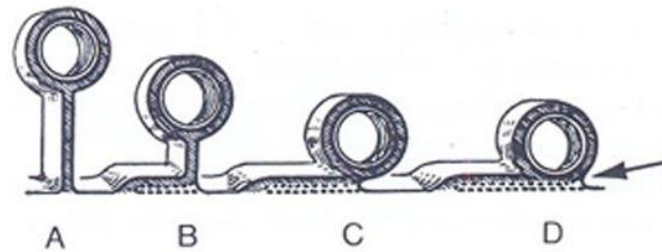


PERITONEUM

- ★ The **peritoneum** is a serous sac that lines the abdominal and pelvic cavities .
- ★ The cavity of the peritoneal sac is called **peritoneal cavity** which is an empty cavity except of a thin film of serous fluid which if increase in amount → ascitis.



- ★ All the abdominal organs without exception are **extraperitoneal**.
- ★ The peritoneal sac is *invaginated* by the abdominal organs which develop on the posterior abdominal wall of the foetus and bulge forwards for variable degree **as follows**:
 - a) Some organs leave the posterior abdominal wall **completely and become suspended** by a fold of peritoneum called:
 - **Mesentery** (in case of the intestine).
 - **Omentum** (in case of the stomach).
 - **Ligament** (as in the spleen and liver).
 - b) Some other organs may *bulge* in the peritoneal cavity **to a limited extent** but remain attached to posterior abdominal wall , and they are covered on their front and sides only with peritoneum (i.e retroperitoneal fixed organs) eg. kidneys, duodenum , pancreas, ascending colon and descending colon.



*Degrees of invagination of viscera *
into the peritoneal cavity

★ *All abdominal organs whether suspended by mesentery or not lie outside the peritoneal cavity which remains an empty cavity except for a thin film of peritoneal fluid.*

★ The peritoneum is divided into :

a) **Visceral layer** : covering organs, supplied by autonomic nerve fibers & insensitive to irritation but sensitive for stretch → diffuse visceral pain .

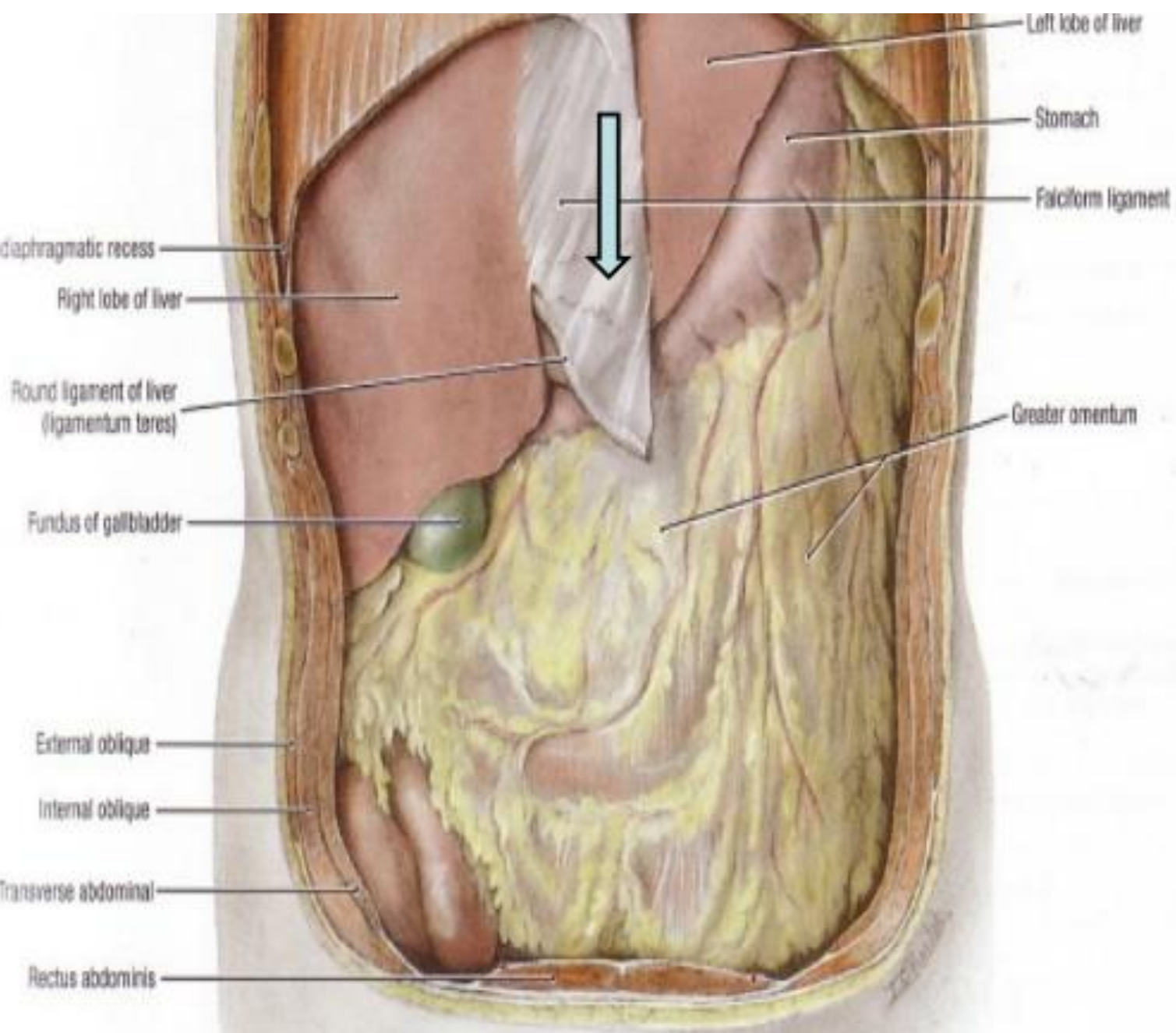
b) **Parietal layer** : lines the abdominal wall, supplied by somatic nerve fibers and sensitive to any irritation → localized somatic pain & reflex involuntary spasm of muscles of anterior abdominal wall i.e. **rigidity** .

★ **Sex Difference:**

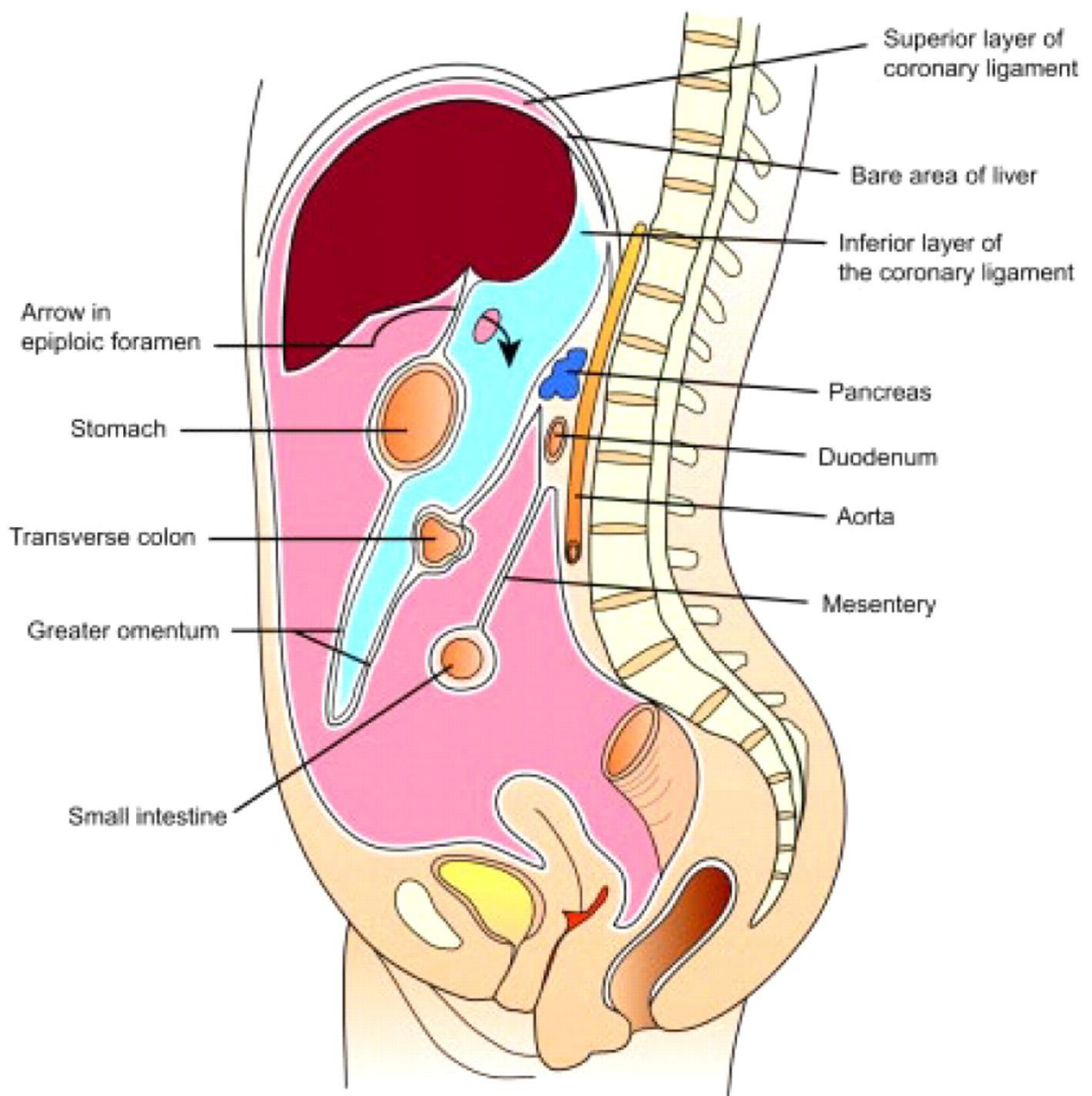
- The peritoneal cavity is *a closed sac in the male*, but receives the openings of the *uterine tubes in the female*, and accordingly it communicates with the outside through these tubes.

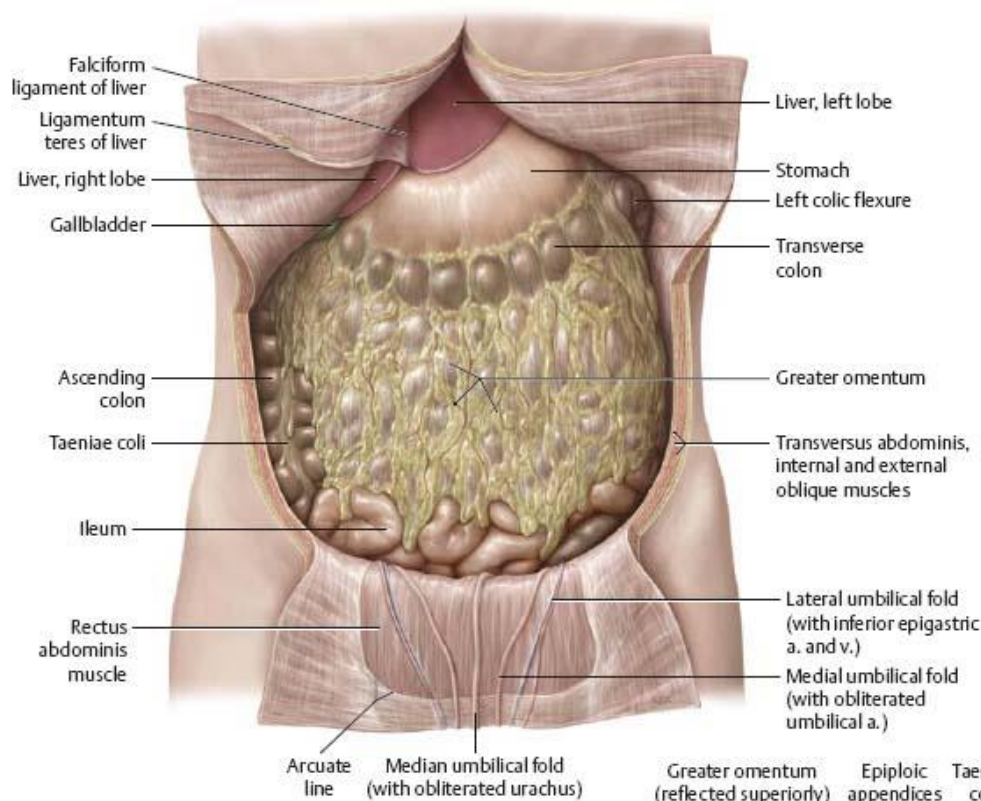
★ The **peritoneal cavity** is divided into :

a) **Greater sac** : Fills all abdominal & pelvic cavity in front of liver , stomach , lesser & greater omenta . It is the part opened as we incise the parietal peritoneum of anterior abdominal wall .

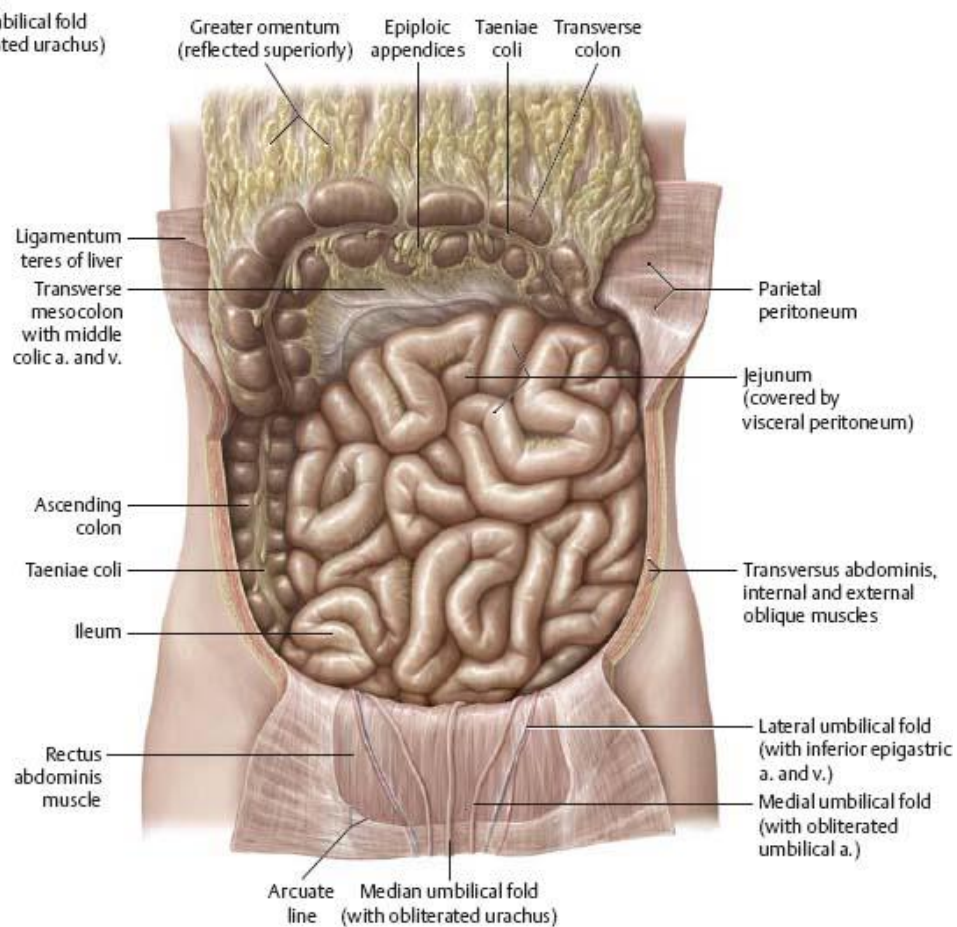


Anterior View



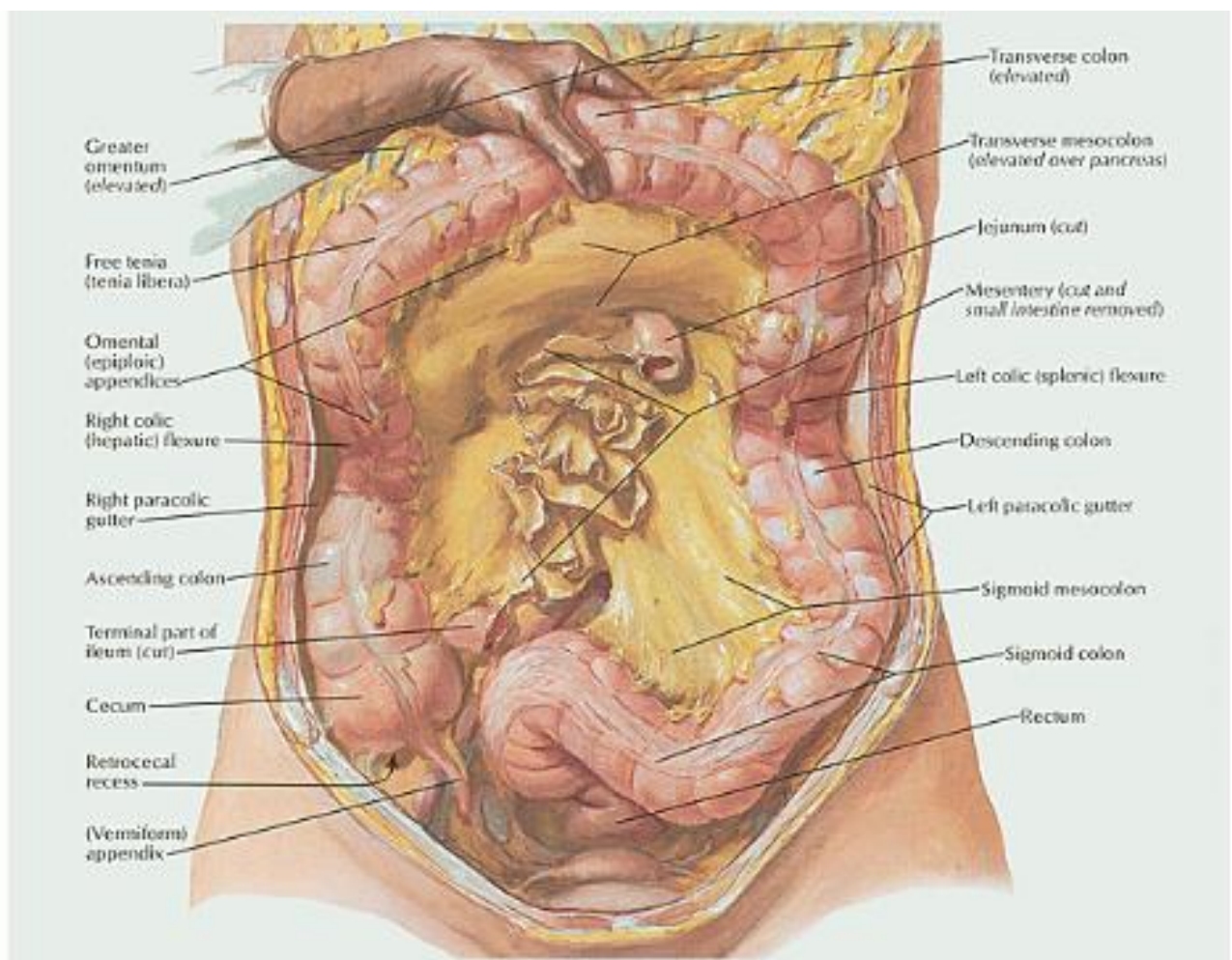


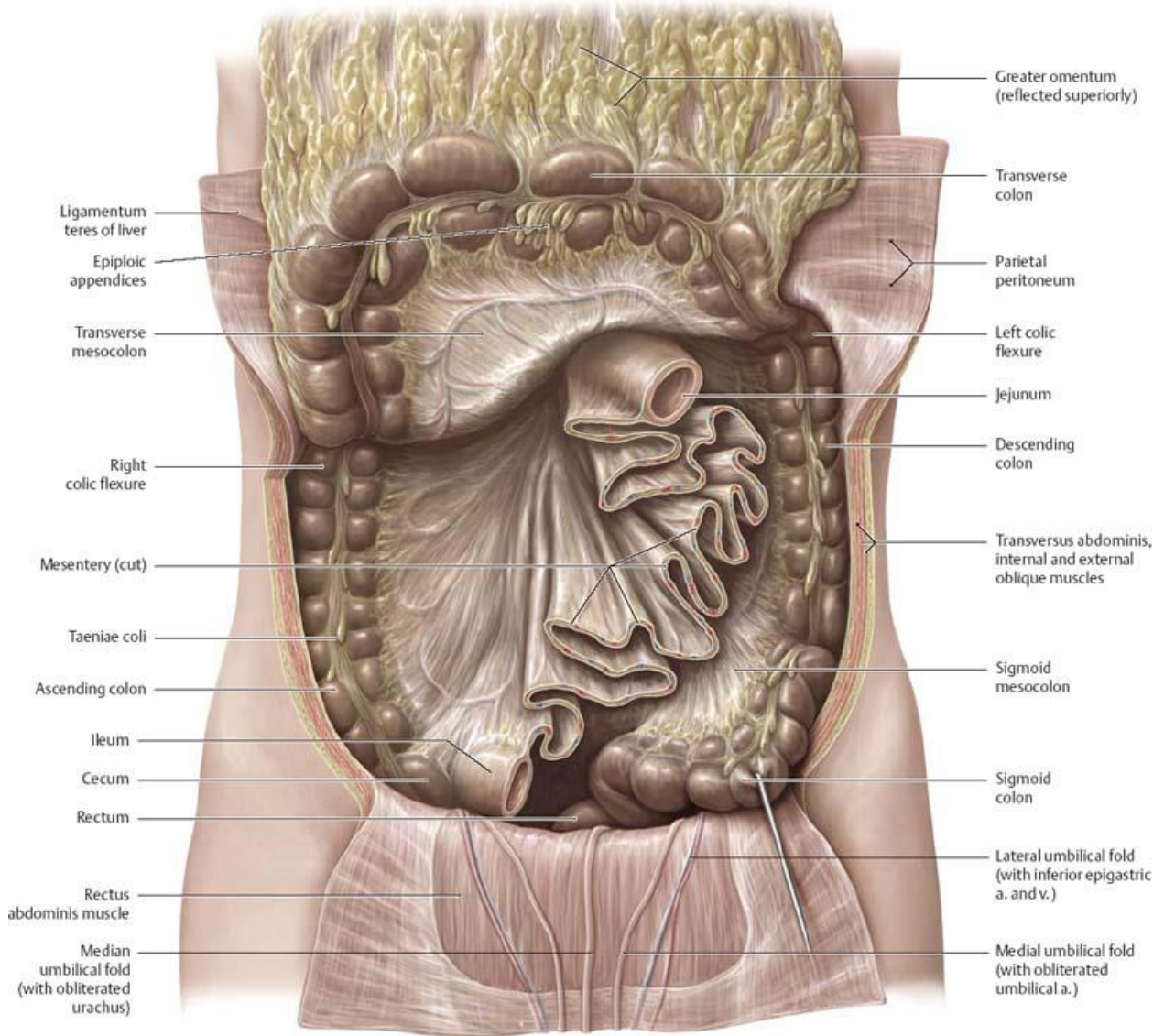
A Greater sac. *Retracted*: Abdominal wall.



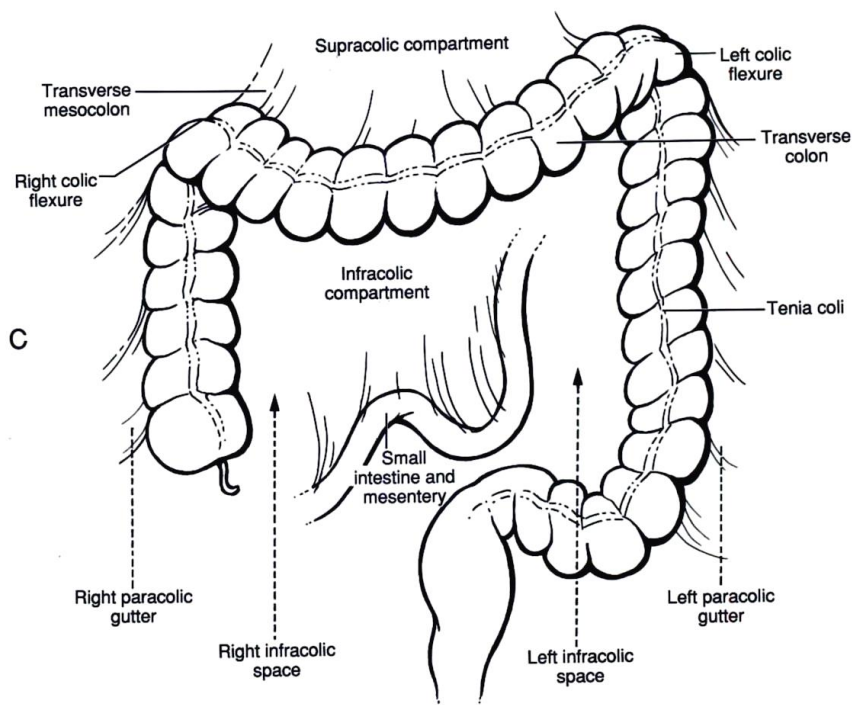
B Infracolic compartment. *Reflected*: Greater omentum and transverse colon.

- It is **subdivided** into 2 compartments by a transverse partition formed by the greater omentum, the transverse colon and its mesocolon.
- These **2 compartments** are:
 - 1) ***Supracolic compartment***: is present in front of and above the transverse colon, greater omentum and transverse mesocolon.
 - 2) ***Infracolic compartment***: lies behind and below the transverse colon, greater omentum and transverse mesocolon.
 - It is divided by the mesentery of small intestine into:
 - a) **Upper right** region.
 - b) **Lower left** region which communicates freely with the pelvic cavity.



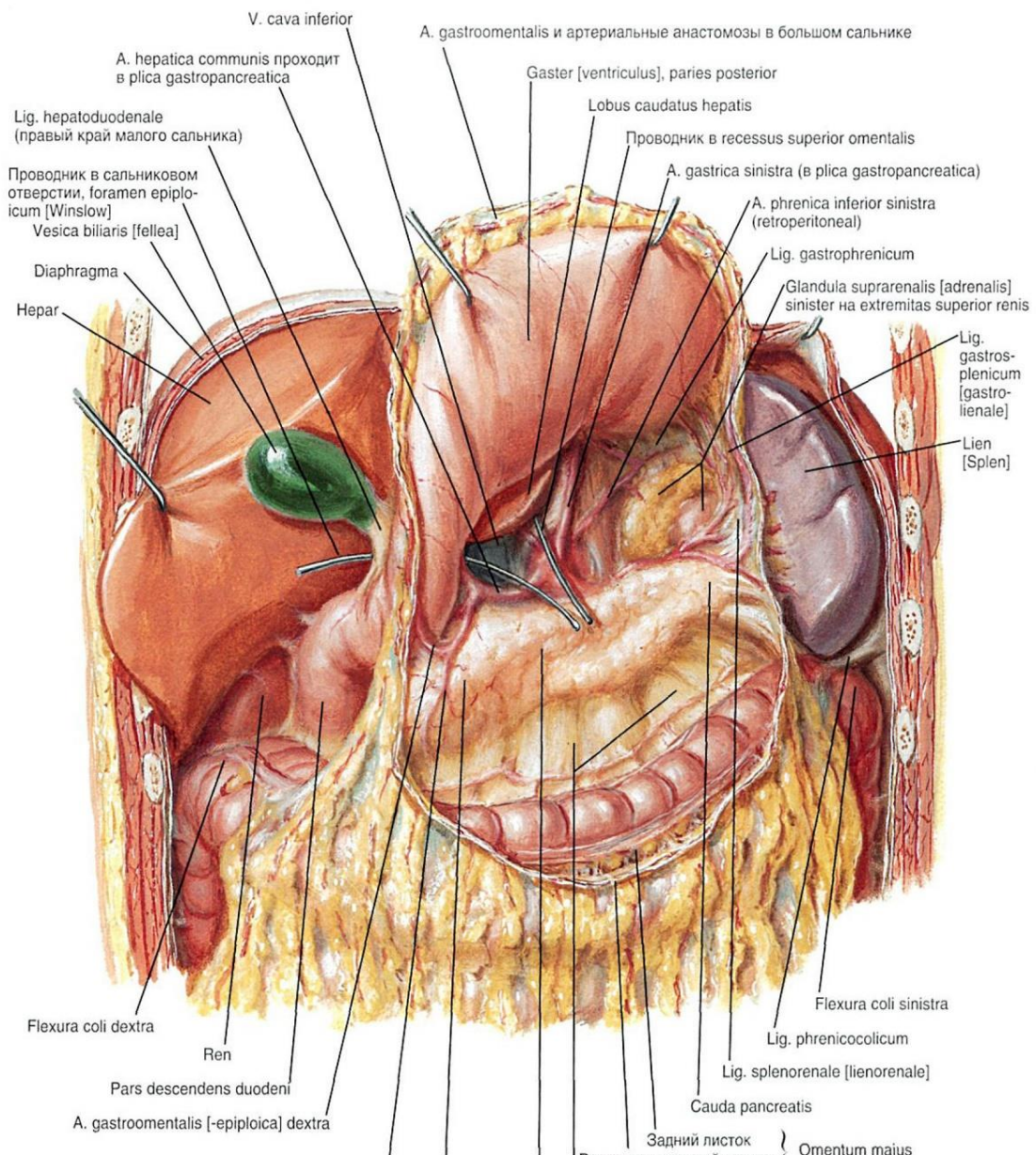
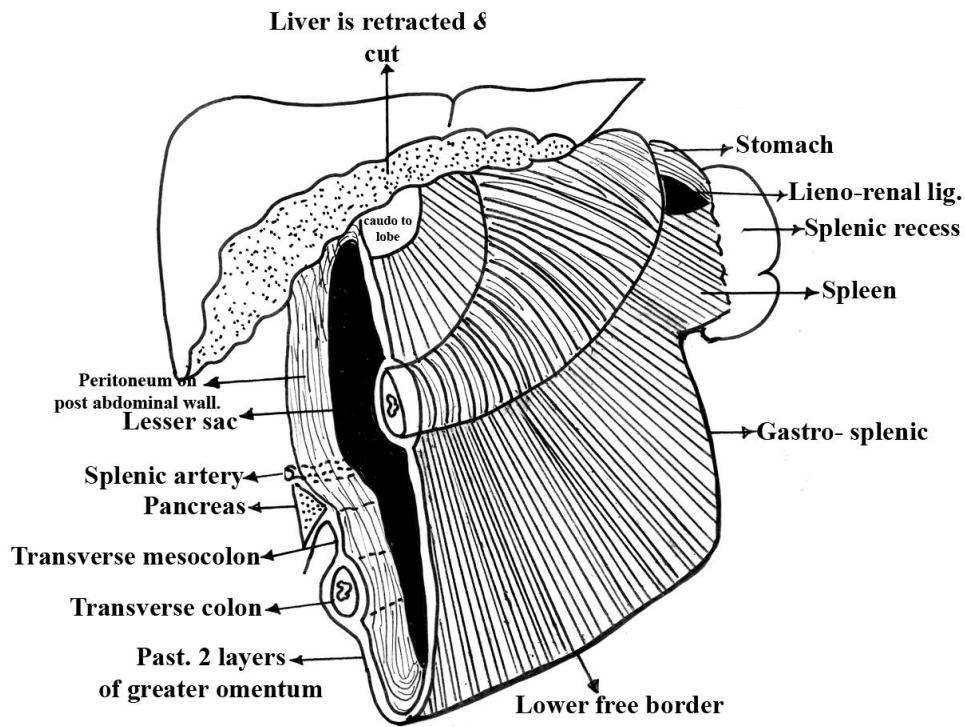


C Mesenteries. *Reflected:* Greater omentum and transverse colon. *Removed:* Intraperitoneal small intestines.



*Compartments of greater sac *

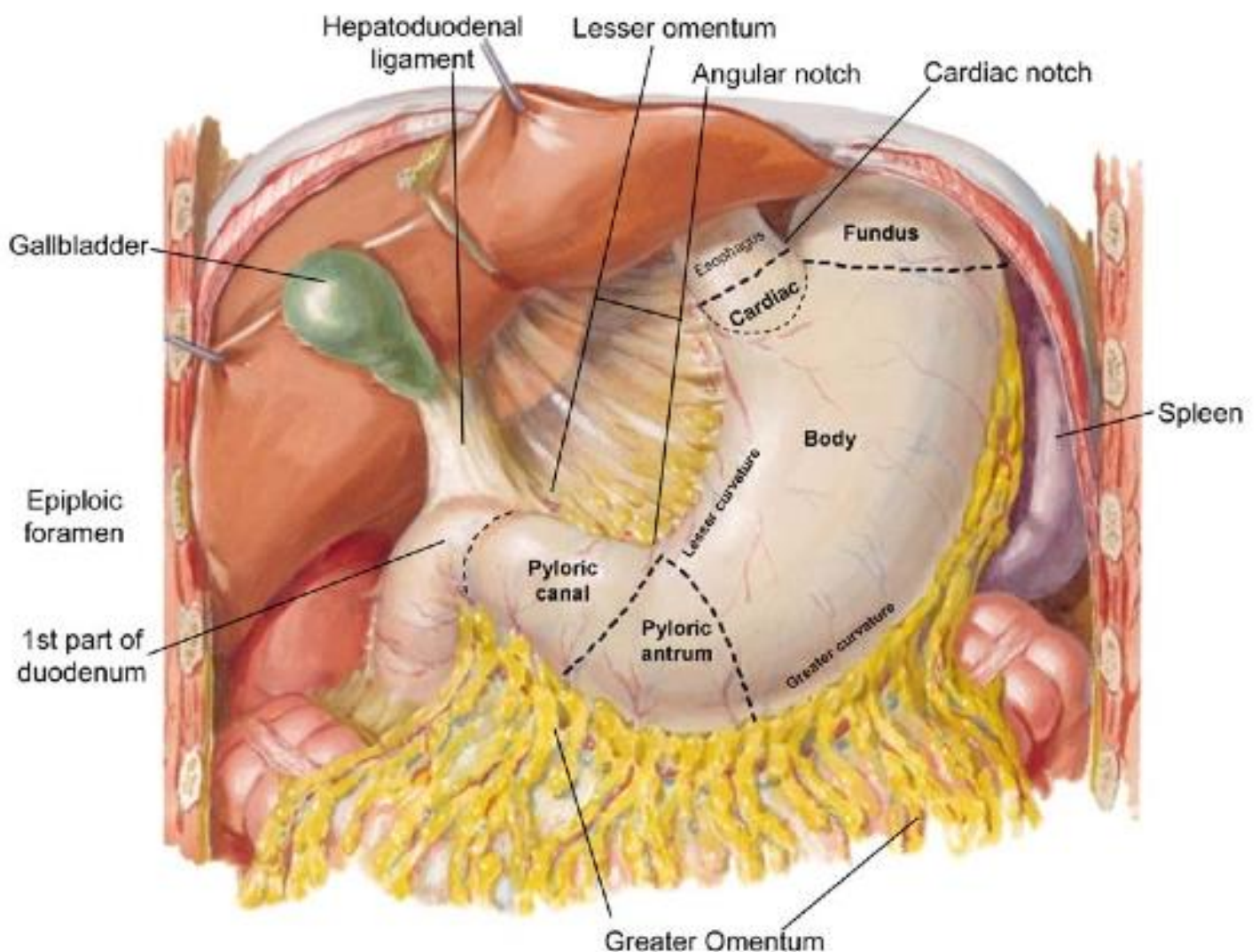
b) *Lesser sac* : It is behind the stomach & lesser omentum .

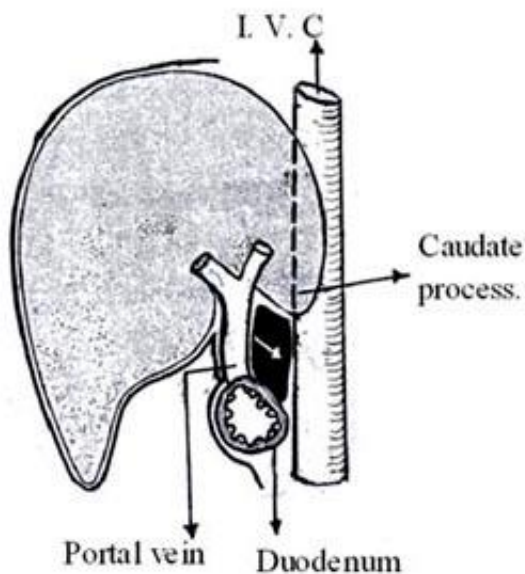
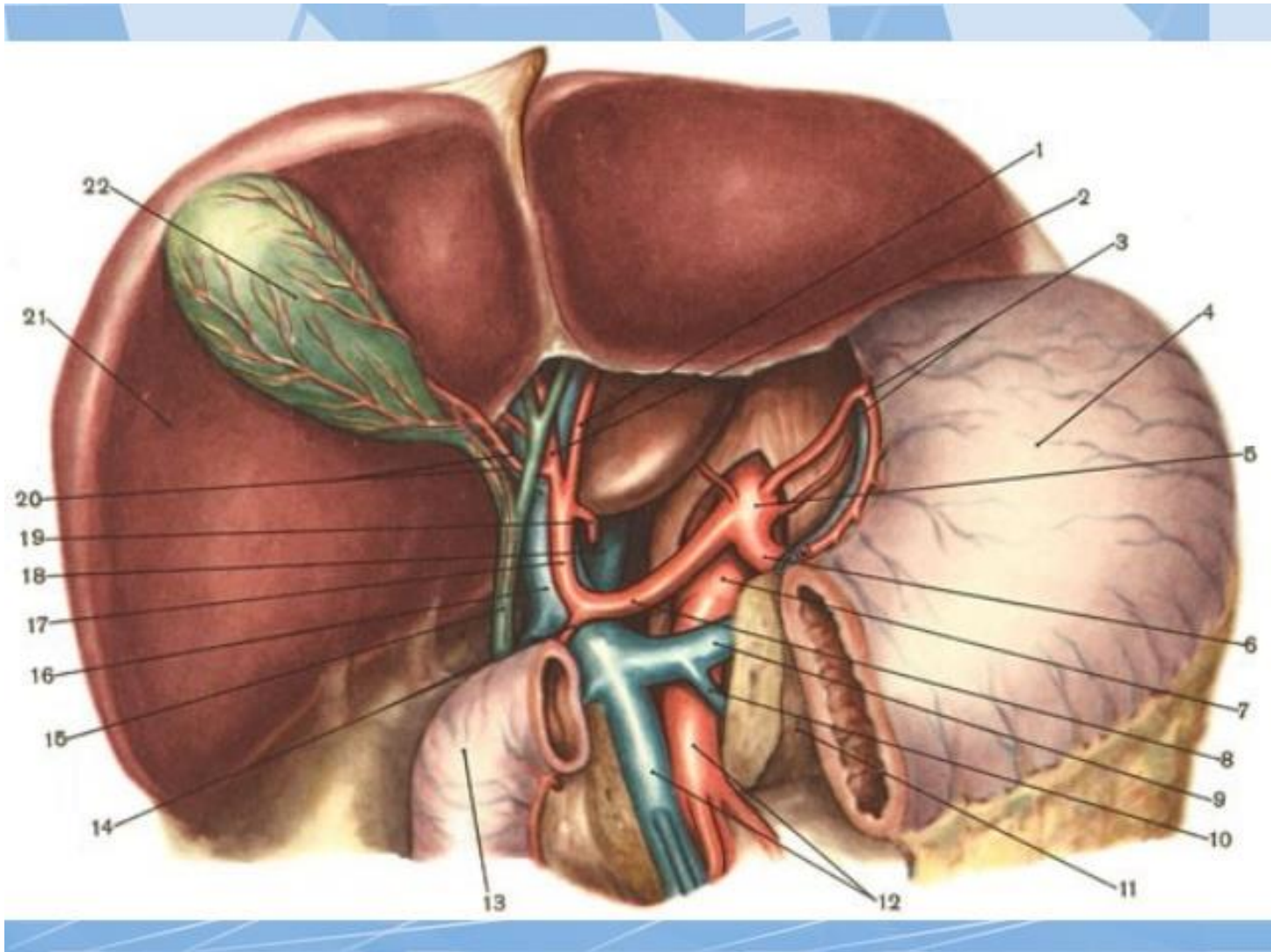


★ Both sacs are continuous with each other through an opening termed opening to the lesser sac (epiploic foramen or foramen of Winslow).

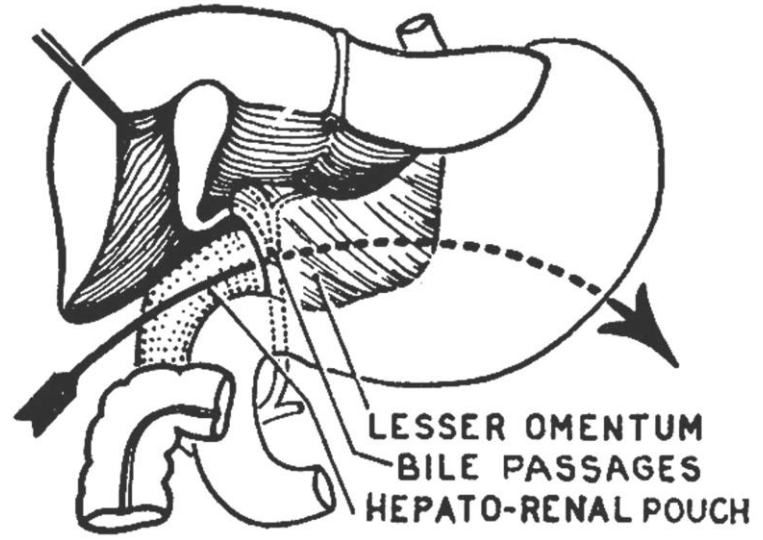
★ **Boundaries of epiploic foramen:**

- a) **Anterior** : free border of lesser omentum (containing portal vein , C.B.D. & hepatic artery).
- b) **Posterior** : I.V.C.
- c) **Superior** : Caudate process of caudate lobe of liver.
- d) **Inferior** : 1st part of duodenum.

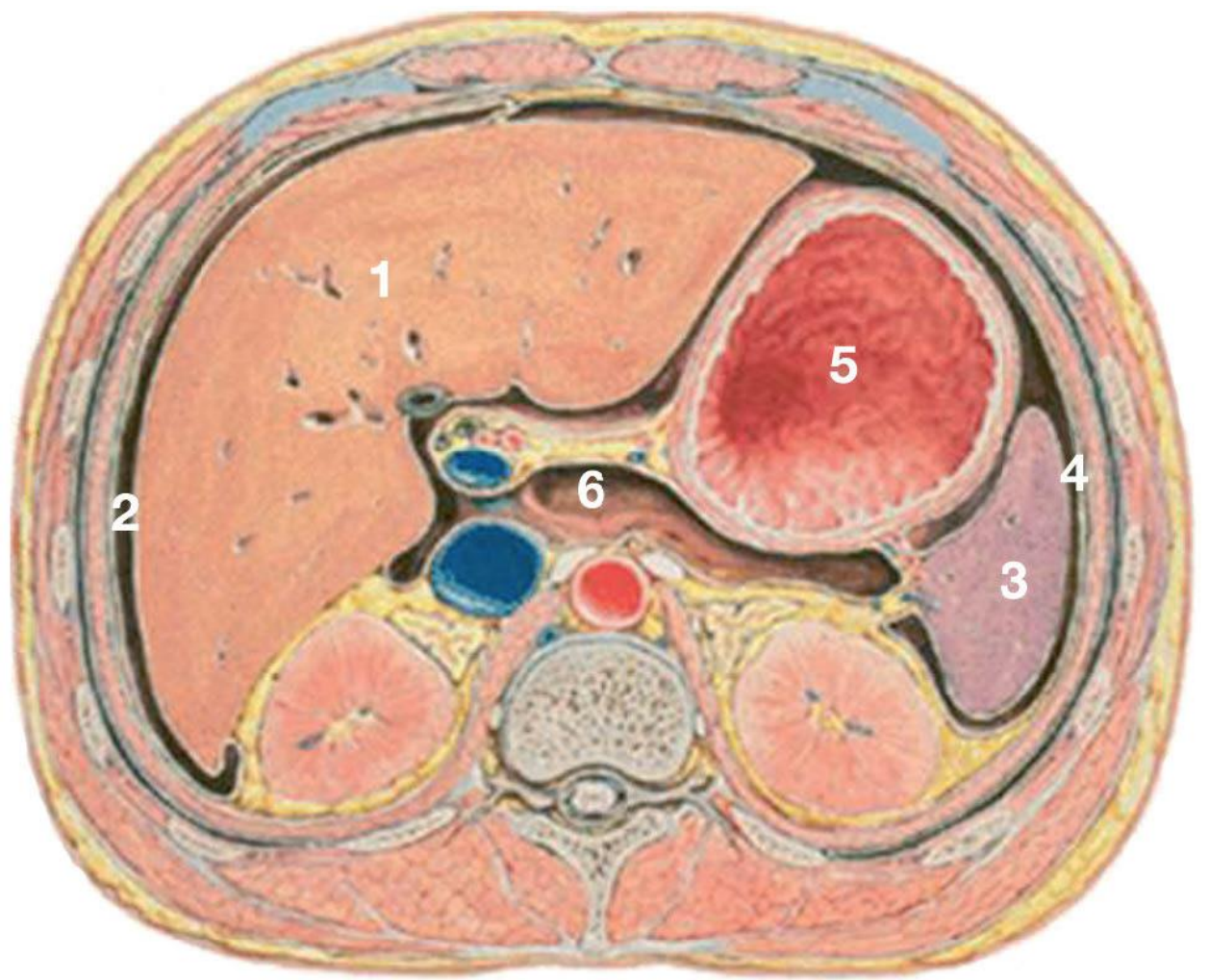




*** Boundaries of epiploic foramen ***

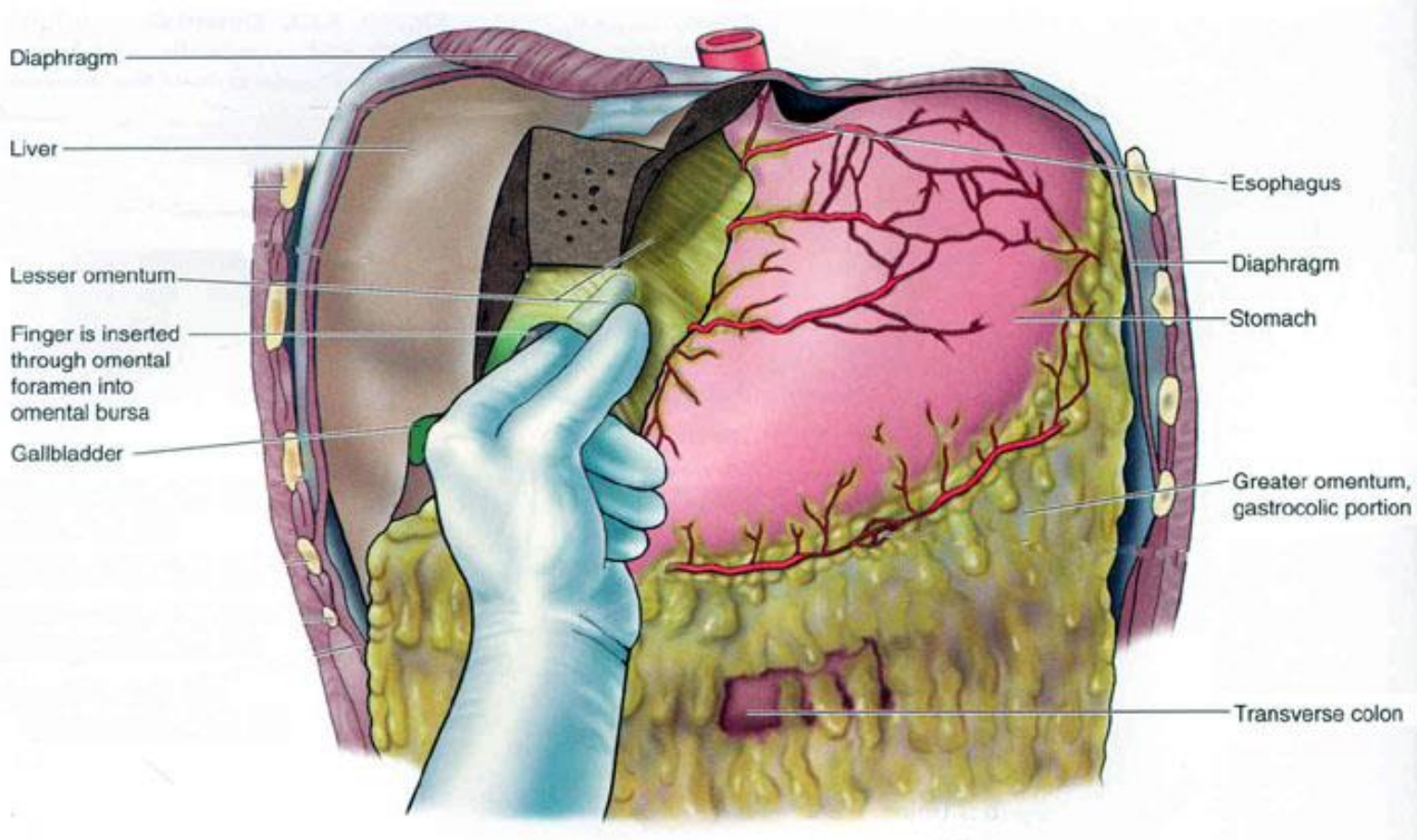


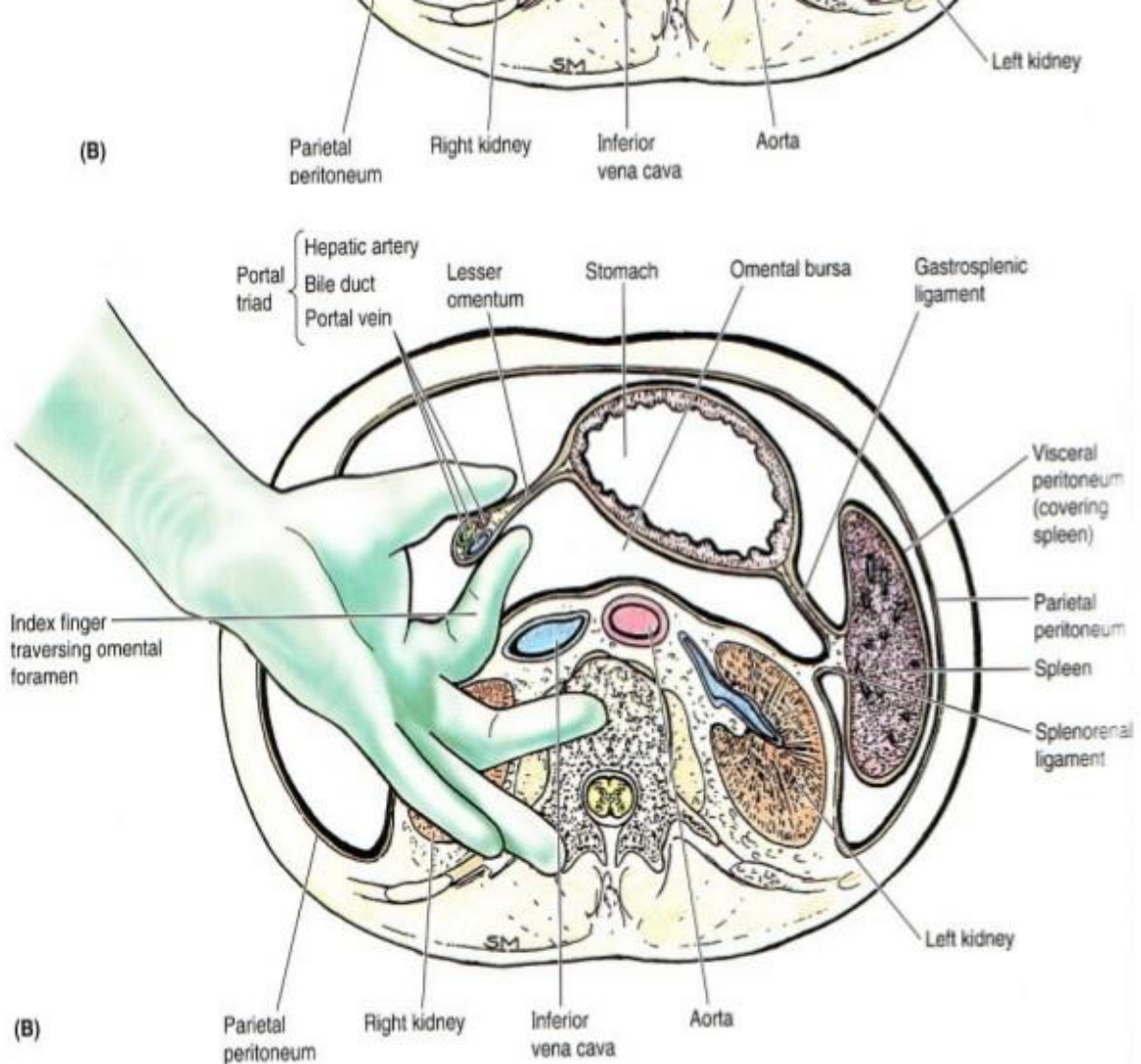
Arrow in the epiploic foramen pass to lesser sac



★ **Applied Anatomy:**

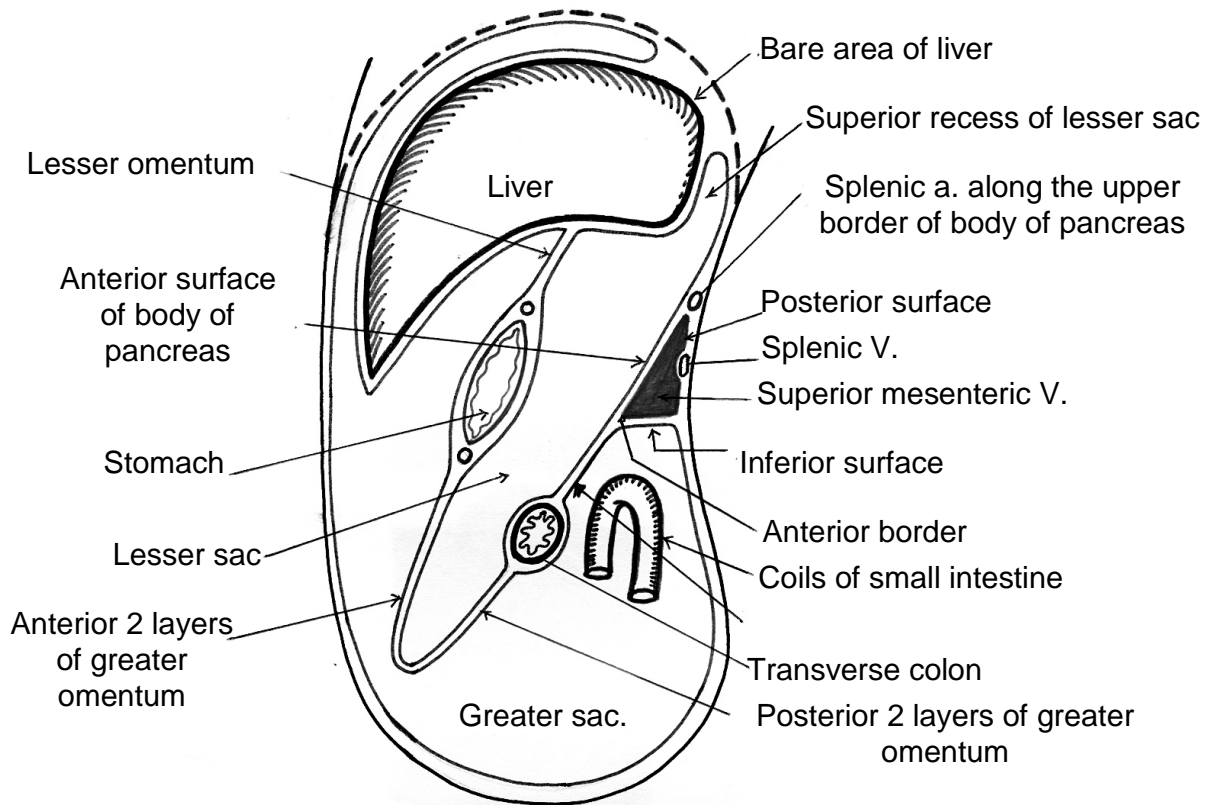
- 1) *Liver haemorrhage* can be controlled by compressing the portal vein and hepatic artery in the free border of the lesser omentum by a finger inserted in the epiploic foramen (**Pringle's maneuver**).
- 2) *Palpation of common bile duct* in the free border of the lesser omentum can be done by a finger inserted in the epiploic foramen.
- 3) Coils of small intestine may pass through epiploic foramen leading to *internal hernia*.



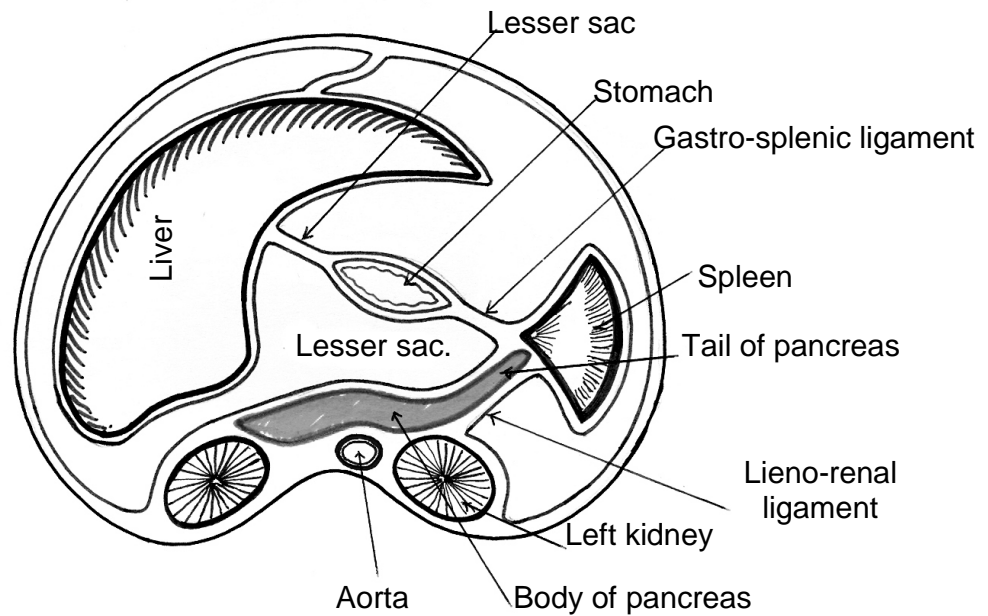


★ FUNCTIONS OF THE PERITONEUM:

- 1) It provides a **smooth surface** for the viscera to move freely.
- 2) It **secretes the peritoneal fluid** which contains antibodies (prevent infection).
- 3) Its mesothelial cells can transform into fibroblasts which allow **rapid healing** of abdominal wounds.
- 4) In case of infection , greater omentum tend to adhere to the surround structures and thus **can localize the spread** of infection (***policeman of the abdomen***).
- 5) Storage of fat (e.g. in the greater omentum).



*** Surfaces and borders of body of pancreas *
(Sagittal Section)**



*** Transverse section at the level of the body of pancreas ***

★ PERITONEAL FOLDS :

* Any peritoneal fold contains , blood vessels , lymph vessels & nodes , autonomic nerve fibres , extraperitoneal fat & may contain organ .

1. Lesser omentum :

- It is **attached to** left & downwards to the lesser curvature of stomach & upper border of 1st inch of duodenum and upwards and to right to porta hepatis and fissure for ligamentum venosum .

-It has a **free border** on the right side containing CBD , hepatic artery & portal vein .

- **Right and left gastric vessels & lymph nodes** : run between its 2 layers along the lesser curvature of stomach.

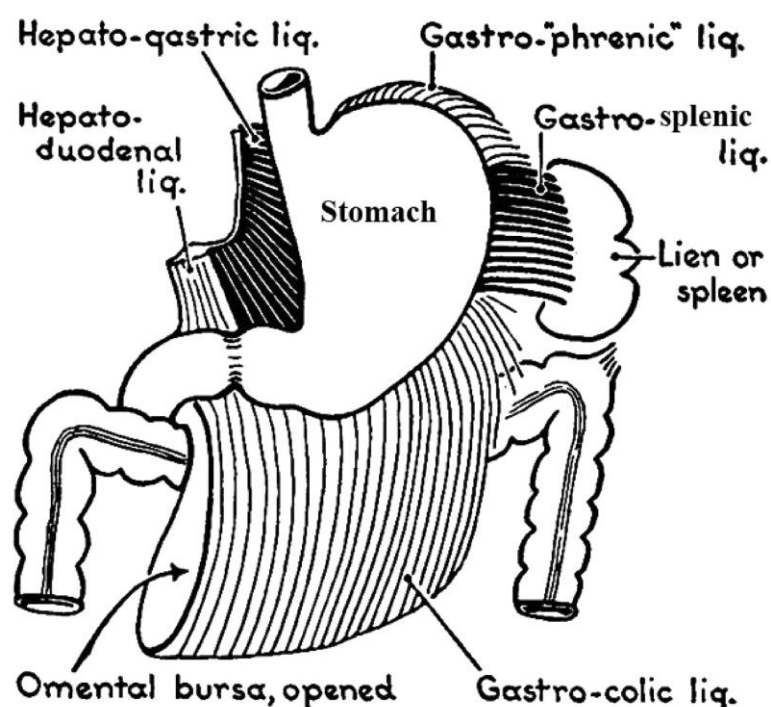
2. Gastro-phrenic ligment : Between the greater curvature of stomach and diaphragm.

3. Gastro-splenic ligament: Between the greater curvature & hilum of spleen. It contains short gastric & left gastroepiploic vessels.

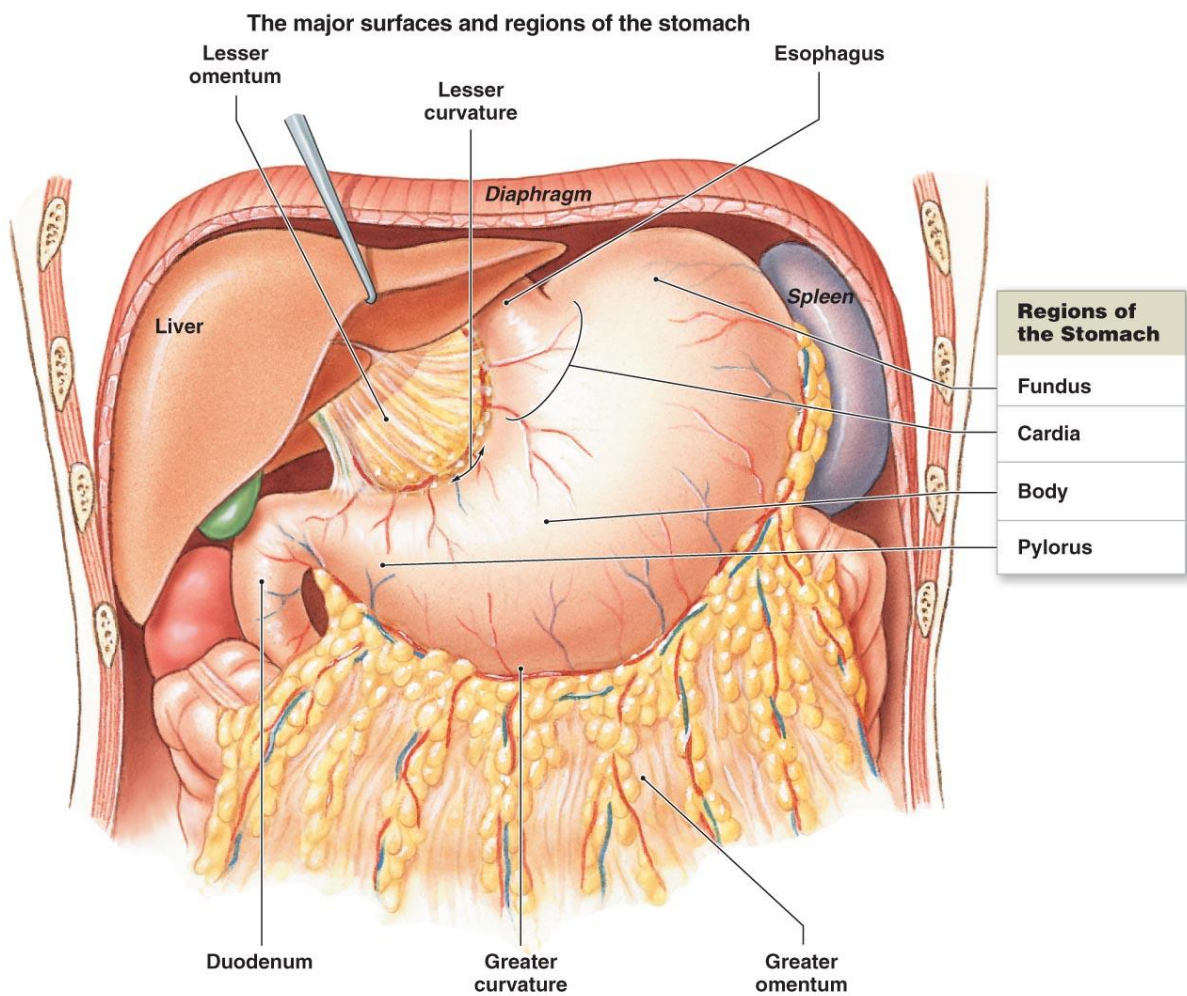
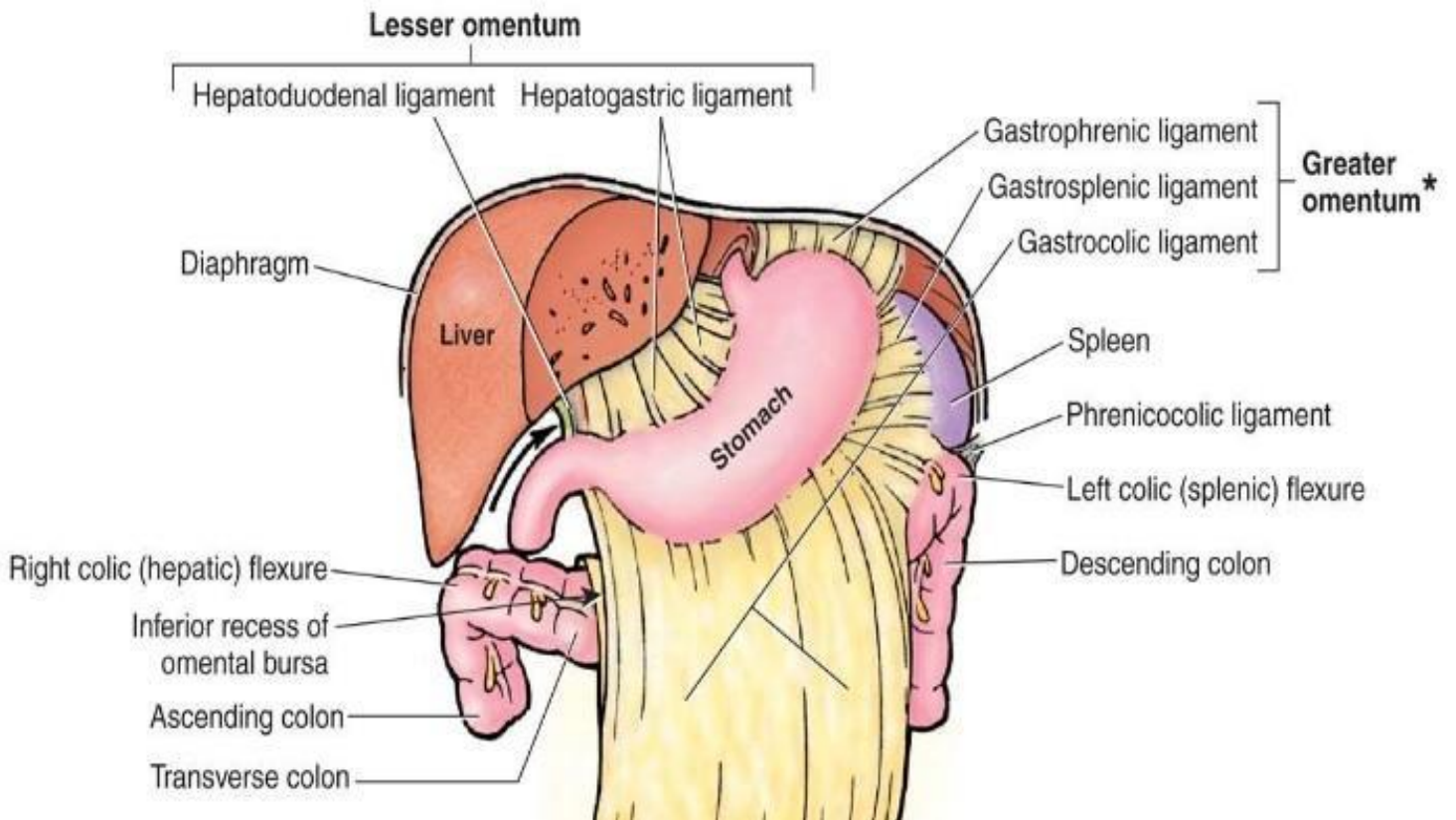
4. Greater omentum:

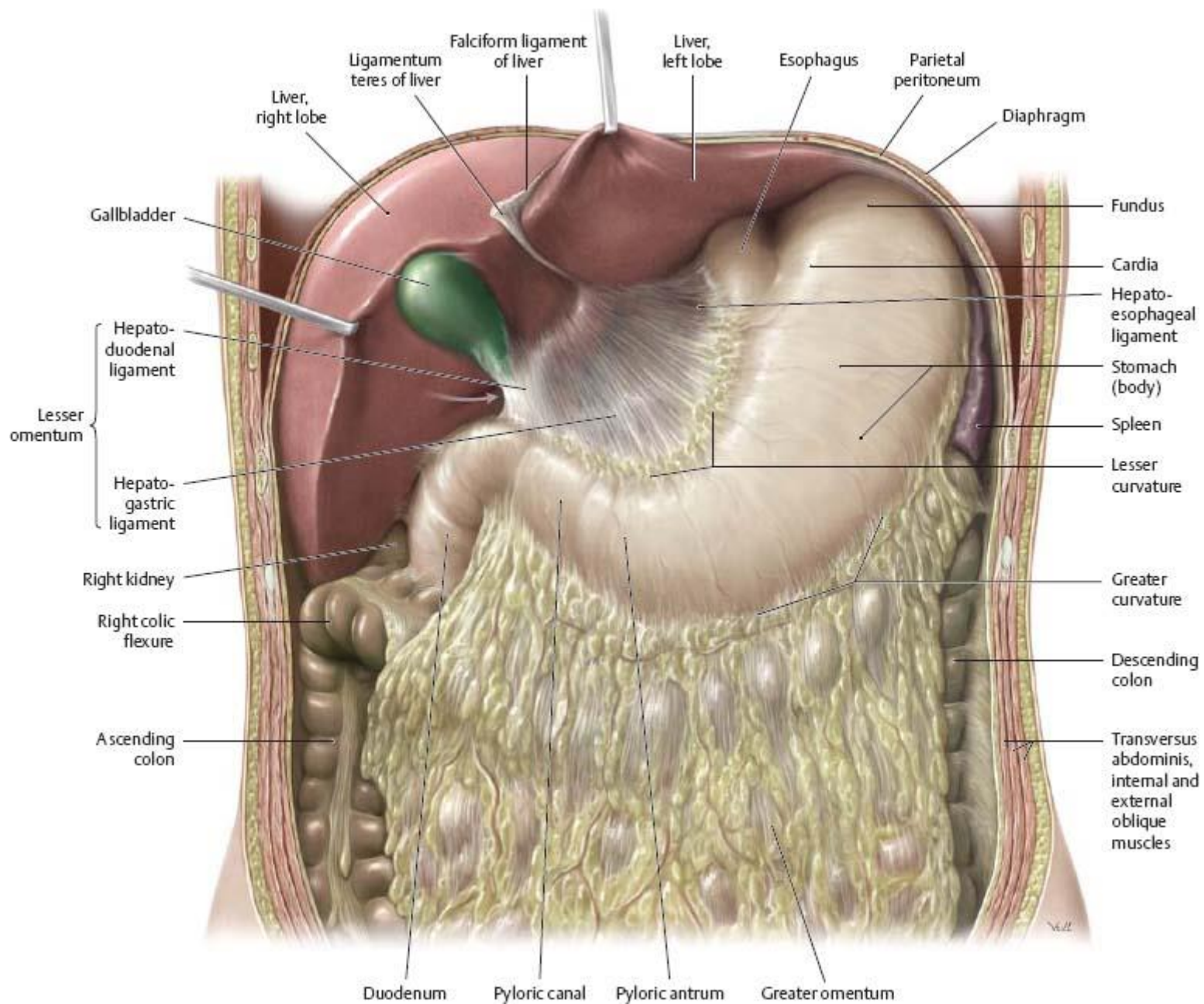
- It is formed of **anterior 2 layers** (attached to the greater curvature of stomach & lower border of 1st inch of duodenum) & **posterior 2 layers** (enclose the transverse colon and continuous with the transvers mesocolon).

- **Contents** : Right and left gastro-epiploic arteries: run between the anterior 2 layers close and parallel to the greater curvature of the stomach

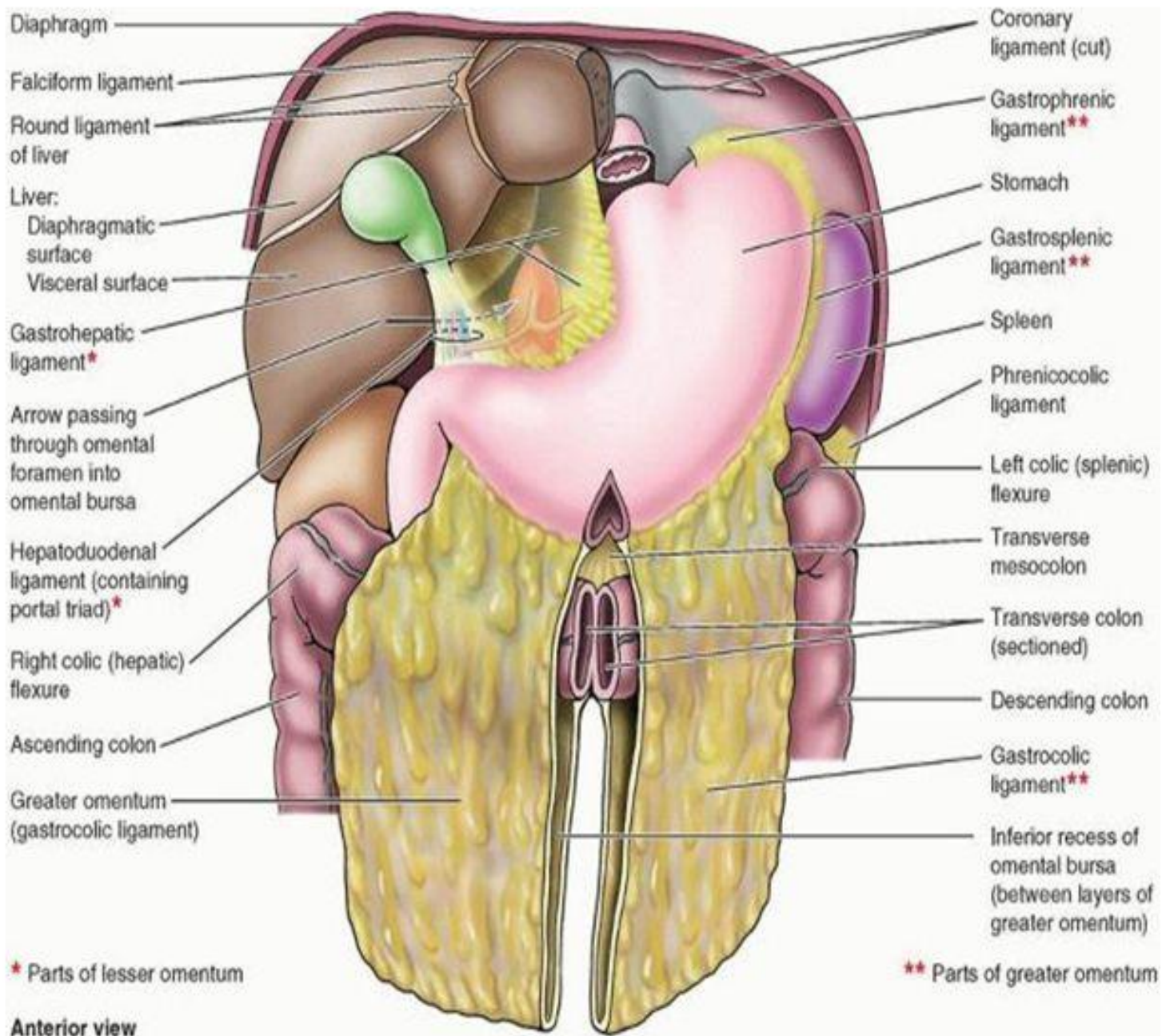


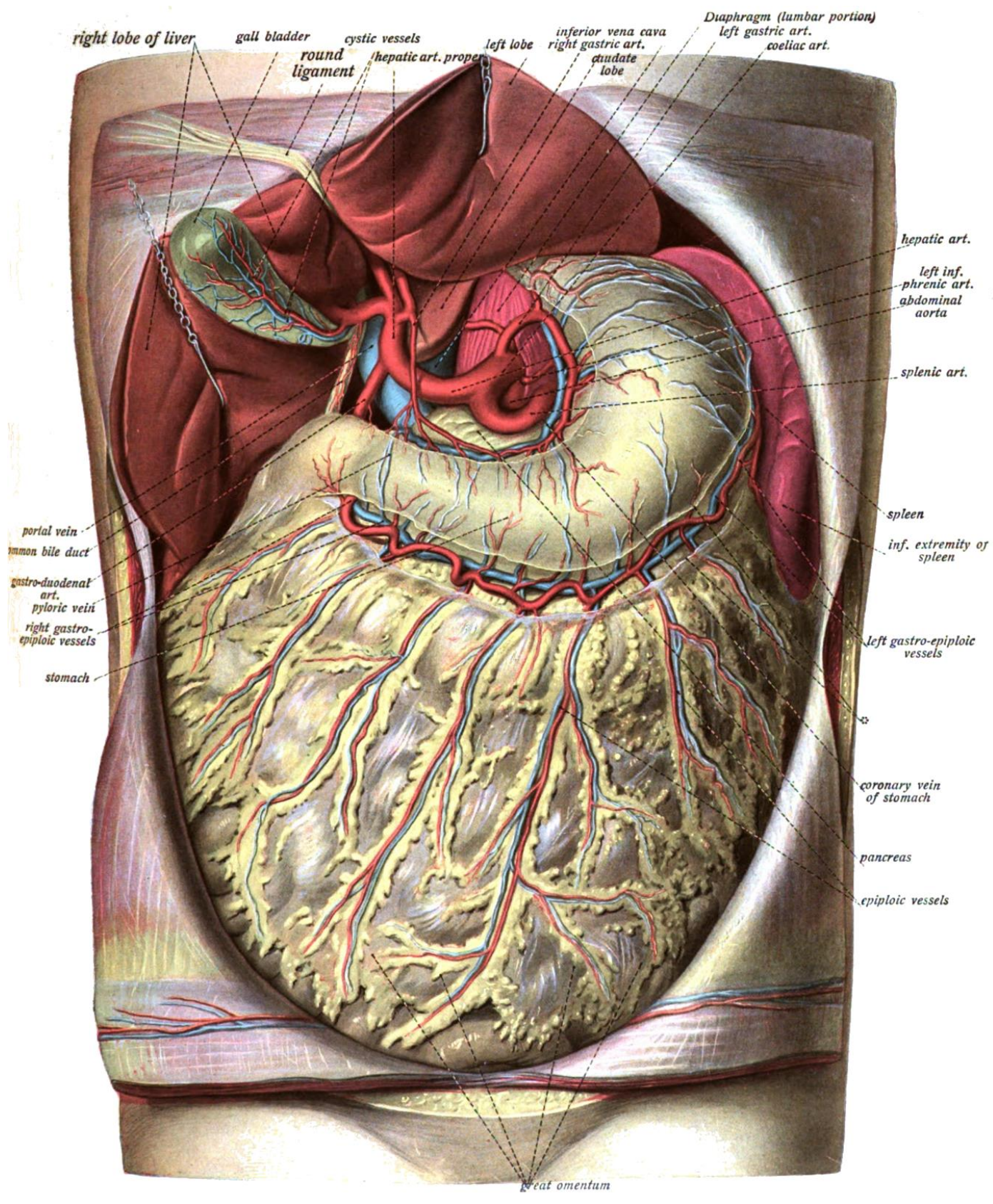
Peritoneal folds related to the stomach





Peritoneal Ligaments



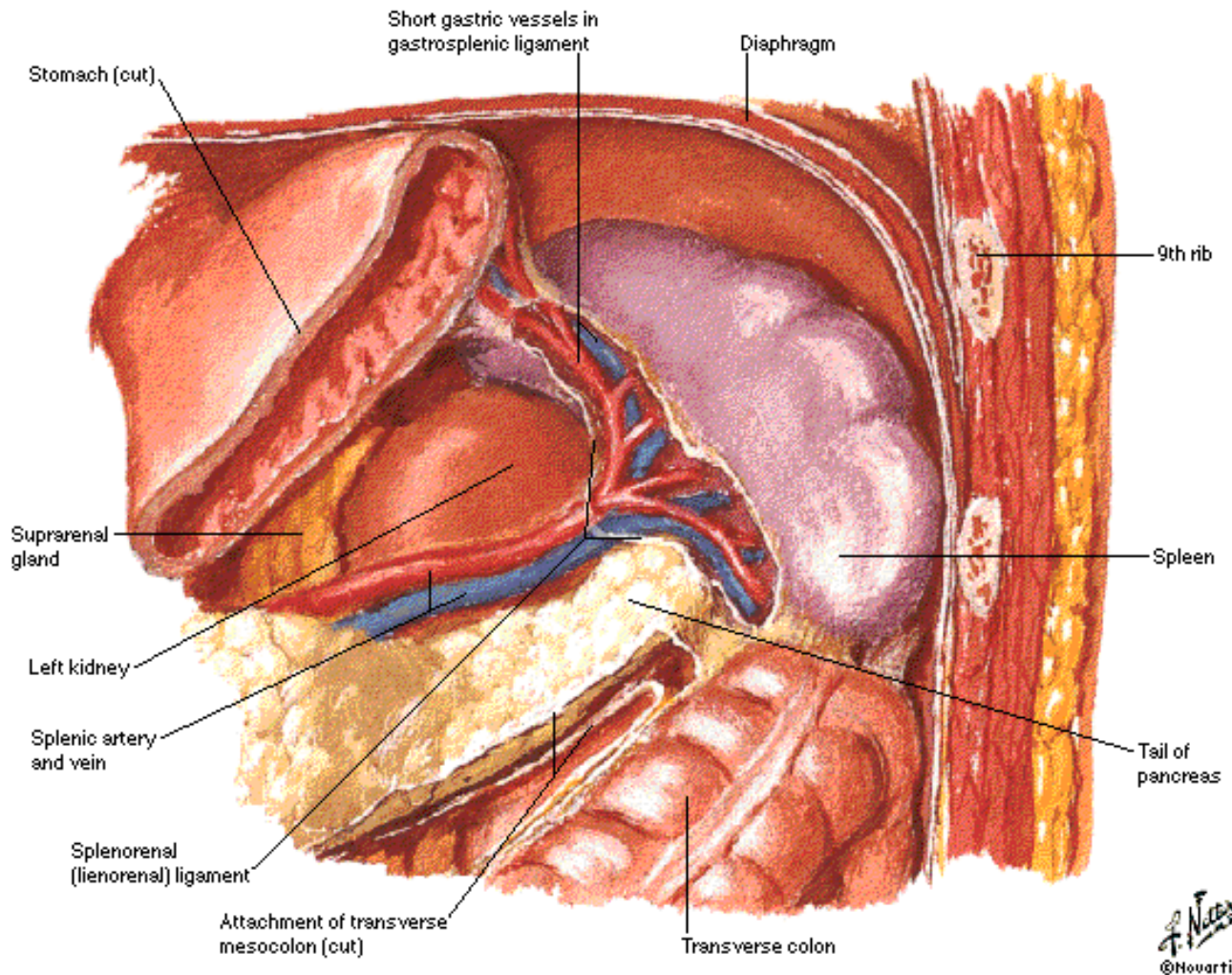


6. Lieno-renal (spleno-renal) Ligament : Between front of left . Kidney & hilum of spleen.

- It contains tail of pancreas & splenic vessels.

7. Phreno-colic ligament : Between diaphragm & left colic flexure. The anterior end of spleen rest on this ligament & in case of splenomegally this ligament direct the spleen downwards & medially

Spleen in Situ



3. Falciform ligament:

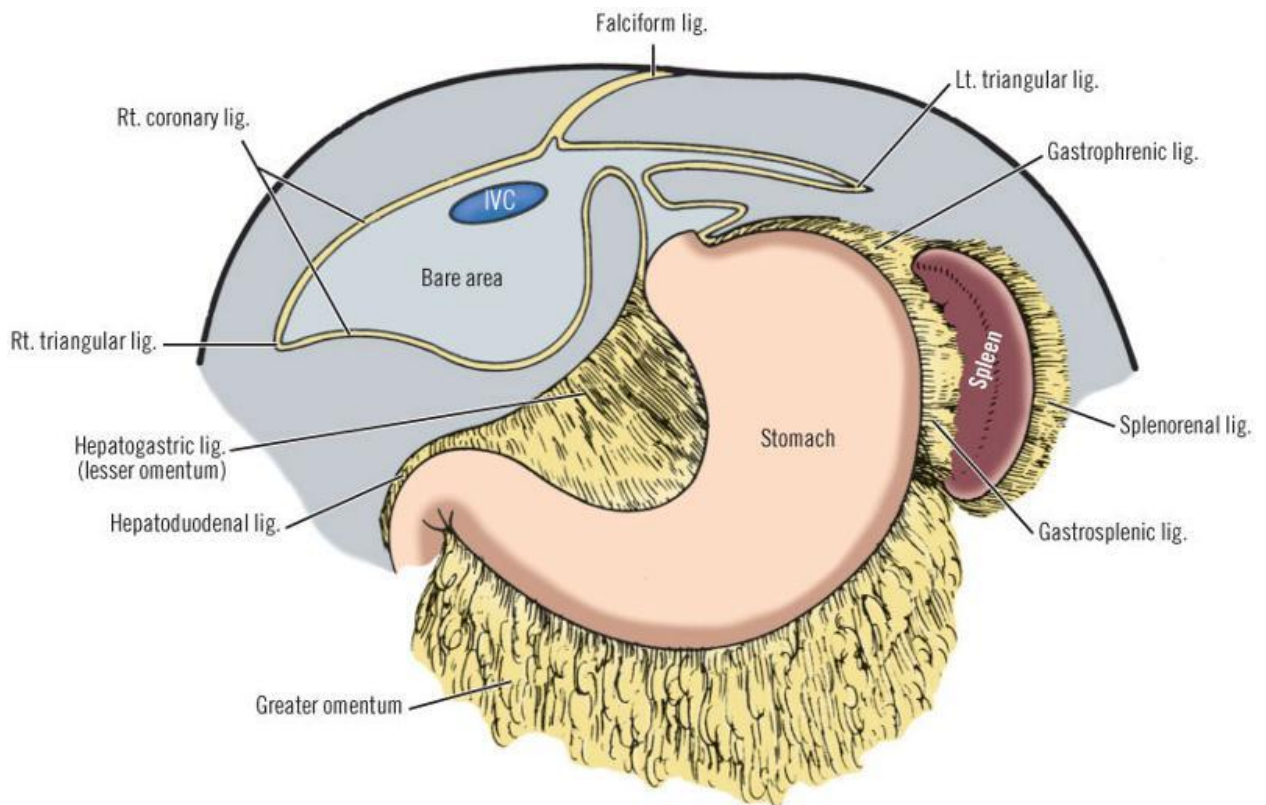
- It is attached between umbilicus, ant. abdominal wall., diaphragm and to the ant. & sup. surface of liver.

- Its free border contains ligamentum teres surrounded by lymph vessels & paraumbilical veins (if unobliterated) .

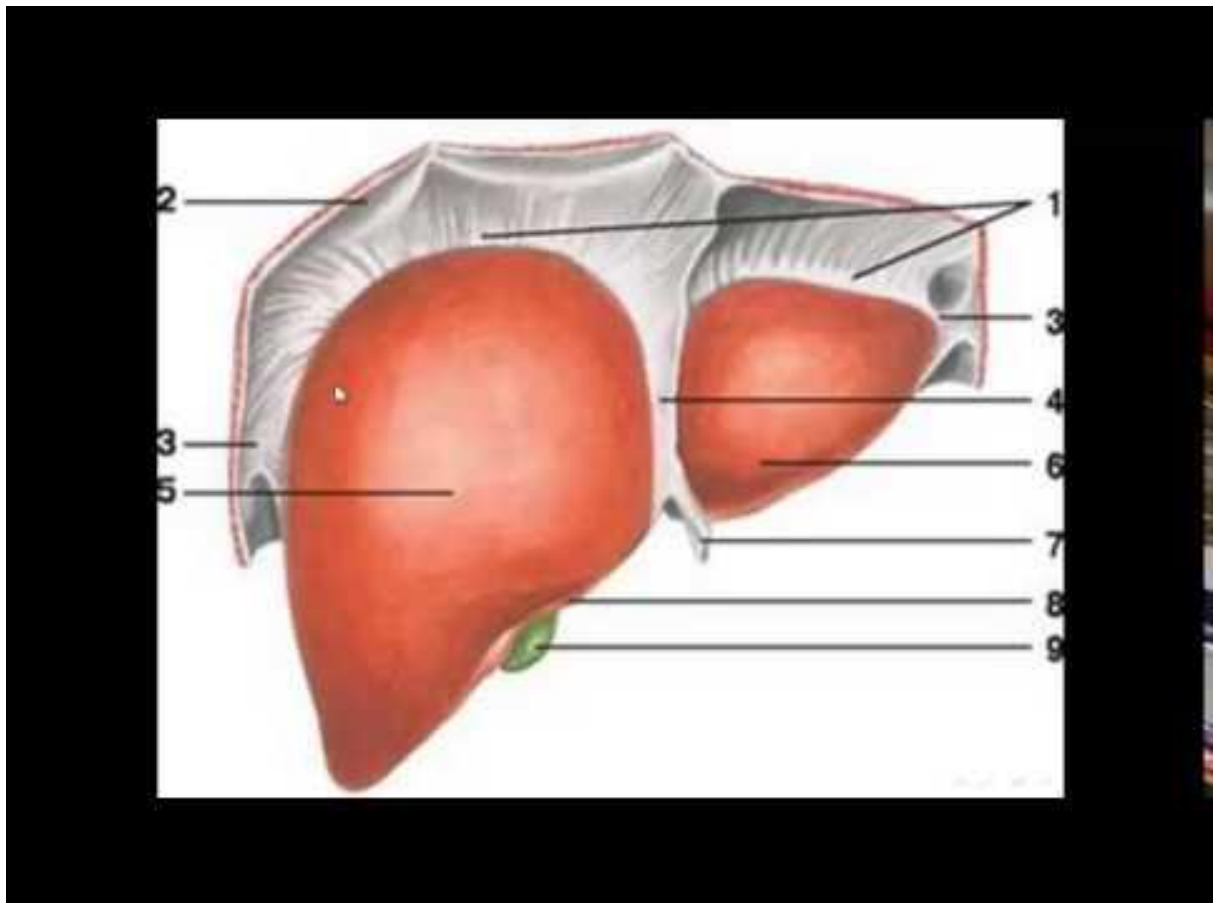
12. Coronary ligament: Between Rt. lobe of liver & diaphragm.

13. Right triangular ligament: Between Rt. lobe of live & diaphragm.

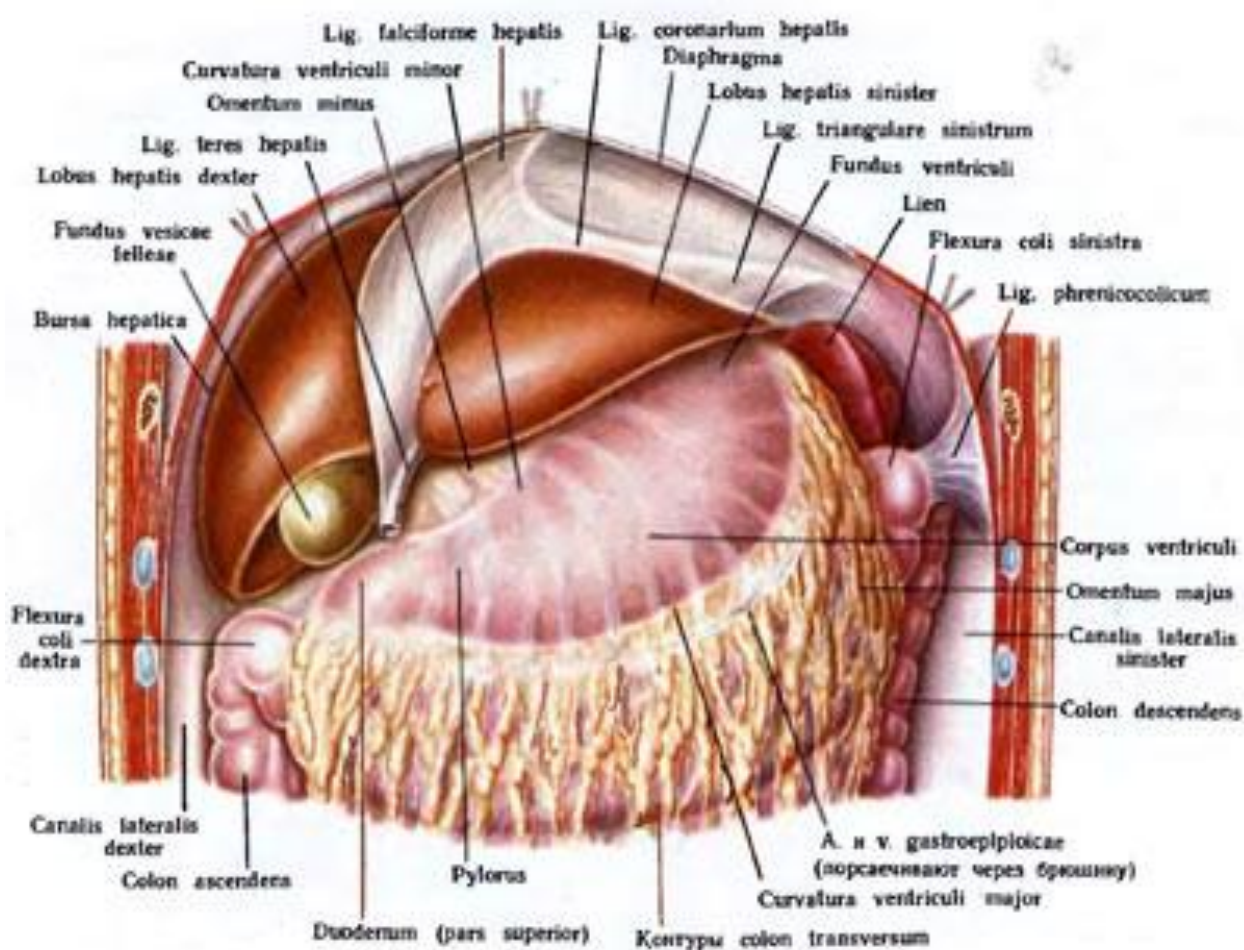
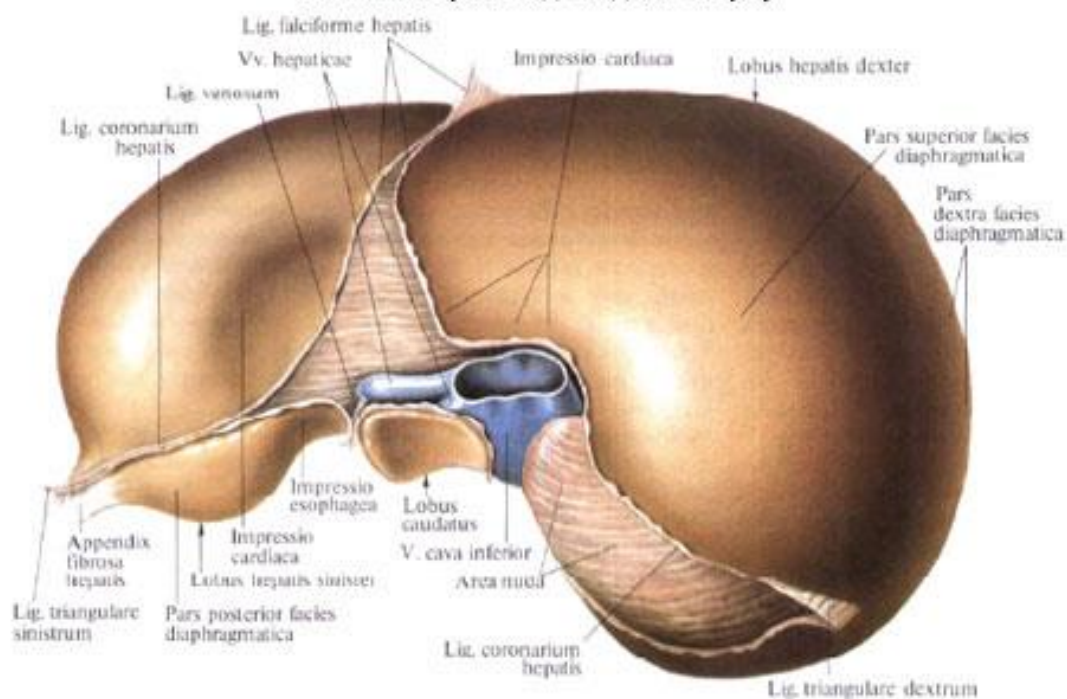
14. Left triangular ligament: Between Lt. lobe of liver & diaphragm.



Copyright ©2006 by The McGraw-Hill Companies, Inc.
All rights reserved.



Печень, гепар, вид сзади и сверху



8. Mesentery of small intestine : (look for anatomy of mobile part of small intestine)

9. Transverse mesocolon: Between ant. border of pancreas & transverse colon.

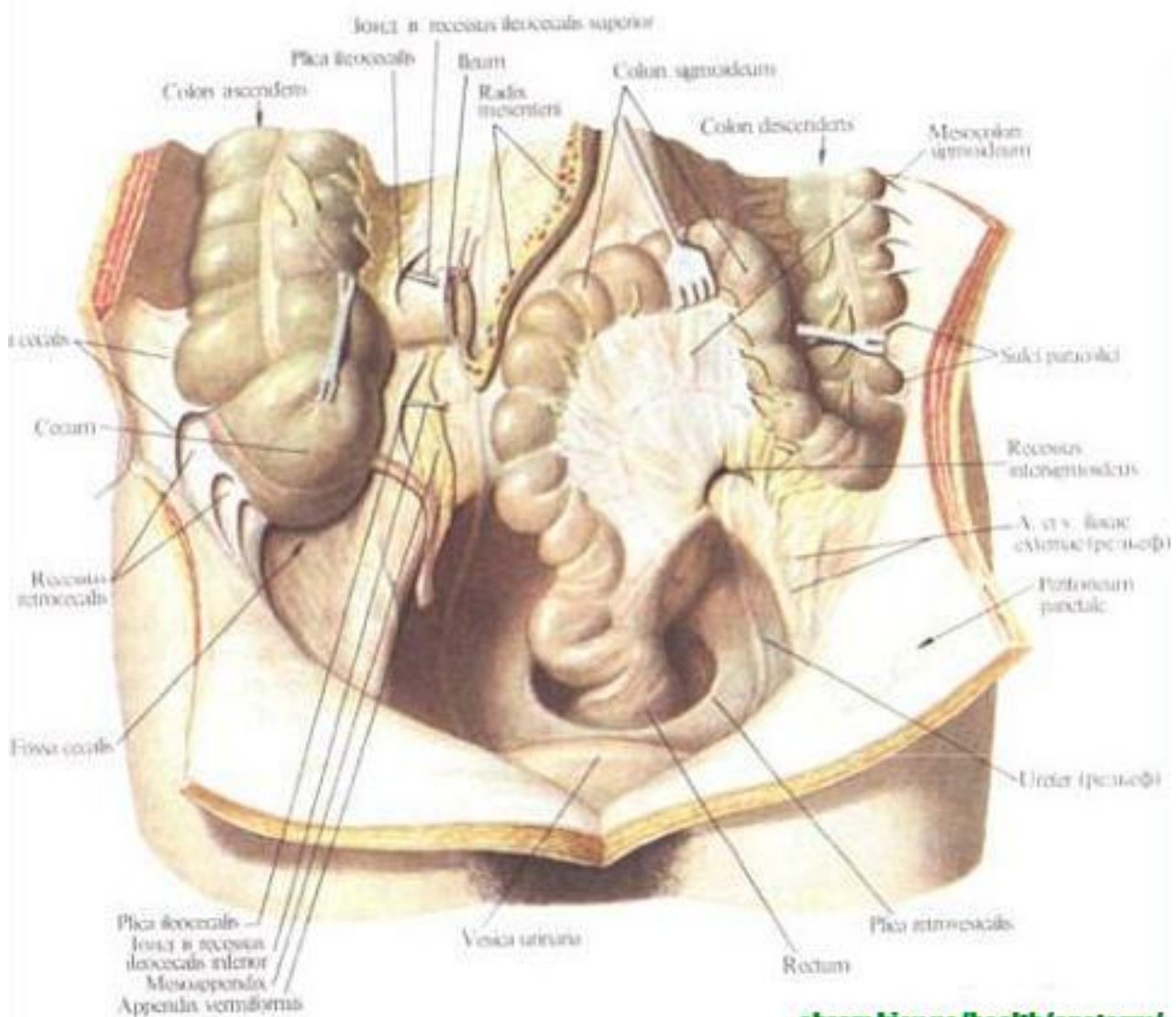
- It contains the transverse colon and middle colic vessels .

10. Sigmoid mesocolon :

- It contains the sigmoid colon and lower left colic (sigmoid) vessels

11. Meso-appendix : (look for anatomy of appendix)

12. Broad ligament of the uterus: Between the uterus and lateral wall of the pelvis.



Paracolic Gutters

- * These are longitudinal grooves lying along the sides of the ascending and descending colons.
- * **Applied anatomy:** They may transmit blood, pus or any fluid between the different parts of peritoneal cavity in trauma or peritonitis.

* **Classification:** paracolic gutters include:

(1) ***Right lateral paracolic gutter:***

- * It lies lateral to ascending colon.
- * It is the only gutter which is open above & below.
- * It communicates with the right subphrenic spaces above and with the pelvic cavity below → recto-vesical pouch in male or recto-vaginal (Douglas) pouch in female.
- * **Applied anatomy :** The above mentioned pouches is the commonest site for peritoneal abscess because it is the most dependent area in the peritoneal cavity during sitting position .This space should be in any suspected peritoneal soiling .

(2) ***Right medial paracolic gutter:***

- * Medial to ascending colon.
- * It is closed both above and below.
- * It lies between the root of mesentery and the ascending colon and transverse mesocolon.

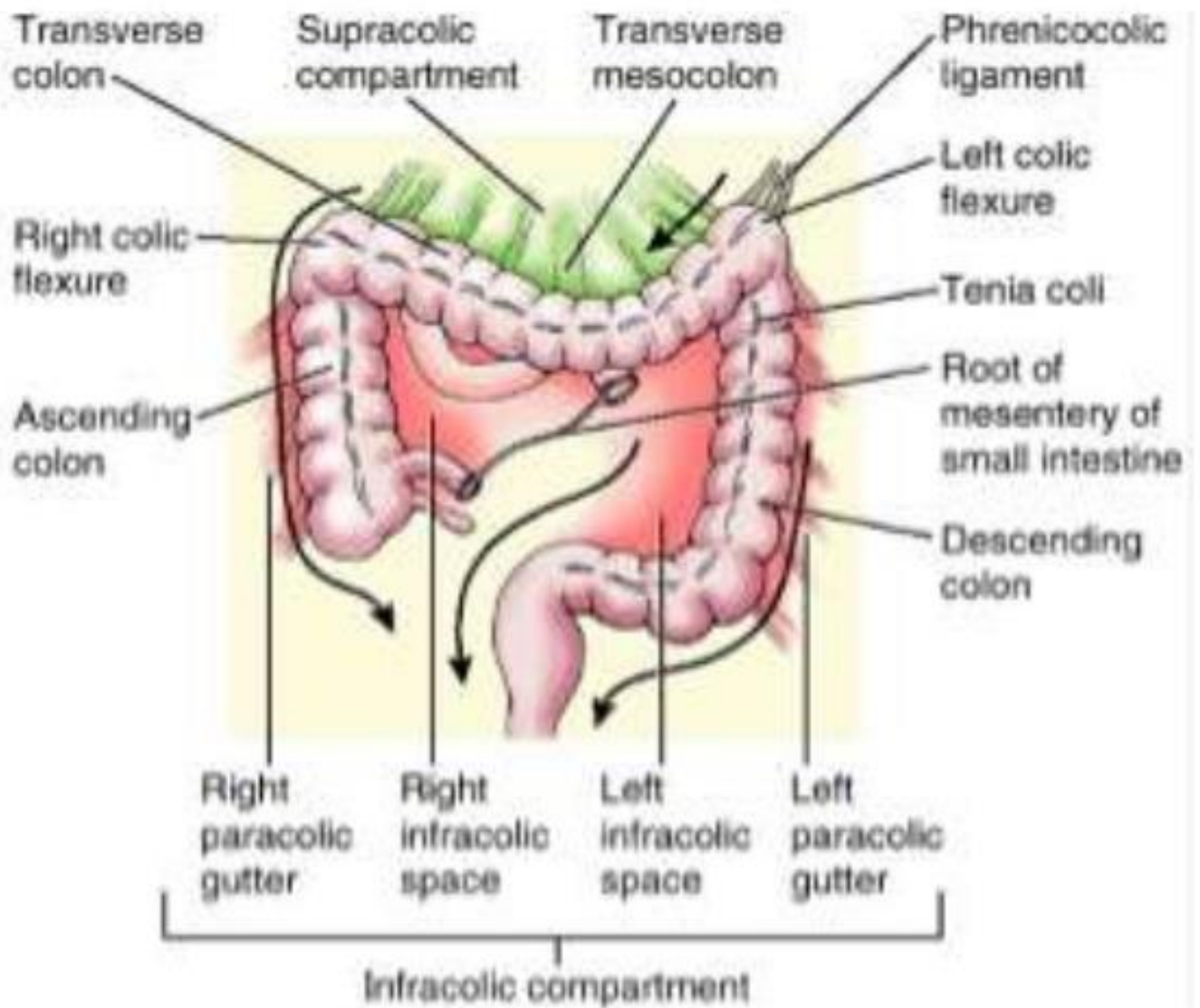
(3) ***Left lateral paracolic gutter :***

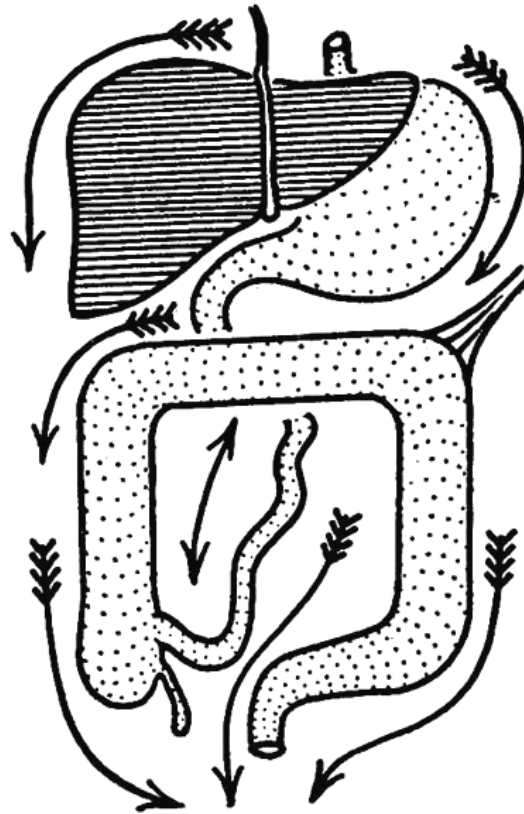
- * It lies lateral to descending colon.
- * It is closed above by the phrenocolic ligament but open below into the pelvis.

(4) ***Left medial paracolic gutter:***

- * It lies medial to descending colon.

* Closed above by left colic flexure but open below into the pelvis.



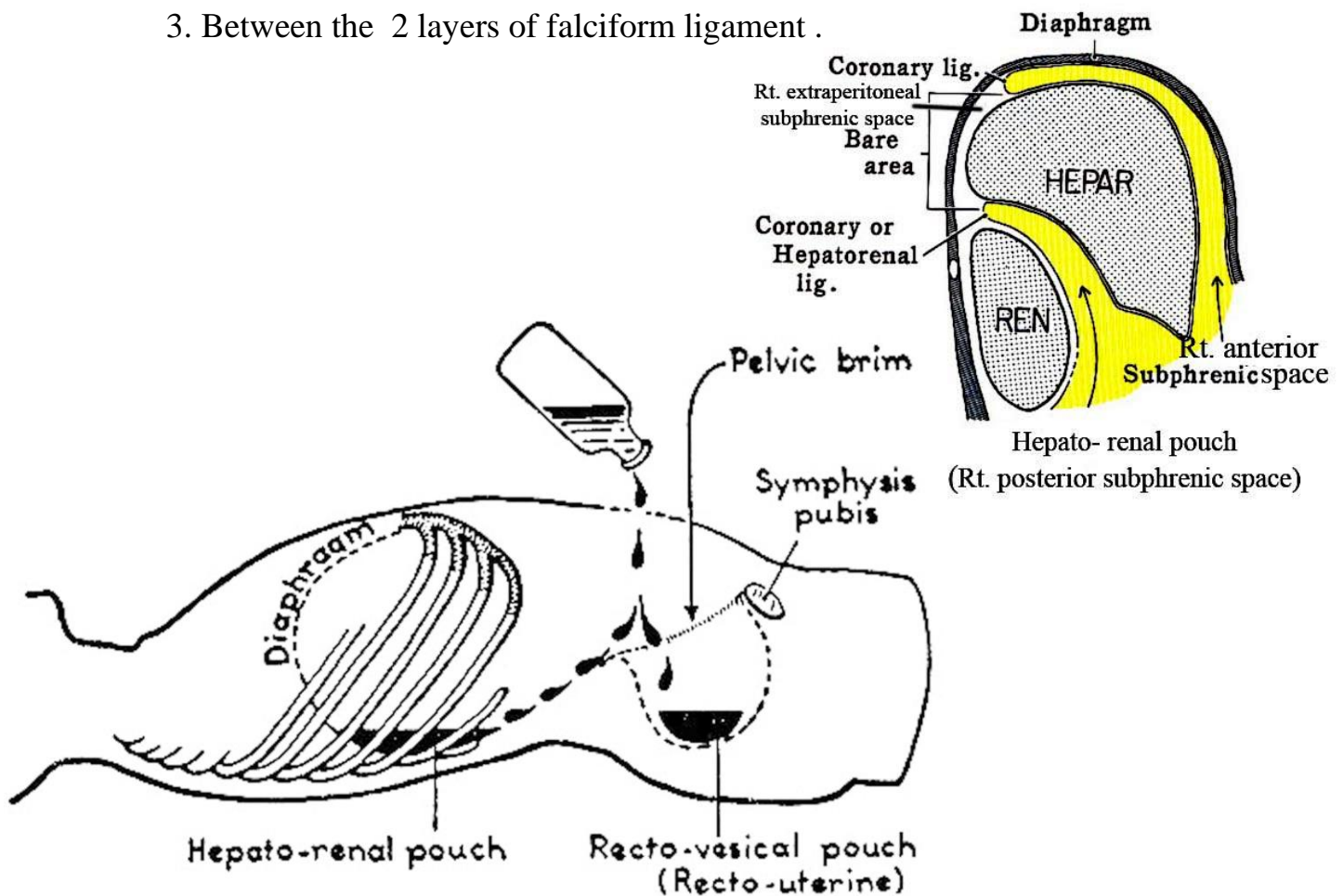


***Compartment of the peritoneum
and paracolic gutter***

SUBPHRENIC SPACES

- The subphrenic space lies between the diaphragm & transverse colon.
 - The liver divides the space into 2 (superior & inferior).
 - The falciform ligament divides each space into 2 (right & left).
 - **The right superior space** is further subdivided by coronary ligament into 2 (anterior & posterior).
 - **The left inferior space** is subdivided by lesser omentum & stomach into 2 (anterior & posterior).
- * So there are 6 intraperitoneal subphrenic spaces:**
1. ***Right superior anterior*** : Bounded by diaphragm, liver, anterior layer of coronary ligament & anterior abdominal wall.
 2. ***Right superior posterior***: (**Morison's hepatorenal pouch**), bounded by liver, right kidney, diaphragm & posterior layer of coronary ligament .

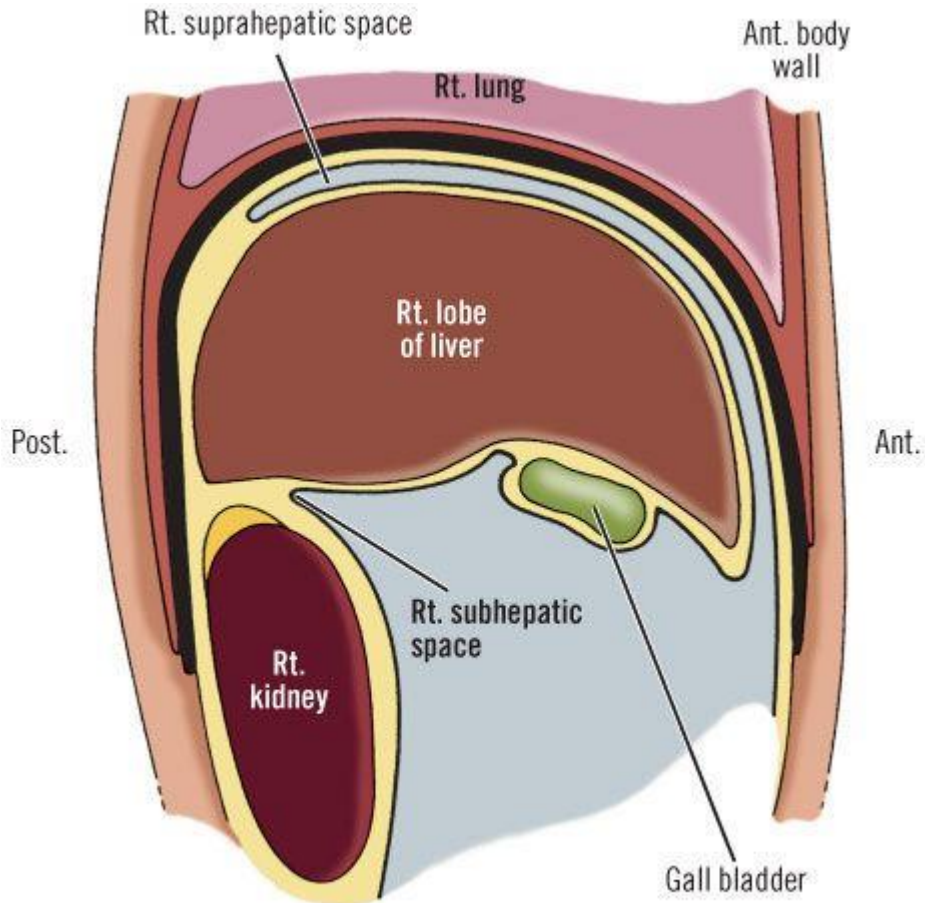
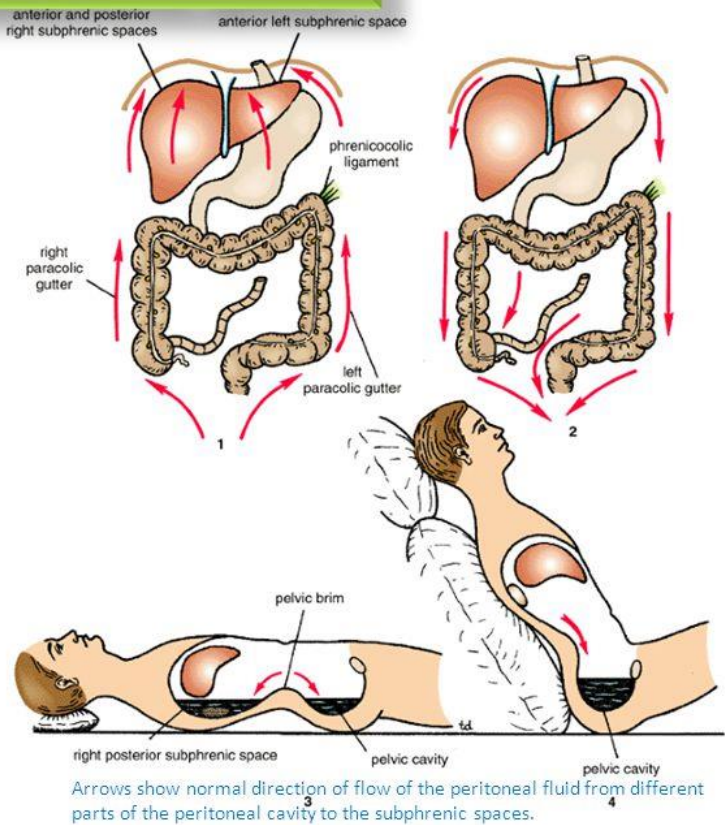
- * **Applied anatomy** : it is commonest site for subphrenic abscess because it is the most dependent area in the peritoneal cavity during supine position .This space should be drained in any suspected peritoneal soiling .
- 3. **Right inferior** : between right lobe of liver & transverse colon .
- 4. **Left superior** : between left lobe of liver and diaphragm .
- 5. **Left inferior anterior** : below left lobe of liver and anterior to stomach & lesser omentum .
- 6. **Left inferior posterior** : below left lobe of liver and posterior to stomach & lesser omentum i.e. Lesser sac .
- * **There are also 3 extraperitoneal spaces** :
- 1. **The right extraperitoneal space**: Bounded by 2 layers of coronary ligament , bare area of liver & diaphragm.
- 2. **The left extraperitoneal space**: lies around the upper pole of left kidney.
- 3. Between the 2 layers of falciform ligament .



Dependent areas in the peritoneal cavity

Subphrenic Spaces

The **right & left anterior subphrenic spaces** lie between the diaphragm and the liver, on each side of the falciform ligament. The **right posterior subphrenic space** lies between the right lobe of the liver, the right kidney, and the right colic flexure.



PERITONEAL RECESSES

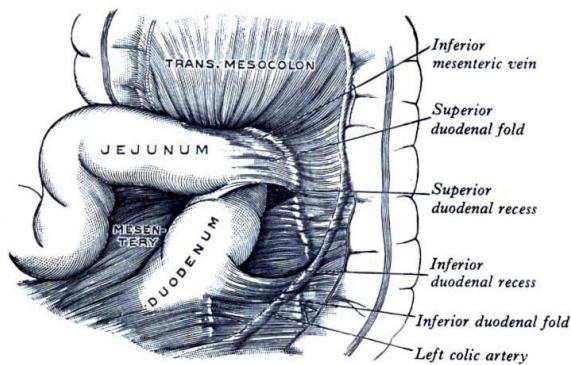
★ **Definiton:** These are **pouches of peritoneal cavity** bounded by peritoneal folds.

★ **SITES:**

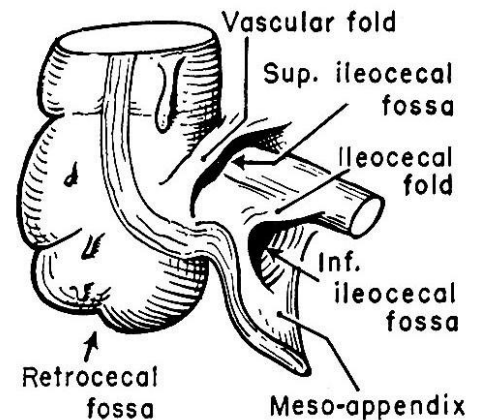
* Peritoneal recesses are mainly found in relation with the **duodenum, caecum and sigmoid colon.**

* They are frequently found **in the foetus and the newborn child** and frequently obliterated in adults.

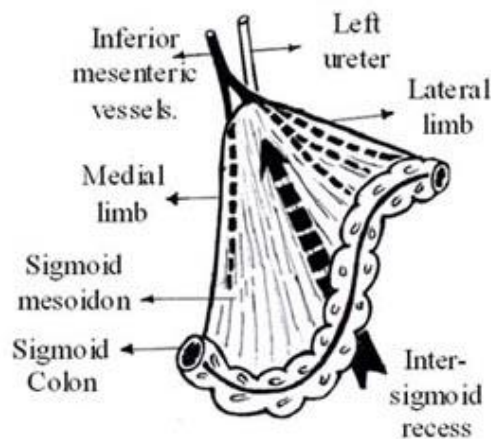
★ **Applied anatomy:** They are of surgical importance because they are sites of **internal hernia.**



Duodenal folds and recesses



Cecul Recesses



*** Sigmoid mesocolon *
and inter- sigmoid recess**