

# Liver and gall bladder



# Location and description

- Largest gland in body
- Pliable مرن and in upper part of abdomen
- under cover of right costal margin + diaphragm (right hypochondriac)
- Inferior surface irregular , cover other vicera
- **Produce and Secret bile (from worn out RBC)**
- **Filtrate blood (detoxification of drugs)**
- **Synthesis of heparin and anti coagulant**

- Inferior surface in contact with

- Esophagus →

- Stomach →

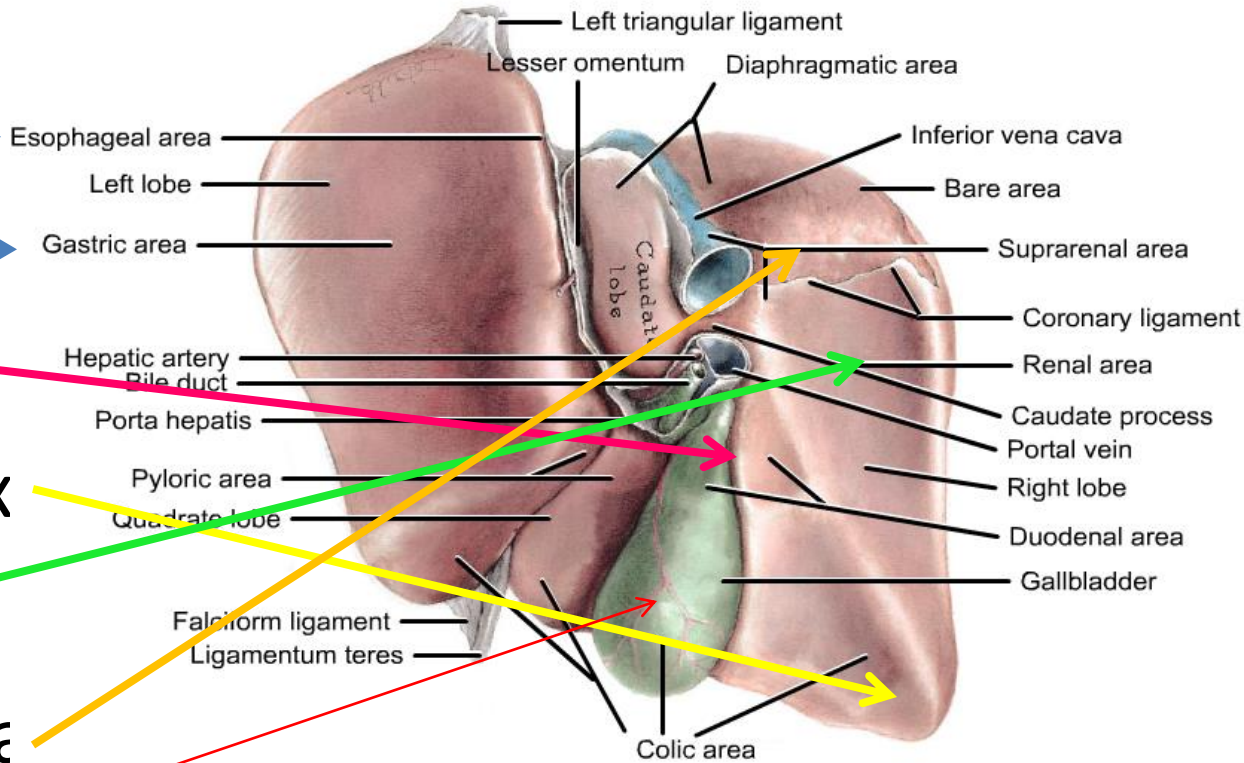
- Duodenum →

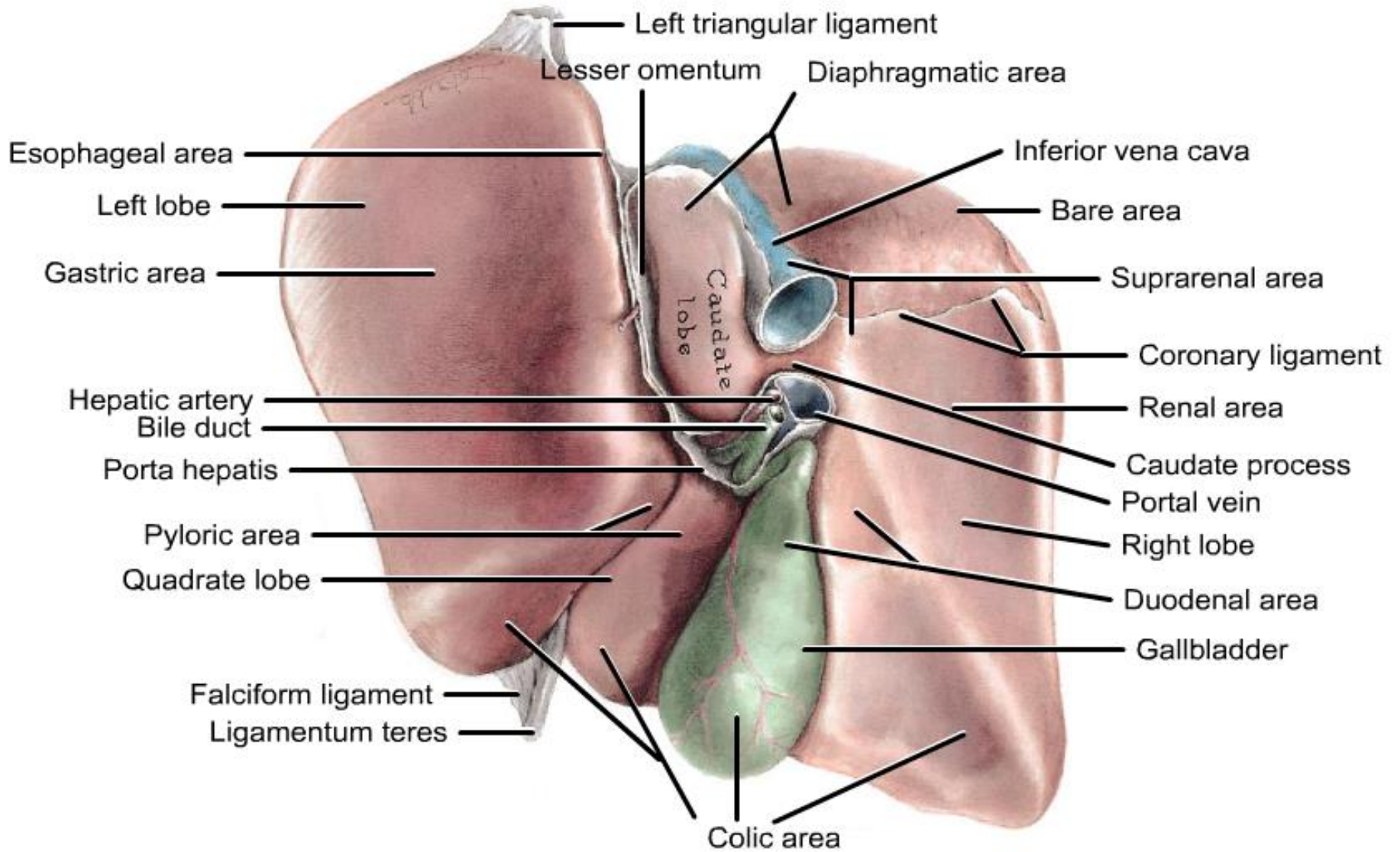
- Right colic flex →

- R kidney →

- Supra renal glā →

- gallbladder →

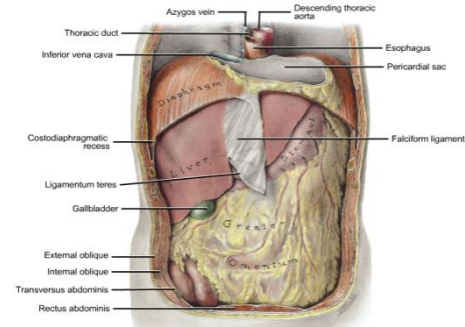







# Lobes

- Demarcated into Right and left by falciform ligament
- Right subdivided into :- quadrate and caudate by presence of gall bladder, fissure for ligamentum teres, the inferior vena cava and by the fissure for ligamentum venosum
- ***the right hepatic artery, cystic artery and branch of portal vein and right hepatic duct to the right***
- ***the remaining lobes by left branches.***

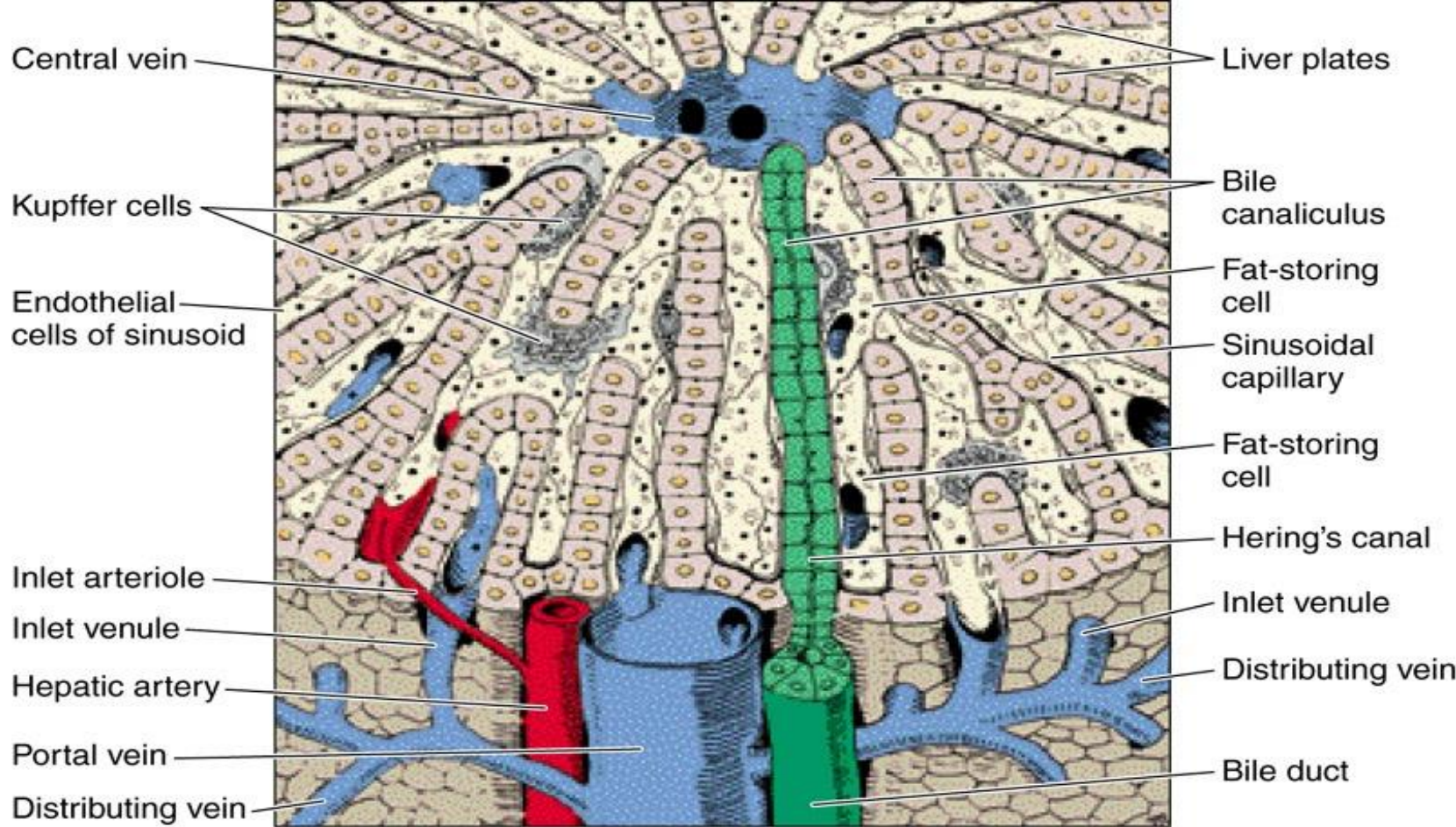


# Portal hepatitis

- On posteroinferior surface between caudate and quadrate lobes
- **Attach to free edge of lesser omentum which contain ;- right and left hepatic duct, hepatic artery, the portal vein , and sympathetic and parasympathetic nerves, few hepatic lymph nodes.  Celiac L. n.**

# Structure of liver

- Fibrous capsule partially covered by peritoneum
- Liver lobules
- Central veins are tributaries of hepatic veins
- Portal triad (portal canal) between lobule; artery, portal vein and bile duct
- The arterial and venous blood passes to sinusoids



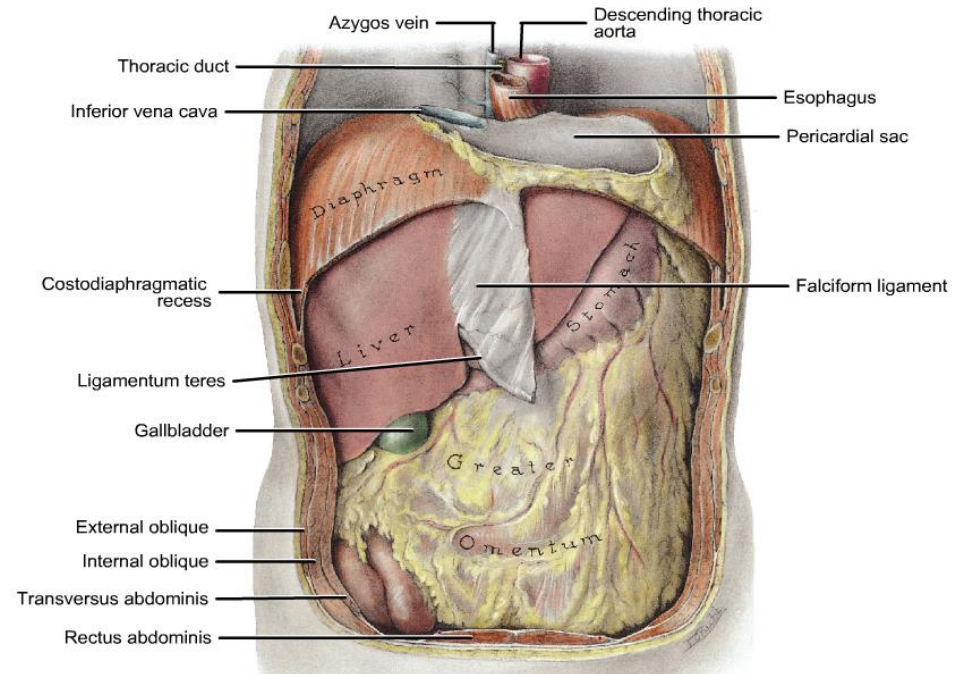
**central vein, the portal vein. Note the bile canaliculus, liver plates, Hering's canal, Kupffer cells, sinusoid, fat-storing cell, and sinusoid endothelial cells. (Courtesy of M Muto.)**



# Relations

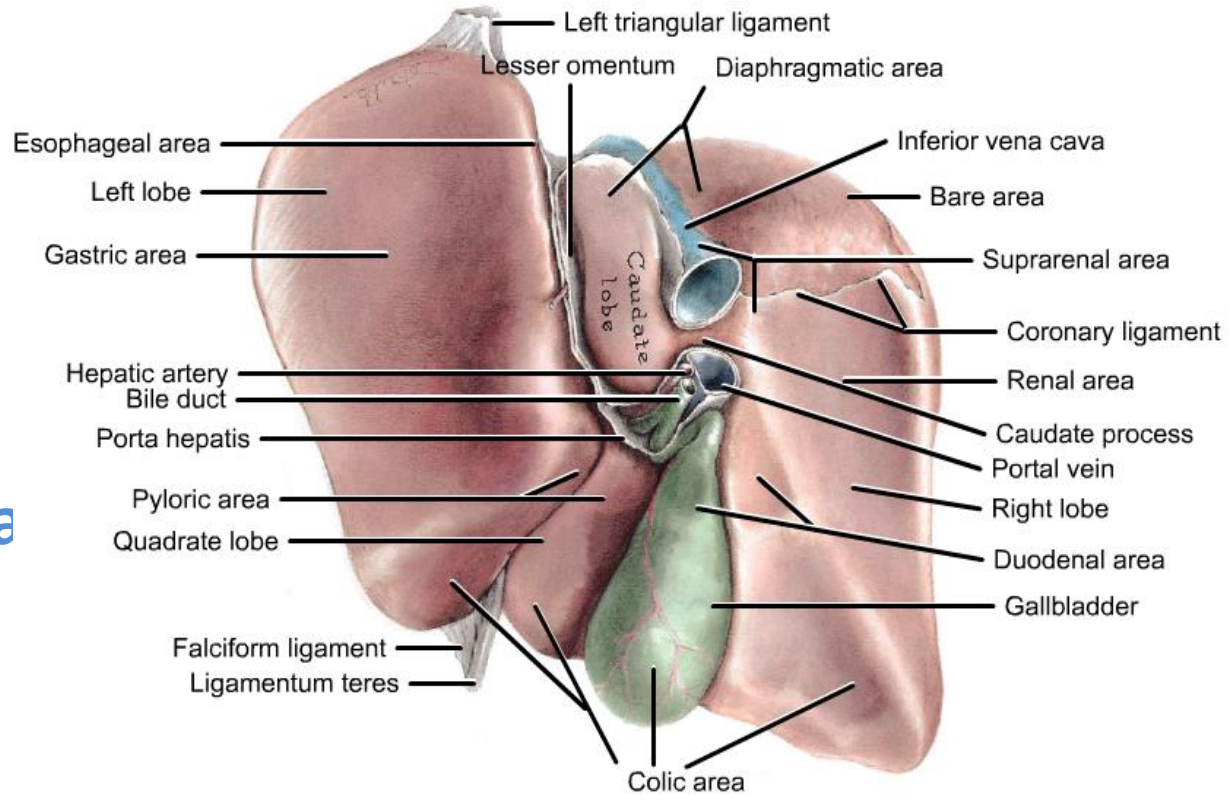
- **Anteriorly:-**

- Diaphragm ,
- R.&L costal margins;
- pleura ,
- lower margins of both lungs ,
- xiphoid process and
- anterior abdominal wall, in the sub costal angle



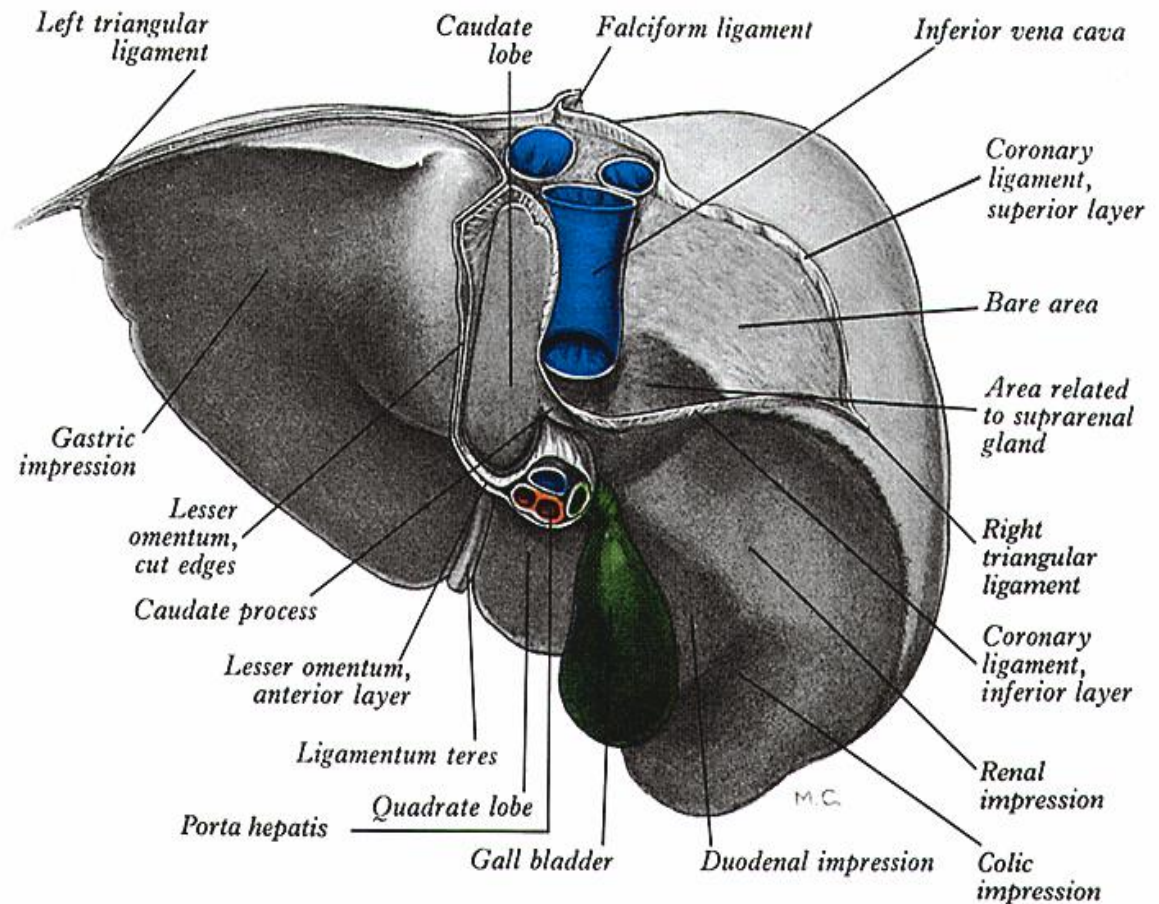
• Posteriorly:-

- Diaphragm
- R. kidney ,
- Hepatic colic flexure
- Duodenum
- Gall bladder
- Inferior vena ca and
- Esophagus
- Fundus of stomach.



# Ligaments of the liver

- **Falciform ligament** : 2 layer of peritoneum from umbilicus to liver, its free margin is
- **Ligamentum teres (remnant of umbilical vein) in fissure , join left portal vein**



## Coronary ligament:

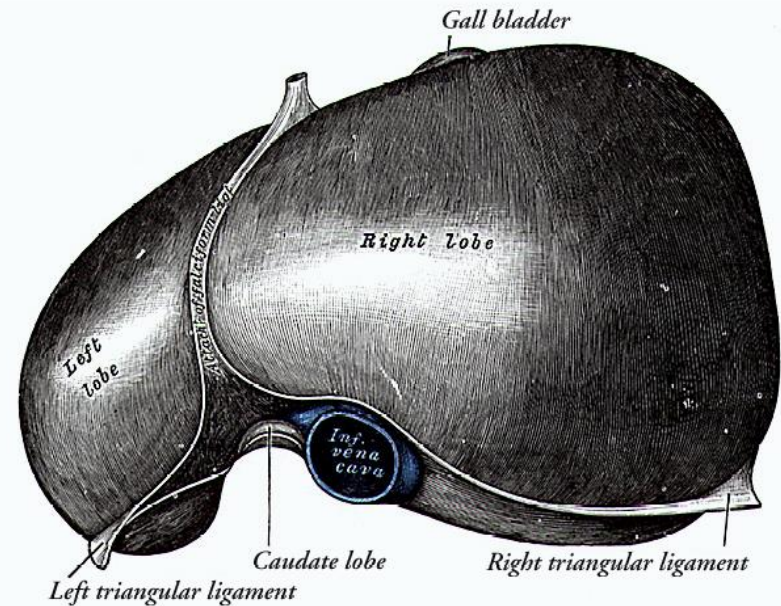
- anterior and posterior layer
- Right and left triangular ligament

## Ligamentum venosum

remains of ductus venosus, attach to left branch of portal vein , ascend upward to join inferior vena cava

## Right triangular ligament

Right extremity of the coronary ligament



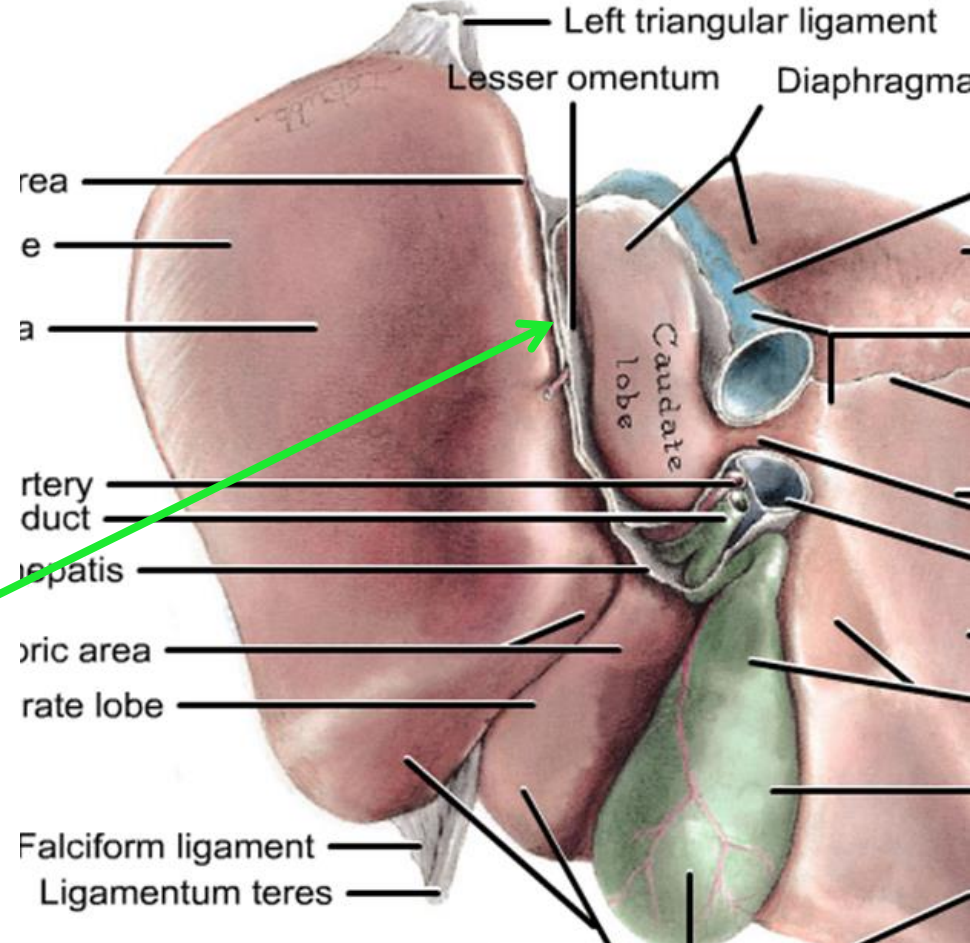
## Left triangular ligament

Formed by extension of left layer of falciform ligament upward



- Two layer of coronary ligament widely separated to form **bare area of liver** devoid of peritoneum.

- **Ductus venosus** bypass blood directly from umbilical vein to inferior vena cava before birth



Blood supply : hepatic artery (30%) divide into R & L hepatic artery before entering to portal hepatis+ portal vein (70 %)

Veins : 2-3 hepatic veins join inferior vine cava

# Lymphatic

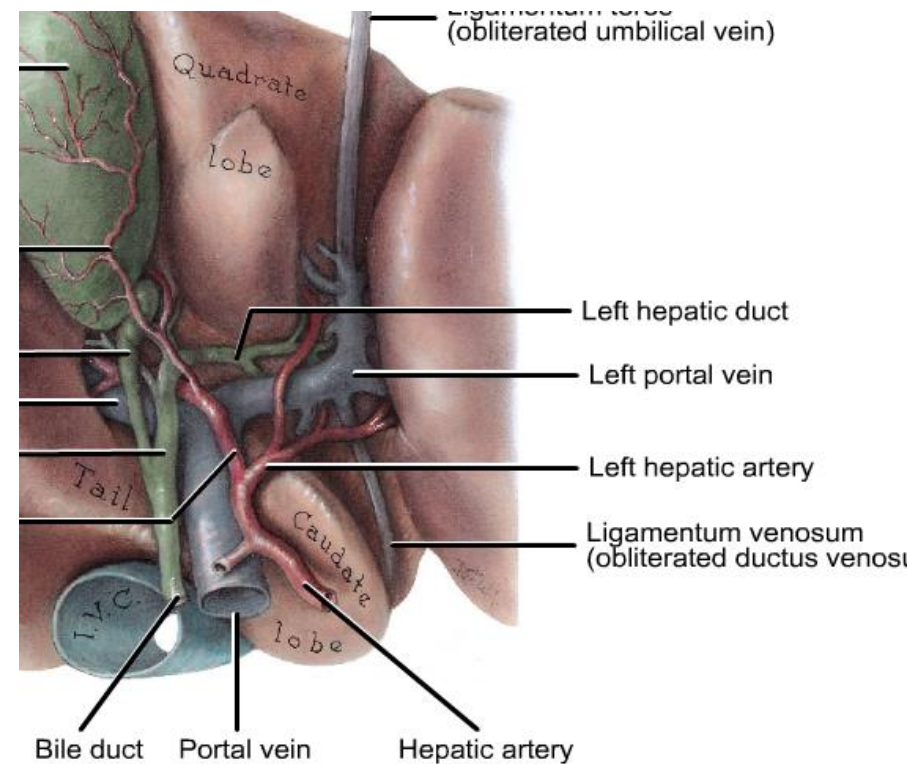
- **1/3 – 1/2 of body lymph produced by liver.**
- **L N in portal hepatis then to the celiac L.N**
- **L.N in bare area drain to posterior mediastinal lymph nodes through diaphragm**

**Nerve supply : sympathetic and parasympathetic around celiac trunk**

**Bile : 40 ml / h secreted by liver, stored in gall bladder , later delivered to duodenum**

**Bile ducts :**

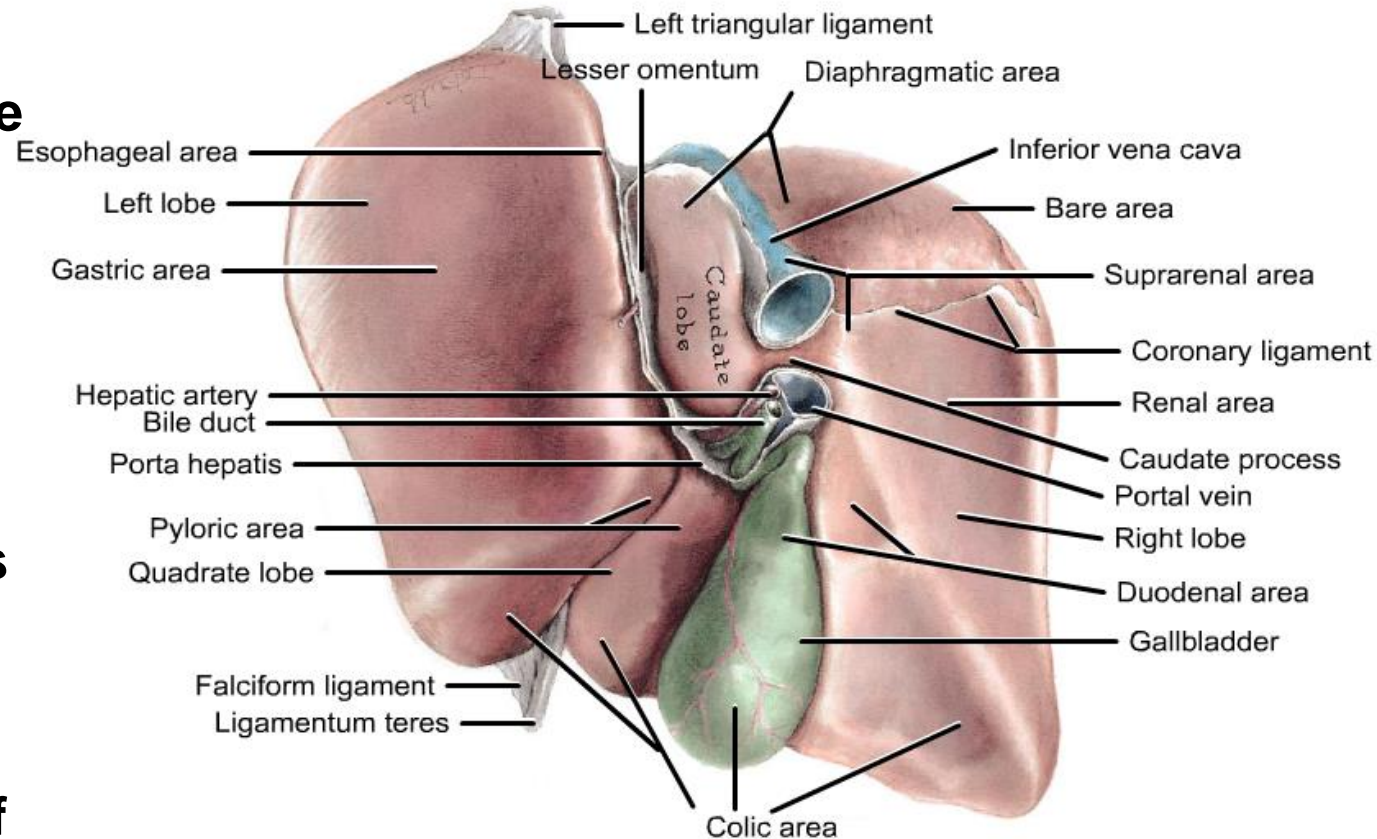
**Right and left hepatic duct then common hepatic duct join cystic duct to form common bile duct**



The visceral areas for: (a) esophagus, stomach, pylorus, and duodenum; (b) transverse colon (colic area); and (c) right kidney and right suprarenal gland. The gallbladder rests on the transverse colon and duodenum;

The posterior surface comprises (a) the bare area, occupied on its left by the inferior vena cava, (b) the caudate lobe, and (c) the groove for the esophagus;

The bare area is triangular; hence, the coronary ligament that surrounds it is three-sided; its left side, or base, is between the inferior vena cava and caudate lobe, and its apex is at the right triangular ligament, where the superior and inferior layers of the coronary ligament meet.

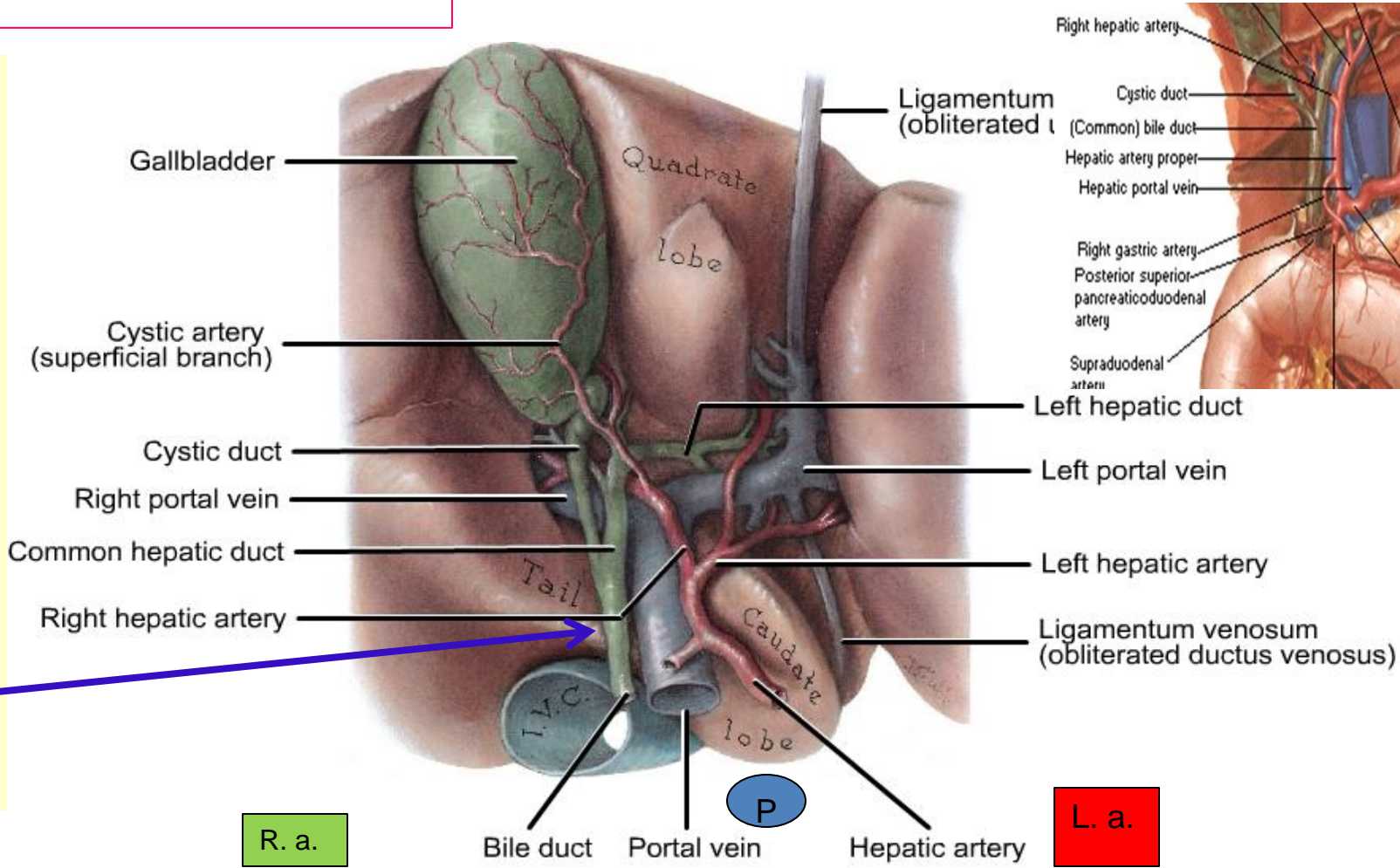
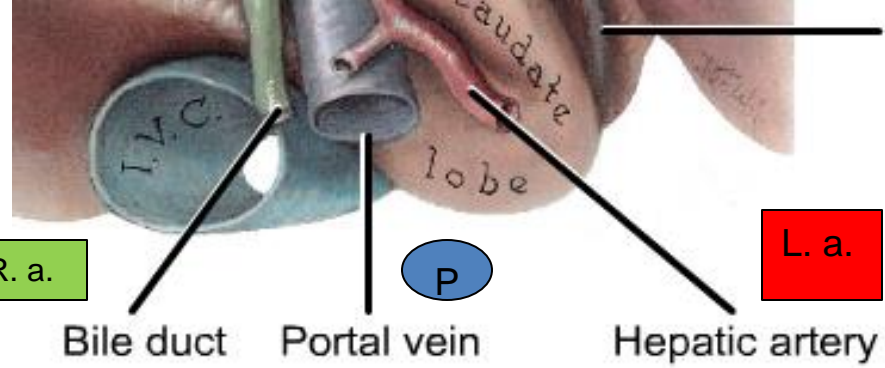




The relation of structures as they ascend to the portal hepatis: duct to the right, artery to the left, and vein posterior;

But at the porta hepatis: duct, artery, and vein from anterior to posterior;

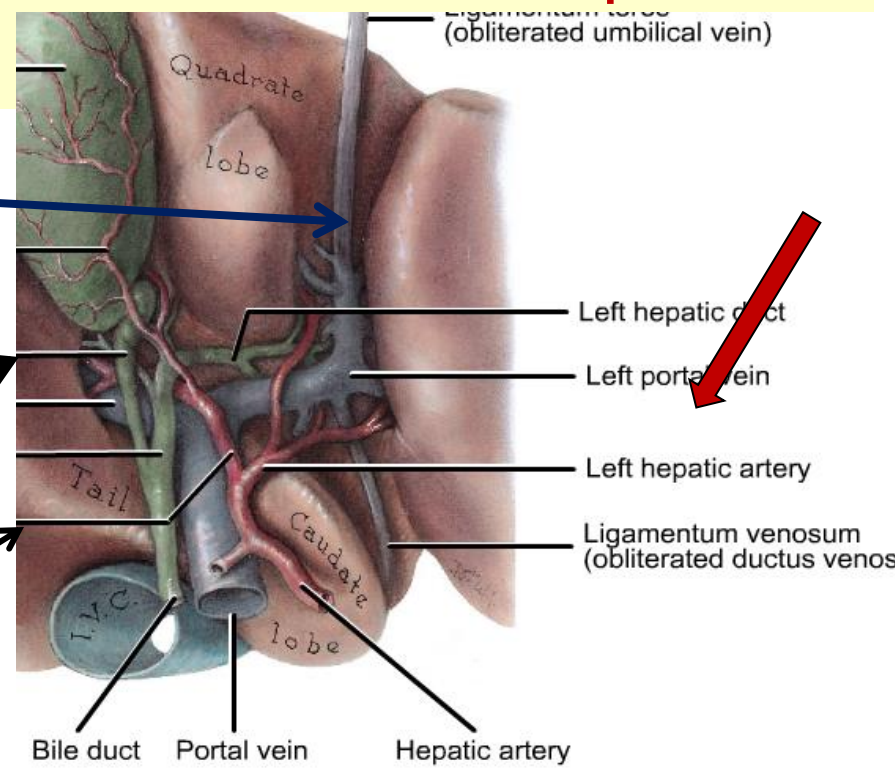
**Caudate lobe forms: superior boundary of the omental (epiploic) foramen and lies between the portal vein and inferior vena cava;**



The left portal vein and left hepatic artery supply the quadrate and caudate lobes en route to the left lobe and are accompanied by tributaries of the left hepatic duct

The ligamentum teres passes to the left portal vein, and the ligamentum venosum arises opposite it and ascends to the inferior vena cava;

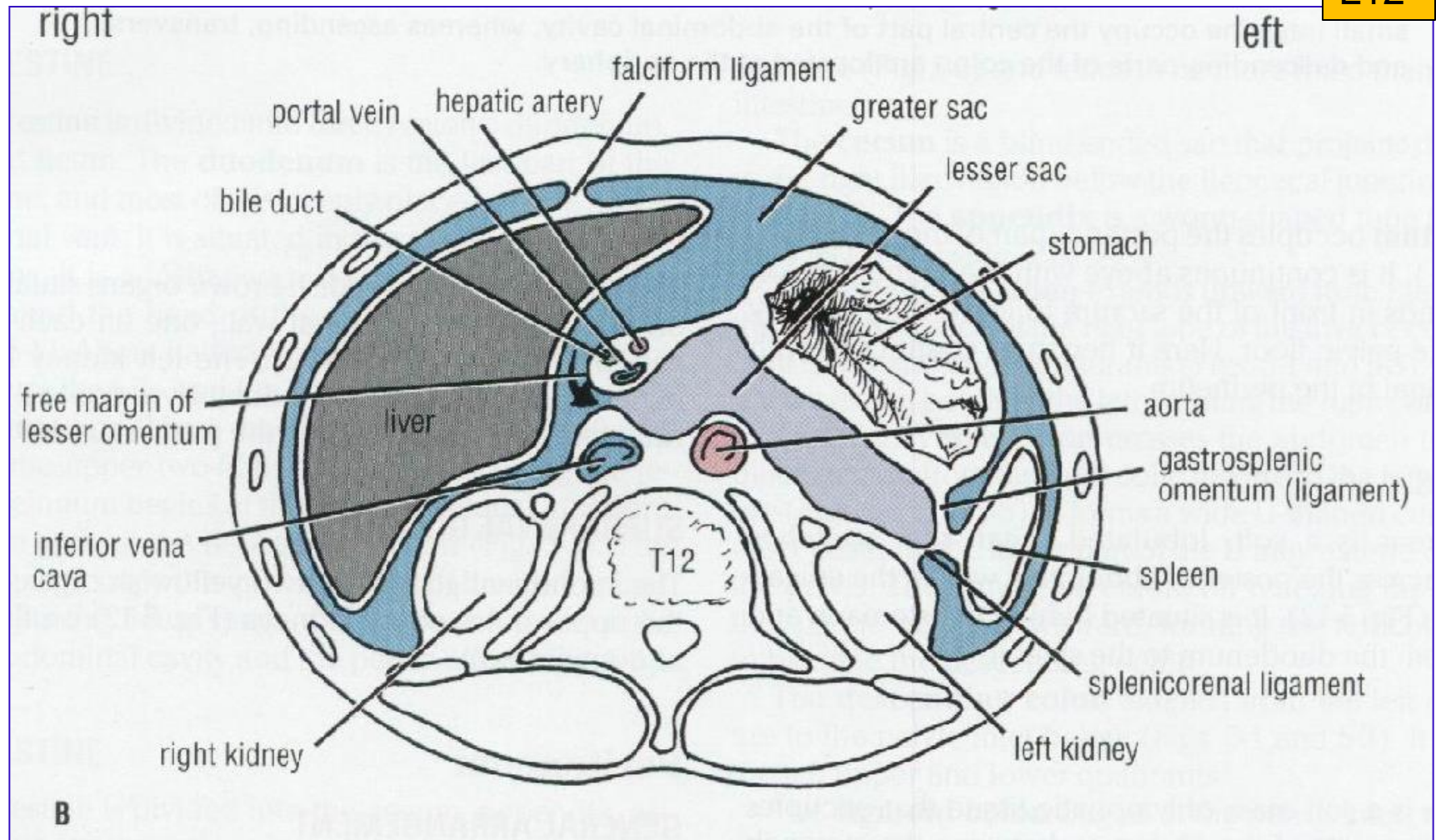
The cystic artery springs from the right **hepatic artery** and divides into superficial and deep branches that arborize on the respective surfaces of the gallbladder

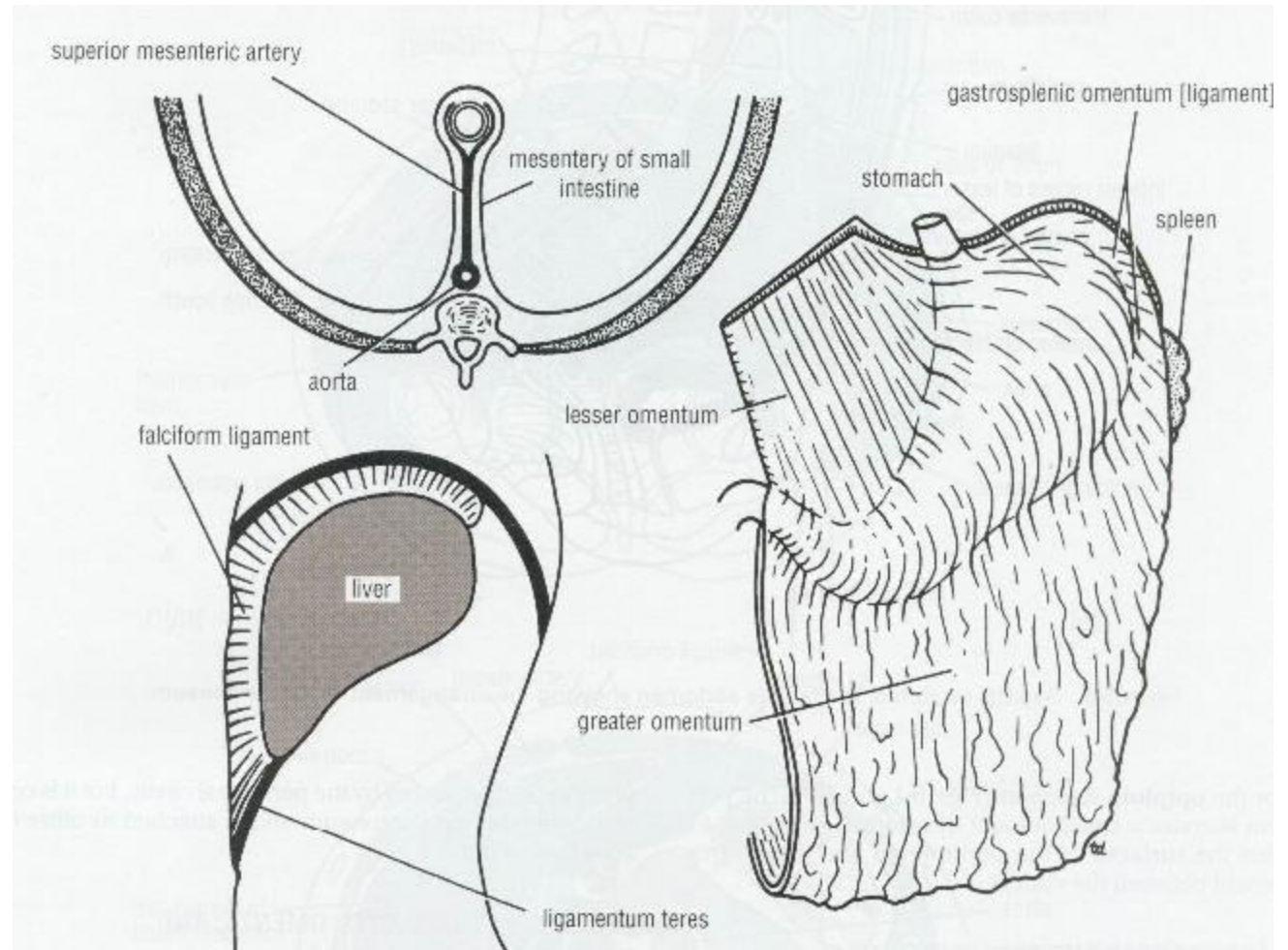




**Figure 5-4** Transverse sections of the abdomen showing the arrangement of the peritoneum. The *arrow* in the lower diagram indicates the position of the opening of the lesser sac. These sections are viewed from below.

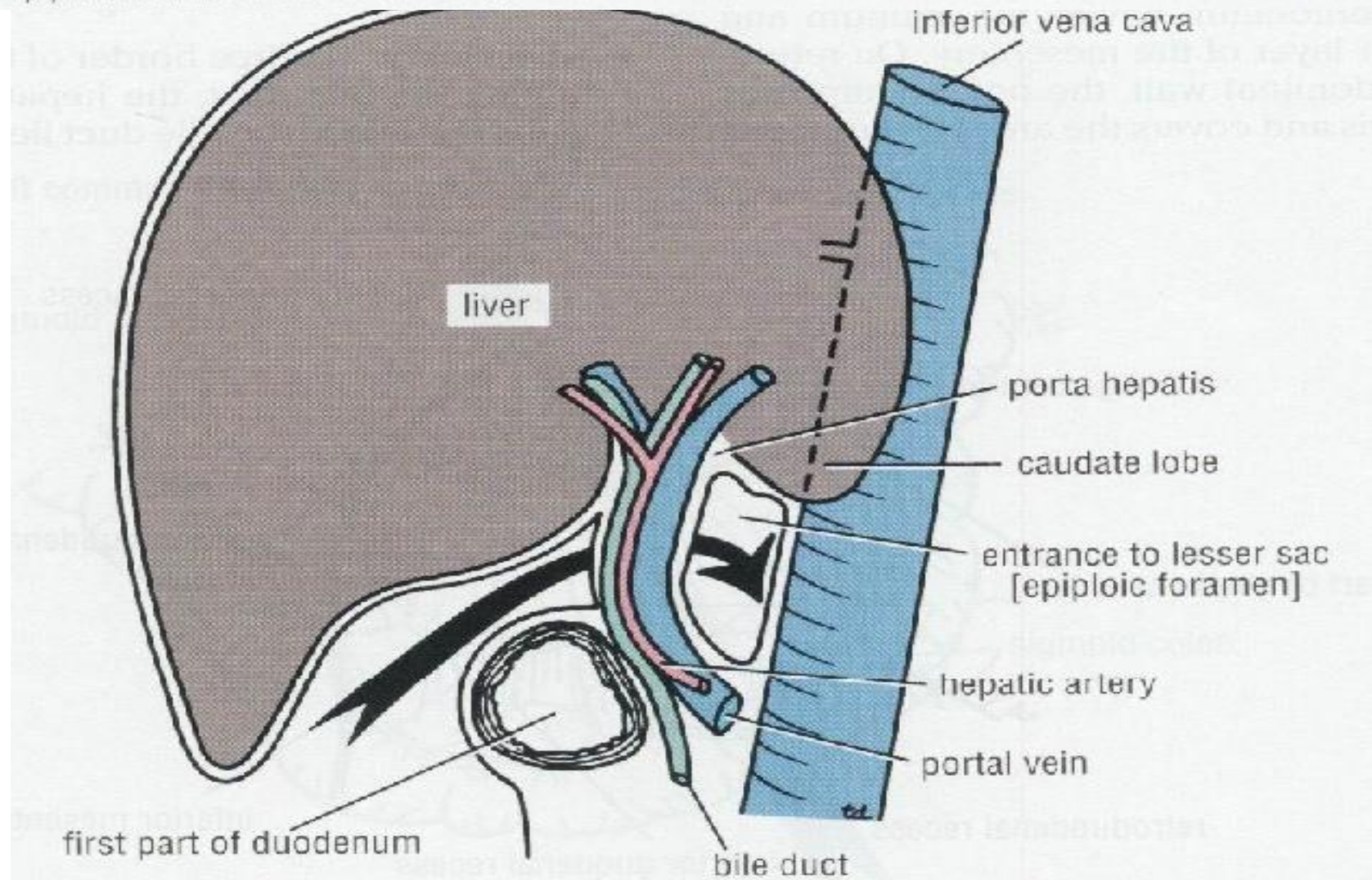
L12







**Figure 5-7** Sagittal section through the entrance into the lesser sac showing important structures that form boundaries to the opening. (Note the *arrow* passing from the greater sac through the epiploic foramen into the lesser sac.)



**Figure 5-8** Peritoneal recesses that may be present in the region of the duodenojejunal junction. Note the presence of the inferior mesenteric vein in the peritoneal fold, forming the paraduodenal recess.

