



**Third year  
GIT..**

**Anatomy**

**Lecture (4)**

**Anatomy of Peritoneum**

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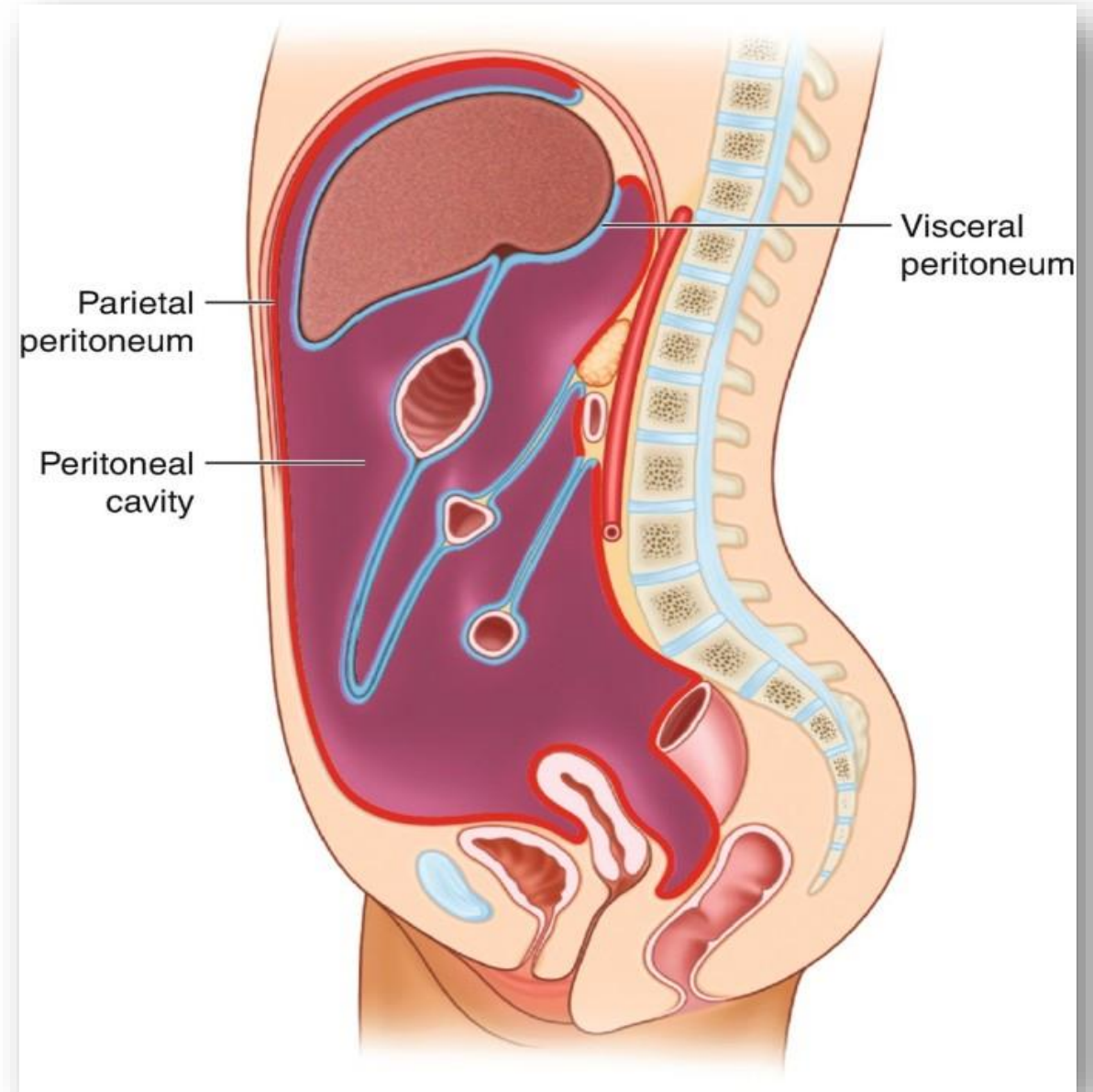
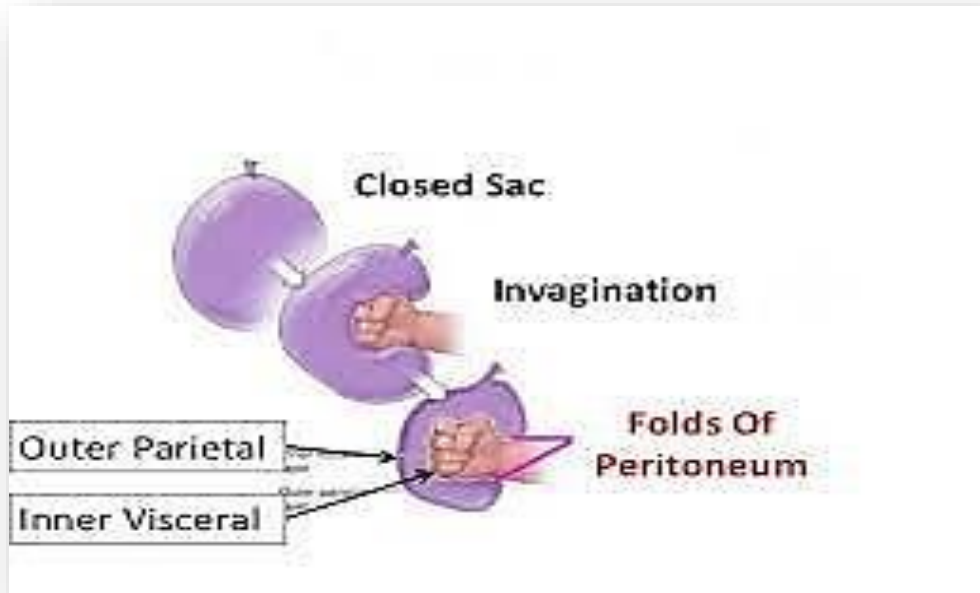
# ILOs

- 1. Describe the parts and reflection of the peritoneum.**
- 2. Describe the Intra-peritoneal & retro-peritoneal organs.**
- 3. Describe the peritoneal cavity, spaces & recesses.**
- 4. Describe the ligaments and folds of the anterior abdominal wall.**
- 5. Describe the ligaments and folds of the posterior abdominal wall.**
- 6. Understand blood & nerve supply, and lymph drainage of peritoneum.**

# Peritoneum

**Def.:** is a serous sac lines the walls of the abdomen and is reflected on the abdominal viscera.

- In males it forms a closed sac, but in females it is open at the lateral ends of the uterine tubes.



# Part of Peritoneum

## Parietal peritoneum:

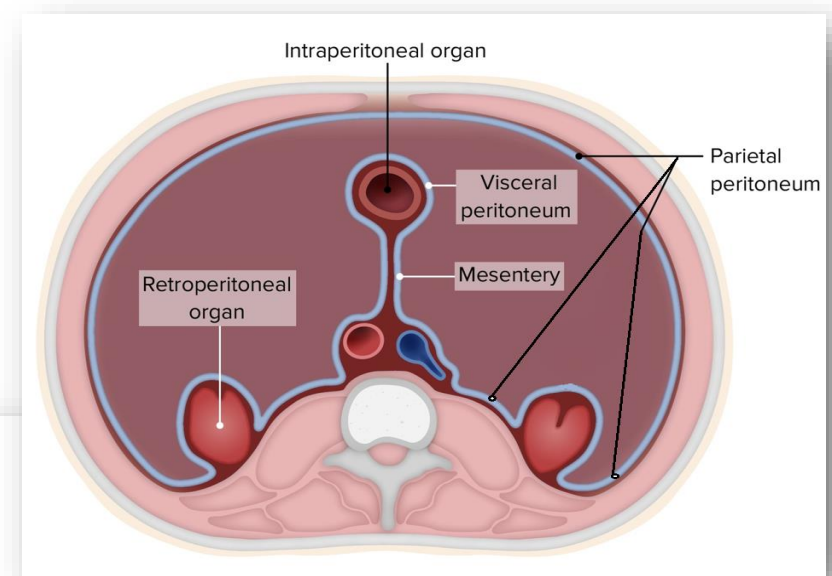
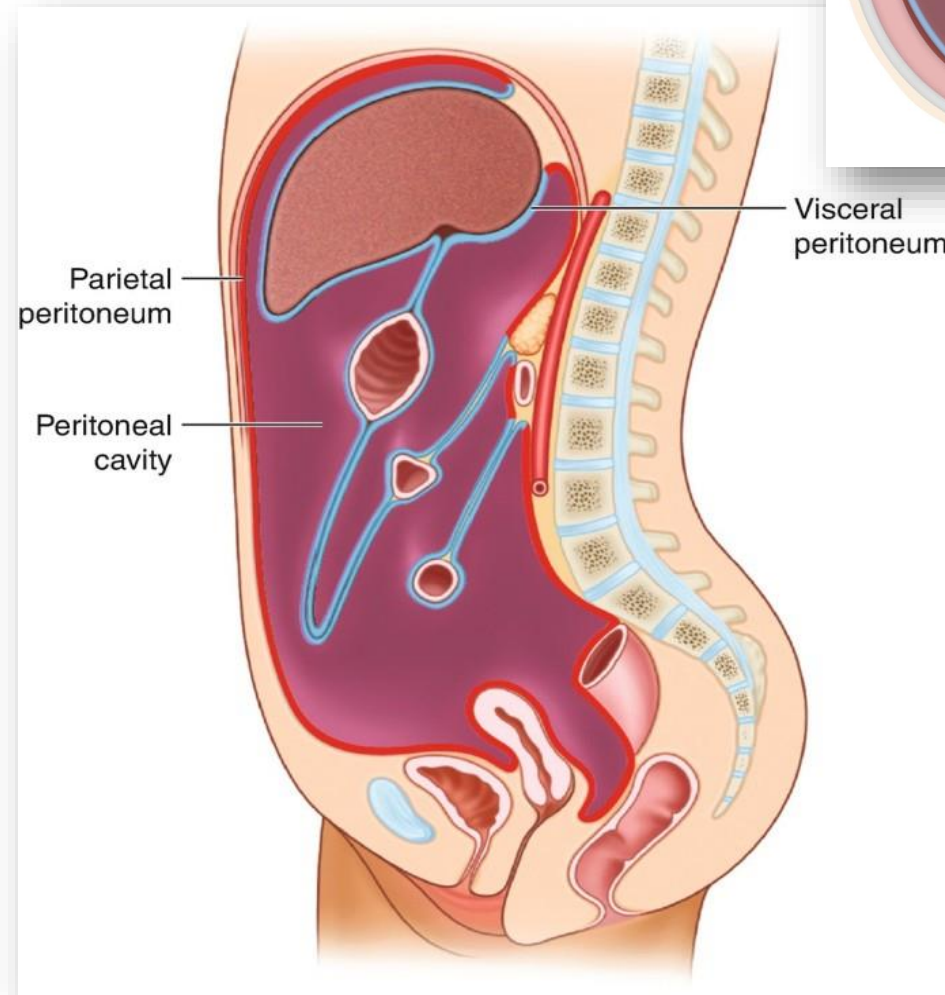
- It is the layer which **lines** the abdominal walls, pelvic wall and follows the surfaces of the pelvic viscera.

## Visceral peritoneum:

- It is the layer which is **reflected on** the abdominal viscera.

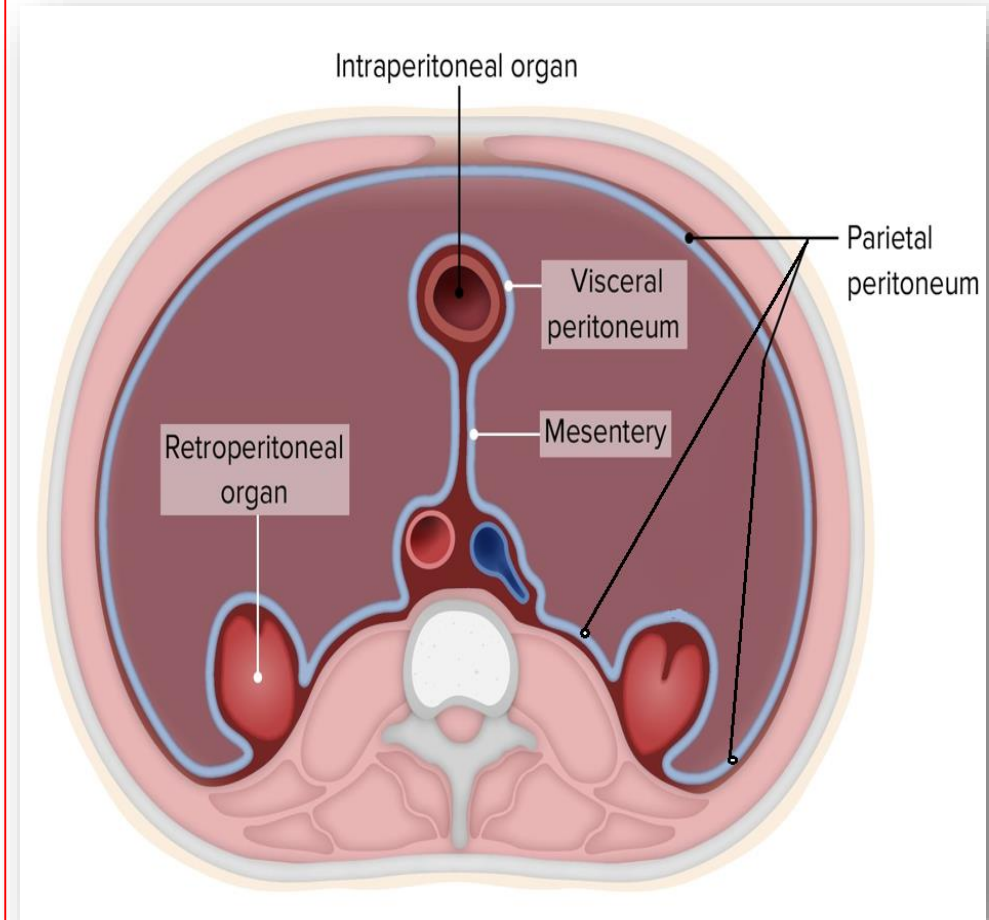
## Peritoneal cavity:

- It is the **space** between the parietal and visceral layer.



# Intra-peritoneal & Retro-peritoneal organs

- The term **intra-peritoneal** & **retro-peritoneal** are used to describe the **relationship** of various abdominal organs to their peritoneal covering.
- **An organ is said to be intra-peritoneal when**
  - They are **totally covered** with visceral peritoneum.
  - They are **totally surrounded** by peritoneal cavity.
  - They are attached to wall or other organ by **peritoneal folds**.
  - They are **free (mobile) organs**. Examples; stomach, jejunum & ileum.
- **Retro-peritoneal organs:**
  - They are **partially covered** by peritoneum and lies behind it.
  - They are **not totally surrounded** by peritoneal cavity.
  - Have **no** peritoneal folds.
  - They are **fixed to** the wall. Example; kidney & pancreas.



# Features of Peritoneum

## Visceral peritoneum

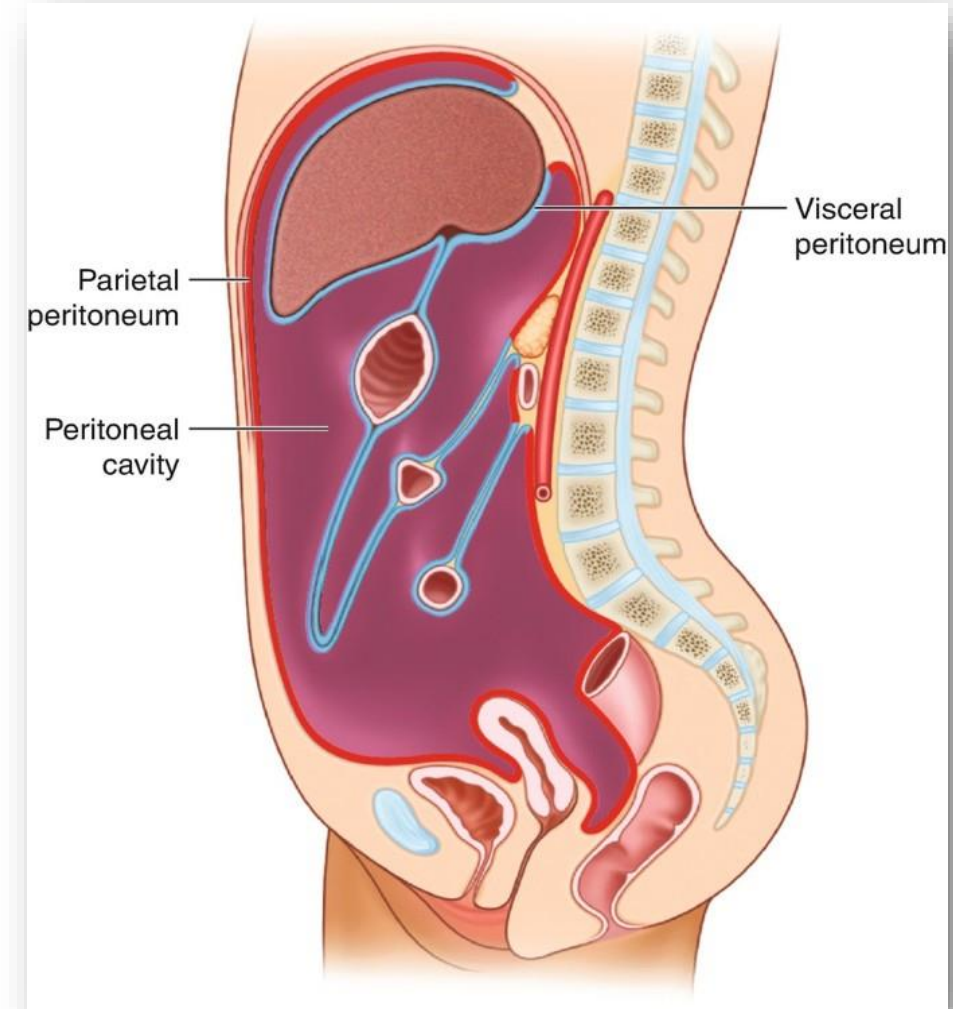
1- it lines the outer surface of abdominal viscera and **firmly adherent** to viscera and cannot be stripped.

## Parietal peritoneum

1- it **lines** the inner surface of abdominal and pelvic wall and the inferior surface of diaphragm.

2- it is **loosely attached to** walls except at linea alba & diaphragm, it is firmly attached.

3- it is separated from the fascial lining of the abdominal walls e.g. fascia transversalis by extraperitoneal fatty areolar tissue.

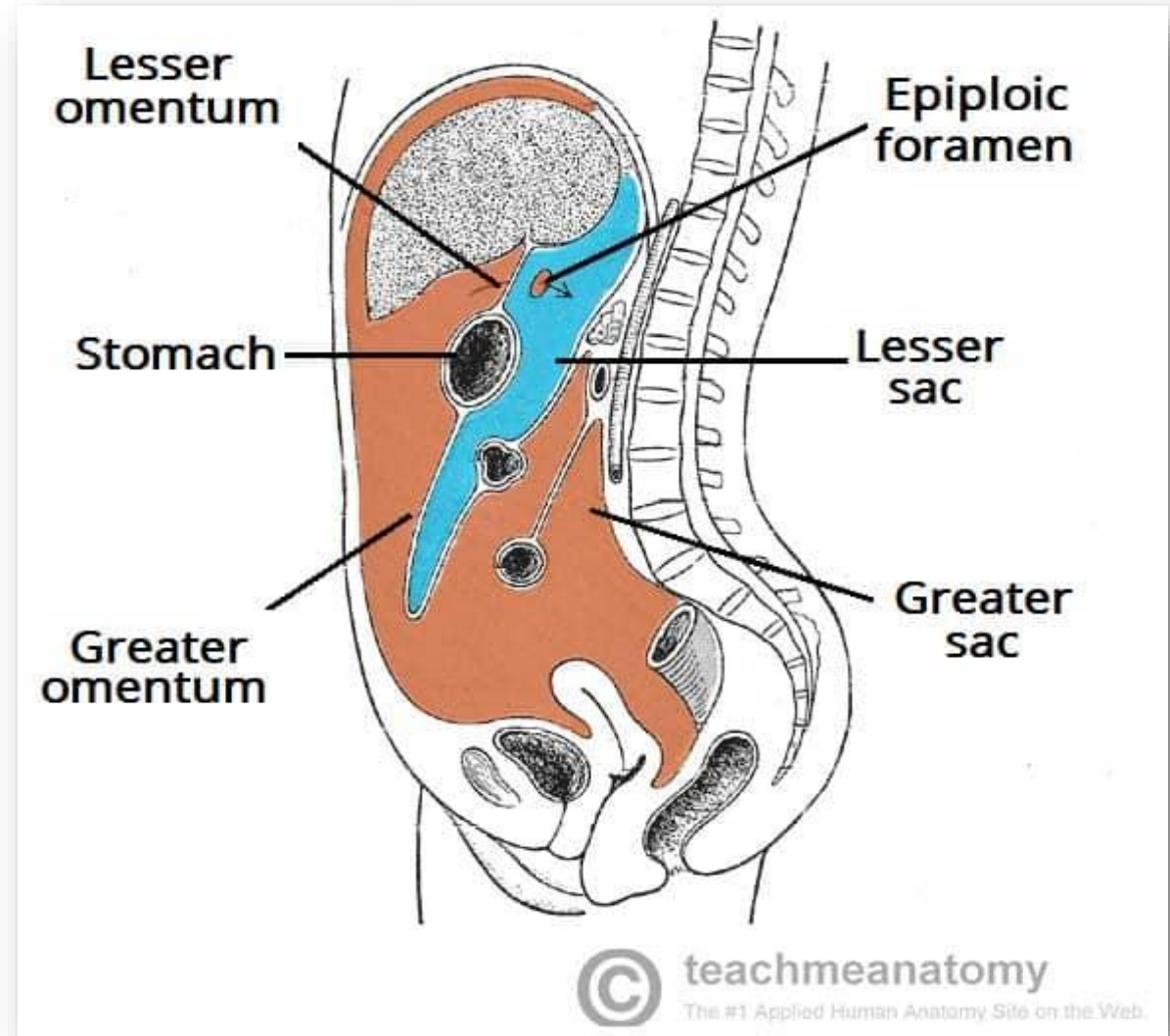


# Peritoneal cavity

**Def.:** It is the space between the parietal and visceral layer of the peritoneum.

- The peritoneal cavity **contains** only a few milliliters of serous fluid, which lubricates the surfaces of viscera so they can glide over one another.
- **The peritoneal cavity is divided into two parts;**
  - 1- The greater sac.
  - 2-The lesser sac (omental bursa).

**The Two cavities communicate with each other via the Epiploic foramen.**



**Ascites** is essentially an excessive accumulation of peritoneal fluid within the peritoneal cavity.

# Peritoneal folds

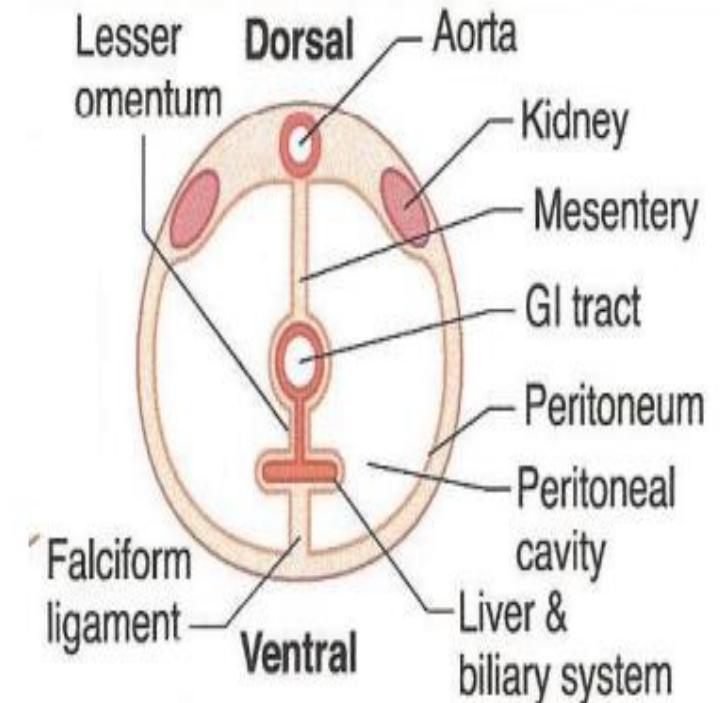
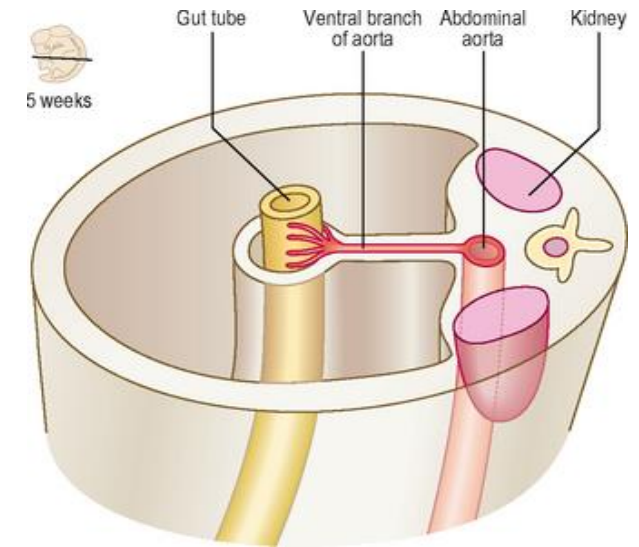
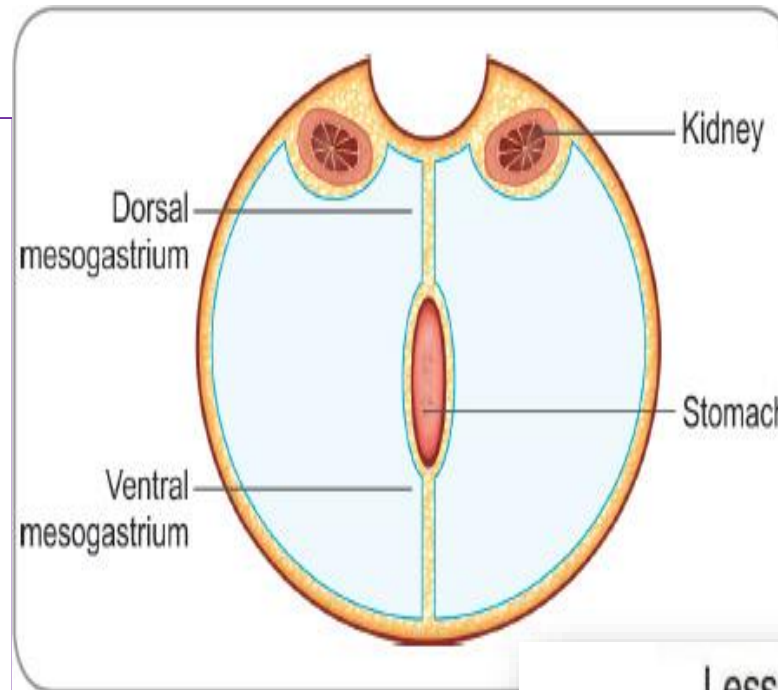
**Def.:** They are **double layers** of peritoneum which **can extend** from one organ to the other or connect organ to the abdominal walls.

## Types of peritoneal folds:

**1- Omenta:** include 1- Lesser omentum.  
2- Greater omentum.

**2- Mesentery:** include  
1- Mesentery of small intestine.  
2- Transvers mesocolon.  
3- Mesoappendix.  
4- Sigmoid mesocolon.

**3- Ligaments:** Include for e.x Falciform ligament, Gastro-splenic ligament, Gastro-phrenic ligament, Lienorenal ligament.



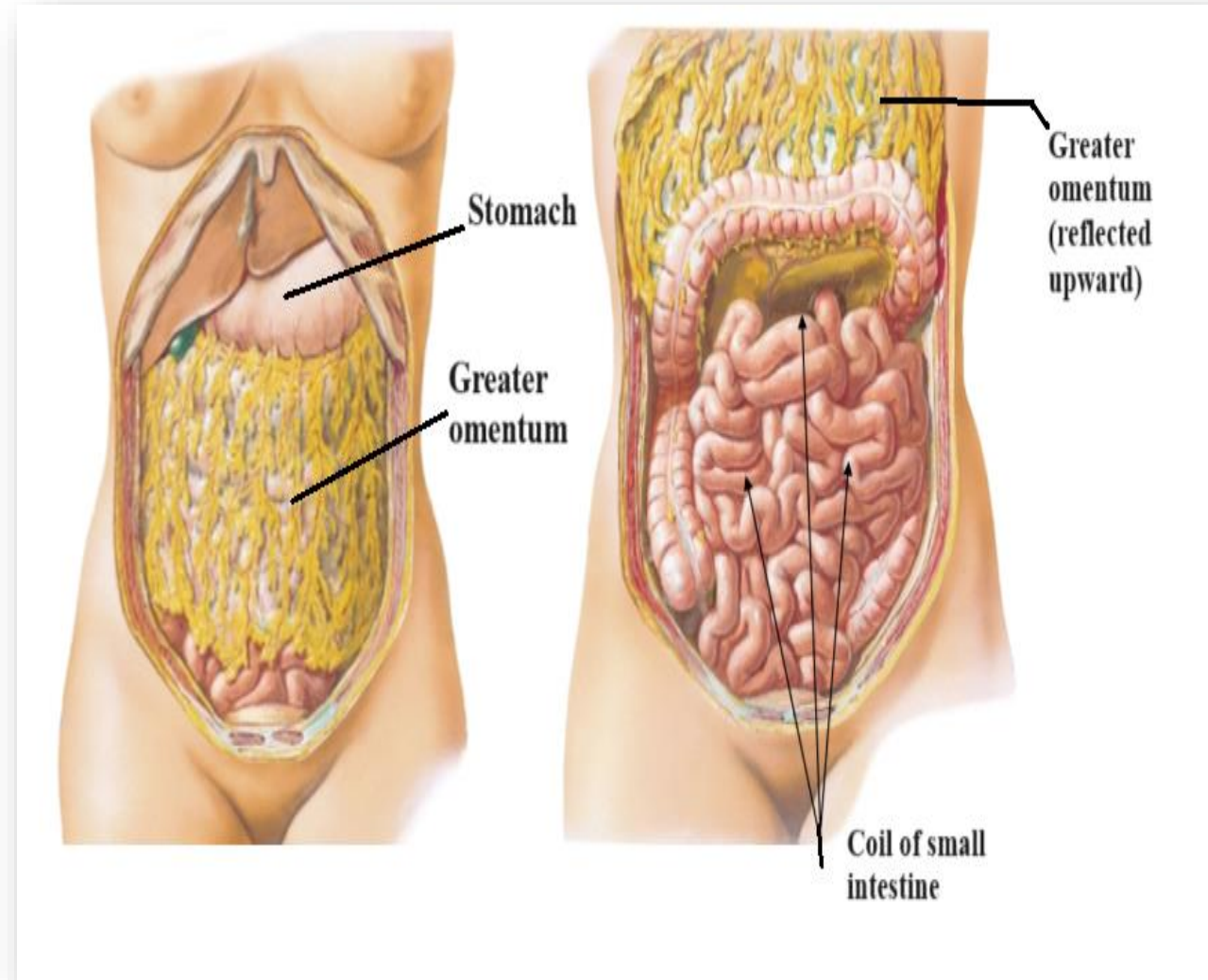


# Greater omentum

**Def:** It is the **largest** peritoneal fold hang downwards from the stomach.

## **Relations:**

- It **lies in front of** the coils of the small intestine & large intestine **separating them** from the anterior abdominal wall.



# Greater Omentum

**Formation:** It is formed of two anterior layers & two posterior layers of peritoneum.

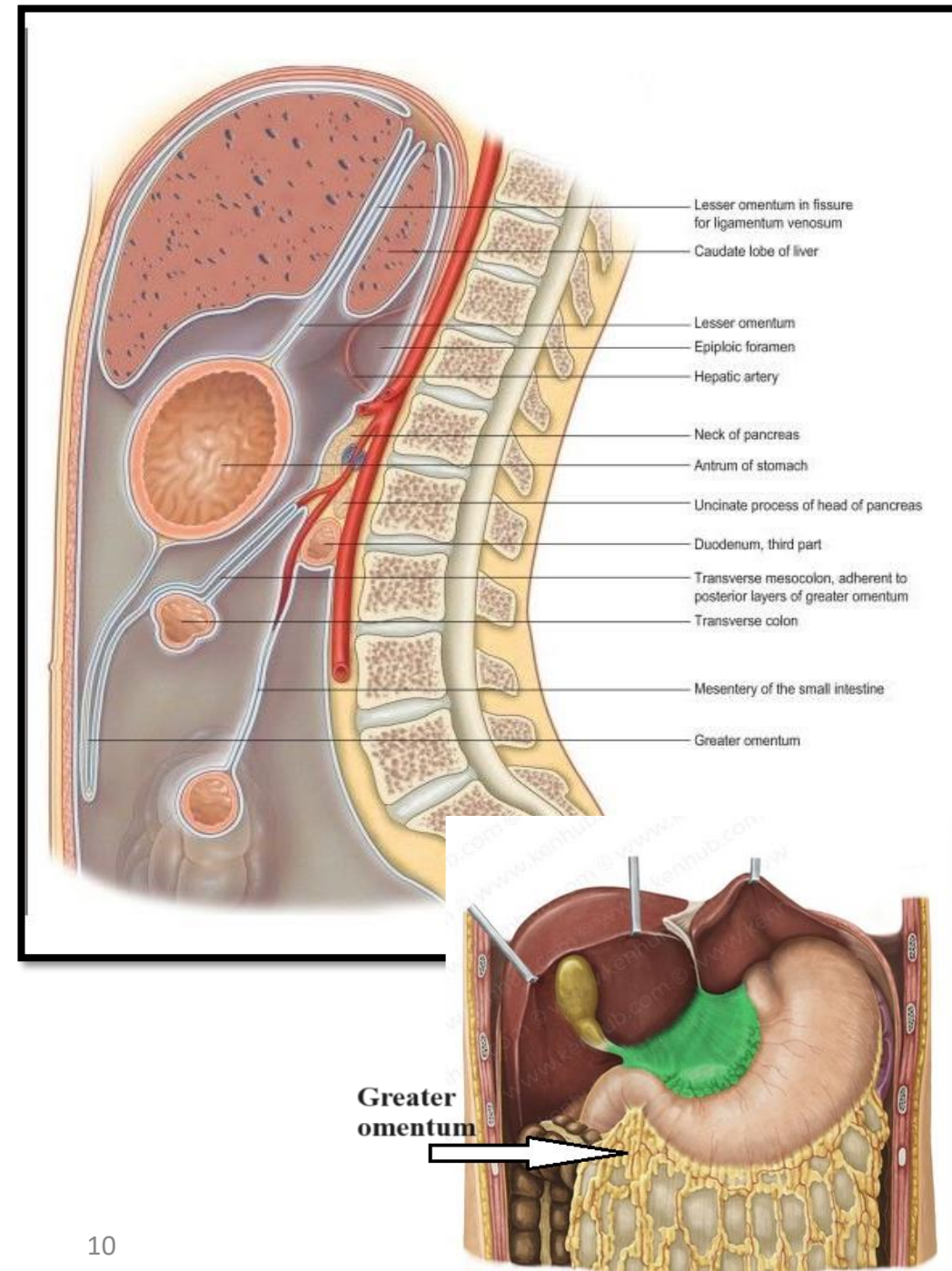
## **Borders & attachment:**

### **Upper borders:**

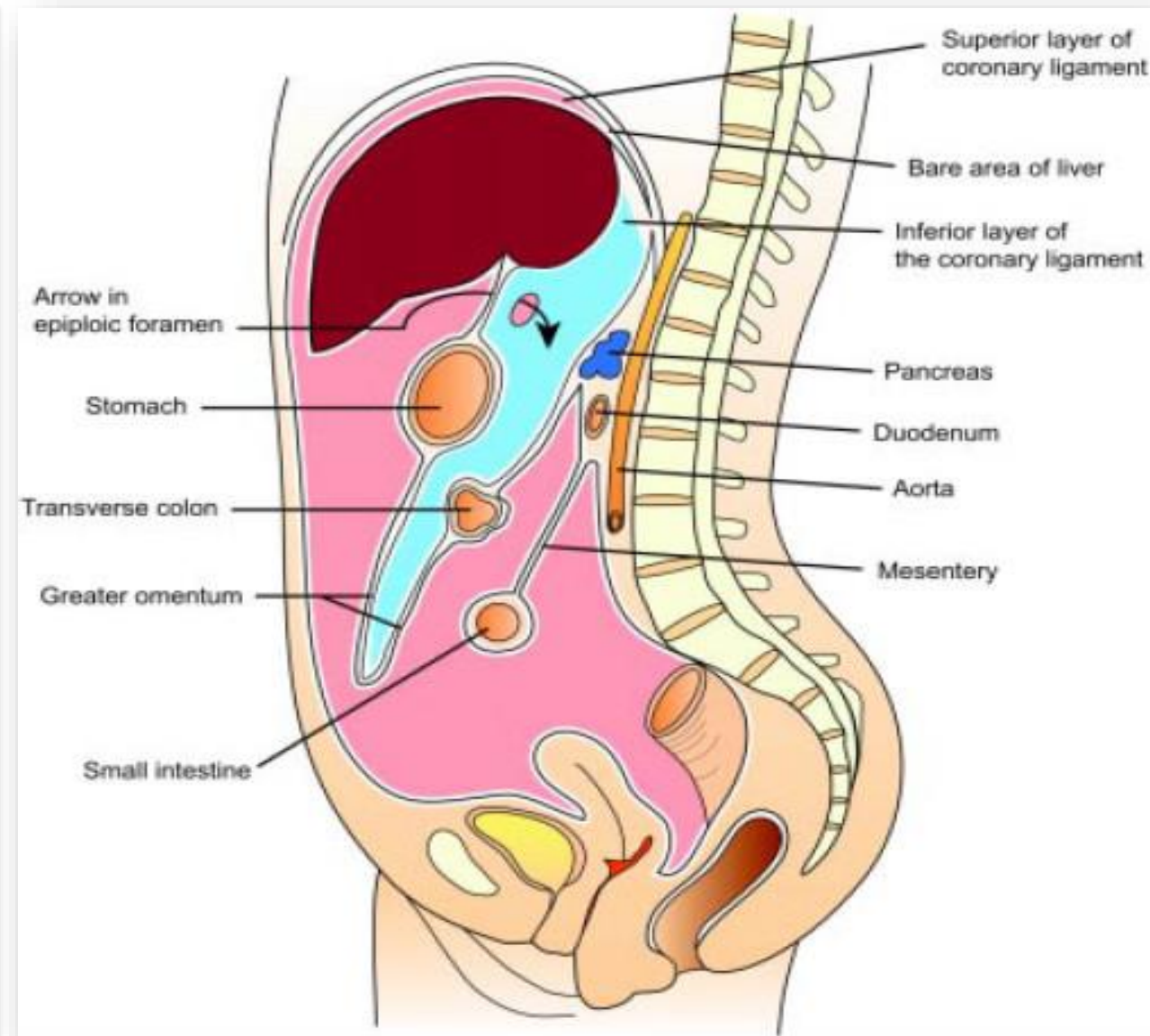
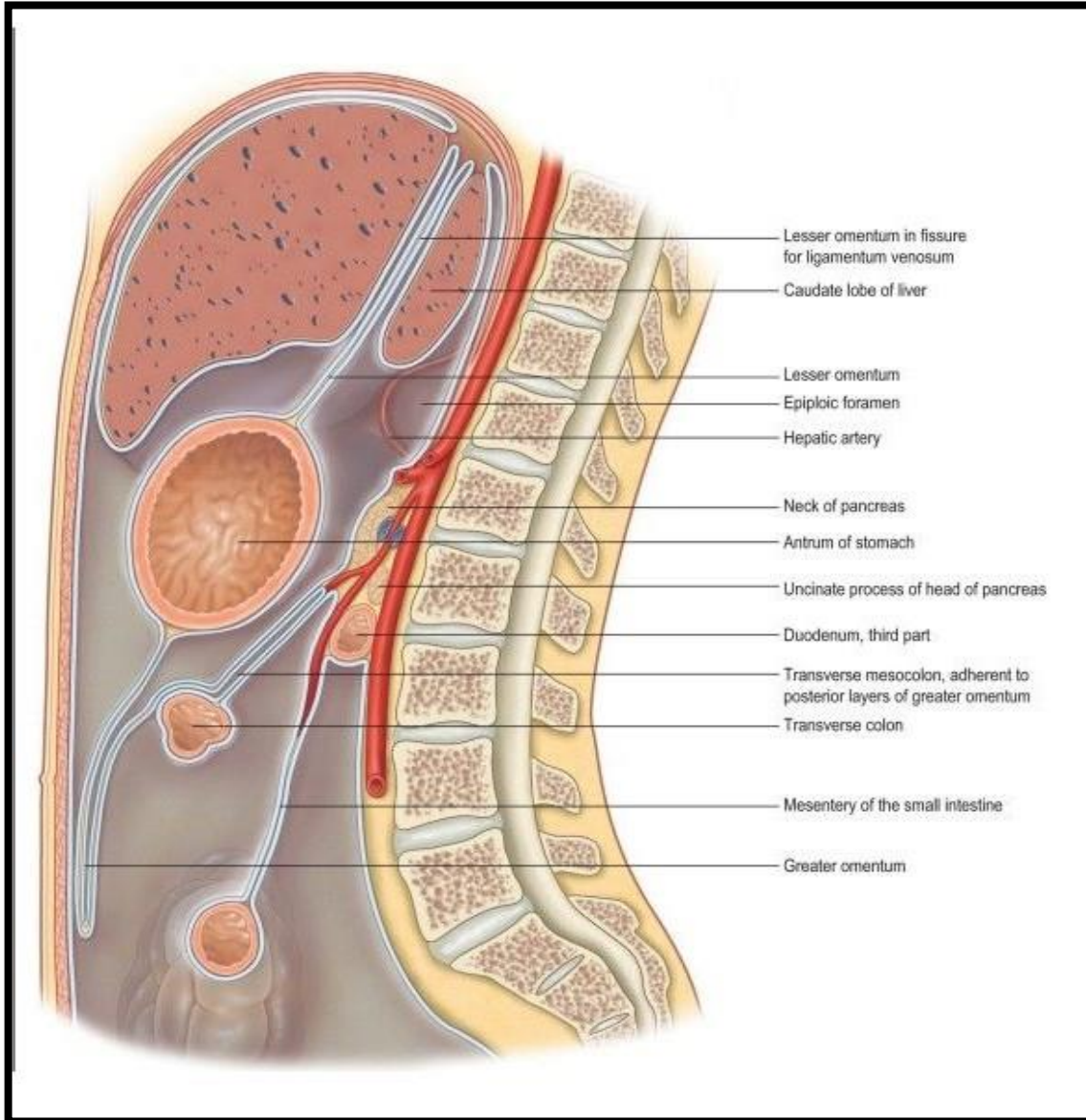
- **Upper border of the anterior two layers are attached to the greater curvature of stomach & 1<sup>st</sup> inch of duodenum.**
- The ant. two layers descend downwards, then they are reflected upward forming **the post. two layers that their upper border attached to the ant. border of pancreas.**

**Lower border:** It is free. It is formed by turning upwards of the ant. 2 layers to become the posterior two layers.

**Rt & Lt borders:** They are free and at them the ant. & post. layers fused together.



# Greater Omentum



# Greater omentum

## Contents:

1-**Right & left gastroepiploic vessels**; these vessels run between the anterior two layers **along** the greater curvature of the stomach. These vessels send their **epiploic branches** downwards between anterior two layers.

2-**Gastroepiploic lymph nodes.**

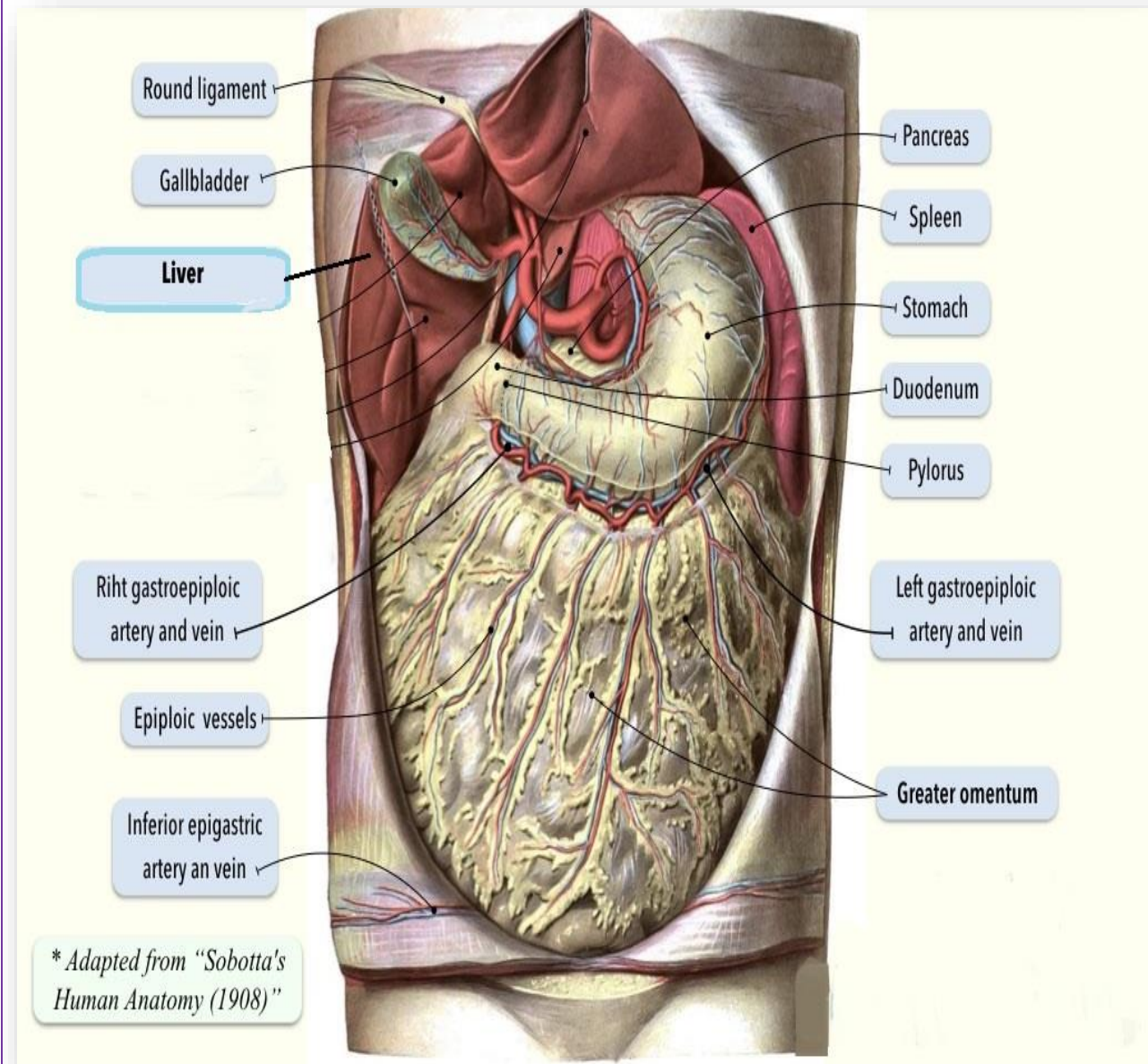
3-Extra peritoneal fat.

4-Autonomic nerves.

## Functions:

1-Defensive function: It moves toward the inflamed abdominal organs to surround them and prevent the spread of inflammation so it is called **policeman of abdomen.**

2-It acts as a store house for fat.



# Lesser Omentum

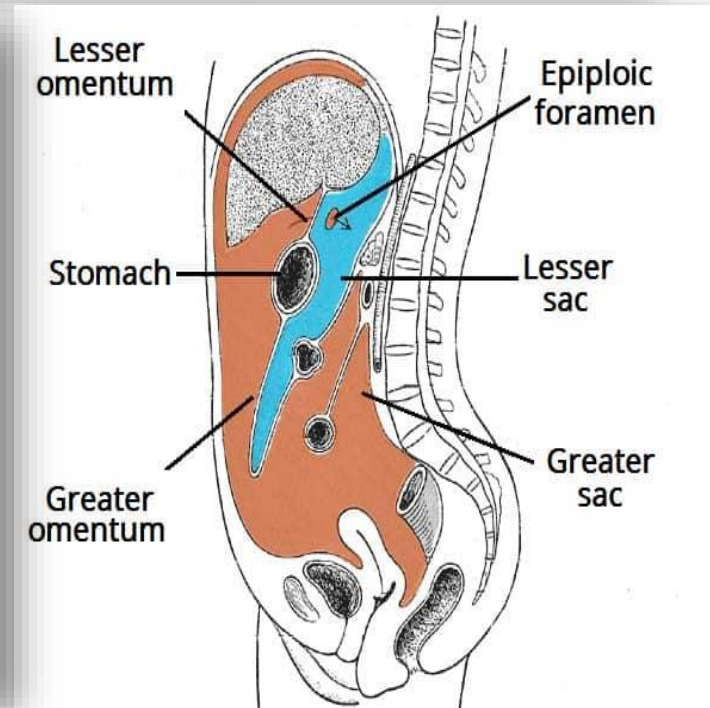
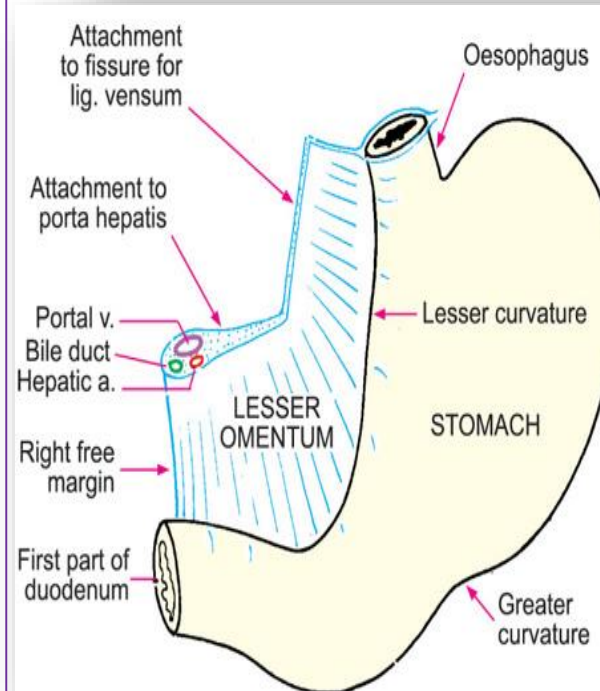
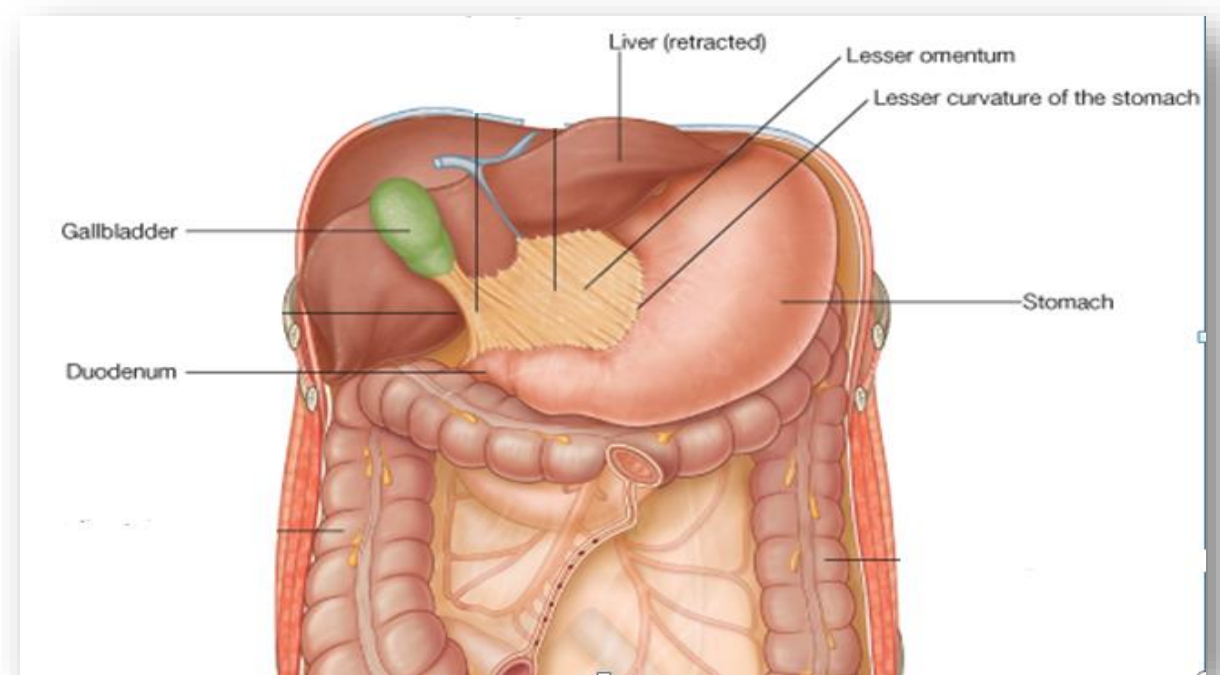
**Def.:** It is peritoneal fold that extends from the liver to (the stomach, and 1<sup>st</sup> inch of the of duodenum).

**Borders:** It has

- **Three attached borders** (hepatic, gastric & diaphragmatic).
- **One free right border.**

**Contents:**

- The free border contains between its two peritoneal layers; **Portal vein, Hepatic artery and Common bile duct.**
- The gastric border contains; Right & left gastric vessels.

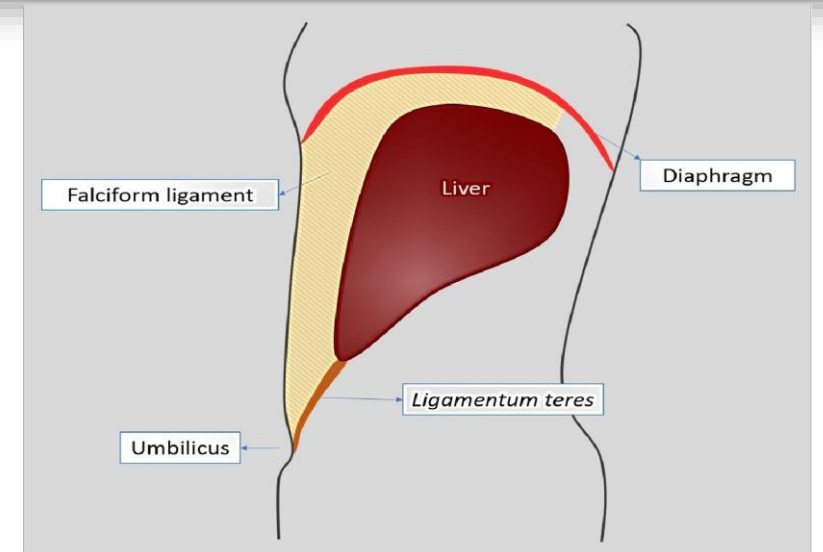
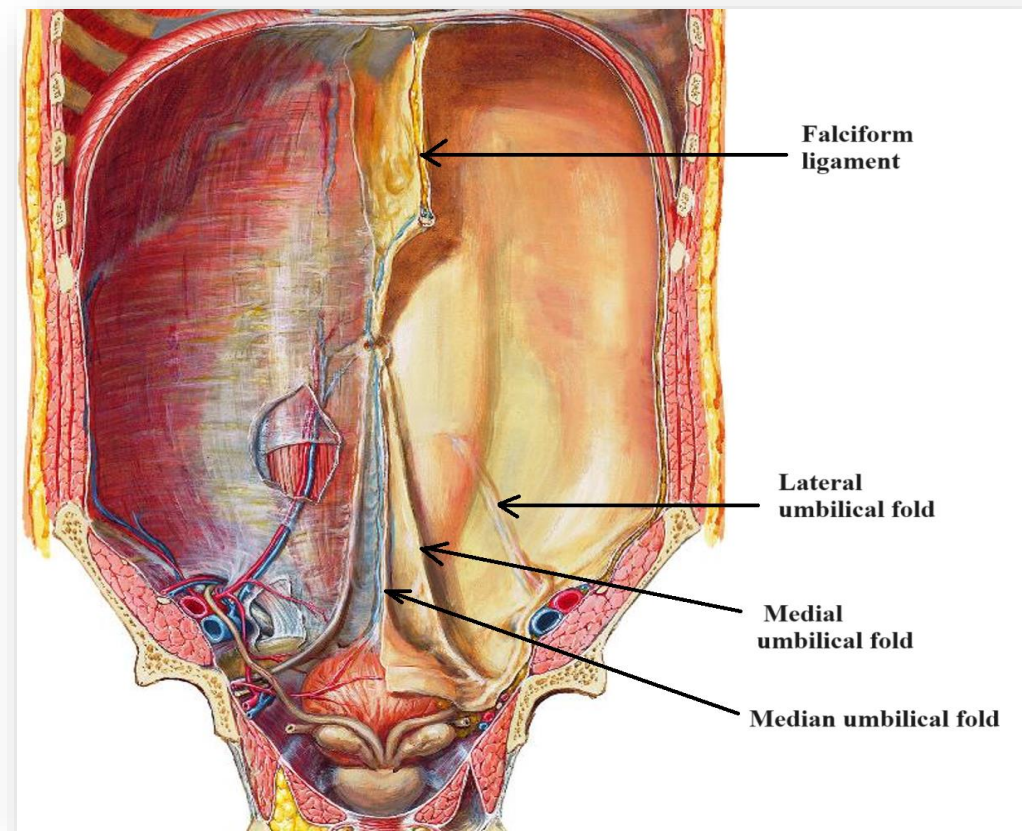


# Peritoneal folds of Anterior Abdominal Wall

- **Six folds** are related to the parietal peritoneum lining the posterior surface of the anterior abdominal wall.
- One above umbilicus and five below it.

## A- The fold above the umbilicus :

- Is the **Falciform ligament**.
- It is a sickle-shaped.
- It connects the anterior & superior surfaces of the **liver** to supra-umbilical part of **anterior abdominal wall** and inferior surface of the **diaphragm**.



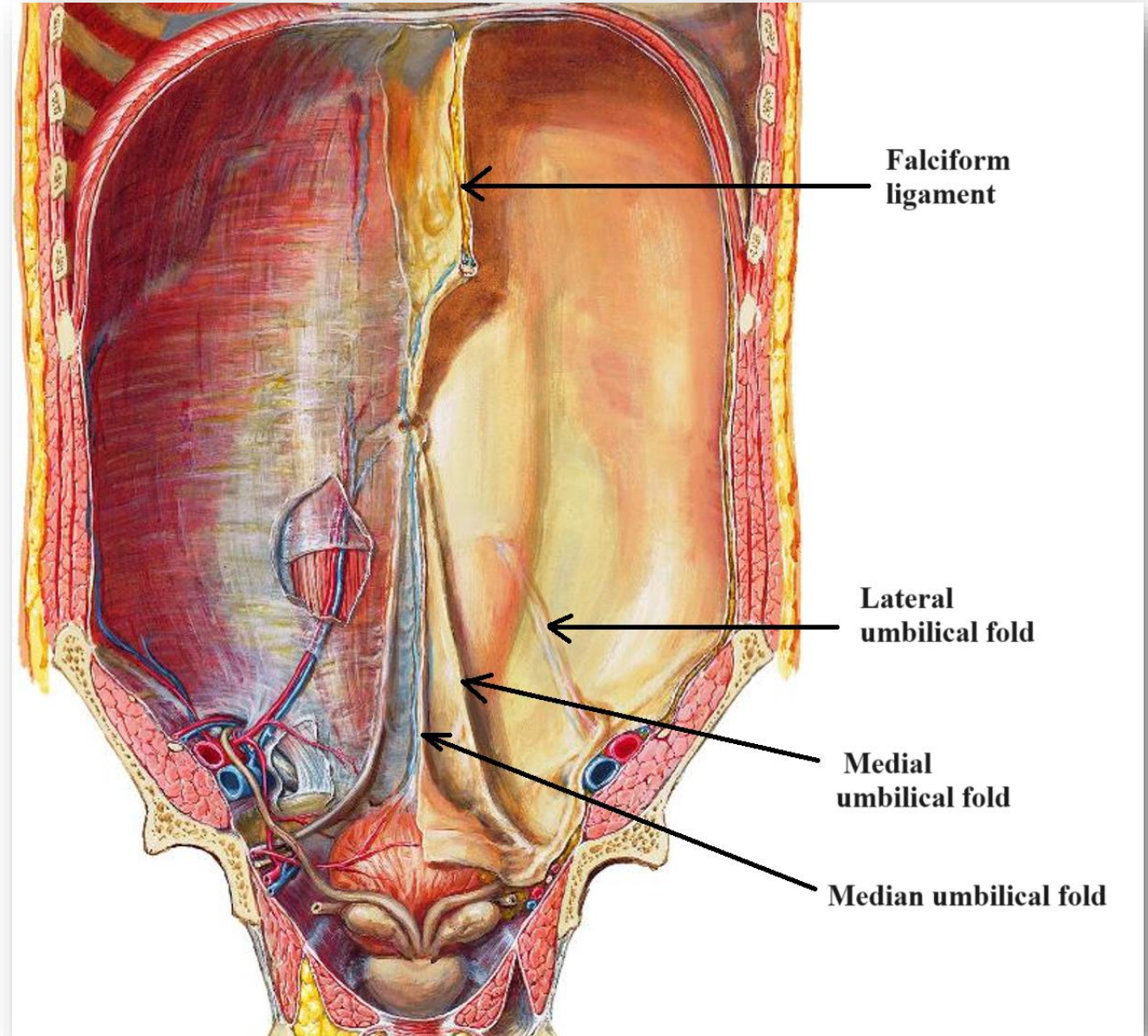
# Peritoneal folds of Anterior Abdominal Wall

## B- The folds below umbilicus:

**1-Median umbilical fold**, containing the median umbilical ligament.

**On each side of median umbilical ligament are two folds.**

- **Medial umbilical folds;** containing the lateral umbilical ligament (the obliterated remains of the umbilical artery).
- **Lateral umbilical folds;** containing the inferior epigastric artery.



# Peritoneal Folds

## a. Mesentery of small intestine:

It is peritoneal fold suspends **coils of jejunum and ileum** to the posterior abdominal wall.

## b. Transverse mesocolon:

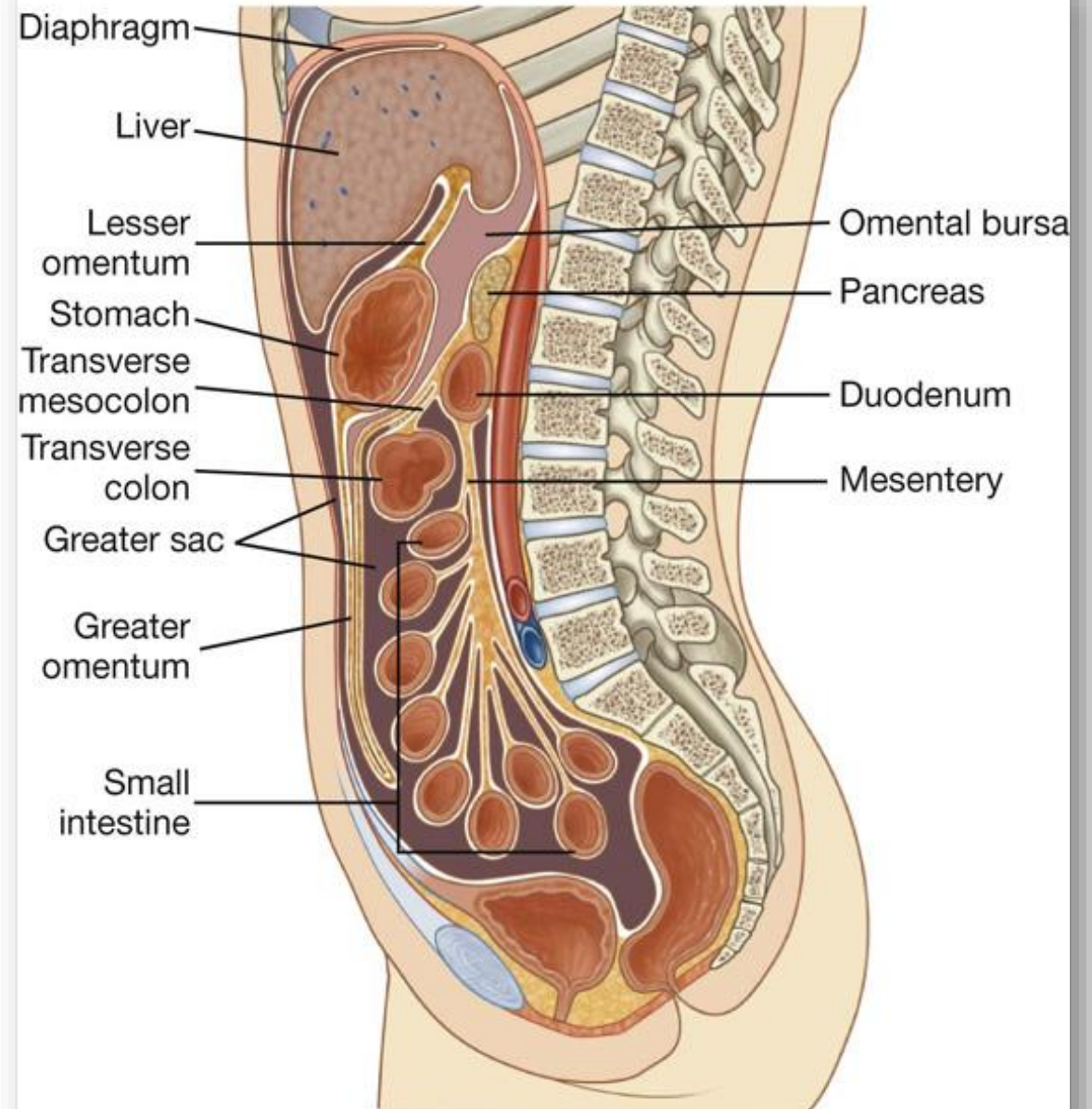
It is peritoneal fold suspends the **transverse colon** to posterior abdominal wall (Pancreas).

## c. Sigmoid mesocolon:

This fold suspends the **sigmoid colon** to the pelvic wall.

## d. Mesoappendix:

It is peritoneal fold suspends the **vermiform appendix**.





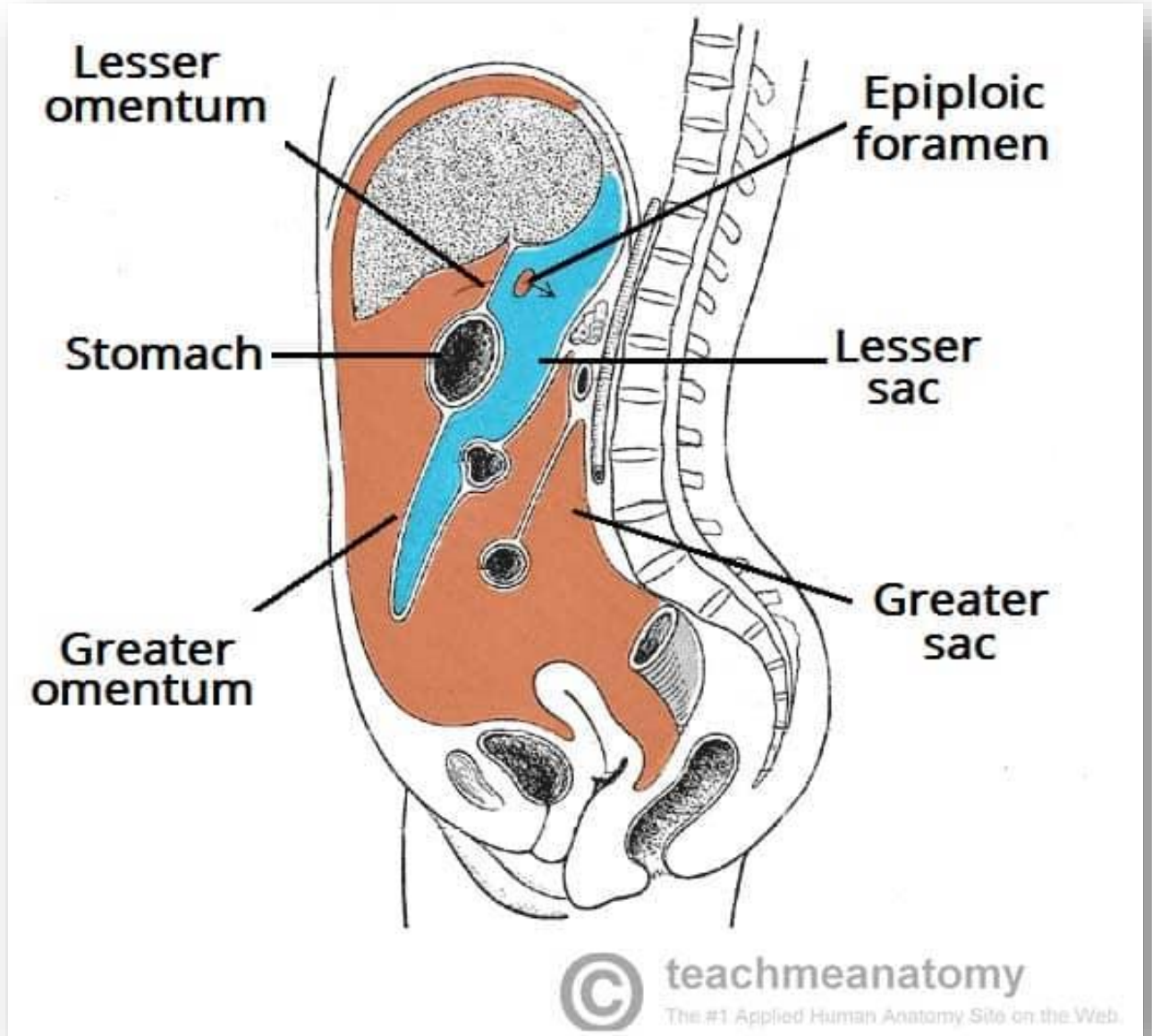
# Peritoneal cavity

## Greater sac:

- It is the **main part** of peritoneal cavity.
- It **extends** from diaphragm to pelvis.
- It is **exposed** after incision of ant. abdominal wall.

## Lesser sac:

- It is a **small part** of the peritoneal cavity.
- It is **placed mainly** behind the stomach and the lesser omentum.



# Peritoneal Spaces

- **The peritoneal cavity can be divided into three compartments; Supracolic, Infracolic, and Pelvic.**
- **The dividing line between the supracolic and infracolic compartments is the attachment of the transverse mesocolon to the posterior abdominal wall.**

## 1- Supracolic Compartment:

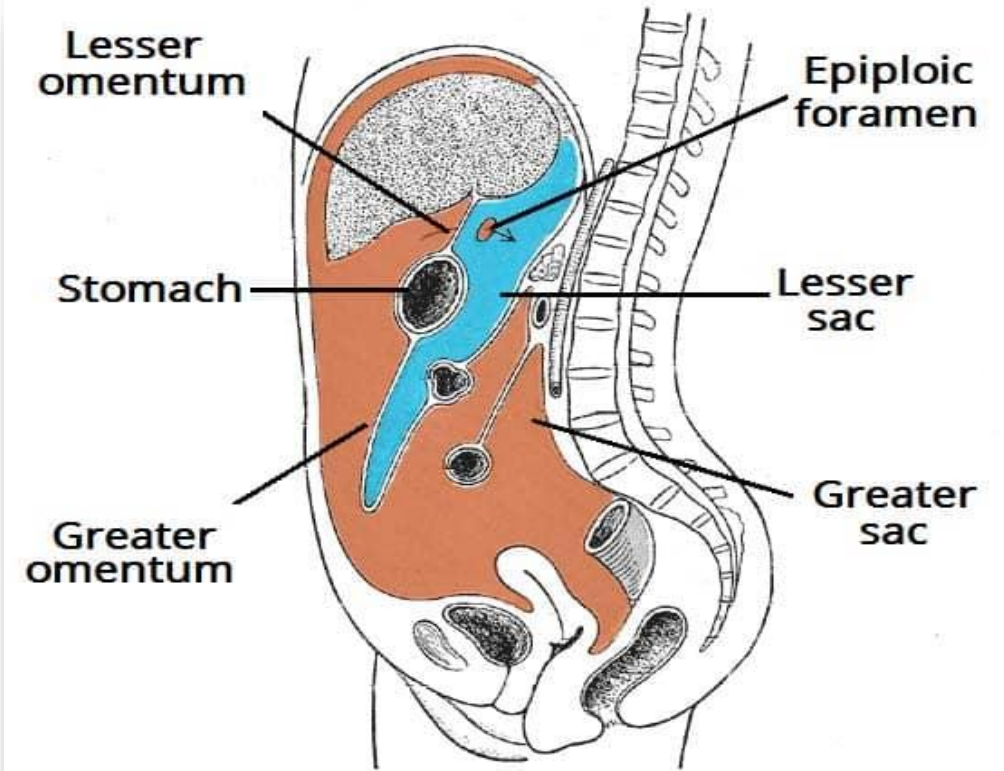
It consists of four peritoneal spaces:

### **1&2: Right and left sub-phrenic spaces:**

These spaces are **below** the diaphragm and correspondingly **on each side of** falciform ligament.

### **3&4: Right and left sub-hepatic spaces:**

The left sub-hepatic space is **the lesser sac**.

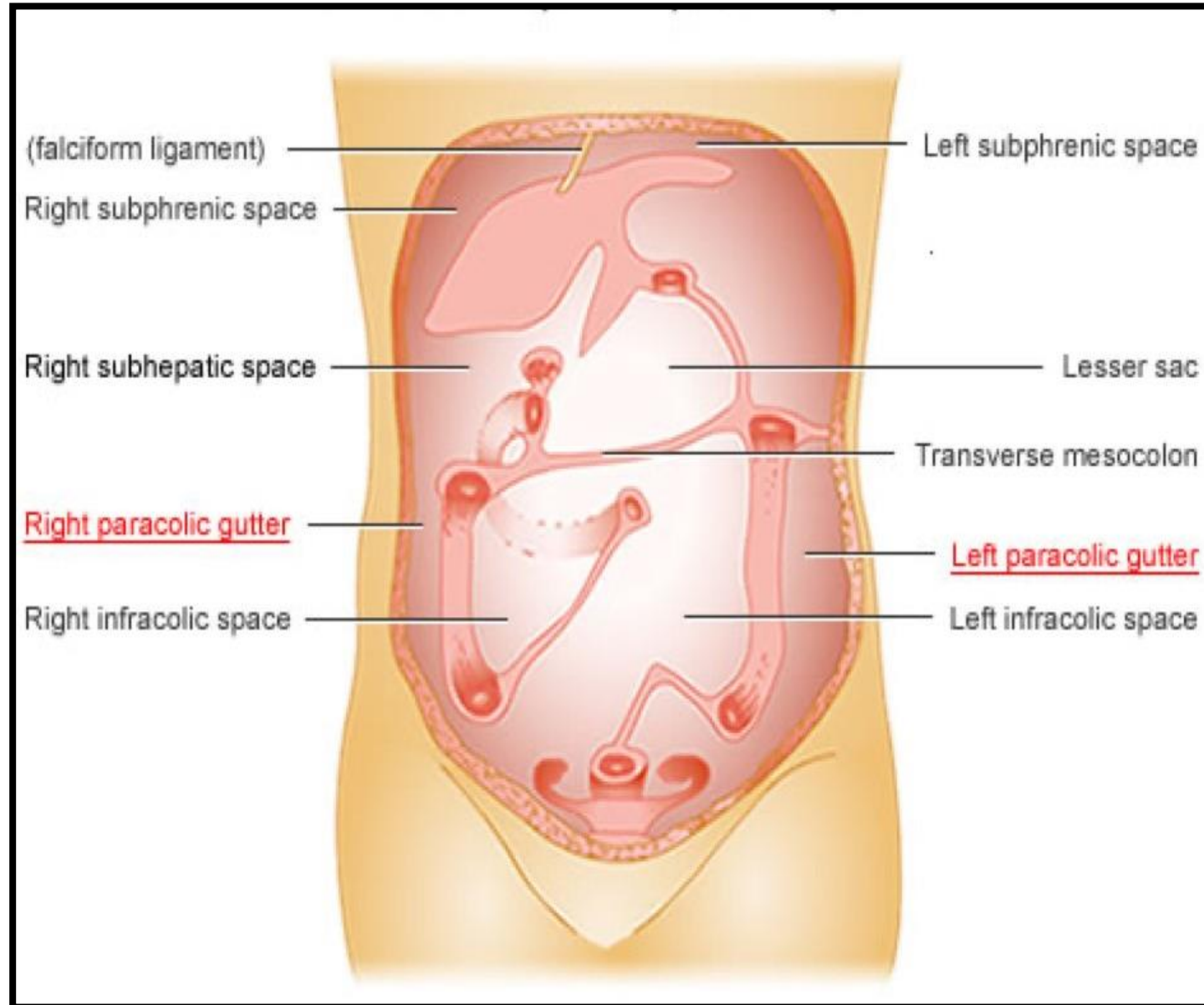


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Peritoneal spaces may be site for pathological collection of fluid.

Collection of infected peritoneal fluid in one of the subphrenic spaces is often accompanied by infection of the pleural cavity.

# Peritoneal Spaces



# Peritoneal spaces

## 2- Infracolic compartment:

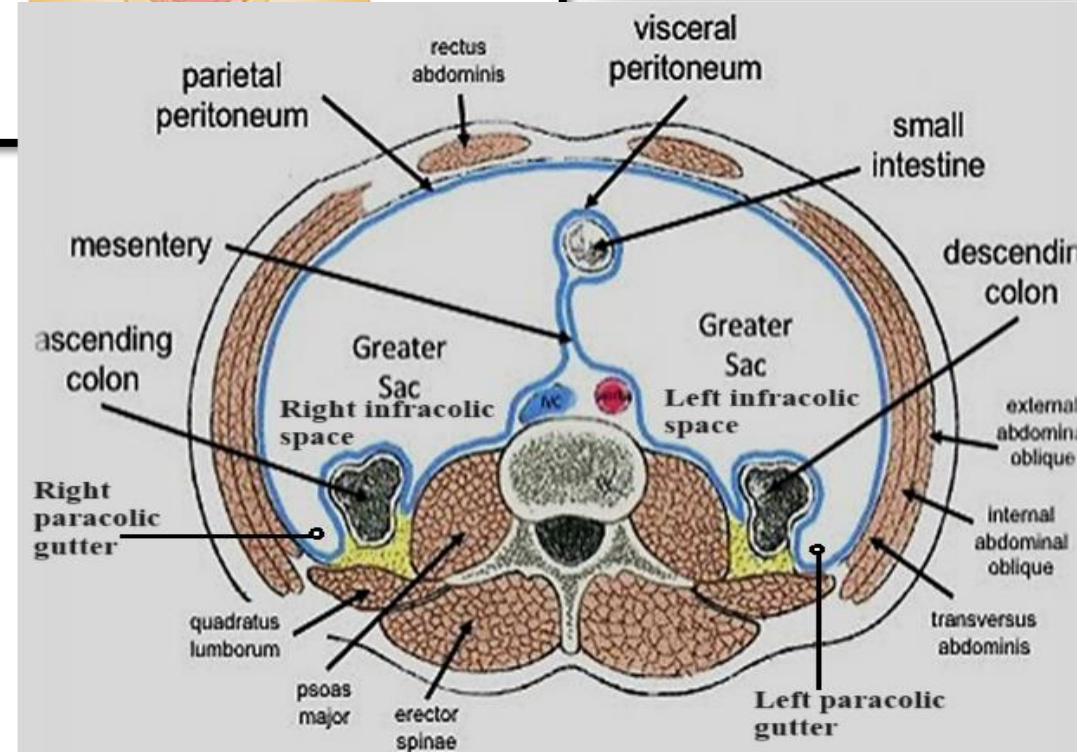
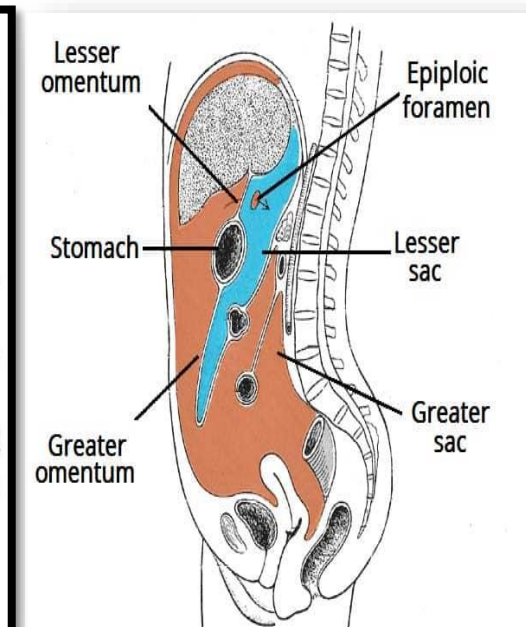
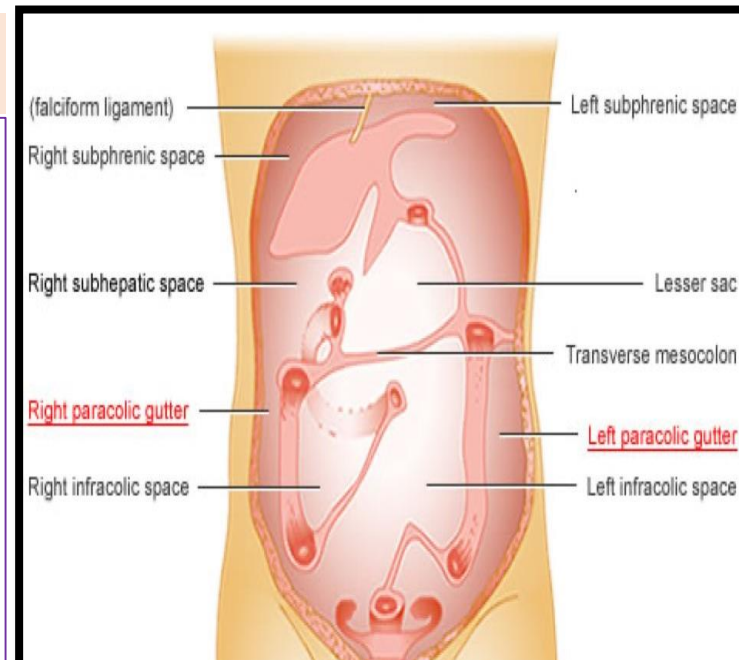
- It is compartment of peritoneal cavity **below** transverse colon and mesocolon.
- It is **divided by mesentery of small intestine** into right & left spaces.
- It also includes the **Right & Left Paracolic gutters**.

## 1-Right infracolic space;

- It is not continuous with pelvic part of peritoneal cavity.
- It is shut off below by the attachment of mesentery of small intestine, so the fluid collected in this space cannot pass to the pelvic part of peritoneal cavity.

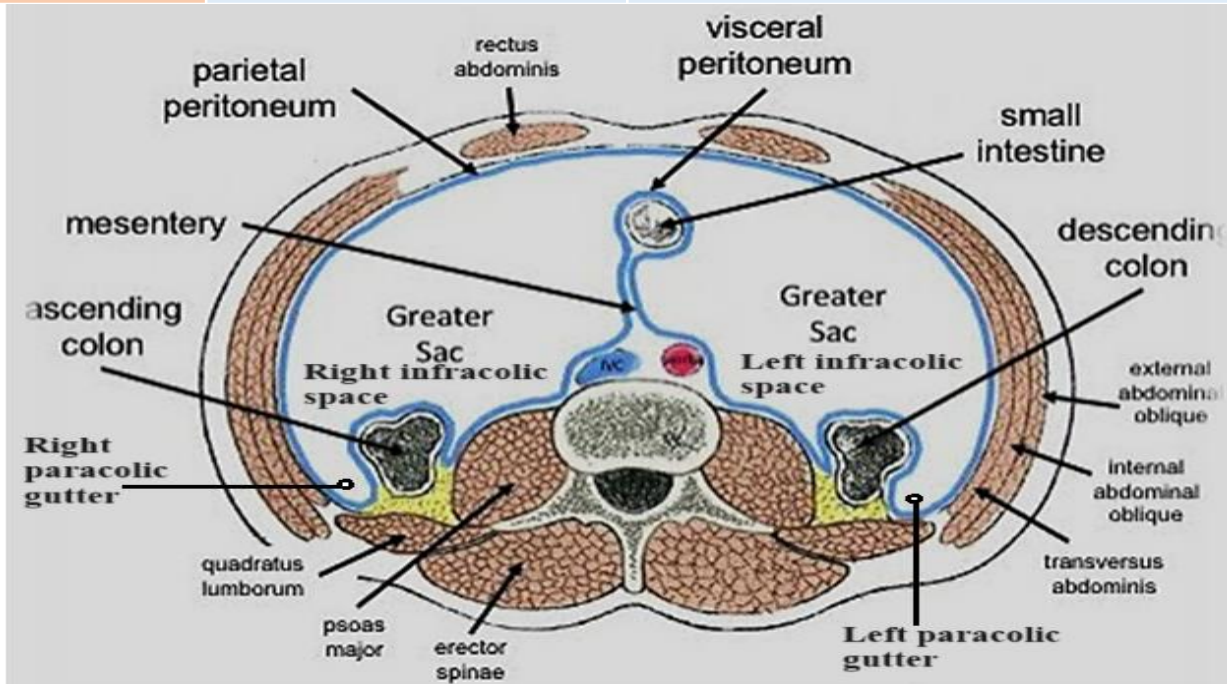
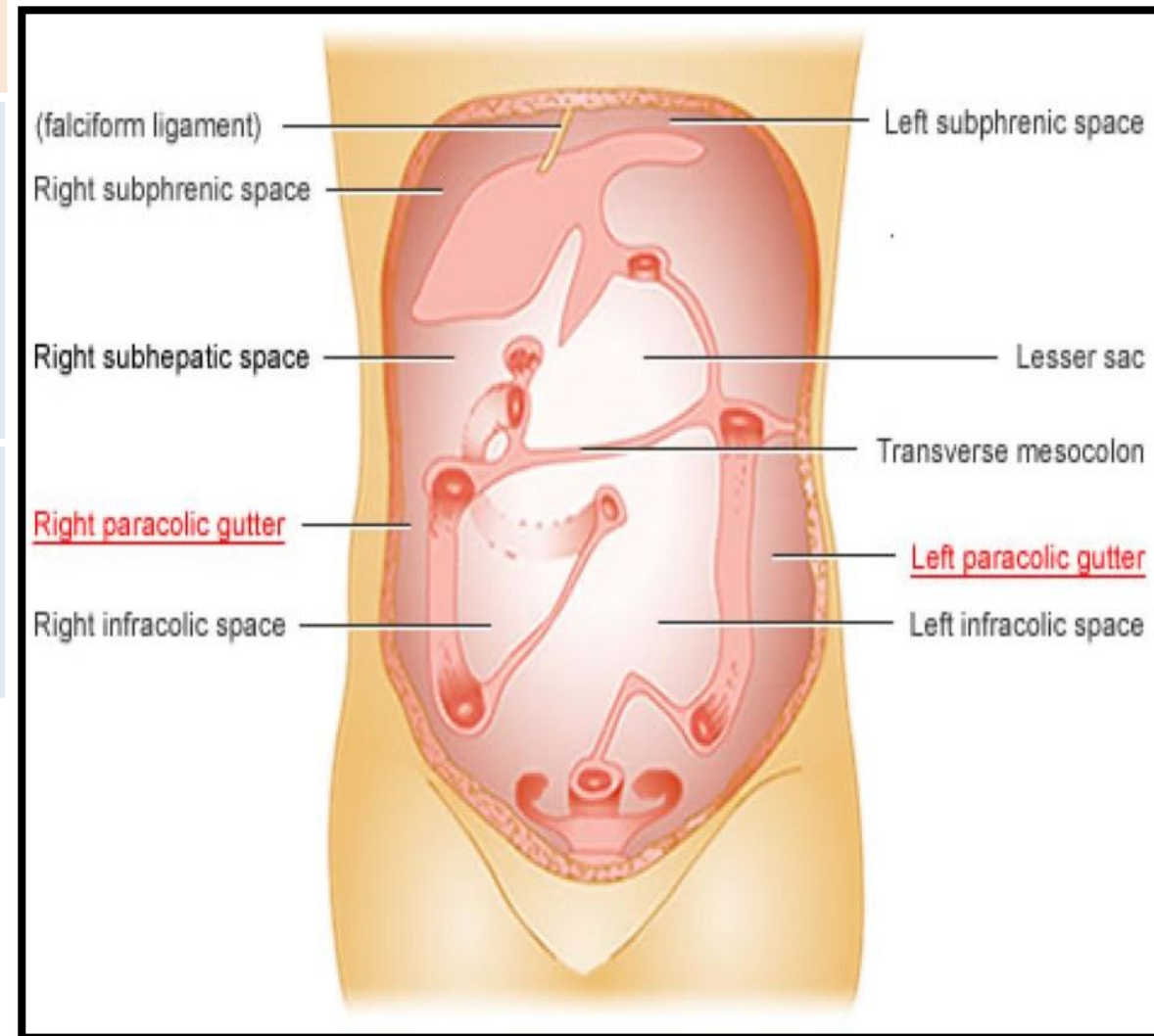
## 2-Left infracolic space;

- It is continuous with pelvic part of peritoneal cavity.



# Paracolic gutters

Right Paracolic gutter	Lateral to ascending colon	to Continue above with right subhepatic space & below with pelvic part of peritoneal cavity.
Left Paracolic gutter	Lateral to descending colon	to Closed above & continue below with pelvic part of peritoneal cavity.

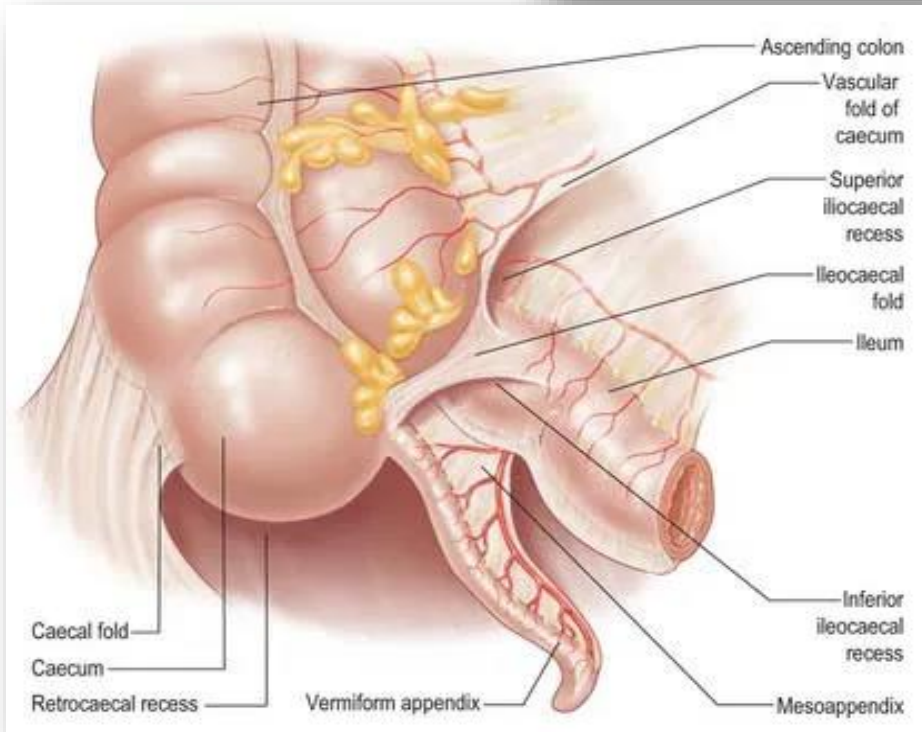
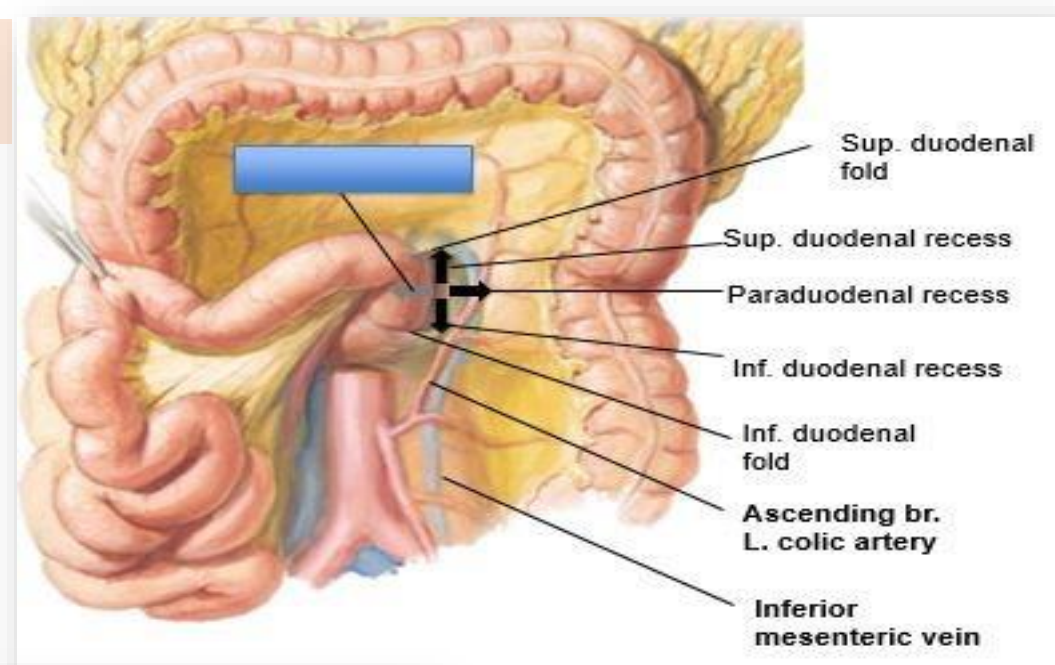


**Clinical importance:** Pus from ruptured appendix may extend upwards along the right paracolic gutter to the right subphrenic space leading to abscess formation.

# Peritoneal recesses

- The peritoneal recesses of peritoneal cavity **are bounded** by peritoneal folds.
- **Lie in relation to** duodenum & caecum.

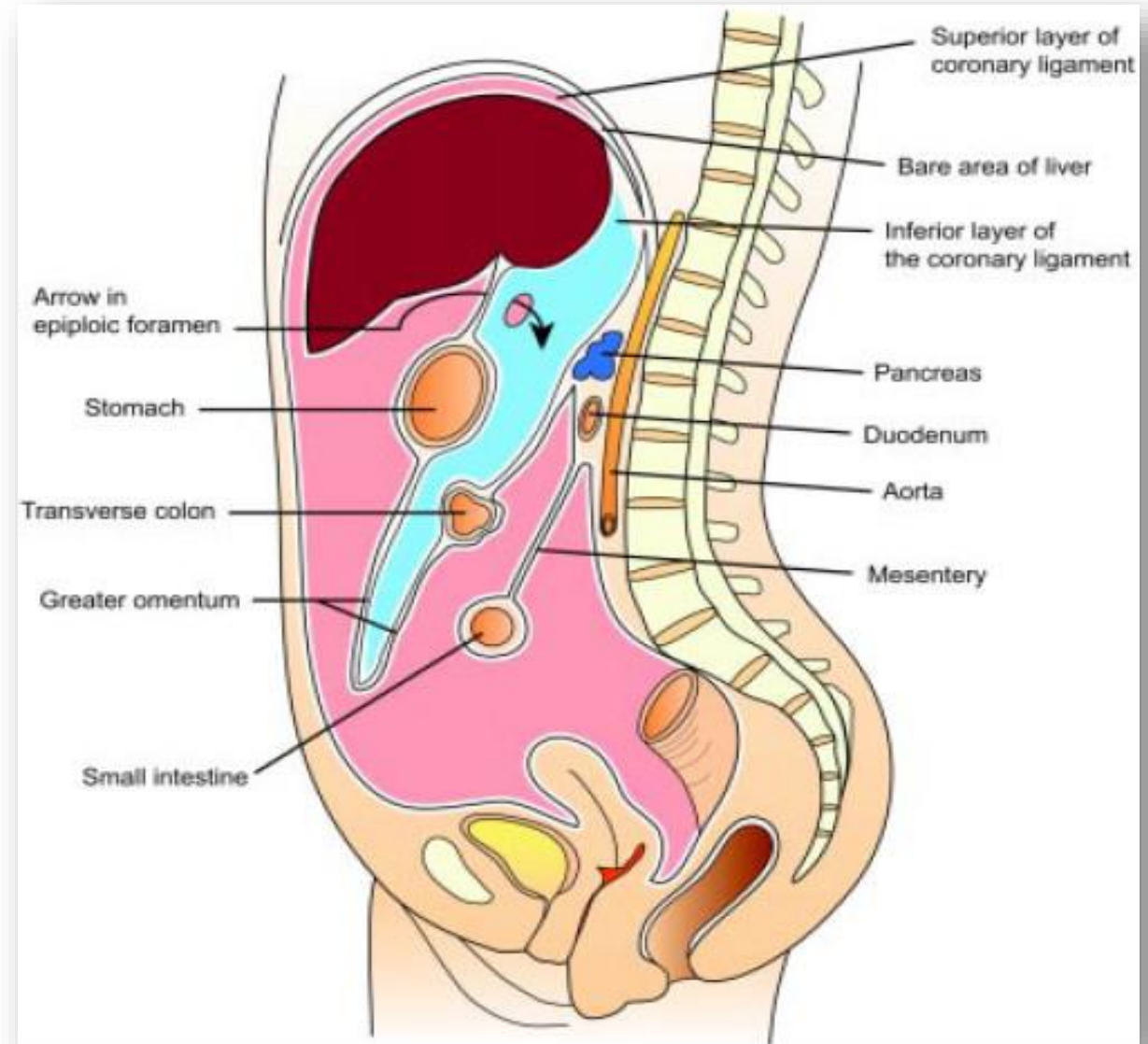
**The surgical importance of these recesses** is that they may be site for **internal hernia**. This means that loop of intestine may herniate into any of these recesses and may become constricted.



# Lesser Sac (Left subhepatic space)

## Site:

- It is a **small part** of the peritoneal cavity **placed mainly behind** the stomach and the lesser omentum.
- It is called **omental bursa** being situated behind stomach so act as bursa to facilitate the movement of the stomach over the posterior abdominal wall.
- It **communicate with** the greater sac **through the Epiploic foramen.**



# Lesser sac

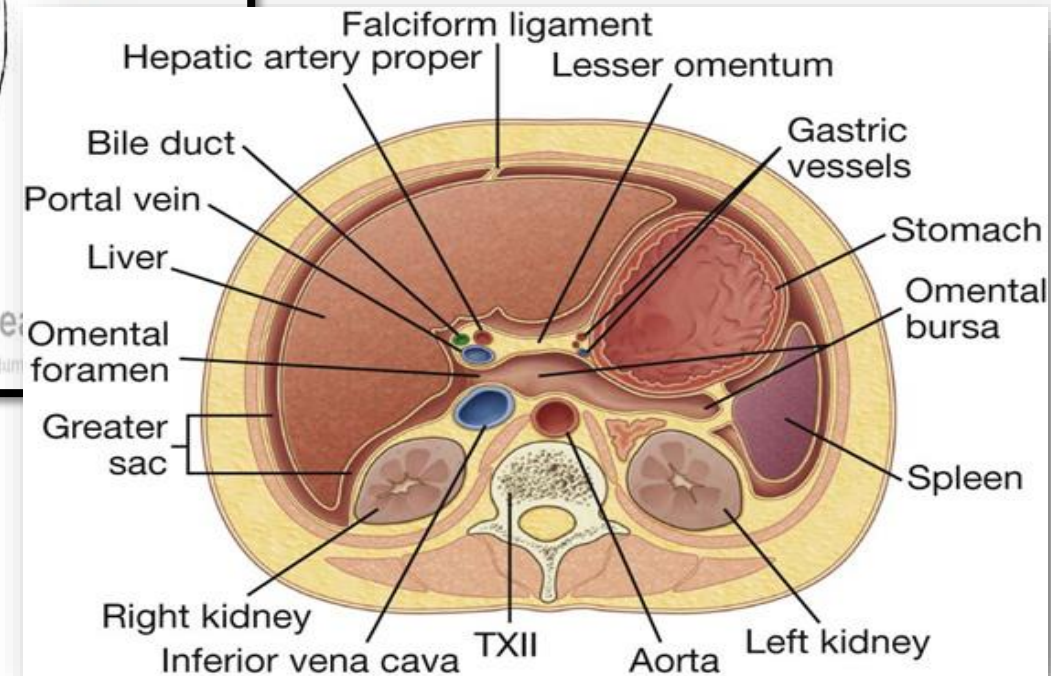
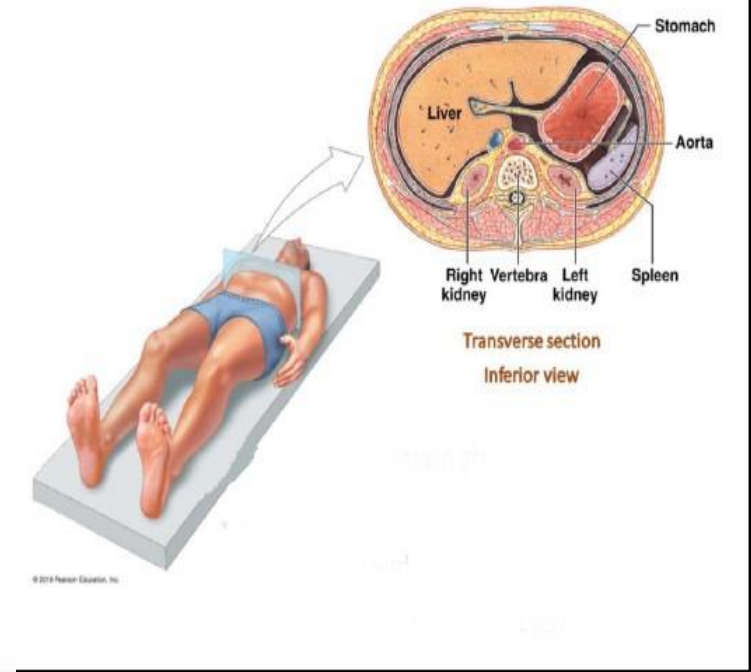
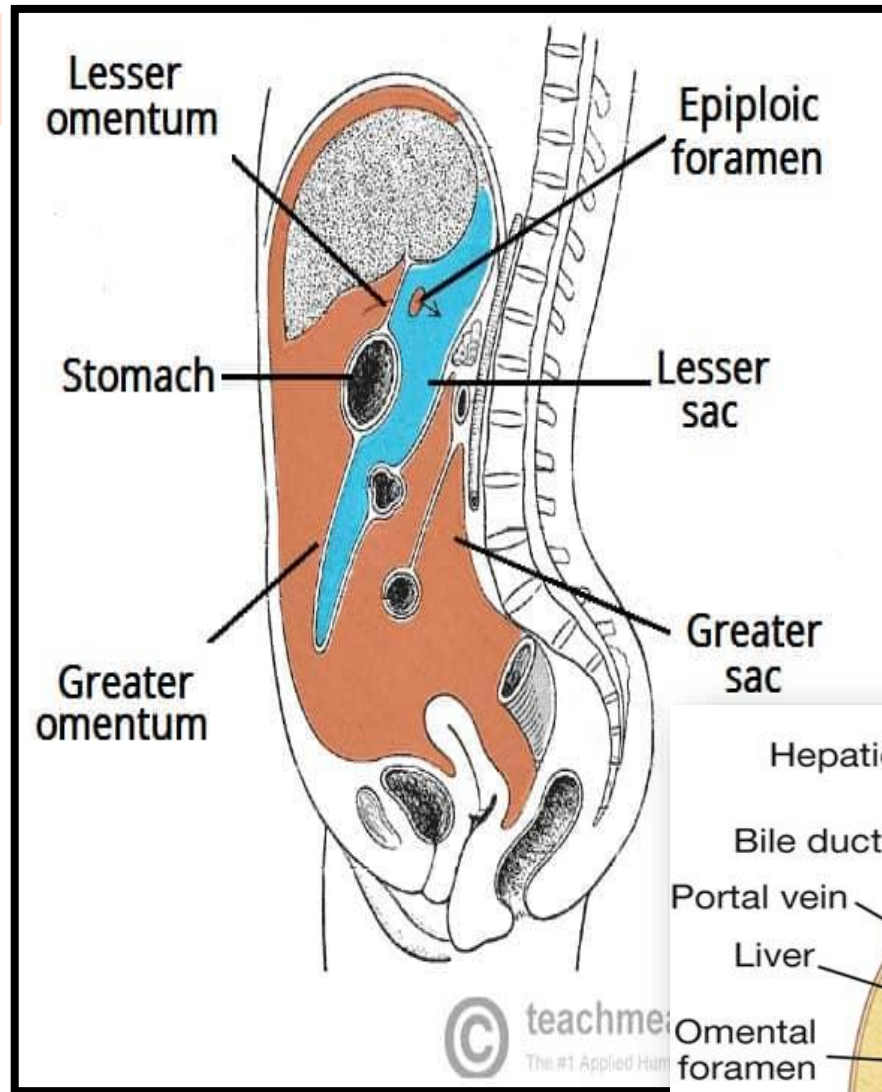
## Recesses of lesser sac:

**1-Superior recess:** Behind the liver.

**2- Inferior recess:** Between anterior & posterior layers of greater omentum.

**3- Splenic recess:** Toward spleen.

Between gastrosplenic & lienorenal ligaments of spleen.





# Epiploic Foramen

**Def:** Vertical slit through it the greater & lesser sacs communicate.

**Site:** It lies behind free border of lesser momentum.

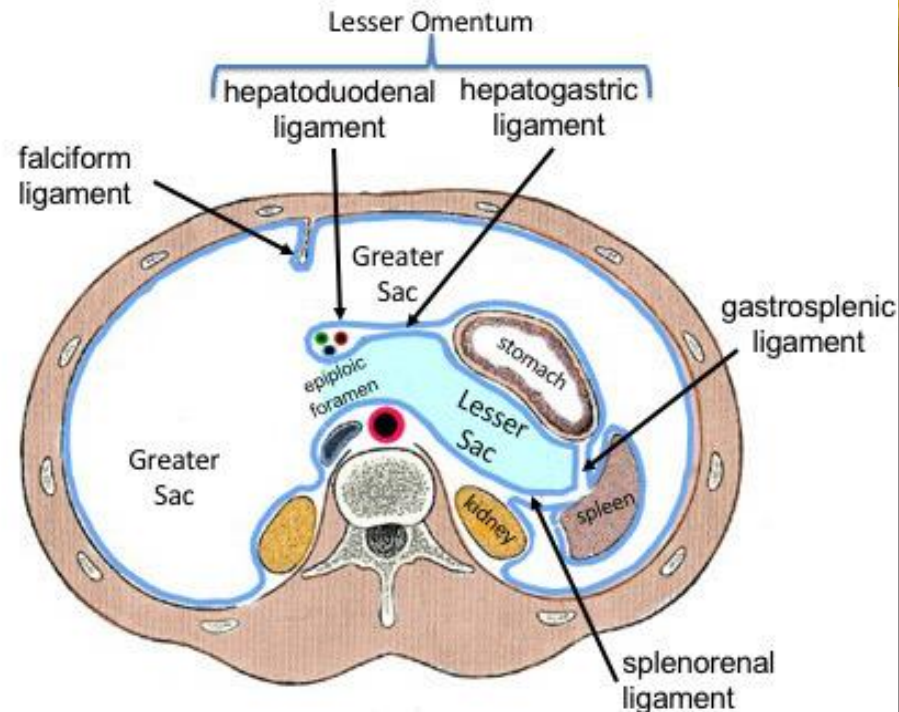
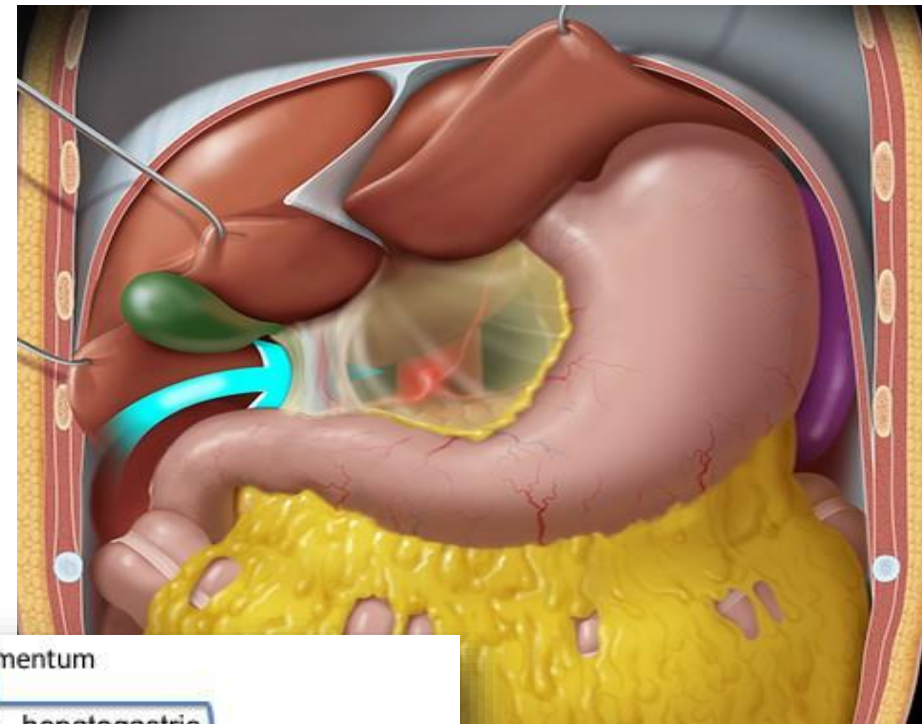
## **Boundaries:**

### **Anterior:**

- Free border of lesser omentum that contains; **portal vein, hepatic artery & common bile duct.**

### **Posterior:**

- **I V C & peritoneum** over it.



# Supply of peritoneum

## Blood supply:

- **Parietal peritoneum:** It gets its blood supply from arteries supplying the walls as **the posterior intercostal and lumbar arteries.**
- **Visceral peritoneum:** It derives its blood supply from vessels supplying the viscera.

## Lymphatic drainage:

### 1-Parietal peritoneum of anterior abdominal wall

above umbilicus; Parasternal lymph nodes.  
below umbilicus; External iliac lymph nodes.

### 1-Parietal peritoneum of posterior abdominal wall

Para aortic lymph nodes.

### 1-Parietal peritoneum of diaphragm

Diaphragmatic lymph nodes.

### 2-Visceral peritoneum: as viscera.

# Nerve supply of the peritoneum

## The parietal peritoneum:

It is **sensitive** to pain, temperature, touch, as it is supplied by **somatic nerves** that supply the wall.

- **The parietal peritoneum lining the central part of diaphragm is supplied by: the phrenic nerve (C4)** --- hence referred pain from this area to tip of shoulder.
- **The peritoneum lining the peripheral part of diaphragm is supplied by: the lower six intercostal nerves.**
- **The remainder of the parietal peritoneum is supplied by: the lower six intercostal nerves and L1 nerves.**
- **In the pelvis:** The obturator nerve.

## • The visceral peritoneum:

- It is **insensitive** to pain, touch and temperature sensations. as it is supplied by **autonomic nerves** that supply the viscera.
- It is **sensitive** to pain due to over distension.

# Functions of the peritoneum

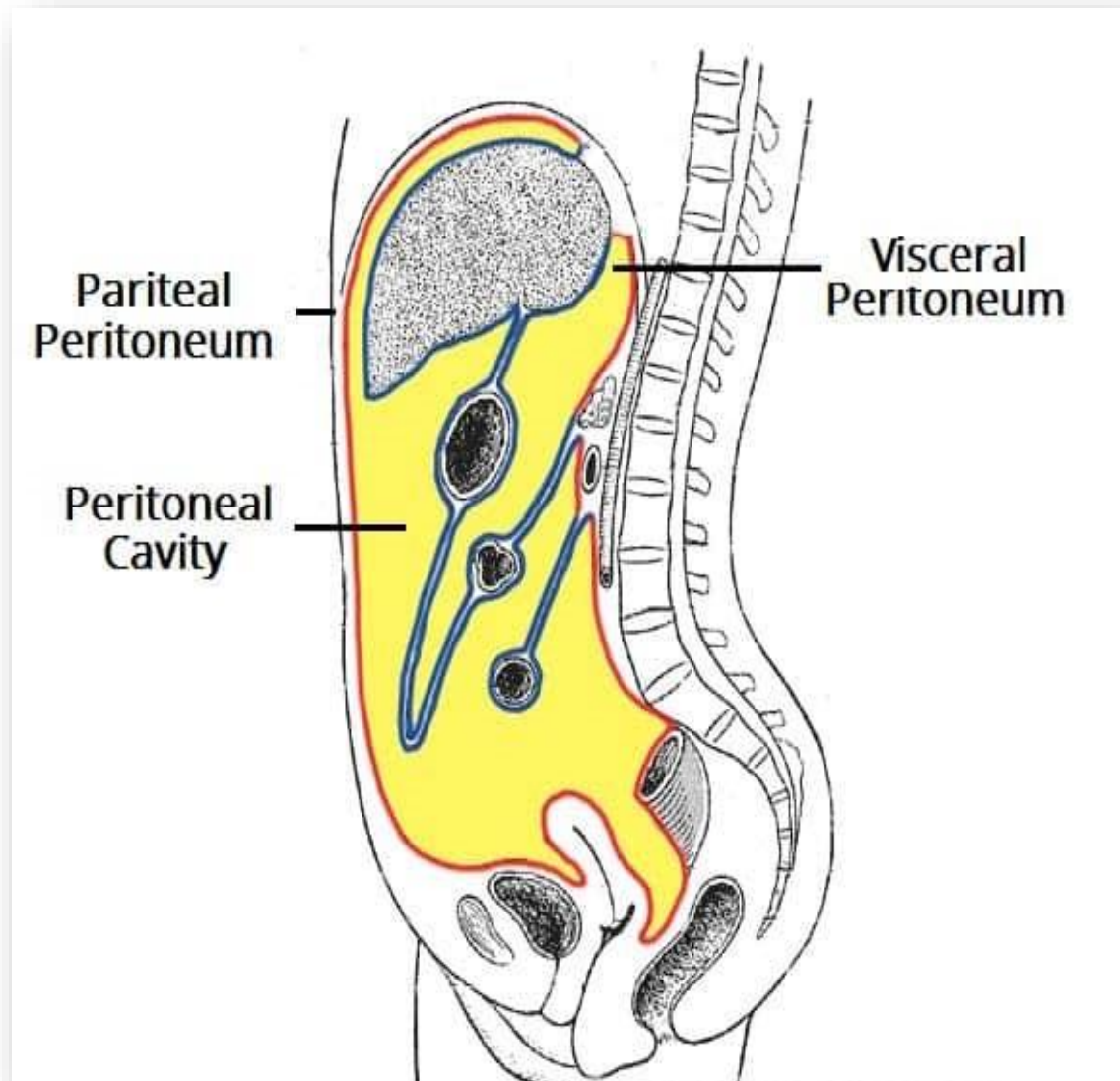
1-It provides a smooth surface for the abdominal viscera to glide on.

2-**Peritoneal fluid** contain phagocytic cells against infections.

3- **Peritoneal folds** suspend the organs and provide routes for passage of nerves & vessels to organs.

4- As stores for fat.

5-**Peritoneal Dialysis:** Because the peritoneum is a semipermeable membrane, it allows rapid bidirectional transfer of substances across itself.



Thank

you

