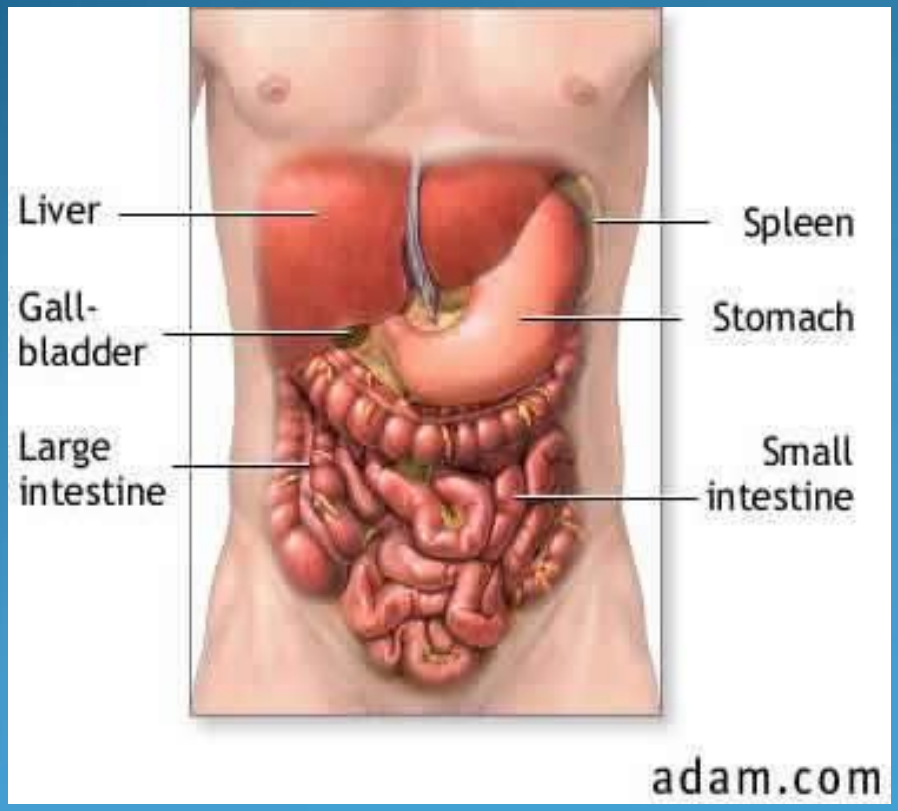
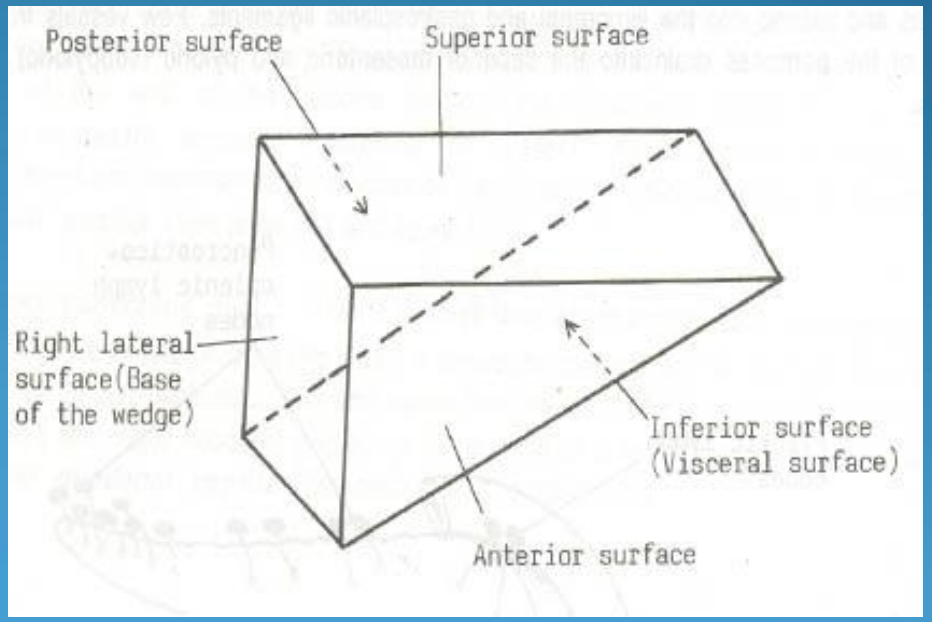
بسم الله الرحمن الرحيم

Anatomy of liver

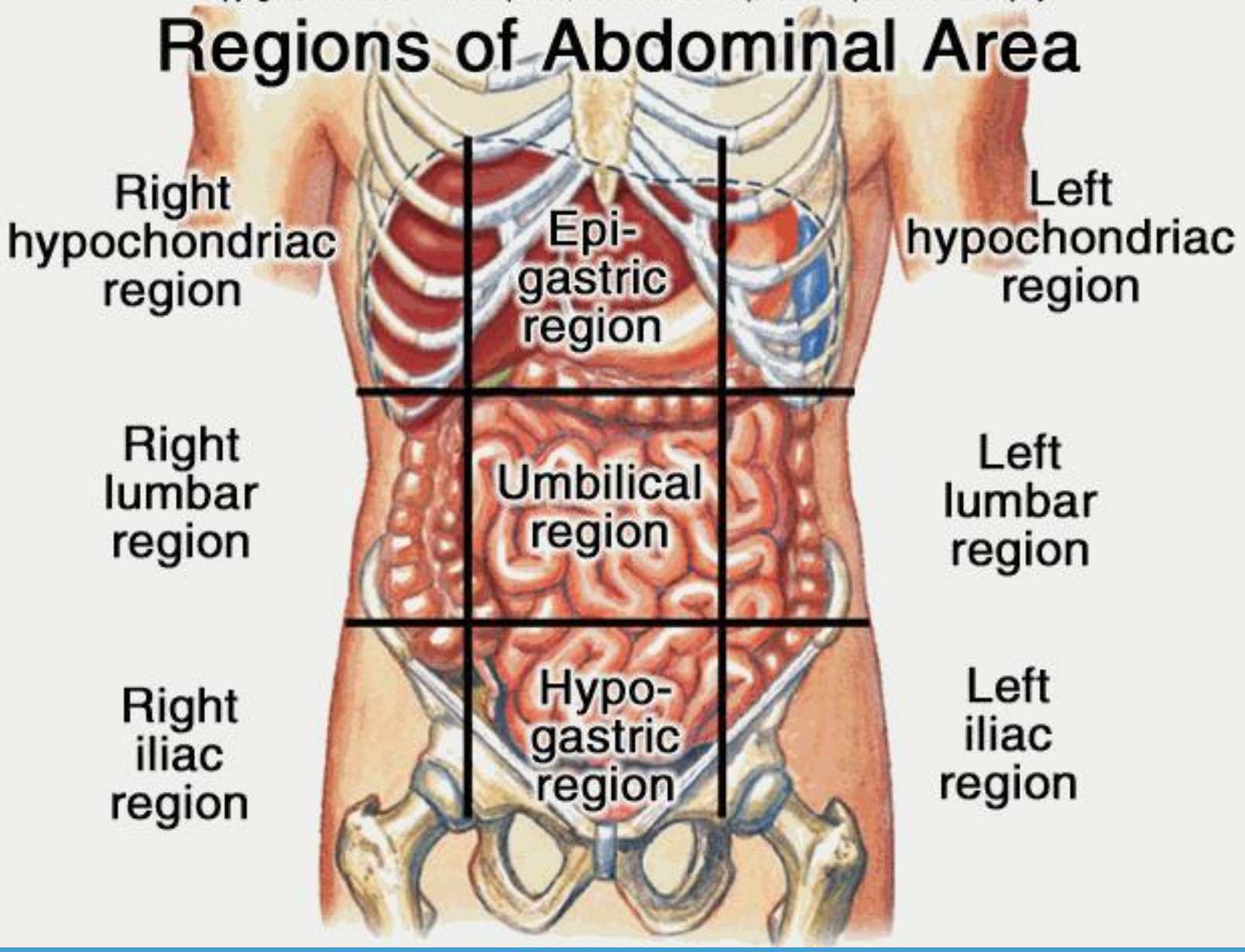
Site: It lies under the diaphragm, in the right hypochondrium, epigastrium and left hypochonderium.

Shape: It is wedge shaped. It has five surfaces: superior, inferior, anterior, posterior and right surfaces.





Regions of Abdominal Area

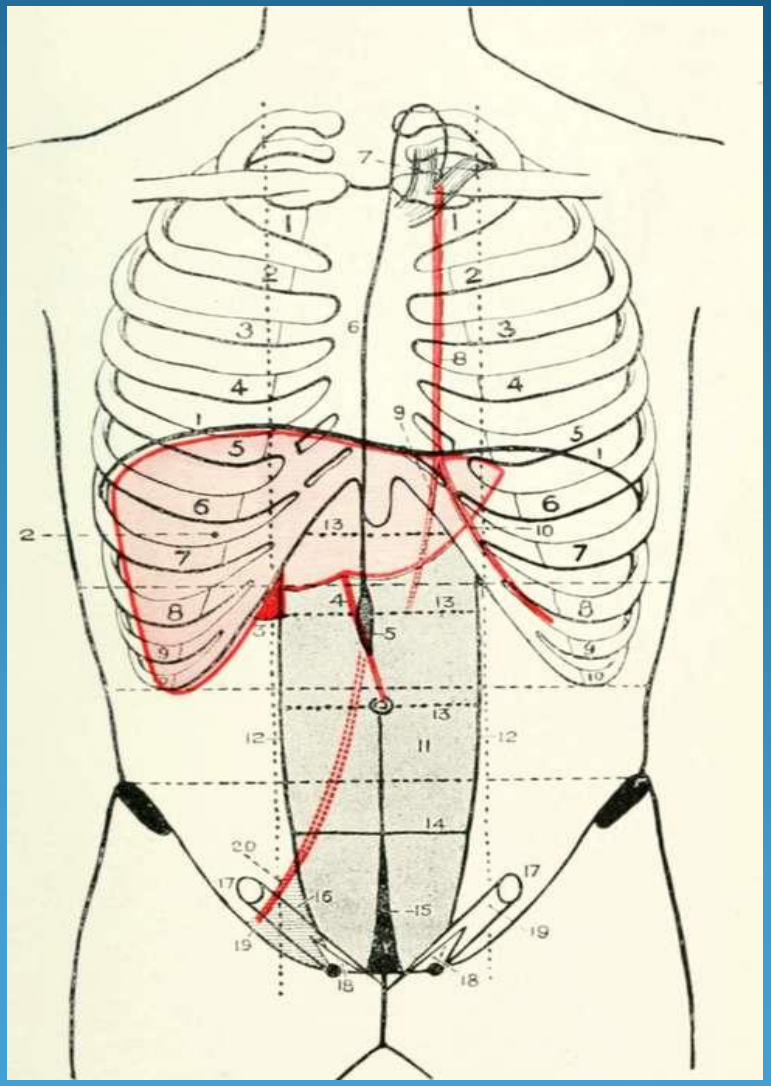


Surface anatomy of liver

1- **Superior surface**: from the 5th left intercostal space in the mid clavicular line to the upper border of right 5th costal cartilages in right lateral plane, to the 7th rib in mid axillary line.

2- **Right border**:from right 7th -11th ribs(mid axill. line).

3- **Fundus of gall bladder:** tip of 9th right costal cartilage .

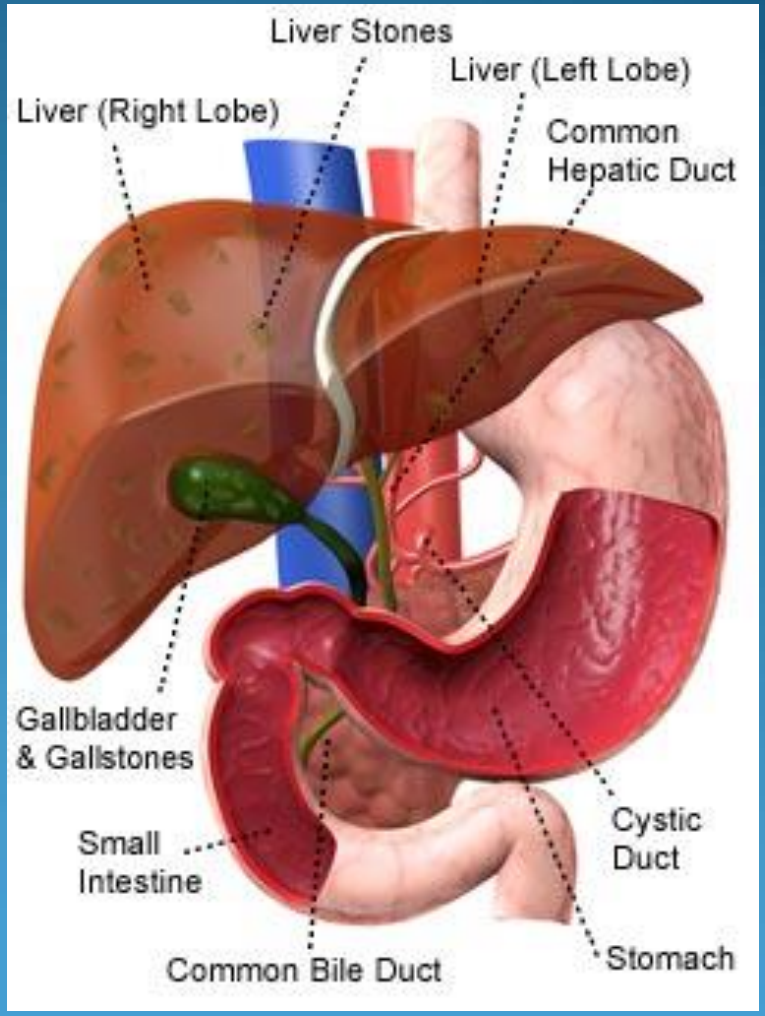


Lobes of the liver

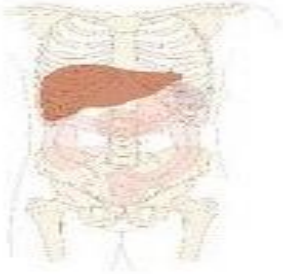
- It is formed of right large and left small lobes by:
  a.The attachment of **falciform ligament** on anterior and superior surfaces.

  b.fissure for **lig. Venosum** on post. Surface

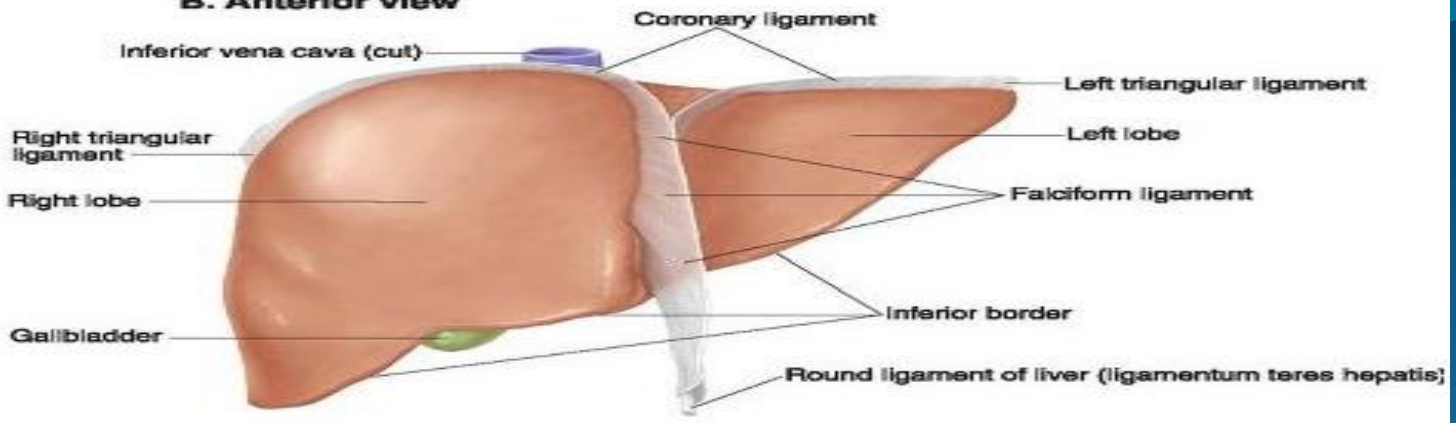
  c.fissure for **lig. teres** on inf. Surface.
- It also contains the **caudate** and **quadrate** lobes.



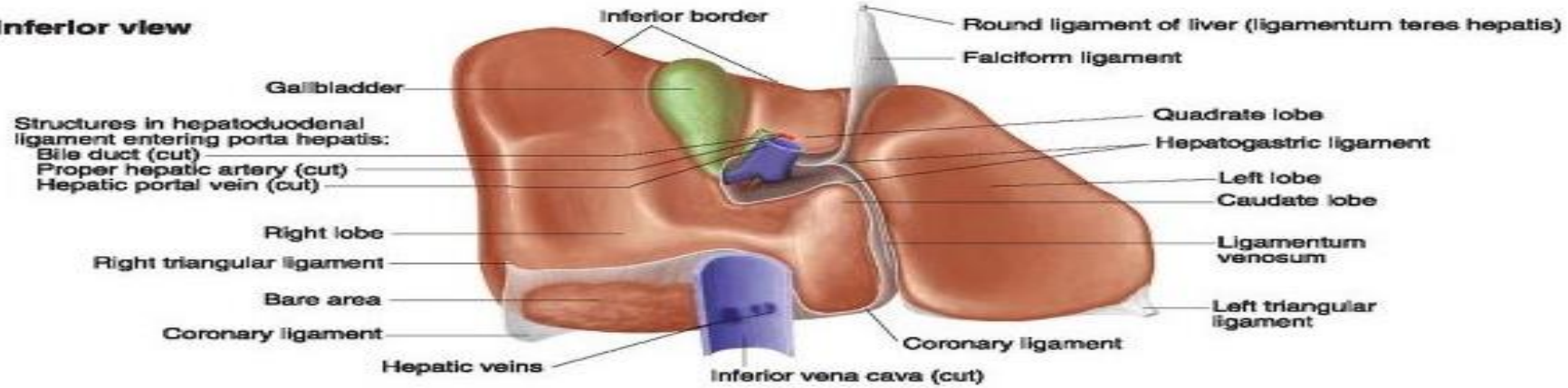
A. Orientation



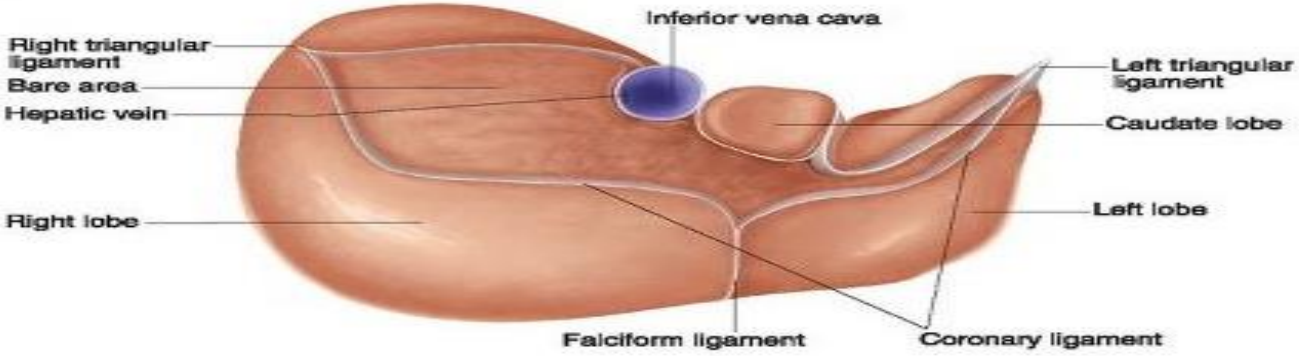
B. Anterior view

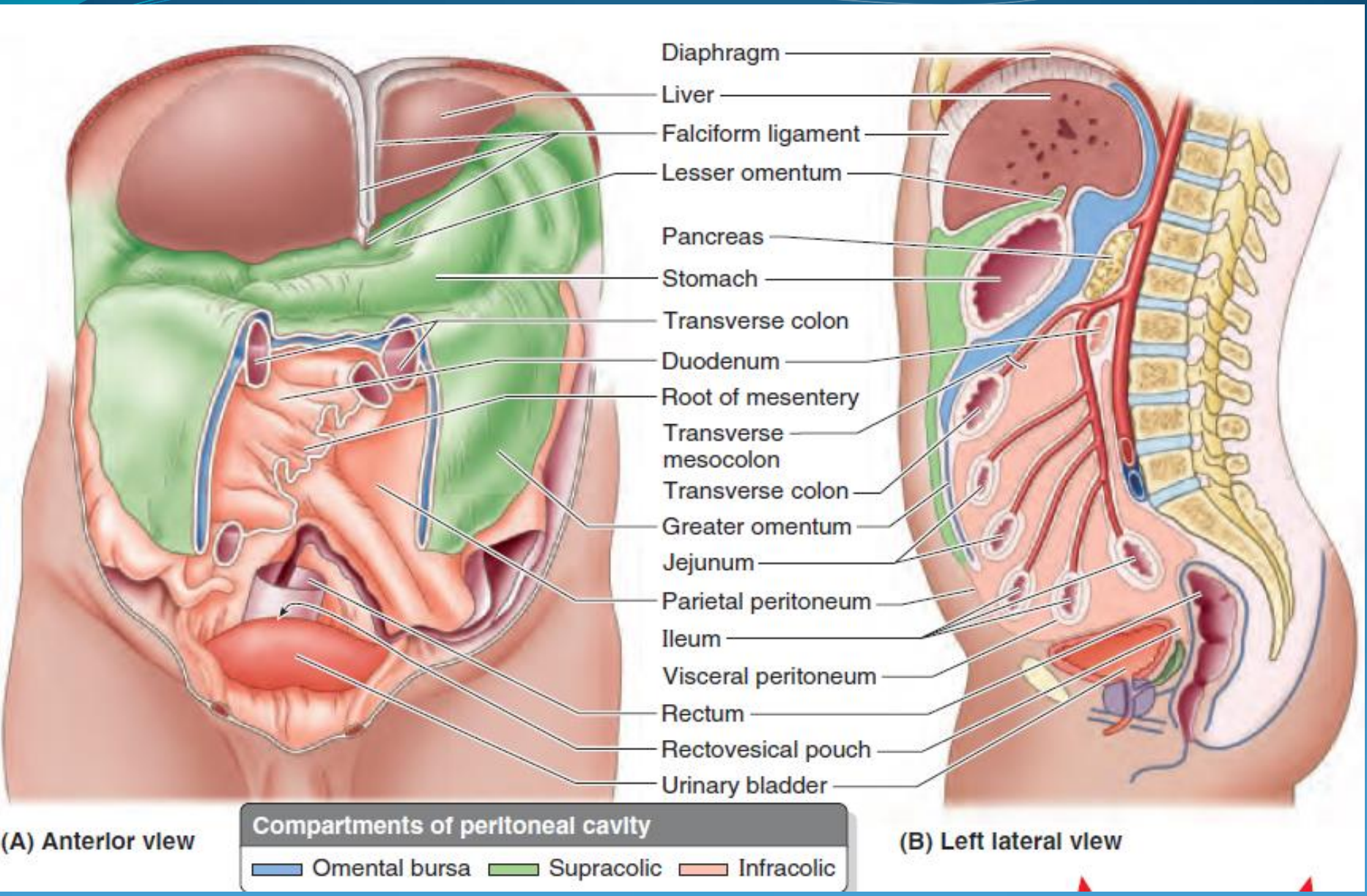


C. Inferior view



D. Superior view




Diaphragm
Liver
Falciform ligament
Lesser omentum
Pancreas
Stomach
Transverse colon
Duodenum
Root of mesentery
Transverse mesocolon
Transverse colon
Greater omentum
Jejunum
Parietal peritoneum
Ileum
Visceral peritoneum
Rectum
Rectovesical pouch
Urinary bladder
Compartments of peritoneal cavity
Omental bursa
Supracolic
Infracolic
(A) Anterior view
(B) Left lateral view

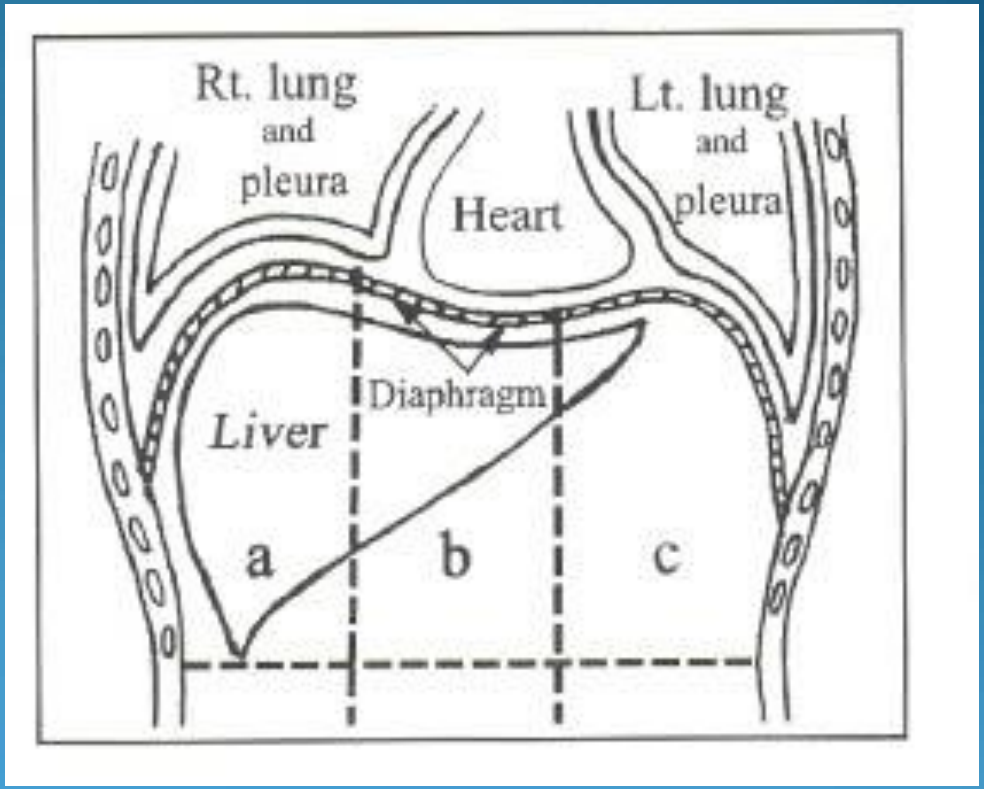
Relations of the liver

- The diaphragm and base of right lung and pleura are related to the superior, anterior and right surfaces.

1- **Anterior surface** is also related to Ant. Abd. Wall.

2- **Superior surface** is also related to heart, pericardium.

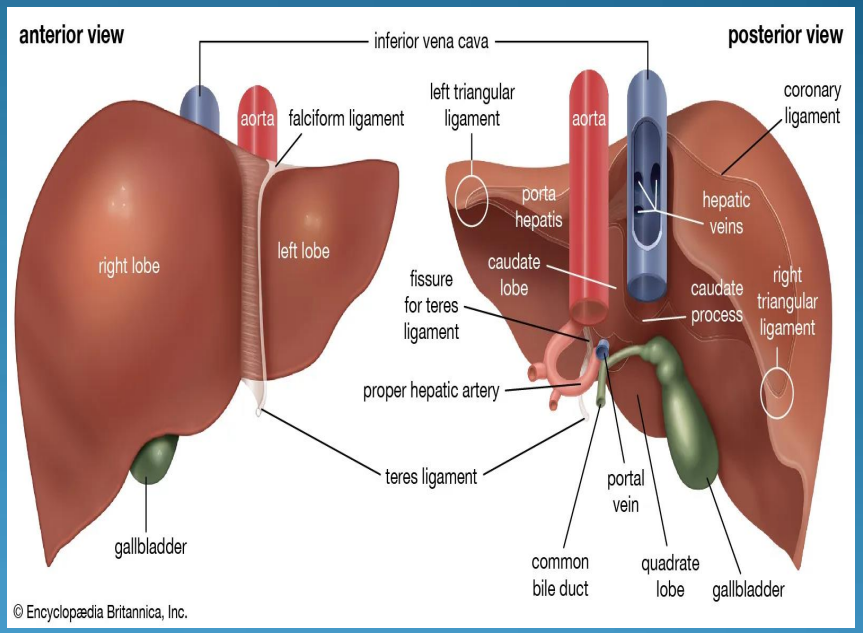
3- **Right surface** is also related to 7^{th} to 11^{th} ribs.

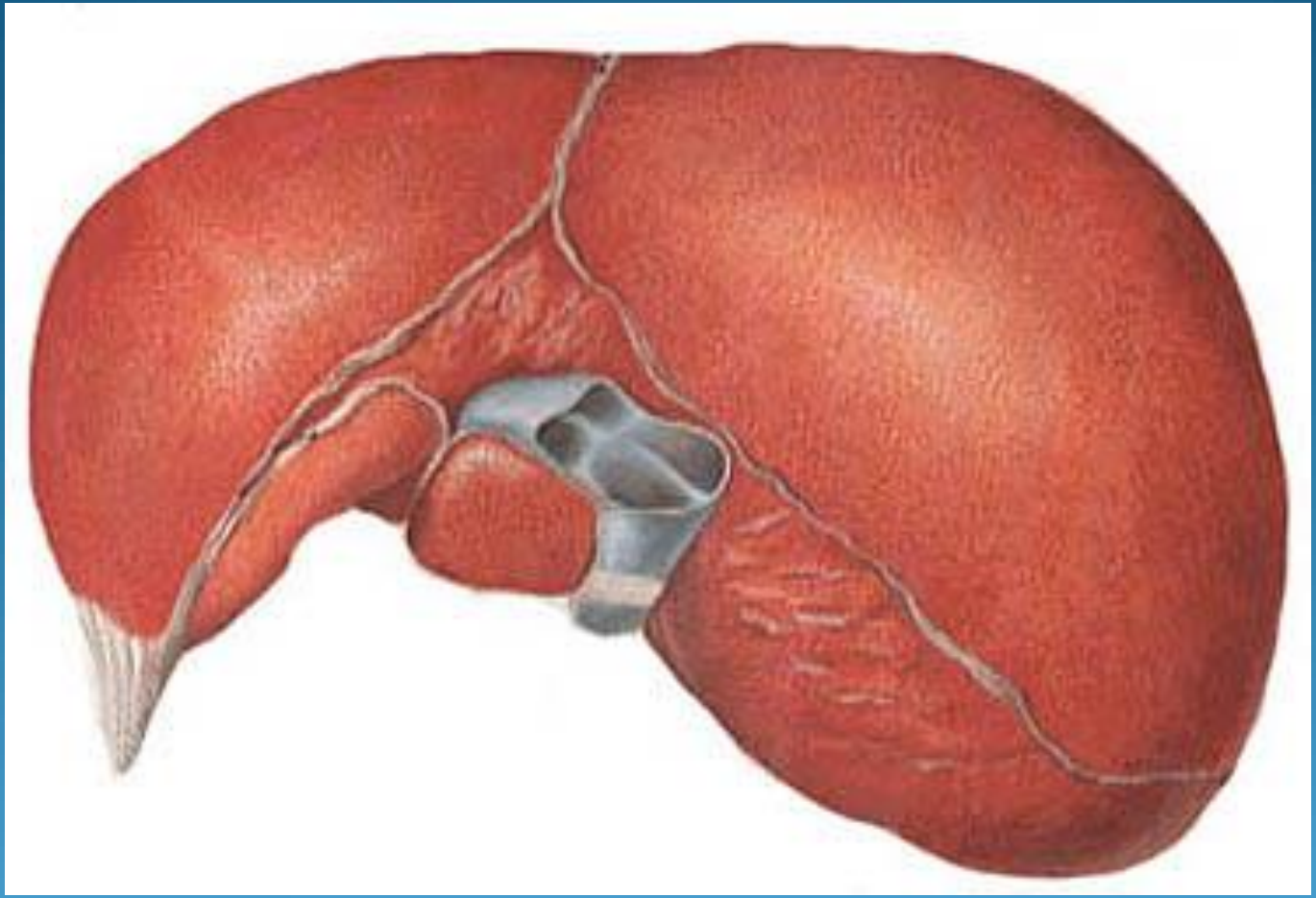


Relations of the liver

4- **posterior surface** is formed of: bare area, groove for IVC, caudate lobe, fissure for ligamentum venosum and oesophageal notch.

Bare areaof liver: a triangular area related directely to the diaphragm , its base is formed by the groove for IVC, its apex is formed by right triangular ligament, its sides are the two layers of coronary ligament.



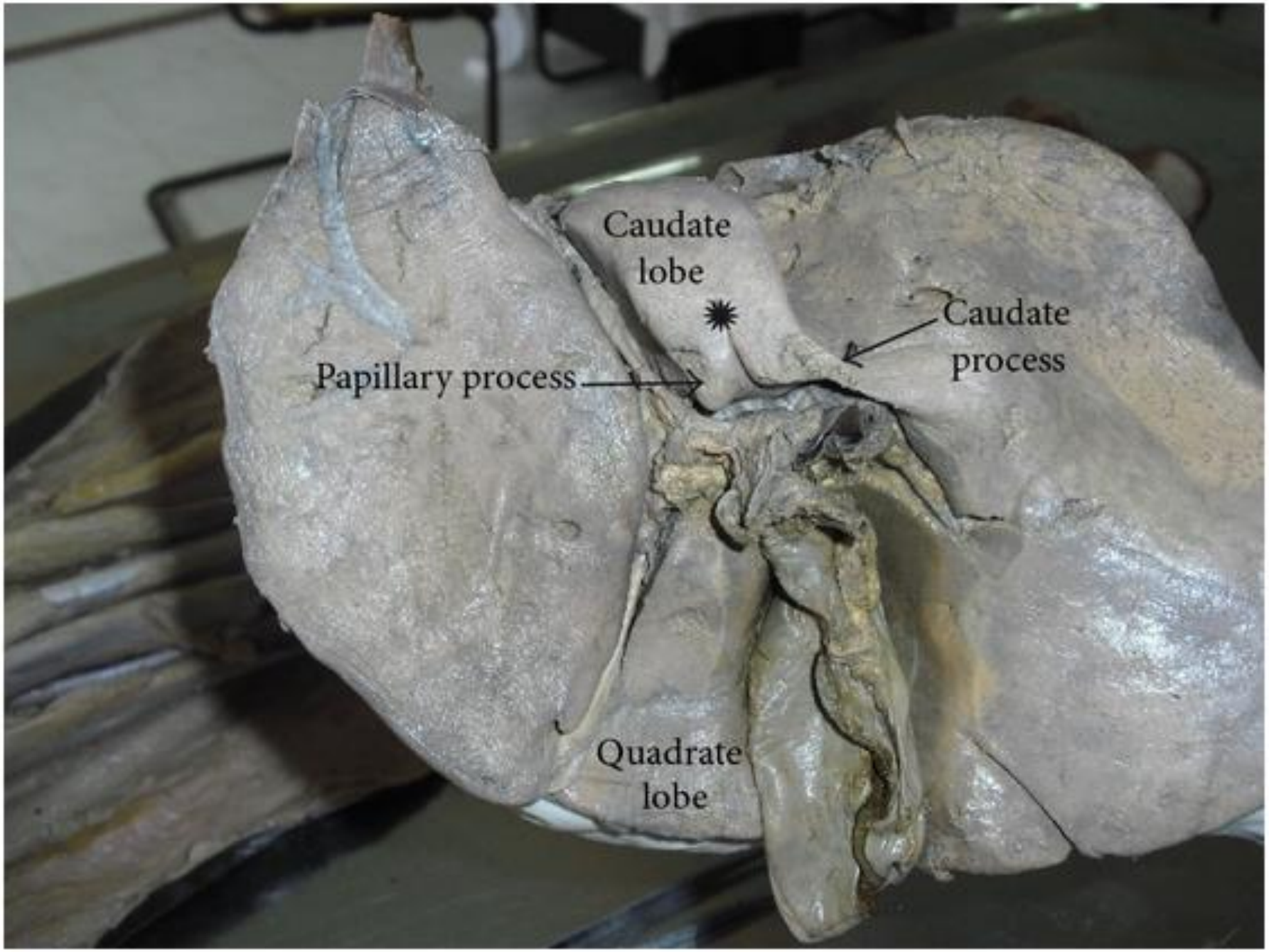


Caudate lobe

- It is related on the right side to groove for the IVC,

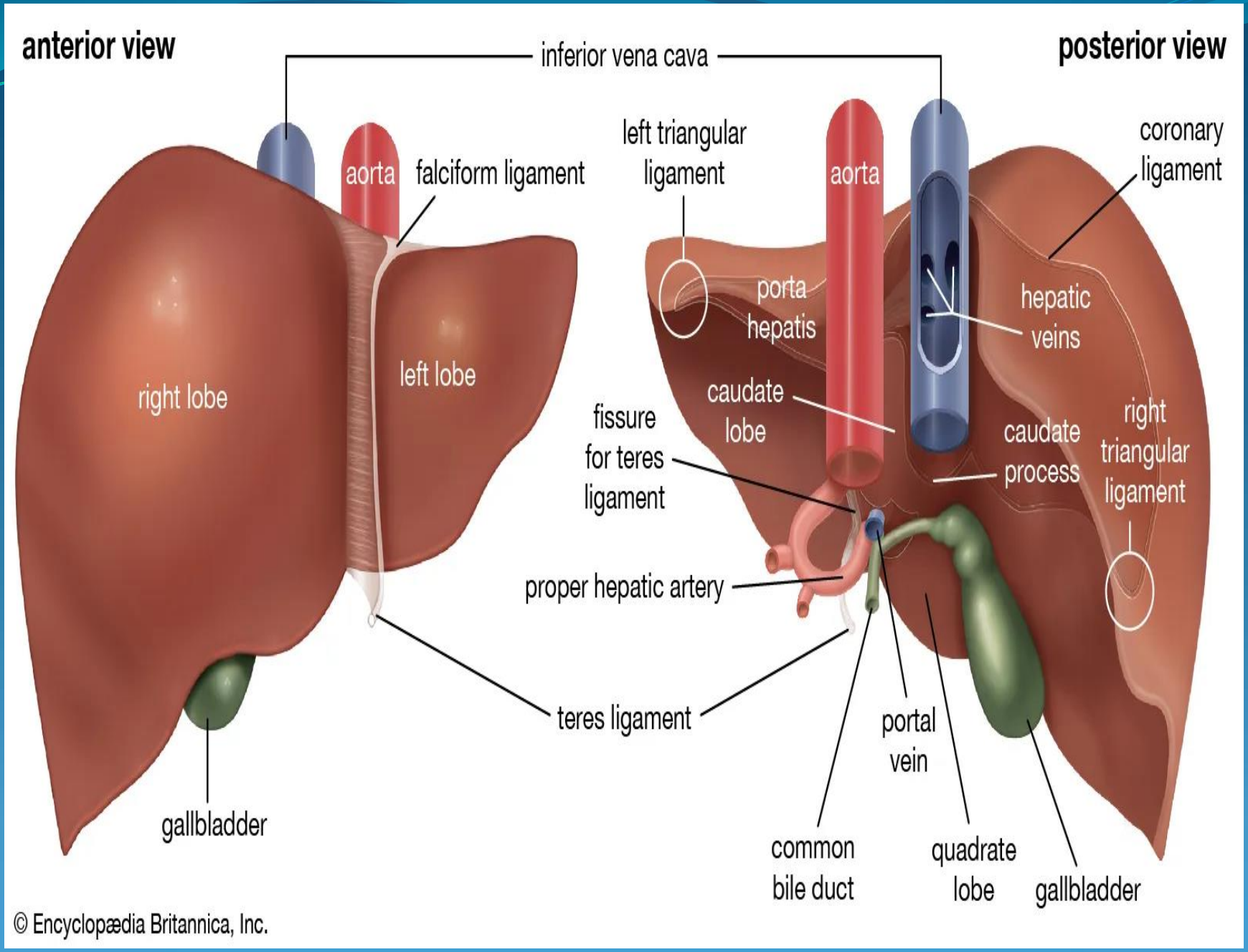
On the left side to fissure for the ligamentum venosum superior to ligamentum venosum as it curves to join the IVC.

inferior to porta hepatis


Caudate
lobe
Caudate
process
Papillary process
Quadrate
lobe

. The lower and right part of the caudate lobe forms a projection called the caudate process which forms the superior boundary of the epiploic foramen.

- The lower and left part of the caudate lobe forms a projection called the papillary process.
- - It is related posteriorly to lesser sac (it forms its anterior wall) diaphragm , descending thoracic aorta and T. 12.


anterior view
inferior vena cava
posterior view
aorta
falciform ligament
left triangular ligament
aorta
coronary ligament
porta hepatis
hepatic veins
right lobe
left lobe
caudate lobe
fissure for teres ligament
caudate process
right triangular ligament
proper hepatic artery
teres ligament
portal vein
gallbladder
common bile duct
quadrate lobe
gallbladder
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Relations of the liver

5- **inferior surface**: it shows the following features and impressions:

a. Gastric impression

B. Fissure for ligamentum teres

c. Quadrate lobe

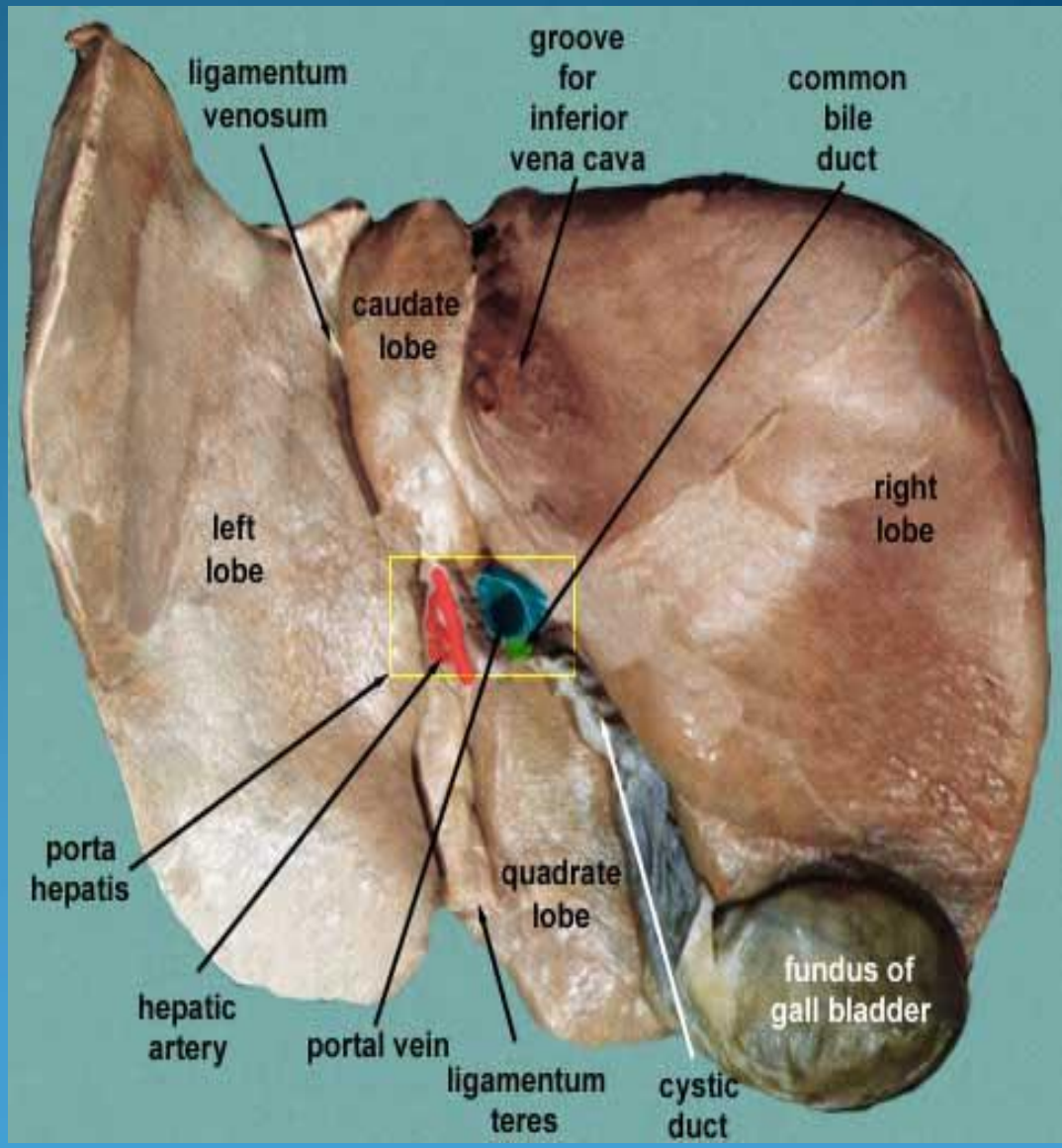
d.Fossa for gall bladder

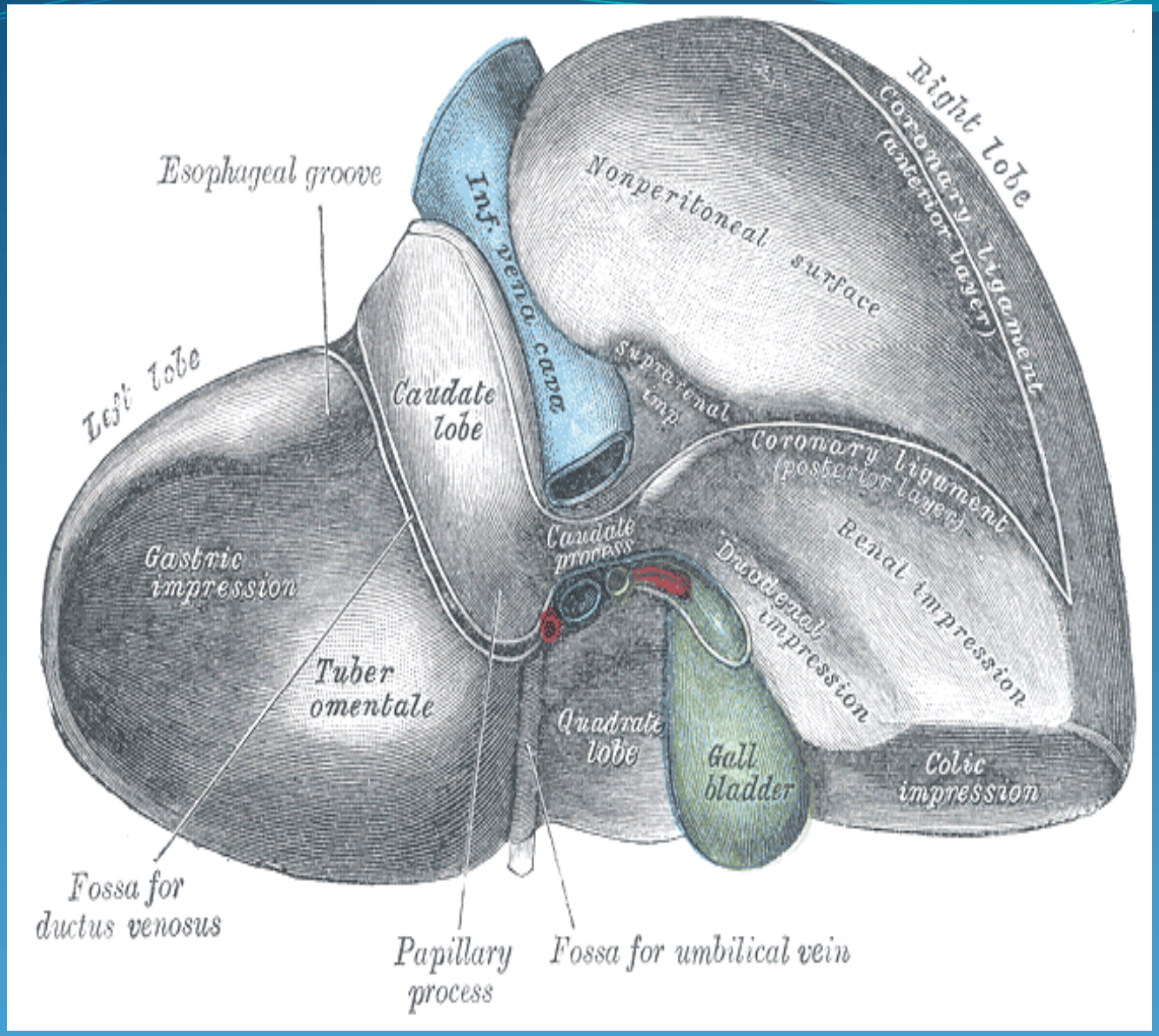
e. Duodenal impression

f. Renal impression

g. Supra renal impression

h. Colic impression




Esophageal groove
Inf. vena cava
Nonperitoneal surface
Right lobe
Coronary ligament (anterior layer)
Left lobe
Caudate lobe
Suprarenal impression
Coronary ligament (posterior layer)
Renal impression
Caudate process
Duodenal impression
Gastric impression
Tuber omentale
Quadrate lobe
Gall bladder
Colic impression
Fossa for ductus venosus
Papillary process
Fossa for umbilical vein

Quadrate lobe

It is a rectangular part of the inferior surface of liver. It is bounded by:

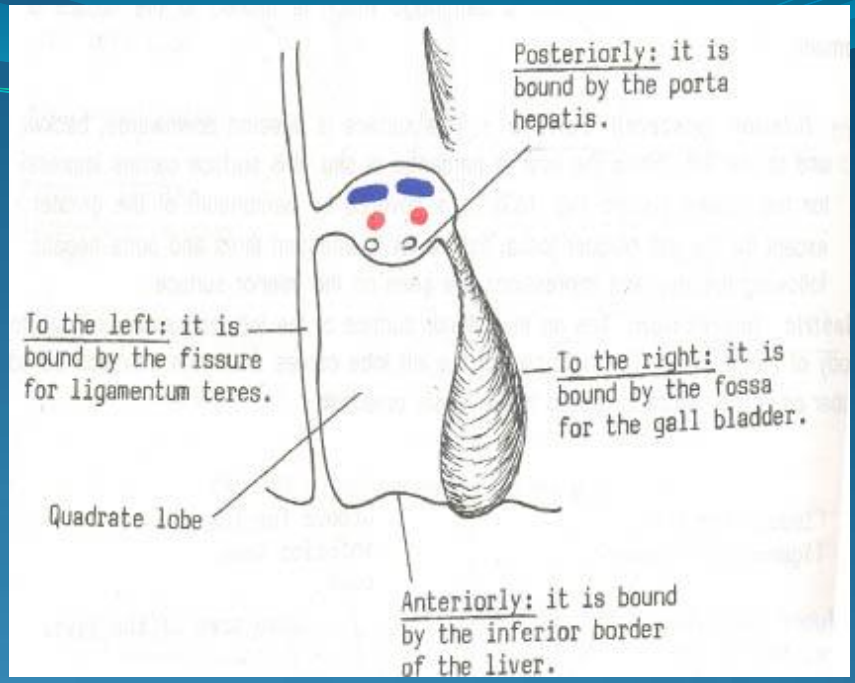
-inferior border of liver (ant.).

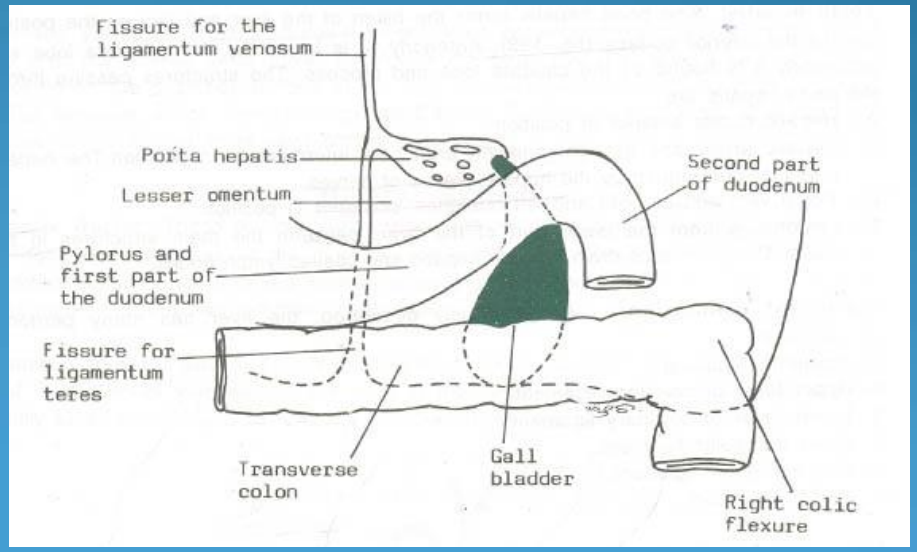
-porta hepatis (post.)

-gall bladder fossa (on the right)

-fissure for ligam.teres (on left side)

*It is related to: transverse colon (ant), pylorus& 1st part of duodenum (middle) and lesser omentum (post)





Porta hepatis

- It forms the hilum of the liver. Anteriorly, it is bounded by quadrate lobe and posteriorly, by caudate lobe and process.
- Structures passing through it:

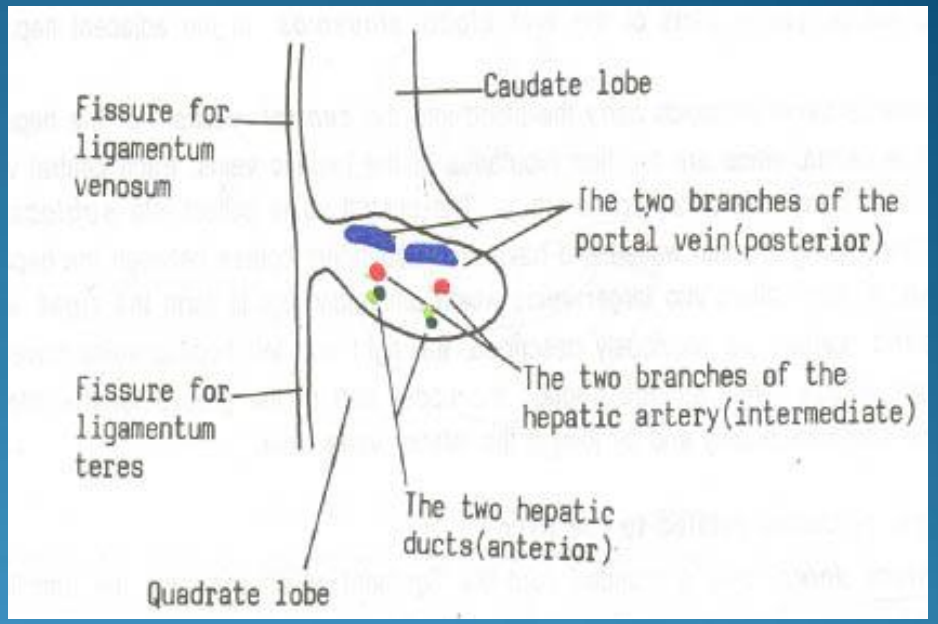
a. Hepatic ducts: ant. In position.

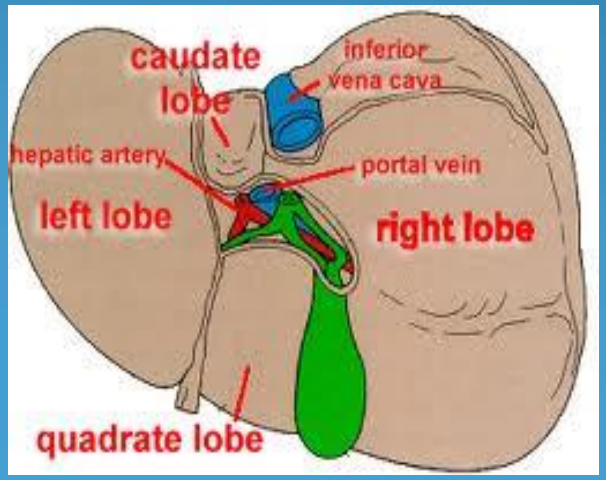
b. Hepatic artery: intermediate in position.

c. Portal vein: posterior in position.

d. Lymphatics.

- It gives attachment to lesser omentum.





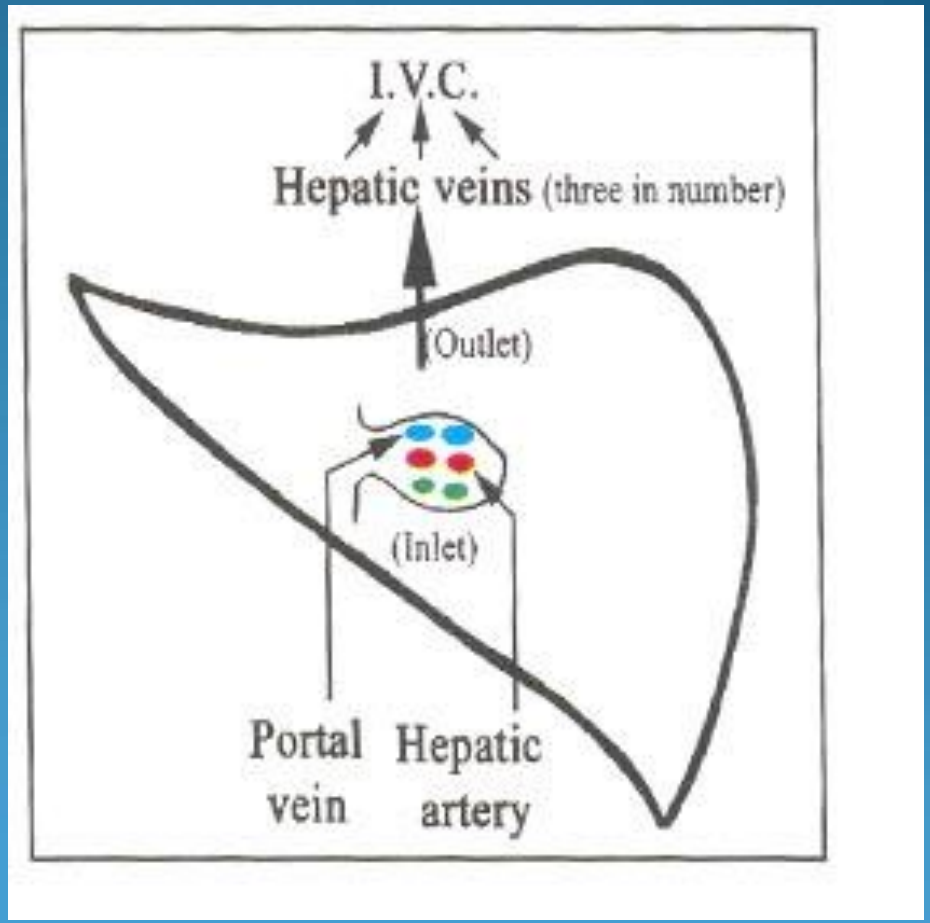
Blood supply of liver

- It receives blood from two sources:

1- Hepatic arteries which divides into right , left branches.

2- Portal vein: which divides into right , left branches.

- The venous drainage is by three hepatic veins which terminate in the IVC(right, left, middle).



Peritoneal connections

1- falciform ligament.

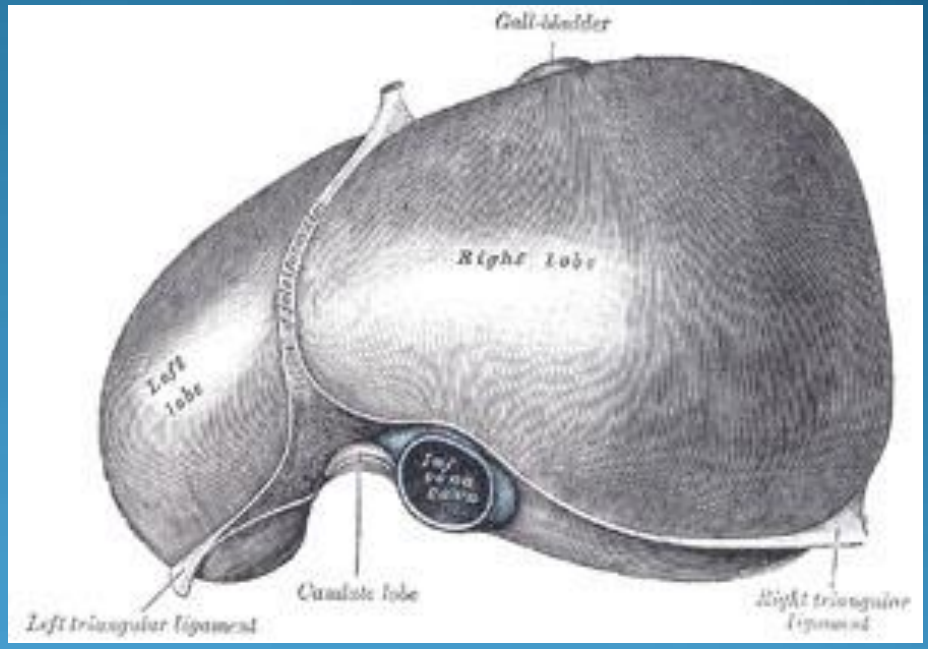
2- upper layer of coronary ligament.

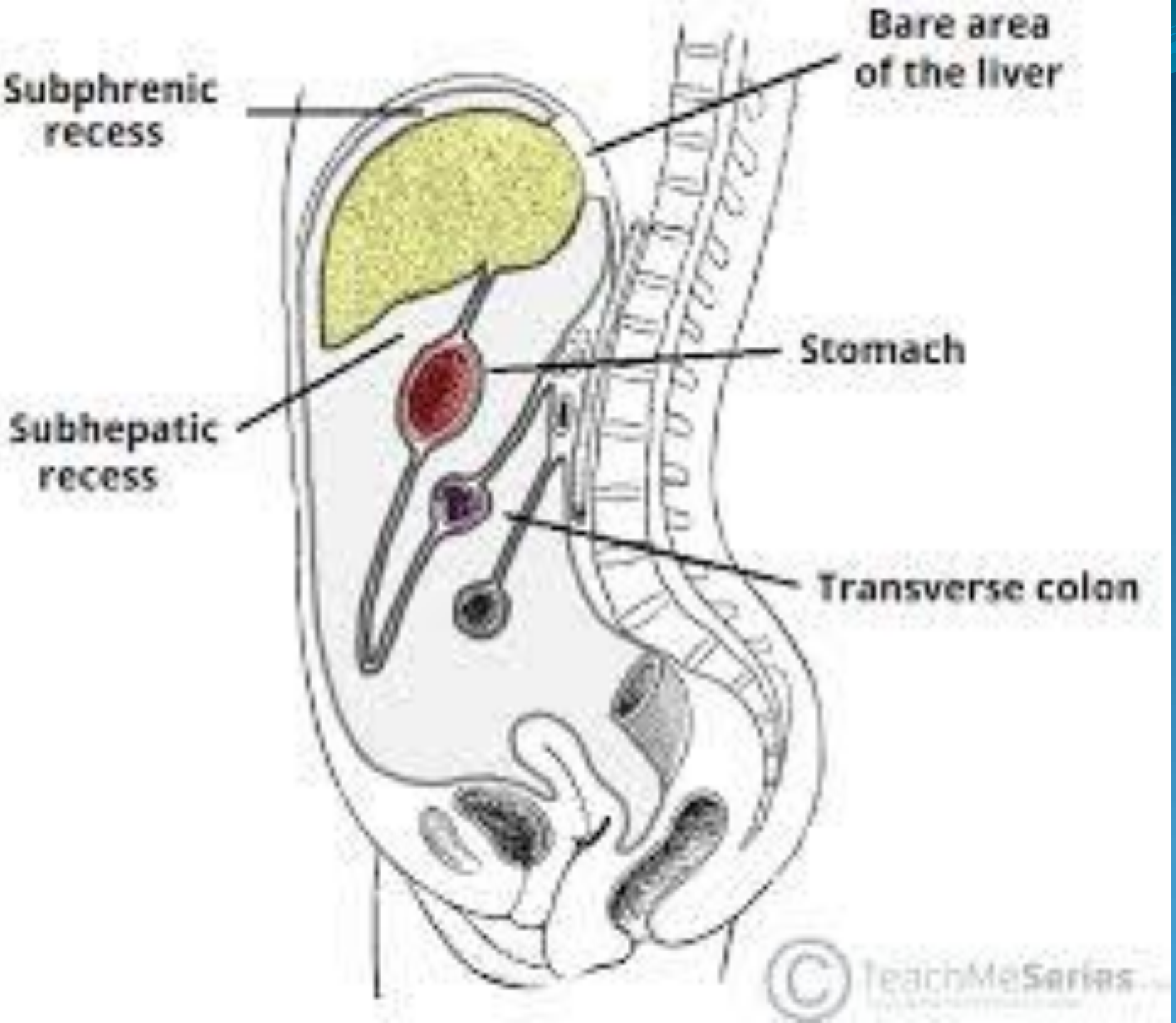
3- lower layer of coronary ligament.

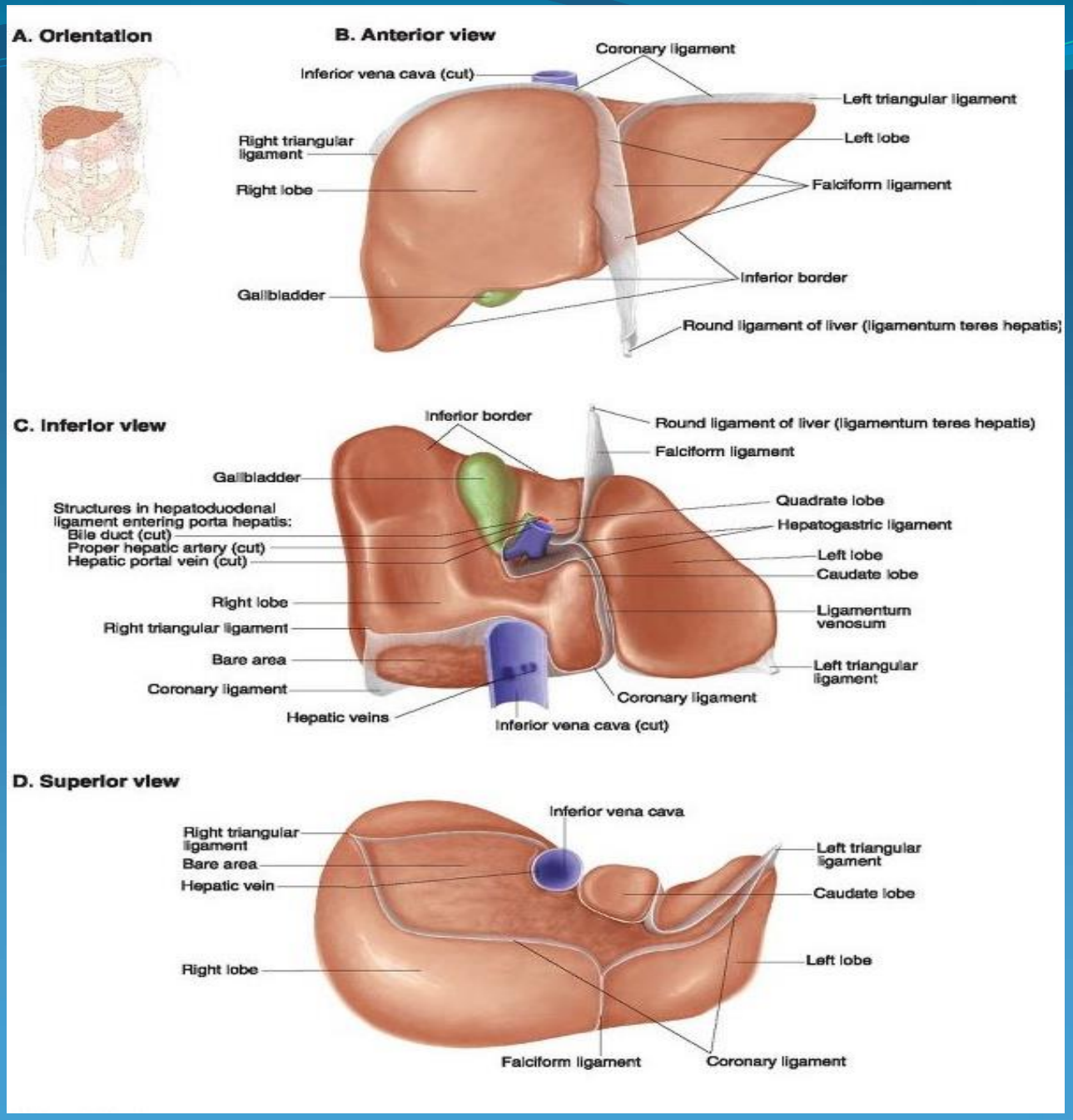
4- right triangular ligament.

5- Left triangular ligament.

6- lesser omentum.




Bare area
of the liver
Subphrenic
recess
Stomach
Subhepatic
recess
Transverse colon


A. Orientation
B. Anterior view
Coronary ligament
Inferior vena cava (cut)
Left triangular ligament
Left lobe
Right triangular ligament
Falciform ligament
Right lobe
Inferior border
Gallbladder
Round ligament of liver (ligamentum teres hepatis)
C. Inferior view
Inferior border
Round ligament of liver (ligamentum teres hepatis)
Falciform ligament
Gallbladder
Quadrate lobe
Structures in hepatoduodenal ligament entering porta hepatis:
Bile duct (cut)
Proper hepatic artery (cut)
Hepatic portal vein (cut)
Hepatogastric ligament
Left lobe
Caudate lobe
Right lobe
Ligamentum venosum
Right triangular ligament
Bare area
Left triangular ligament
Coronary ligament
Coronary ligament
Hepatic veins
Inferior vena cava (cut)
D. Superior view
Inferior vena cava
Right triangular ligament
Left triangular ligament
Bare area
Hepatic vein
Caudate lobe
Left lobe
Right lobe
Falciform ligament
Coronary ligament

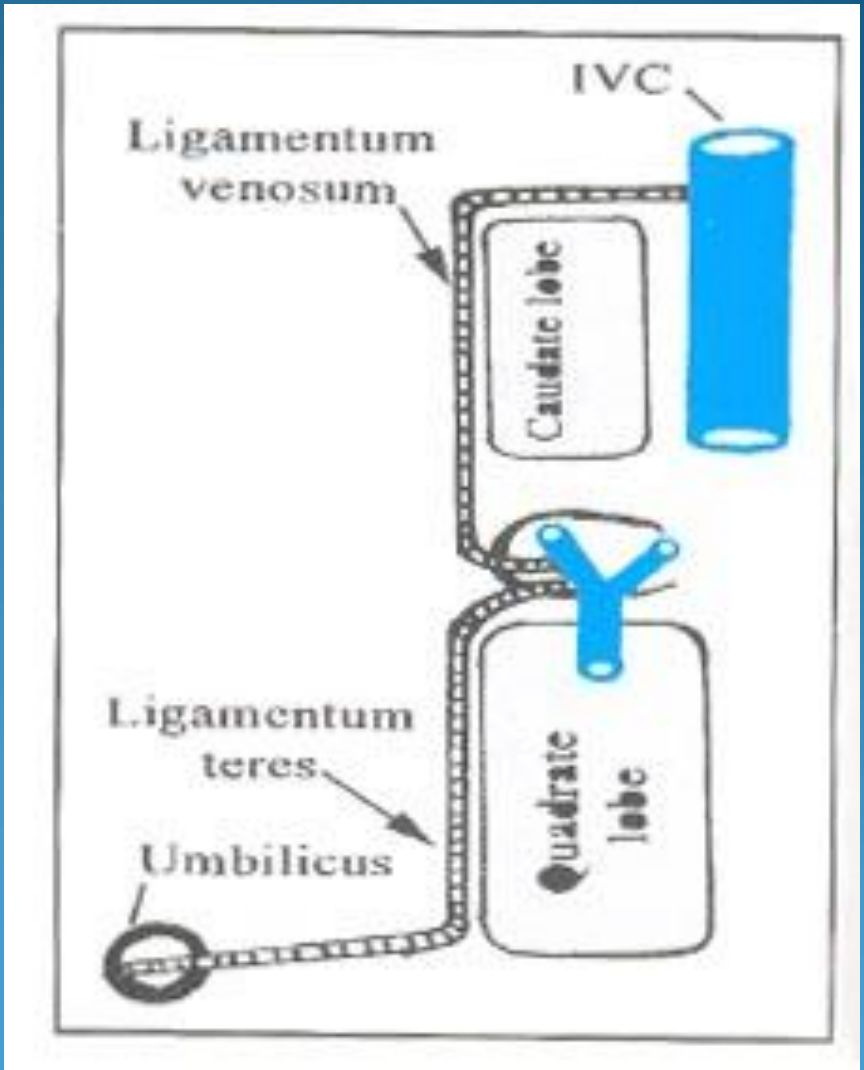
Embryonic remnants

1- Ligamentum teres:

It connects the umblicus with the left branch of portal vein. It represents the obliterated umblical vein.

2- Ligamentum venosum:

It connects the left branch of portal vein with the IVC. . It represents the obliterated ductus venosus.



Areas of the liver not covered by peritoneum

1- Bare area

2- Groove for IVC

3- Porta hepatic

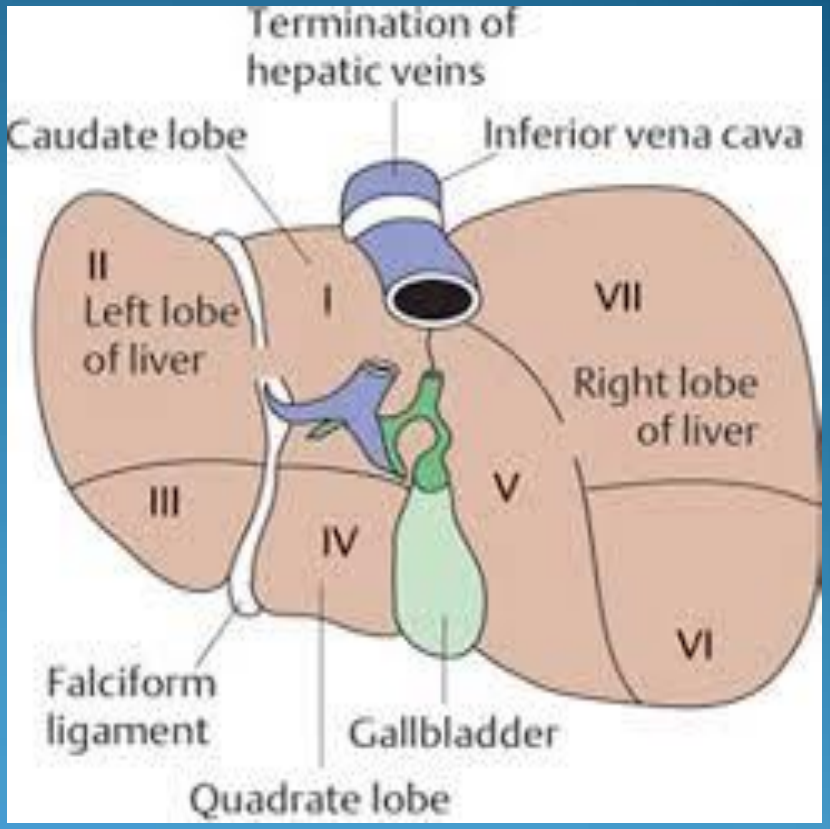
4- Fossa of gall bladder

5- Fissure for ligamentum teres

6-Fissure for ligamentum venosum.

Hepatic segmentation

- It depends on the vascular distribution to the liver.
- It is divided into right and left lobes by an imaginary line passing through IVC and fossa of gall bladder. This include caudate , quadrate lobes as parts of left lobe.
- Each part receives its own primary branch of the hepatic artery and hepatic portal vein and is drained by its own hepatic duct.



Thank You

Dr.DALIA M. BIRAM