MED437
KING SAUD UNIVERSITY

ANATOMY
Team 437

Revised By
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Abdullah AlOmar

Omentum

Lecture (7)

- **Important**
- **Doctors Notes**
- **Notes/Extra explanation**

{وَمَنْ يَتَوَكَّلْ عَلَى اللَّهِ فَهُوَ حَسْبُهُ}

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هذا العمل مبني بشكل أساسي على عمل دفعة ٤٣٦ مع المراجعة
والتدقيق وإضافة الملاحظات ولا يغني عن المصدر الأساسي للمذاكرة

Objectives

At the end of the lecture, students should be able to:

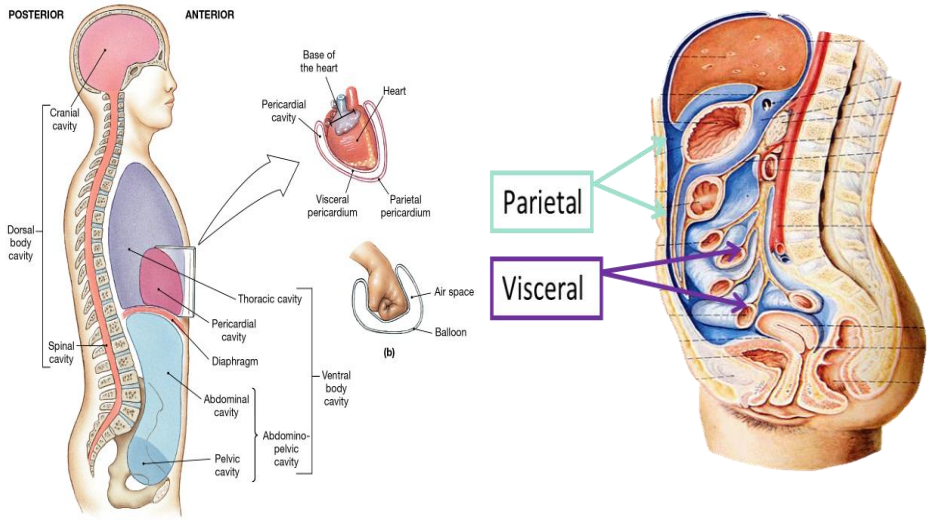
- ✓ Brief knowledge about **peritoneum** as a thin serous membrane and its main parts; **parietal** and **visceral**
- ✓ The **peritonial cavity** and its parts the greater sac and the lesser sac (Omental bursa)
- ✓ The **omentum**, as one of the peritonial folds
- ✓ The **greater omentum** ,its extends, and contents
- ✓ The **lesser omentum**, its boundaries, and contents
- ✓ The **Omental bursa**, its boundaries
- ✓ The **Epiploic foramen**, its boundaries
- ✓ **Mesentery** of the small intestine & **ligaments** of the liver
- ✓ Nerve supply of the **peritoneum** & **Clinical points**

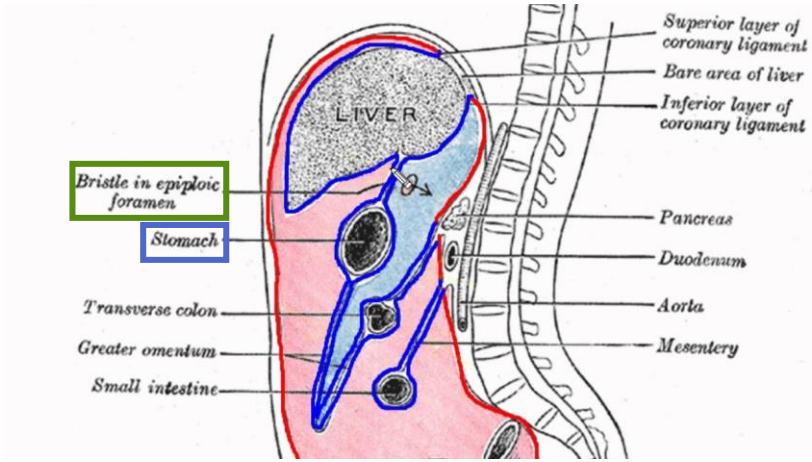
The peritoneum

Highly recommended →

07:12

- is a thin **serous** membrane,
- Lining the wall of the abdominal (anterior and posterior) and pelvic cavities, (the **parietal** peritoneum) → above diaphragm
- Covering the existing organs, (the **visceral** peritoneum).
- The potential space between the two layers is the peritoneal cavity.
- The peritoneal cavity is the largest one in the body.
- Divisions of the peritoneal cavity :
- Greater sac; extends from **diaphragm** down to the **pelvis**.
- Lesser sac; lies behind the **stomach**.
- Both cavities are interconnected through the **epiploic foramen**.
- In **male** : the peritoneum is a closed sac .
- In **female** : the sac is not completely closed because it communicates with the exterior through the uterine tubes, uterus and vagina.

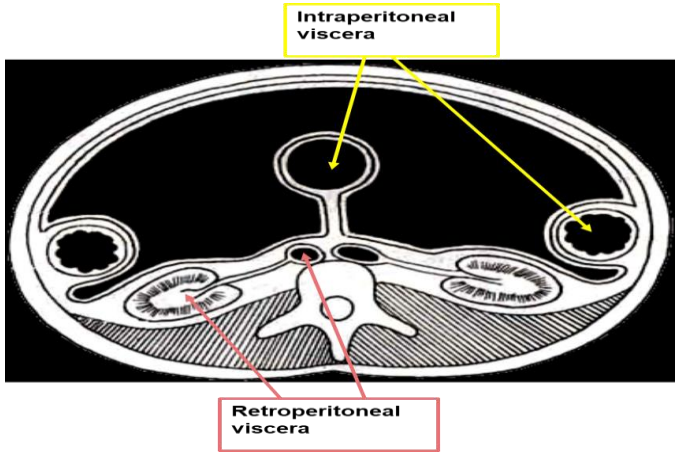




The peritoneum

According to the covering, organs are divided into:

- **Intraperitoneal** and **retroperitoneal**; describe the relationship between various organs and their peritoneal covering;



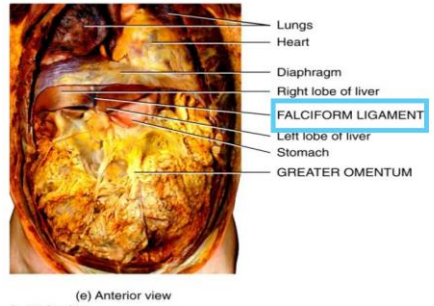
Intraperitoneal structure; which is nearly totally (entirely) covered by visceral peritoneum.

Retroperitoneal structure; lies **behind the peritoneum**, and partially covered by visceral peritoneum.

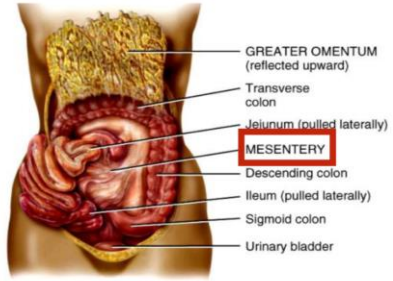
Folds of the Peritoneum

08:27

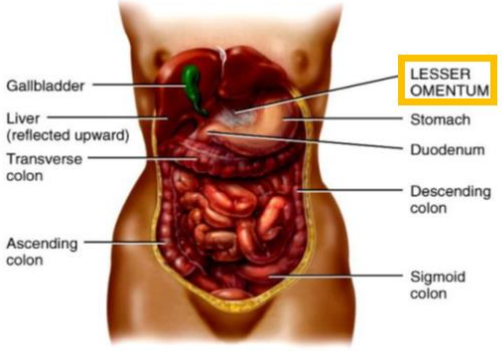
- The peritoneum is divided into (3 types of peritoneal folds):
  - Omenta (for stomach)
  - Mesenteries or Mesocolon (for intestine)
  - Ligaments (for other structures)
- The peritoneal ligaments, omenta, and mesenteries permit **blood**, **lymph vessels**, and **nerves** to reach the viscera and supply organs.



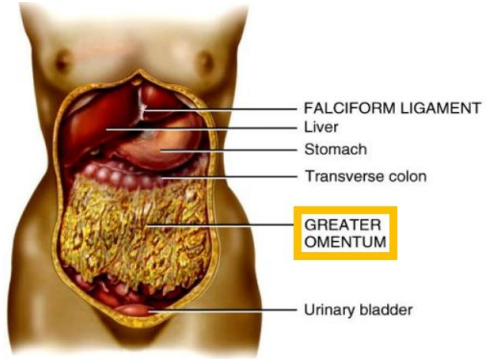
(e) Anterior view



(d) Anterior view (greater omentum lifted and small intestine reflected to right side)



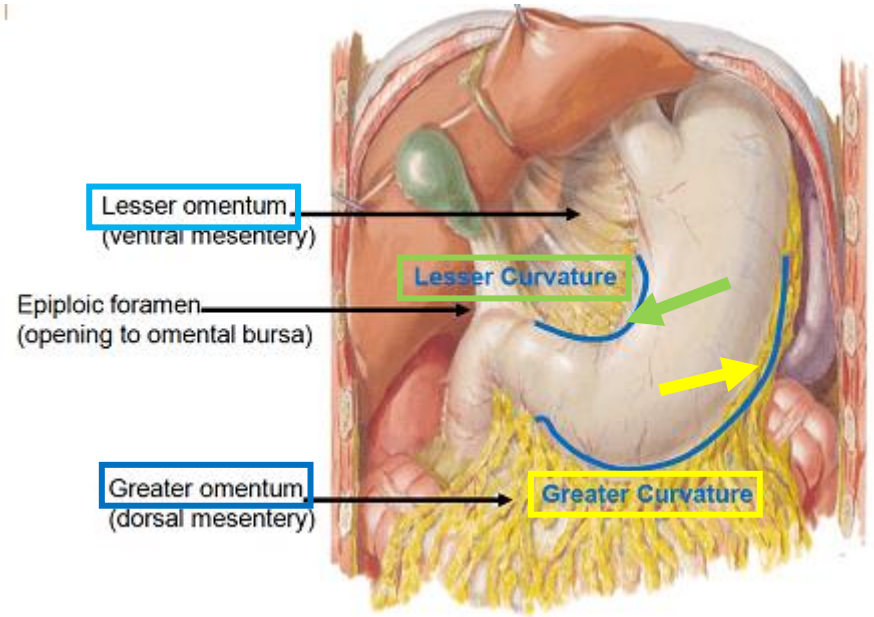
(c) Lesser omentum, anterior view (liver and gallbladder lifted)

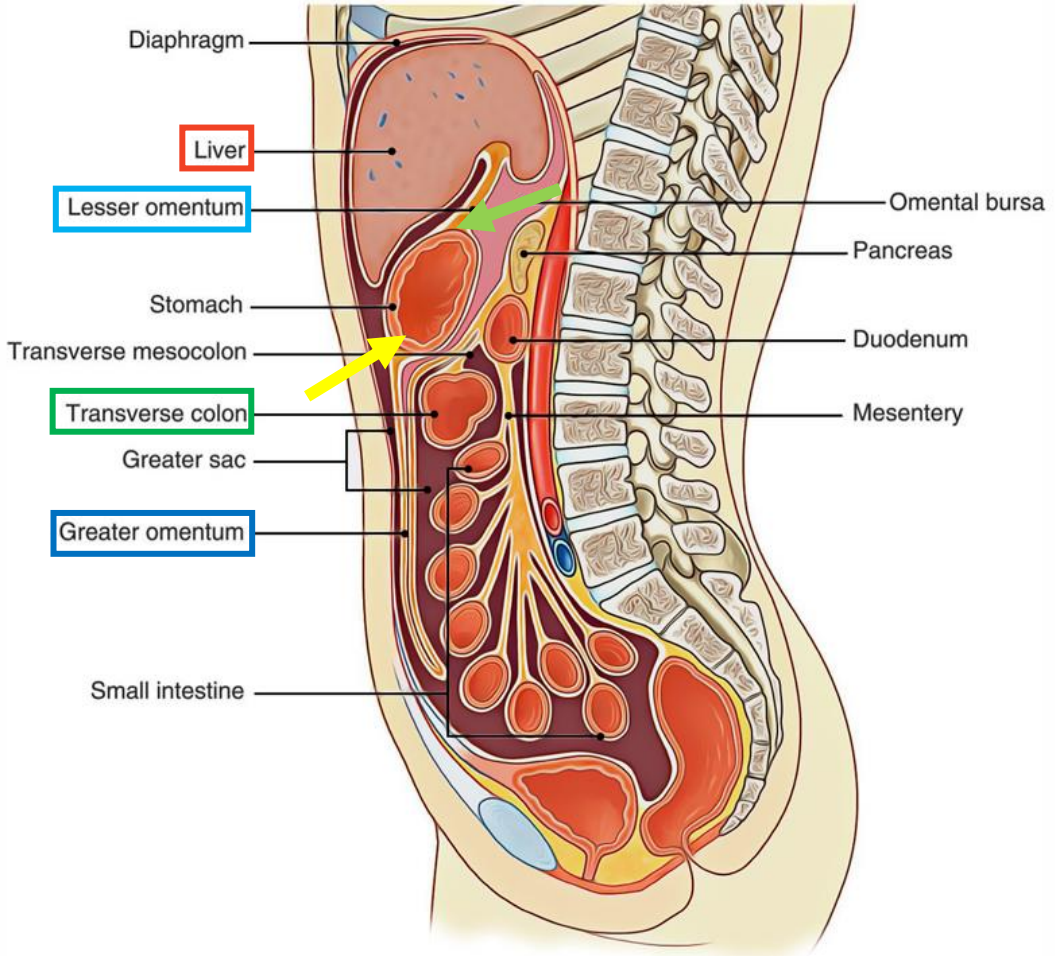


(b) Anterior view

1- Omenta

- Two layered fold of peritoneum connecting the stomach to another viscus.
- The **lesser omentum** attaches the lesser curve of the stomach to the liver.
- The **greater omentum** connects the greater curve of the stomach to the transverse colon.

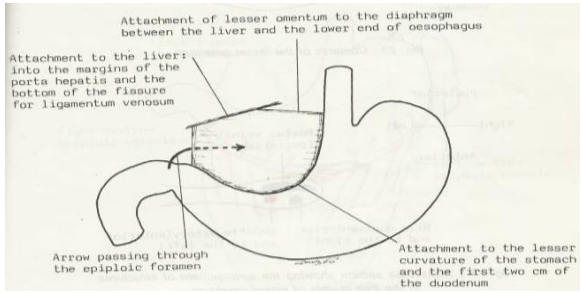


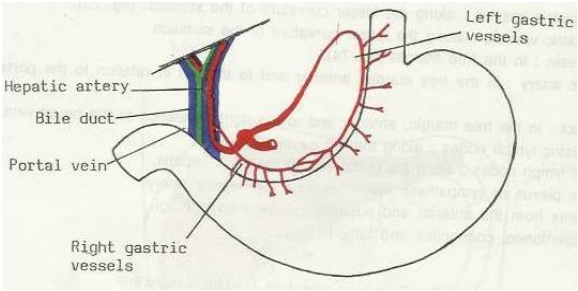


Greater omentum = كرش

Lesser omentum

- Extends between the **liver** and the **lesser curvature of the stomach** + **1st part of the duodenum**.
- It is continuous with the two layers of peritoneum which cover the stomach and 1st part of the duodenum.
- Ascend as a double fold to the porta hepatis of the liver, and fissure for ligamentum venosum.
- To the left of porta hepatis it is carried to the **diaphragm**.
- Its right border is a **free margin**; constitutes the anterior boundary of the epiploic foramen.





Contents between the two layers of the lesser omentum:

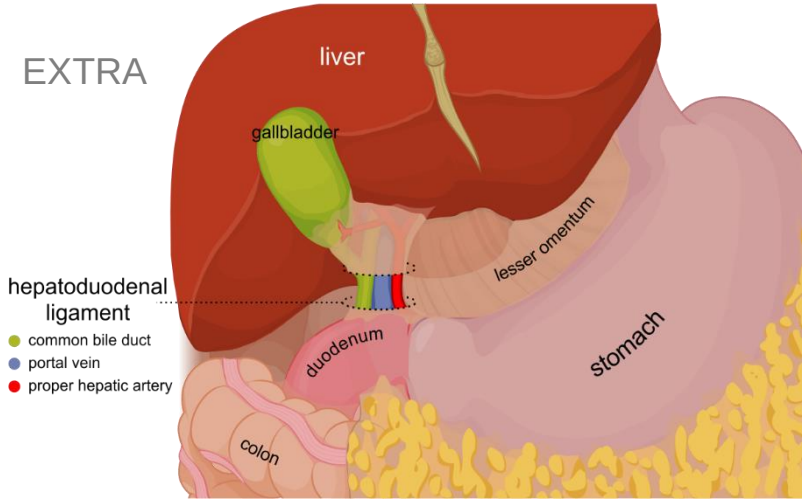
Close to **right free margin**:

1. hepatic artery
2. common bile duct
3. portal vein
4. Lymphatics
5. hepatic plexus of nerves

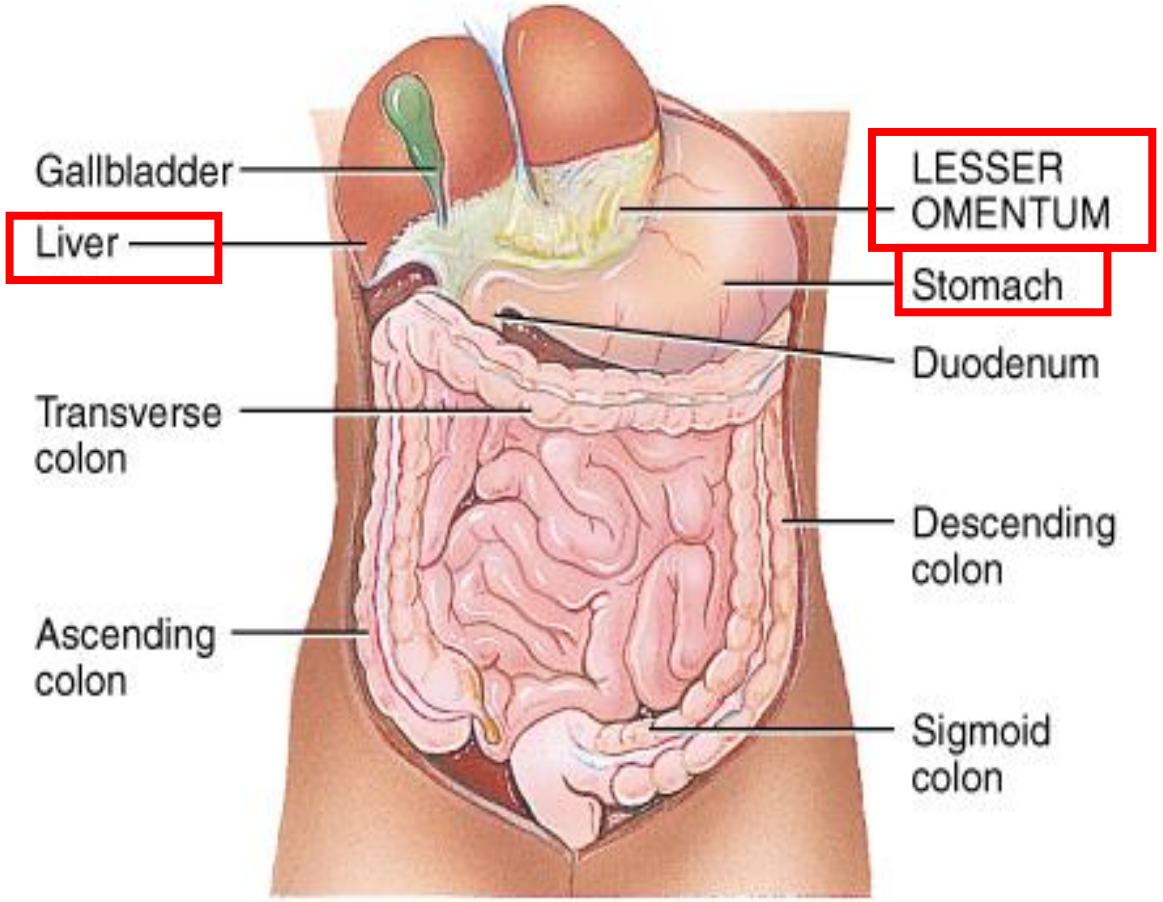
At the attachment to the **stomach** :

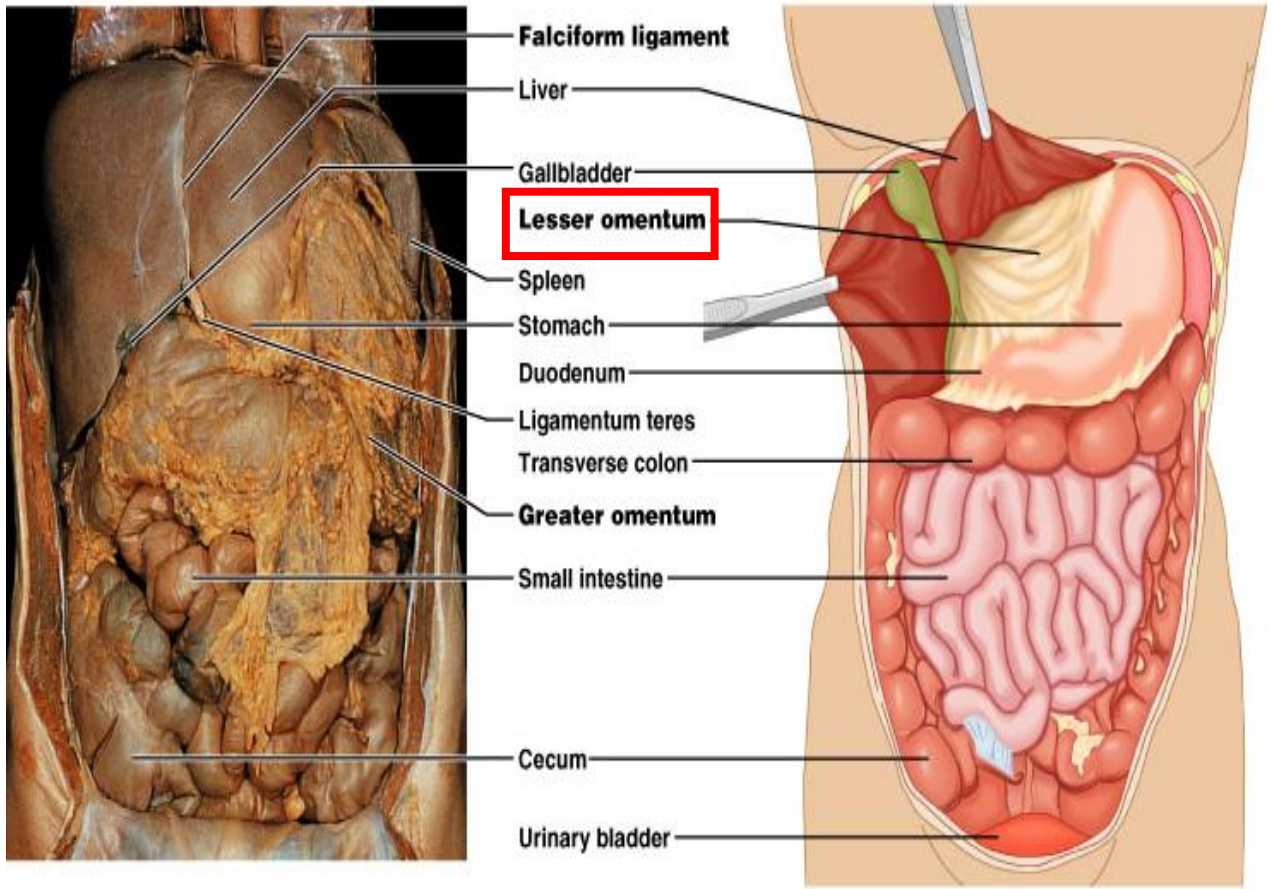
run the right and left gastric vessels.

EXTRA



Lesser omentum



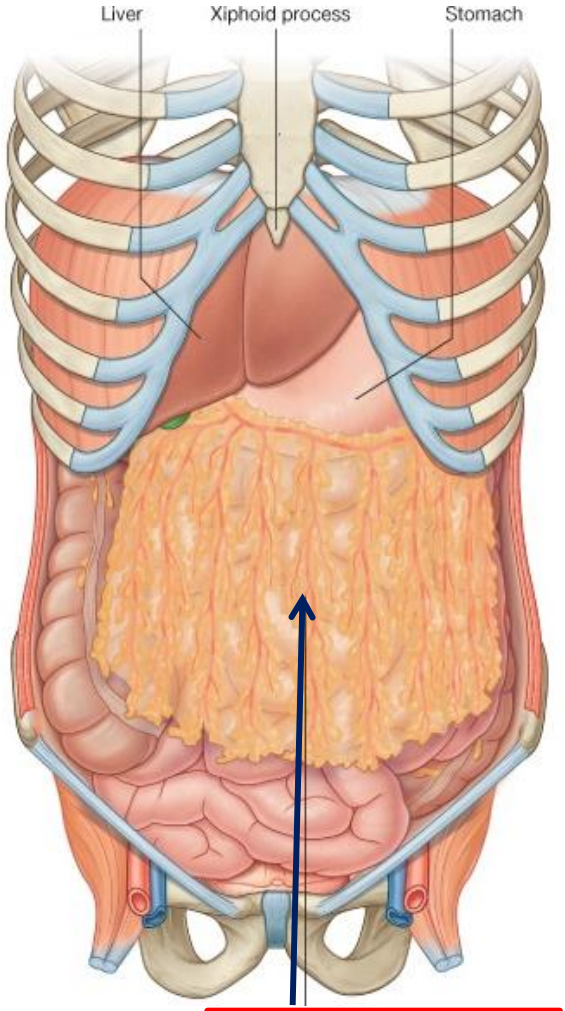


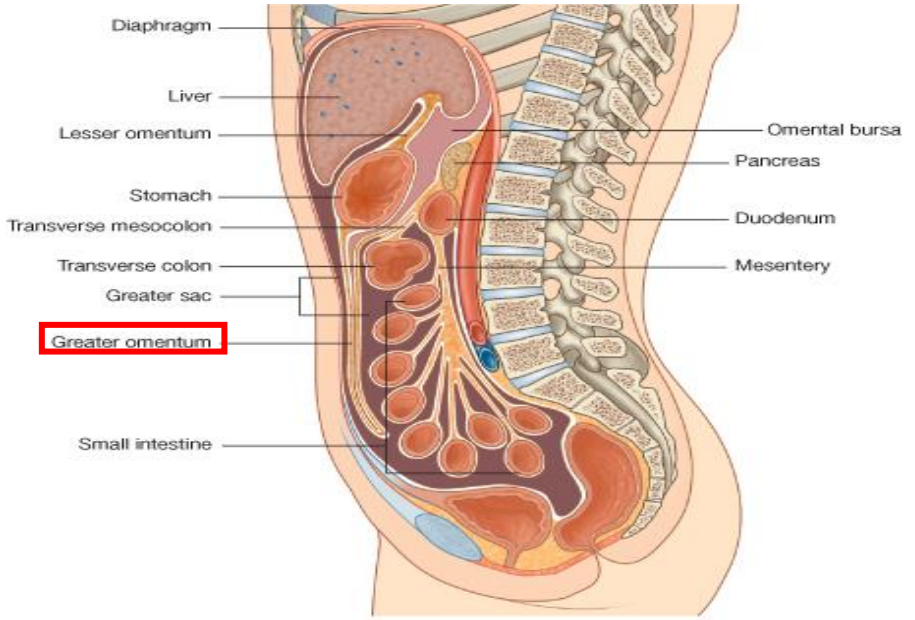
Greater omentum

Connect	**The greater curve of the stomach to the transverse colon.**	
Description and course	• The **largest** peritoneal fold. • cribriform appearance. • contains some adipose tissue. • It consists of a double sheet of peritoneum, folded on itself so that it is made up of **four layers** (anterior 2 layers + posterior 2 layers). • The two layers which descend from the greater curve of the stomach and commencement of the duodenum, pass downward in front of the small intestines (jejunum and ileum), then **turn upon themselves**, and ascend to the transverse colon, where they separate and enclose it.	
Borders	**Left**	**Right**
	continuous with the **gastrosplenic ligament**.	extends as far as the commencement (beginning) of the duodenum.
Content between the 2 layers	the **anastomosis** between the right and left gastroepiploic vessels. the right gastroepiploic is a branch of gastroduodenal artery, and the left gastroepiploic is a branch of splenic artery	

Greater omentum

Note that the posterior two layers of the greater omentum separate and cover the transvers colon and form what we call it (mesocolon) and continue to cover the pancreas anteriorly





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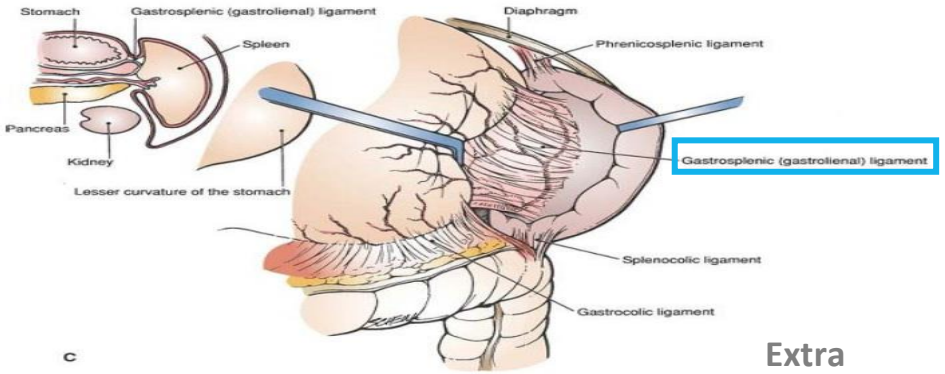
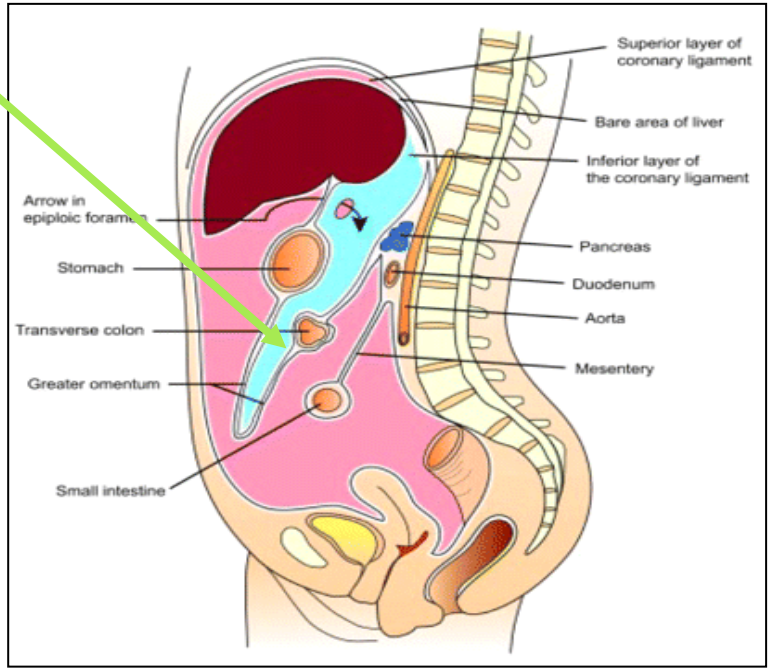
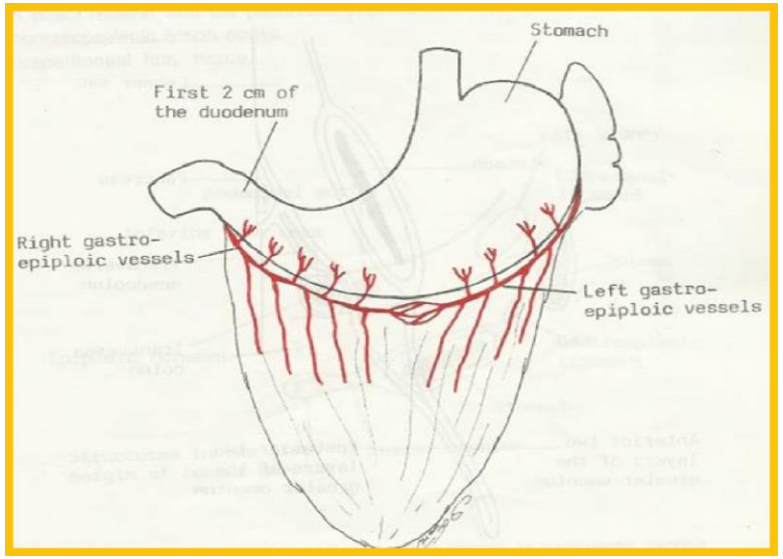


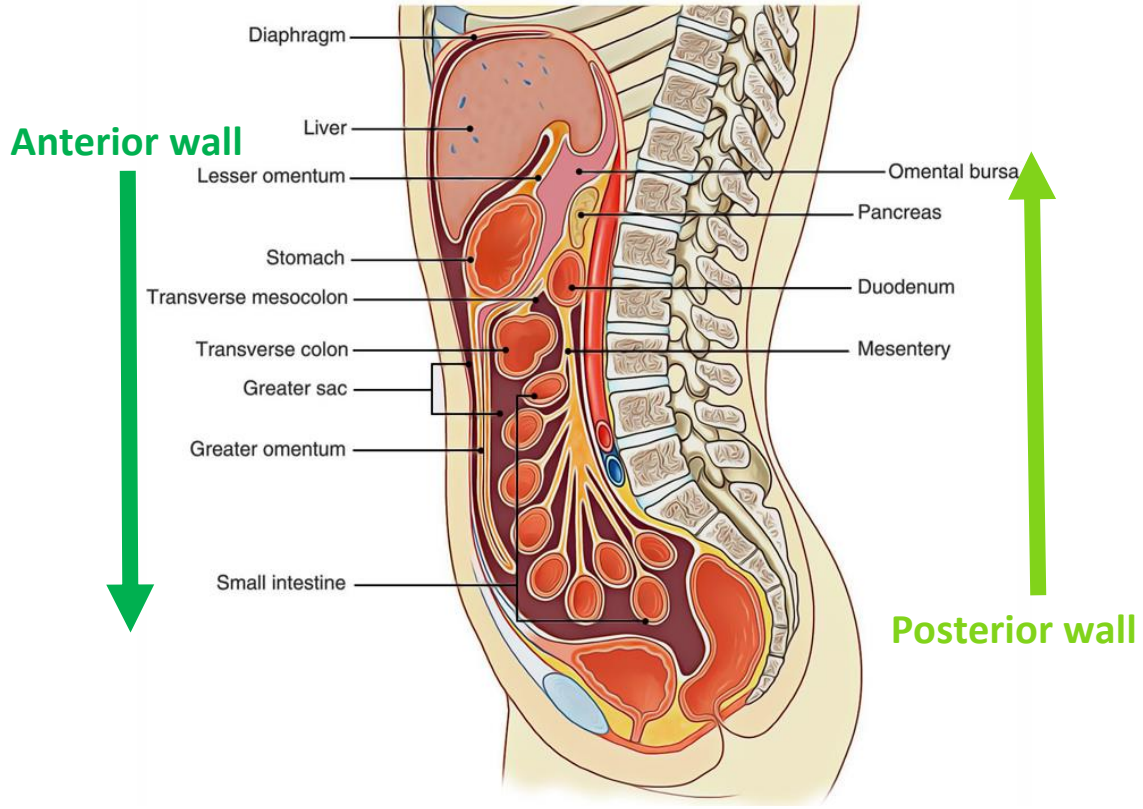


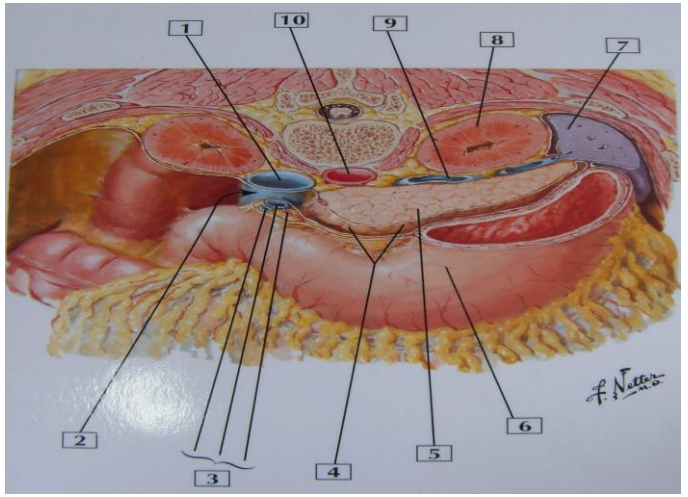


Extra

Omental bursa (Lesser Sac)

- The omental bursa is a part of the peritoneal cavity <u>behind the stomach.</u>
- Boundaries of the **omental bursa**:
  <u>Anterior wall</u>: from above downward:
  by the caudate lobe of the liver → the lesser omentum → back of the stomach → and the anterior two layers of the greater omentum
  <u>Posterior wall:</u> from below upward,
  by the posterior two layers of the greater omentum → the transverse colon → and the ascending layer of the transverse mesocolon → the upper surface of the pancreas → the left suprarenal gland →and the upper end of the left kidney.





Epiploic Foramen

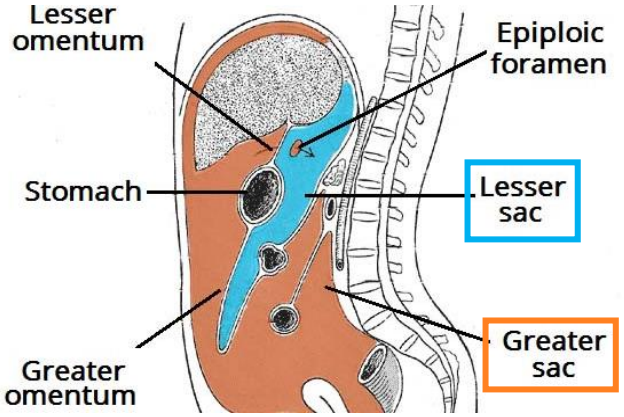
- The epiploic foramen is the communication between the **greater sac** and **lesser sac**
- It is bounded by:

In **front** by the free border of the lesser omentum, with its contents: **hepatic artery, common bile duct, and portal vein between its two layers**

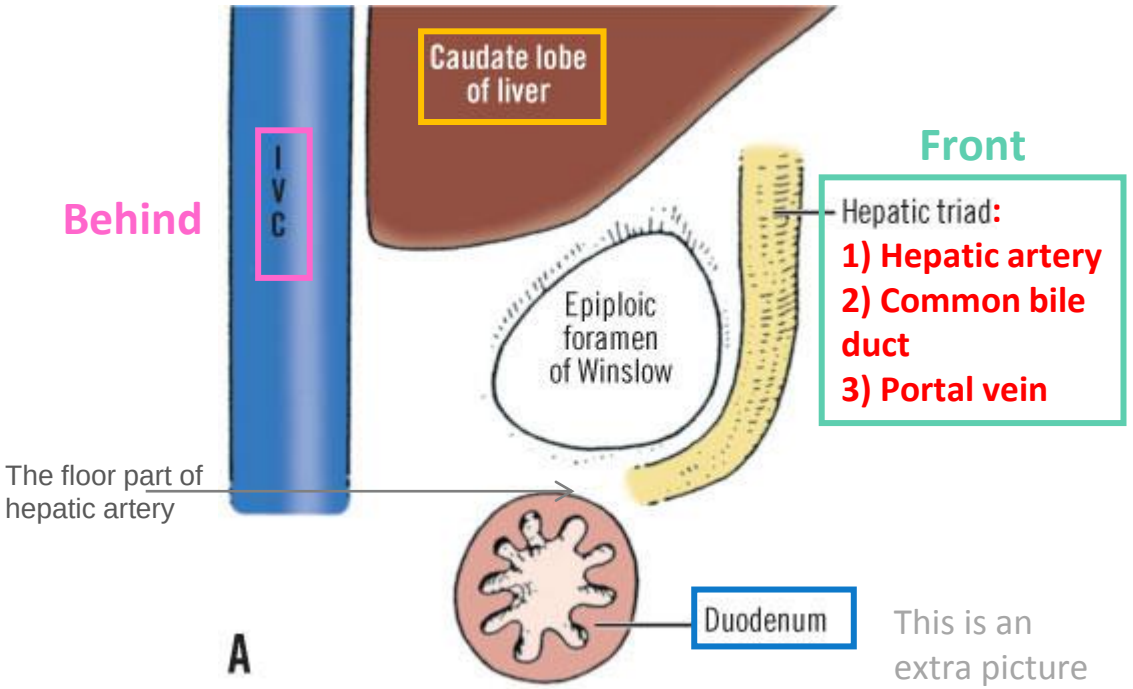
Behind by the **peritoneum** covering the **inferior vena cava**

Above (roof) by the **peritoneum** on the **caudate process** of the liver

Below (floor) by the **peritoneum** covering the commencement of the **duodenum** and the **hepatic artery**, before ascending between the two layers of the lesser omentum



Roof



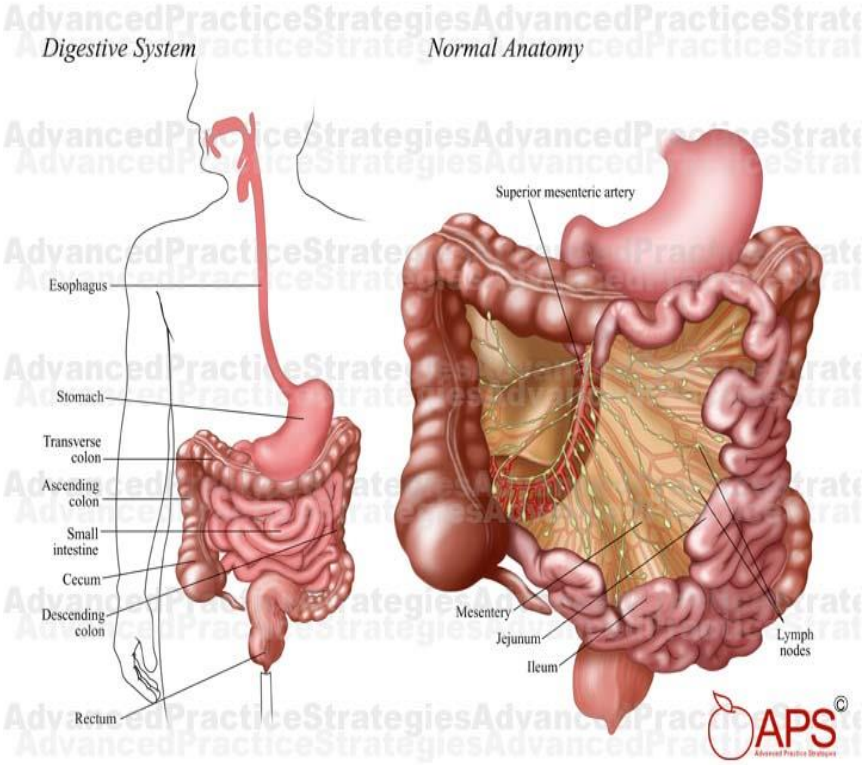
Floor

This is an extra picture to understand the relations

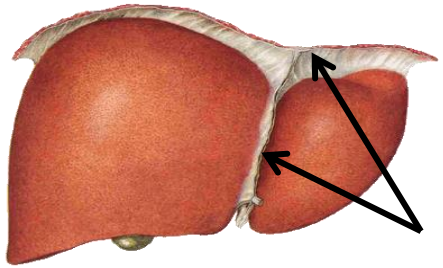
2- Mesentery

- Two-layered fold of peritoneum suspends the small intestine from the posterior abdominal wall. (it attaches the small intestines to the posterior abdominal wall)
- Broad and a fan-shaped
- Intestinal border: Folded, 7 m long
- **Root of mesentery:**
  - 15 cm long
  - Directed obliquely from **duodenojejunal flexure at the level of left side of L2**
  - to the **ileocecal junction** in the right iliac fossa **at the level of right sacroiliac joint.**

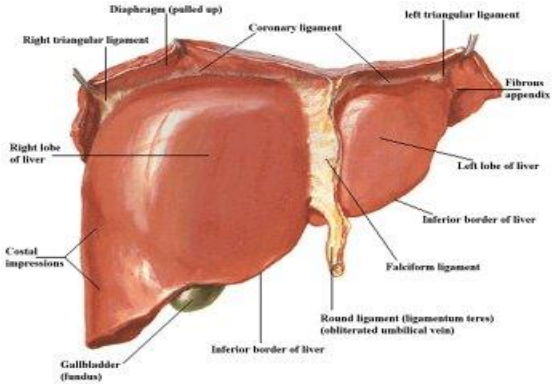
Extremely important



3- Ligaments



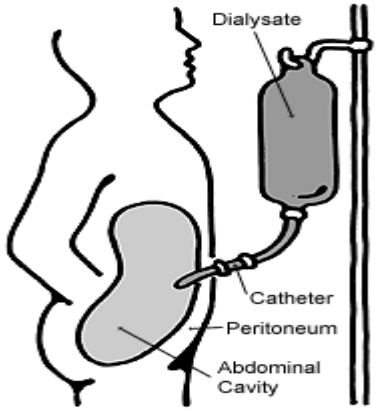
- Two-layered folds of peritoneum that attach solid viscera to the abdominal wall and diaphragm.
- Ligaments of liver (will discuss them in more detail in the next lecture)
  - Falciform ligament of liver (attaches the liver to the anterior abdominal wall)
  - Coronary ligament (attaches the liver to diaphragm)
  - Right & Left triangular ligaments (attaches the liver to diaphragm)
  - Ligamentum teres (remnant embryologically)



Clinical point

Peritoneal Dialysis

- Because the peritoneum is a semi permeable membrane :
- It allows transfer of substances (glucose solution) across itself to remove the waste products.
- It has been used of in patients with acute renal insufficiency.



Peritoneum
Nerve supply

Peritoneum	**Parietal** Peritoneum (somatic)	**Visceral** Peritoneum (sympathetic and parasympathetic)
Sensitive to	Pain, temperature, touch, and pressure.	Only to stretch and tearing
Supplied by	**Somatic spinal:** • Lining the anterior abdominal wall: **lower six thoracic** (lower 6 intercostal) and **first lumbar** nerves. • The central part of the diaphragmatic peritoneum is supplied by the **phrenic nerves** (C3,4,5)**.**	**autonomic** nerves that supply the viscera or traveling in the mesenteries.
Clinical Point: Peritoneal Pain (peritonitis)	Abdominal pain originating from the parietal peritoneum is therefore of the **somatic type,** it is usually **severe**, and can be **accurately localized.**	Includes the mesenteries, which is innervated by autonomic nerves It is due to **Stretch** caused by over distension of a viscus and **pulling** on a mesentery t**hat gives rise to the sensation of pain.** Leading to abdominal pain; **poorly localized**, poorly characterized pain (dull ,unclear, cramping).

Only in girls slides

Intraperitoneal vs. Retroperitoneal

- Stomach
- Part 1 of duodenum
- Jejunum, Ileum
- Cecum, Appendix
- Transverse colon
- Sigmoid colon
- Liver, Gallbladder
- Tail of pancreas
- Spleen

- Parts 2,3,4 duodenum
- Ascending, Descending colon
- Rectum
- Head, neck, body of pancreas
- Kidneys, ureters
- Suprarenal gland
- Abdominal Aorta
- Inferior vena cava

Summary

Lesser omentum	Greater omentum
connects the stomach and 1st part of duodenum to the liver	connects the greater curvature of stomach with the transverse colon
Right border of lesser omentum is free and it forms the anterior boundary of epiploic foramen	
Contents of lesser omentum : Along lesser curvature of stomach: right & left gastric vessels At the right free border: 1) Hepatic artery 2) Bile duct 3) Portal vein 4) Nerves, lymph vessels & fat	Contents of greater omentum: Along the greater curvature of stomach: Right & left gastroepiploic vessels Lymph nodes, vessels & fats

The peritoneum is divided into 2 layers :

1) **Parietal layer**, lines the abdominal and pelvic walls.
2) **Visceral layer**, covers the abdominal and pelvic organs.

Omenta are **folds** of peritoneum.

2 omenta: 1) Lesser 2) Greater

- Lesser sac of peritoneum (**Omental Bursa**) :
  Boundaries : Anterior wall & Posterior wall
- Opening to lesser sac (epiploic foramen) : It is a slit-like opening which connect lesser sac with greater sac. Lies behind the lesser omentum.
- **Epiploic foramen is bounded anteriorly by right free margin of lesser omentum.**

Mesentery: two-layered fold of peritoneum suspends the small intestine from the posterior abdominal wall.

Ligaments: two-layered folds of peritoneum that attach solid viscera to the abdominal wall.

Function of peritonuem: The peritoneal ligaments, omenta, and mesenteries permit blood, lymph vessels, and nerves to reach the viscera.

Nerve Supply of the Peritoneum :

- parietal peritoneum**: lower six thoracic and first lumbar nerves and** the **phrenic nerves.**
- visceral peritoneum**: autonomic nerves that supply the viscera.**

Clinical aspects:

- Peritoneal Pain
- Peritoneal Dialysis

MCQs

1- An organ covered by visceral peritoneum and has a supporting mesentery is described as:

A-Retroperitoneal
B-Extrapetironeal
C-Intraperitoneal

2- Which of the following connects the greater curve of the stomach to the transverse colon:

A-Lesser omentum
B-Greater omentum
C-Epiploic Foramen

3-Which of the following is a content of lesser omentum?

A-Hepatic duct
B-Hepatic vein
C-Hepatic artery

4-The left border of the greater omentum is continuous with:

A-Gastrosplenic ligament
B-Coronary ligament
C-Ligamentum teres

5-Which of the following is an anterior border of the omentum bursa?

A- transverse colon
B- left kidney
C- back of the stomach

6-Which of the following is part of the hepatic triad?

A- common bile duct
B- hepatic duct
C- portal artery

7-The parietal peritoneum is supplied by:

A-lower 6 intercostal
B-lower 6 cervical
C-autonomic

8- A patient presented with abdominal pain that was dull and poorly localized, which part of the peritoneum is affected?

A- parietal peritoneum
B- visceral peritoneum
C- both A & B

Answers

(1) C
(2) B
(3) C
(4) A
(5) C
(6) A
(7) A
(8) B

Good luck
Special thank for team436 ❤

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- References:
  1. Girls' & Boys' Slides
  2. Earthslab.com
  3. TeachMeAnatomy.com

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