

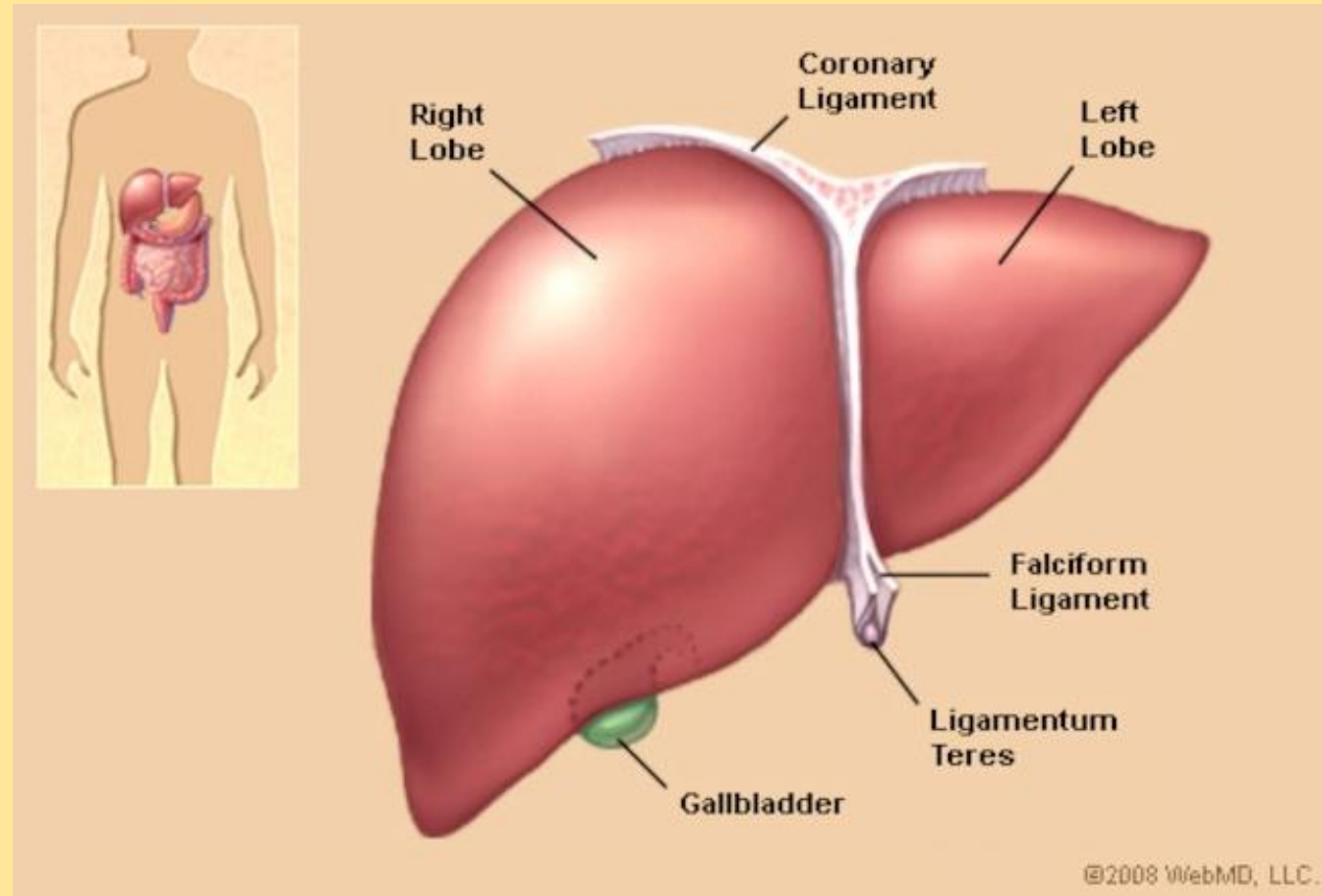
Liver cirrhosis & GIT bleeding

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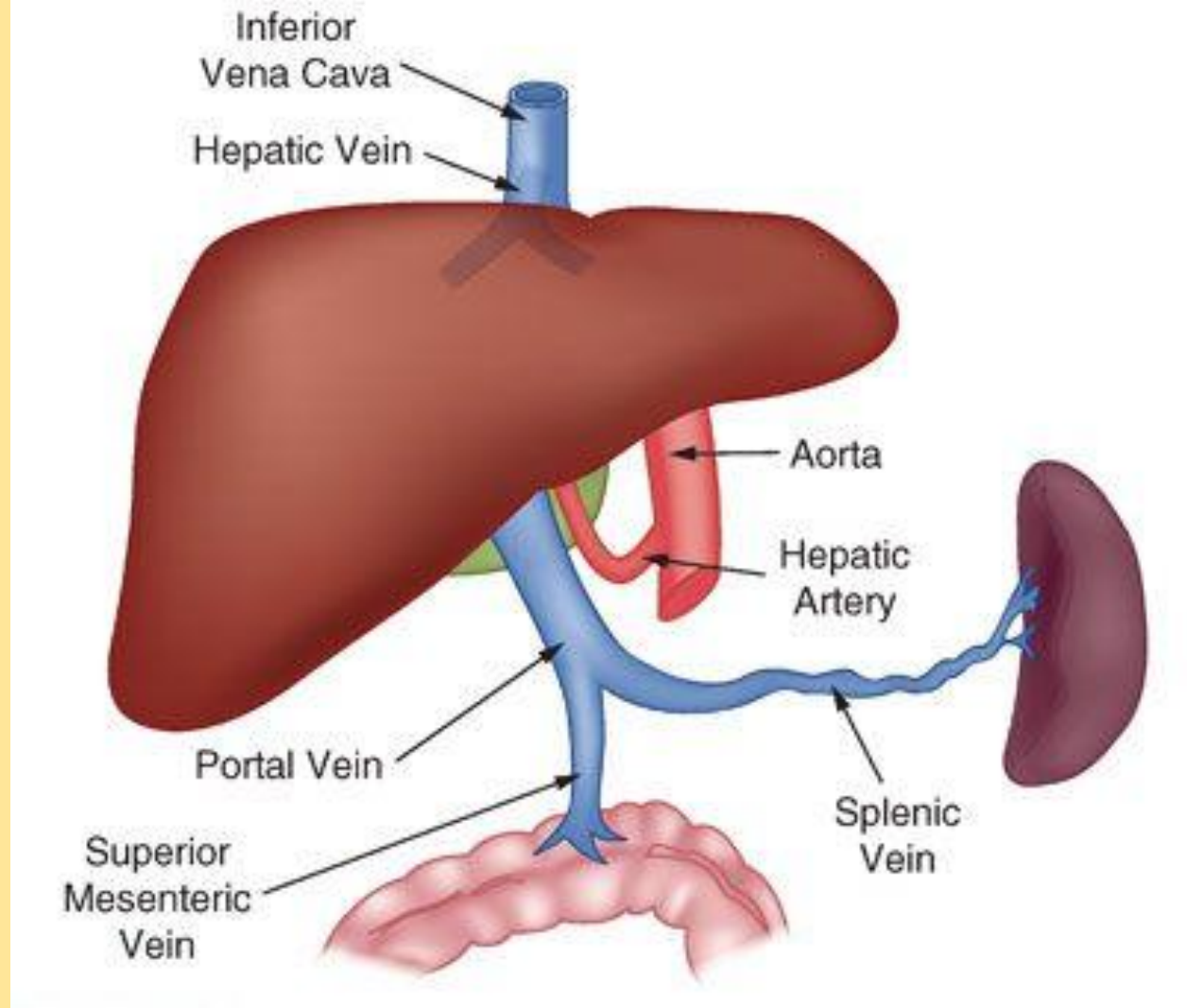
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Liver anatomy:



Blood supply of the liver:

- The liver receives a dual blood supply from the hepatic portal vein (75%) and hepatic arteries (25%).
- The hepatic portal vein carries blood drained from the spleen and gastrointestinal tract.



Functions of the liver:

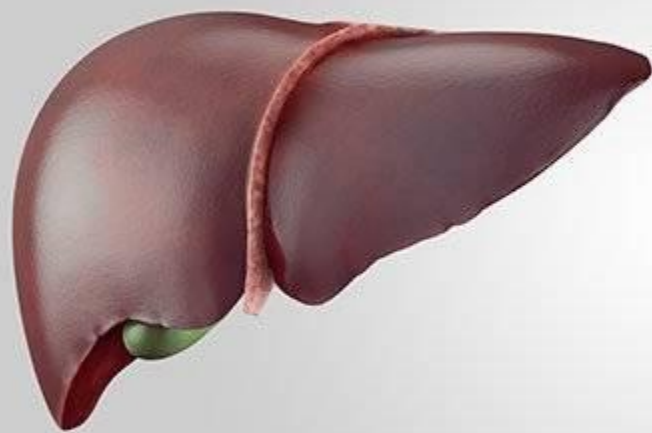
- **Carbohydrate metabolism:** Glucose stored as glycogen to be used during fasting.
Gluconeogenesis “glucose generation” when no Glycogen stores are available.
- **Protein metabolism:** Liver is the principal site for synthesis of most of the circulating proteins (e.g. Albumin & coagulation factors).

- **Lipid metabolism:** Cholesterol synthesis, production of triglycerides, and lipoproteins are synthesized in the liver.
- **Bilirubin** metabolism.
- **Bile acid synthesis:** important for absorption of fat and fat soluble vitamins.

- **Hormones:** catalyzed mainly in the liver (e.g. Insulin, growth hormone and estrogens).
- **Storage:** Main site for storage vitamin A, D and K.
Also Vitamin B12, folic acid and iron.
- **Immunological function:** Liver acts as a sieve for bacteria and other antigens carried to it through the portal vein from GIT

Liver cirrhosis:

- **Cirrhosis** is a condition in which the liver does not function properly due to long-term damage. This damage is characterized by the replacement of normal liver tissue by scar tissue and **abnormal nodules**.



healthy liver



cirrhosis

Etiology:

- Viral Hepatitis (HCV & HBV)
- Alcoholic liver disease
- Non alcoholic fatty liver disease (NAFLD)
- Autoimmune hepatitis
- Hemochromatosis - Wilson disease
- Alpha-1 antitrypsin deficiency - sarcoidosis
- Drug-induce: e.g. methotrexate.

Clinical picture:

- Some patients with cirrhosis are completely **asymptomatic**, other individuals have more **symptoms of end-stage liver disease**.
- Common signs and symptoms may result from decreased hepatic synthetic function (e.g. coagulopathy), portal hypertension (e.g. variceal bleeding), or decreased detoxification capabilities of the liver (e.g. hepatic encephalopathy).

Portal hypertension:

Portal hypertension is characterized by the following:

- Hepatosplenomegaly
- Abdominal pain
- Ascites

Hepatic encephalopathy:

- The symptoms and signs of hepatic encephalopathy are graded into 4 grades, ranging from mild confusion, may be severe up to coma.

Treatment:

- Low protein diet
- Lactulose
- Antibiotics (Neomycin – Rifaximin – Metronidazole)
- L-ornithine L-aspartate (Hepa-Merz)

Gastrointestinal Bleeding:

Acute gastrointestinal bleeding is a potentially life-threatening emergency.

The most common presentations for upper GIT bleeding are:

- Hematemesis
- Melena
- Hematochezia
- Syncope
- Presyncope

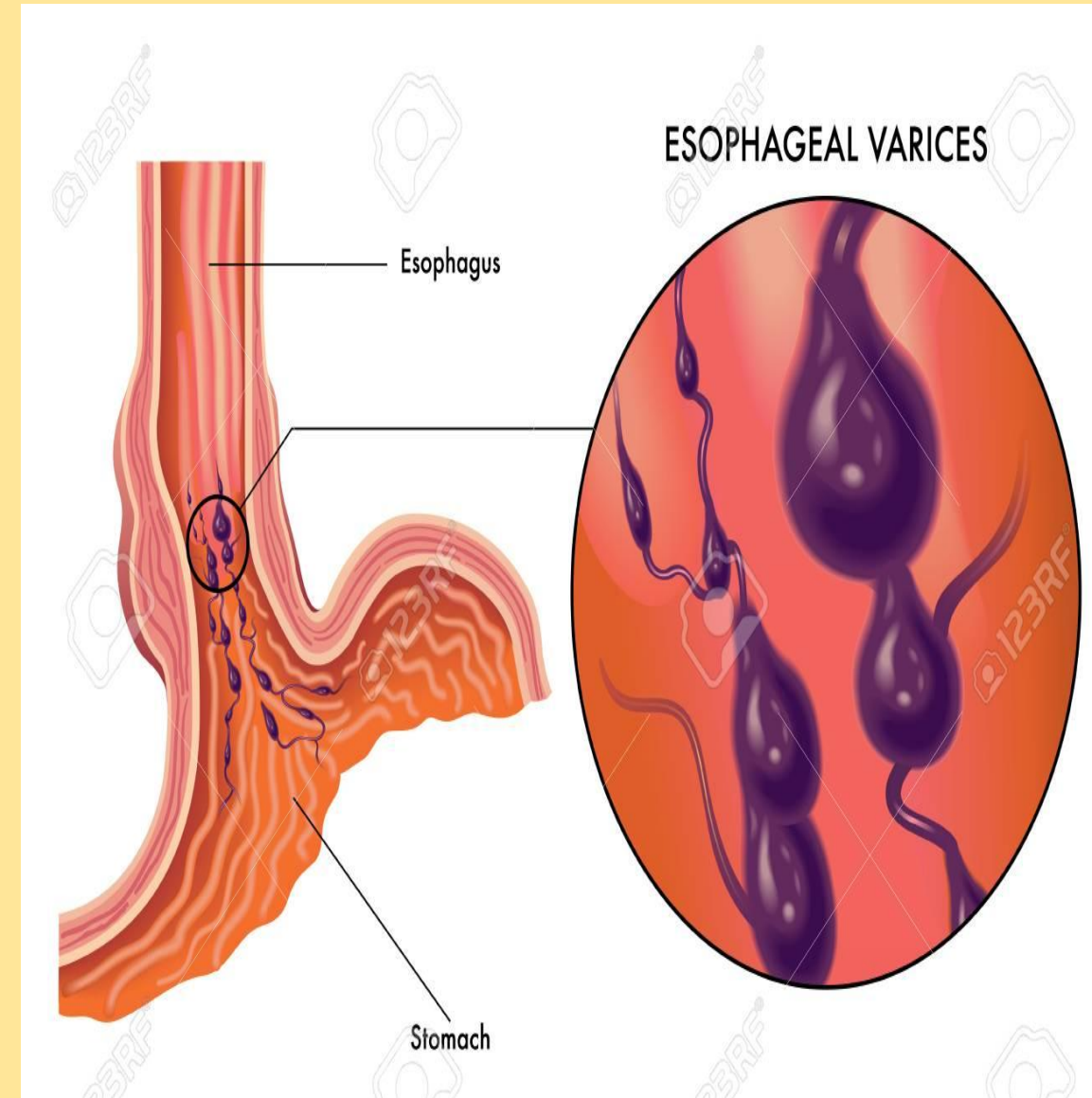
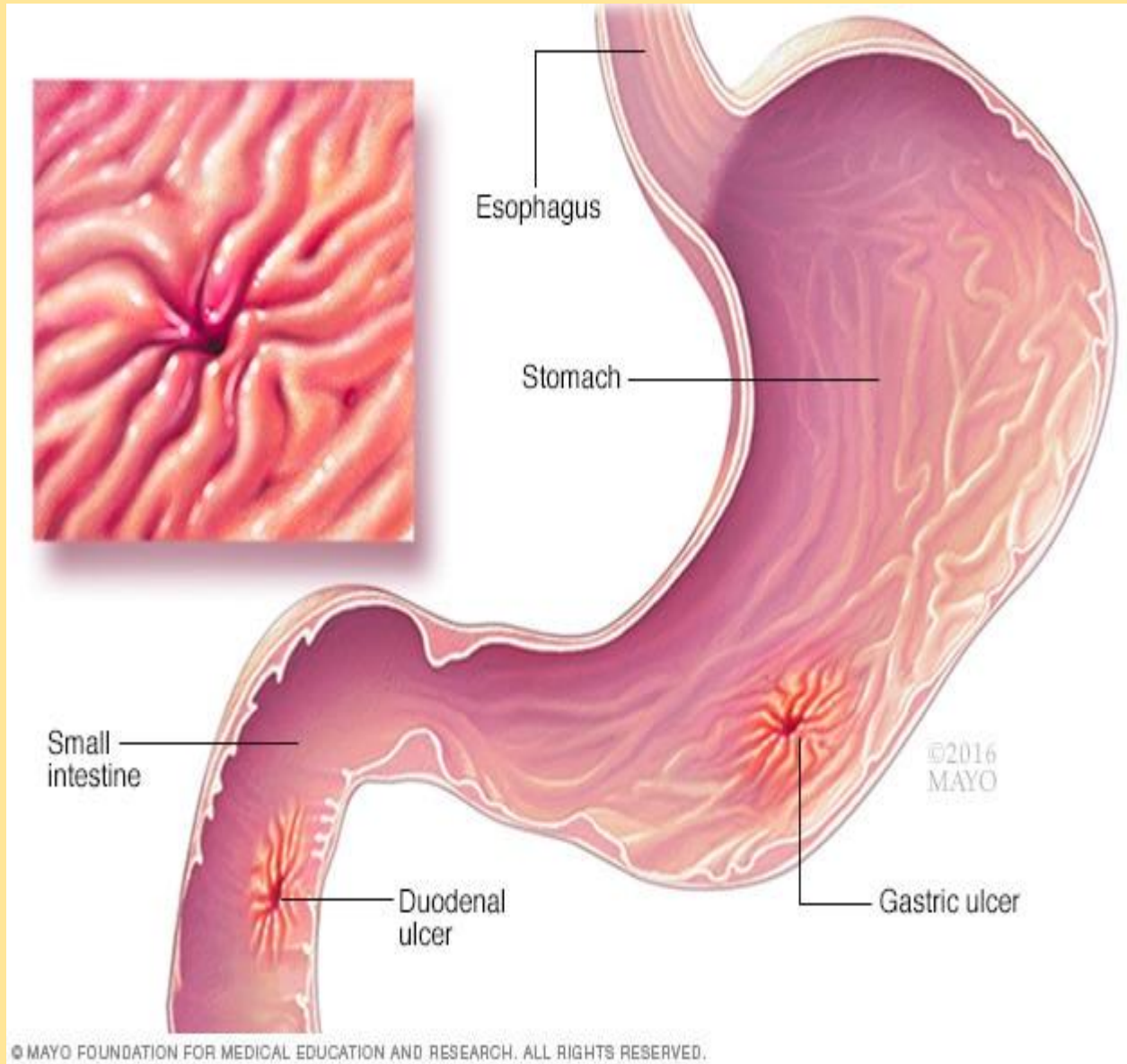
- **Hematemesis** is the **vomiting** of blood, The source is generally the **upper** GIT. Patients can easily confuse it with **hemoptysis** (**coughing** up blood).
- **Melena**: dark black, tarry stools that are associated with **upper** GIT bleeding, The black color and characteristic strong odor are caused by hemoglobin in the blood being altered by digestive enzymes and intestinal bacteria.

- **Hematochezia** is the passage of fresh blood through the anus, usually in or with stools. Hematochezia is commonly associated with **lower** gastrointestinal bleeding, but may also occur from a brisk upper gastrointestinal bleed

Approach to upper GI bleeding:

Medical history:

- **Varices** or portal hypertension in a patient with a history of liver disease.
- **Peptic ulcer** disease in a patient with a history of *Helicobacter pylori* infection, nonsteroidal anti-inflammatory drug (NSAIDs) use, or smoking.
- **Malignancy** in a patient with a history of smoking, alcohol abuse, or *H. pylori* infection.



Medication history:

- Predispose to peptic ulcer, such as **aspirin** and other **analgesic** non steroidal anti-inflammatory drugs **NSAIDs**.
- Associated with pill esophagitis.
- Promote bleeding, such as antiplatelet agents (e.g. clopidogrel “Plavix”) and anticoagulants (e.g. Warfarin)
- May alter the clinical presentation, such as bismuth and iron, which can turn the stool black

Physical examination:

- Assessing the patient for hemodynamic instability and clinical signs of poor perfusion.
- Warning clinical signs and symptoms of hemodynamic compromise include **postural hypotension**, **tachycardia** of more than 100 beats per minute, systolic blood pressure of less than 90 mm Hg, cool extremities, syncope.

Management:

Hemodynamically unstable: shock, orthostatic hypotension

- **Intravenous access:** Adequate peripheral access should be attained with either two 18 gauge or larger intravenous catheters and/or a large-bore, single-lumen central venous line.
- **Fluid resuscitation:** Fluid resuscitation should begin immediately and should not be delayed pending transfer of the patient to an intensive care unit.

- **Transfusion:** Patients without active bleeding who become hemodynamically stable with fluid resuscitation should receive a **blood transfusion if the hemoglobin is <9 g/dL for high-risk patients and if it is <7 g/dL in low-risk patients.**
- Transfusion of platelets may be required if the platelet count is $<50,000/\text{microL}$ and fresh frozen plasma (FFP) is indicated if the INR is >2 .

- **Medications:**
- **Acid suppression** by proton pump inhibitors (PPI) e.g. Esomperazole “Nexium”.
- **Vasoactive medications:** Octreotide “Sandostatin” and terlipressin “Glypressin” are used in the treatment of variceal bleeding by decreasing portal hypertension.
- **Tranexamic acid “Kapron”:** is an antifibrinolytic agent

Endoscopy:

Endoscopic findings in patients with upper GI bleeding may include:

- Duodenal ulcer
- Gastric erosion or ulcer
- Esophageal varices
- Mallory-Weiss tear
- Esophagitis
- Duodenitis
- Neoplasm

Therapeutic Endoscopy

The following endoscopic techniques for achieving hemostasis (control of bleeding):

- Injection of epinephrine
- Coagulation (Electro – heater robe – Argon plasma – Laser)
- Band ligation
- Constant probe pressure tamponade
- Application of hemostatic materials, including biologic glue

Surgical management:

- Surgical intervention for some cases which are refractory to medical treatment (e.g. gastrectomy for refractory life threatening bleeding peptic ulcer).

THANK you!

