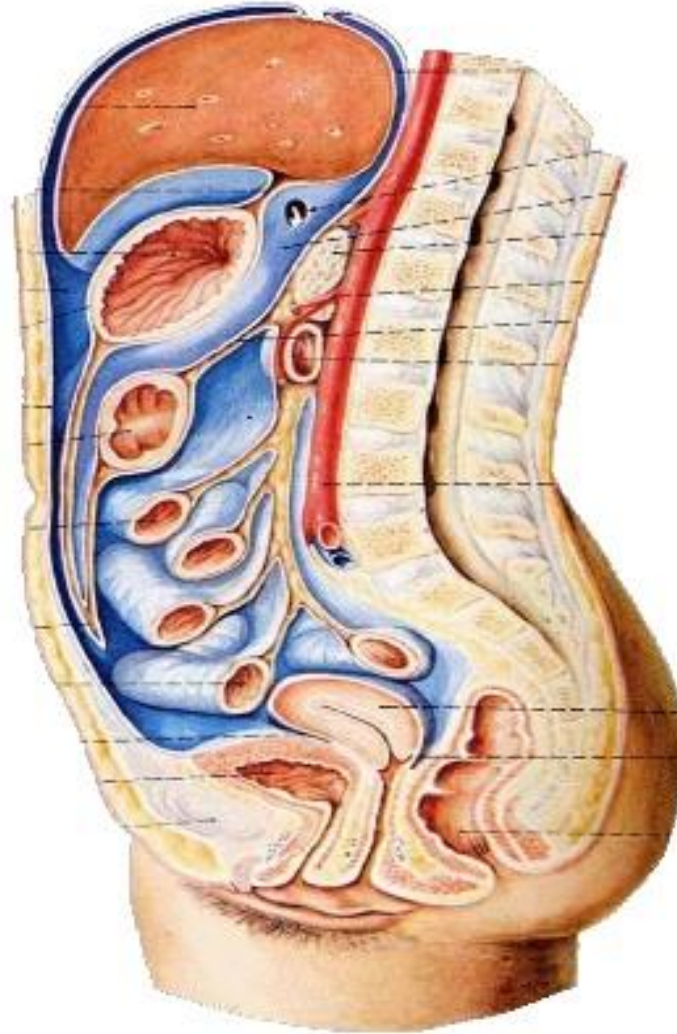


The Peritoneum

(lecture 1)



<https://www.slideshare.net/MehulTandel/peritoneum-dr-mehul-tandel>

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Professor
Department of Anatomy
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Peritoneum

- The peritoneum (Greek stretched over) is a large serous membrane (serosa) lining the abdominal cavity.
- It is divided into:
 - a. An outer or parietal layer
 - b. An inner or visceral layer
 - c. Folds of peritoneum by which the viscera are suspended

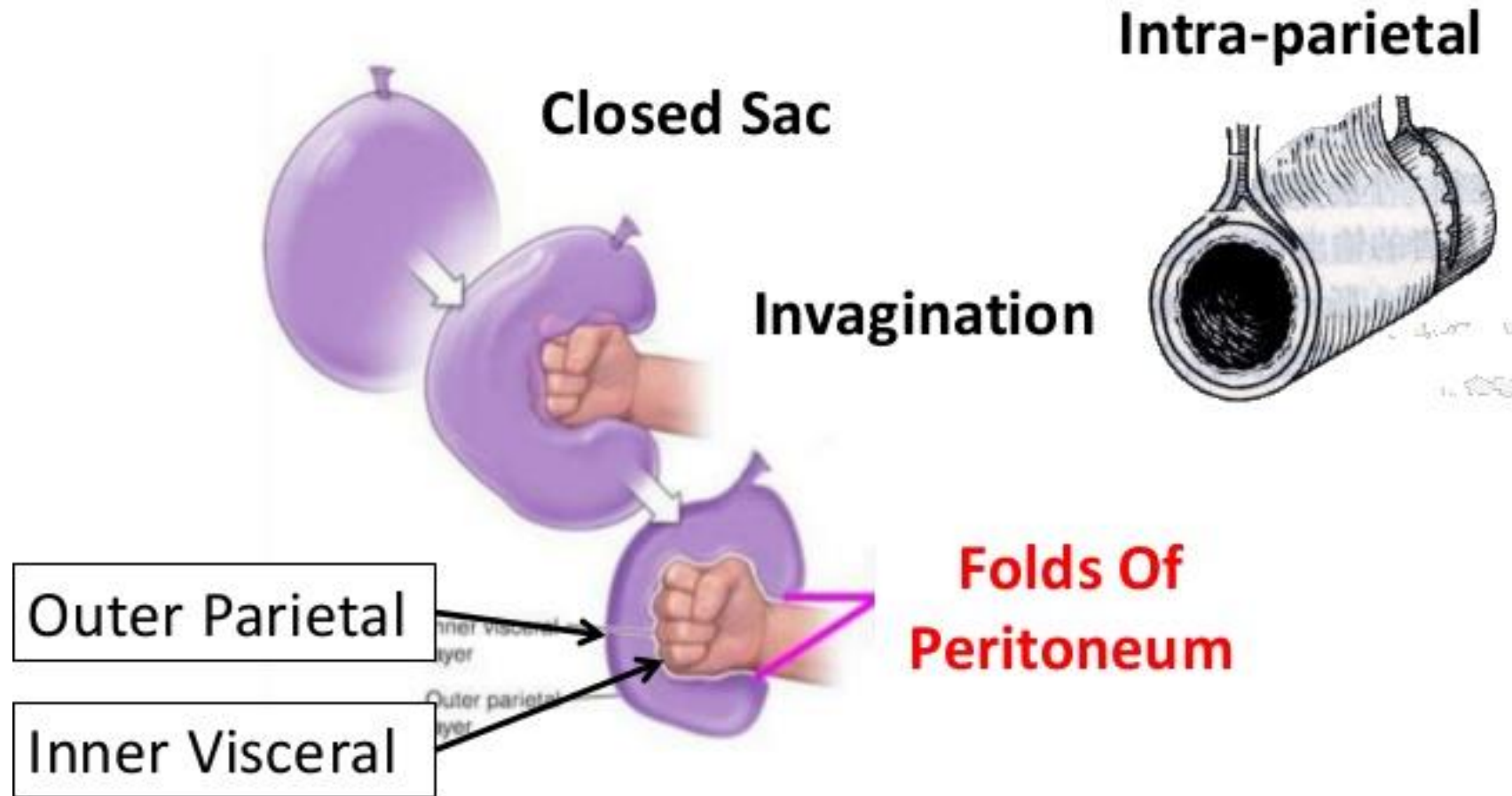
Histology of Peritoneum

Histologically, composed of:

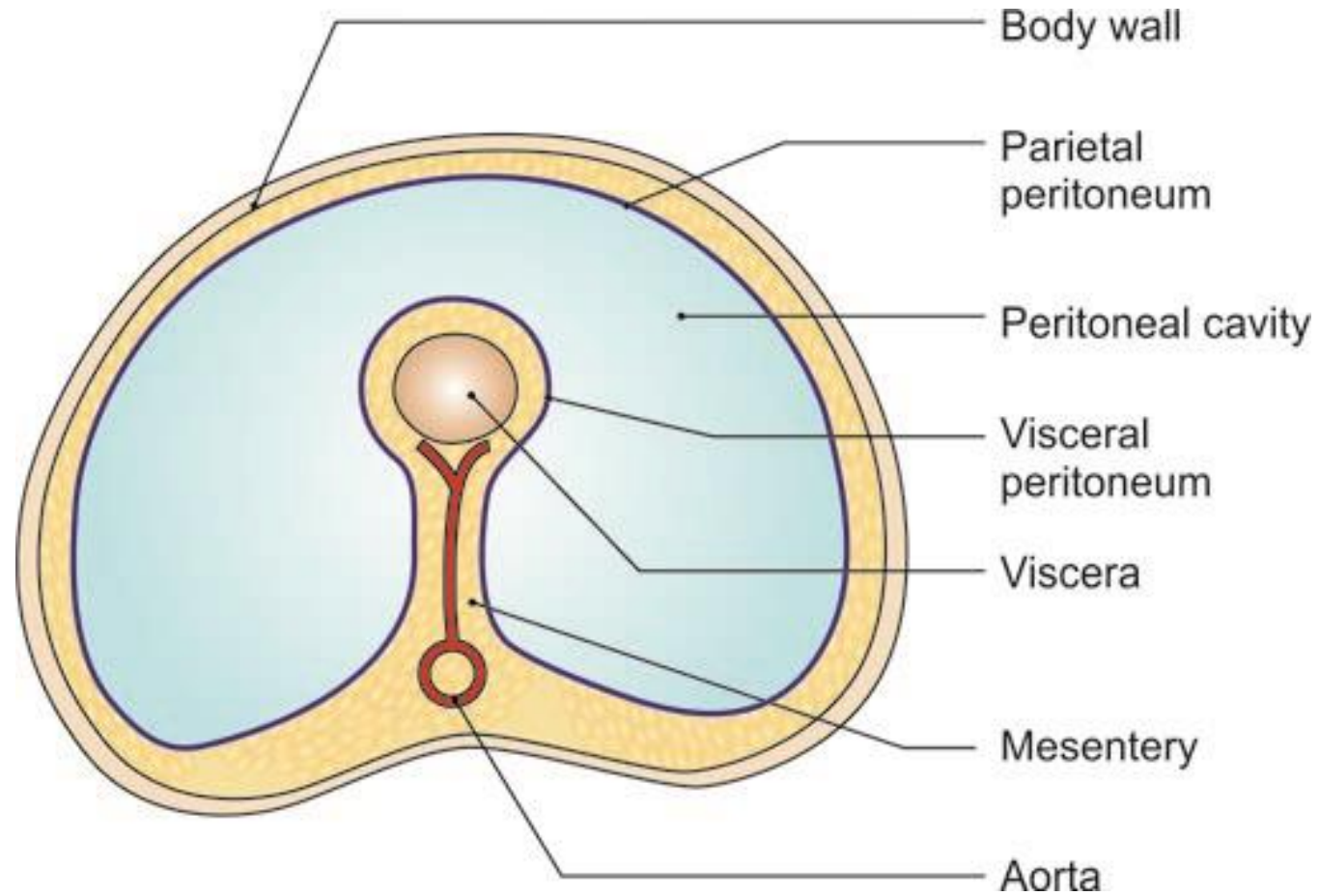
- **Outer fibrous layer-**
provides strength
- **Inner layer of mesothelial cells-**
secrete a serous fluid for lubrication



Formation

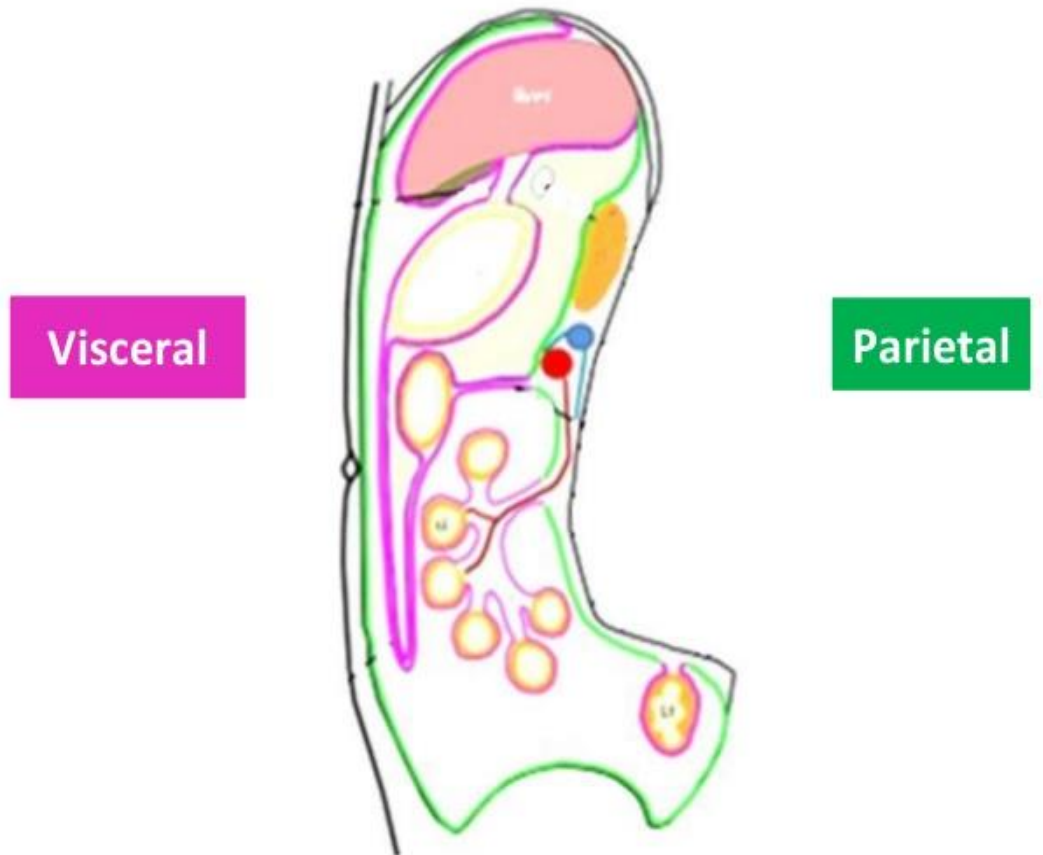


Diagrammatic transverse section of the abdomen showing the arrangement of the peritoneum



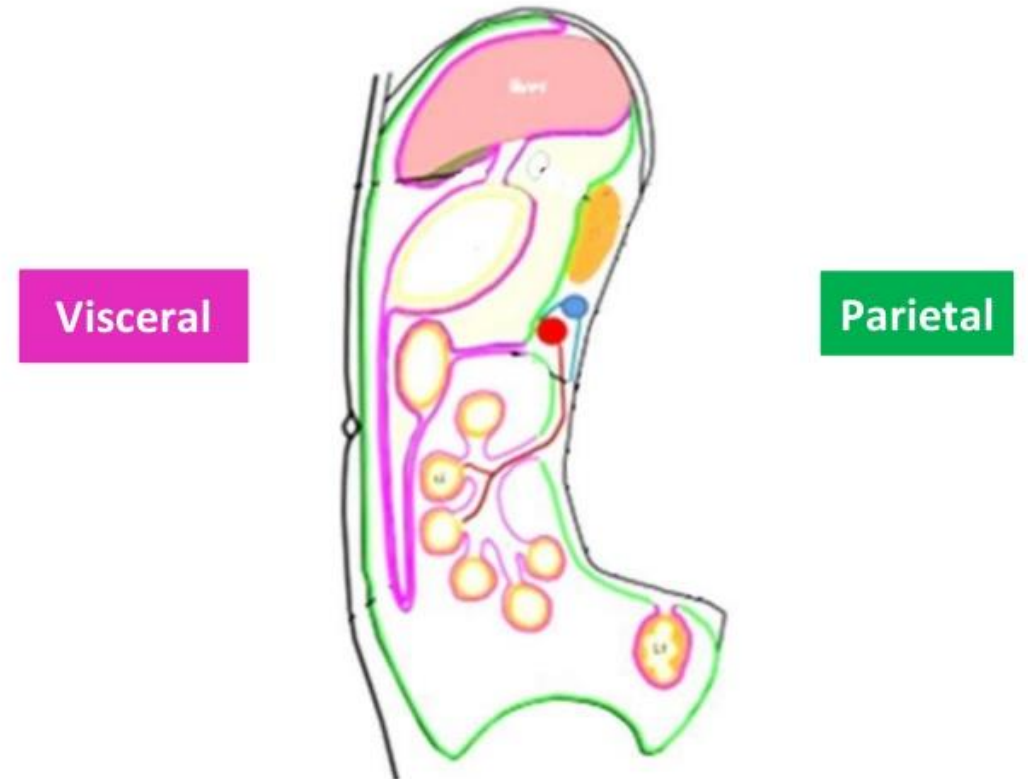
Parietal Peritoneum

- It lines the inner surface of the abdominal and pelvic walls and the lower surface of the diaphragm.
- Can be easily stripped.
- Derived from somato-pleuric layer of lateral plate mesoderm.
- Its blood supply and nerve supply are the same as those of the overlying body wall.
- Because of the somatic innervation, parietal peritoneum is *pain sensitive*.



Visceral Peritoneum

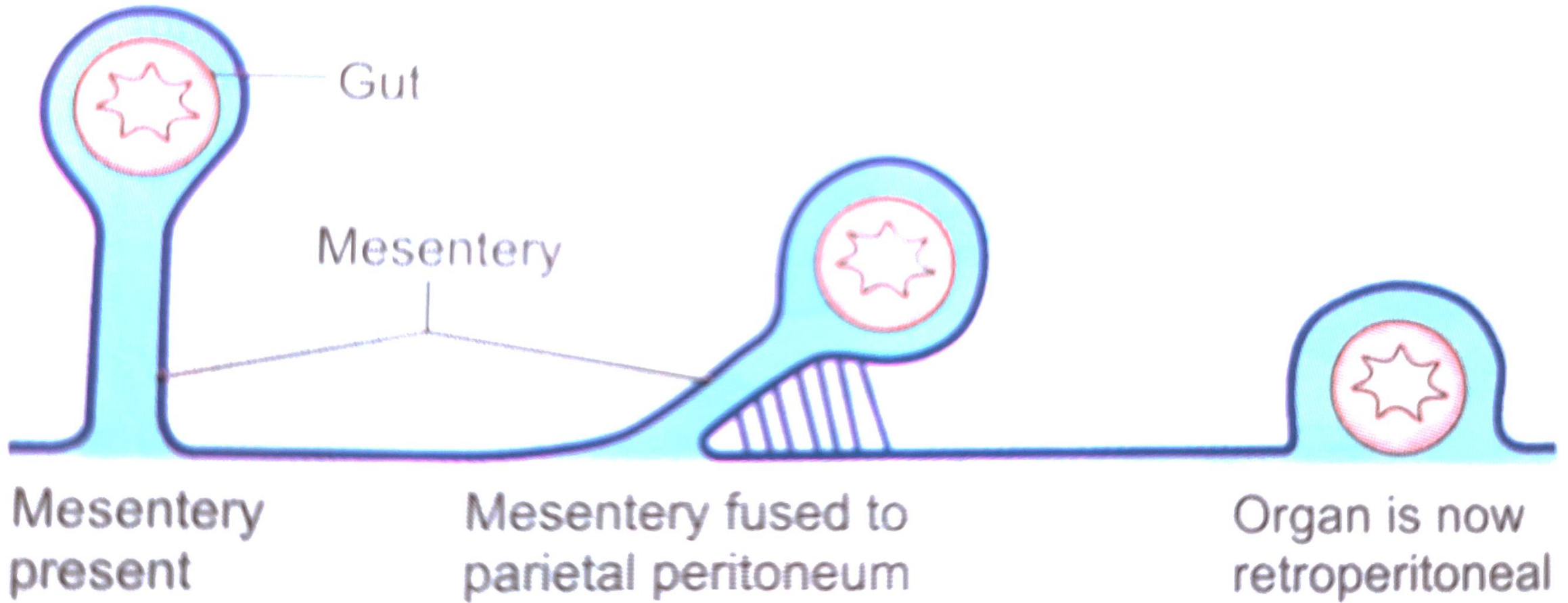
- It lines the outer surface of the viscera. In fact it forms a part and parcel of the viscera.
- Cannot be stripped.
- Derived from splanchno-pleuric layer of lateral plate mesoderm.
- Its blood supply and nerve supply are the same as those of the underlying viscera.
- Because of the autonomic innervation, visceral peritoneum evokes pain when viscera is stretched, ischaemic or distended.

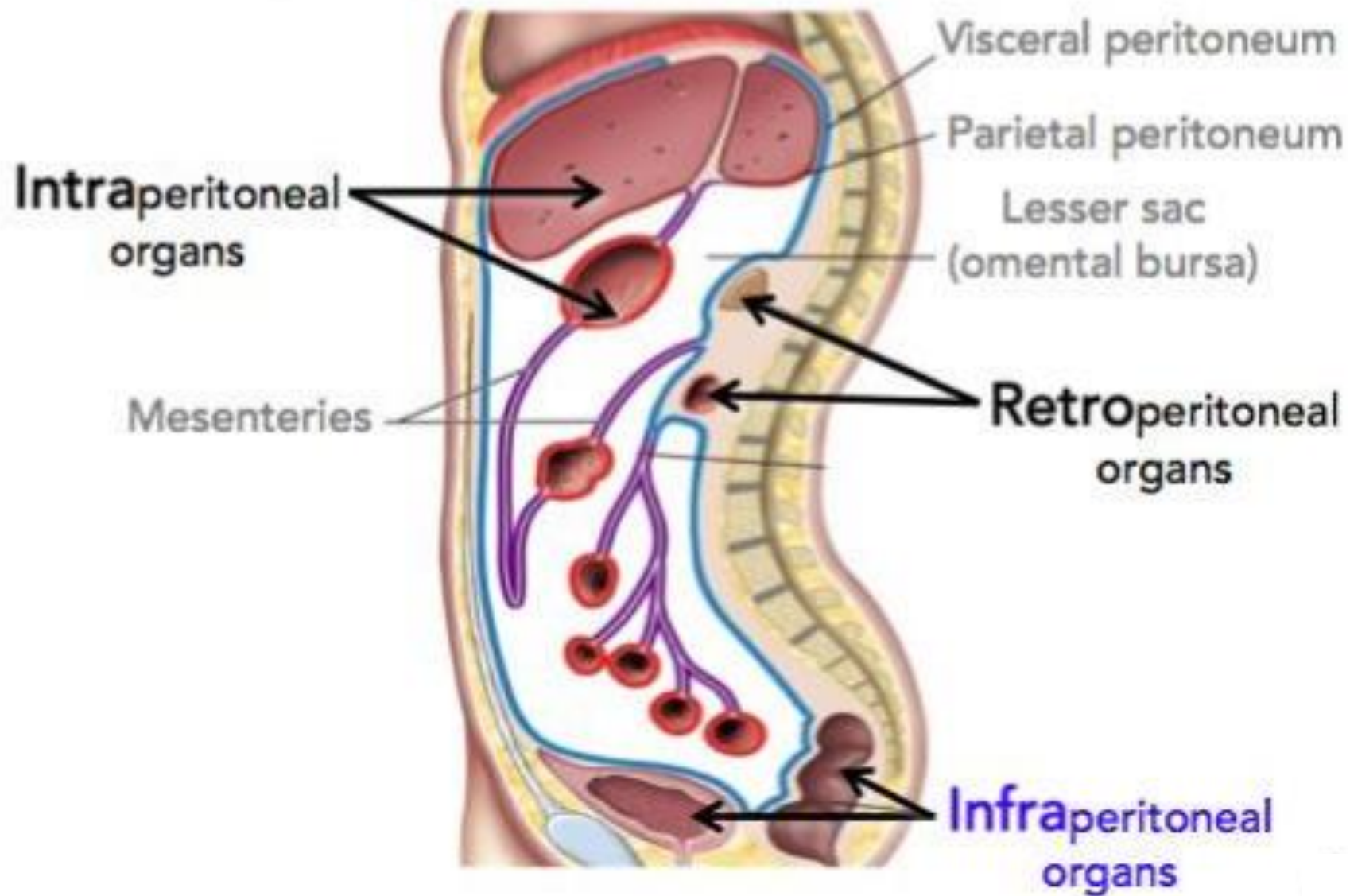


Folds of Peritoneum

- Many organs within the abdomen are suspended by folds of peritoneum. Such organs are mobile.
- Other organs are fixed and immobile. Such organs are said to be retroperitoneal.
- Some are partially covered.
- Few are sub-peritoneal (infra-peritoneal).
- Provide pathways for passage of vessels, nerves and lymphatics.

Process of zygosis

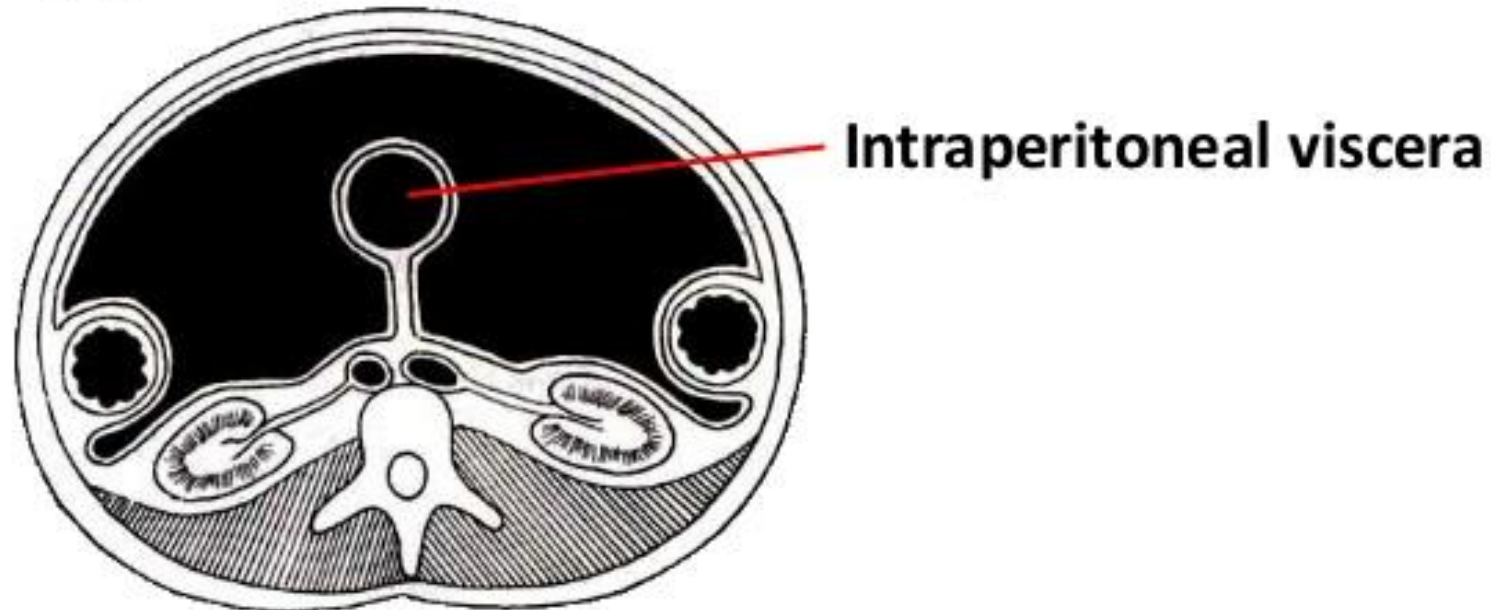




The relationship between viscera and peritoneum

Intraperitoneal viscera: completely surrounded by peritoneum

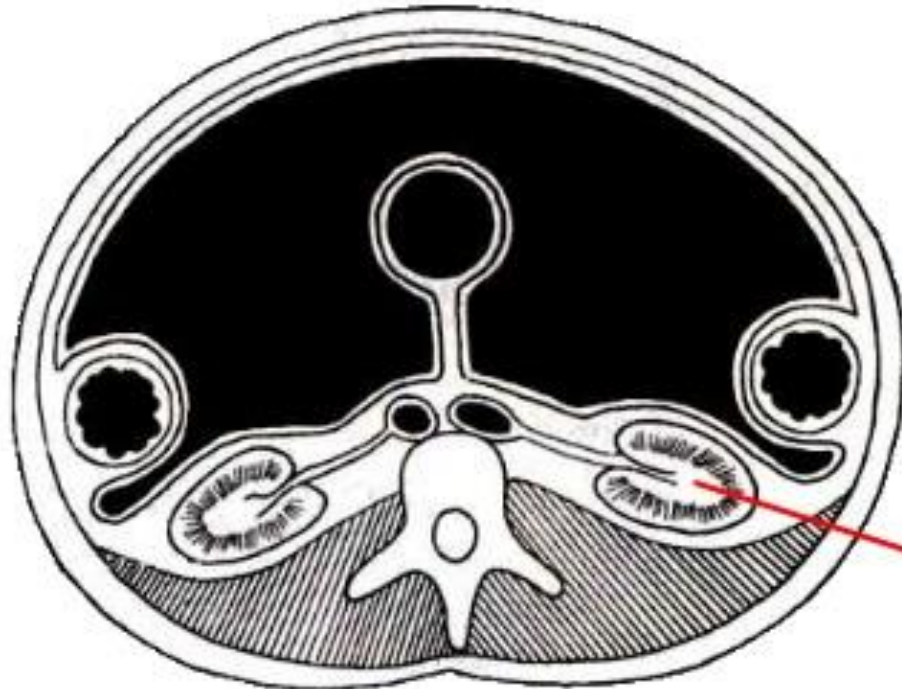
Eg: Stomach, superior part of duodenum, jejunum, ileum, cecum, vermiform appendix, transverse and sigmoid colons, spleen , ovary and uterine tube



- **Retroperitoneal viscera** —

Covered by peritoneum on their **anterior surfaces only**

Eg: Kidney, suprarenal gland, pancreas, 2nd & 3rd parts of duodenum, ascending & descending colon middle and lower parts of rectum and ureter



Retroperitoneal viscera

Intraperitoneal Organs

(completely surrounded by peritoneum)

S= Stomach

A= Appendix

L= Liver

T= Transverse colon

D= Duodenum (1st part only)

S= Small intestines

P= Pancreas (tail only)

R= Rectum (upper 3rd only)

S= Sigmoid colon

S= Spleen

Retroperitoneal Organs

(covered by peritoneum on anterior surfaces only)

S= Suprarenal glands

A= Aorta/Inferior Vena Cava

D= Duodenum (except for 1st part)

P= Pancreas (head and neck)

U= Ureters

C= Colon (ascending and descending parts)

K= Kidneys

E= Esophagus

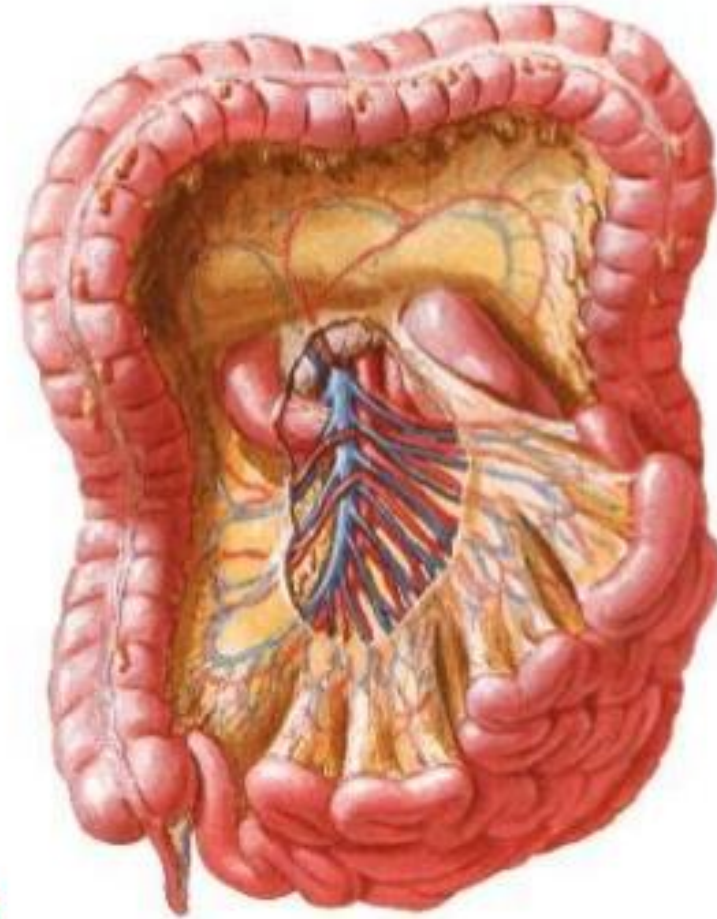
R= Rectum

Major Intraperitoneal Organs (suspended by a mesentery)	Major Secondary Retroperitoneal Organs (lost a mesentery during development)	Major Primary Retroperitoneal Organs (never had a mesentery)
Stomach	Duodenum, 2nd and 3rd parts	Kidneys
Liver and gallbladder	Head, neck, and body of pancreas	Adrenal glands
Spleen	Ascending colon	Ureters
Duodenum, 1st part	Descending colon	Aorta
Tail of pancreas	Upper rectum	Inferior vena cava
Jejunum		Lower rectum
Ileum		Anal canal
Appendix		
Transverse colon		
Sigmoid colon		

Folds of Peritoneum

- Mobile organs:
 - Suspended by folds
- Fixed:
 - Directly rest on Post wall
 - Retroperitoneal

**Provide passage for Vessels,
Nerves & Lymphatics**



Names of Folds

Mes / Meso → Name of organ

Small Intestine /
Enteron:

Mesentery

Large Intestine /
Colon:

Mesocolon

Stomach

Omentum / Omenta

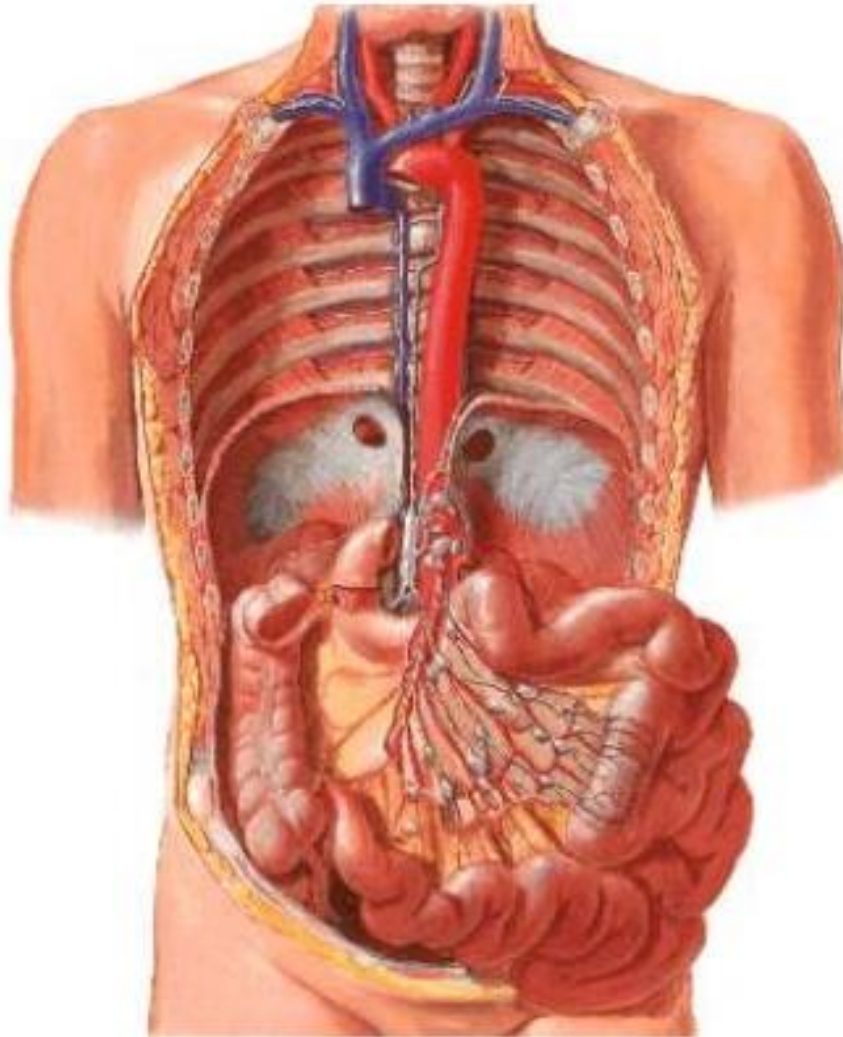
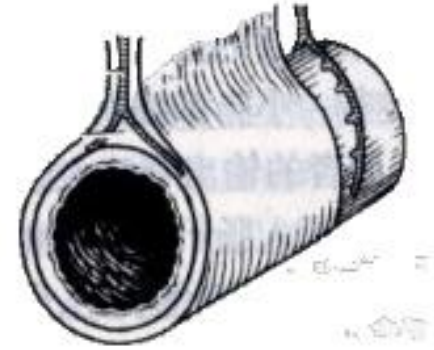
Organs – organ /
Abdominal wall

Ligaments



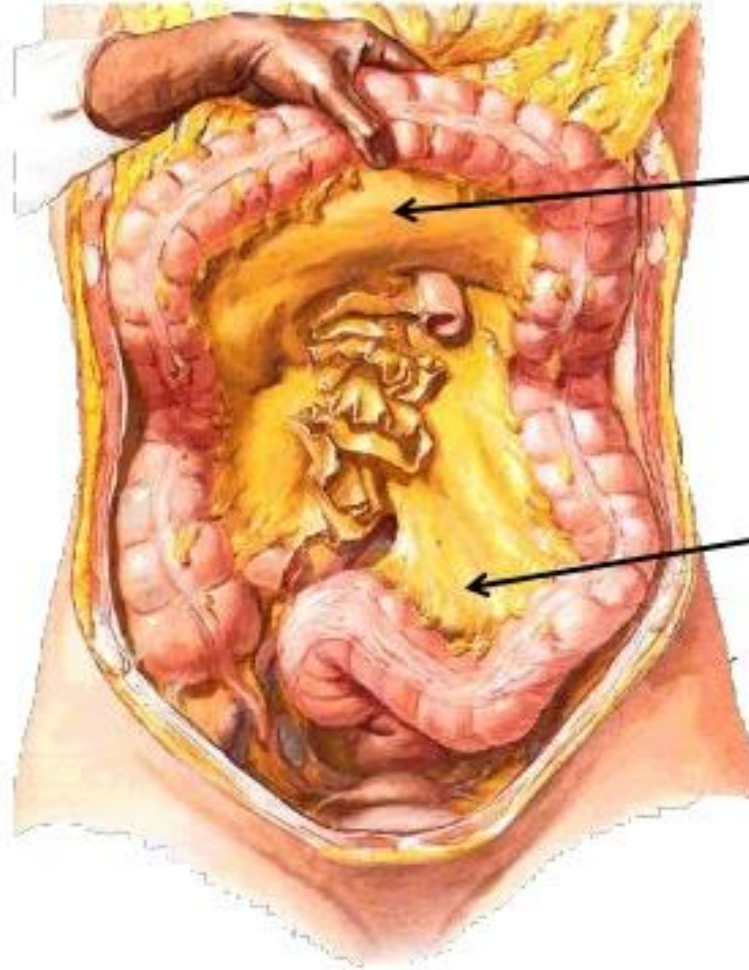
Mesentery

Small Intestine /
Enteron:



Mesocolon

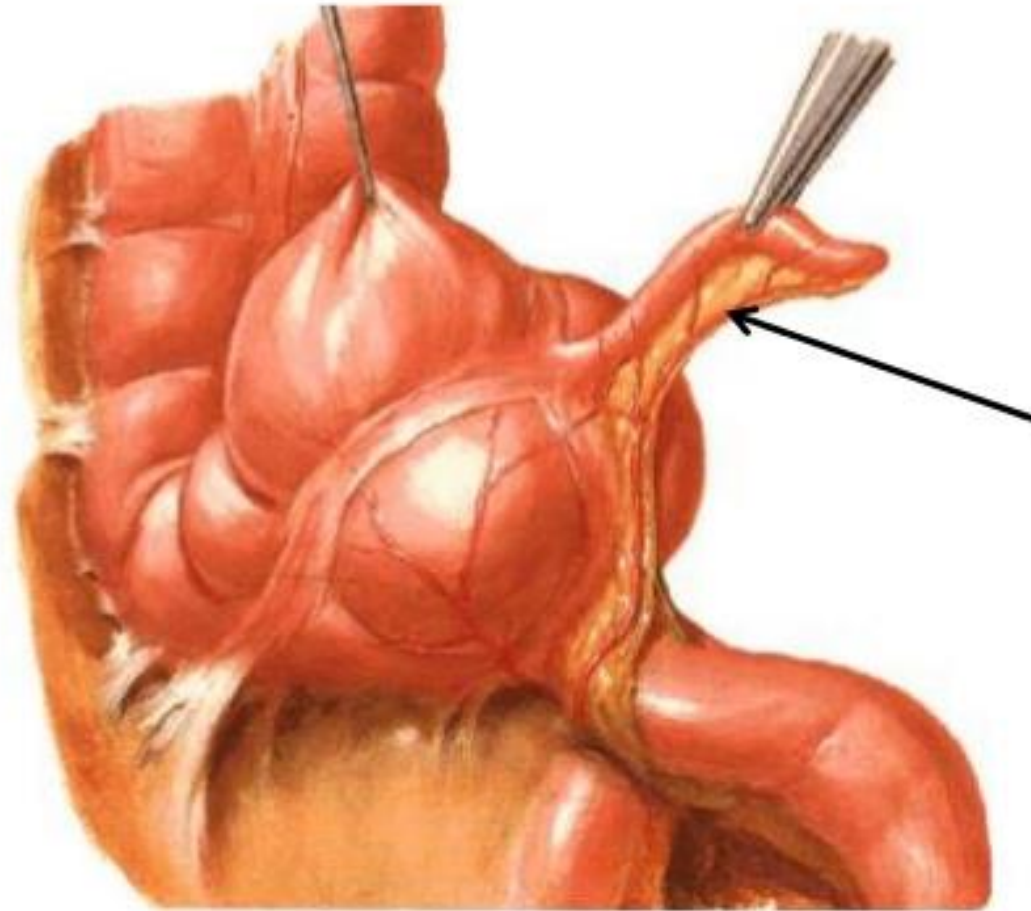
Large Intestine /
Colon:



Transverse mesocolon

Sigmoid mesocolon

Mesoappendix

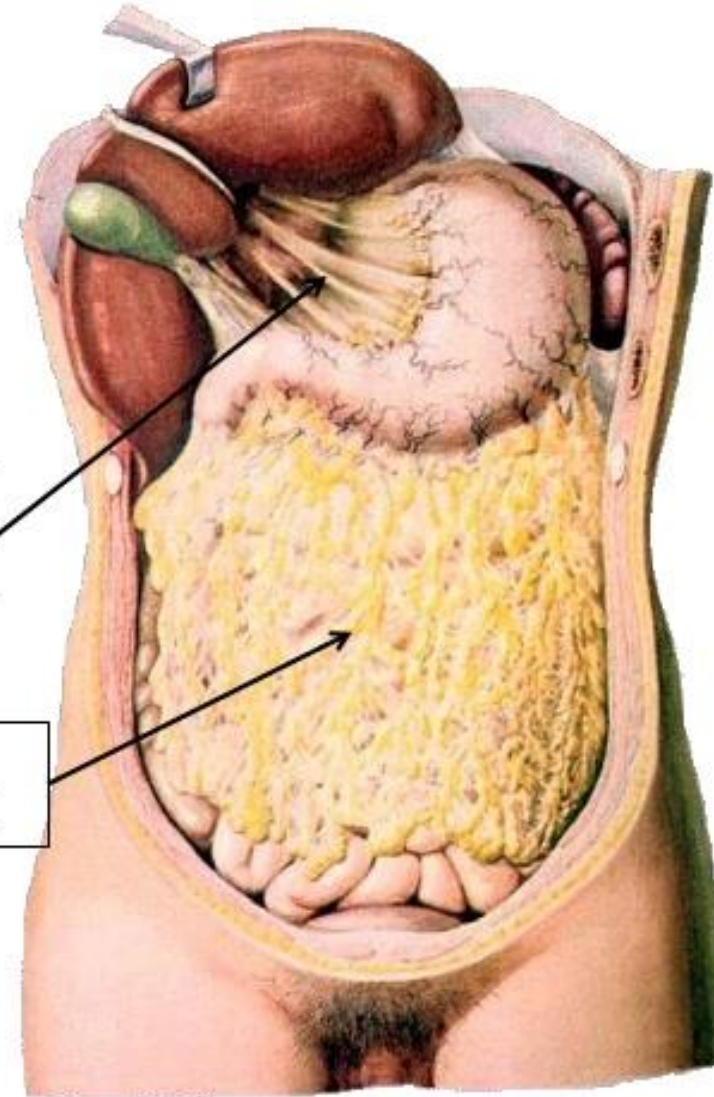


Omenta

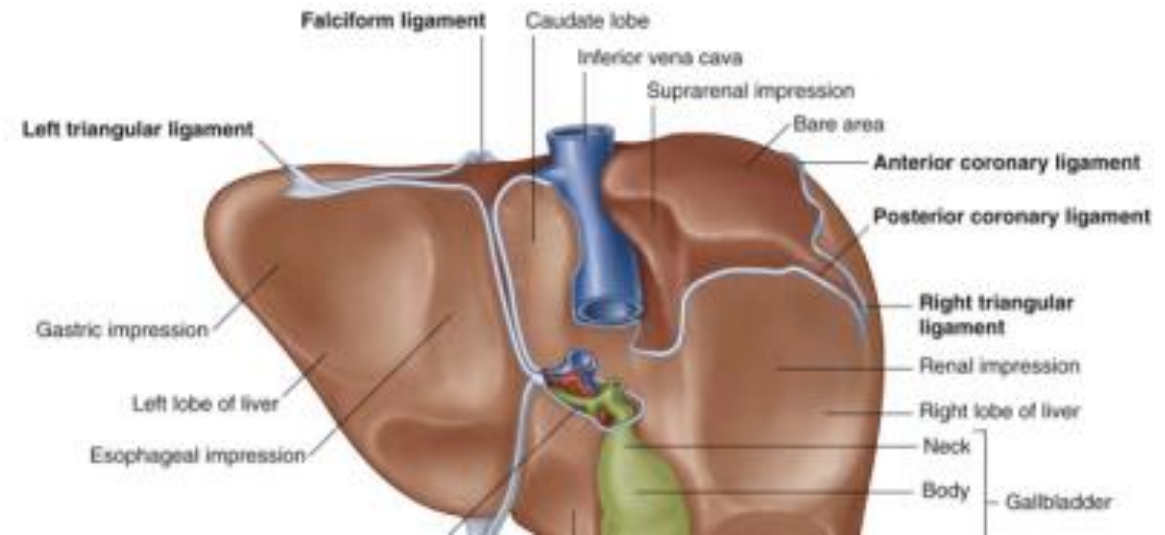
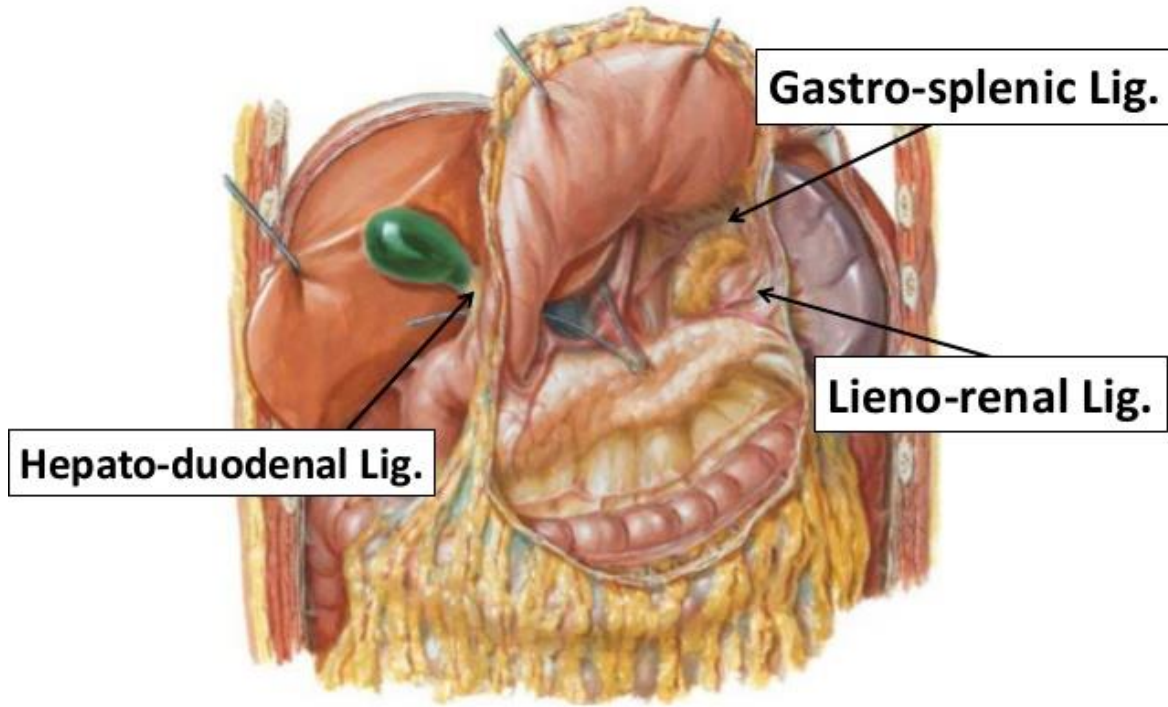
Fold of peritoneum that connect the stomach with another viscera

Lesser omentum

Greater omentum



Ligaments

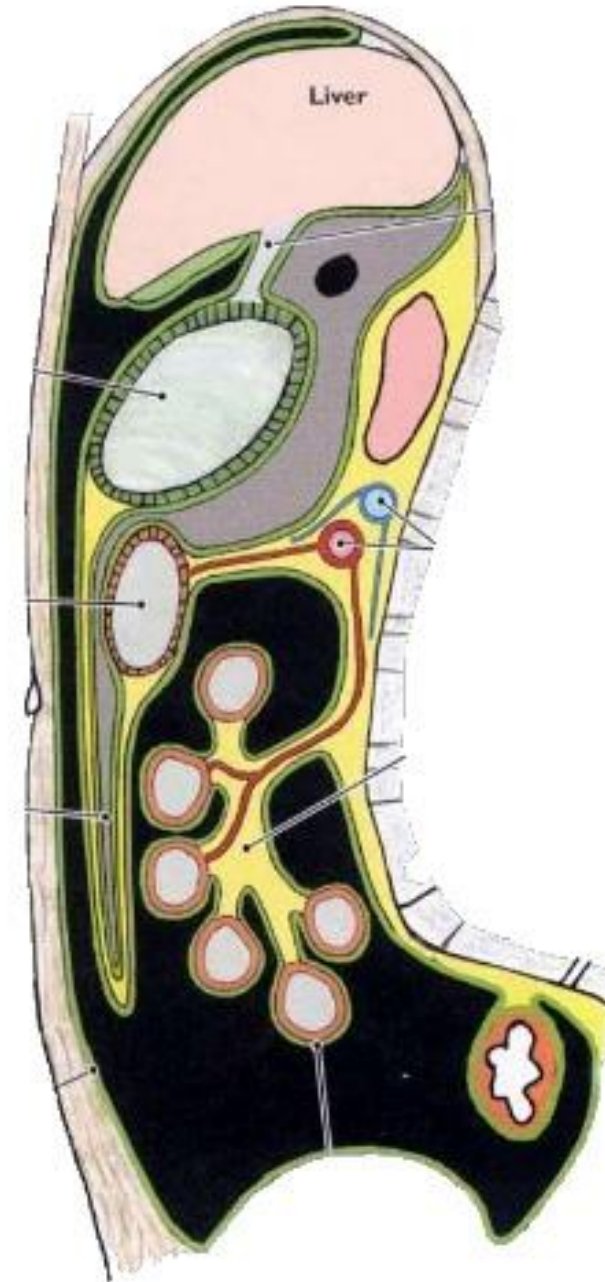


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<https://www.studyblue.com/notes/note/n/liver-pancreas-spleen/deck/21887610>

Peritoneal cavity:

- **Potential space** between the two layers of peritoneum.
- Filled with **very thin** film of **serous fluid** secreted by?
- In the male – closed sac, but
- In the female – open due to uterine tubes, the uterus, and the vagina



Peritoneal cavity:

Divided in to:

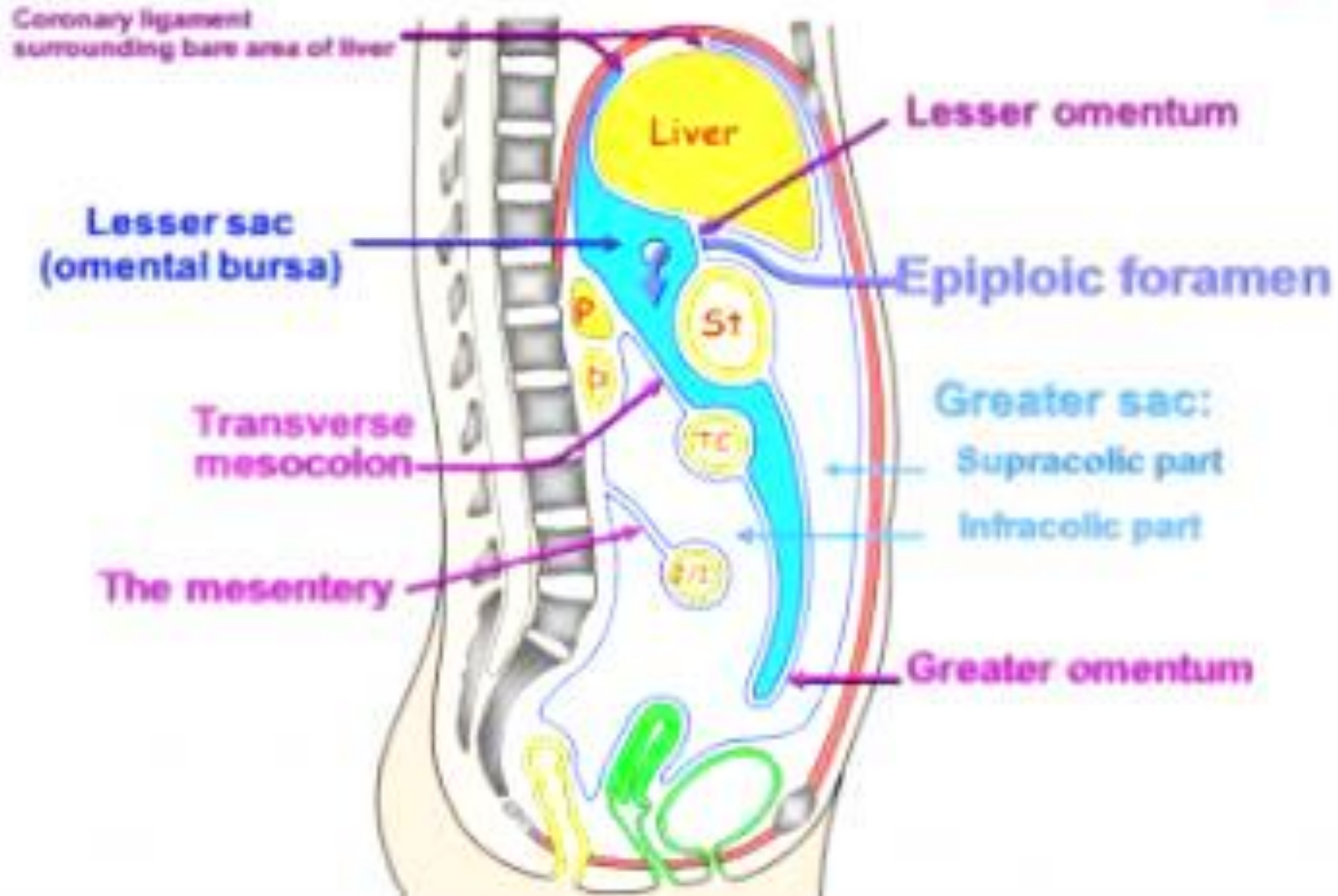
- Larger part – Greater Sac
- Smaller part – Lesser Sac

Communication

- **Epiploic Foramen / Foramen of Winslow**
- Small pockets or recesses – site for internal hernia

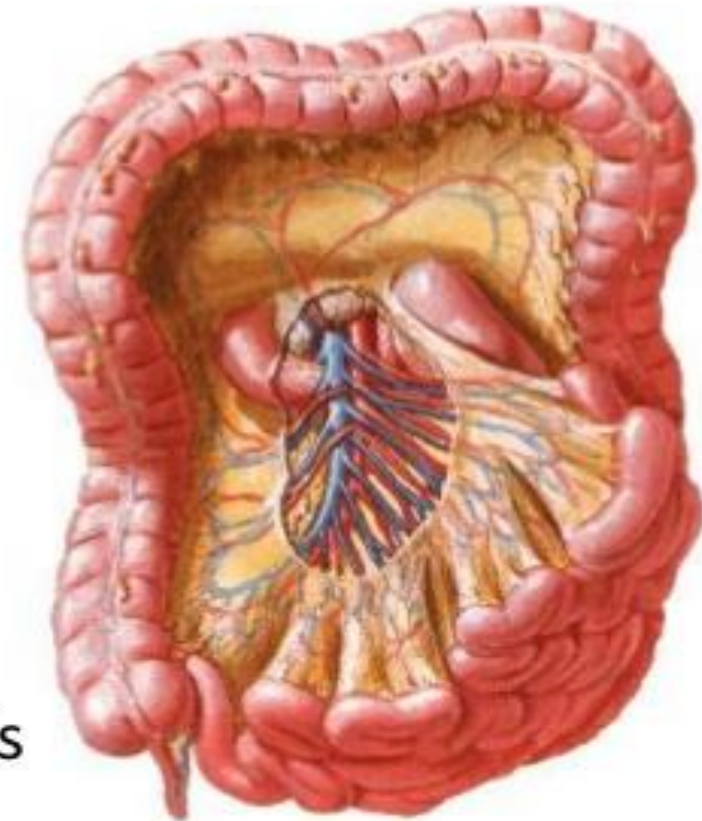


Subdivisions of the Peritoneal Sac & Cavity



Functions of Peritoneum

- Movement of Viscera:
 - Provide slippery surface – permit free movements like Peristalsis, movements during respiration & Filling & evacuation of hollow viscera
- Protection of Viscera:
 - Phagocytic cells & lymphocytes
 - Greater omentum – move towards infection site & seal it
 - **Policeman of Abdomen**



Functions of Peritoneum

- Absorption and Dialysis:

- Mesothelium – semipermeable membrane
- Both secretive & absorptive
- Fluid injection
- Peritoneal dialysis

- Healing power and Adhesions:

- Mesothelial cells – Fibroblast
- Abnormal adhesion - obstruction

- Storage of Fat:

- Provide passage for nerves, vessels & lymphatics

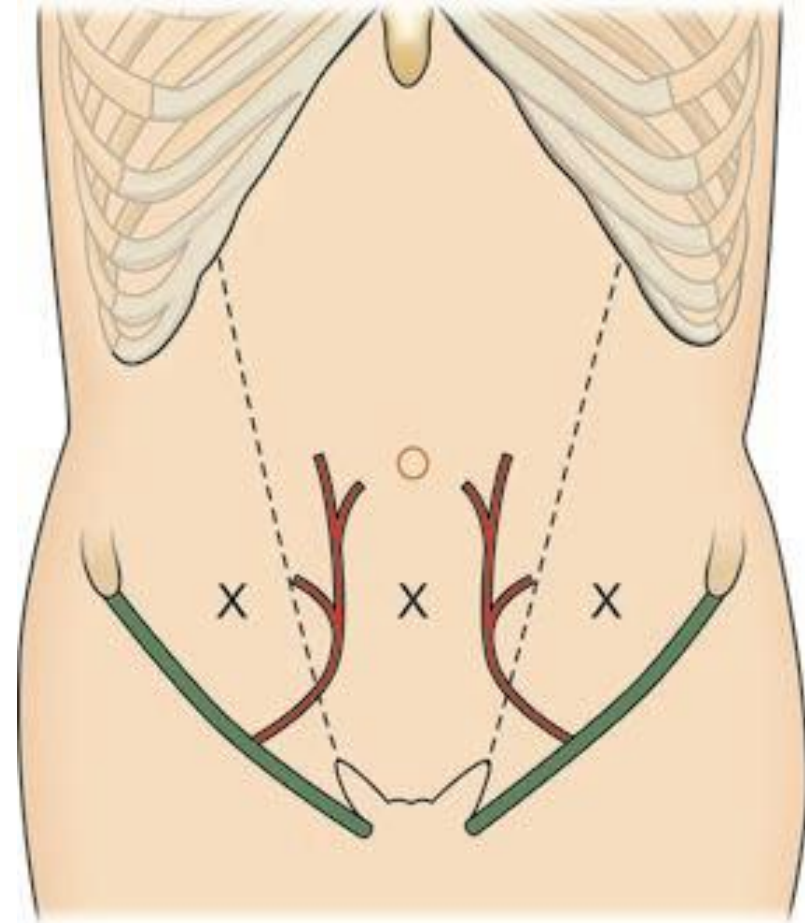


CLINICAL ANATOMY

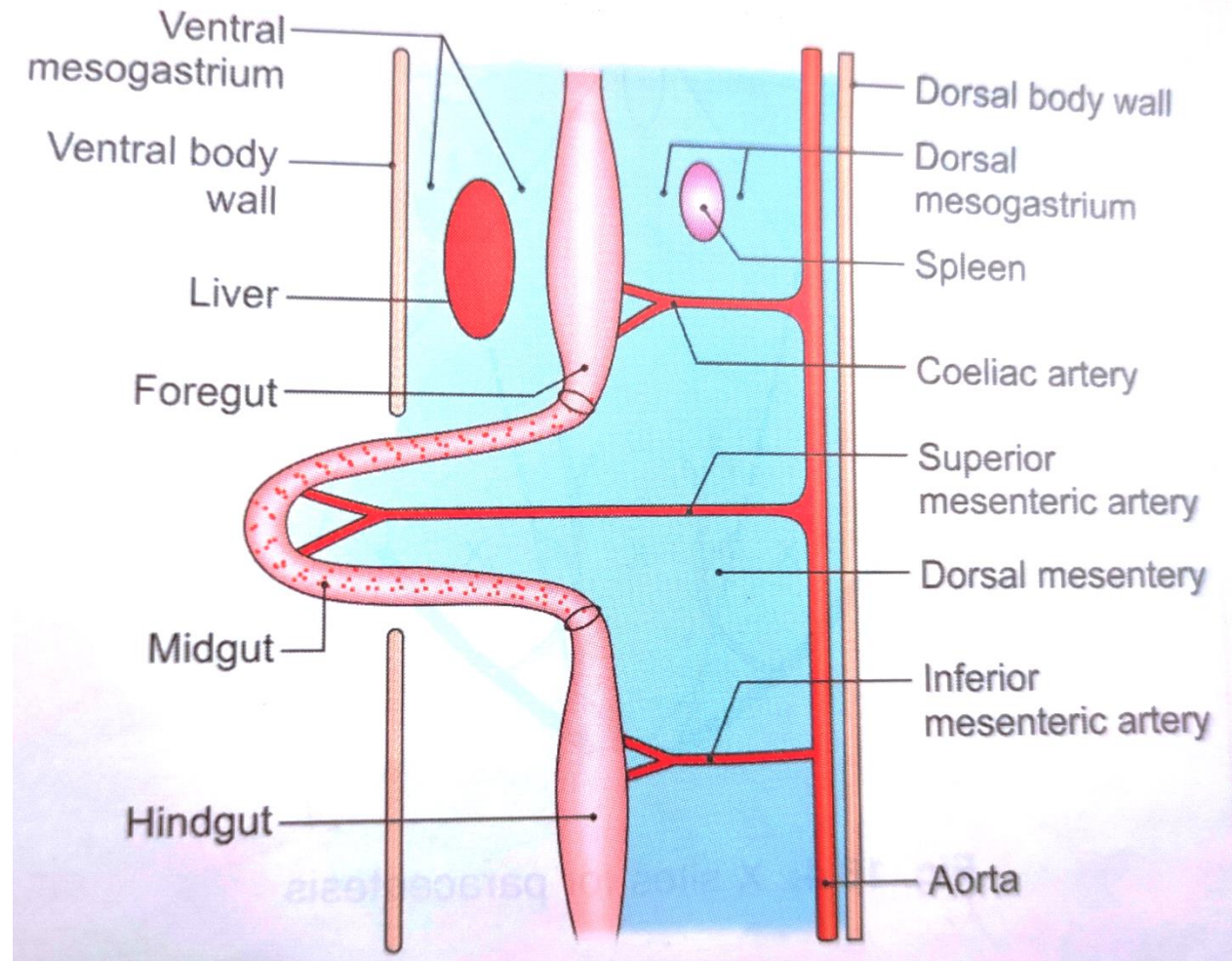
- **Ascites:** Collection of free fluid in the peritoneal cavity is known as *ascites*. **Common causes** of ascites are cirrhosis of the liver, tubercular peritonitis, congestive heart failure, and malignant infiltration of the peritoneum. Veins also get prominent in cirrhosis of liver.
- **Peritonitis**
- **Pneumoperitoneum**
- **Laparoscopy**
- **Laparotomy**
- Greater omentum limits the spread of infection by sealing off the site of ruptured vermiform appendix or gastric ulcer and tries to delay the onset of peritonitis. It is called “**abdominal policeman**”.
- **Peritoneal dialysis**

Paracentesis

X sites for paracentesis

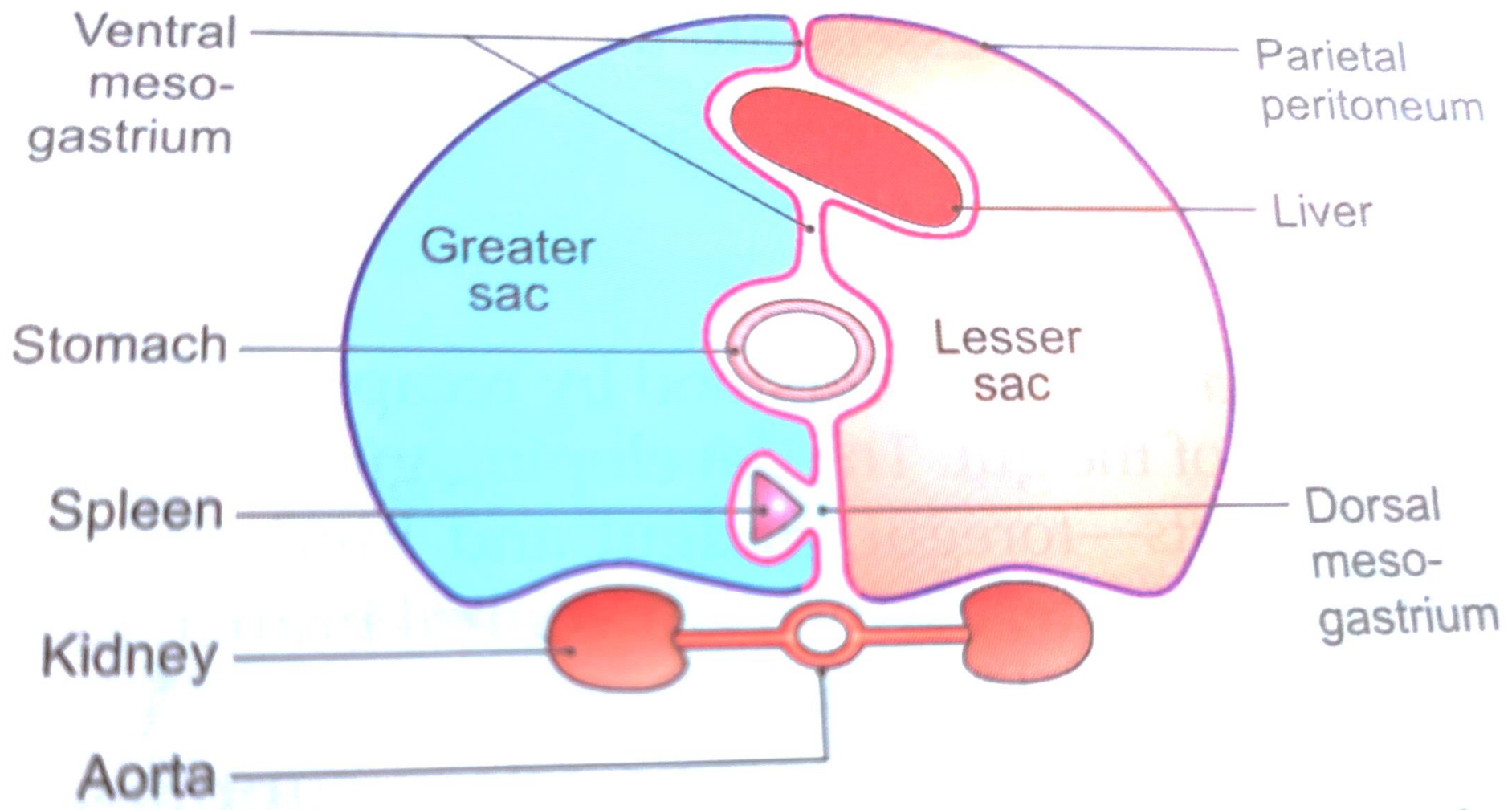


Peritoneal Folds



Derivatives of the different parts of gut

FOREGUT	MIDGUT	HINDGUT
Esophagus Stomach Duodenum (1st and 2nd parts) Liver Pancreas Biliary apparatus Gallbladder	Duodenum (2nd, 3rd, 4th parts) Jejunum Ileum Cecum (with Appendix) Ascending colon Transverse colon (proximal 2/3)	Transverse colon (distal 1/3) Descending colon Sigmoid colon Rectum (anal canal above pectinate line)



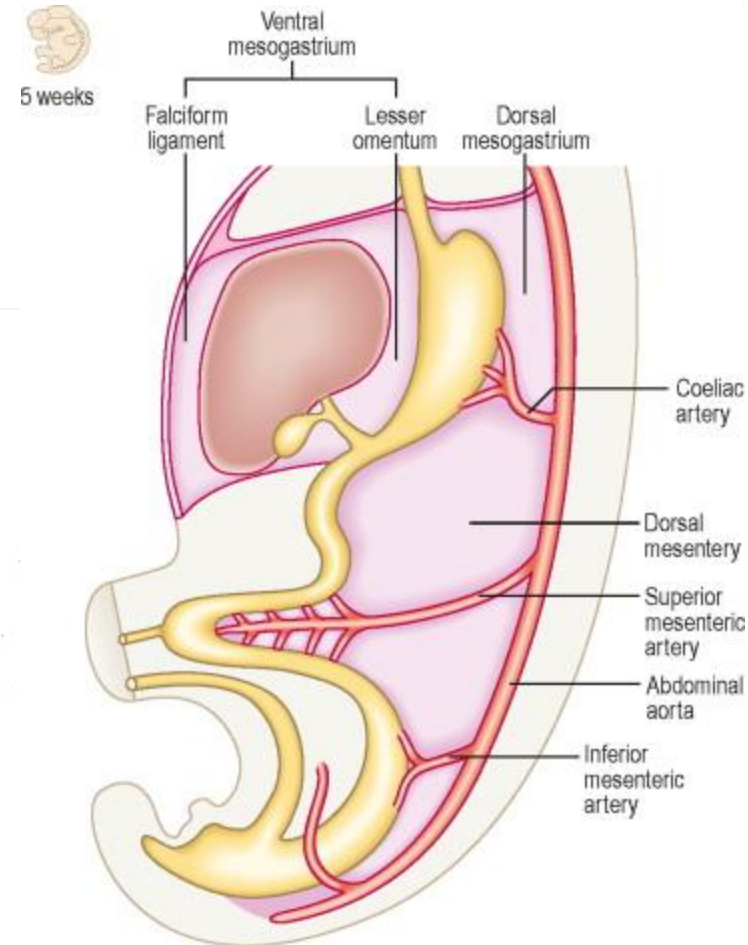
DERIVATIVES OF VENTRAL MESOGASTRIUM

Ventral mesogastrium:

Extends from the lesser curvature to septum transversum and anterior abdominal wall

Derivatives:

- Falciform ligament
 - Right and left triangular ligaments.
 - Superior and inferior layers of coronary ligaments
 - Lesser omentum
- DORSAL**



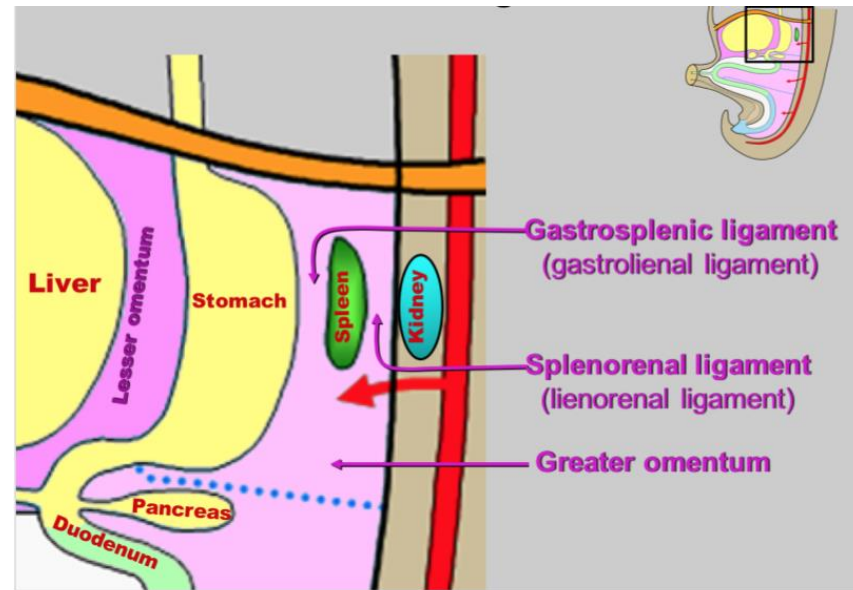
DERIVATIVES OF DORSAL MESOGASTRIUM

Dorsal mesogastrium:

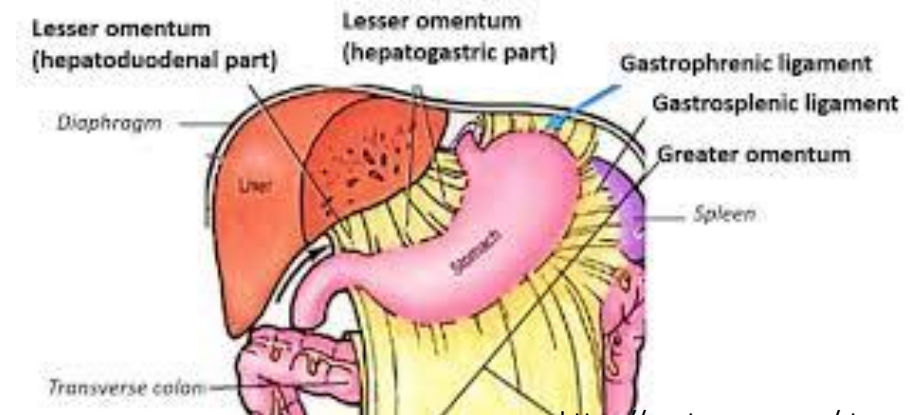
- Extends from the greater curvature to the posterior abdominal wall.

Derivatives:

- Spleen.
- Gastrosplenic omentum
- Lienorenal ligament.
- Greater omentum
 - Cranial most part forms the gastrophrenic ligament

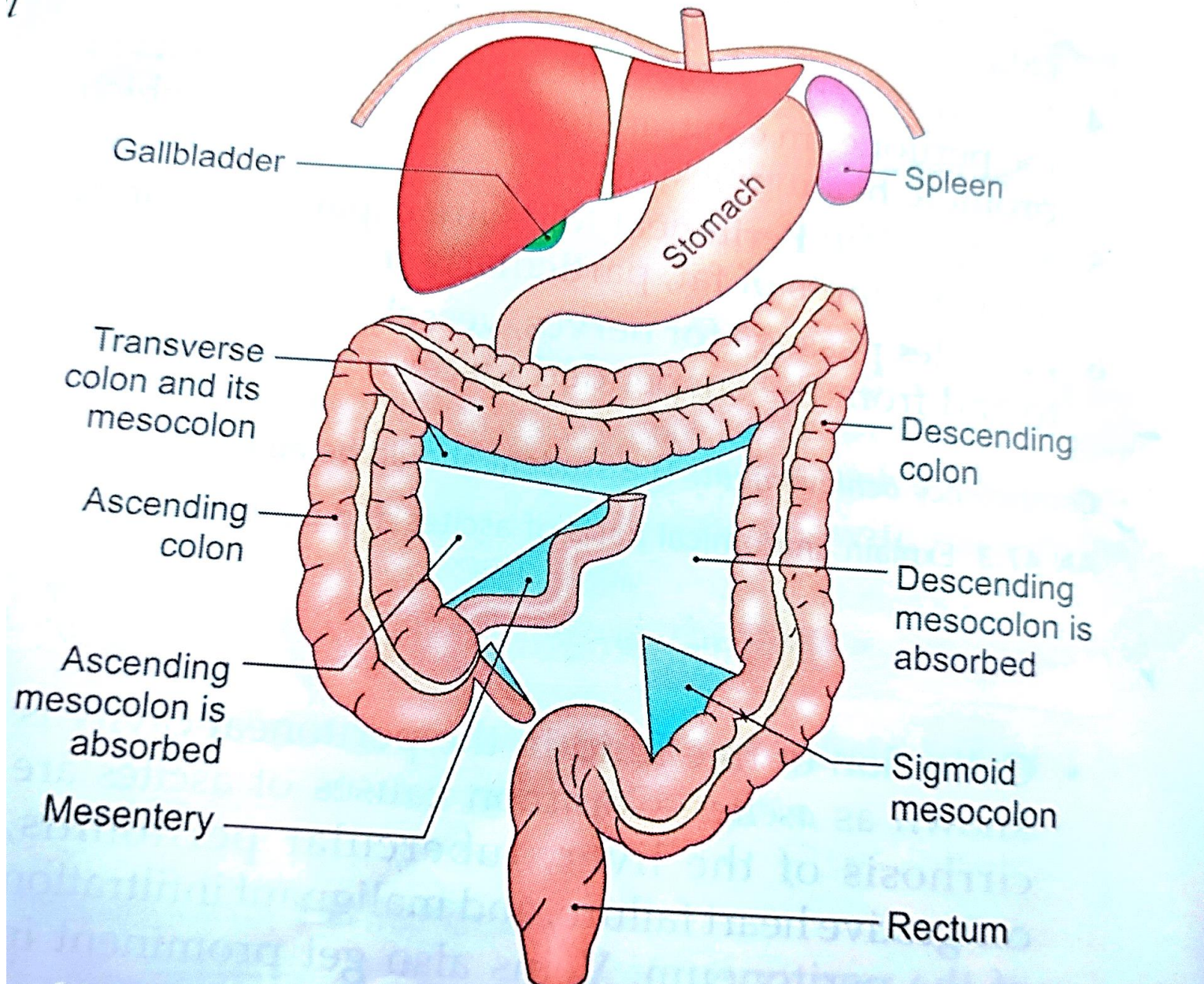


[https://www.memorangapp.com/flashcards/84729/Abdominal+Wall+and+Peritoneal+Sac+\(Lecture+%231](https://www.memorangapp.com/flashcards/84729/Abdominal+Wall+and+Peritoneal+Sac+(Lecture+%231)



<https://anatomyqa.com/stomach-anatomy/>

1



Greater Omentum

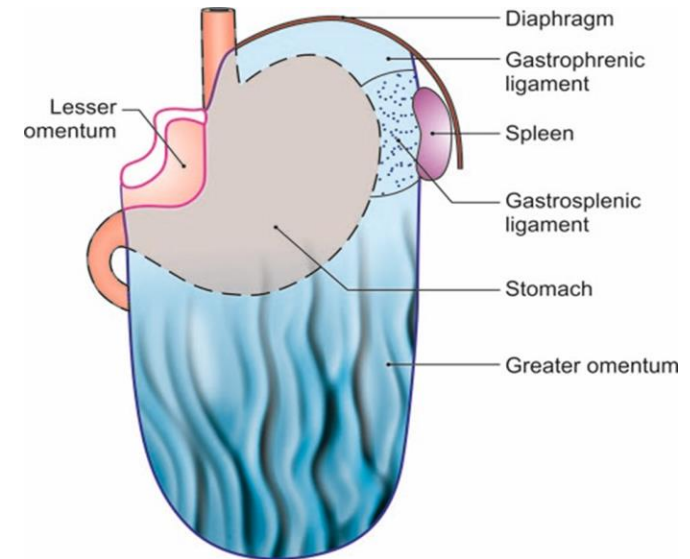
- The greater omentum (Latin apron) is a large fold of peritoneum which hangs down from the greater curvature of the stomach like an apron and covers the loops of intestines to a varying extent.
- Made up of 4 layers.

Contents

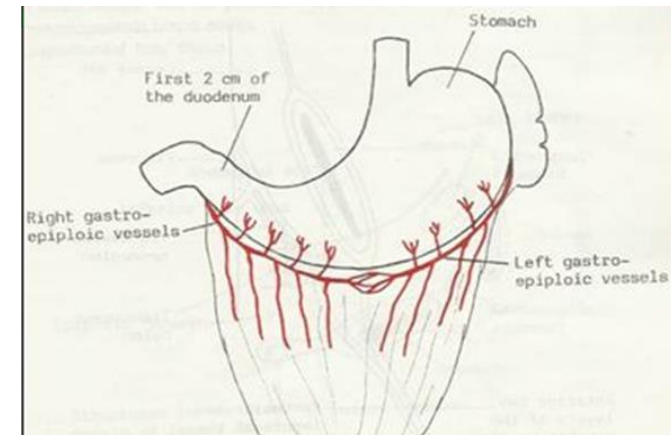
- Right and left gastroepiploic vessels
- Fat

Functions

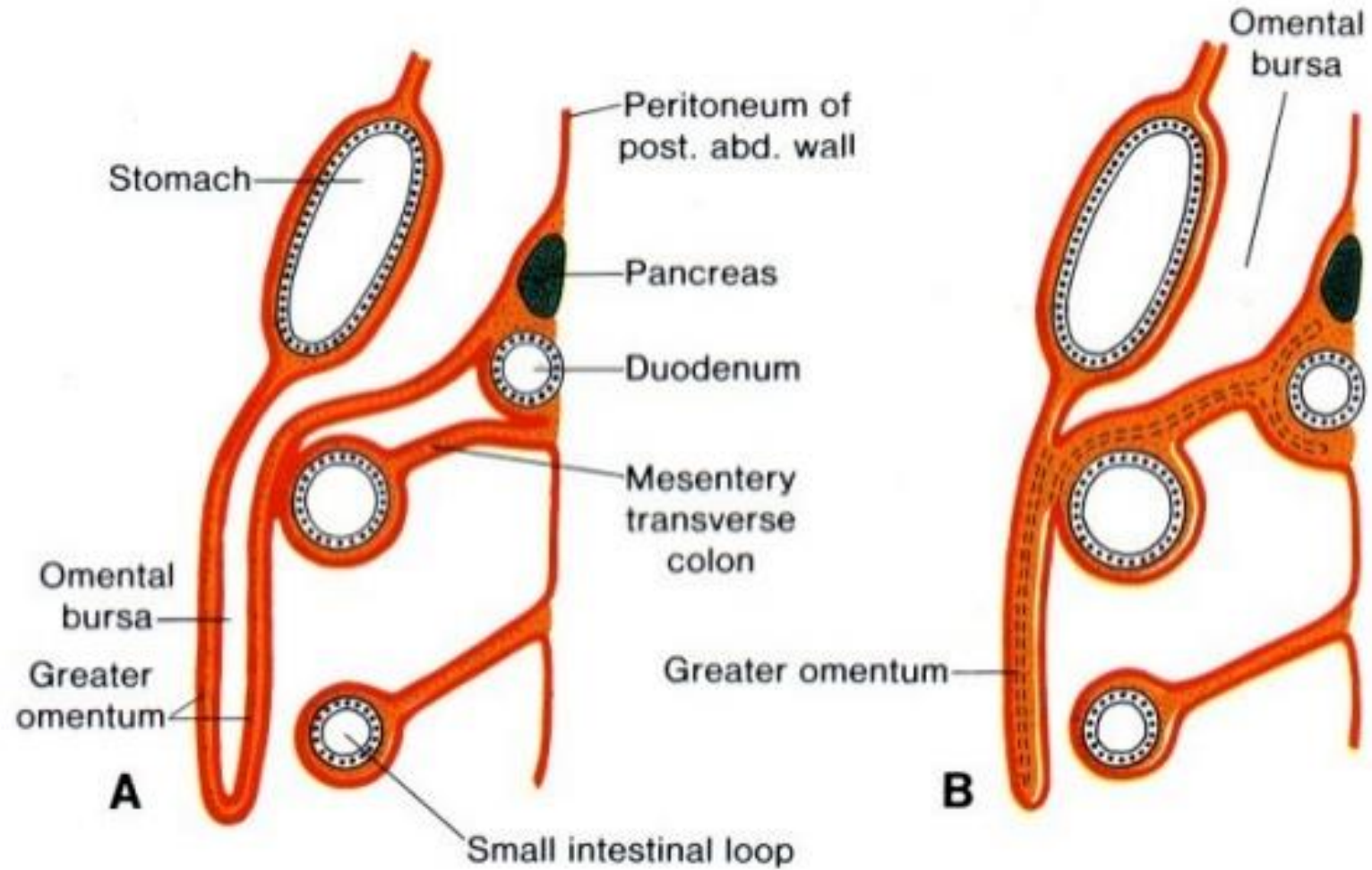
1. It is a storehouse of fat
2. It protects the peritoneal cavity against infection (collection of macrophages form **milky spots**)
3. Also known as “**policeman of the abdomen**”

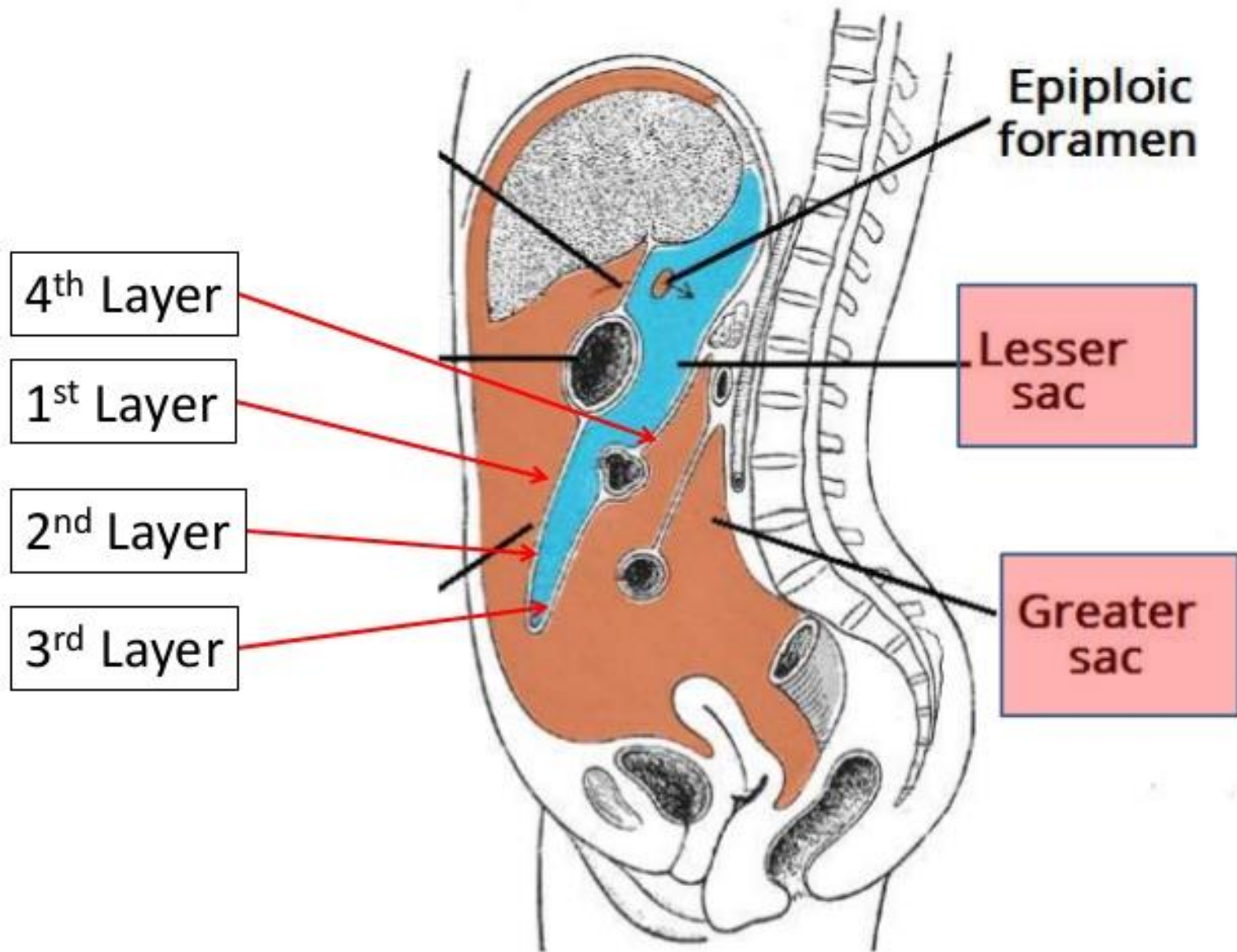


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Attachments





LESSER OMENTUM

This is a fold of peritoneum which extends from the lesser curvature of the stomach and the first 2 cm of the duodenum to the liver. The portion of the lesser omentum between the stomach and the liver is called the *hepatogastric ligament*, and the portion between the duodenum and the liver is called the *hepatoduodenal ligament*.

Attachments:

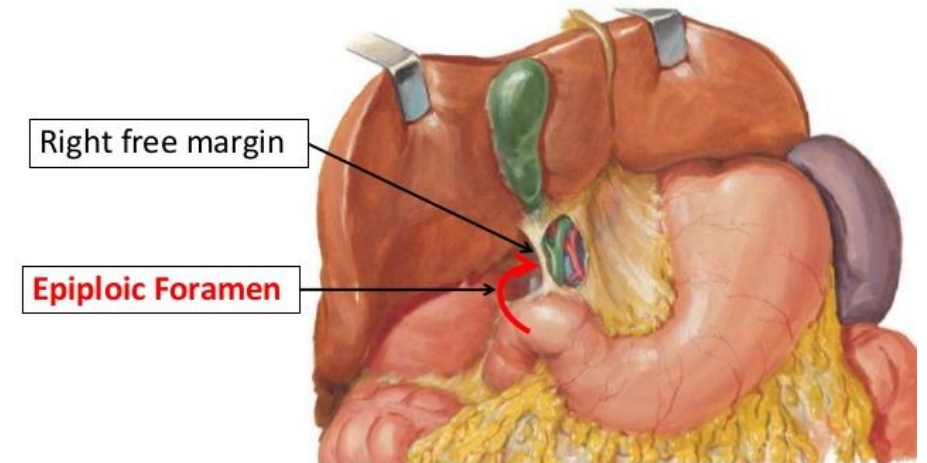
Inferiorly: lesser curvature of stomach and duodenum

Superiorly: liver in the form of an inverted 'L'

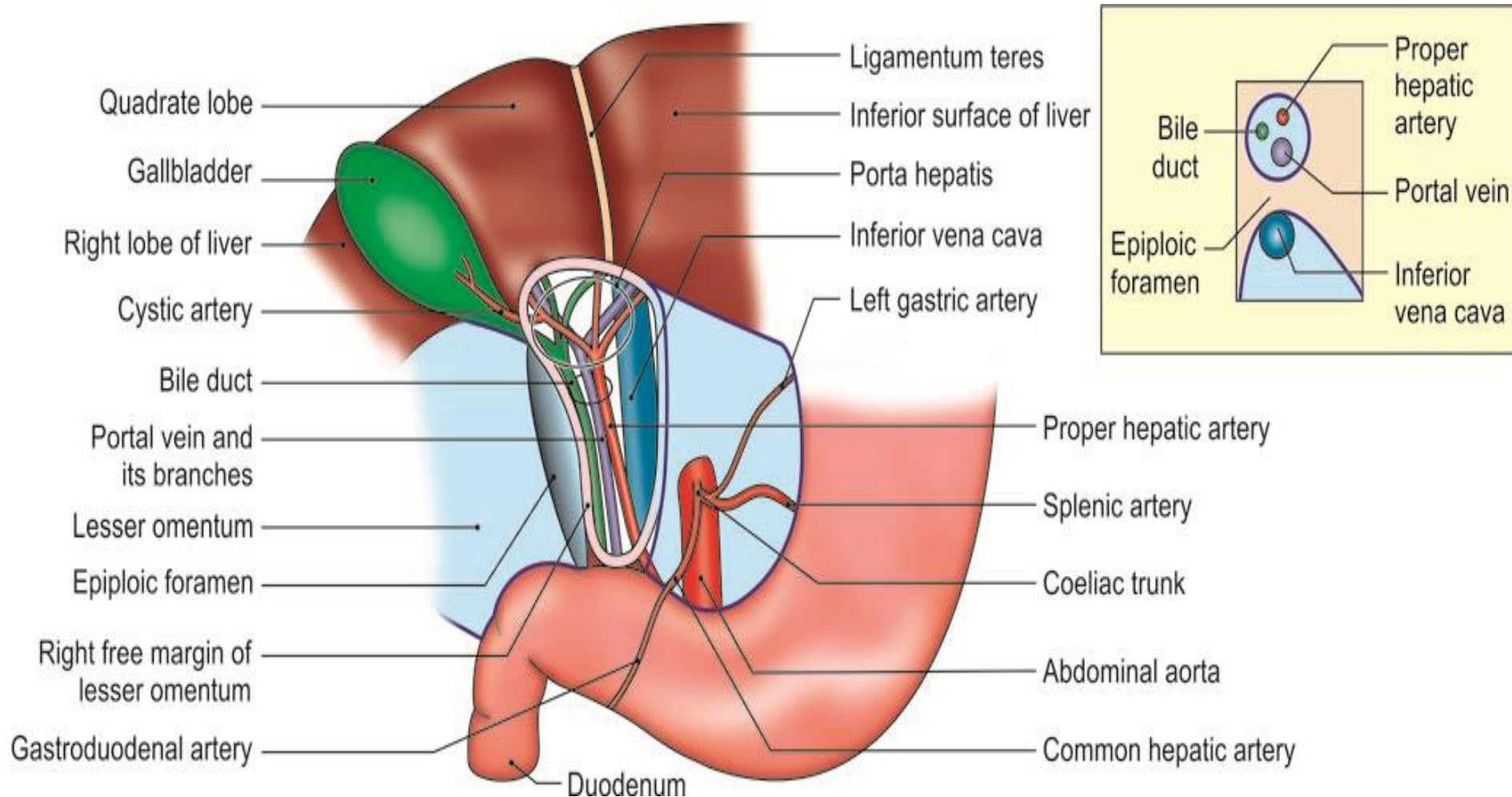
Contents:

The right free margin of the lesser omentum contains:

1. The proper hepatic artery
2. The portal vein
3. The bile duct
4. Lymph nodes & lymphatics
5. Hepatic plexus of nerves

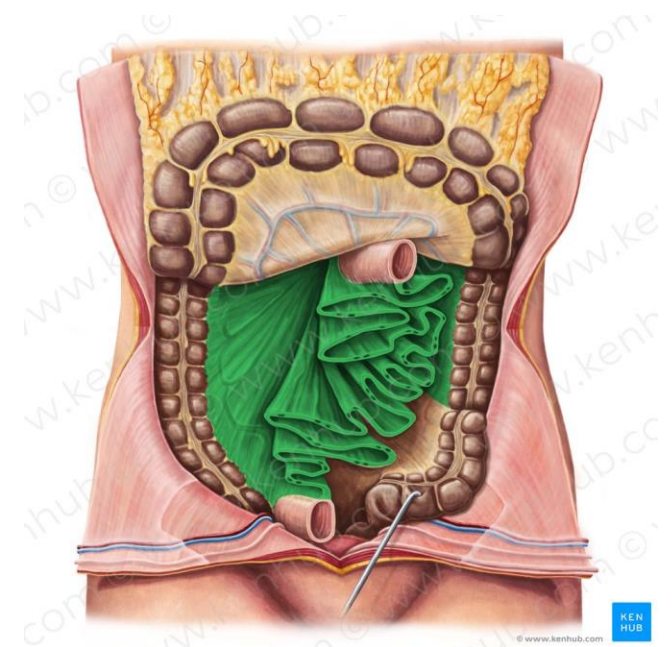


The attachments and contents of the lesser omentum. The liver has been turned upwards so that its posteroinferior surface can be seen



MESENTERY

The mesentery (Greek *fold of intestine*) of the small intestine or mesentery proper is a broad, fan-shaped fold of peritoneum which suspends the coils of jejunum and ileum from the posterior abdominal wall.

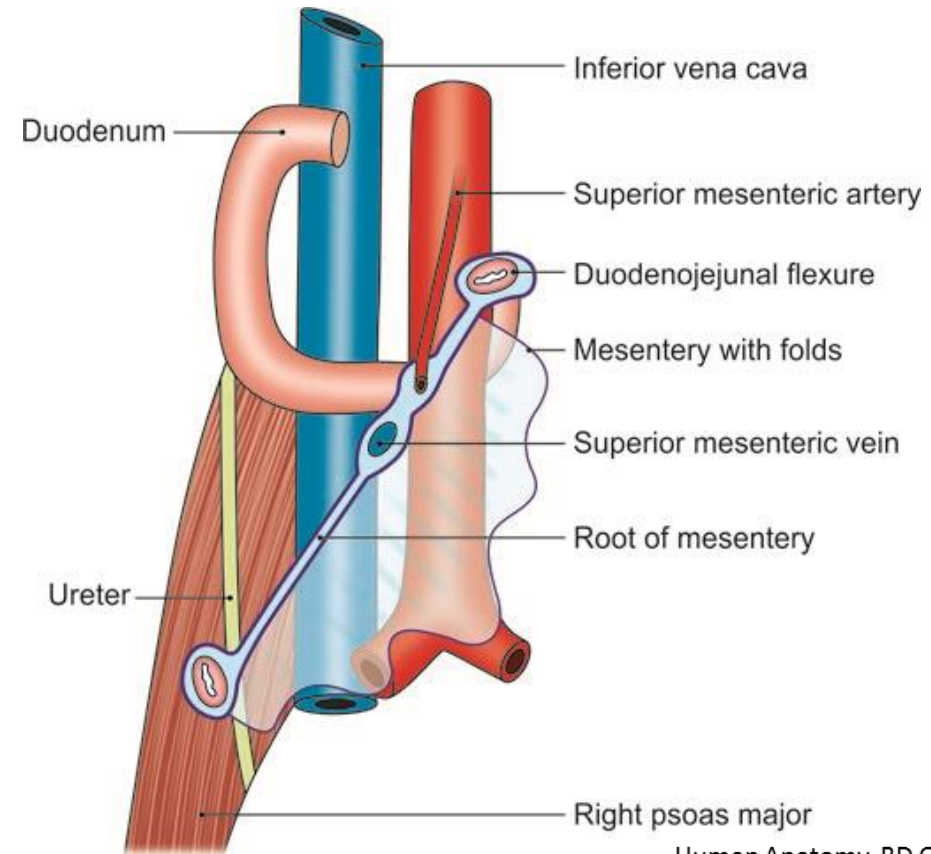


Borders

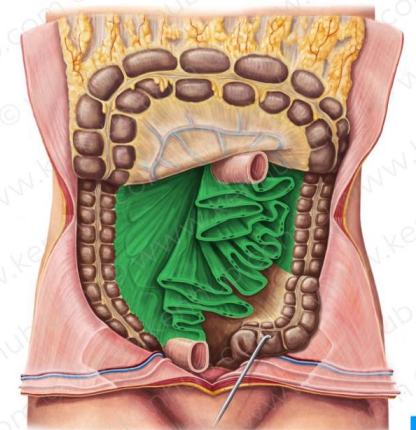
- The **attached border, or root** of the mesentery, is 15 cm long, it crosses the following structures:

1. The third part of the duodenum where the superior mesenteric vessels enter into it
2. The abdominal aorta
3. The inferior vena cava
4. The right ureter
5. The right psoas major

- **Free or intestinal border** is 6 metres long.
- The breadth of the mesentery is maximum and is about 20 cm in the central part, but gradually diminishes towards both the ends.

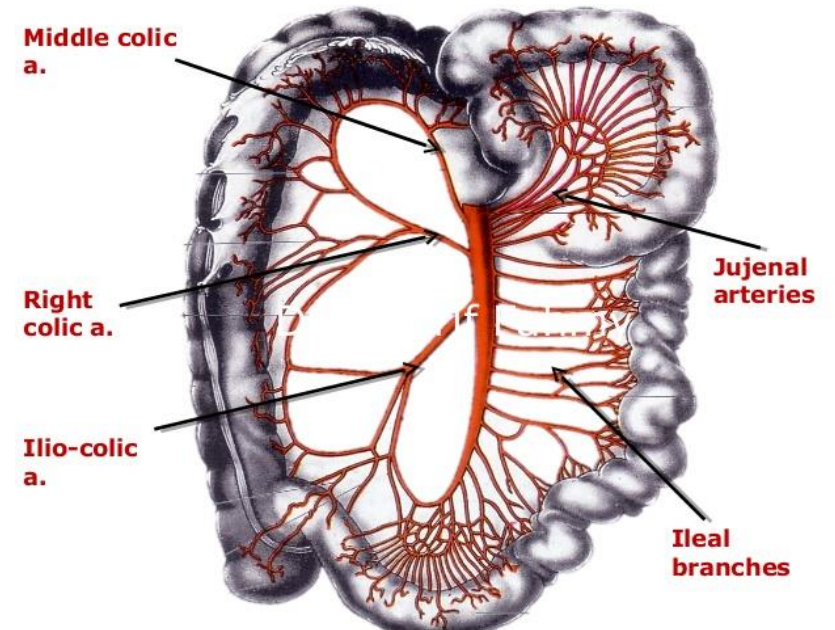


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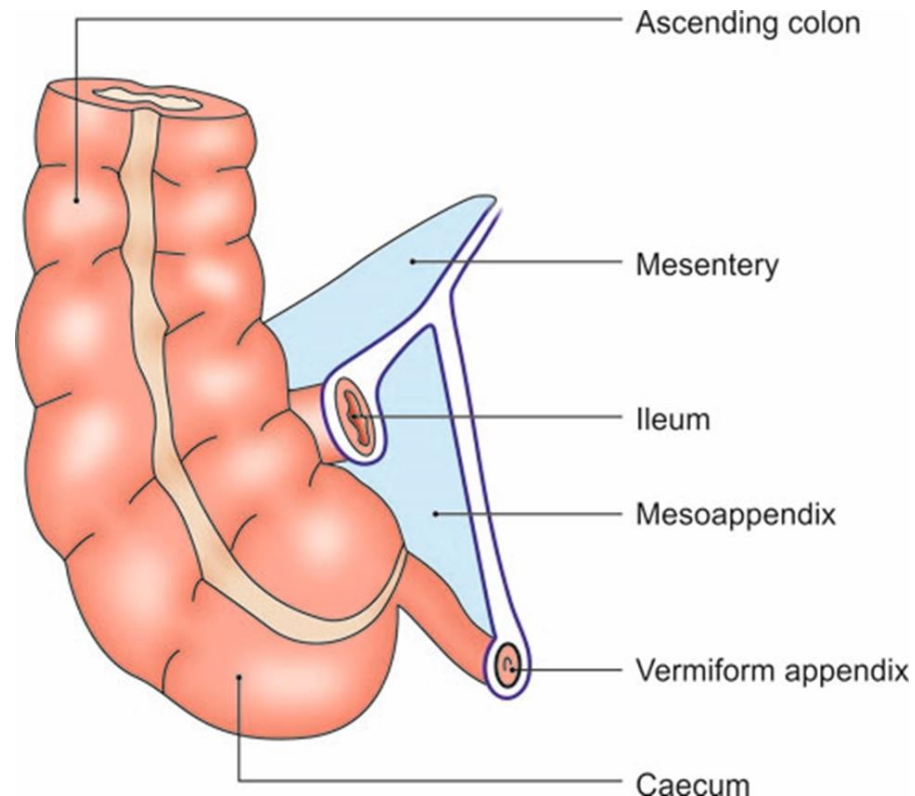
Contents

1. Jejunal and ileal branches of the superior mesenteric artery
2. Accompanying veins
3. Autonomic nerve plexuses
4. Lymphatics or lacteals
5. 100–200 lymph nodes
6. Connective tissue with fat



Mesoappendix

It is a small, triangular fold of peritoneum which suspends the vermiform appendix from the posterior surface of the lower end of the mesentery close to the ileocaecal junction.



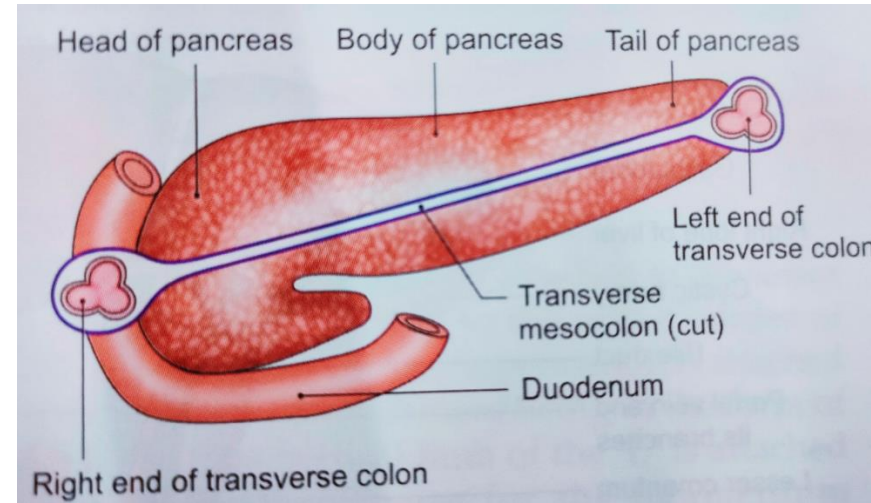
Transverse Mesocolon

Attachments

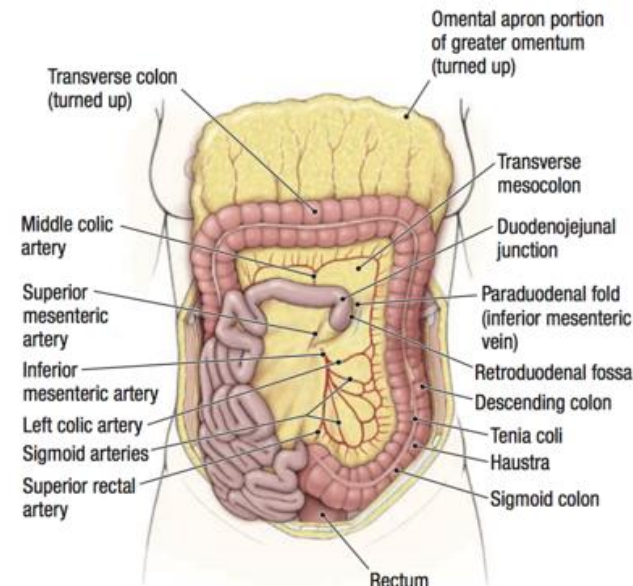
- The root of the transverse mesocolon is attached to the anterior surface of the head, and the anterior border of the body of the pancreas.

Contents

- It contains the middle colic vessels; the nerves, lymph nodes and lymphatics of the transverse colon.



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Sigmoid Mesocolon

Features

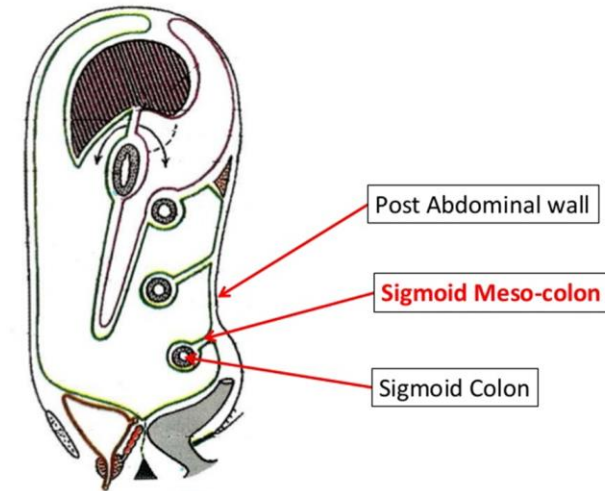
- This is a triangular (Greek 'S' shape) fold of peritoneum which suspends the sigmoid colon from the pelvic wall.

Attachments

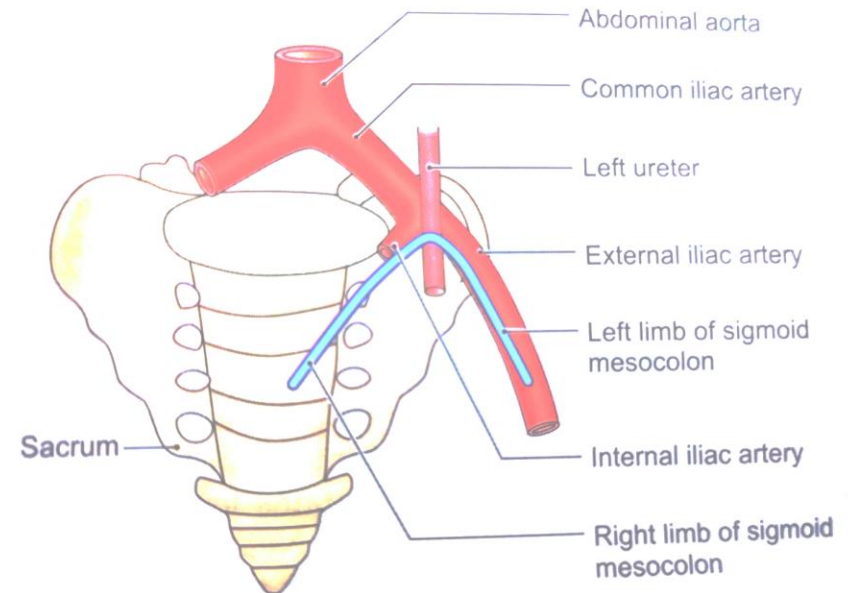
- The root is shaped like an inverted 'V'.

Contents

- The sigmoid vessels in the left limb; superior rectal vessels, nerves, lymph nodes and lymphatics in the right limb of the sigmoid colon.



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THANKYOU