



SNS COLLEGE OF ALLIED HEALTH SCIENCES
SNS Kalvi Nagar, Coimbatore - 35
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DEPARTMENT : PHYSICIAN ASSISTANT

COURSE NAME: ANATOMY

UNIT : DIGESTIVE SYSTEM

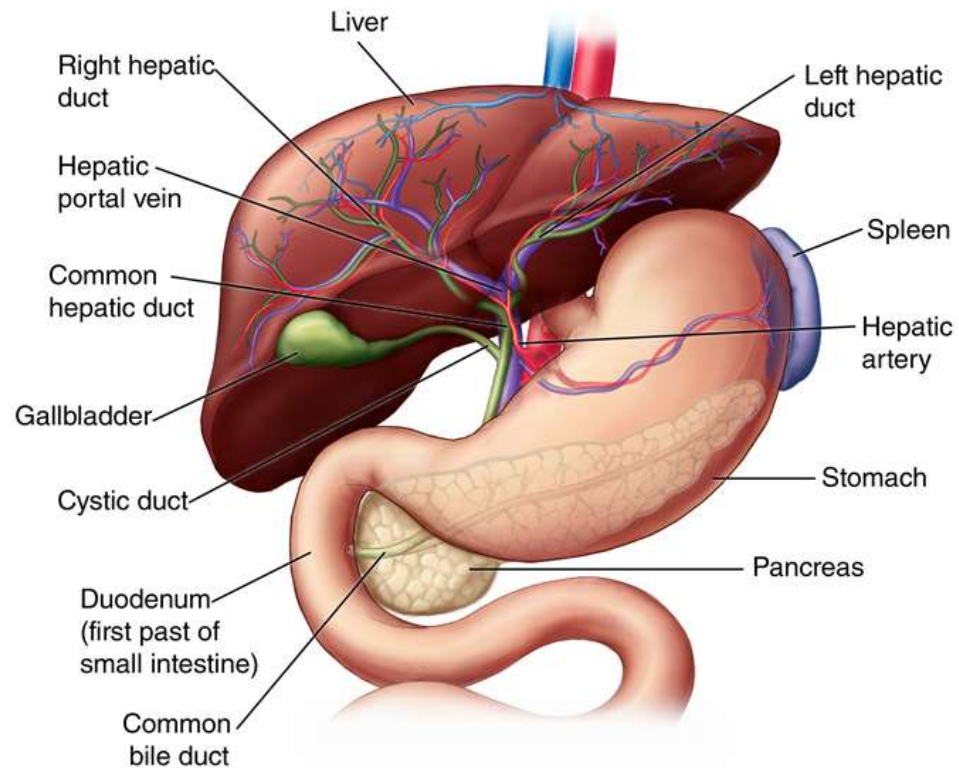
TOPIC : LIVER



LIVER



- The liver is located in the upper right-hand portion of the abdominal cavity, beneath the diaphragm, and on top of the stomach, right kidney, and intestines.
- Shaped like a cone, the liver is a dark reddish-brown organ that weighs about 3 pounds.

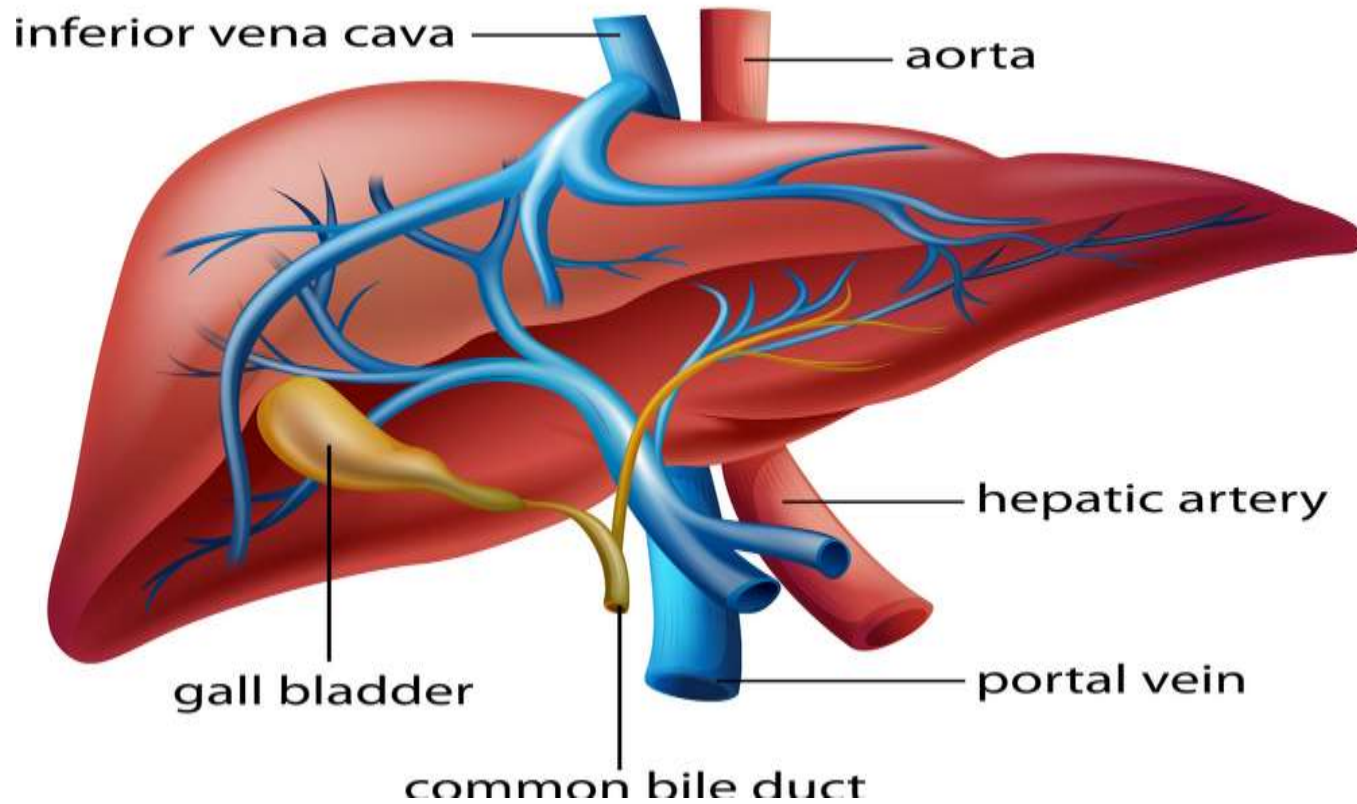




- The liver is reddish-brown and shaped approximately like a cone or a wedge, with the small end above the spleen and stomach and the large end above the small intestine.
- The entire organ is located below the lungs in the right upper abdomen. It weighs between 3 and 3.5 pounds.
- The liver is predominantly located in the right hypochondrium and epigastric areas, and extends into the left hypochondrium.



Human Liver Anatomy





LIVER SURFACES



The external surfaces of the liver are described by their location and adjacent structures. There are two liver surfaces – **the diaphragmatic and visceral**:

Diaphragmatic surface – the anterosuperior surface of the liver.

It is smooth and convex, fitting snugly beneath the curvature of the diaphragm.

The posterior aspect of the diaphragmatic surface is not covered by visceral peritoneum, and is in direct contact with the diaphragm itself



Visceral surface – the posteroinferior surface of the liver.

- With the exception of the fossa of the gallbladder and porta hepatis, it is covered with peritoneum.
- It is moulded by the shape of the surrounding organs, making it irregular and flat.
- It lies in contact with the right kidney, right adrenal gland, right colic flexure, transverse colon, first part of the duodenum, gallbladder, oesophagus and the stomach.



LIGAMENTS



- There are a number of ligaments that attach the liver to the surrounding structures. These are formed by a double layer of peritoneum.
- Falciform ligament – this sickle-shaped ligament attaches the anterior surface of the liver to the anterior abdominal wall. Its free edge contains the ligamentum teres, a remnant of the umbilical vein.
- Coronary ligament (anterior and posterior folds) – attaches the superior surface of the liver to the inferior surface of the diaphragm and demarcates the bare area of the liver. The anterior and posterior folds unite to form the triangular ligaments on the right and left lobes of the liver.



Triangular ligaments (left and right):

The left triangular ligament is formed by the union of the anterior and posterior layers of the coronary ligament at the apex of the liver and attaches the left lobe of the liver to the diaphragm.

The right triangular ligament is formed in a similar fashion adjacent to the bare area and attaches the right lobe of the liver to the diaphragm.

Lesser omentum – Attaches the liver to the lesser curvature of the stomach and first part of the duodenum. It consists of the hepatoduodenal ligament (extends from the duodenum to the liver) and the hepatogastric ligament (extends from the stomach to the liver). The hepatoduodenal ligament surrounds the portal triad.



HEPATIC RECESSES



Subphrenic spaces – located between the diaphragm and the anterior and superior aspects of the liver. They are divided into a right and left by the falciform ligament.

Subhepatic space – a subdivision of the supracolic compartment (above the transverse mesocolon), this peritoneal space is located between the inferior surface of the liver and the transverse colon.

Morison's pouch – a potential space between the visceral surface of the liver and the right kidney. This is the deepest part of the peritoneal cavity when supine



LOBES OF LIVER



- Caudate lobe – located on the upper aspect of the visceral surface. It lies between the inferior vena cava and a fossa produced by the ligamentum venosum (a remnant of the fetal ductus venosus).
- Quadrate lobe – located on the lower aspect of the visceral surface. It lies between the gallbladder and a fossa produced by the ligamentum teres



BLOOD SUPPLY



- **Hepatic artery proper (25%)** – supplies the non-parenchymal structures of the liver with arterial blood. It is derived from the coeliac trunk.
- **Hepatic portal vein (75%)** – supplies the liver with partially deoxygenated blood, carrying nutrients absorbed from the small intestine. This is the dominant blood supply to the liver parenchyma, and allows the liver to perform its gut-related functions, such as detoxification.



LYMPHATIC DRAINAGE



- The lymphatic vessels of the anterior aspect of the liver drain into hepatic lymph nodes. These lie along the hepatic vessels and ducts in the lesser omentum, and empty in the coeliac lymph nodes which in turn, drain into the cisterna chyli.
- Lymphatics from the posterior aspect of the liver drain into phrenic and posterior mediastinal nodes, which join the right lymphatic and thoracic ducts.



NERVE SUPPLY



- The parenchyma of the liver is innervated by the hepatic plexus, which contains sympathetic (coeliac plexus) and parasympathetic (vagus nerve) nerve fibres. These fibres enter the liver at the porta hepatis and follow the course of branches of the hepatic artery and portal vein.
- Glisson's capsule, the fibrous covering of the liver, is innervated by branches of the lower intercostal nerves. Distension of the capsule results in a sharp, well localised pain.



APPLIED ANATOMY



- Hepatitis
- Cirrhosis
- Non-Alcoholic Fatty Liver Disease (NAFLD) Liver Cancer
- Liver Fibrosis
- Autoimmune Liver Diseases
- Liver Abscess
- Hemochromatosis
- Wilson's Disease
- Biliary Tract Disorders
- Alcoholic Liver Disease



ASSESSMENT



- What is the Blood supply of Liver ?
- What all are the Ligaments of Liver ?