

## Checklist GI Lab 3:

1- Liver & gallbladder

2- Spleen

3- Appendix, cecum

### LIVER:

Present in the right hypochondriac region and epigastric region (left lobe) and extend to left hypochondrium.

Surrounding by the diaphragm anteriorly, above and posteriorly.

**It has 5 surfaces:** Anterior, posterior, superior, right & visceral.

### Lobes of the liver

- Rt. Lobe
- Lt .lobe
- Quadrate lobe
- Caudate lobe

**The following structures forming an “H shape”, divide the liver into the previously mentioned 4**

### Lobes:

1. Right sagittal fossa - groove for inferior vena cava superiorly and gall bladder inferiorly
2. Left sagittal fissure - contains the ligamentum venosum superiorly and round ligament of liver (lig. Teres) inferiorly
3. Transverse fissure (porta hepatis)

### Peritoneum of the liver

- The liver is covered by peritoneum (intraperitoneal organ) except at bare area → so can be considered “Interperitoneal”

### Ligament s of the liver:

#### Falciform ligament:

Separate the right lobe from the left lobe

Attached to the anterior abdominal wall and to the diaphragm.

Divide the superior space above the diaphragm into right and left subphrenic (the abscess reaches the right subphrenic space which is open into the right gutter).

Free border of the ligament contains Ligamentum teres (obliterated umbilical vein)

### Coronary ligament:

the area between upper and lower layer of the coronary ligament is the bare area of liver which contract with the diaphragm to the bare area.

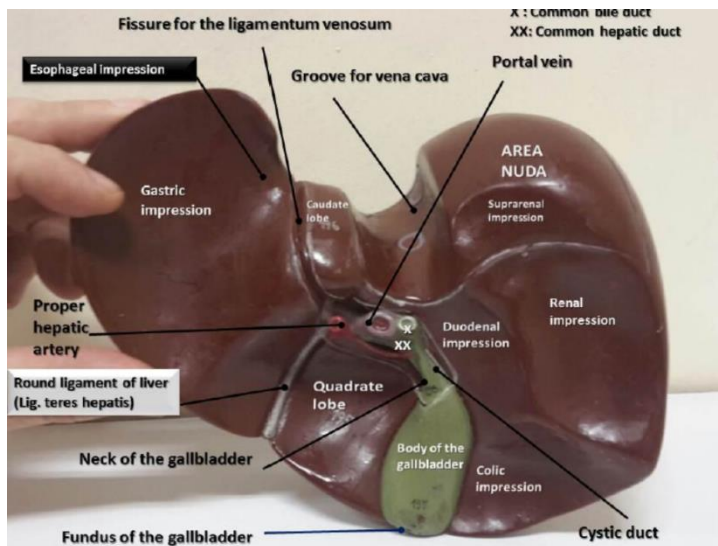
Give arise to the right and left triangular ligaments at the sides of the liver.

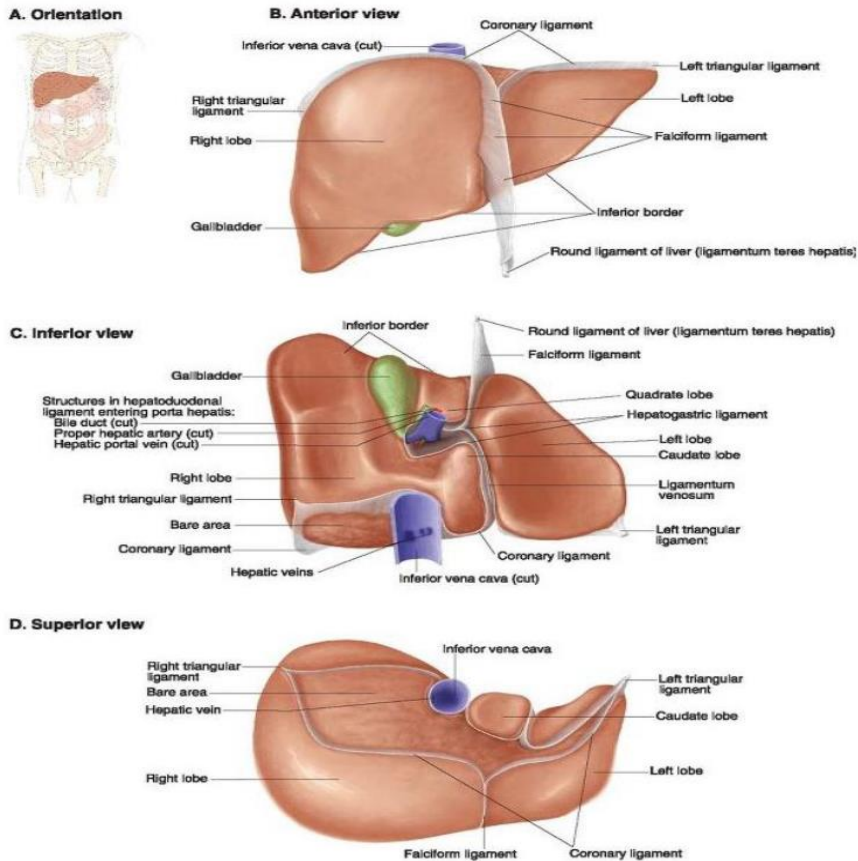
### Ligamentum venosum:

Between the caudate and left lobes.

Attached to lesser omentum.

### IMPRESSIONS OF THE LIVER (important)





### Relation of the liver (important)

Anteriorly: Diaphragm, Rt & Lt pleura and lung, Costal cartilage, Xiphoid process, Ant. abdominal wall

Posterior: Diaphragm, Rt. Kidney, Supra renal gland, T.colon(hepatic flexure), Duodenum, Gall bladder, I.V.C, Esophagus, Fundus of stomach

Visceral surface: I.V.C, the esophagus, the stomach, the duodenum, the right colic flexure, the right kidney, Rt. Suprarenal gland, the gallbladder., Porta hepatic (bile duct,H.a.H.V), Fissure for lig. Venosum & lesser omentum, Tubular omentum, Lig.teres

Superior surface: Diaphragm, cut edge of the falciform ligament, the left and right triangular ligaments, The cut edges of the superior and inferior parts of the coronary ligament, I.V.C and the 3 hepatic veins (right, left & middle) → passing through a groove

Right & left liver lobes and the bare area of the liver can be seen from the superior view.

Relations of Superior surface of liver:

- Diaphragm
- Pleura & lung
- Pericardium & heart

### Porta hepatis:

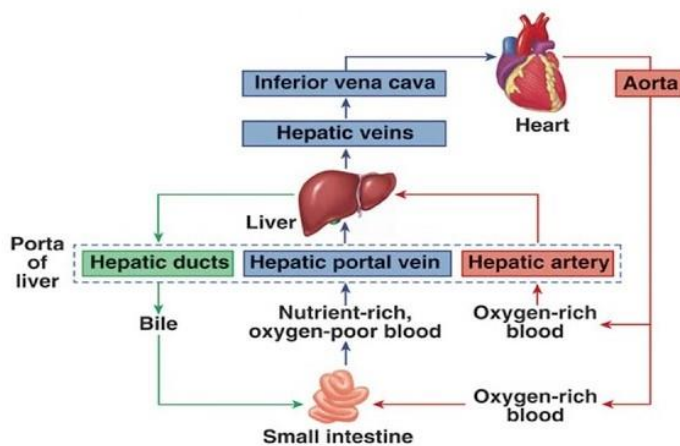
It is the hilum of the liver

- t is found on the posteroinferior surface
- lies between the caudate and quadrate lobes
- Lesser omentum attaches to its margin

### **Contents**

- Gallbladder (ant.)
- Hepatic. Art + nerve+ lymphatic node (middle).
- Portal vein ( post.)

### **Blood supply of the liver:**



### **The gallbladder**

- It is a green muscular pear-shaped hollow organ
- Anatomical position of the gallbladder: In the Epigastric - Right hypochondrium region  
At the tip of the 9th right costal cartilage (the fundus).

On inferior surface of liver: Between quadrate and right lobes.

### ▪ **Parts**

#### • **Fundus.**

Relations: anteriorly - anterior abdominal wall

postero inferiorly - transverse colon

#### • **Body.**

Relations: superiorly - liver

postero inferiorly transverse colon, end of 1 st part of duodenum to beginning of 2nd part of duodenum

#### • **Neck**

- Forms the cystic duct which is 4cm long

- Body and neck are directed towards porta hepatis

• **Hartmann's Pouch:** opposite to the neck of the gallbladder. It's usually filled with bile secretions but stasis of bile can occur resulting in gallstones (usually a single stone)

1. Lies between body and neck of gallbladder

2. A normal variation

3. May obscure cystic duct

4. If very large, may see cystic duct arising from pouch

▪ It's sometimes completely covered by peritoneum and has short mesentery

(intraperitoneal). Other times, it's just fixed from the anterior and sides to the liver and has a bare area (Interperitoneal)

▪ **Major function:** bile concentration by increasing water absorption so that the concentration of bile increases 20 times.

### **Blood supply of the gallbladder:**

- Cystic artery branch of right Hepatic artery (from proper hepatic artery from common hepatic artery)

- Cystic vein which ends in portal vein

- Small branches (arteries and veins run between liver and gall bladder)

### **Common bile duct**

▪ Common bile duct is 7-10cm long (3 inches)

▪ Descends in the free edge of lesser omentum

- Blood supply: small arteries
  - a. Arise from cystic artery
  - b. Posterior branch of superior pancreaticoduodenal artery
- It can be divided into 3 parts: Supra-duodenal, retro-duodenal, retro-pancreatic.

## **SPLEEN**

The spleen is completely covered with peritoneum (intraperitoneal organ)

· Two ligaments

- 1- the gastrosplenic omentum (ligament): (carrying the short gastric and left gastroepiploic vessels)
- 2- splenicorenal ligament (carrying the splenic vessels and the tail of the pancreas)

It has two surfaces: 2 Surfaces (Diaphragmatic surface / Visceral surface)

1. Diaphragmatic surface: Has Post- lat. relation, Convex, Smooth, Diaphragm separates it from - Pleura & lung – Ribs 9,10 ,11  
The upper border is lobulated whereas the lower border is rounded.
2. Visceral surface: Has Ant- med. Relations,  
It is divided by a ridge into: anterior or gastric, A posterior or renal portion.

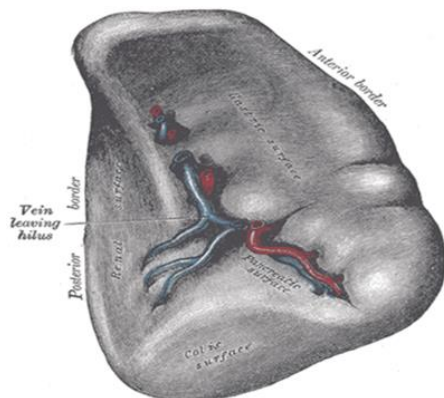
**Spleen has two borders: superior & inferior boarder**

**Two ends: medial & lateral end**

### **Hilum of spleen**

- Splenic . >>ant
- Splenic . v >>post
- Tail of pancreas

### **IMPRESSOINS OF THE SPLEEN:**



- Renal (left kidney), below the hilum

- Gastric, above the hilum
- Colic (left colic flexure)
- Pancreas, make impression on the hilum

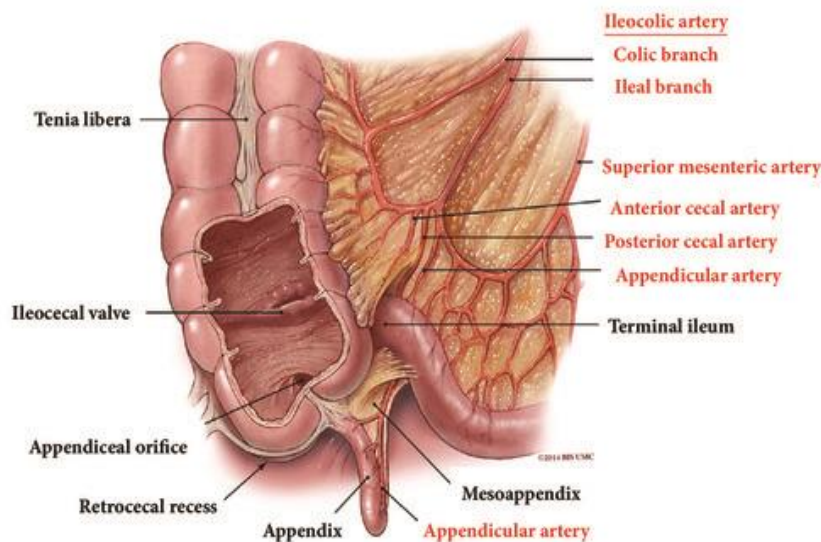
\*Related to the 9th, 10th and 11th ribs and the tenth ribs is parallel to the spleen so when someone has an accident and hurt his ribs we will be afraid from splenic rupture and in case we find it we must do splenectomy (we can remove it since it's a lymphoid tissue).

### Blood supply

- The large splenic artery is the largest branch of the celiac artery.
- It has a tortuous course
- It runs along the upper border of the pancreas
- The splenic artery then divides into about six branches, which enter the spleen at the hilum

### Veins

- The splenic vein leaves the hilum and runs behind the tail and the body of the pancreas.
- Behind the neck of the pancreas, the splenic vein joins the superior mesenteric vein to form the portal vein.



## Appendix:

**Location and Description:** it is a narrow (with a very narrow lumen), muscular tube, containing a large amount of lymphoid tissue (it is considered as lymphatic tissue)

Although it is a part of GI tract (mid gut), it has no role in digestion. It is involved in immunity.

Its length from 3 to 5 inches, another books state from 2 to 22cm; it may be very short or very long due to the variation. (In infection the size is increased due to edema and inflammation)

### **It has base, apex and mesoappendix(mesentery):**

-The base is attached to the posteromedial surface of the cecum about 1 in. (2.5 cm) below the ileocecal opening (junction/valve)

-The remainder of the appendix is free.

It has a complete peritoneal covering (intraperitoneal organ), which is attached to the mesentery of the small intestine by a short mesentery of its own, the mesoappendix.

The mesoappendix contains the appendicular vessels, nerves, lymph nodes.

### **Position:**

The appendix is part of the large intestine, lies in the right iliac fossa, and in relation to the anterior abdominal wall, it may be found in different positions, including:

1. Retrocecal: in retrocecal recess, behind cecum in 74% of people. (most common site).
2. Pelvic: in pelvis related to Rt. Ovary and uterine tube in 21% of people.
3. Subcecal: below cecum in 3.5% of people.
4. Preileal: in front of ileum in 1% of people.
5. Postileal: behind the ileum in 0.5% of people.

To determine the location of appendix in retrocecal fossa: by tracking the tenia coli to the base until it converges around the appendix.

### **Surface anatomy of appendix – (McBurney's point):**

McBurney's point: the point between the upper 2 thirds and the lower third of the line joining the right anterior superior iliac spine to the umbilicus, where the base of the appendix is situated.

### **Blood Supply of appendix:**

#### **Arteries:**

-The appendicular artery (A branch from posterior cecal artery (ilio-cecal artery) from SMA, which descends behind the ileum).



- Note: Appendicular artery runs in a free margin of the mesoappendix

**Veins:**

-The appendicular vein drains to posterior cecal vein.

**Why is common to have a gangrene in the appendix?!**

Because there is only one blood supply which is appendicular artery.

**Cecum**

-The cecum is a blind-ended pouch within the right iliac fossa, it is about 2.5 in. (6 cm) long

- is completely covered with peritoneum

- At the junction of the cecum and the ascending colon, it is joined on the left side by the terminal part of the ileum.

-The appendix is attached to its posteromedial surface.

**Arteries:** Anterior and posterior cecal arteries from the ileocolic artery (from SMA)

**Veins:** drain to SMV

**There are two things that open into the cecum:**

1-The first thing is ileum; through the ileocecal junction which is a physiological sphincter, prevents cecal contents from returning back into the ileum.

2- The second thing is the appendix which usually presents in the retrocecal recess

**AND DON'T FORGET THE OPENING OF ASCENDING COLON**

**Relations**

■ **Anteriorly:** Coils of small intestine, sometimes part of the greater omentum, and the anterior abdominal wall in the right iliac region.

■ **Posteriorly:** The psoas and the iliacus muscles, the femoral nerve, and the lateral cutaneous nerve of the thigh, the appendix is commonly found behind the cecum.

■ **Medially:** The appendix arises from the cecum on its medial side.

**ILEOCECAL VALVE**

A rudimentary structure, the ileocecal valve consists of two horizontal folds of mucous membrane that project around the orifice of the ileum.