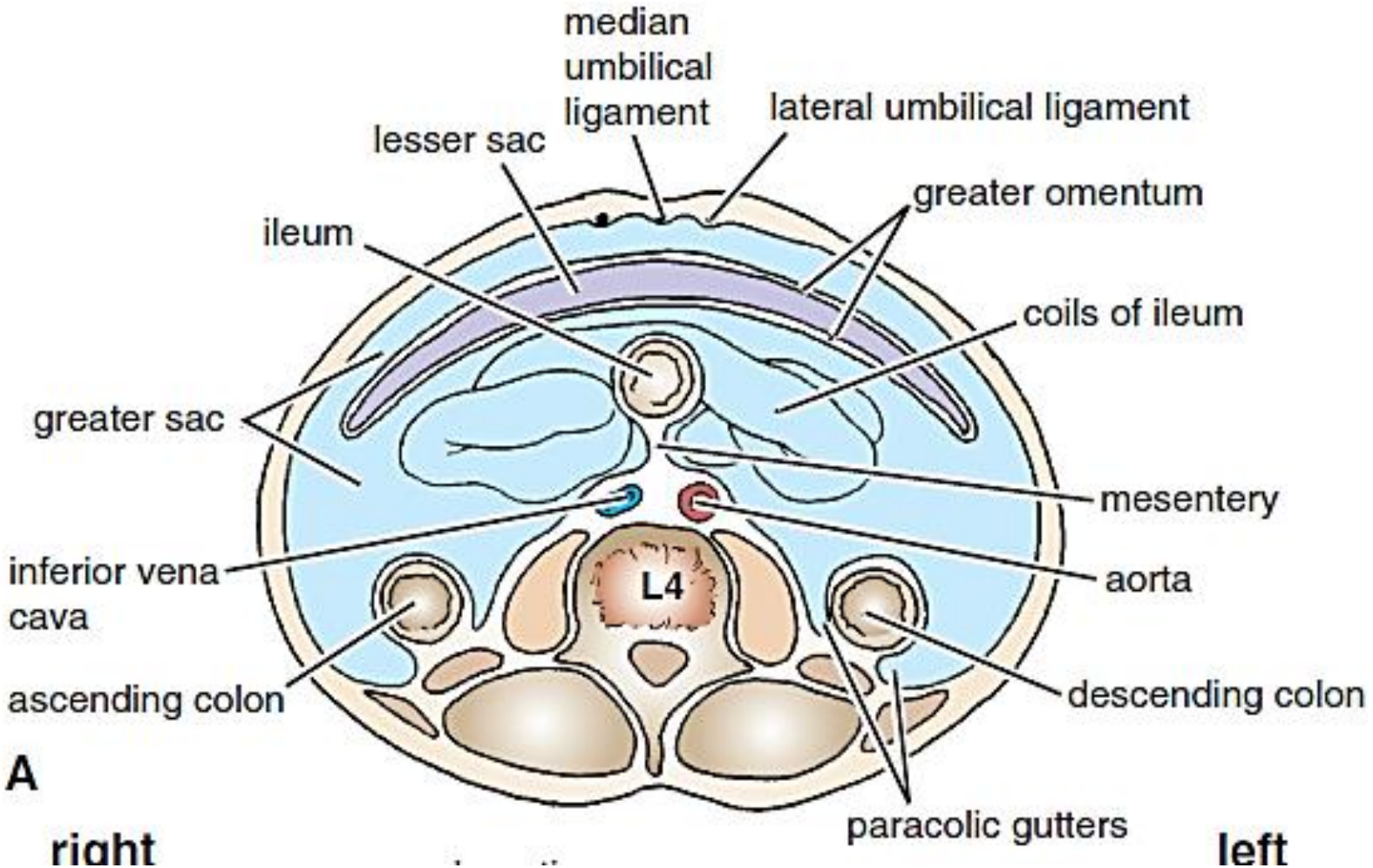
The Peritoneum

Dr Maan Al-Abbasi, PhD, MD

Learning Objectives

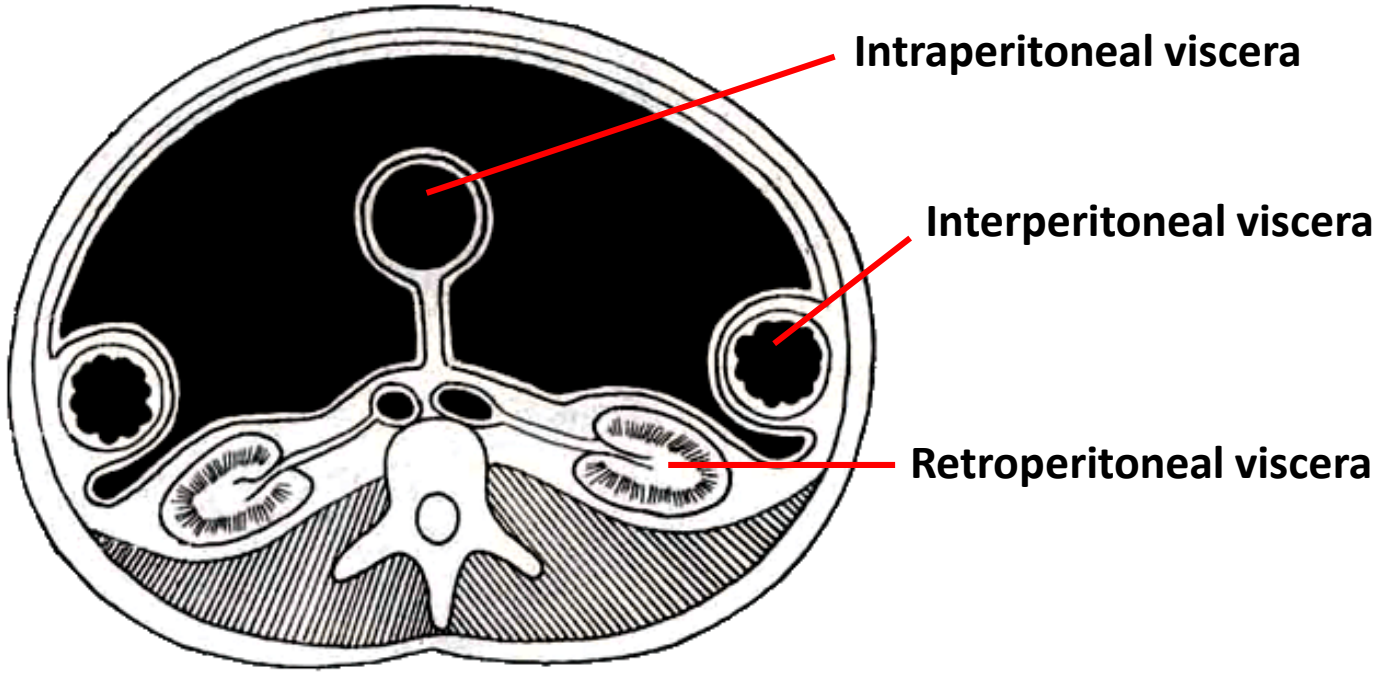
- Describe the organisation and clinical significance of the parietal and visceral peritoneum, the greater and lesser sacs, mesenteries and peritoneal ‘ligaments’.
- Explain the significance of the attachments of the ascending and descending colon to the posterior abdominal wall.
- Describe the functional anatomy of the small and large bowel mesenteries; their structure, location and their vascular, lymphatic and neural contents.
- Explain the nerve supply of the parietal and visceral peritoneum and the role of the visceral peritoneum in referred pain.

Peritoneum

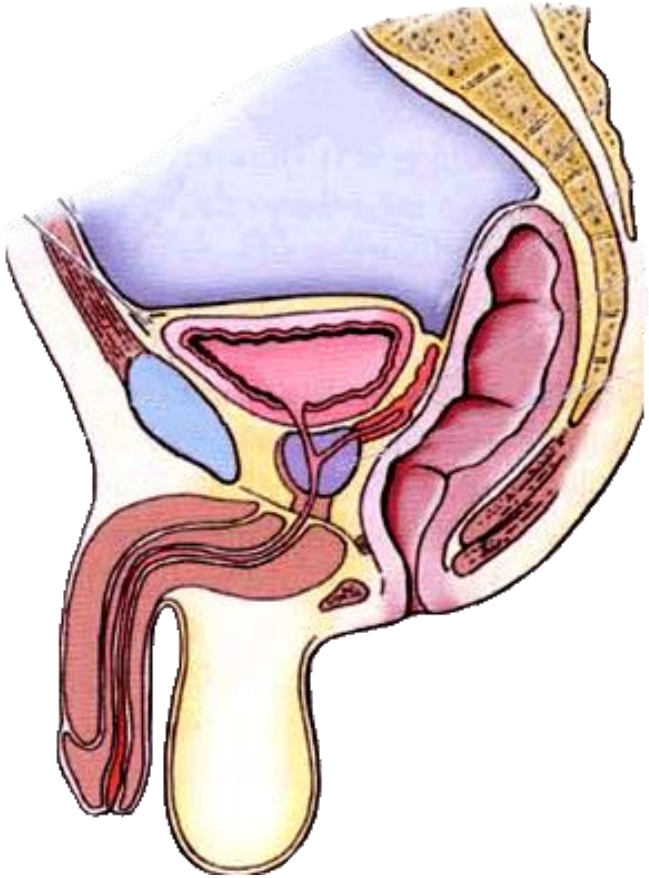

median umbilical ligament
lateral umbilical ligament
lesser sac
greater omentum
ileum
coils of ileum
greater sac
mesentery
inferior vena cava
aorta
L4
ascending colon
descending colon
paracolic gutters
A
right
left

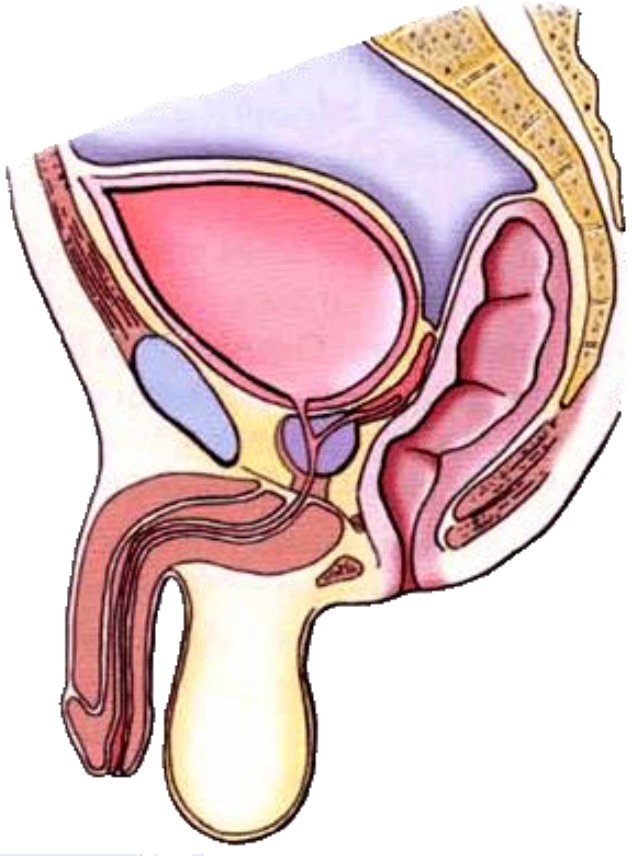
The relationship between viscera and peritoneum

- **Intraperitoneal viscera** stomach, superior part of duodenum, jejunum, ileum, cecum, vermiform appendix, transverse and sigmoid colons, spleen and ovary
- **Interperitoneal viscera** liver, gallbladder, ascending and descending colon, upper part of rectum, urinary bladder and uterus
- **Retroperitoneal viscera** kidney, suprarenal gland, pancreas, descending and horizontal parts of duodenum, middle and lower parts of rectum, and ureter



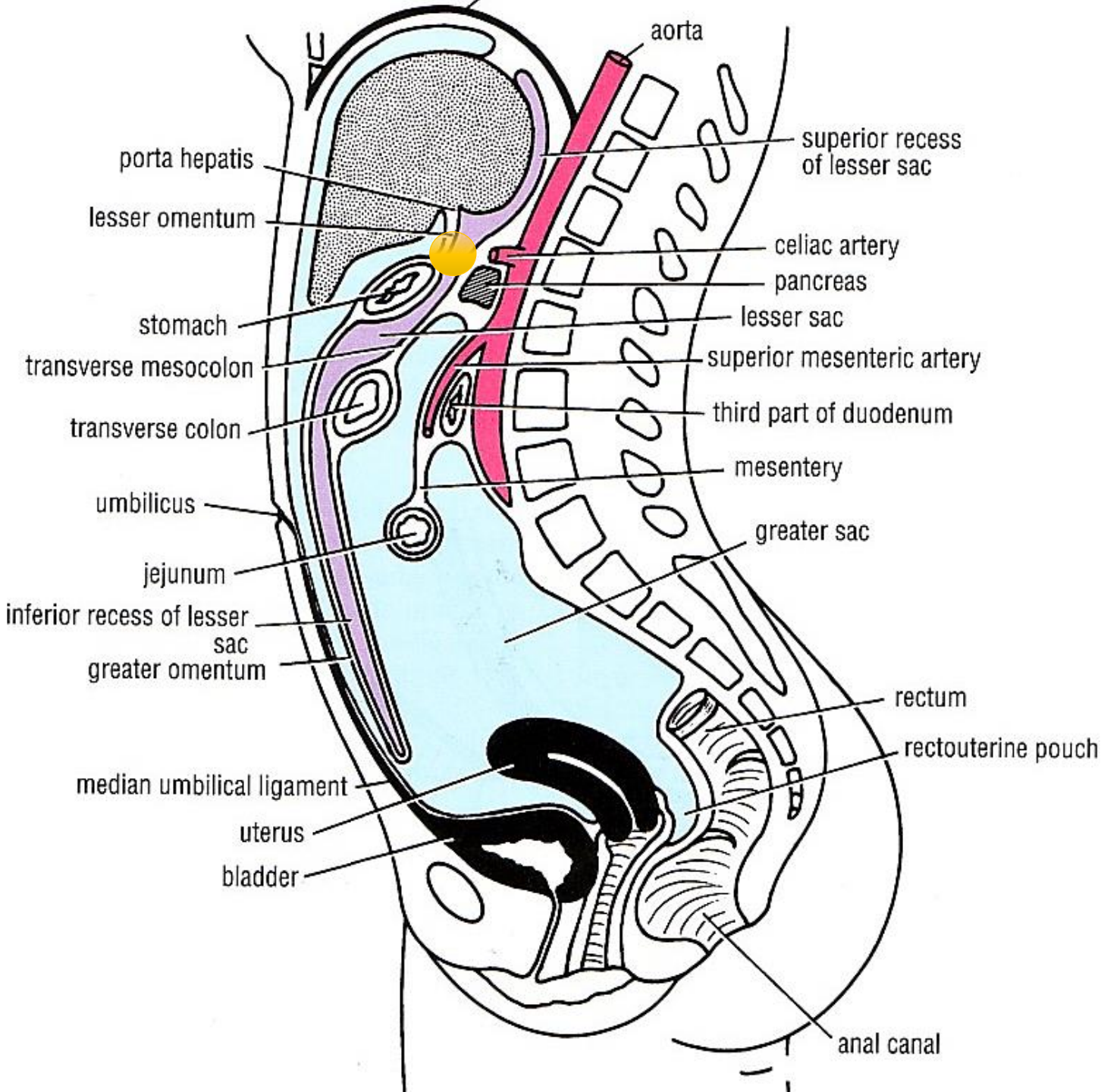
Interperitoneal viscera





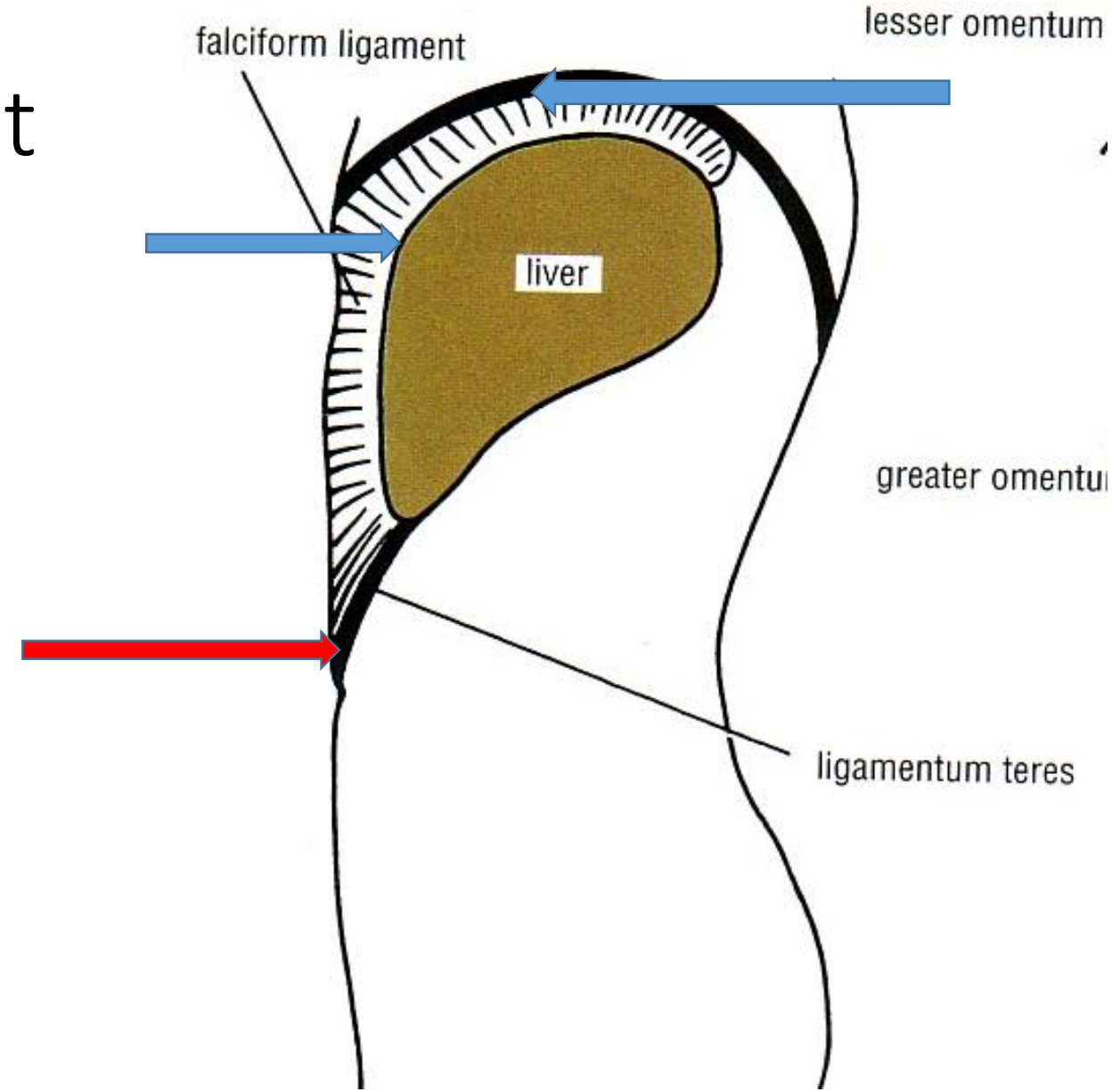
Peritoneal Cavity

- It is divided into two main sacs:
- 1- Greater sac.
- 2- Lesser sac or omental bursa.
- The two sacs interconnected by a single oval opening called the epiploic foramen or opening into lesser sac or foramen of **Winslow**



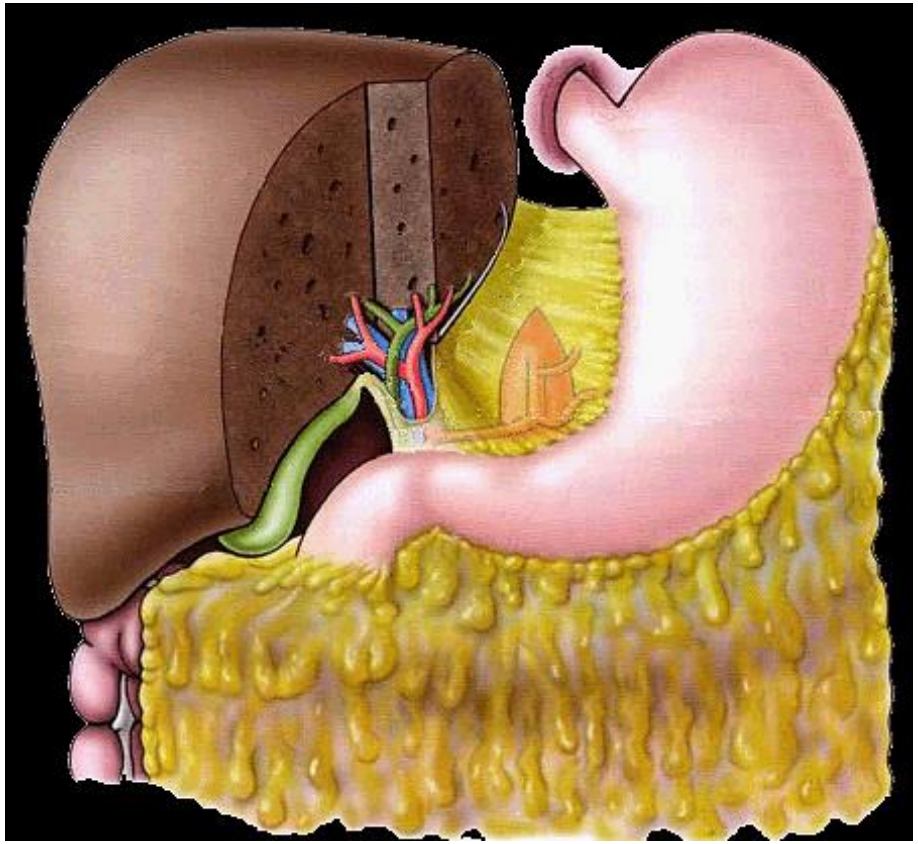
Peritoneal Ligament

Falciform Ligament

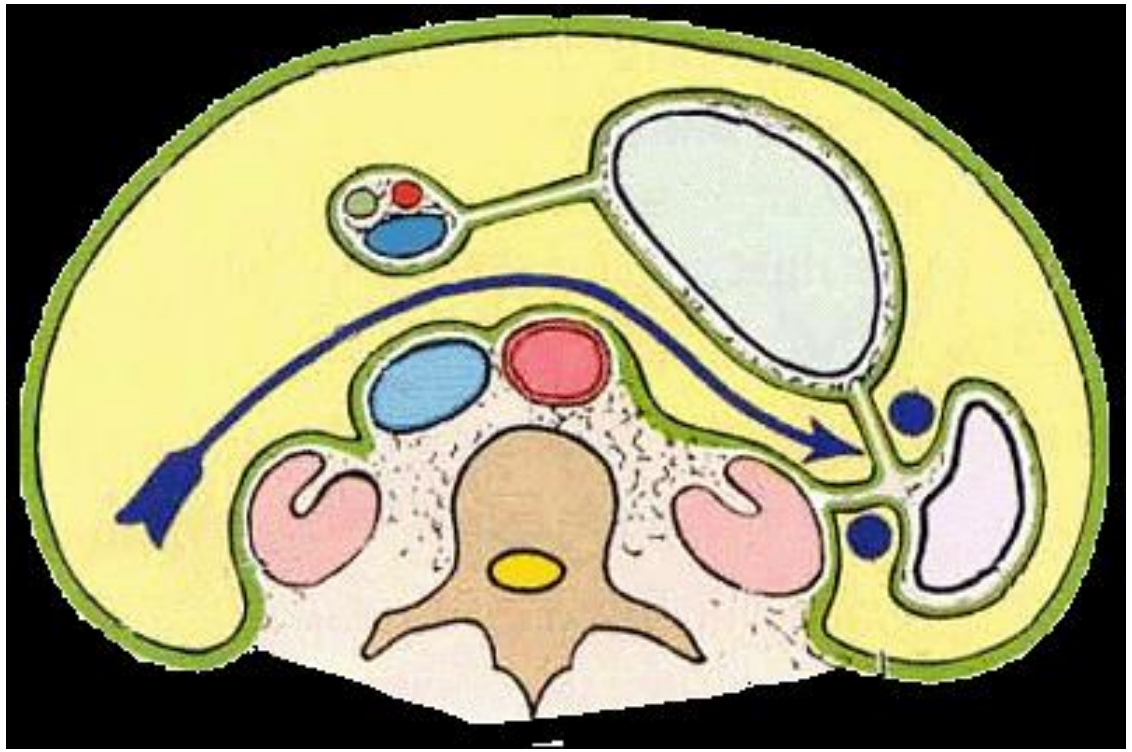


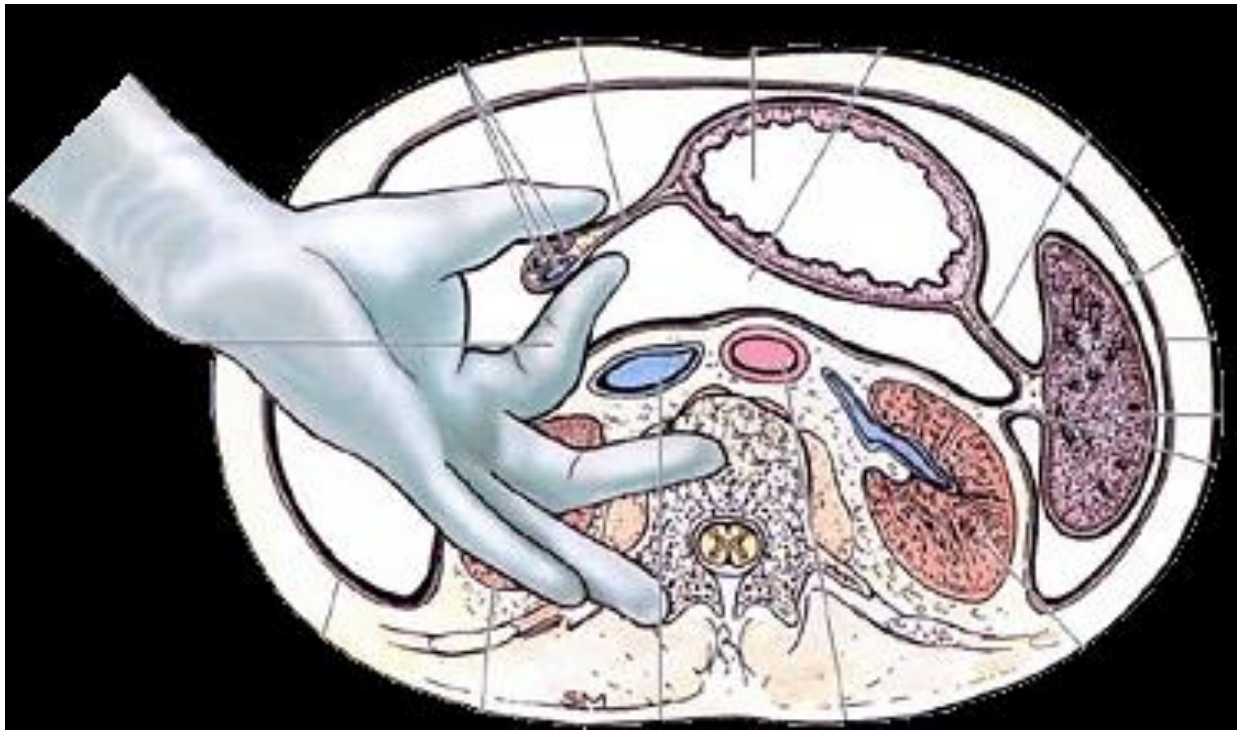
Lessor omentum & Ligaments

- **Hepatogastric ligament**
- **Hepatoduodenal ligament** (Contains: common bile duct, proper hepatic a. and hepatic portal v.)



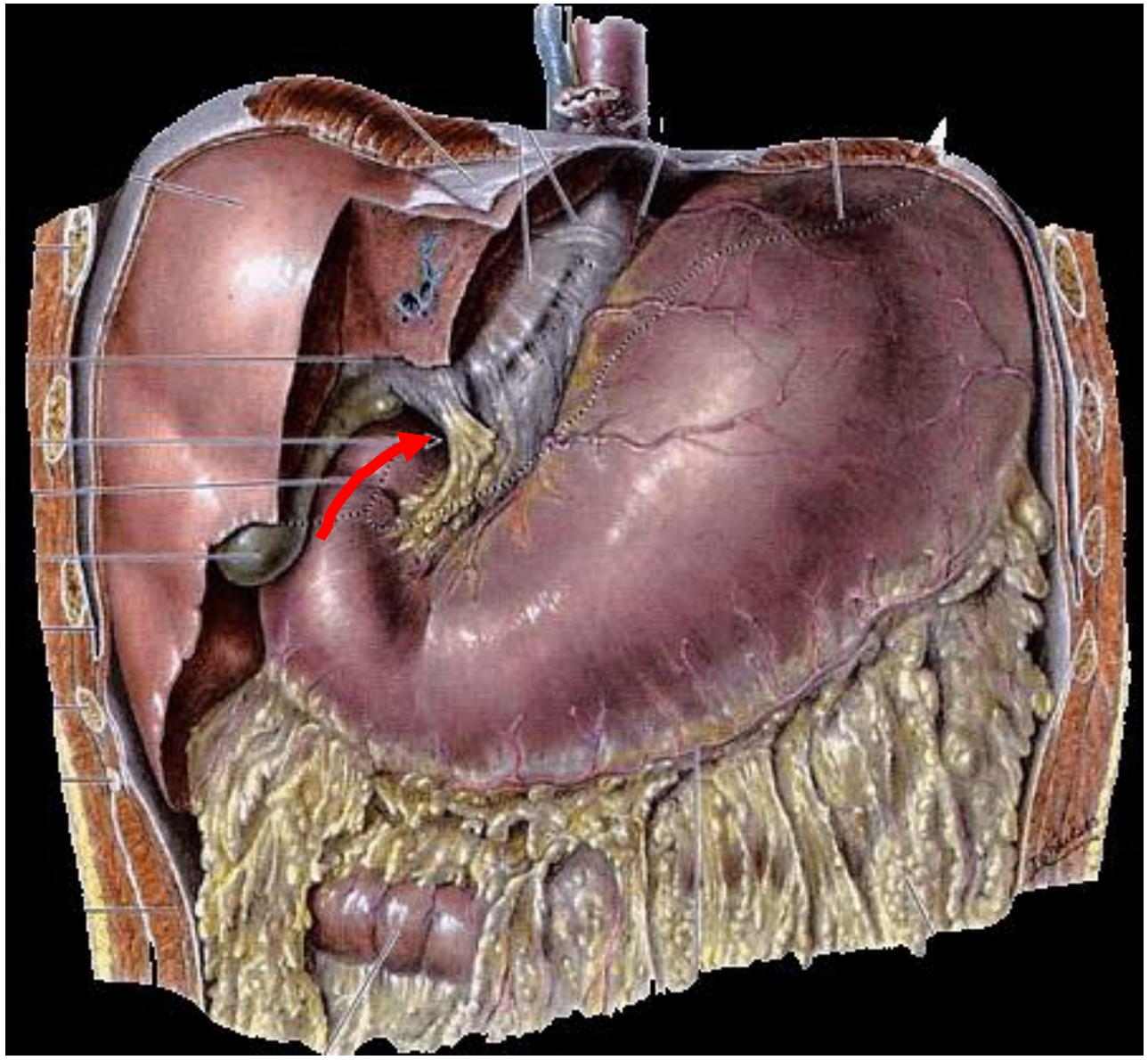
Gastrosplenic & splenorenal Ligaments



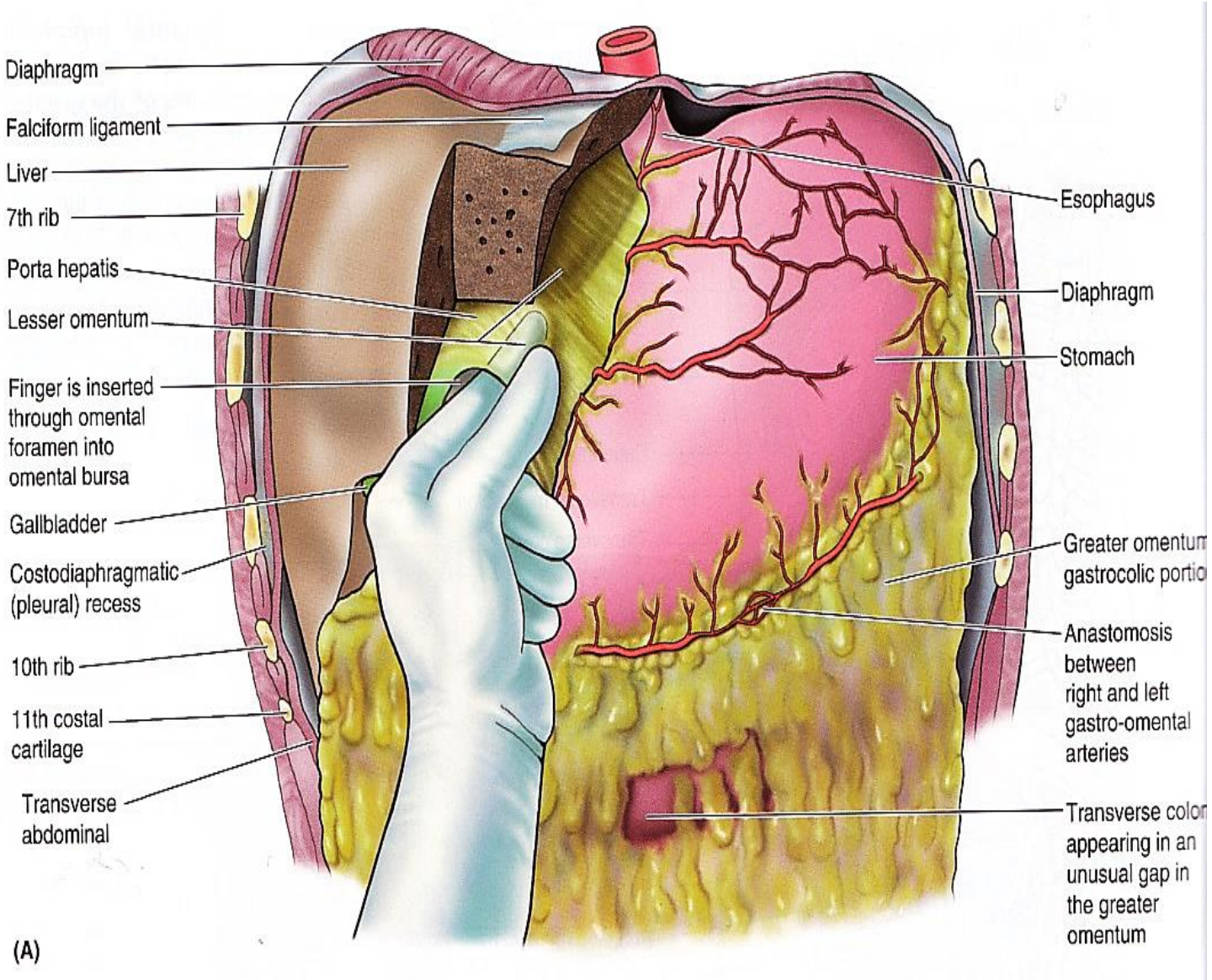


Omental foramen

- Behind the right border of hepatoduodenal ligament
- Superior—caudate lobe of liver
- Inferior—superior part of duodenum
- Anterior—hepatodudenal ligament
- Posterior—peritoneum covering the inferior vena cava

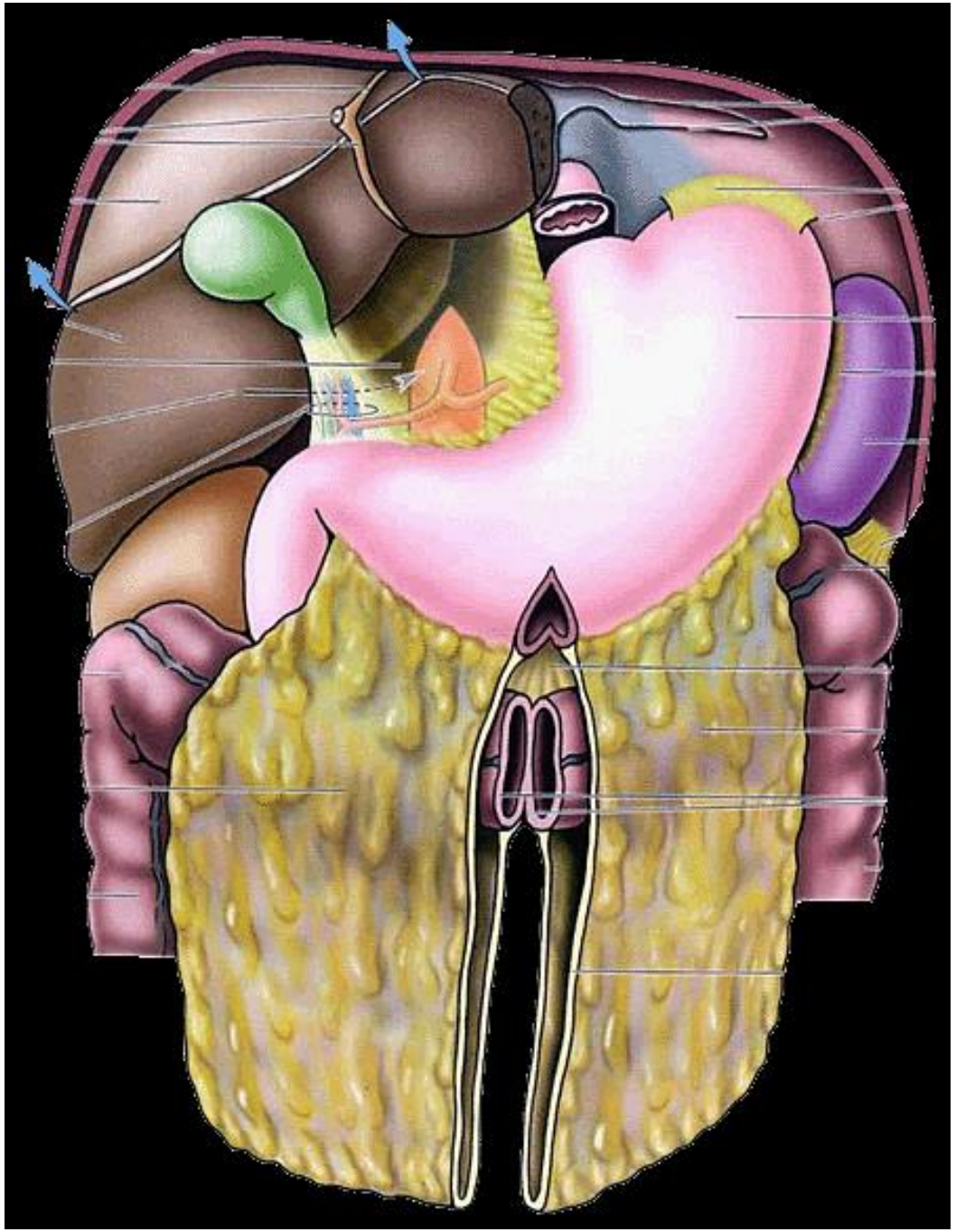


Omental Bursa



Greater omentum

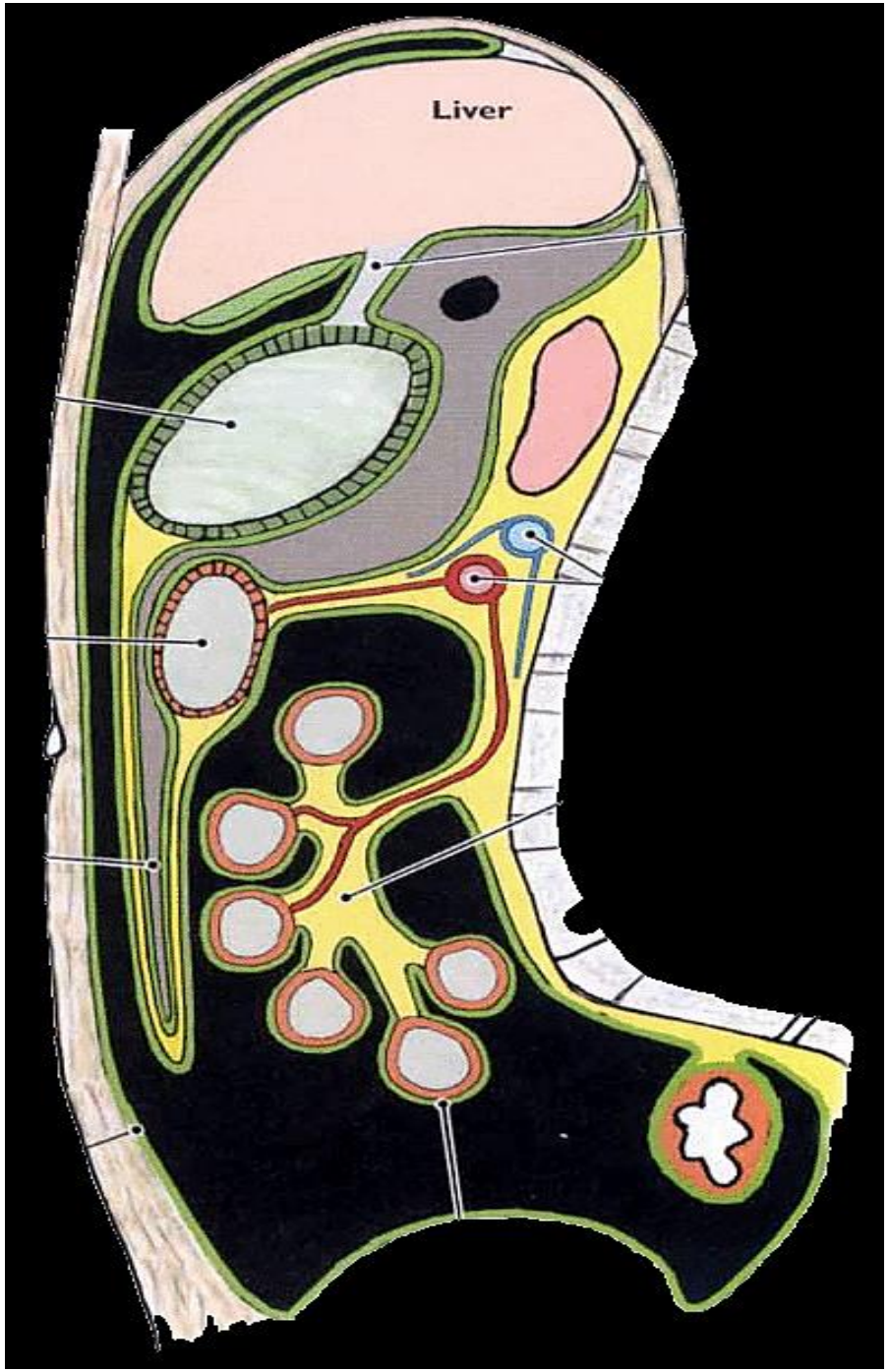
- Four-layered fold of peritoneum, the anterior two layers descend from the greater curvature of stomach and superior part of duodenum and hangs down like an apron in front of coils of small intestine, and then turns upward and attaches to the transverse colon



Omental bursa

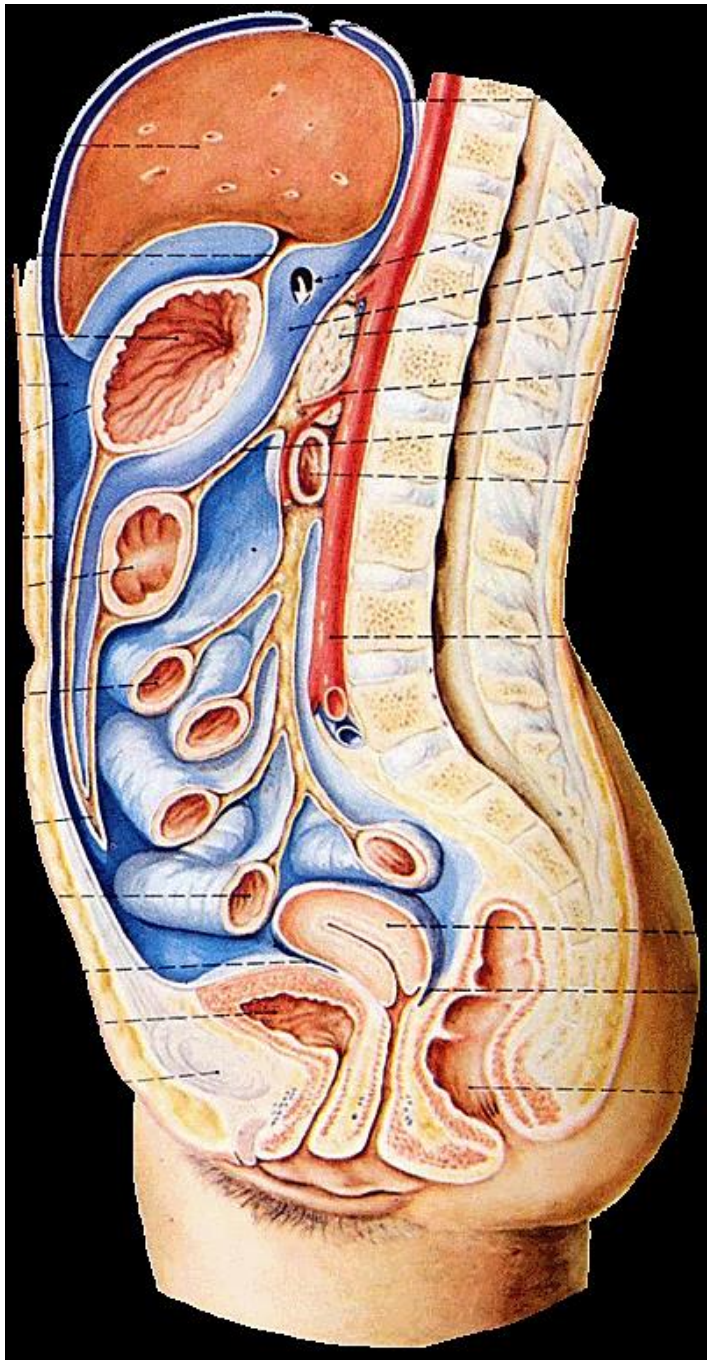
Walls

- **Superior** — peritoneum which covers the caudate lobe of liver and diaphragm
- **Anterior** — formed by lesser omentum, peritoneum of posterior wall of stomach, and anterior two layers of greater omentum
- **Inferior** — conjunctive area of anterior and posterior two layers of greater omentum
- **Posterior** — formed by posterior two layers of greater omentum, transverse colon and transverse mesocolon, peritoneum covering pancreas, left kidney and suprarenal gland

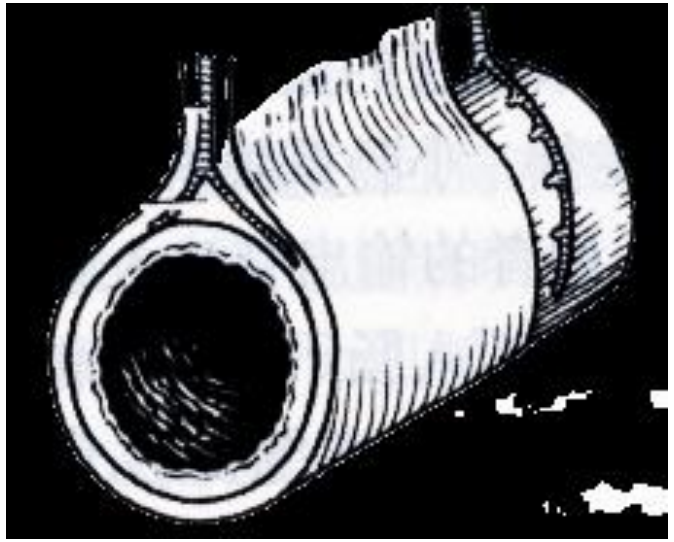


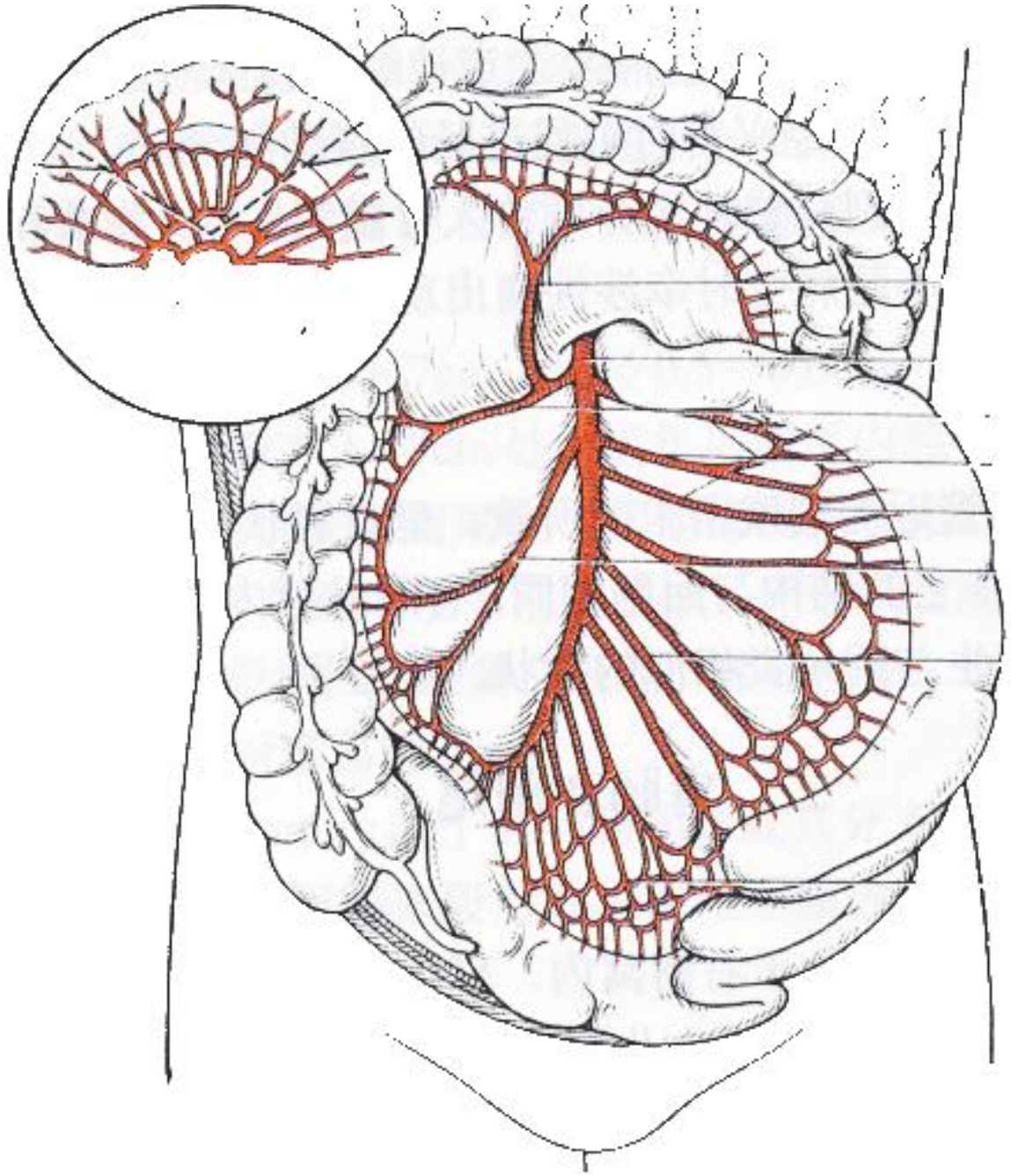
Mesenteries or mesocolons

It is two-layered fold of peritoneum that attach part of the intestines to the posterior abdominal wall



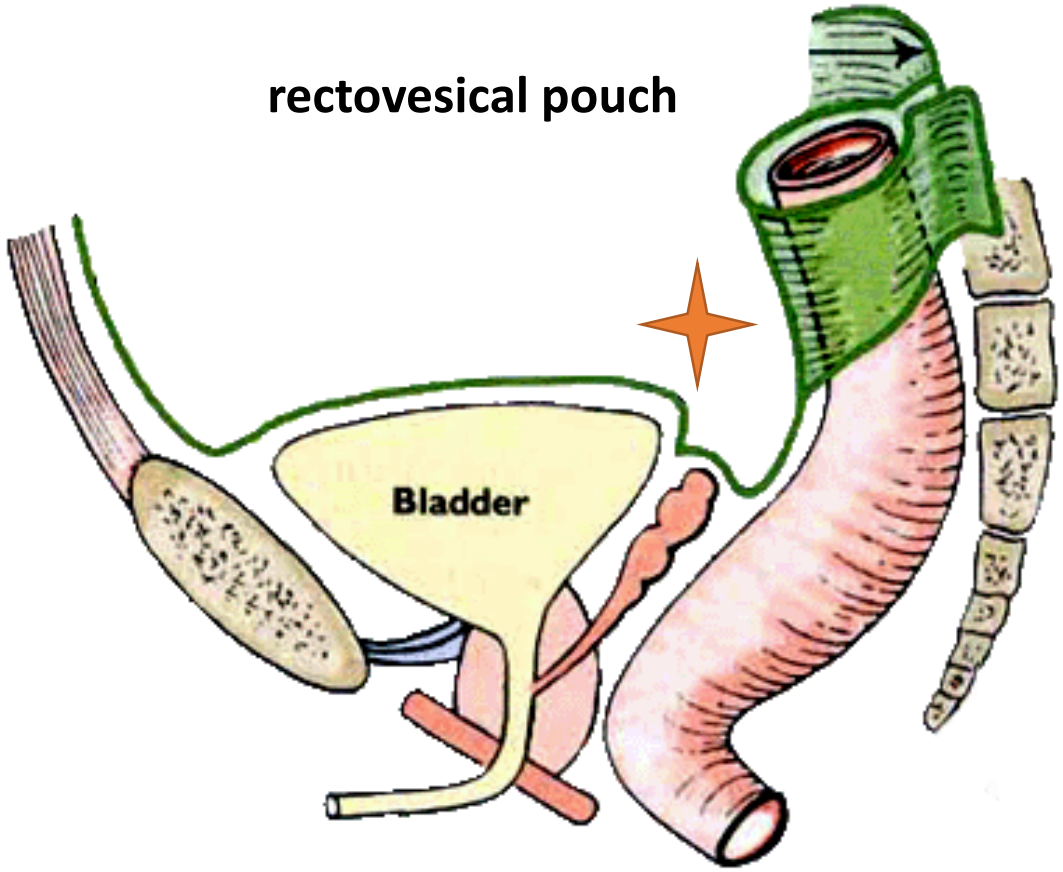
Mesentery



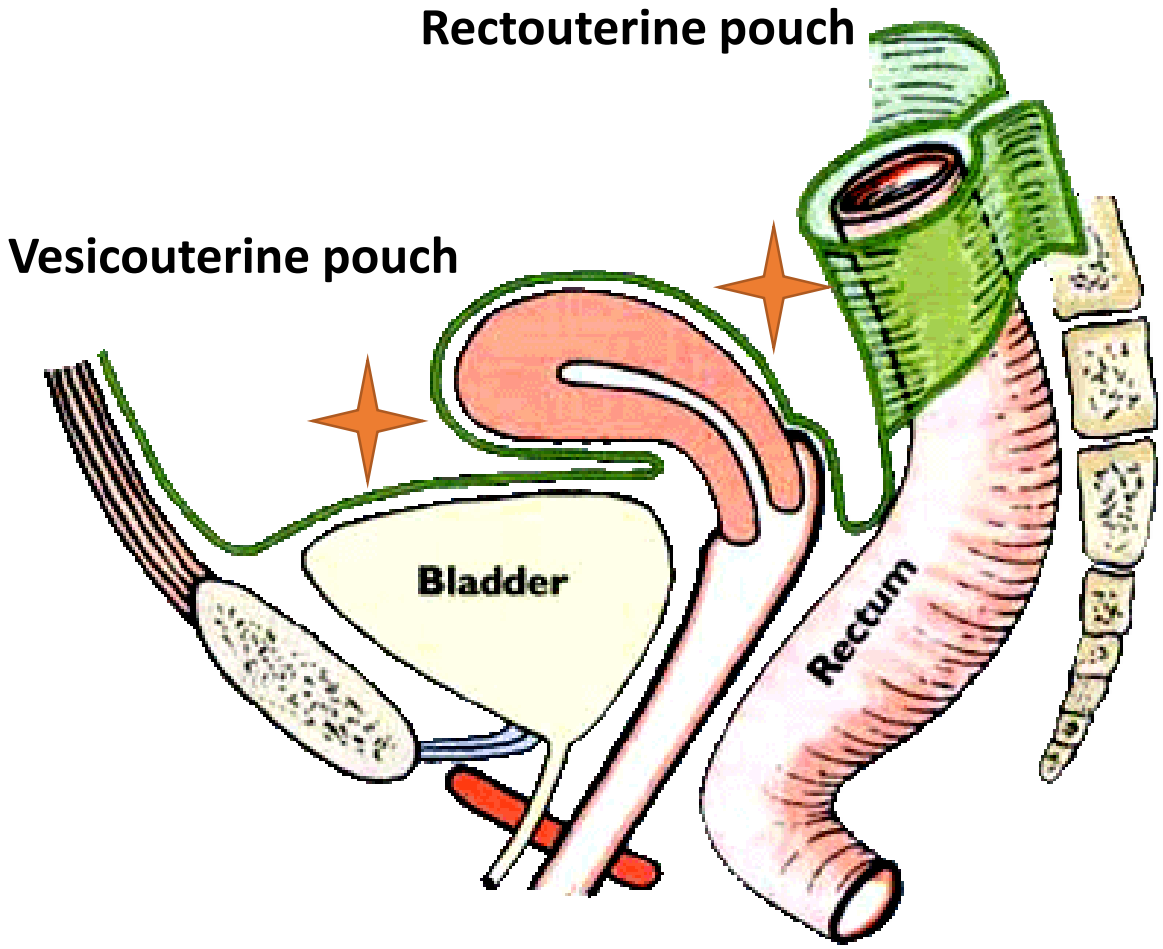


Pouches

- In male

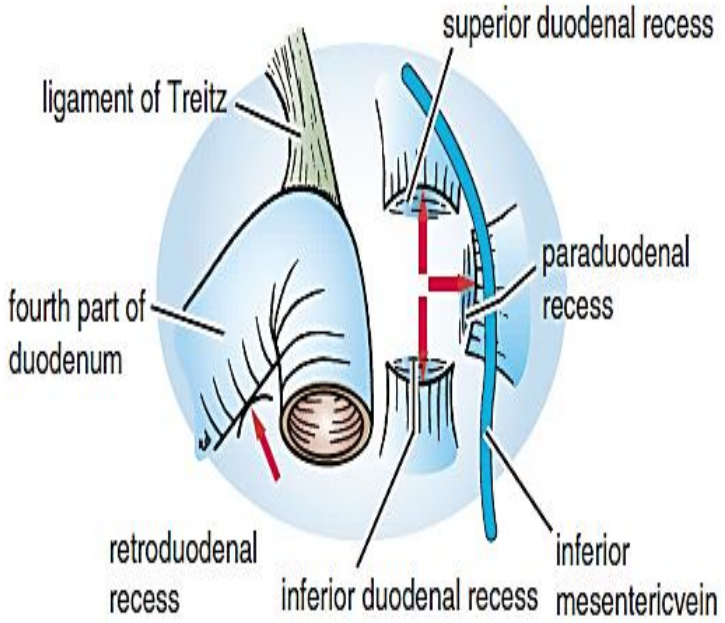


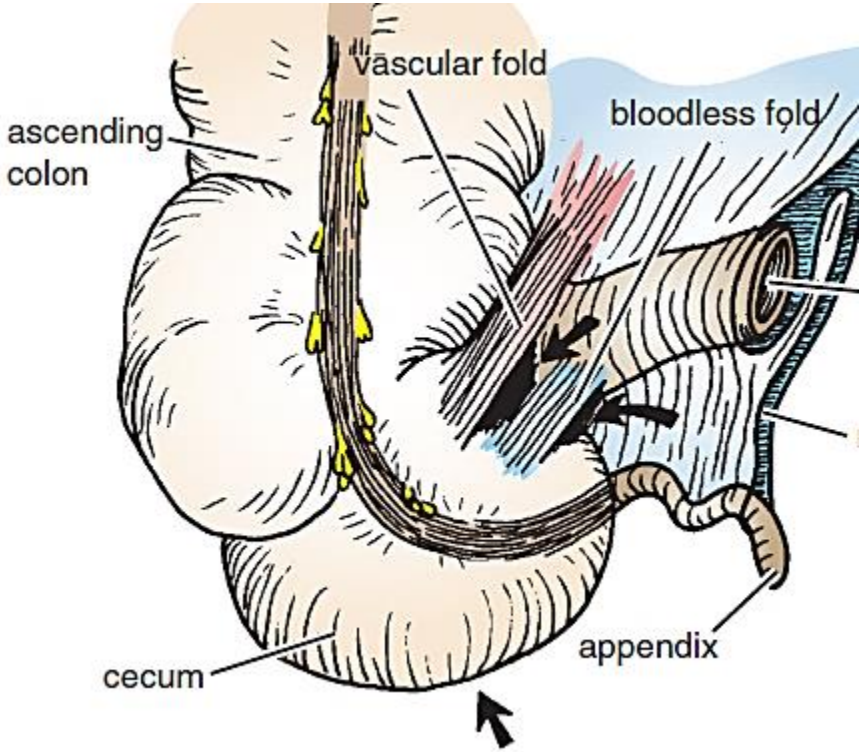
- In female



Peritoneal Recesses, Spaces, and Gutters

- Duodenal Recesses there may be four small pocket like pouches of peritoneum called the superior duodenal, inferiorduodenal, paraduodenal,and retroduodenal recesses.
- Cecal Recesses three peritoneal recesses called the superior ileocecal, the inferior ileocecal, and the retrocecal recesses.





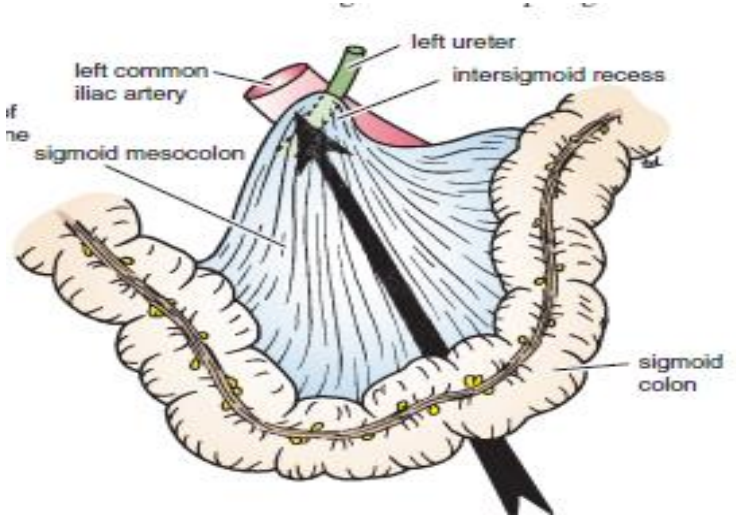
- **Intersigmoid Recess**

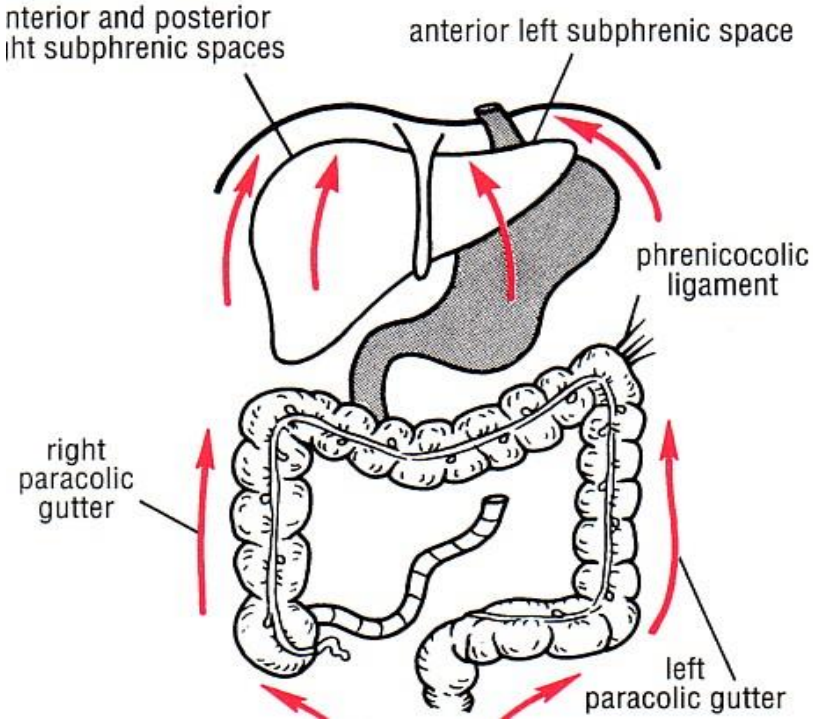
The intersigmoid recess is situated at the apex of the inverted,V-shaped root of the sigmoid mesocolon its mouth opens downward.

- **Subphrenic Spaces**

The **right and 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. The **right extraperitoneal space lies between the layers of the coronary ligament and** is therefore situated between the liver and the diaphragm.

- The **paracolic gutters** lies lateral and medial to the ascending and descending colon respectively.





- **Function of peritoneum**

It suspend the organs within the peritoneal cavity.
It fixes some organs within the abdominal cavity.

Storage of large amount of fat in the peritoneal ligaments (e.g.. Greater omentum)
Peritoneal covering of intestine tends to stick together in infection
Greater omentum is called the **policeman** of abdomen to prevent spread of infection
It secretes the peritoneal fluid which helps in the gliding of the mobile viscera over one another.

Innervation of peritoneum

- **Parietal peritoneum** is sensitive to pain, pressure, temperature & touch
- Parietal peritoneum is supplied by:
- Lower 6 thoracic nerves (T7-- T12)
- First lumber nerve (L1)
- Central part of diaphragmatic parietal peritoneum is supplied by Phrenic nerve. Peripherally supplied by lower 6 thoracic nerves and in the pelvis supplied by the Obturator nerve.

- **Visceral peritoneum** is sensitive to stretch & tearing.
- It is supplied by autonomic afferent nerves which supply the viscera.

Ascites & Peritoneal paracentesis