GI Bleeding and Esophageal Bleeding

- Paul Wisniewski, DO
- Trauma Director
- Surgical Critical Care Fellowship Director

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Disclosures

NONE

Learning Objectives

- Understand the Pathophysiology and Causes of Gastrointestinal and Esophageal Bleeding:
- Identify the Clinical Presentation and Diagnostic Approaches:
- Outline the Treatment Strategies for GI and Esophageal Bleeding:
- Evaluate the Prognosis, Mortality Rates, and Success Rates of Treatments:

GI Bleeding

Gastrointestinal (GI) bleeding refers to any form of hemorrhage within the gastrointestinal tract, which can present as either upper or lower GI bleeding depending on the location of the bleed. Esophageal bleeding is a subset of upper GI bleeding that can be life-threatening.

GI Bleeding

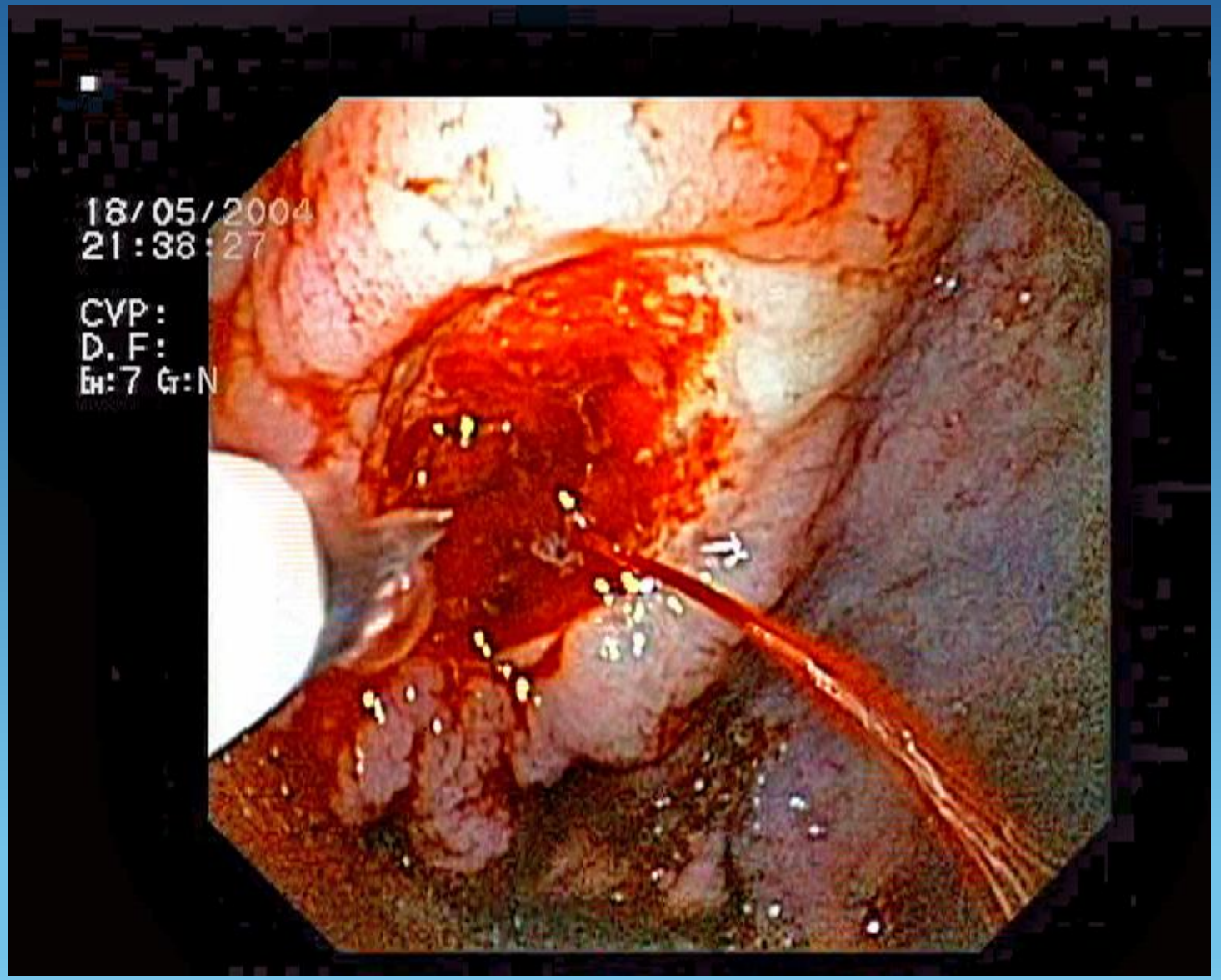
- The management of these conditions involves early diagnosis, resuscitation, and targeted therapeutic interventions to mitigate the risk of complications such as shock, anemia, and organ failure. The success rate for interventions like endoscopic treatments for esophageal variceal bleeding is **80-90%**, while mortality rates can range from **5-15%** depending on the underlying pathology.

Disease Process and Classification

GI bleeding is classified into two broad categories based on the site of bleeding:

- **Upper GI Bleeding (UGIB)**: This involves bleeding from the esophagus, stomach, or duodenum, with common causes being peptic ulcers, esophageal varices, Mallory-Weiss tears, and gastritis.
- **Lower GI Bleeding (LGIB)**: This includes bleeding from the jejunum, ileum, colon, or rectum, which may present as hematochezia or occult blood loss in the stool.
- **Esophageal bleeding:** is a type of upper GI bleeding and is typically caused by conditions such as esophageal varices, esophagitis, or trauma.

Upper GI Bleed: Bleeding Gastric Ulcer



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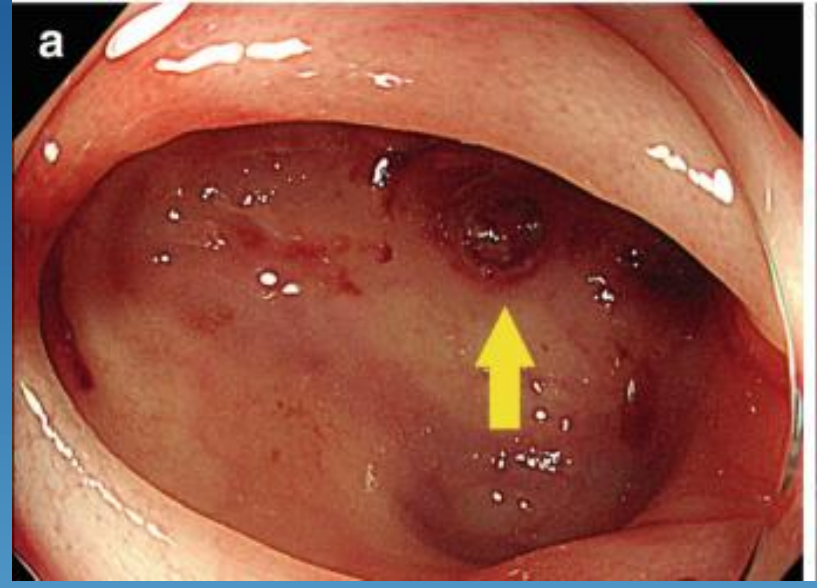
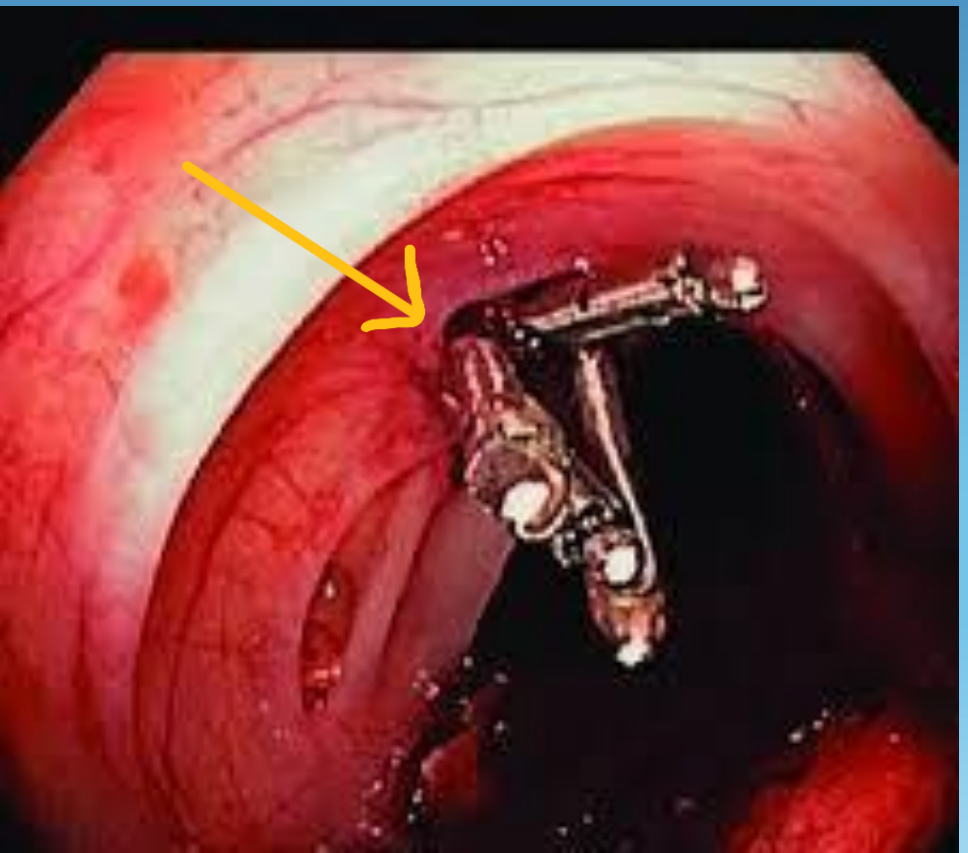
Lower GI Bleed: Bleeding Diverticulum





- Above is bleeding diverticulum
- To the left is the clips that are applied to stop the bleeding

Causes of GI and Esophageal Bleeding

GI Bleeding Causes

- **Peptic Ulcer Disease (PUD)**: Peptic ulcers in the stomach or duodenum can erode into submucosal blood vessels, causing significant bleeding. The incidence of GI bleeding from PUD has decreased, but it still accounts for **30-40%** of upper GI bleeds.
  - **Mortality Rate**: The mortality rate for patients with peptic ulcer bleeding is **5-10%**, depending on the severity of the bleeding and associated comorbidities.
  - **Treatment Success Rate**: Endoscopic therapy for bleeding ulcers, such as coagulation, clips, or injection therapy, has a **success rate of approximately 80-90%** in controlling bleeding.

GI Bleeding

Esophageal Varices: These are dilated veins in the esophagus that occur due to portal hypertension, commonly seen in cirrhotic patients. Varices are fragile and can rupture, causing massive bleeding. Esophageal varices account for **15-20%** of upper GI bleeding.

- **Mortality Rate**: The mortality rate for variceal bleeding is **10-15%** within the first 6 weeks after bleeding, particularly in patients with liver cirrhosis and advanced liver disease.
- **Treatment Success Rate**: Endoscopic variceal banding or sclerotherapy achieves successful hemostasis in **80-90%** of patients. Balloon tamponade also has a **75-80%** success rate in controlling acute variceal bleeding.

Esophogeal Balloon Occlusion

Tube in Nose need to attach to Football Helmet for Traction

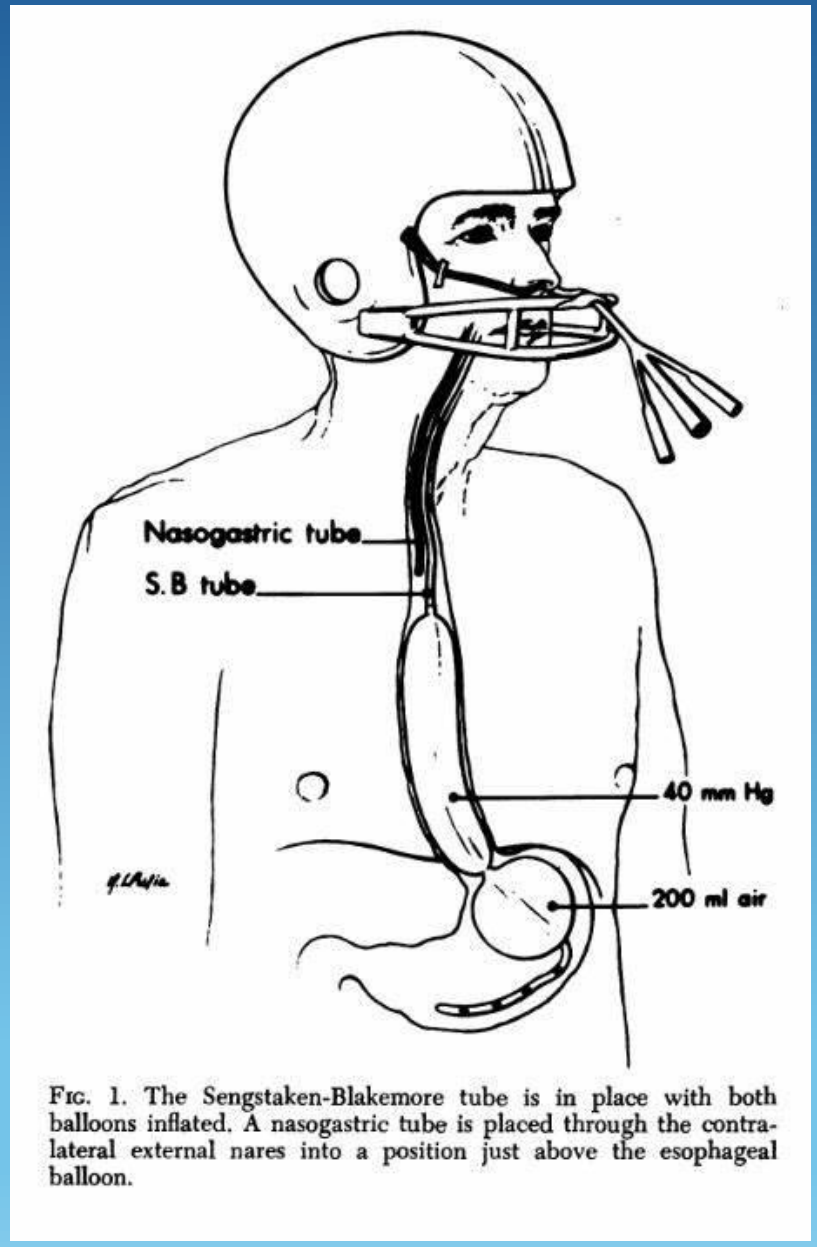


FIG. 1. The Sengstaken-Blakemore tube is in place with both balloons inflated. A nasogastric tube is placed through the contralateral external nares into a position just above the esophageal balloon.

Gastritis

Gastritis: Inflammation of the gastric mucosa due to factors like alcohol use, NSAIDs, or H. pylori infection can lead to bleeding, contributing to **15-20%** of cases of upper GI bleeding.

- **Mortality Rate**: The mortality rate for bleeding due to gastritis is **3-7%**, with a lower risk than that of variceal or ulcer bleeding.
- **Treatment Success Rate**: Proton pump inhibitors (PPIs) are effective in treating gastritis-related bleeding, with **90% success** in controlling the bleeding when treated early.

Upper GI Bleeding

Mallory-Weiss Tear: Longitudinal tears in the esophagus, typically caused by severe vomiting, can lead to mild to moderate bleeding. These are responsible for **5-10%** of upper GI bleeding.

- **Mortality Rate**: Mortality rates are relatively low, ranging from **0-2%**, as the bleeding often resolves on its own.
- **Treatment Success Rate**: The bleeding usually resolves spontaneously in **80-90%** of cases, but if required, endoscopic clipping or cauterization can have a success rate of **90%**.

Upper GI Bleeding

Arteriovenous Malformations (AVMs): AVMs, often located in the small intestine, are another cause of GI bleeding. AVMs are responsible for about **5-7%** of GI bleeding cases.

- **Mortality Rate**: AVMs contribute to a low mortality rate of around **5%**, though chronic or recurrent bleeding may lead to significant blood loss.
- **Treatment Success Rate**: Endoscopic or angiographic interventions are effective, with success rates for AVM treatment reaching **85-90%** in controlling bleeding.

Esophageal Bleeding Causes

- **Esophageal Varices**: These fragile veins in the esophagus rupture in the setting of portal hypertension, often from cirrhosis. Ruptured varices account for **40-50%** of all cases of upper GI bleeding in patients with cirrhosis.
  - **Mortality Rate**: As mentioned, mortality can range from **10-15%**, and is significantly higher in patients with decompensated cirrhosis, advanced liver disease, and other comorbidities.
  - **Treatment Success Rate**: Treatment through endoscopic banding, sclerotherapy, or balloon tamponade has a **success rate of approximately 80-90%** in controlling active bleeding.

Esophogeal Bleeding

Esophagitis: Inflammation of the esophagus, typically due to gastroesophageal reflux disease (GERD), infections, or medications, may cause minor bleeding.

- **Mortality Rate**: The mortality rate for esophagitis-related bleeding is **2-5%**, largely due to the underlying condition (e.g., systemic infection, GERD).
- **Treatment Success Rate**: Pharmacologic treatment with proton pump inhibitors (PPIs) and H2 blockers is generally effective, with a success rate of **85-90%** in reducing symptoms and preventing bleeding recurrence.

Trauma Bleeding

Trauma and Foreign Body Ingestion: Trauma to the esophagus or ingestion of foreign objects can result in acute bleeding.

- **Mortality Rate**: The mortality rate for traumatic esophageal bleeding is **5-10%** depending on the extent of the injury and associated complications (e.g., perforation).
- **Treatment Success Rate**: Endoscopic treatment of esophageal trauma can achieve hemostasis in **80-90%** of cases, with surgical intervention needed in severe cases.

Pathophysiology GI Bleeding

The pathophysiology of GI bleeding is determined by the underlying cause:

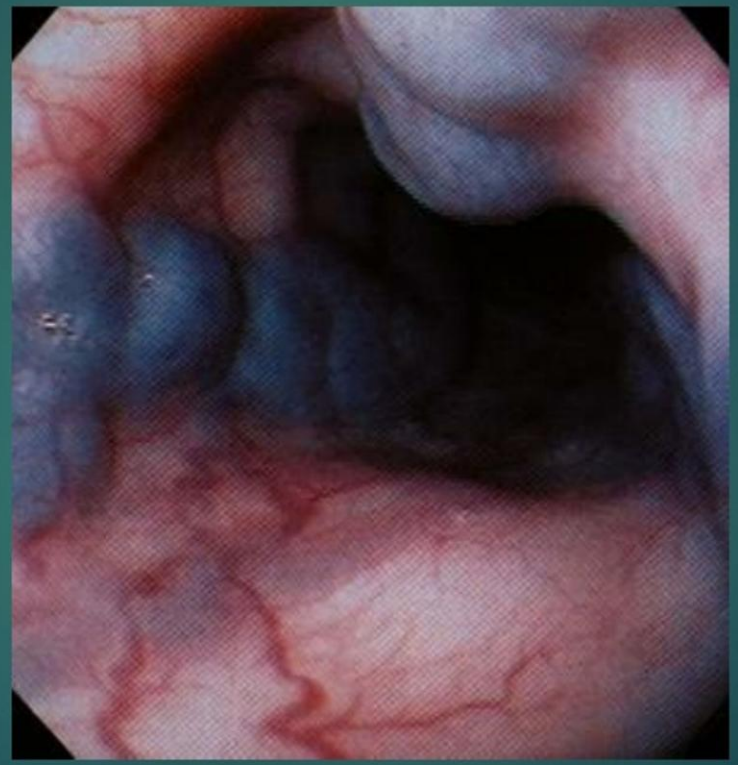
- **Peptic Ulcer Disease**: Ulcers erode into the blood vessels in the mucosa or submucosa, leading to active bleeding. Acid production exacerbates the bleeding by increasing gastric mucosal injury.
- **Esophageal Varices**: In portal hypertension, the increased pressure within the portal system causes veins in the esophagus to dilate. When the pressure exceeds the strength of the varices, they rupture, causing massive bleeding.
- **Gastritis**: The inflammatory process damages the gastric mucosa, leading to superficial or deep mucosal erosions. The release of cytokines and proteases further contributes to vessel destruction.
- **Mallory-Weiss Tear**: The tear at the gastroesophageal junction results in a disruption of the mucosa and submucosa, leading to bleeding.

Mallory Weiss Tear

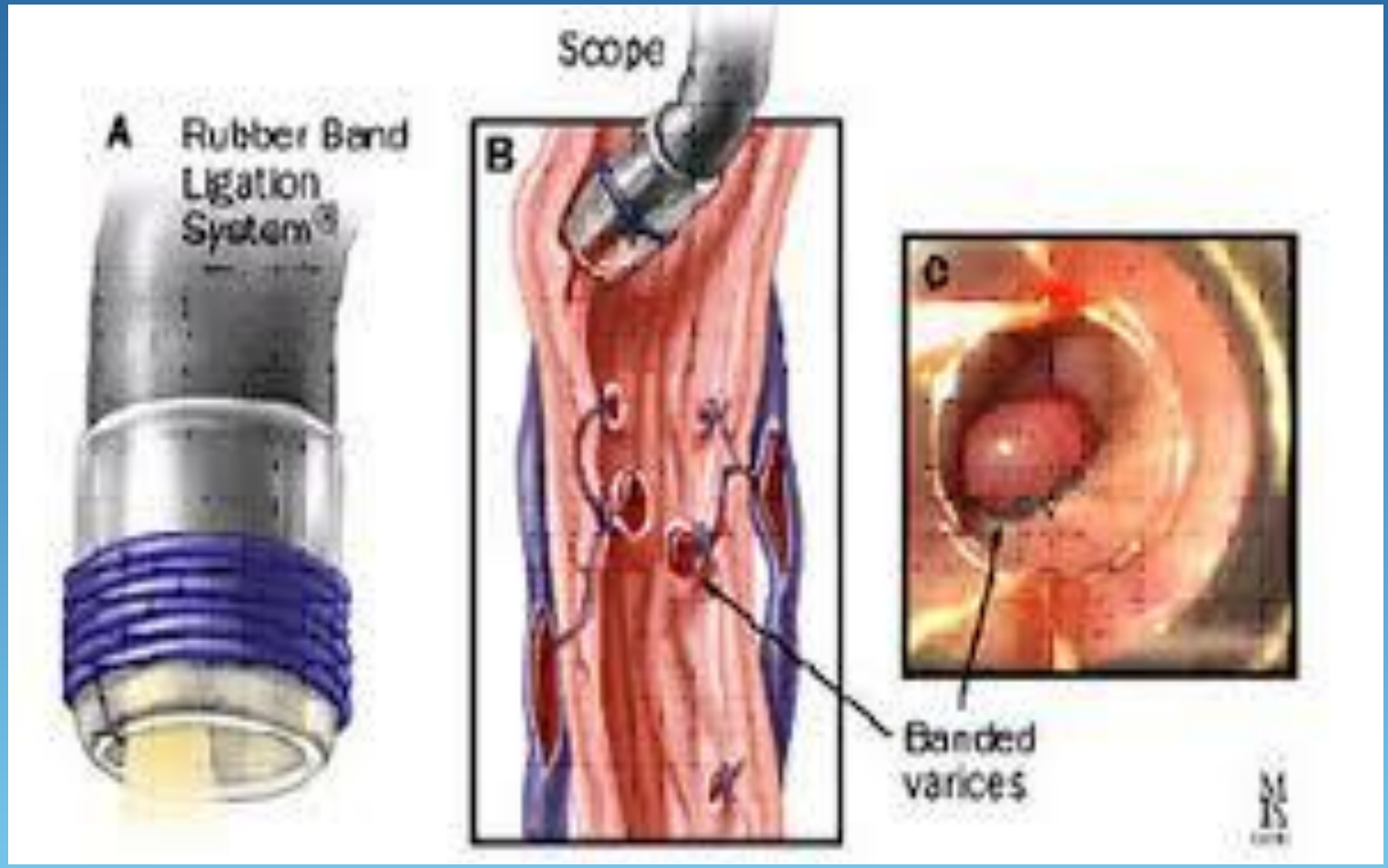
Esophageal Bleeding

- In esophageal bleeding, the primary pathology involves rupture of fragile varices due to increased portal pressure, or tears in the esophageal mucosa caused by vomiting, trauma, or inflammation. The resulting hemorrhage often leads to hemodynamic instability, requiring prompt intervention to control the bleeding.

Esophageal varices



Banding Device



Esophageal Banding

Clinical Presentation

- **Symptoms of GI Bleeding**: These may include hematemesis (vomiting blood), melena (black, tarry stools), hematochezia (bright red blood in stool), dizziness, weakness, and signs of shock (hypotension, tachycardia, and pallor).
- **Symptoms of Esophageal Bleeding**: This typically includes hematemesis, with or without a history of varices or recent trauma. Signs of hypovolemic shock, such as hypotension and tachycardia, may be present in severe cases.

Diagnosis

- **Endoscopy**: Upper endoscopy (esophagogastroduodenoscopy, EGD) is the gold standard for diagnosing and managing esophageal bleeding. It allows direct visualization of the bleeding source, such as varices, ulcers, or mucosal tears. The success rate of identifying the bleeding source with EGD is **95-98%**.
- **Laboratory Tests**: A complete blood count (CBC) will reveal anemia. Coagulation studies, liver function tests, and renal function tests are important in guiding management, especially in patients with cirrhosis or coagulopathies.
- **Imaging**: In cases where endoscopy is not diagnostic, angiography can be used to localize the bleeding source. Imaging success rates are **85-90%** for identifying active bleeding sites.

Treatment Plan

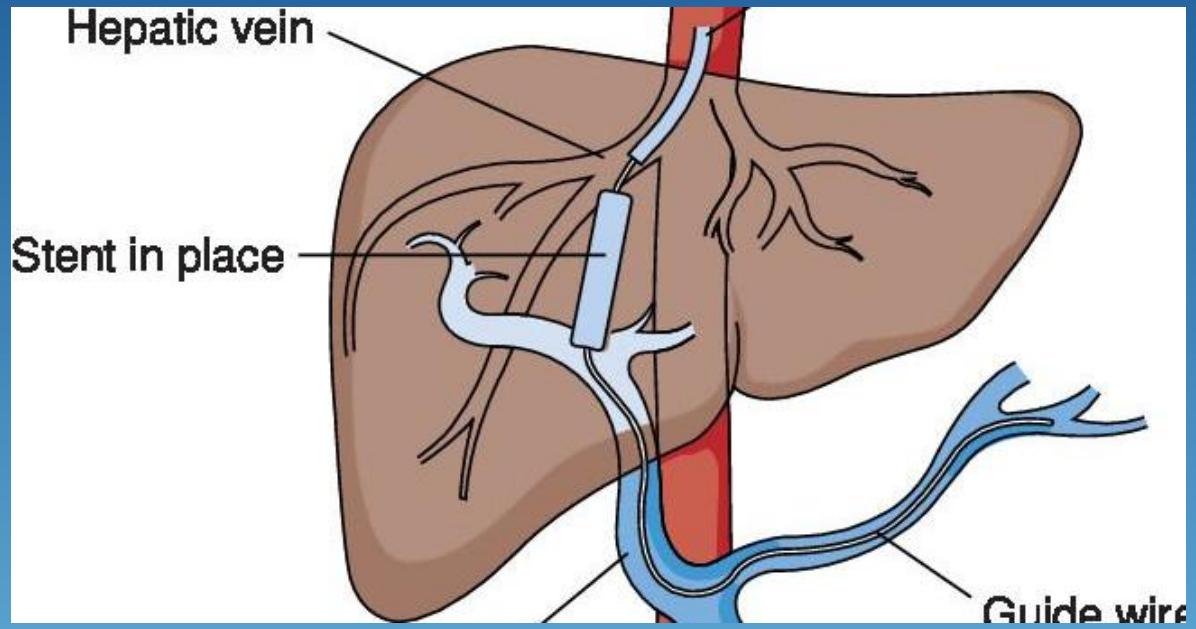
Initial Management

- **Resuscitation**: Fluid resuscitation
  - Blood products 1:1:1 balanced resuscitation.
  - Consider calcium 1-2 grams, TXA 1-2 grams, Kcentra (DOAC reversal), DDAVP for platelet inhibitor reversal or for uremic bleeding.
  - Reason to call CODE MTP
- **Proton Pump Inhibitors (PPIs)**: IV PPIs are frequently used to reduce gastric acid secretion, promoting clot stability. The success rate of PPI therapy in stabilizing bleeding ulcers is **80-90%**.
- **Octreotide**: For esophageal varices, octreotide is used to reduce portal pressure and decrease bleeding. Octreotide has a **success rate of 70-80%** in controlling variceal hemorrhage.

Specific Treatments for Esophageal Bleeding

- **Endoscopic Therapy**: Endoscopic variceal banding and sclerotherapy have a **success rate of 80-90%** in controlling esophageal variceal bleeding.
- **Balloon Tamponade**: In severe cases, balloon tamponade with a Sengstaken-Blakemore tube can be used temporarily to control bleeding. This method has a success rate of **75-80%**.
- **Transjugular Intrahepatic Portosystemic Shunt (TIPS)**: TIPS can be used in refractory variceal bleeding to reduce portal pressure. The success rate of TIPS in controlling variceal bleeding is **85-90%**.

Transjugular Intrhepatic Portosystemic Shunt (TIPS)



- Bridge to Transplant only
- This is not a long-term treatment for bleeding varices. The shunt will eventually clot off, and the patient will bleed again.
- 20 % of patient get hepatic encephalopathy

Surgical Treatment

- **Surgical Intervention**: In cases where endoscopic treatment is unsuccessful, surgical interventions may be necessary.
- For esophageal variceal bleeding that is refractory to Endoscopy, the only surgery, that is effective is liver transplantation, has a **success rate of 70-80%** for long-term survival.
- All other surgical procedures have a near 100% mortality rate (stapling the esophogus, portal caval shunts, portal decompression procedures with the exception of TIPS.

Long-Term Management

- **Beta-Blockers**: For preventing variceal bleeding in patients with portal hypertension, beta-blockers (e.g., propranolol) have an **effectiveness rate of 40-50%** in reducing the incidence of bleeding.
- **H. pylori Eradication**: For peptic ulcer disease associated with H. pylori infection, eradication therapy has an **80-90% success rate** in preventing ulcer recurrence.
- **Liver Transplantation**: For patients with cirrhosis and recurrent variceal bleeding, liver transplantation has a **5-year survival rate of 70-80%**, providing long-term relief from bleeding episodes.

Prognosis, Mortality Rates, and Success Rates

The prognosis of GI and esophageal bleeding depends on the underlying cause and response to therapy. For esophageal variceal bleeding, timely treatment can significantly improve outcomes, with endoscopic therapies providing **80-90% success** in controlling the bleeding. However, mortality remains high in patients with advanced liver disease and other comorbidities.

- **Esophageal Variceal Bleeding Mortality Rates**: The mortality rate for esophageal variceal bleeding is **10-15%** in the first 6 weeks, with higher mortality in patients with cirrhosis and liver failure.
- **Non-Variceal Upper GI Bleeding Mortality Rates**: For non-variceal bleeding, such as that from peptic ulcers, mortality is typically **5-10%** depending on the severity and comorbidities.

Prognosis, Mortality Rates, and Success Rates

- **Endoscopic Treatment Success Rates**: Endoscopic therapies, such as variceal banding, sclerotherapy, and clipping, have a **success rate of 80-90%** in controlling upper GI and esophageal bleeding.
- **Balloon Tamponade Success Rate**: Balloon tamponade for variceal bleeding has a **success rate of 75-80%**, and surgical management (e.g., liver transplantation) provides long-term survival, with a **5-year survival rate of 70-80%**.

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