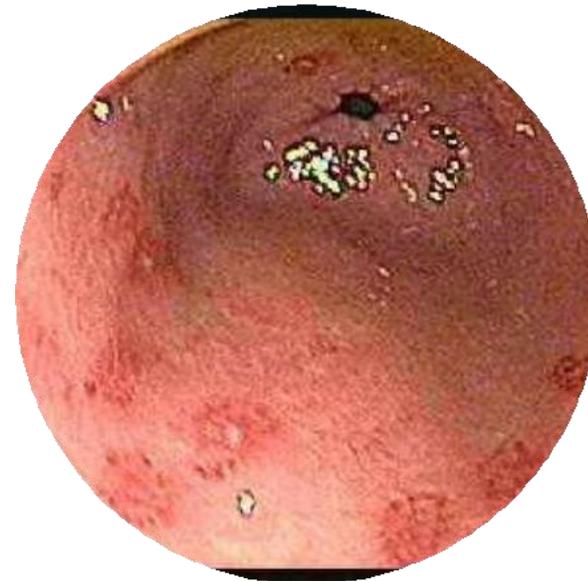
Causes of UGIB

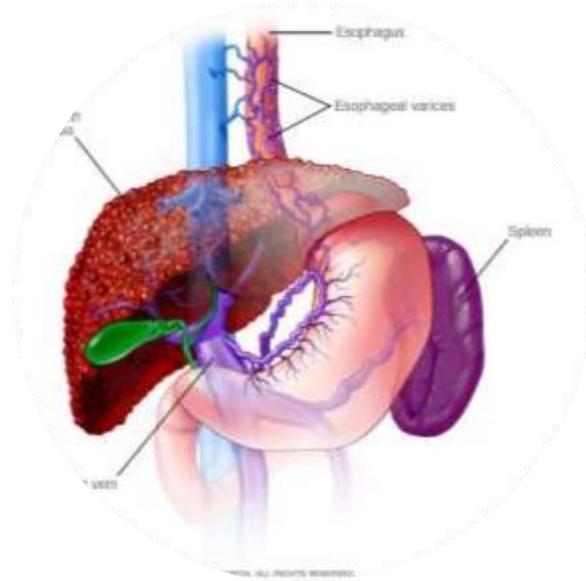
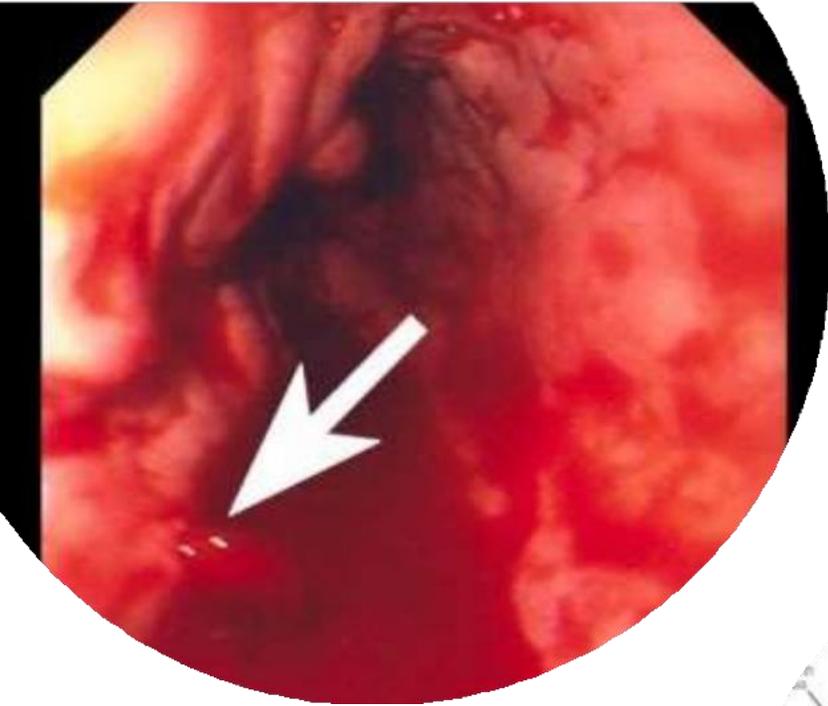
2- Acute erosive gastritis

Although acute gastritis is usually erosive and hemorrhagic, it does not usually erode into a major vessels, but when it does, the bleeding would become problematic to treat .

Common cause is NSAID intake

It's preferred to treat it through endoscopy, although sometimes, surgery is needed





Causes of UGIB

3- Ruptured esophageal varices

Bleeding is often profuse, life threatening and challenging to manage

A history of liver cirrhosis or portal hypertension may indicate ruptured varices

Sclerotherapy, banding and balloon tamponade are usually effective treating modalities for esophageal varices while gastric varices are difficult to treat

Causes of UGIB

4- Mallory-Weiss tear

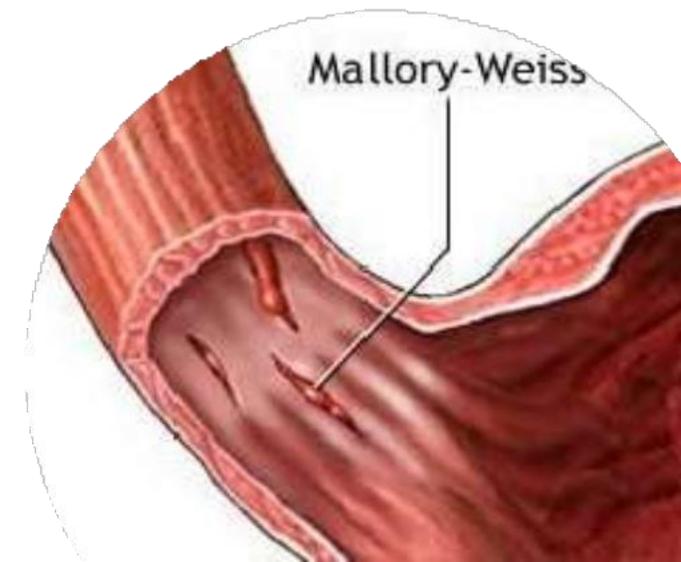
History of the following is almost always present:

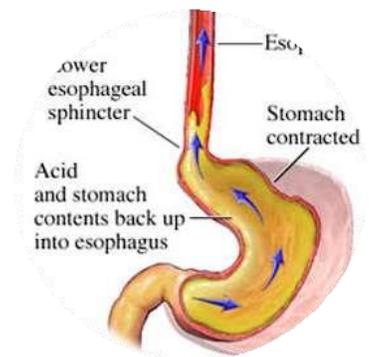
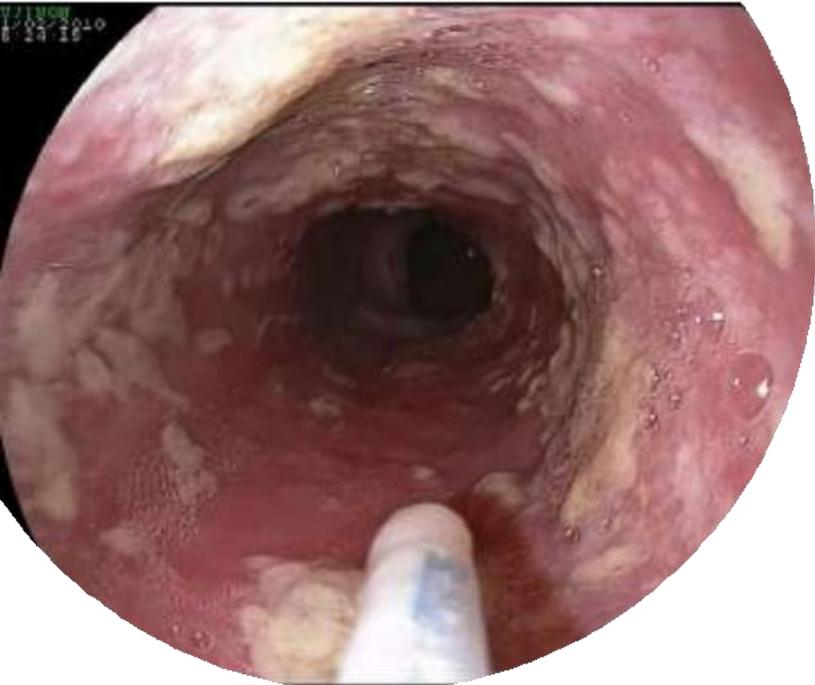
- Alcoholism

- Repetitive retching

- Strenuous vomiting

These tears may be missed during endoscopy due to their location being just below the gastro-esophageal junction



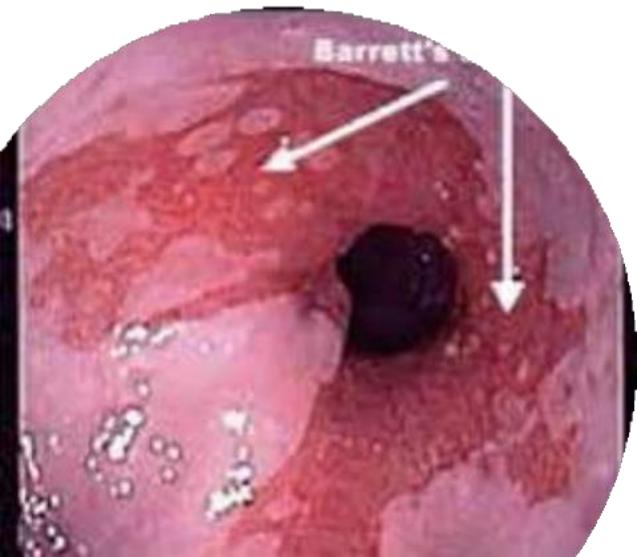


Causes of UGIB

5- Esophagitis

Bleeding from the esophagus may be a complication of esophagitis due to any cause but more commonly in reflux esophagitis

A history of GERD (reflux esophagitis), drugs (e.g.: Bisphosphonates) or chemical intake (as in erosive esophagitis) may help us to identify that the cause of bleeding may be esophagitis



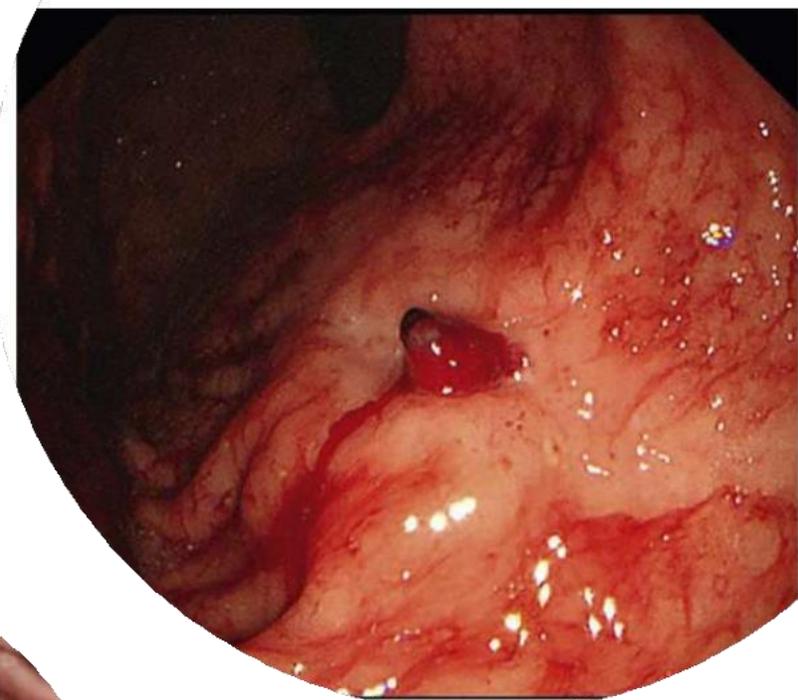
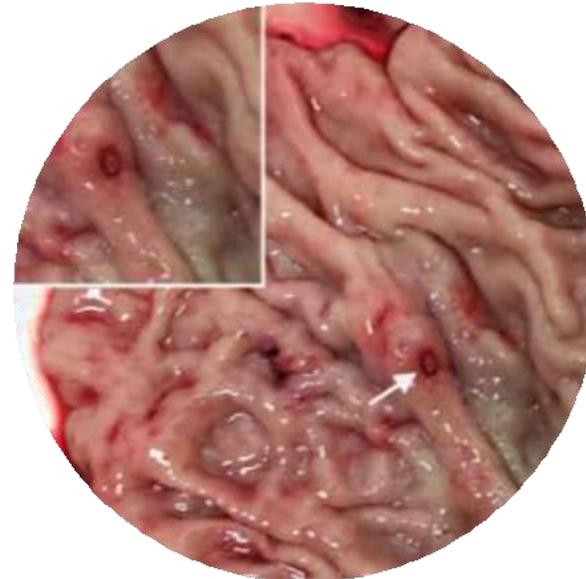
Causes of UGIB

6- Dieulafoy disease

A gastric arteriovenous malformation that causes a bleeding that's considered one of the **hardest** to treat

The lesion is covered by abnormal mucosa, effectively making it invisible when not bleeding

If it was identified endoscopically, sclerosant injection or clips can be preformed. While in an operation a local excision is usually enough



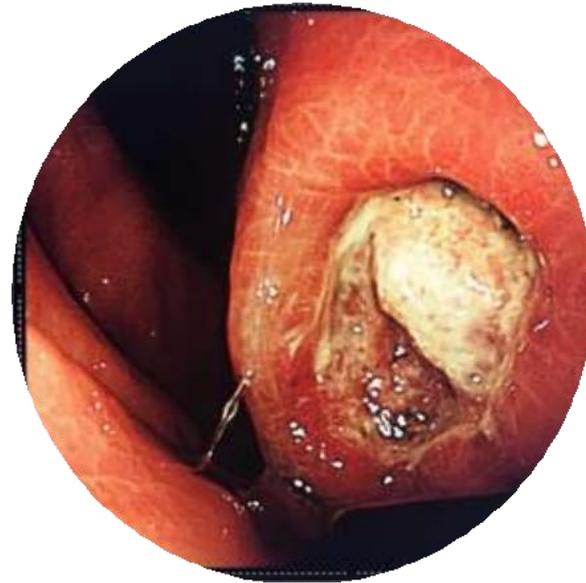
Causes of UGIB

7- GI tumors

Nearly all GI tumors have the ability to induce bleeding, especially stromal tumors

The bleeding is not usually profuse but can be unyielding.

Weight loss and anemia may favor such diagnosis



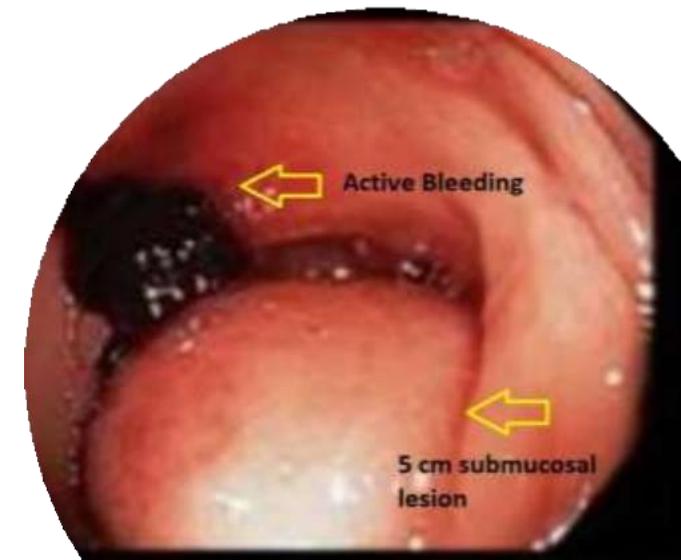
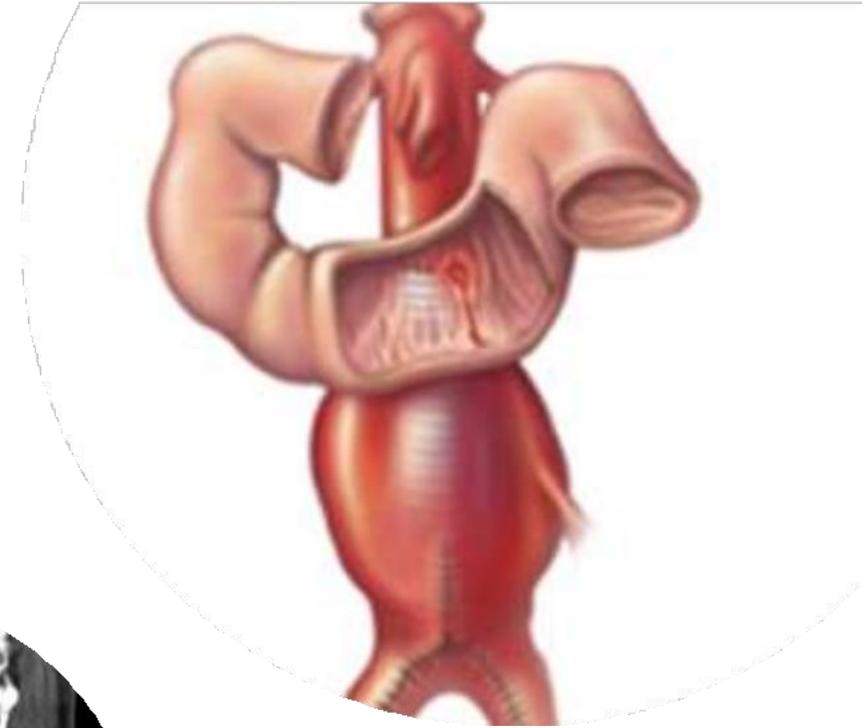
Causes of UGIB

8- Aortioenteric fistula

This diagnosis should only be considered if there's no other explanation for the bleeding

Almost all patients will have had an aortic graft.

A well-performed CT scan will commonly detect the malformation with certainty



Basic investigations & Lab tests

Collect blood sample

- **Full blood count.** • Anemia ! Chronic or subacute bleeding • Hb concentration may be normal after sudden, major bleeding until hemodilution occurs. (poor indicator of the need to transfuse) • Thrombocytopenia ! hypersplenism in chronic liver disease
- **Urea and electrolytes (renal failure).** • The blood urea rises as the absorbed products of luminal blood are metabolized by the liver; an **elevated blood urea with normal creatinine** concentration implies **severe bleeding**
- blood absorption to the liver leads to break down → elevated blood urea nitrogen
- **Liver function tests (chronic liver disease.)** • Including PT, PTT, INR and serum albumin concentration.
- **Cross-matching.** At least 2 units of blood should be cross-matched if a significant bleed is suspected
- **Guaiac positive stool (looks for occult blood in a stool sample)**
- **Nasogastric tube placement**

History and Physical Examination in UGIB

History

- ❖ HOPI : e.g.: Epigastric pain , retching – Repeated violent vomits after a large meal or alcohol followed by a bright red hematemesis (Mallory Weiss tear), odynophagia (Esophageal Ulcers)
 - ❖ PMSHx: PUD , H. pylori , DM , CAD, CLD, CKD, previous UGIB , prior surgery or endoscopic interventions and radiation therapy.
 - ❖ DHx: Aspirin , clopidogrel , Anti-coagulant , steroids , NSAIDs
 - ❖ SHx: Smoking and alcoholism
 - ❖ A story of alcoholism or previous viral hepatitis may suggest cirrhosis , and an alcoholic binge may have precipitated an acute gastric erosion or gastritis .
- ***N.B : Diagnosis of UGIB is made via history , examination , and special investigations.***

Physical Examination

- This is usually negative apart from the clinical features that enable assessment of blood loss. It is important to note the following:
 - purpura, suggesting a bleeding tendency;
 - features of cirrhosis (enlargement of the liver and spleen, the presence of spider naevi, jaundice and liver palms) suggesting esophageal varices;
 - circumoral telangiectasia suggesting hereditary hemorrhagic telangiectasia.

❖ In General Examination : Look for evidences of hypovolemia or hypovolemic shock.

❖ Abdominal Exam

❖ Rectal Exam

Hemorrhagic telangiectasia →



Purpura →



Management of upper gastrointestinal bleeding

Management of UGIB

Classification

- The management is divided into 2 types depending on the presentation of the patient :
 - Management of **acute** UGIB
 - Management of **chronic** UGIB

Management criteria :

- Initial clinical assessment & Risk evaluation
- IV Line
- Investigations (Discussed before)
- IV fluids
- NPO for 24 hr's
- Blood transfusion
- Medications and arrange for Endoscopy **to determine the etiology / location of bleeding and treatment.**

N.B. : Nasogastric tube should not be used If upper GI bleed is suspected: Melena or hematemesis.

Acute bleeding management

□ Initial clinical assessment

- Define circulatory status: severe bleeding cause tachycardia , hypotension and oliguria. The patient is cold and sweating and may be agitated
- Seek evidence of liver disease (stigmata of liver disease) : jaundice , cutaneous stigmata , hepatosplenomegaly and ascites
- Identify comorbidities: the presence of cardiorespiratory, renal, cerebrovascular disease is important as these diseases may be worsened by acute bleeding and because they increase the hazards of endoscopy and surgical operations

Acute bleeding management

❑ Risk Evaluation

Complete Rockall score

- Clinical Rockall score (patient's age, shock & coexisting illnesses) + Endoscopic findings
- Assessing the risk of death and re-bleeding in patients with UGI hemorrhage
- A score less than 3 carries good prognosis but total score more than 8 carries high risk of mortality

8.20 Prediction of the risk of mortality in patients with upper gastrointestinal bleeding: Rockall score	
Criterion	Score
Age	
<60 years	0
60–79 years	1
>80 years	2
Shock	
None	0
Pulse >100 bpm and systolic blood pressure (BP) >100 mmHg	1
Systolic BP <100 mmHg	2
Comorbidity	
None	0
Heart failure, ischaemic heart disease or other major illness	2
Renal failure or disseminated malignancy	3
Endoscopic findings	
Mallory–Weiss tear and no visible bleeding	0
All other diagnoses	1
Upper gastrointestinal malignancy	2
Major stigmata of recent haemorrhage	
None	0
Visible bleeding vessel/adherent clot	2
Total score	
Pre-endoscopy (maximum score = 7)	Score 4 = 25% mortality pre-endoscopy
Postendoscopy (maximum score = 11)	Score 8+ = 40% mortality postendoscopy

Acute bleeding management

❑ Intravenous access

- ✓ The first step is to gain IV access using at least one LARGE BORE cannula (preferably two)
- ✓ If there is venous collapse due to hypotension caused by hypovolemia – then central venous access is indicated in IJV/EJV



Acute bleeding management

❑ Resuscitations and monitoring (IV fluids) :

- Oxygenation
- Measure BP and HR & repeat measurement hourly.
- Admission (if SBP < 100 or HR >100 ! ICU admission).
- Insert Foley's catheter and monitor the urine output hourly.
- IV crystalloid fluids , bolus of 500 ml in less than 15 mins (0.9% normal saline (NS) /lactated Ringer (LR)) should be given to raise the BP and blood should be transfused when the patient is actively bleeding with low blood pressure and tachycardia
- Patient with cardiac disease and/or severe bleeding ! central venous pressure (Invasive BP) monitoring to assist in defining the volume of fluid replacement and identify re-bleeding

✓ **Water lavage using warm H2O will remove clots .**

❑ Medication therapy

- Patient with suspected chronic liver disease ! should receive broad spectrum abx (Ceftriaxone 1g IV daily for 7 days)
- IV PPI for bleeding ulcer

Acute bleeding management

❑ Medication therapy (cont..)

❑ In case of Esophageal and gastric varices & in addition to fluids , blood , platelets , plasma

,
give :

- IV Octreotide (somatostatin analogue decrease portal pressure) / vasopressin can be given
- Banding performed by endoscopy to obliterate esophageal varices .
- ✓ **Trans jugular intrahepatic portosystemic shunting (TIPS)** is used to decrease portal pressure in those who are not controlled by octreotide and banding.

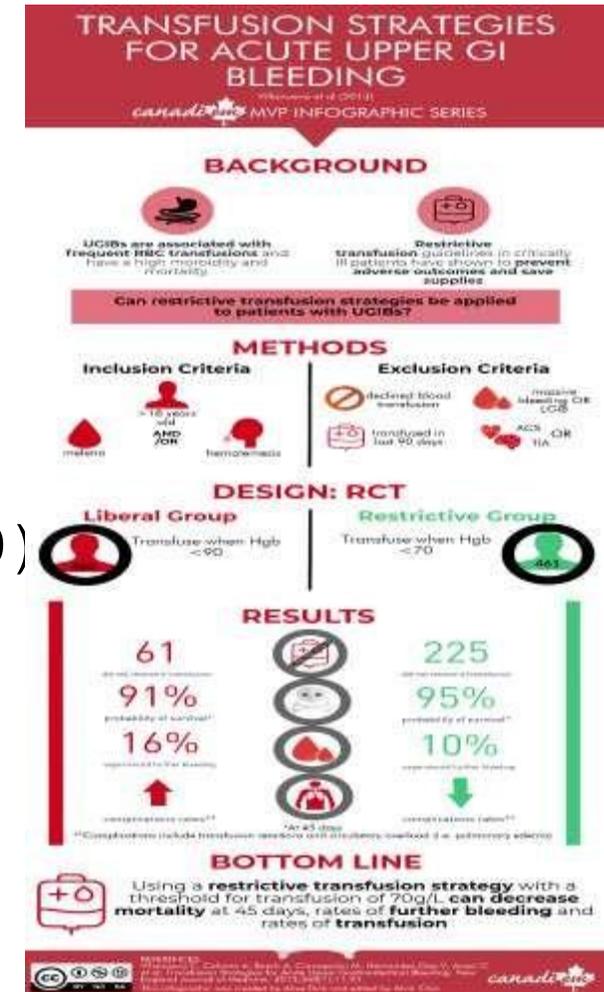
A catheter is placed into the jugular vein and guided radiographically through the liver to form a shunt between the systemic circulation in the hepatic vein and the portal circulation through the portal vein. TIPS has largely replaced the need to surgically place the shunt. The most common, long-term complication of TIPS is worsening of hepatic encephalopathy.

Acute bleeding management

❑ Blood transfusion

- If Hb (trigger : less than 7 mg/dL) ; (target : 7-10 mg/dL) . A higher trigger in case of co-morbidity

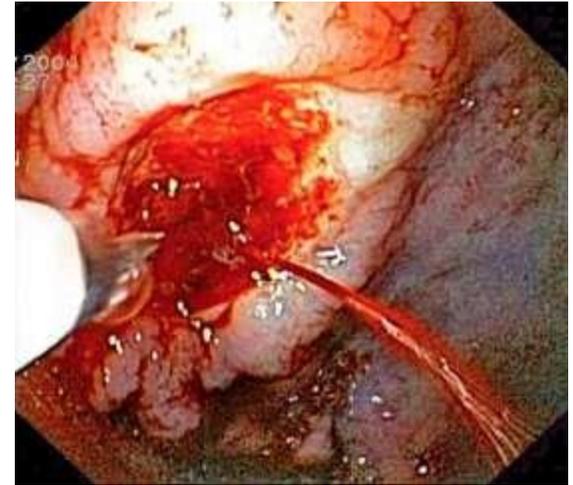
- ❖ 1 Unit PRBC increases Hgb by 1 mg/dl , and increase Hct by 3%
- ❖ FFP for INR greater than 1.5
- ❖ Platelets for platelet count less than 50.000 (Normally : 150.000 – 450.000)



Acute bleeding management

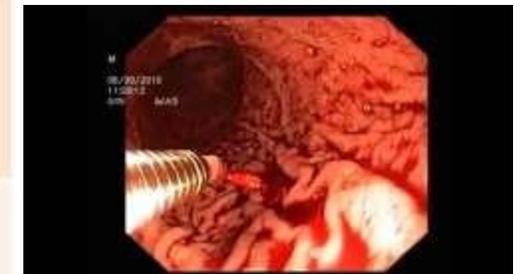
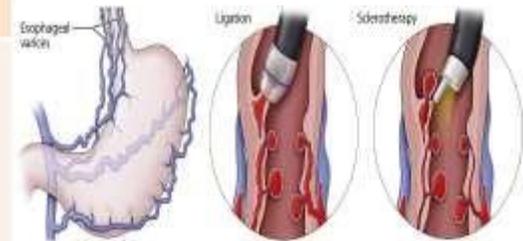
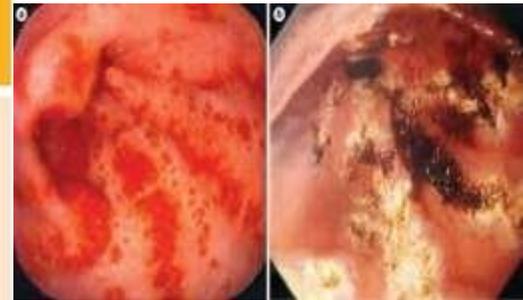
□ Endoscopy after stabilization for diagnosis and treatment

- The endoscope using for diagnosis and therapeutic if needed 'Gold Standard'
- URGENT
- More sensitive than contrast radiography
- urgent endoscopy should be performed in patients with shock, suspected varices or with continued bleeding
- Endoscopy can detect the cause of the hemorrhage in 80% or more of cases
After adequate resuscitation,
- At endoscopy, Varices should be treated, usually with banding → Or sclerotherapy



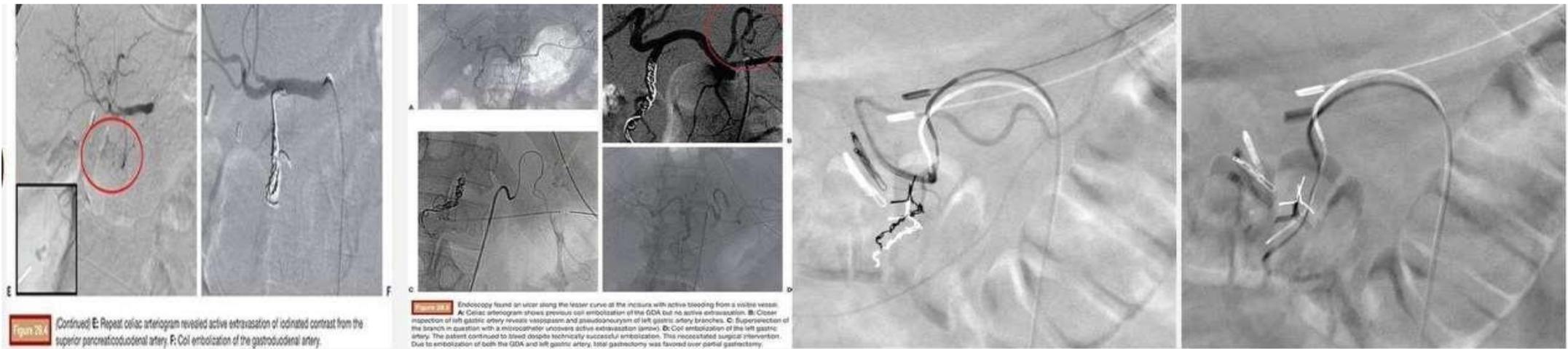
Endoscopic treatment modalities

Endoscopic treatment modalities		
Injection	<ul style="list-style-type: none"> ➤ Adrenaline (1:10000) ➤ Sclerosants (ethanolamine, ethanol, polidocanol) ➤ Pro-coagulants (thrombin, fibrin) ➤ Cyanoacrylate 	<p>-----</p> <p>Most commonly used for variceal UGIB</p>
Thermal Devices	<ul style="list-style-type: none"> ➤ Heater probes ➤ Electrocautery probes ➤ Argon plasma coagulation ➤ Lasers photocoagulation 	
Mechanical Therapy	<ul style="list-style-type: none"> ➤ Clips ➤ Band ligation 	<p>-----</p> <p>Modality of choice for variceal UGIB</p>



Meta-analyses have found that combination therapy (adrenaline + 2nd modality) is superior to adrenaline alone in treating high risk stigmata lesions (reducing risk of rebleeding, mortality and surgery).

Angiographic therapy : Embolization



Acute bleeding management

❑ Surgery

To remove the site of bleeding

➤ Percentage of patients require surgery is only 10%

• Due to advances in medications and therapeutic endoscopy techniques and angiographic therapy UGIB is now usually treated without surgery.

• Surgery is indicated if endoscopic therapy or angiographic therapy (embolization) failed.

➤ **Indications for surgery**

✓ Exsanguinating hemorrhage. A patient with uncontrollable hemorrhage who is losing blood faster than it can be replaced must be sent to the operating room immediately for control of the site of bleeding.

✓ Profuse bleeding, especially in association with hypotension. Patients should be treated surgically

✓ If more than 4 Units of blood are required for initial resuscitation. & If bleeding continues at a rate of more than 1 Unit every 8 hours.

Surgery indications (cont..)

- ✓ If a brief hypotensive episode could have catastrophic results, as in patients with coronary artery disease or cerebrovascular disease or in patients older than 60 years of age.
- ✓ **Continued hemorrhage despite resuscitation and other treatment :**
 - The rate increases dramatically with total PRBCs above 7 Units. Thus, surgery should be undertaken before the blood loss reaches that point.
- ✓ Recurrent bleeding after its initial cessation.
- ✓ **Pathologic features of the bleeding site that increase the risk of recurrent bleeding include:**
 - A posterior duodenal ulcer with the gastroduodenal artery visible in its base
& A giant gastric ulcer

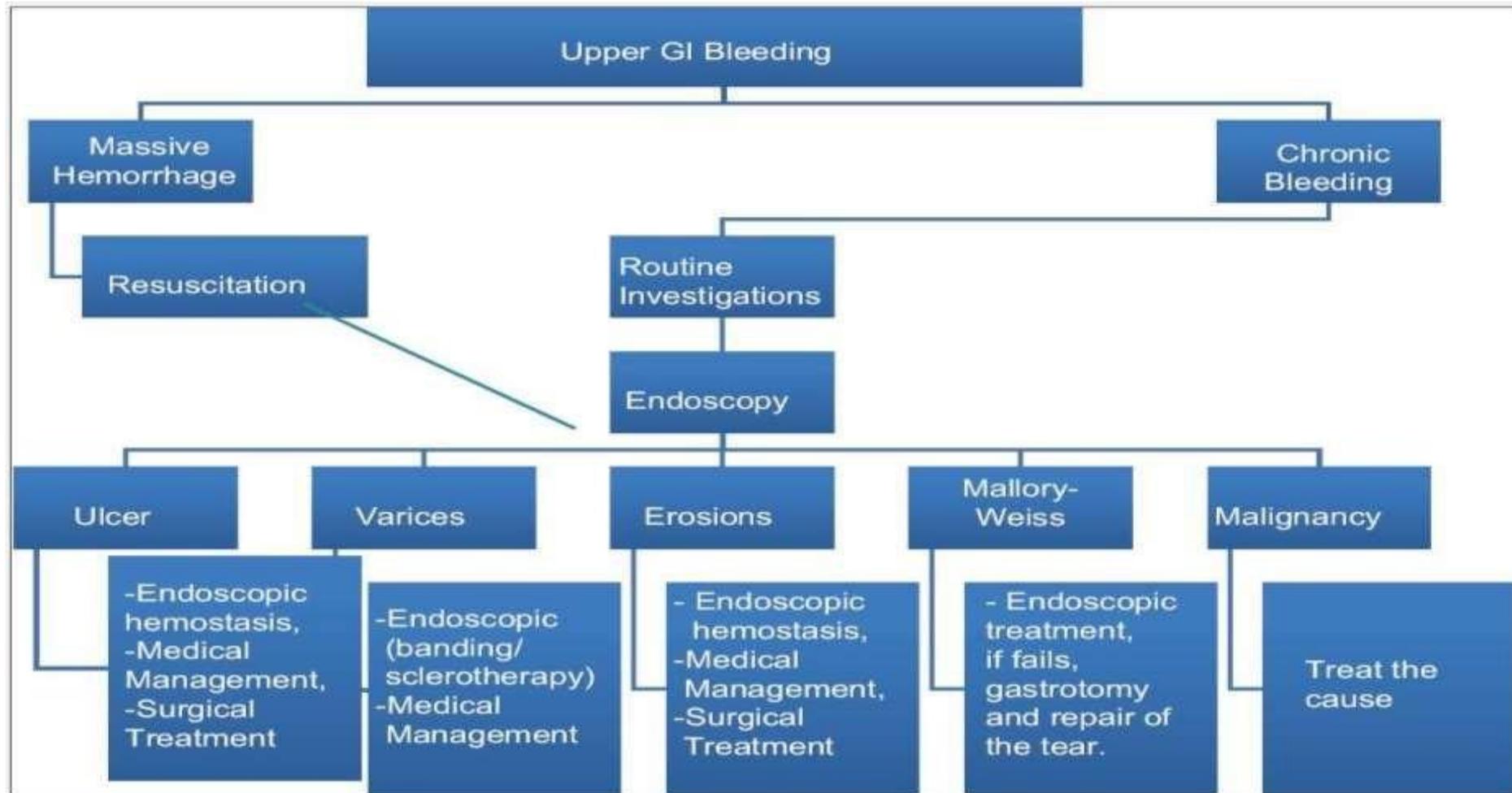
Special cases for surgical management

- **Special cases may call for modulation of usual routines of managements**
 1. **A patient with a rare or hard-to-find blood type should be operated on while blood is still available.**
 2. **A patient who refuses blood transfusion for any reason should undergo surgical exploration early.**
 3. **A patient with coagulopathy should have the disorder corrected, if possible, prior to surgical exploration.**

Chronic bleeding management

- ❖ **Chronic UGIB usually does not present as an emergency. It is usually discovered due to signs and symptoms of anemia.**
- ❖ **Management includes resuscitation and identifying the underlying cause, and hence treatment depends on the cause itself.**

Management of specific conditions





THANK YOU