GALL BLADDER &BILIARY PASSAGES

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GALL BLADDER

•**Site:** Right hypochondrium, in the G.B fossa on the inferior surface of liver, attached to it by loose C.T & small vessels.

•**Shape:** Pyriform in shaped.

Size: 3 inches long, 3 cm breadth, 30-50 ml capacity.

Function: Concentration of bile (10 times).

Parts & relations:

a. Fundus: Protrudes below inferior border of liver.

1.Anterior: Anterior abdominal wall.

2.Posterior: Transverse colon.

b. Body:

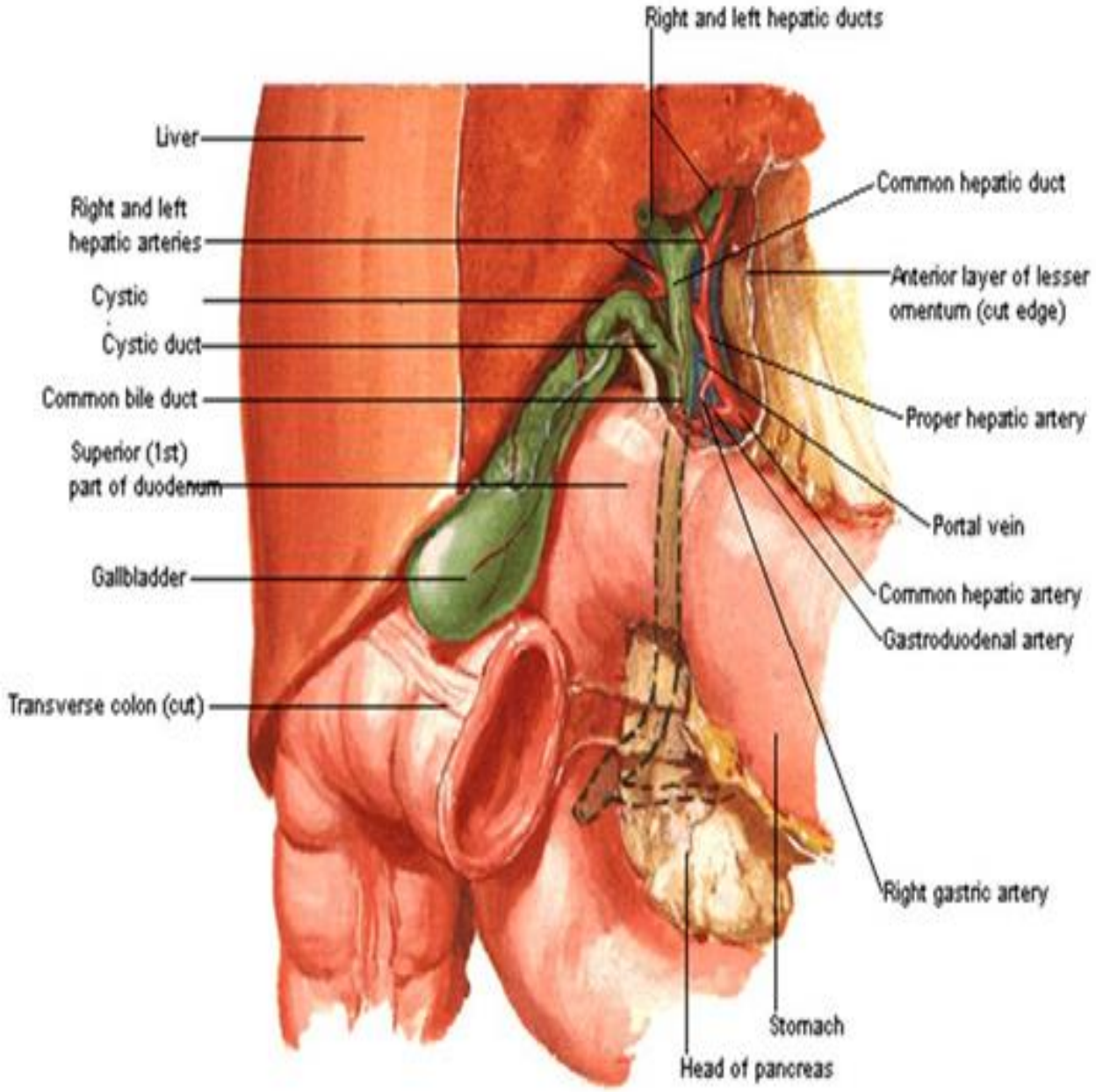
1. Antero-superior: liver.

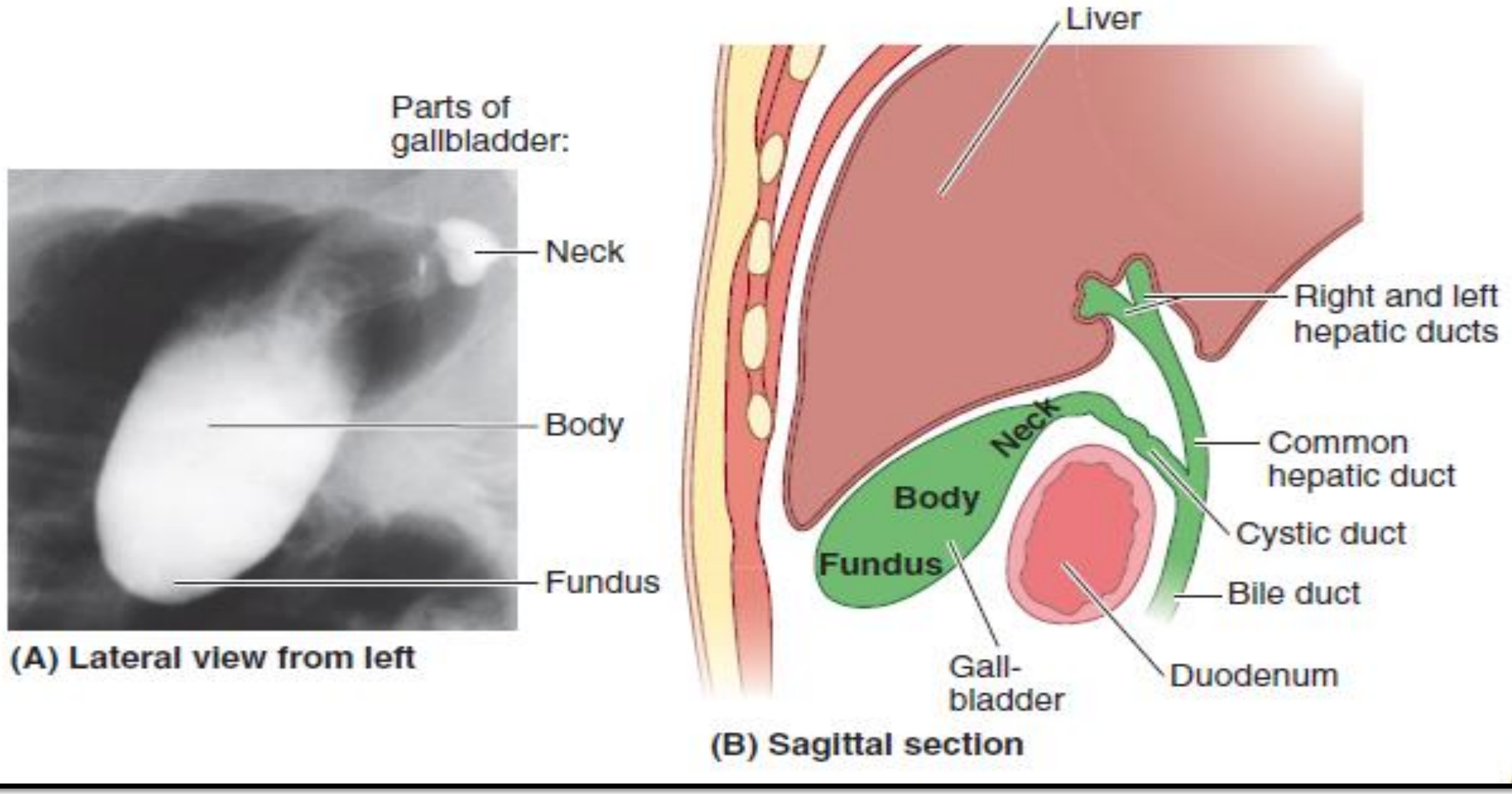
2. Postero-inferior: Transverse colon, end of 1st part of duodenum.

c. Neck: It is the narrowest part, from it comes the cystic duct & it shows dilatation called **Hartman's pouch**.

1. Antero-superior: liver.

2. Postero-inferior: end of 1st part of duodenum.

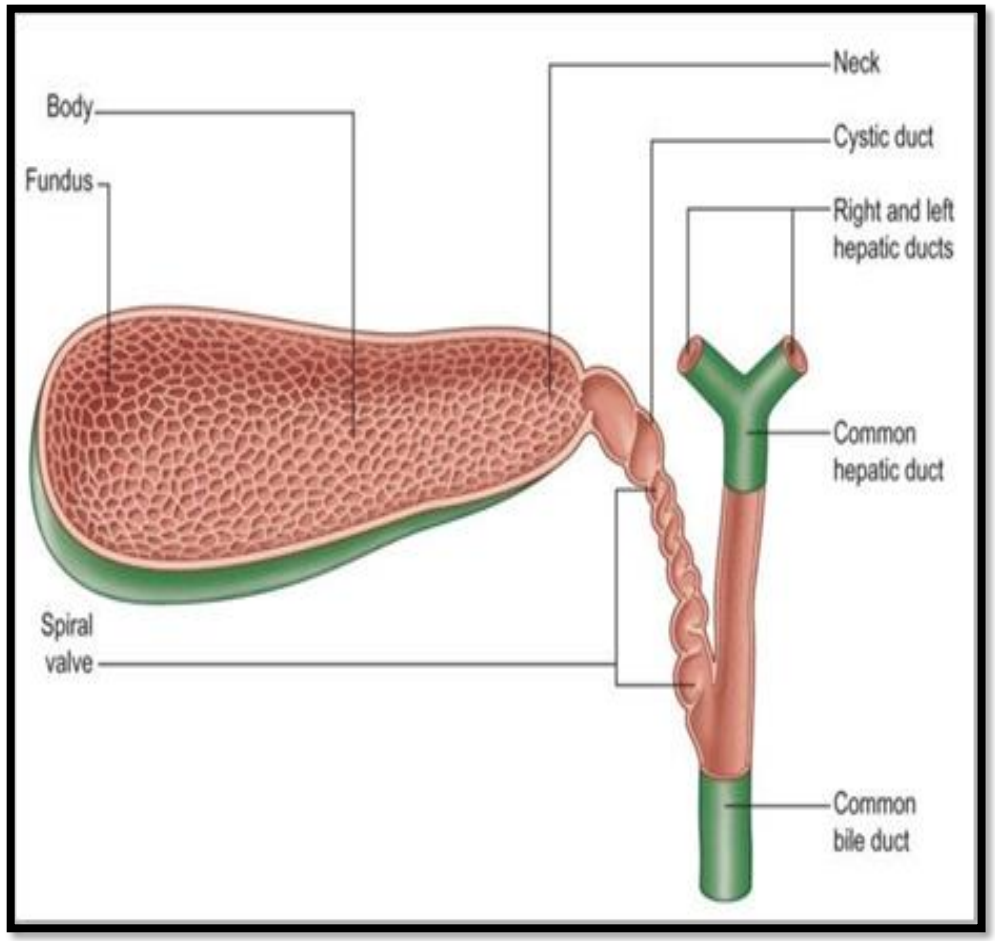


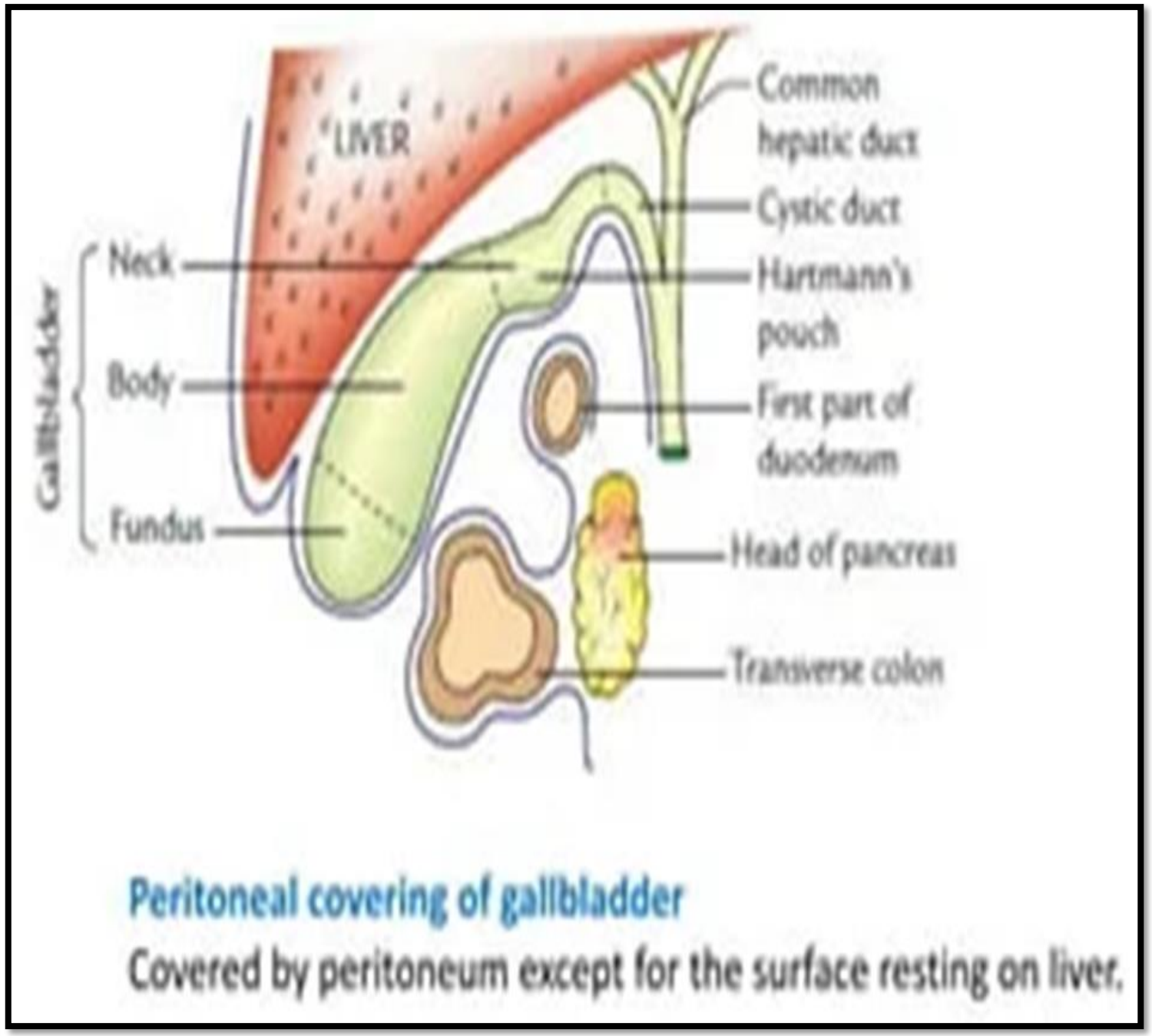

Parts of gallbladder:
Neck
Body
Fundus
(A) Lateral view from left
Liver
Right and left hepatic ducts
Neck
Body
Fundus
Common hepatic duct
Cystic duct
Bile duct
Gall-bladder
Duodenum
(B) Sagittal section

PERITONEAL COVERING:

- **Fundus:** completely covered by peritoneum
- **Body & neck:** only covered posteriorly

FUNCTION: Stores & concentrates bile





Arterial supply:

1.Cystic artery: a branch of right hepatic artery. It passes in the triangle of Callot's between cystic duct, C.H.D. & inferior surface of liver.

2. Many small short arteries pass from liver to G.B .

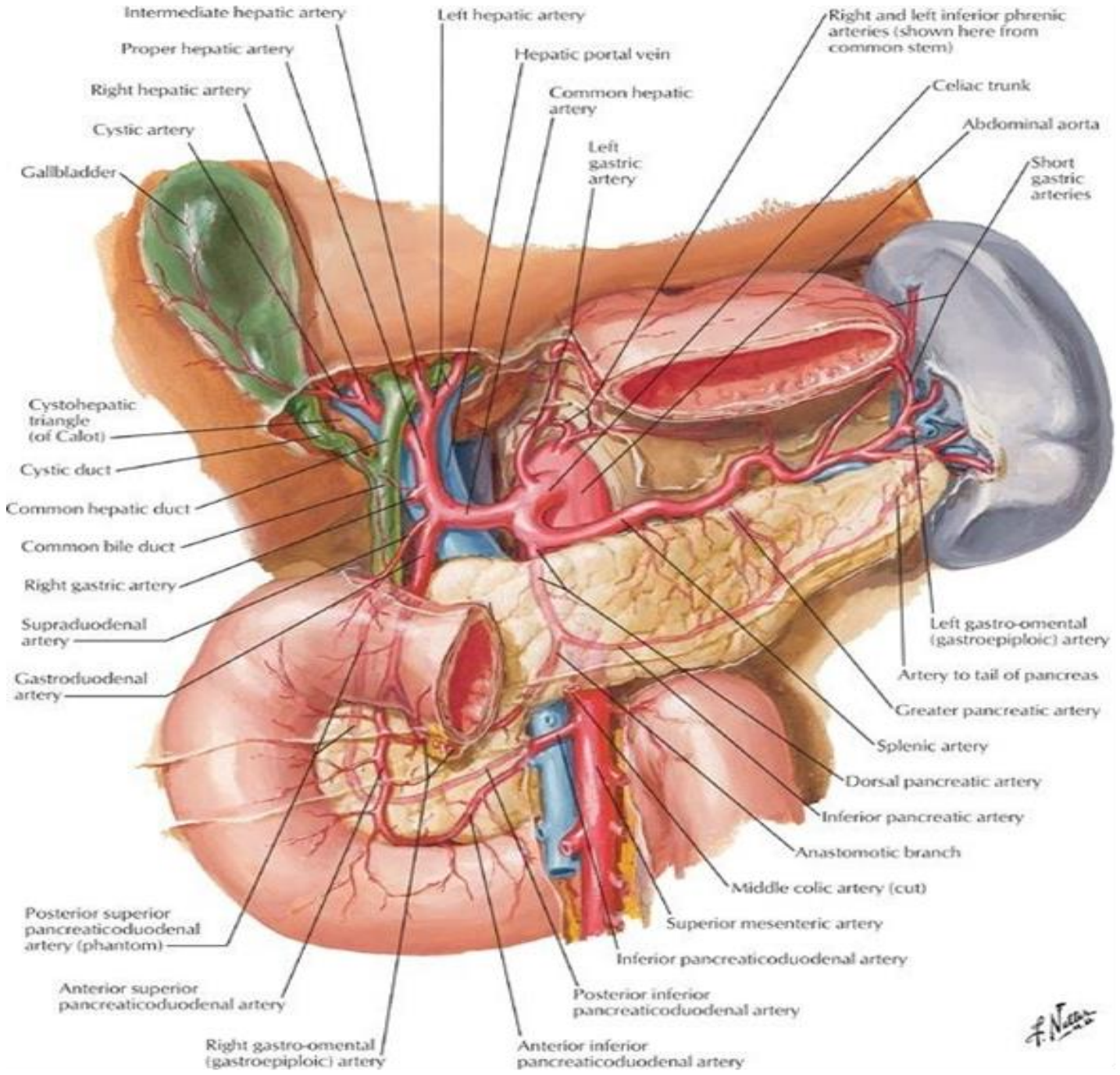
Venous drainage :

Usually, many veins open directly into portal venules inside the liver.

Cystic vein is tradionally described and drain into right branch of portal vein and may be absent .

Lymphatic drainage:

Cystic lymph node lies at the junction of cystic duct and common hepatic duct.

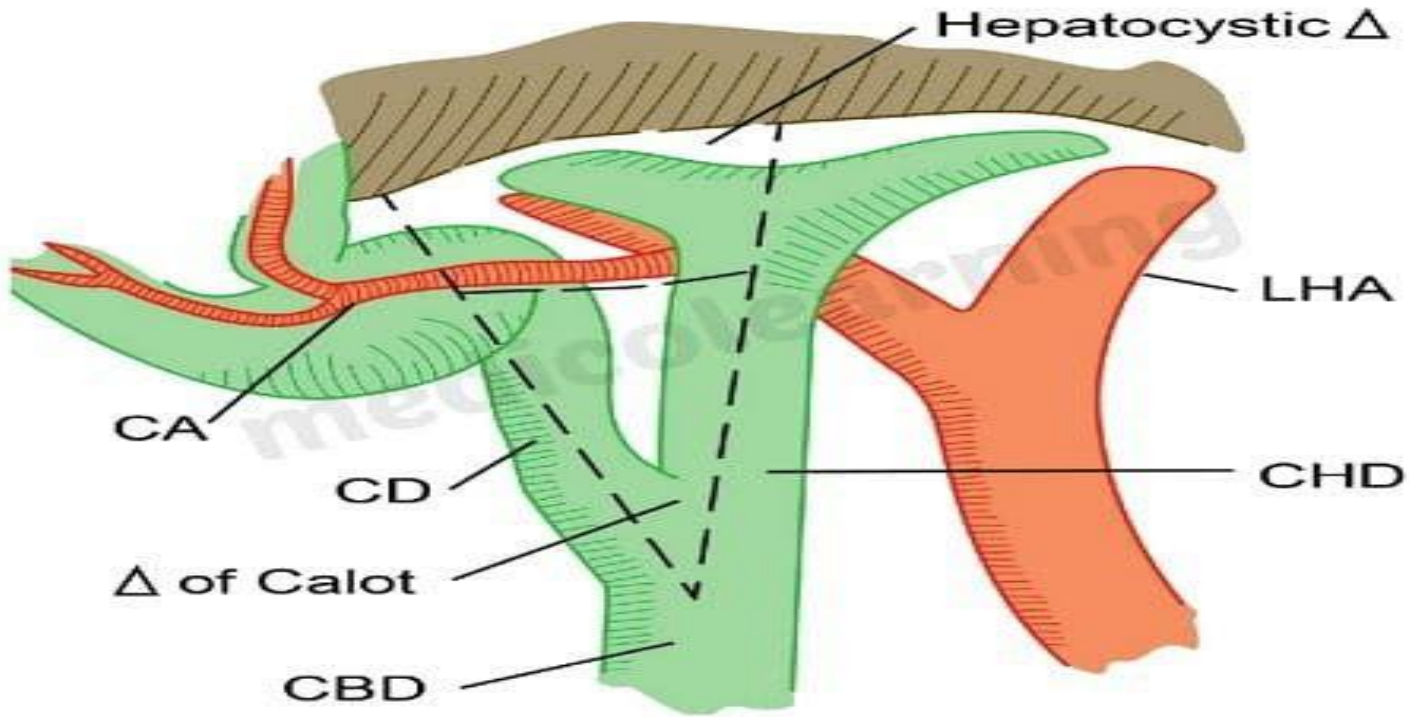


Calot's Triangle

Calot's triangle (cystohepatic triangle) is a small anatomical space in the abdomen.

Contents

- Right hepatic artery
- Cystic artery
- Lymph node of Lund
- Lymphatics



Border

- common hepatic duct medially
- cystic duct inferiorly
- Cystic Artery superiorly

Nerve supply:

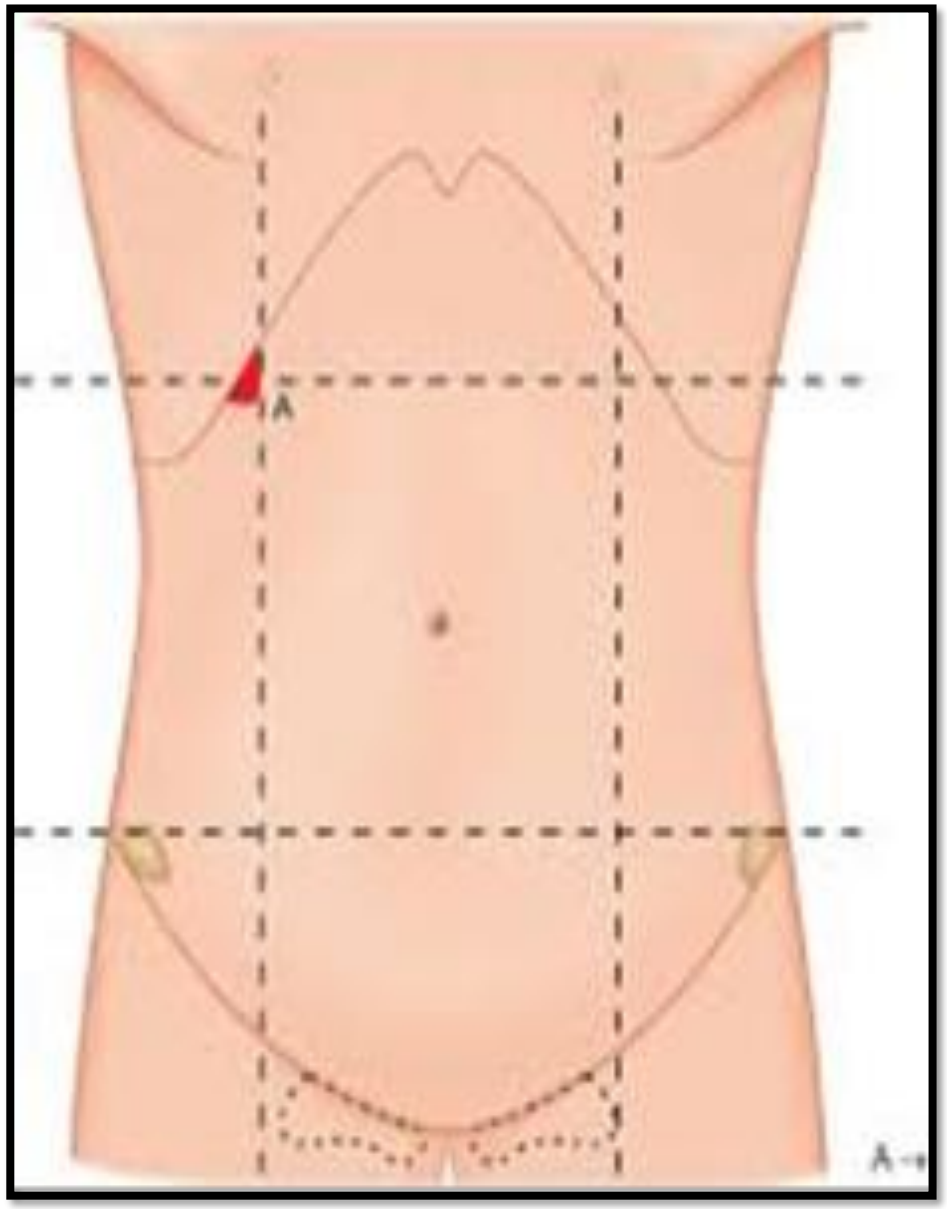
Parasympathetic : hepatic branch of Vagus .

Sympathetic: greater splanchnic nerve from T_{5-9}.

Sensory to peritoneum: Right phrenic nerve (C3, 4, 5).

Surface anatomy:

The fundus of G.B. corresponds to the tip of right 9th costal cartilage where the transpyloric plane or right lateral vertical plane crosses the right costal margin



BILIARY TREE

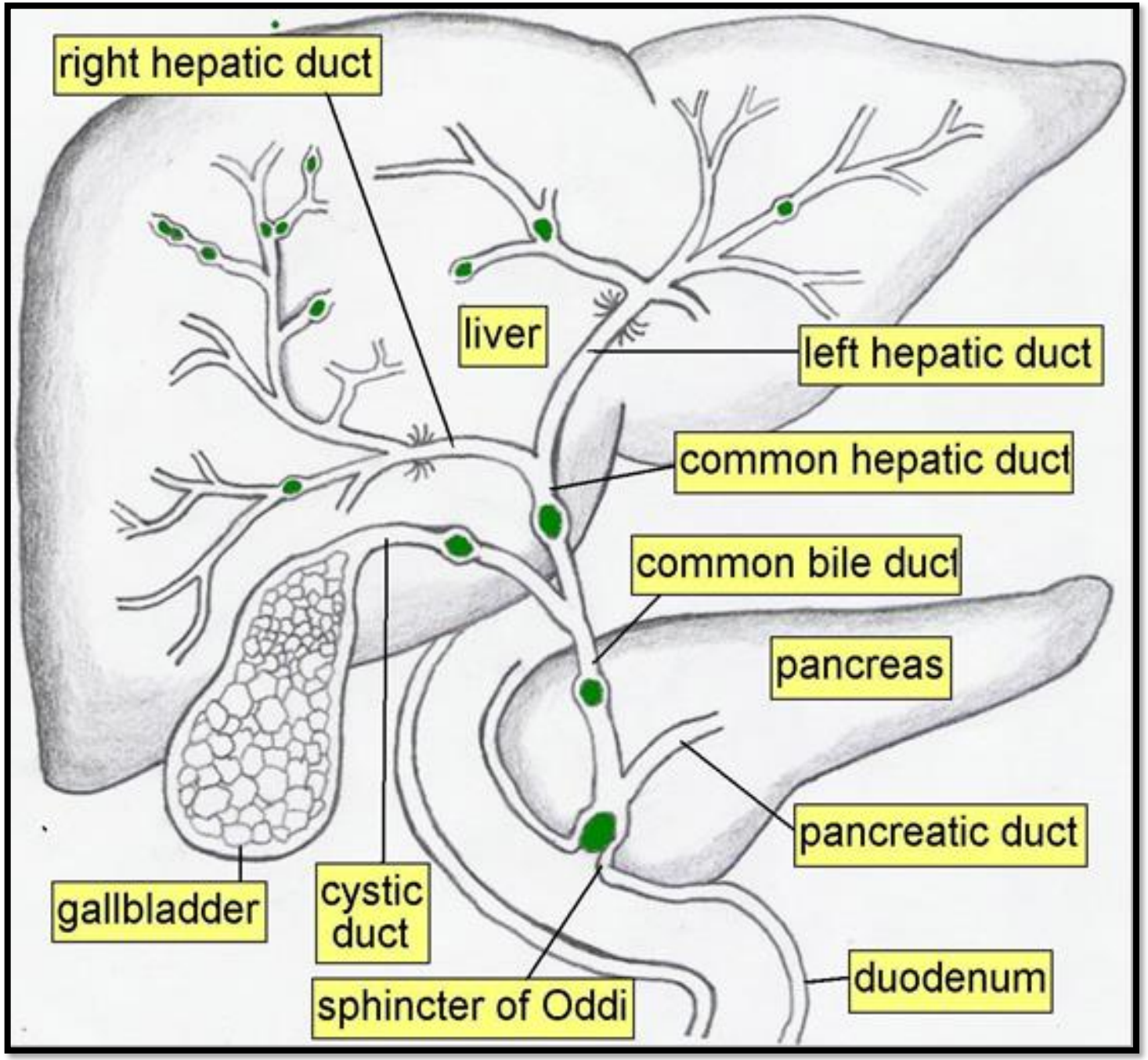
It is Made up of:

-Intra hepatic biliary ducts

-Extra hepatic biliary ducts

The biliary ducts convey bile from the liver to the duodenum. Bile is produced continuously by the liver and stored and concentrated in the gallbladder, which releases it intermittently when fat enters the duodenum.

so, Bile is directed to be concentrated in the gall bladder



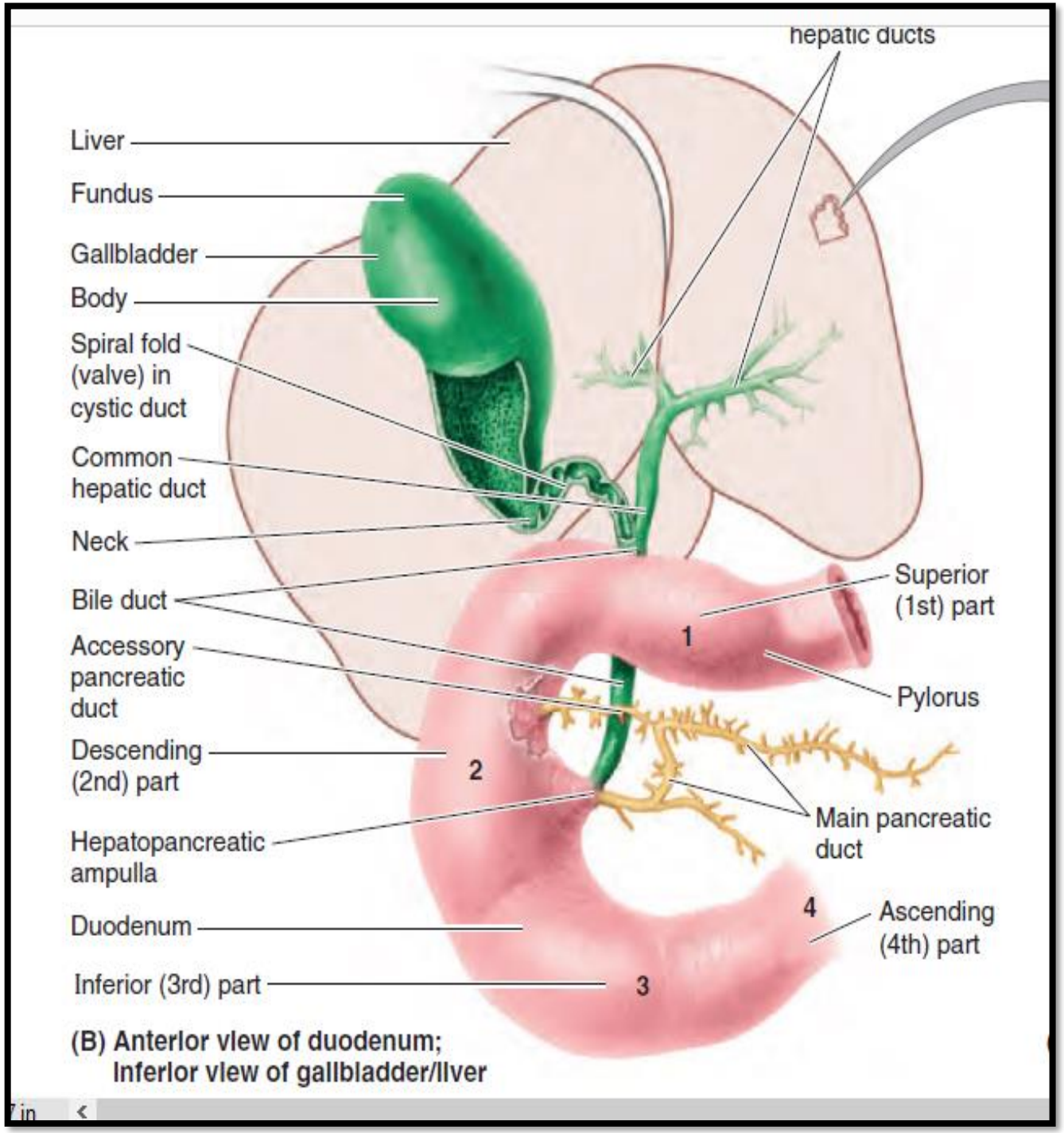
❑ **The hepatocytes secrete bile into the bile canaliculi formed between them.**

1-The right and left hepatic ducts which collect bile from canaliculi of the right & left lobes of liver.

2- common hepatic duct formed in the porta hepatis by union of right & left hepatic ducts.

3- Cystic duct:

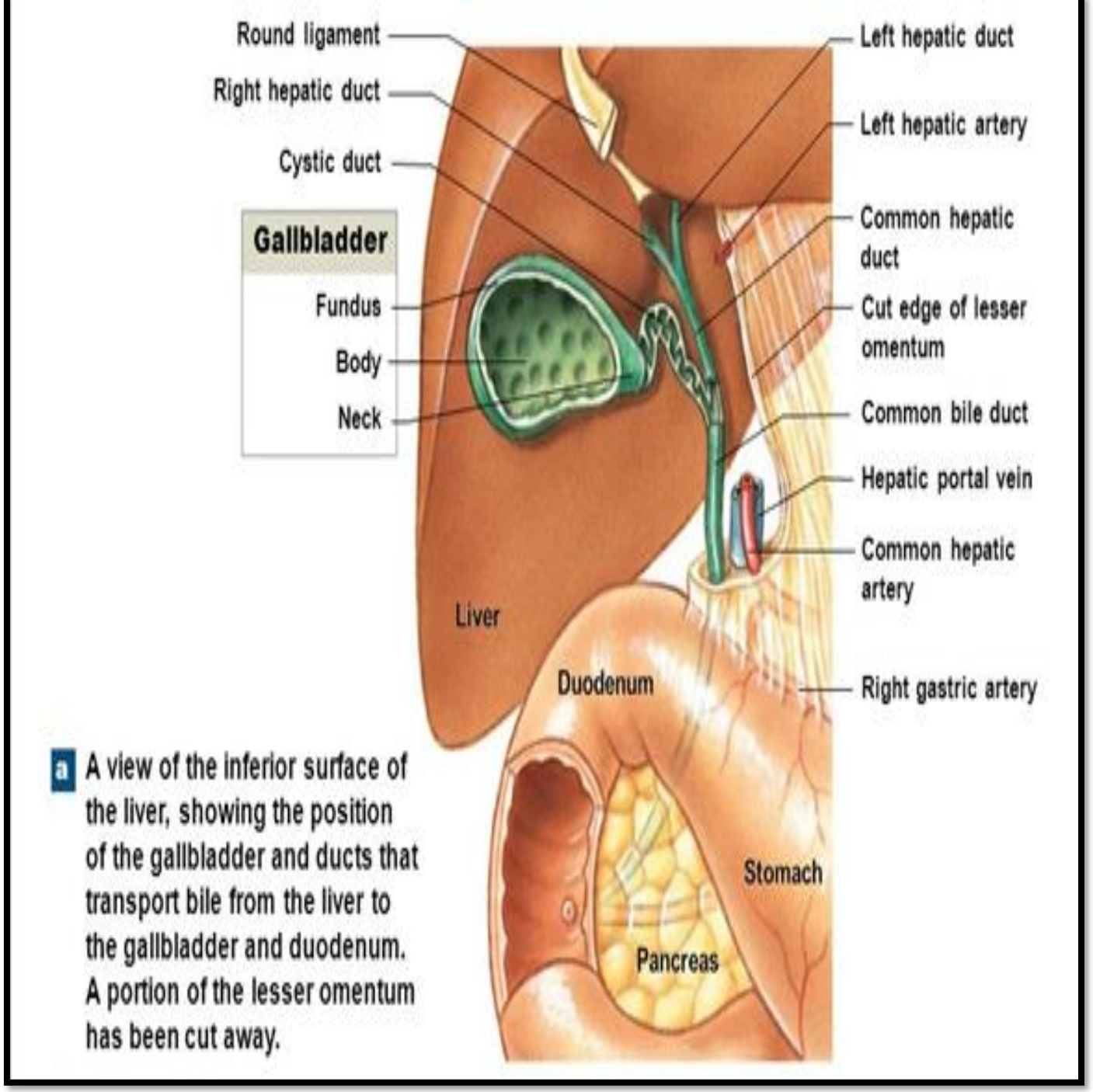
- **It is one and half inches long.**
- **It is S- shaped arises from the neck of G.B.**
- **It is S shaped. Its mucosal folds form spiral valves which keep the duct open .**
- **It joins the common hepatic duct at an acute angle to form the common bile duct just below the porta hepatis.**



4- common BILE DUCT

forms in the free edge of the lesser omentum by the union of the cystic duct and common hepatic duct

- **Its length varies from 6 – 8 cm long, 6 mm wide.**
- **It descends posterior to the superior part of the duodenum and lies in a groove on the posterior surface of the head of the pancreas.**



Parts of CBD

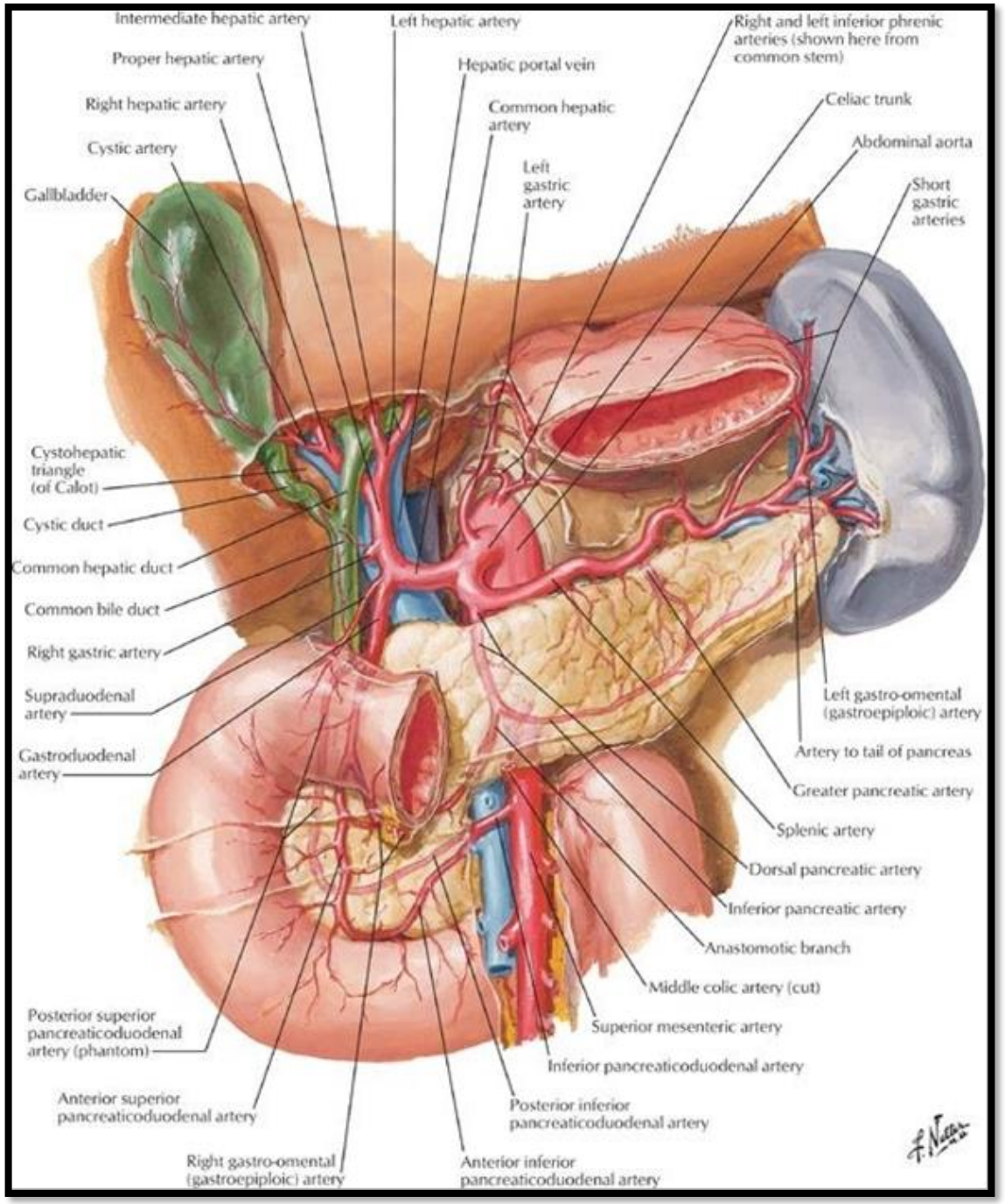
1-The supraduodenal portion It travels inferiorly in the right part of the free edge of the lesser omentum, anterior to the gastroepiploic foramen of Winslow.

2-The retroduodenal portion CBD lies behind the 2nd inch of 1st part of duodenum, with the gastro-duodenal artery on its left side.

3-The infraduodenal CBD lies behind head of pancreas (may be embedded in it) & in front of I.V.C.

The duct may be compressed by cancer head of pancreas causing obstructive jaundice

4-The intraduodenal portion : The terminal part of C.B.D. unite with the main pancreatic duct to form **the ampulla of Vater** which open at the major duodenal papilla at the middle of Postero-medial aspect of 2nd part of duodenum and surrounded by **sphincter of Oddi.**



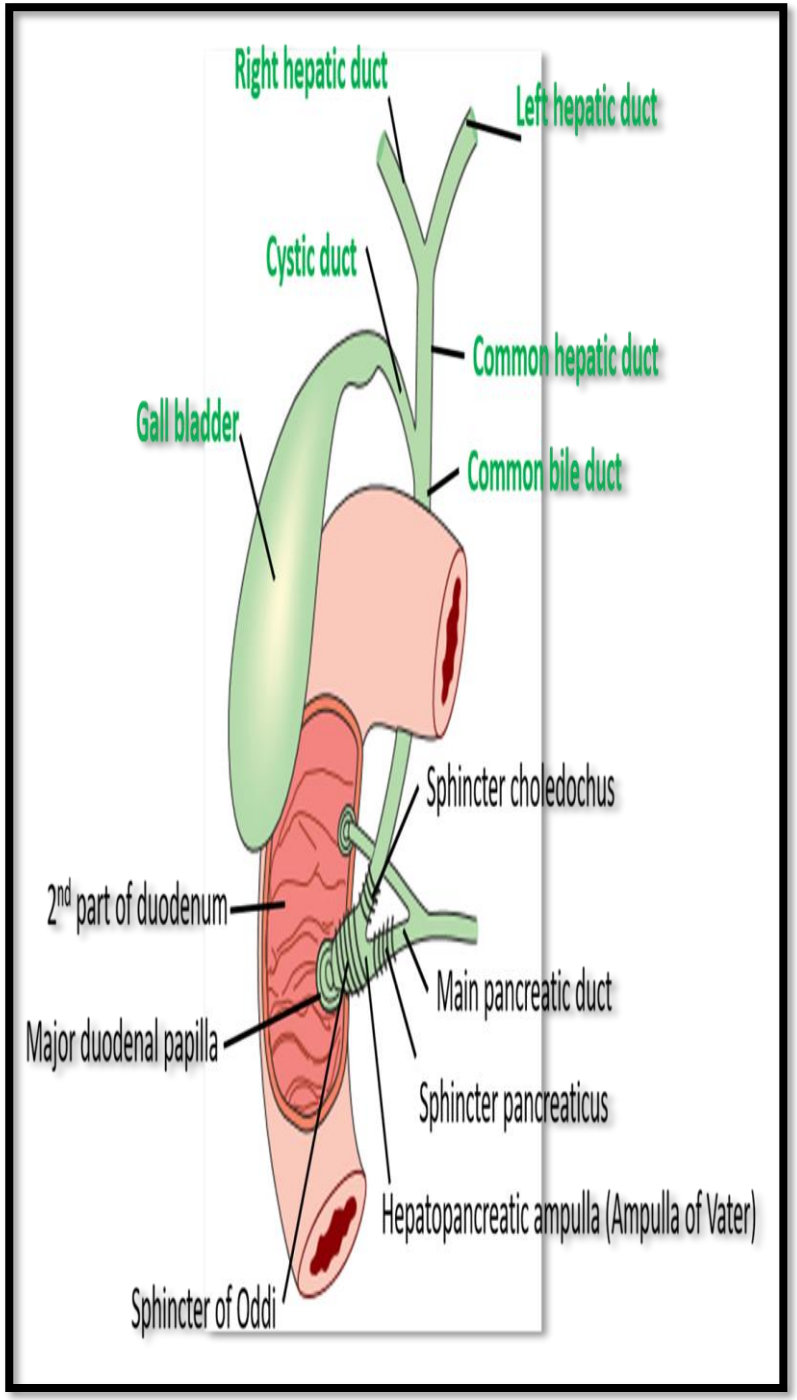
- **The circular muscle around the distal end of the bile duct is thickened to form the sphincter of the bile duct**

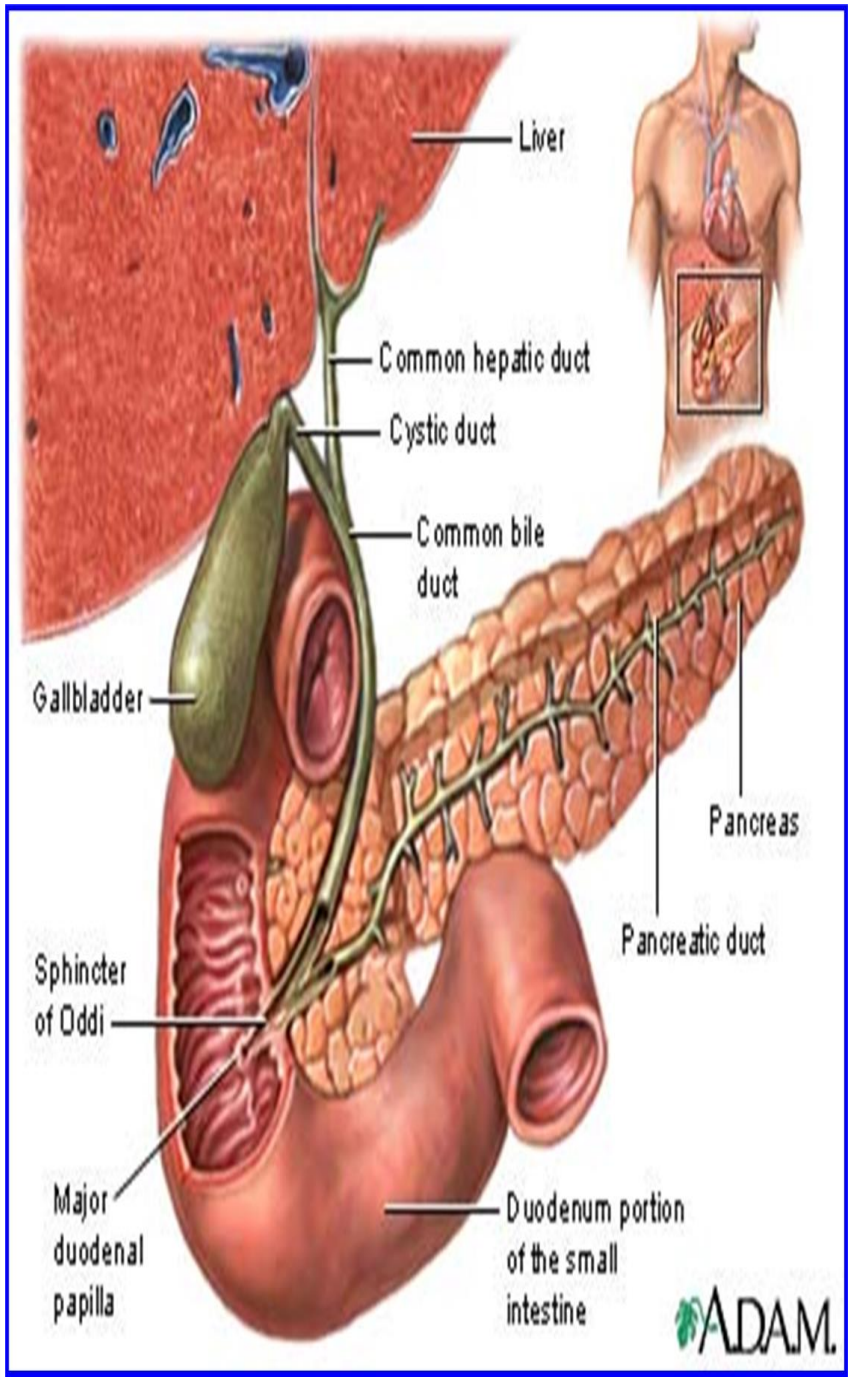
there are two circular muscular structures around the hepatopancreatic ampulla

– superior and inferior sphincter choledochus.

The superior sphincter choledochus is located around the distal portion of the common bile duct. There is also a similar sphincter around the distal aspect of the main pancreatic duct. Therefore, release of contents from the biliary tract and pancreatic duct can be regulated independently.

The inferior sphincter choledochus becomes the hepatopancreatic sphincter of Oddi.





Applied Anatomy

(1) In cholecystitis , pain is felt in the right hypochondrium and radiates to:

The tip of right shoulder (C3,4 segment of spinal cord gives phrenic and lateral supraclavicular nerves supplying skin of right shoulder region).

Back below the scapula (T5-9 segment of spinal cord gives greater splanchnic nerve and skin below the scapula).

Epigastric region (Vagi supplying stomach and gall bladder).

(2) Gall bladder swelling is pyriform in shape, felt in the right hypochondrium and moves up and down with respiration.

(3) Stone in the Hartman's pouch can cause obstruction of the neck of gall bladder leading to obstructive jaundice

(4) Because gall bladder has double arterial supply, therefore in acute cholecystitis, gangrene of gall bladder is rare. If gangrene occurs, it affects the fundus (most distal)

5- To stop hemorrhage from cystic artery during cholecystectomy, compress the hepatic artery in the free border of the lesser omentum.