

THE PERITONEUM

Dr. Aiman Qais Afar
Surgical Anatomist

College of Medicine / University of Mutah
2023-2024

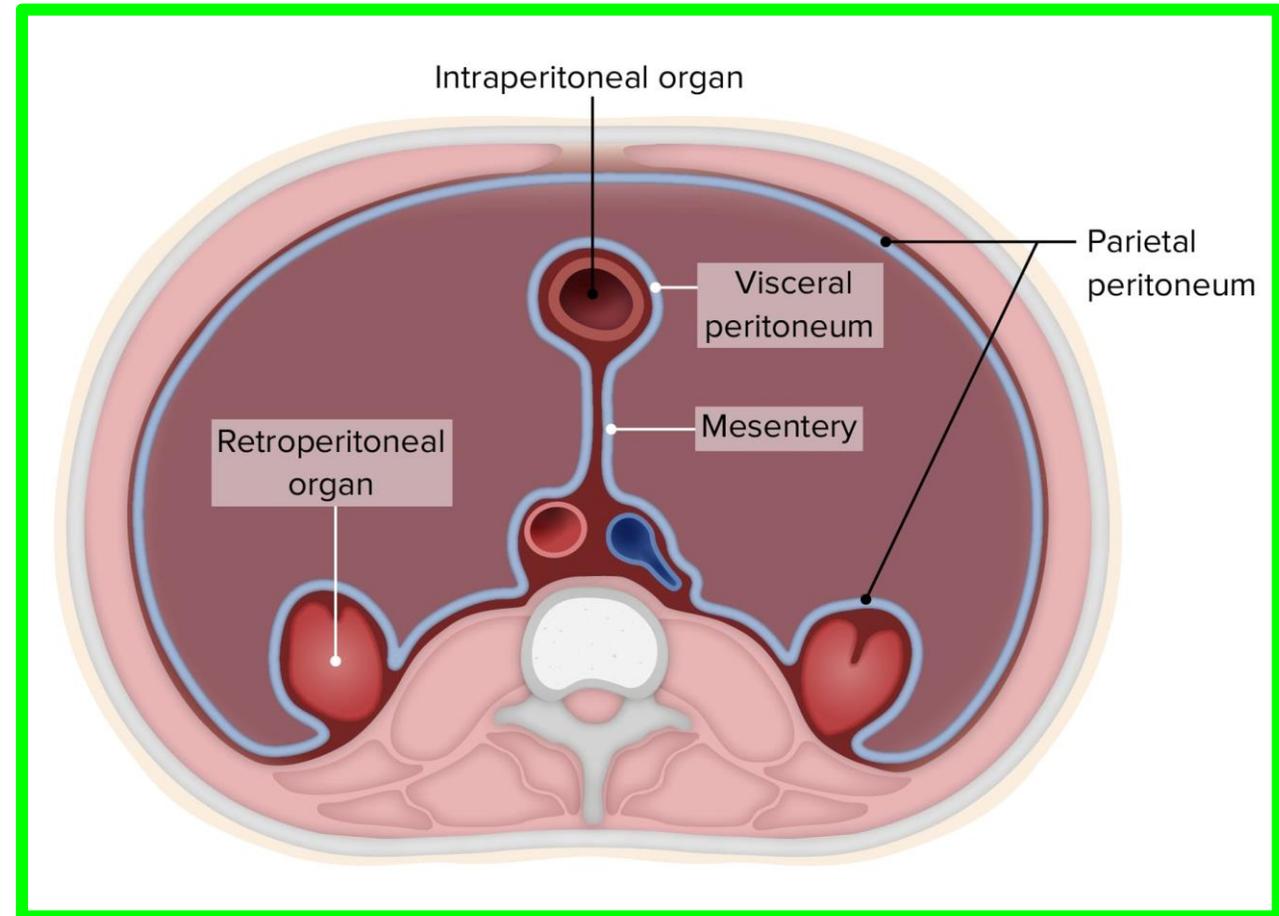
Sunday 14 April 2024

PERITONEUM (General Arrangement)

- ❖ The **peritoneum** is a thin **serous membrane** that lines the walls of the abdominal and pelvic cavities and clothes the viscera .
- ❖ The peritoneum can be regarded **as a balloon** against which organs are pressed from outside

❖ The parietal peritoneum lines the walls of the abdominal and pelvic cavities

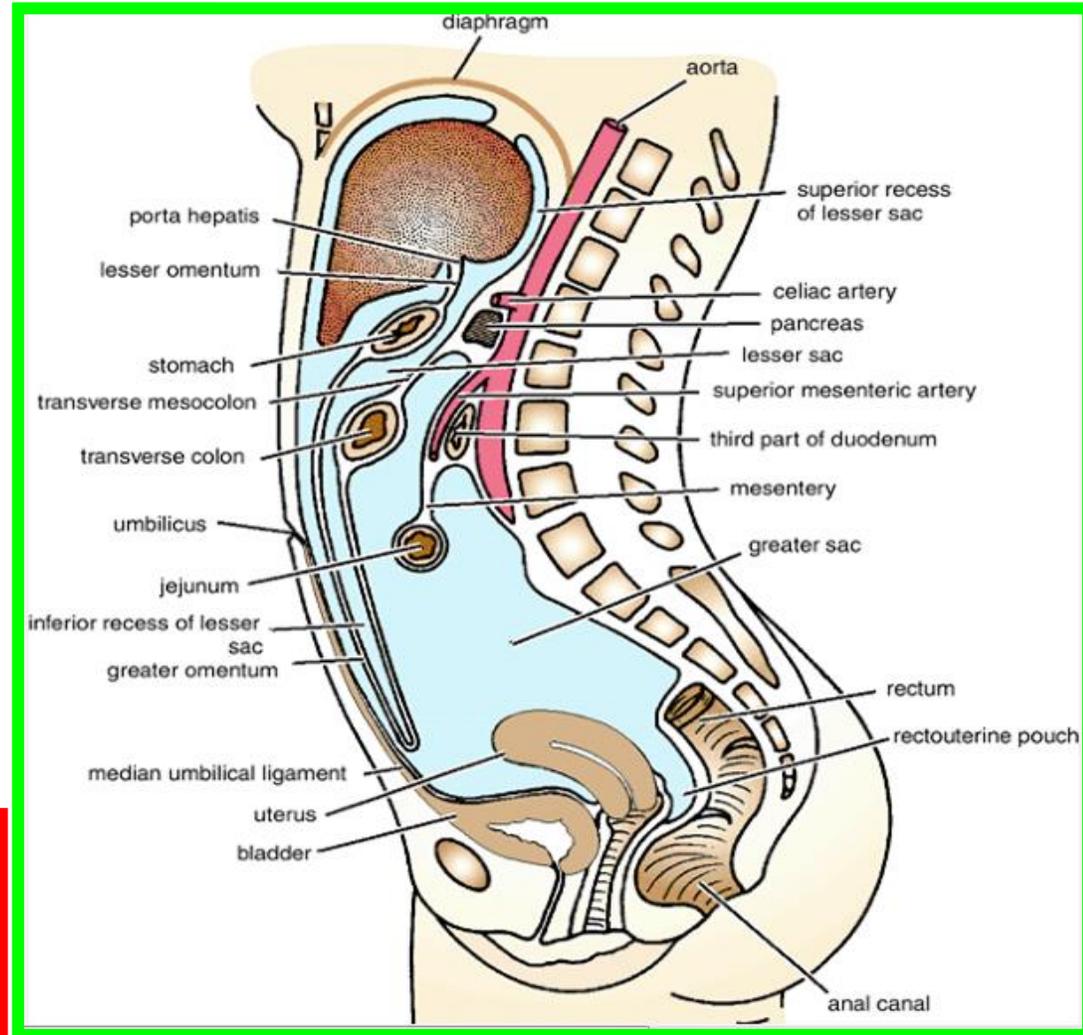
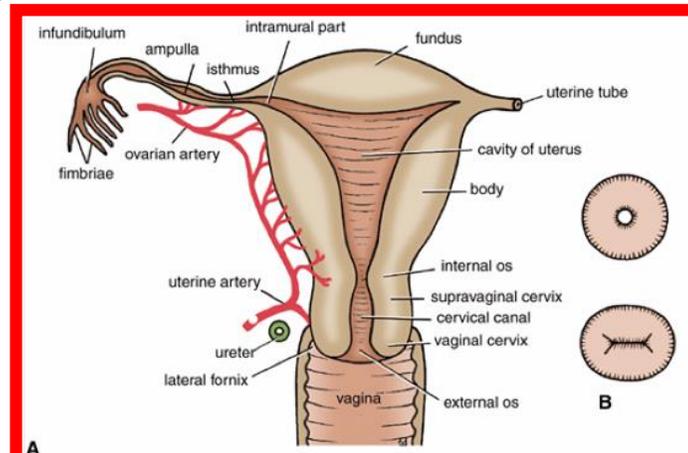
❖ The visceral peritoneum covers the organs.



PERITONEUM (General Arrangement)

❖ The potential space between the parietal and visceral layers, (which is in effect the inside space of the balloon), is called the **peritoneal cavity**.

❖ In males, this is a closed cavity,
❖ In females, there is communication with the exterior through the **uterine tubes, the uterus, and the vagina**

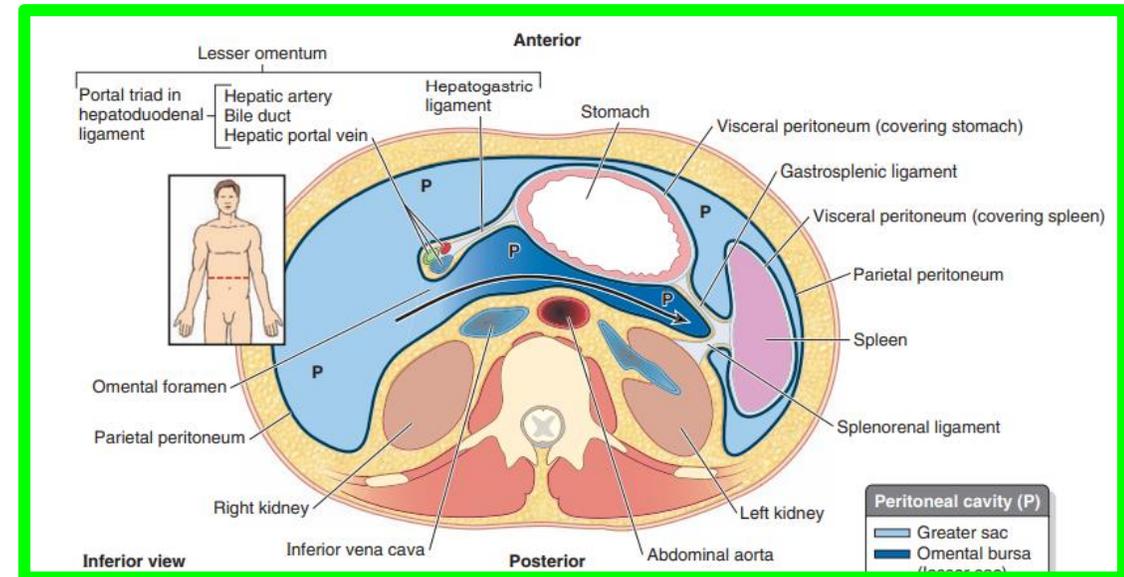
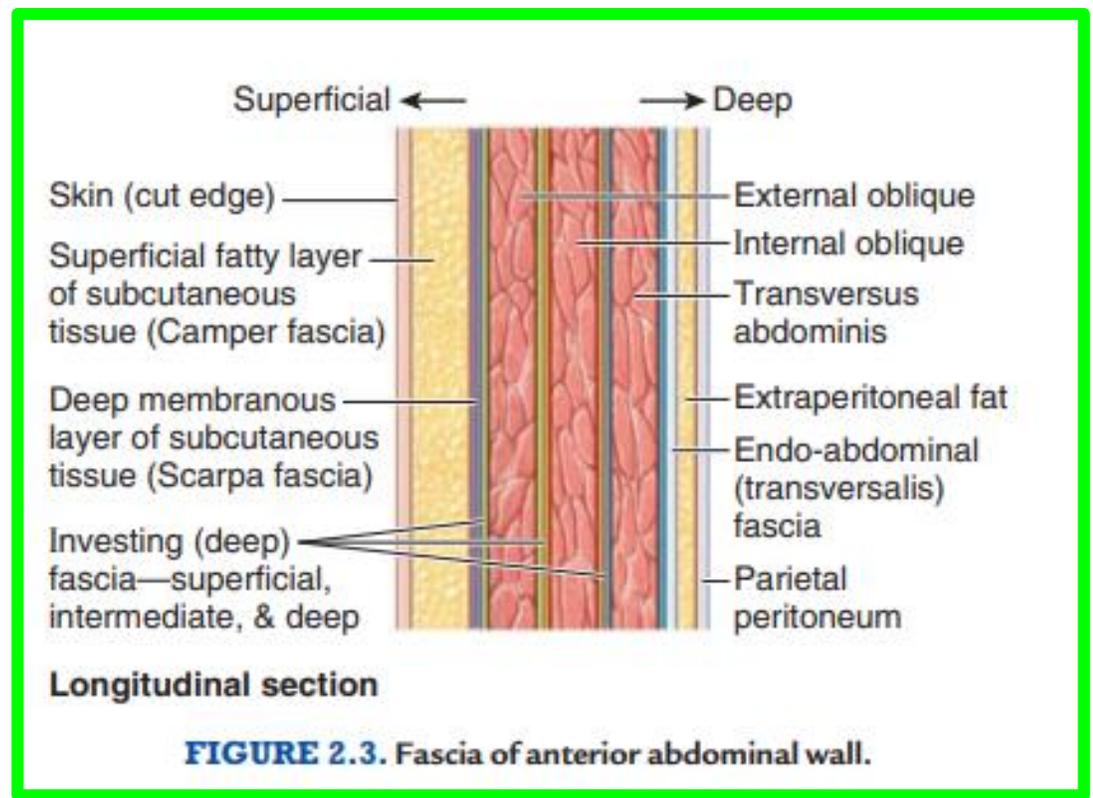


Dr. Aiman AL - Maathidy
Sunday 14 April 2024

PERITONEUM (General Arrangement)

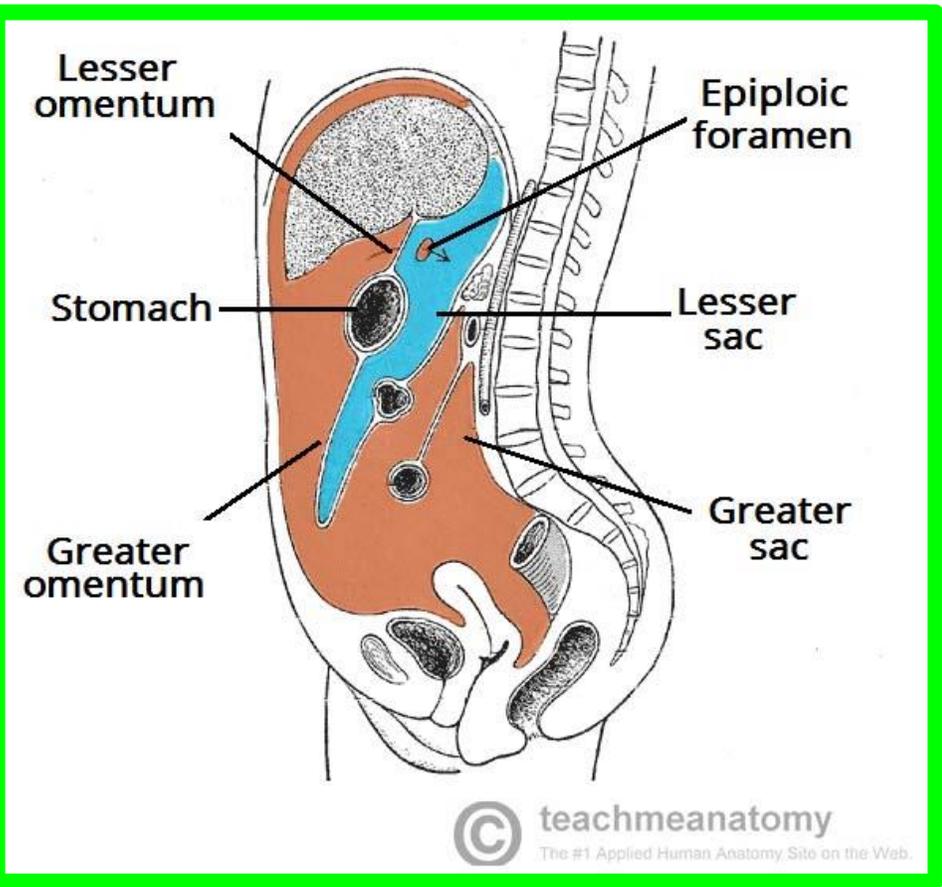
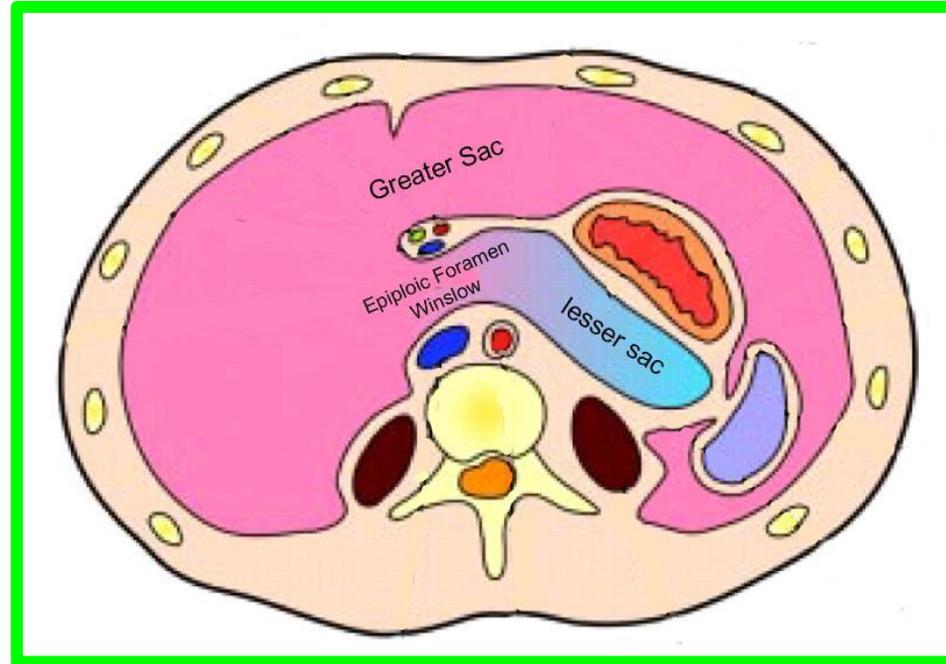
Between the parietal peritoneum and the fascial lining of the abdominal and pelvic walls is a layer of connective tissue called **the extra peritoneal tissue**

In the area of the kidneys this tissue contains a large amount of fat, which supports the kidneys



PERITONEUM

Dr. Aiman AL - Maathidy
Sunday 14 April 2024

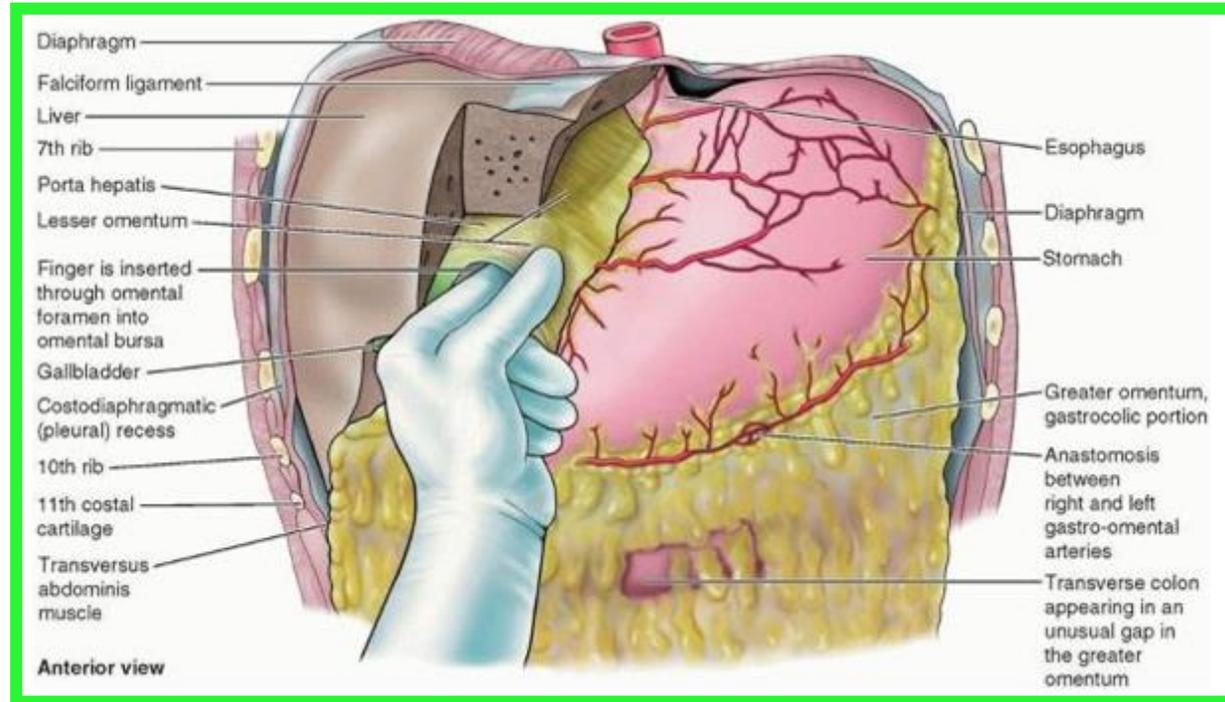
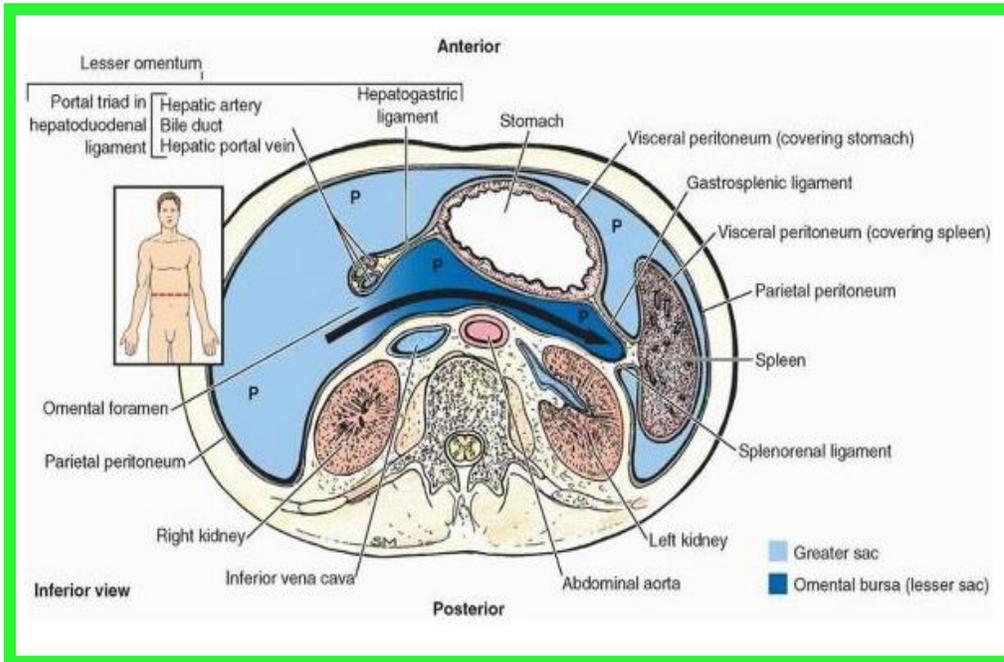


The peritoneal cavity is the largest cavity in the body and is divided into two parts:

- ❖ **The greater sac** is the main compartment and extends from the diaphragm down into the pelvis.
- ❖ **The lesser sac** is smaller and lies behind the stomach.

PERITONEUM

The greater and lesser sacs are in free communication with one another through an oval window called the **opening of the lesser sac, or the epiploic foramen**.

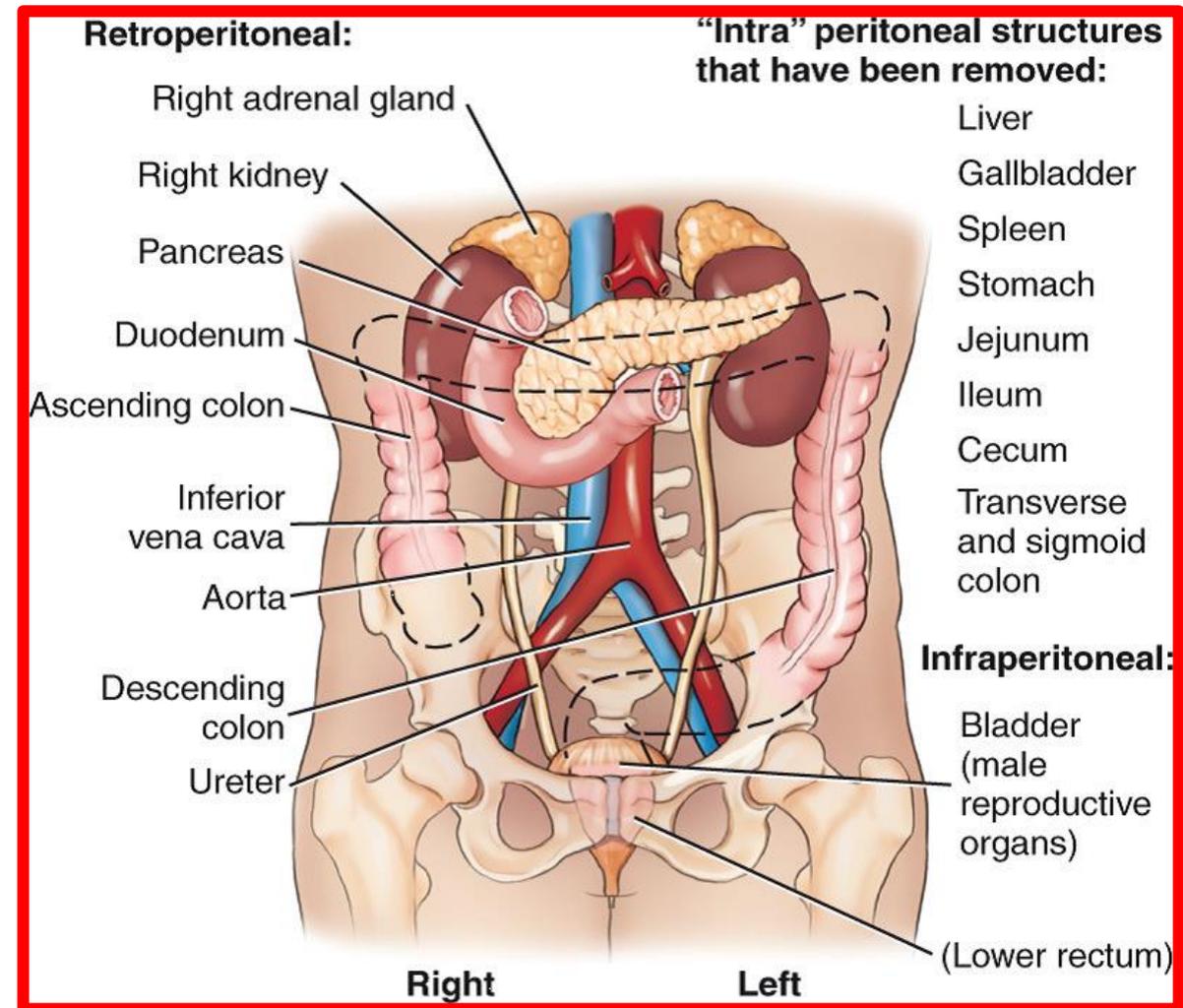


The peritoneum secretes a small amount of serous fluid, **the peritoneal fluid**, which lubricates the surfaces of the peritoneum and allows free movement between the viscera.

Intraperitoneal and Retroperitoneal Relationships

□ **Intraperitoneal organ** when it is almost totally covered with visceral peritoneum like **stomach, spleen, jejunum, ileum**.

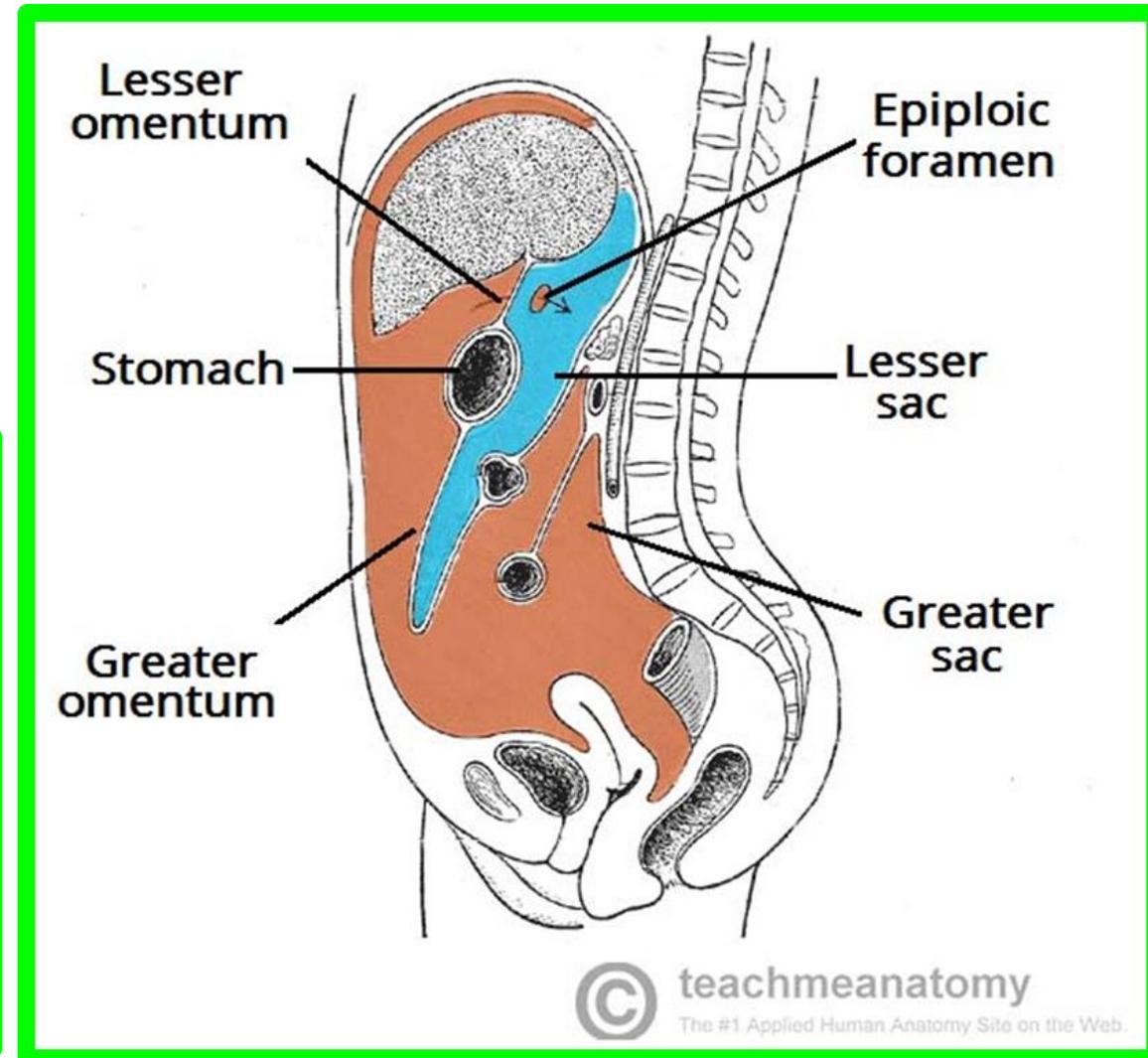
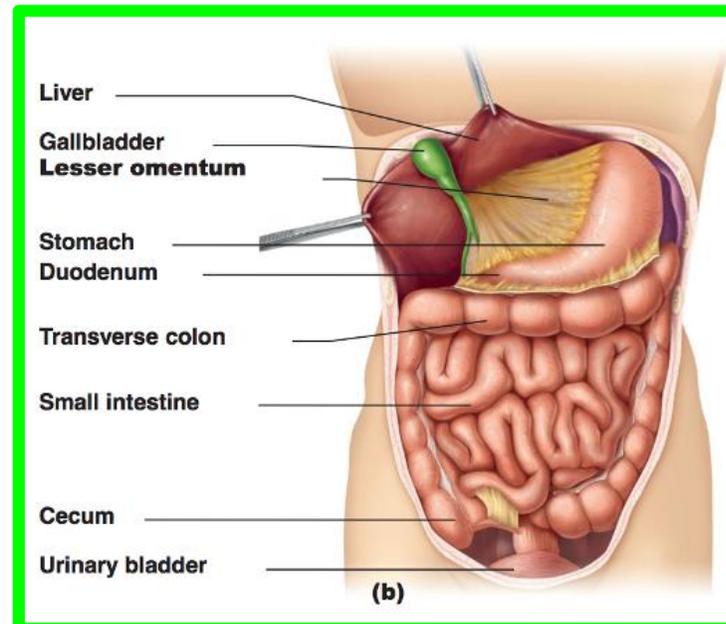
□ **Retroperitoneal organ** lie behind the peritoneum and are only partially covered with visceral peritoneum like **pancreas, ascending and descending colon**



Intraperitoneal and Retroperitoneal Relationships

No organ, however, is actually within the peritoneal cavity.

❖ An intraperitoneal organ, such as the stomach, appears to be surrounded by the peritoneal cavity, but it is covered with visceral peritoneum and is attached to other organs by omenta.



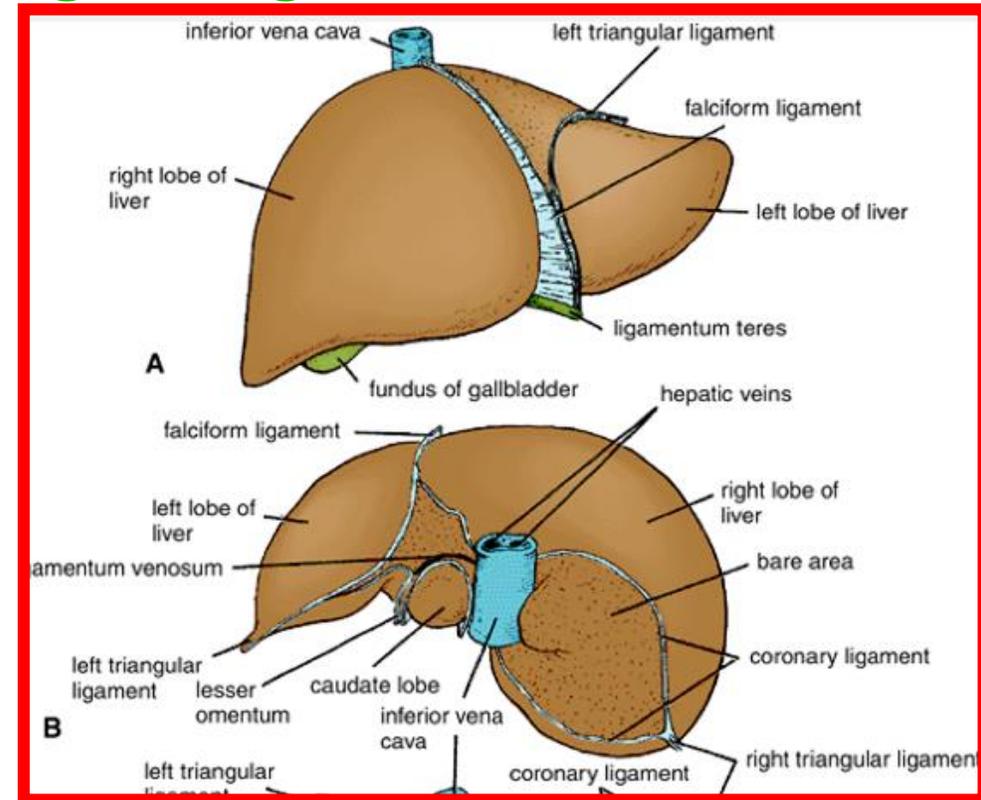
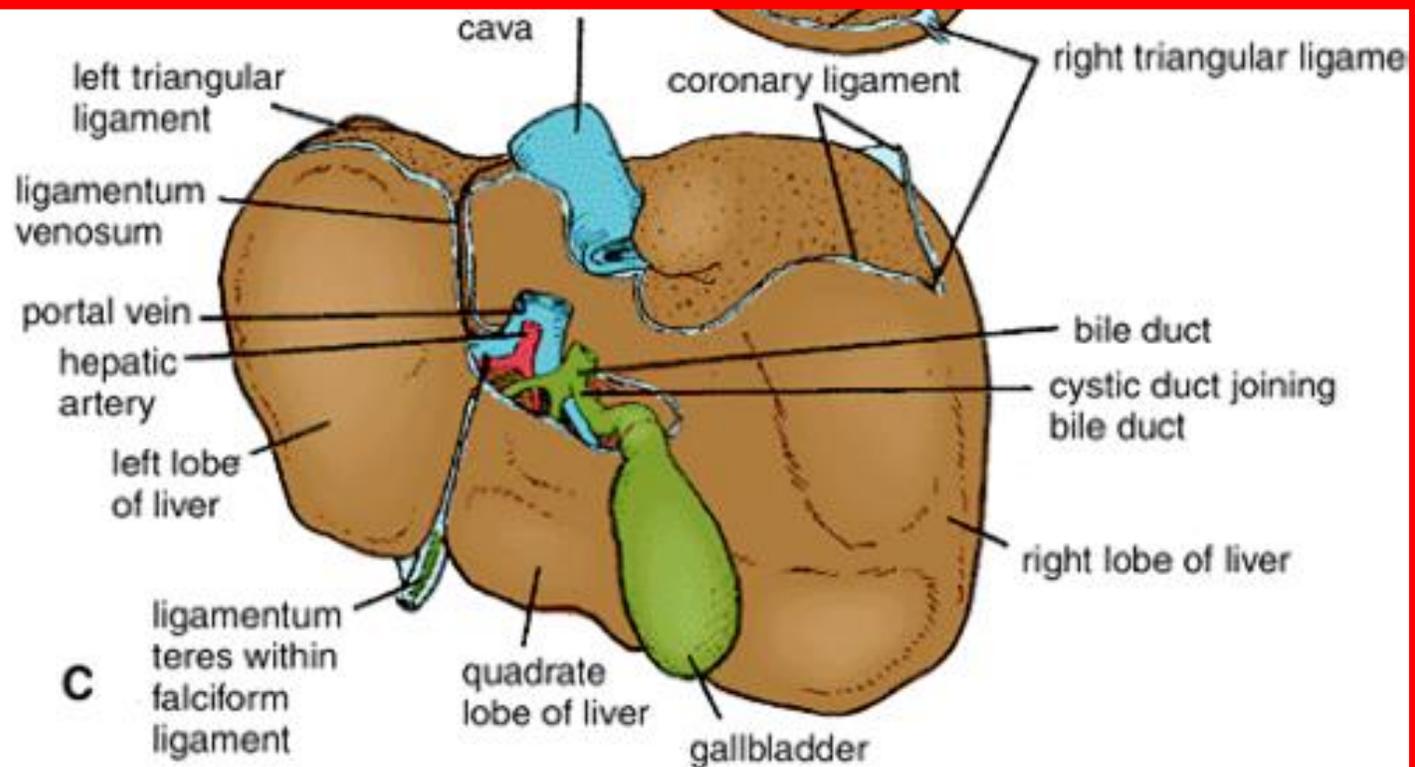
Peritoneal Ligaments

Sunday 14 April 2024

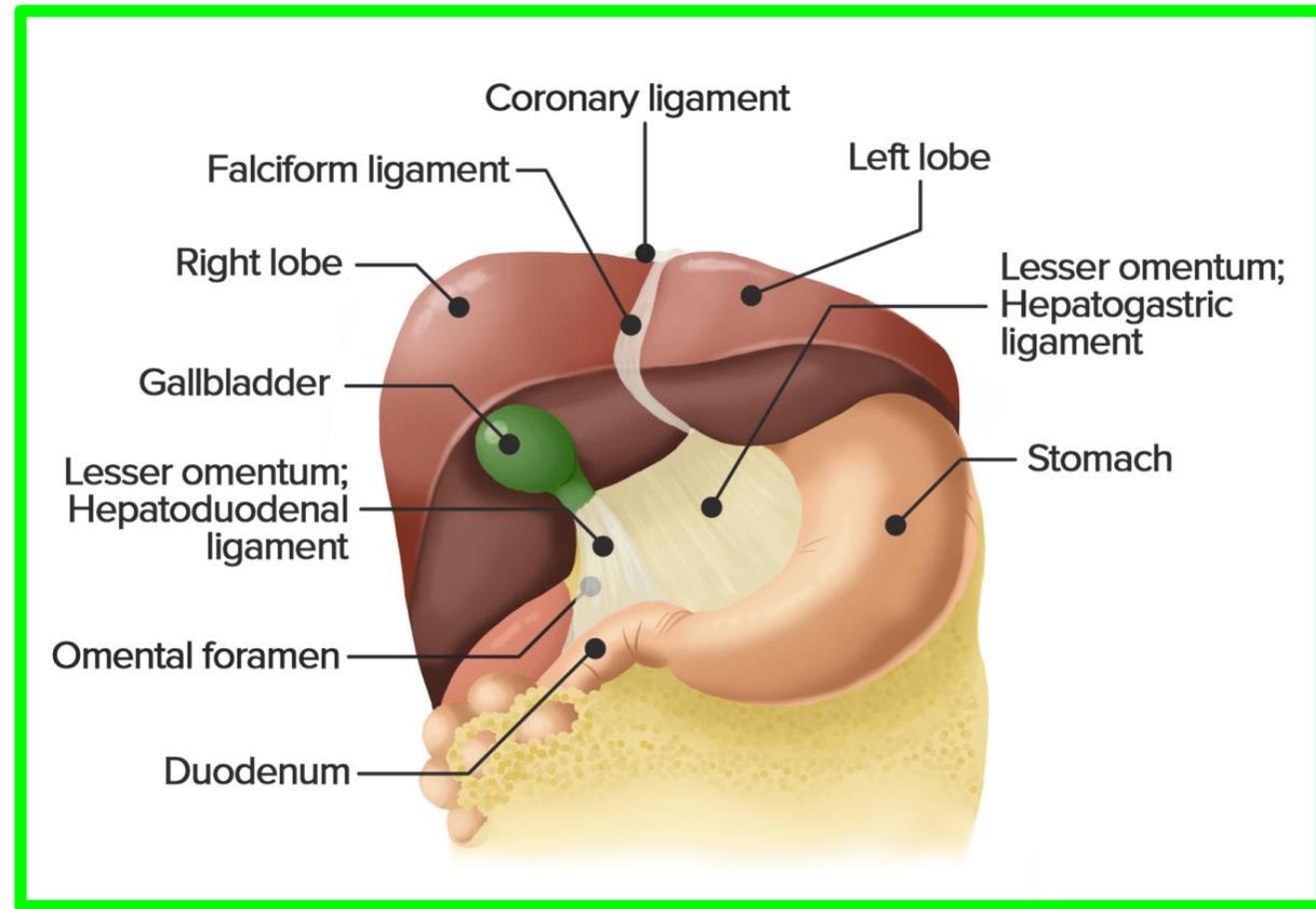
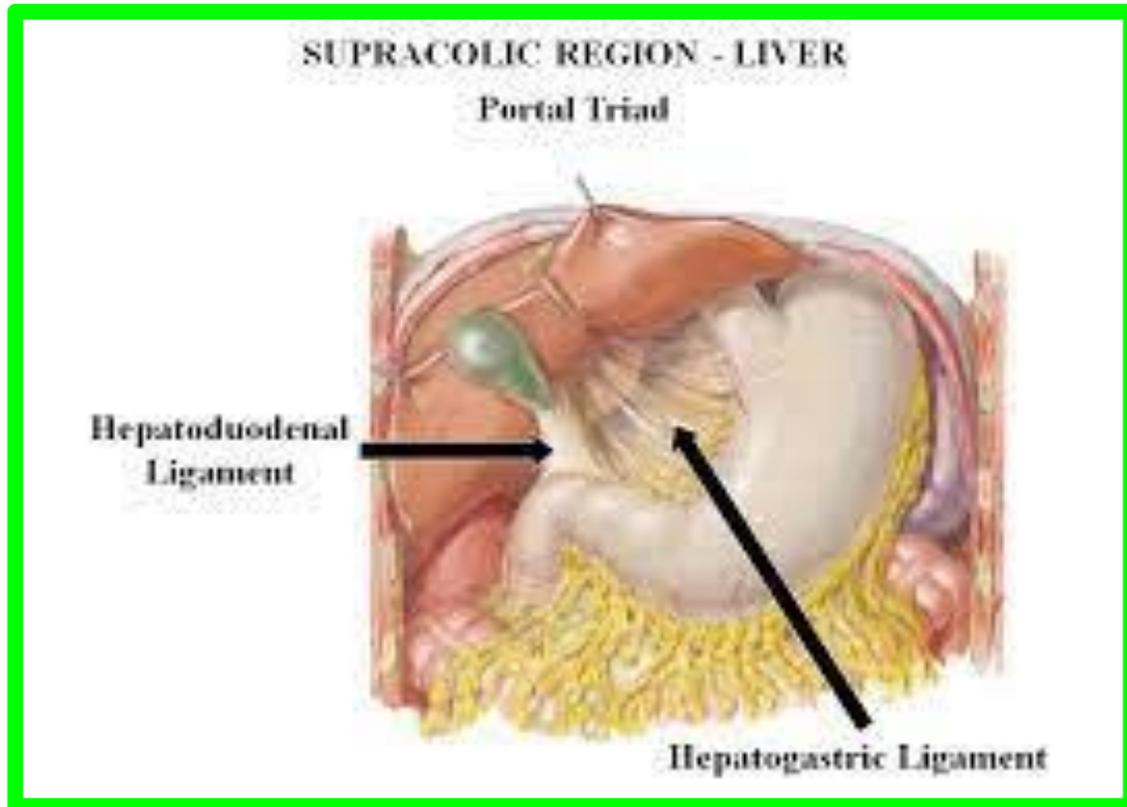
Dr. Aiman AL - Maathidy

9

- ❖ **Peritoneal ligaments** are two-layered folds of peritoneum that connect an organ with another organ or to the abdominal wall.
- ❖ **The liver**, is connected to the diaphragm by the **Falciform ligament**, the **coronary ligament**, and the **right and left triangular ligaments**



- ❖ Liver to the stomach by the **Hepatogastric ligament**, the membranous portion of the lesser omentum.
- ❖ To duodenum by **the hepatoduodenal ligament**, the thickened free edge of the lesser omentum, which conducts the portal triad: **portal vein**, **hepatic artery**, and **bile duct**



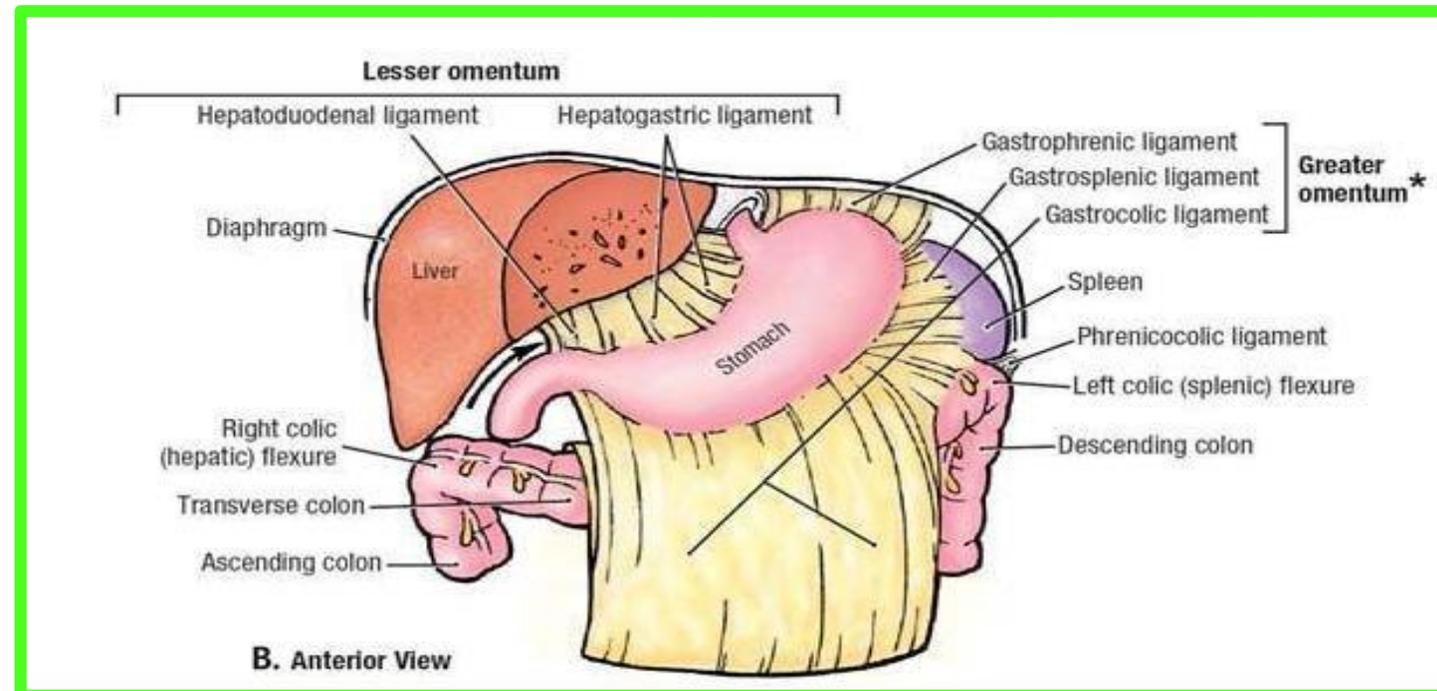
Peritoneal Ligaments

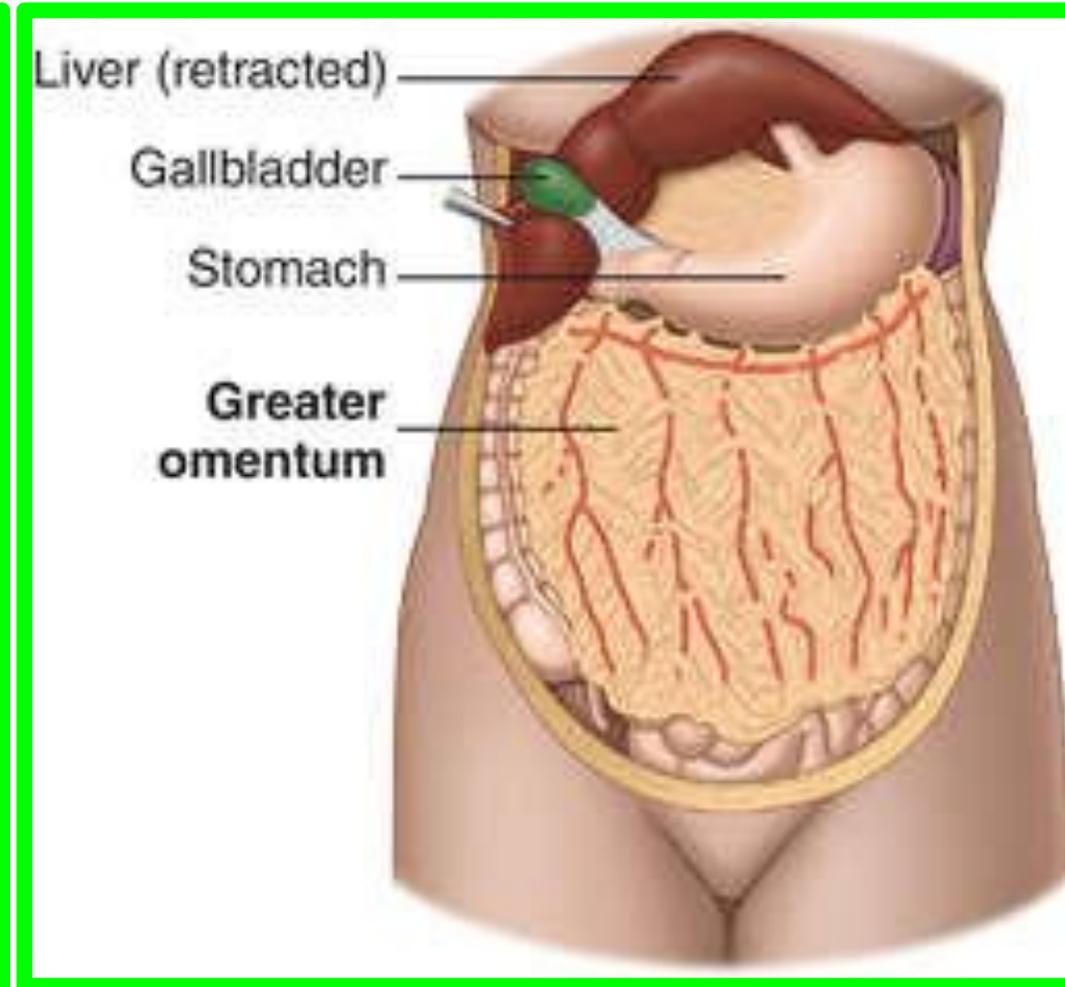
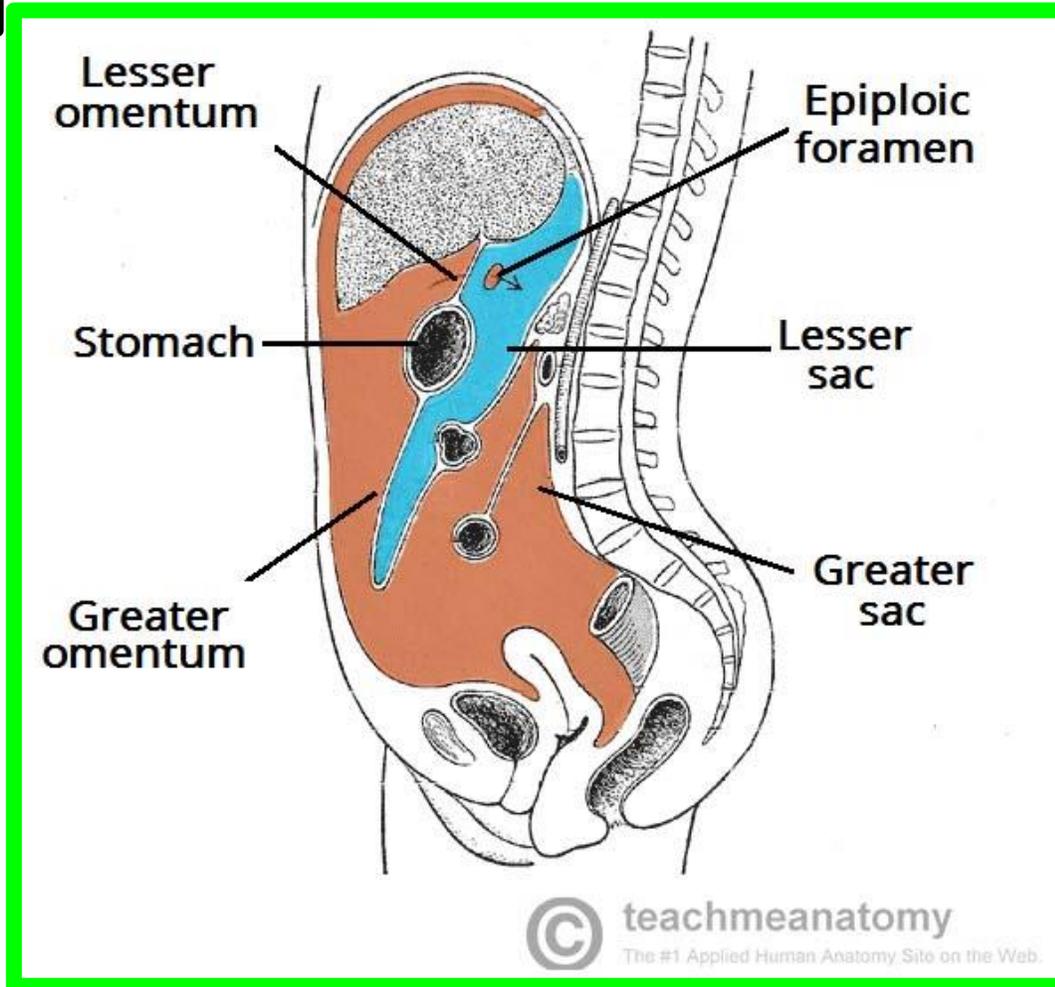
Sunday 14 April 2024

Dr. Aiman AL - Maathidy

The stomach is connected to the:

- Inferior surface of the diaphragm by **the gastrophrenic ligament**.
- Spleen by **the gastrosplenic ligament**, which reflects to the hilum of spleen.
- Transverse colon by **the gastrocolic ligament**, the apron-like part of the **greater omentum**, which descends from the greater curvature, turns under, and then ascends to the transverse colon.





An omentum is a double-layered extension or fold of peritoneum that passes from the stomach and proximal part of the duodenum to adjacent organs in the abdominal cavity.

Omenta

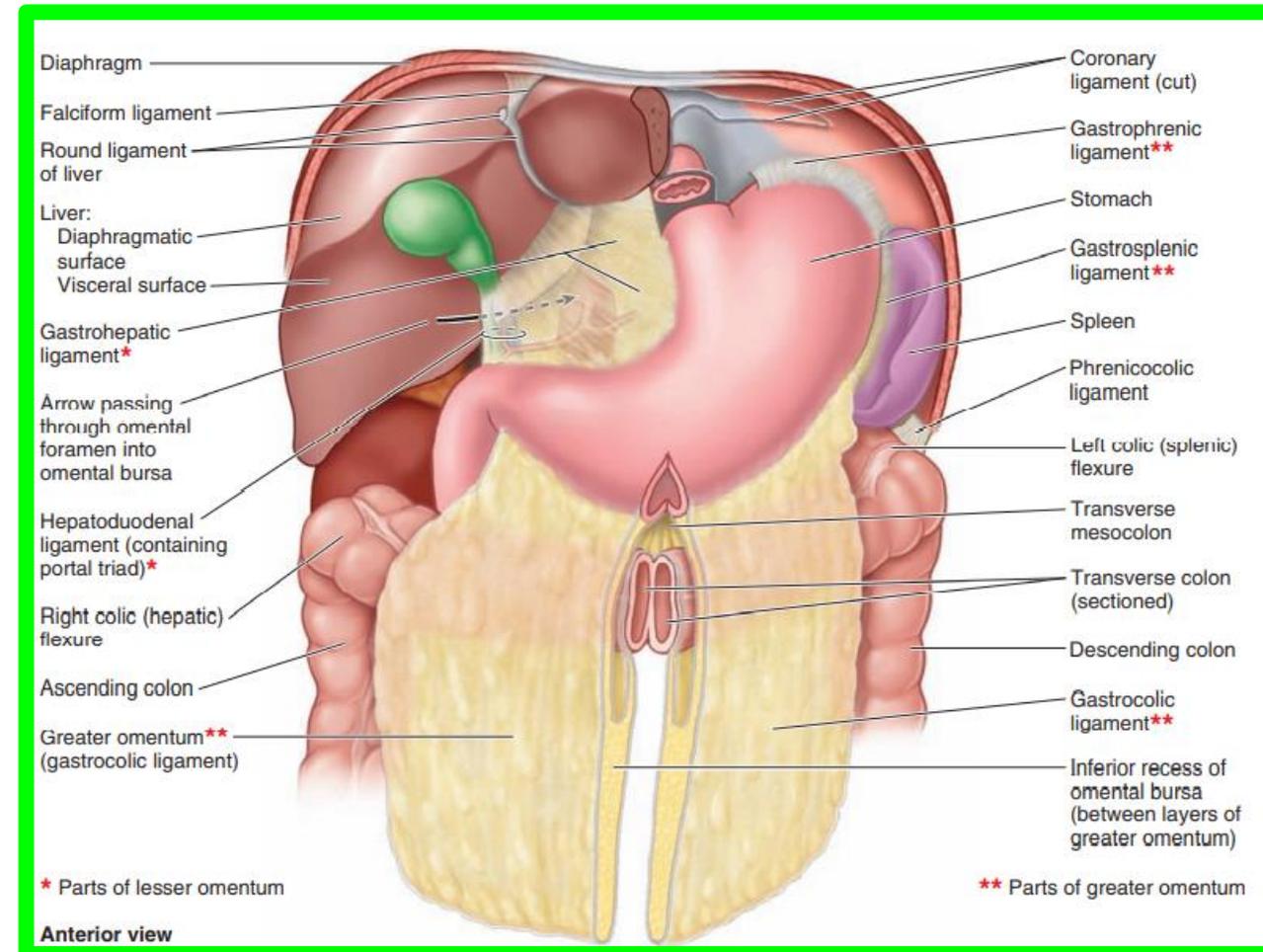
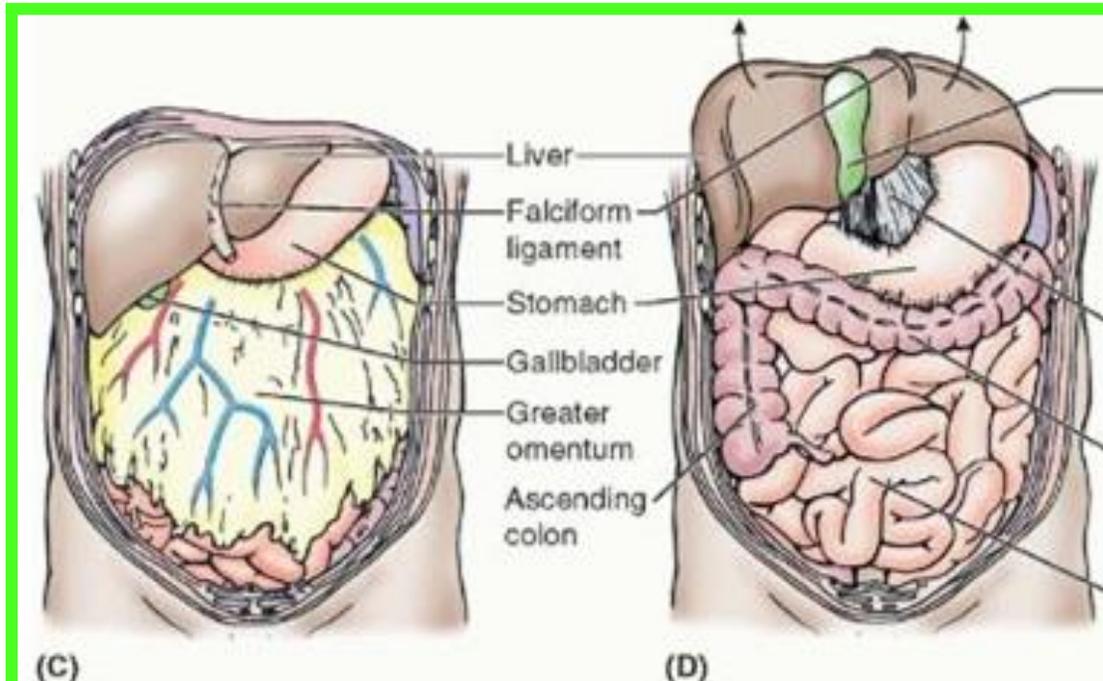
The greater omentum

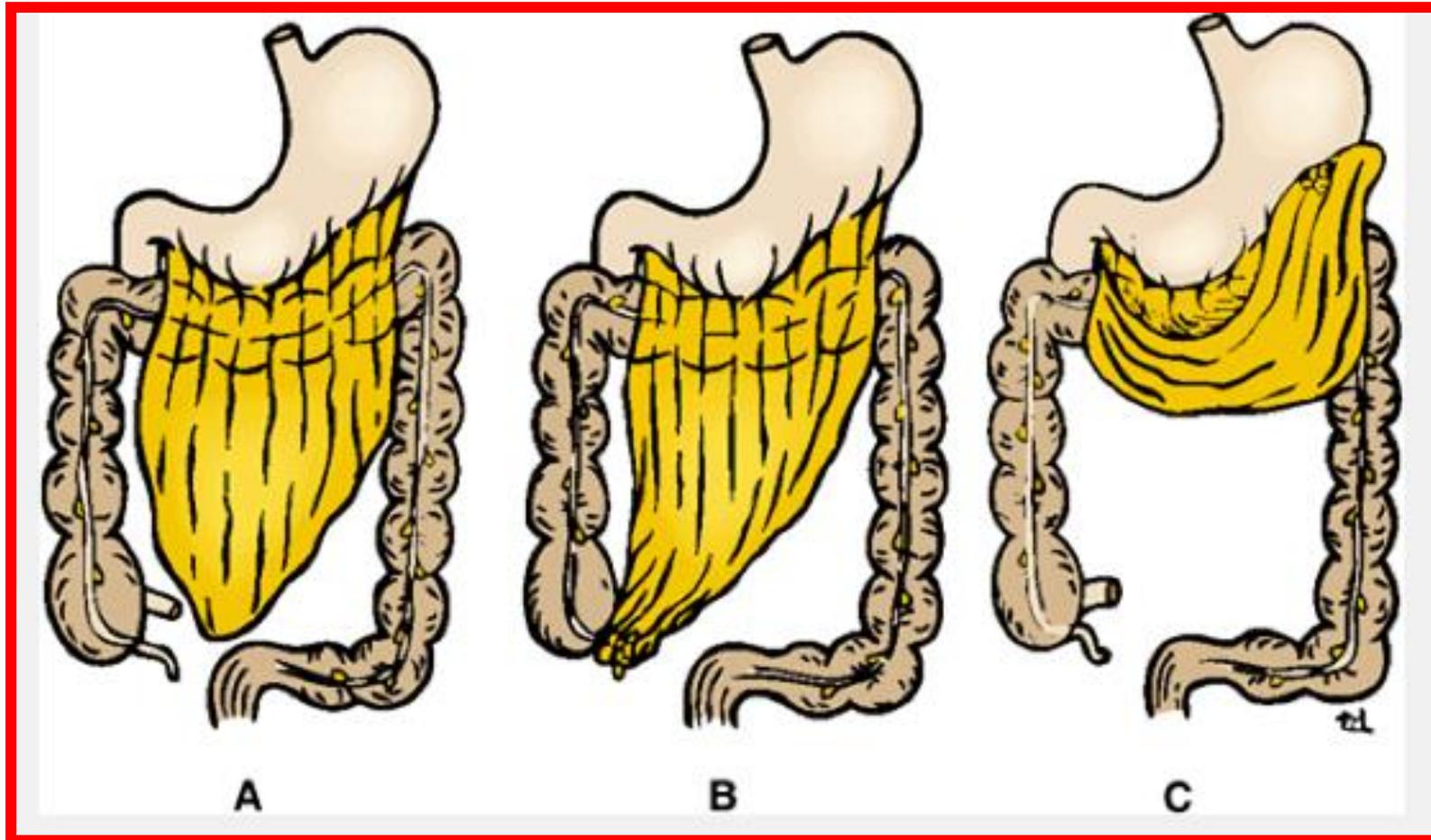
13

Dr. Aiman AL - Maathidy
Sunday 14 April 2024

is a prominent, **four-layered peritoneal fold** that hangs down like an apron from the **greater curvature of the stomach** and the **proximal part of the duodenum**.

After descending, it folds back and attaches to **the anterior surface of the transverse colon** and its mesentery.

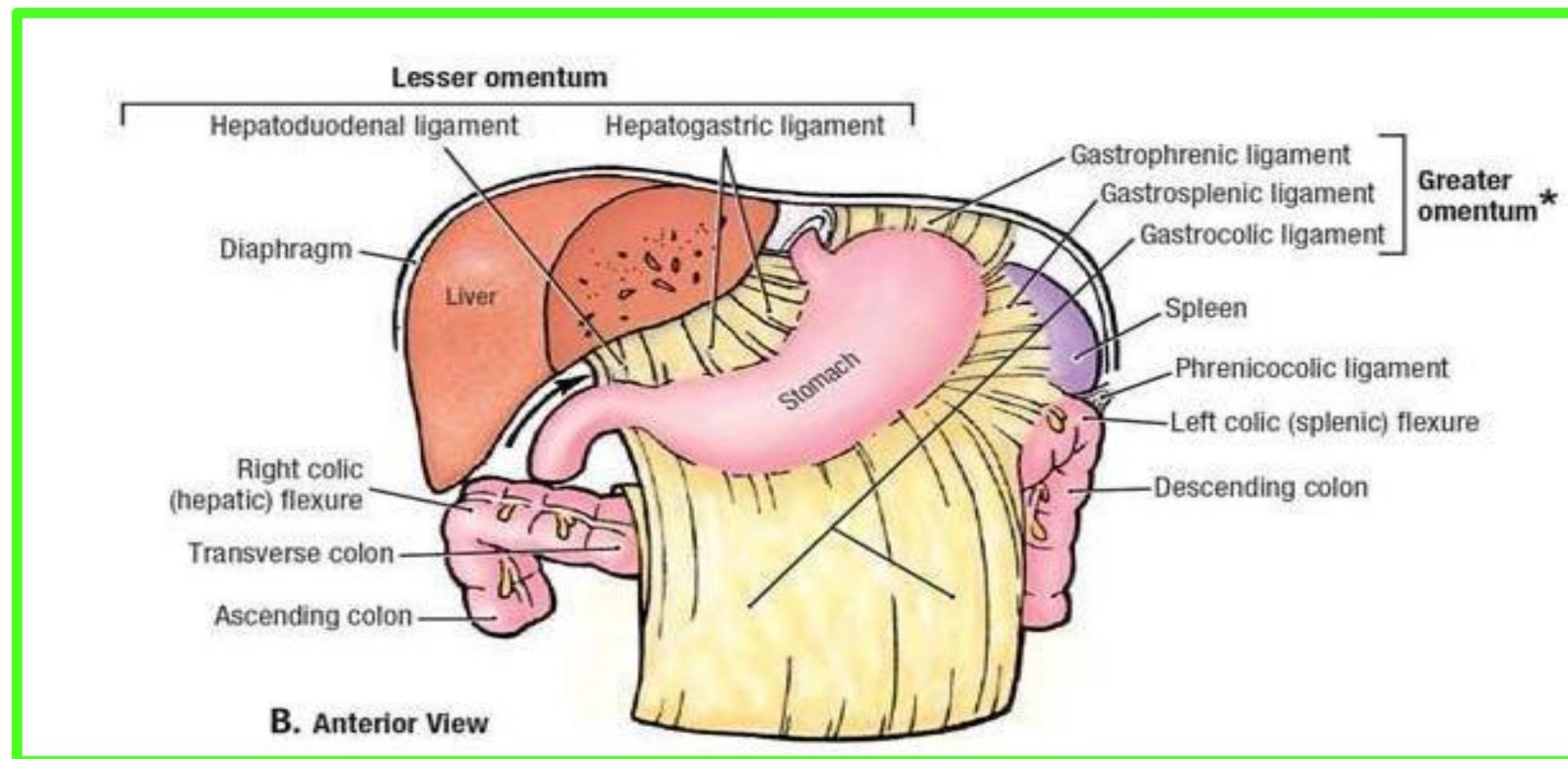




One important function of the greater omentum is to attempt to limit the spread of intraperitoneal infections.

Omenta

The lesser omentum



Is a much smaller, **double-layered peritoneal fold** that connects the lesser curvature of the stomach and the proximal part of the duodenum to **the liver**

➤ It also connects the stomach to **a triad of structures** that run between the duodenum and liver in the **free edge of the lesser omentum**

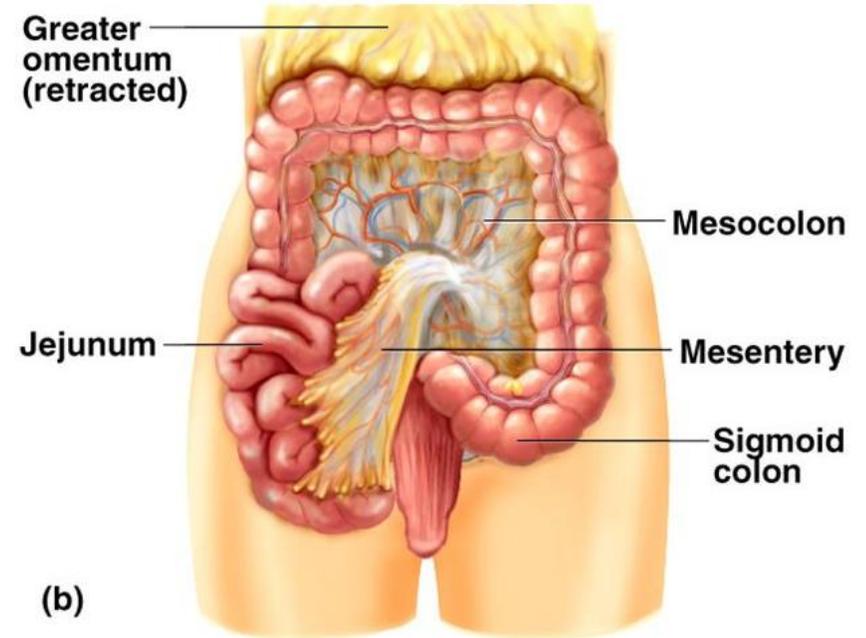
Mesenteries

❖ A **mesentery** is a double layer of peritoneum that occurs as a result of the invagination of the peritoneum by an organ and constitutes a continuity of the **visceral** and **parietal peritoneum**

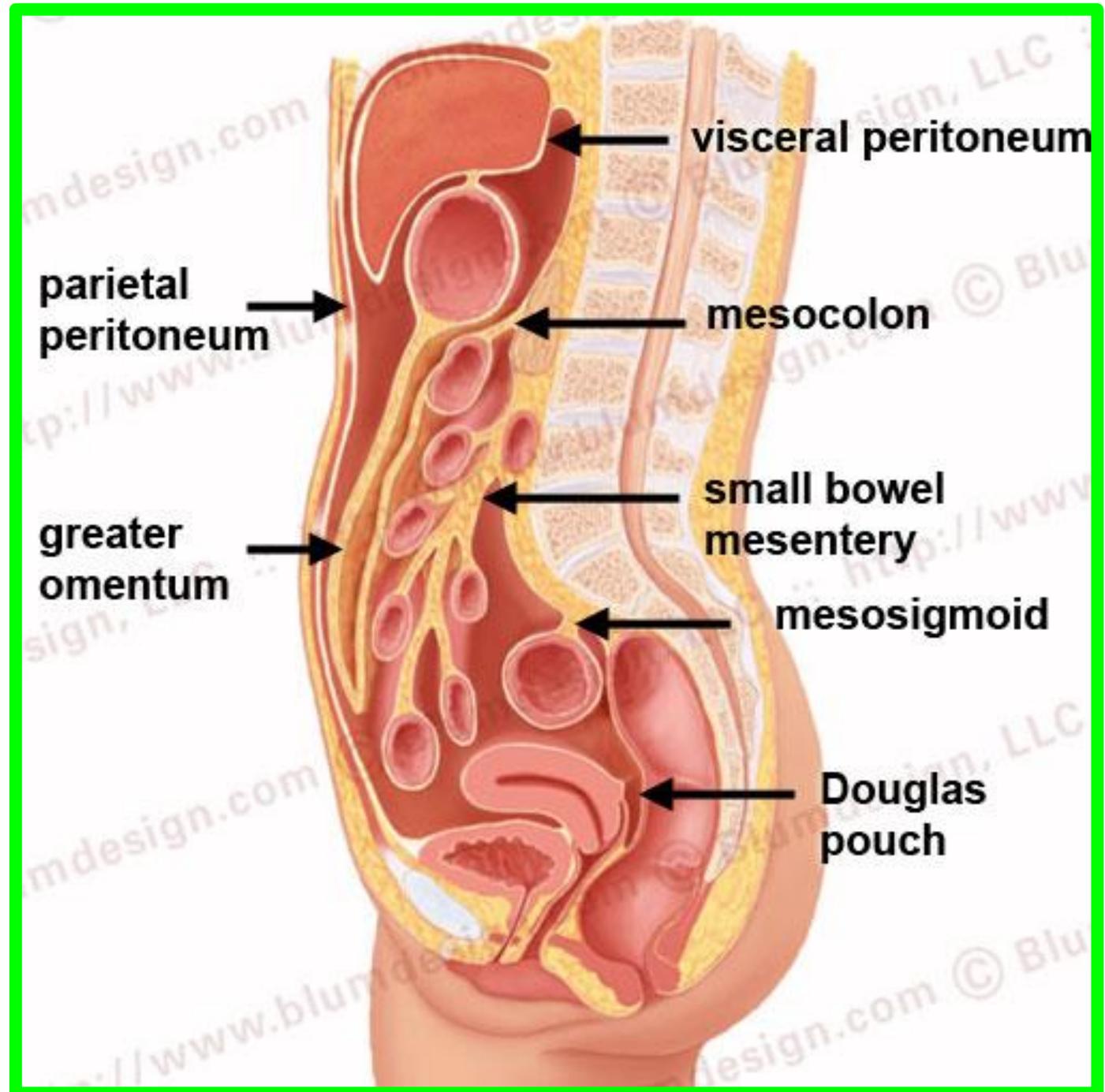
❖ It provides a means for **neurovascular communications** between the organ and the **body wall**

❖ A mesentery connects an intraperitoneal organ to the body wall—usually the posterior abdominal wall (e.g., **mesentery of the small intestine**)

Mesentery and Mesocolon



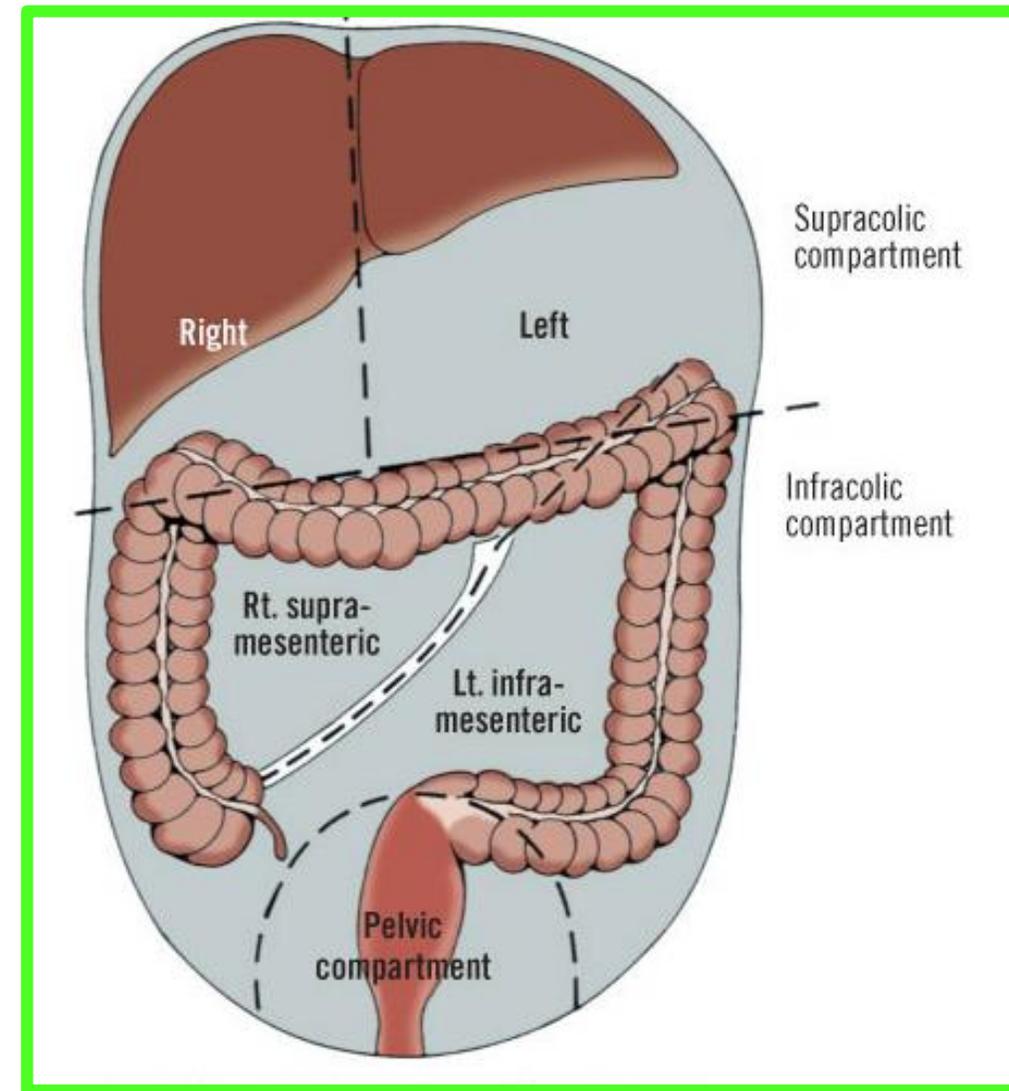
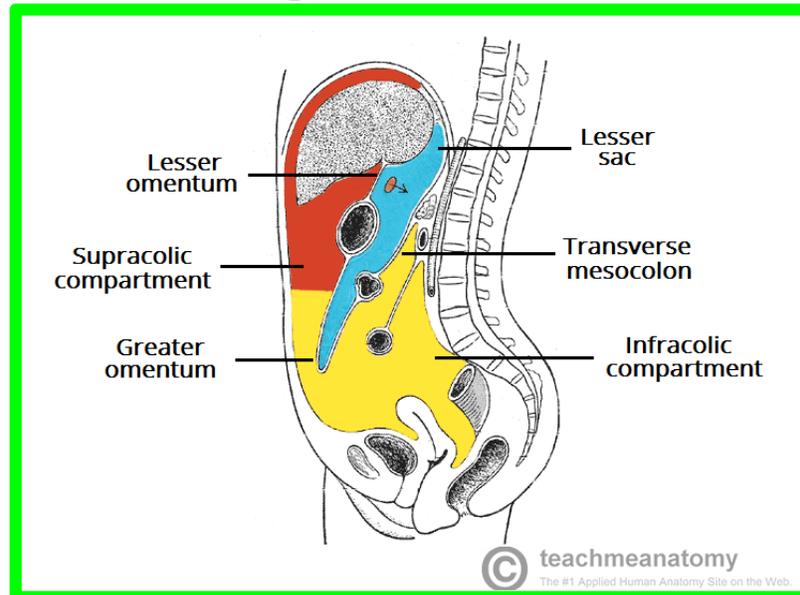
Mesenteries



Subdivisions of Peritoneal Cavity

The transverse mesocolon (mesentery of the transverse colon) divides the abdominal cavity into:

- ✓ A **supracolic compartment**, containing the stomach, liver, and spleen
- ✓ An **infracolic compartment**, containing the small intestine and ascending and descending colon.

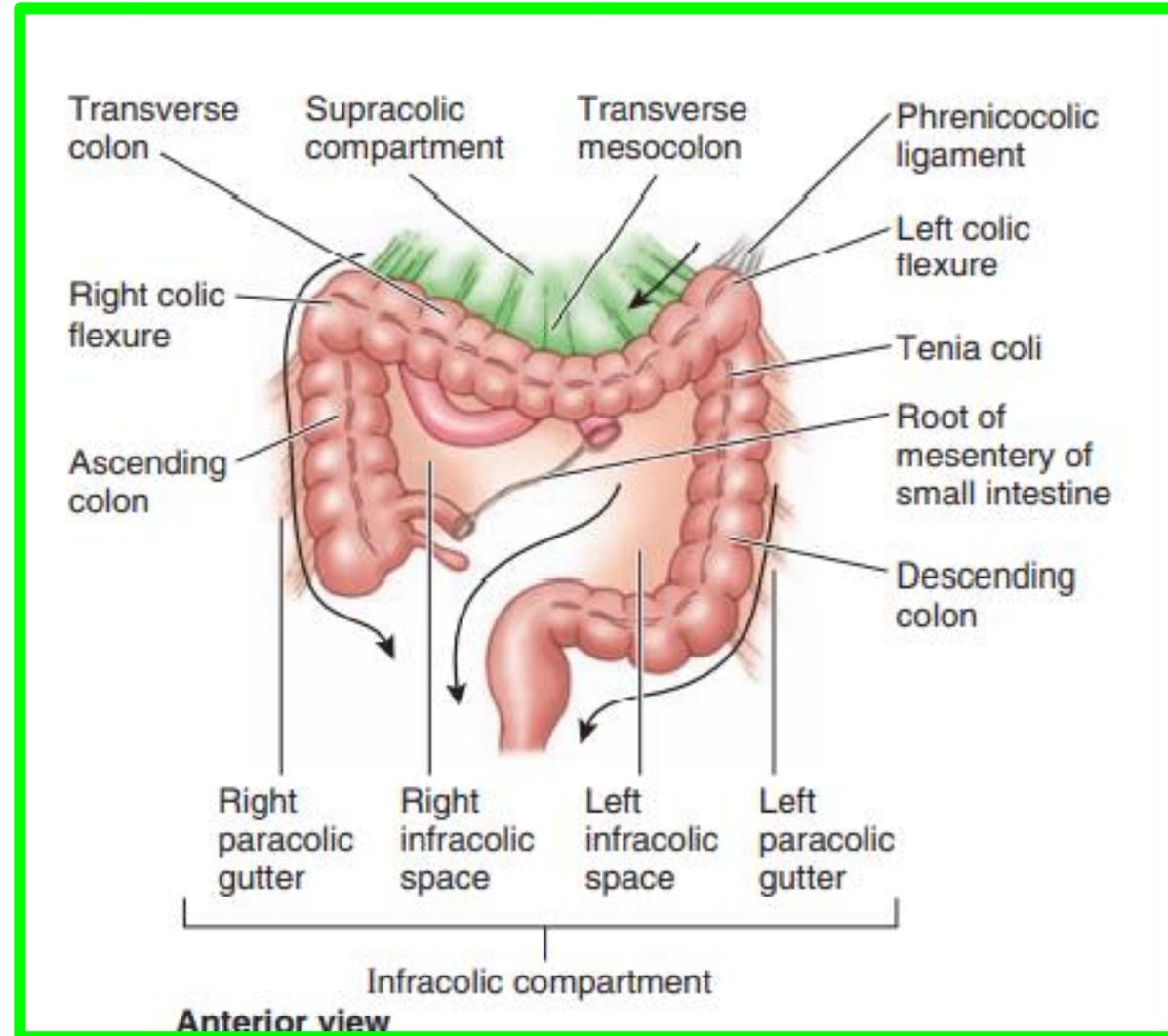


Dr. Aiman AL - Maathidy
Sunday 14 April 2024

Subdivisions of Peritoneal Cavity

✓ **The infracolic compartment** lies posterior to the greater omentum and is divided into **right** and **left infracolic** spaces by the **mesentery of the small intestine**.

❖ Free communication occurs between **the supracolic** and **the infracolic** compartments through **the paracolic gutters**

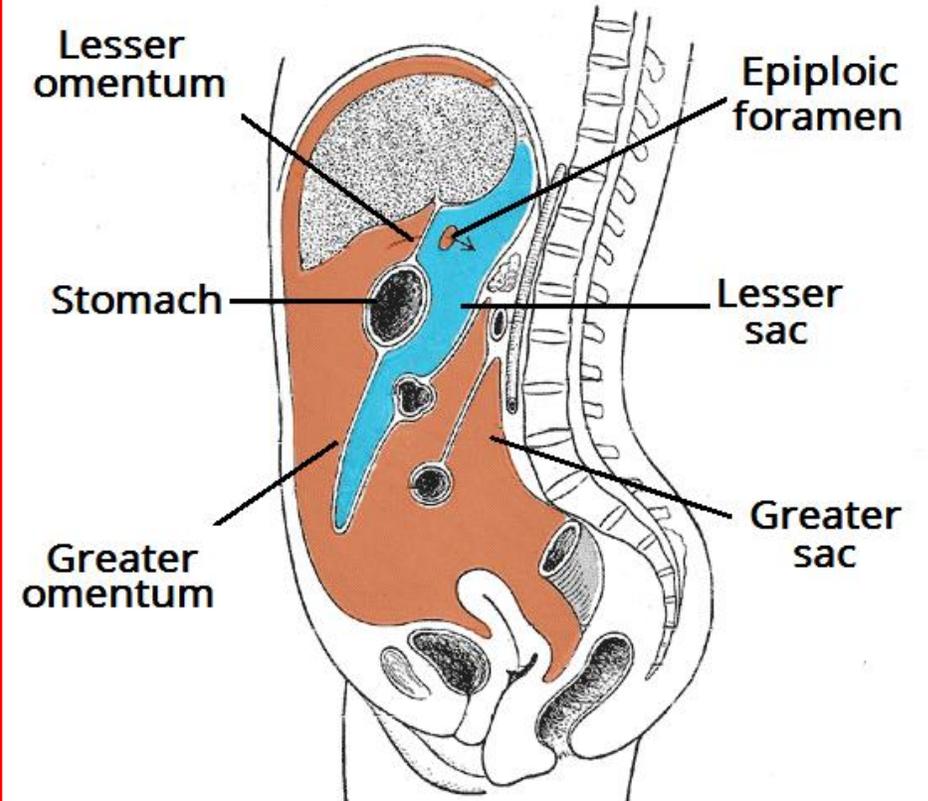


Peritoneal Pouches, Recesses, Spaces, and Gutters

Lesser Sac

Epiploic foramen location "important" !!

1. Epiploic foramen
2. To superior recess of lesser omental bursa
3. Pancreas (retroperitoneal)



© teachmeanatomy
The #1 Applied Human Anatomy Site on the Web.

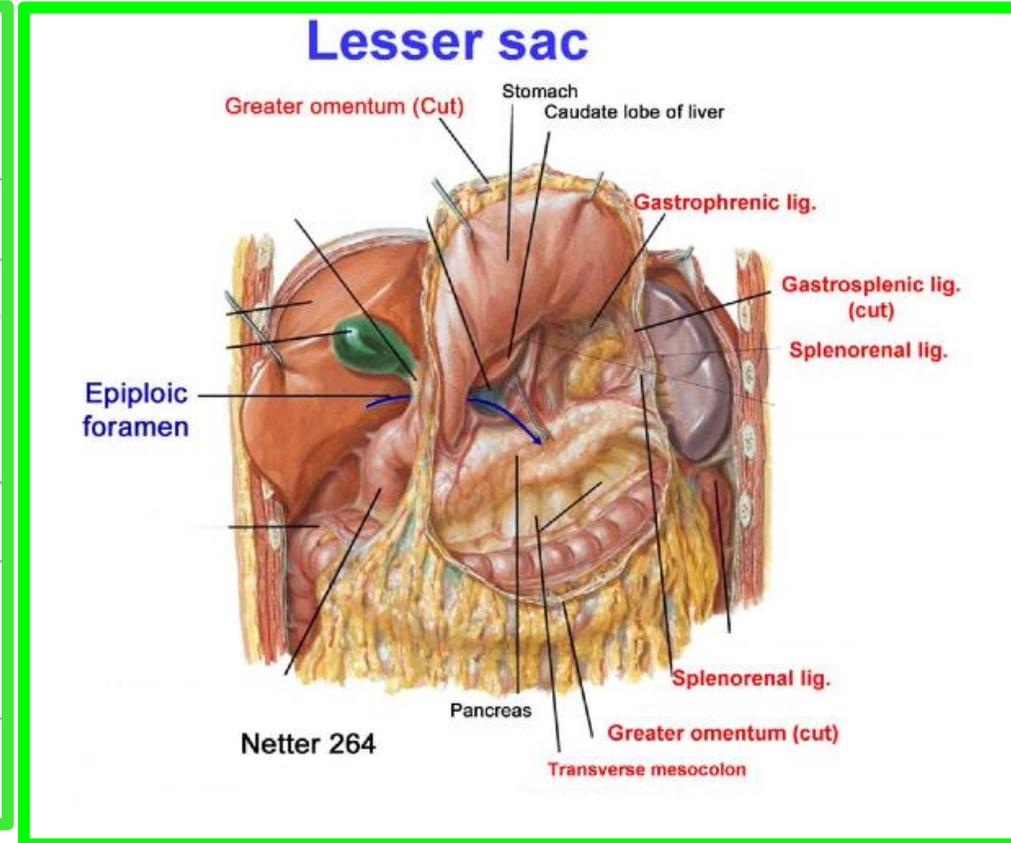
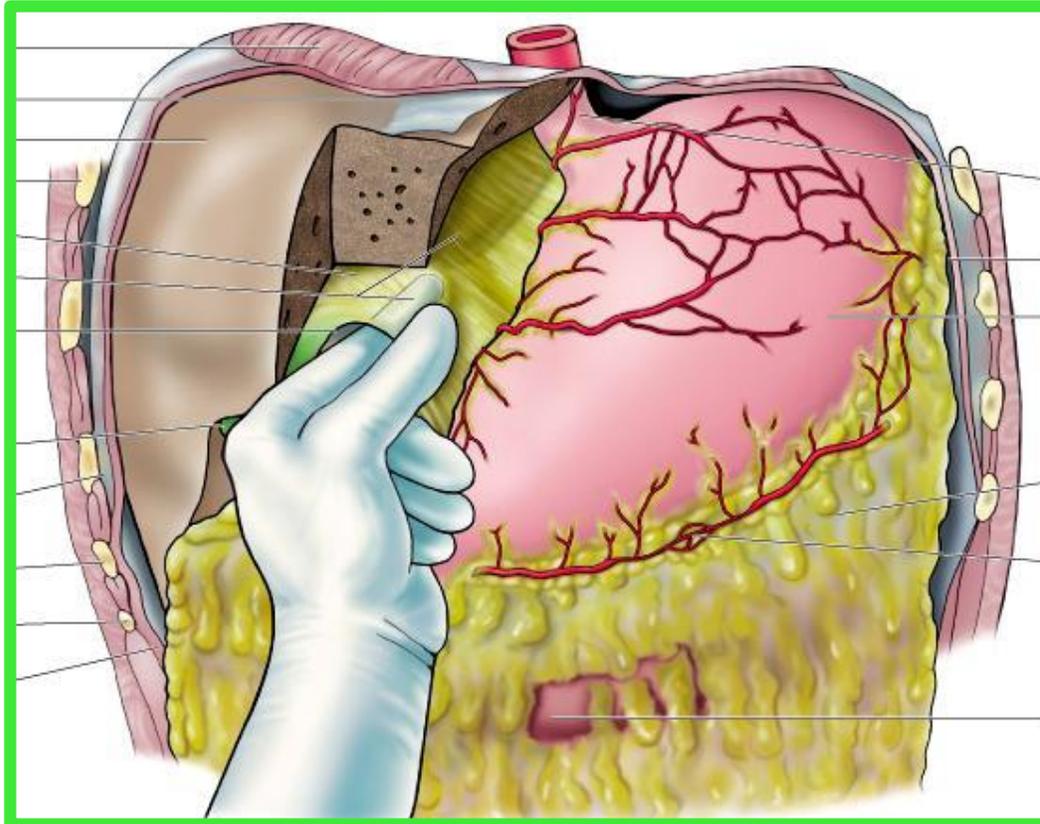
The lesser sac lies behind the stomach and the lesser omentum.

✓ It extends upward as far as the diaphragm and downward between the layers of the greater omentum.

Peritoneal Pouches, Recesses, Spaces, and Gutters

Dr. Aiman AL - Maathidy
Sunday 14 April 2024

Lesser Sac



- ✓ The left margin of the sac is formed by the spleen and the gastrosplenic omentum and splenicorenal ligament.
- ✓ The right margin opens into the greater sac (the main part of the peritoneal cavity) through the opening of the lesser sac, or epiploic foramen.

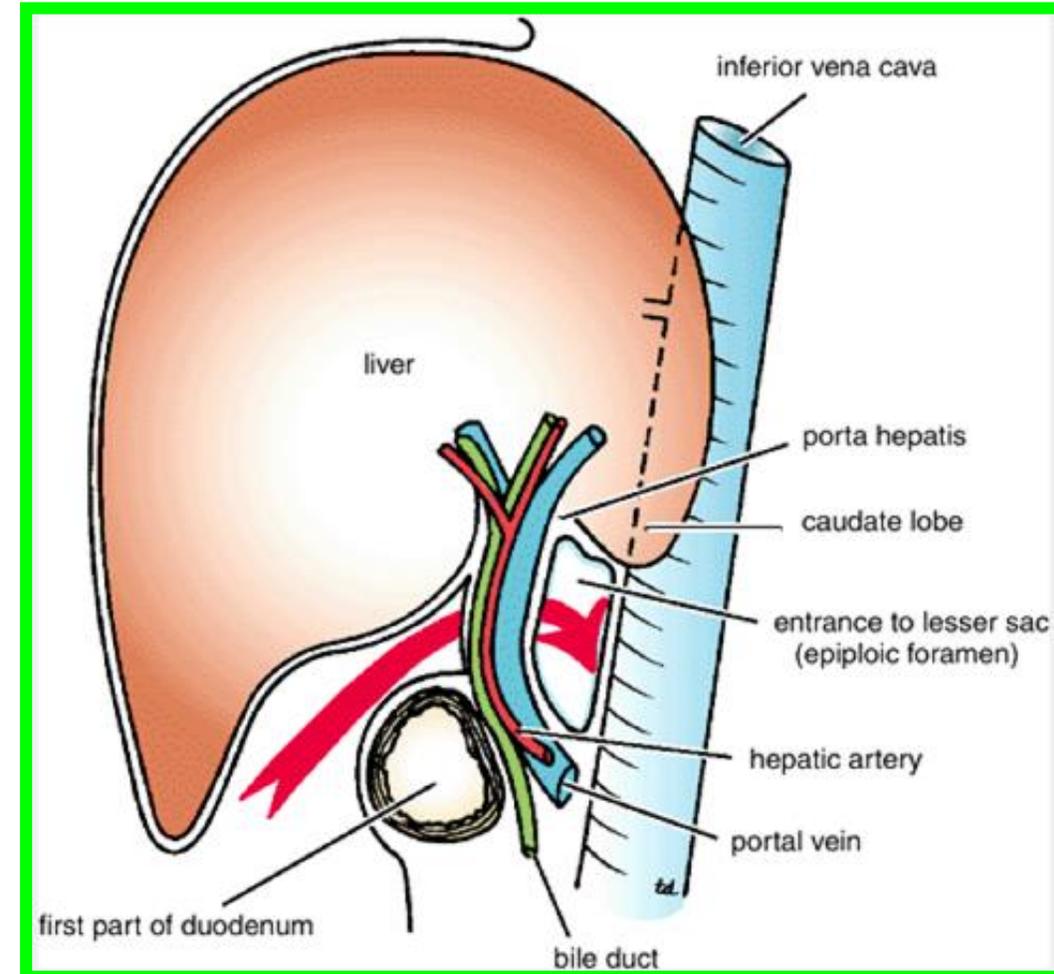
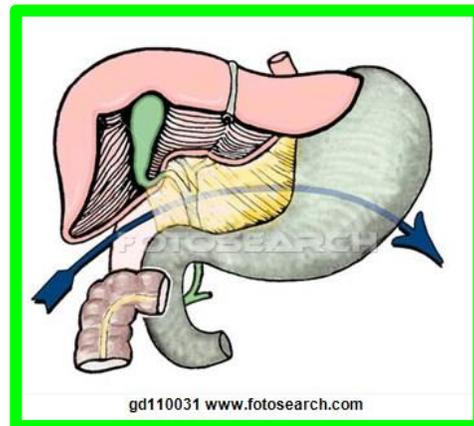
Peritoneal Pouches, Recesses, Spaces, and Gutters

Dr. Aiman AL - Maathidy
Sunday 14 April 2024

Lesser Sac

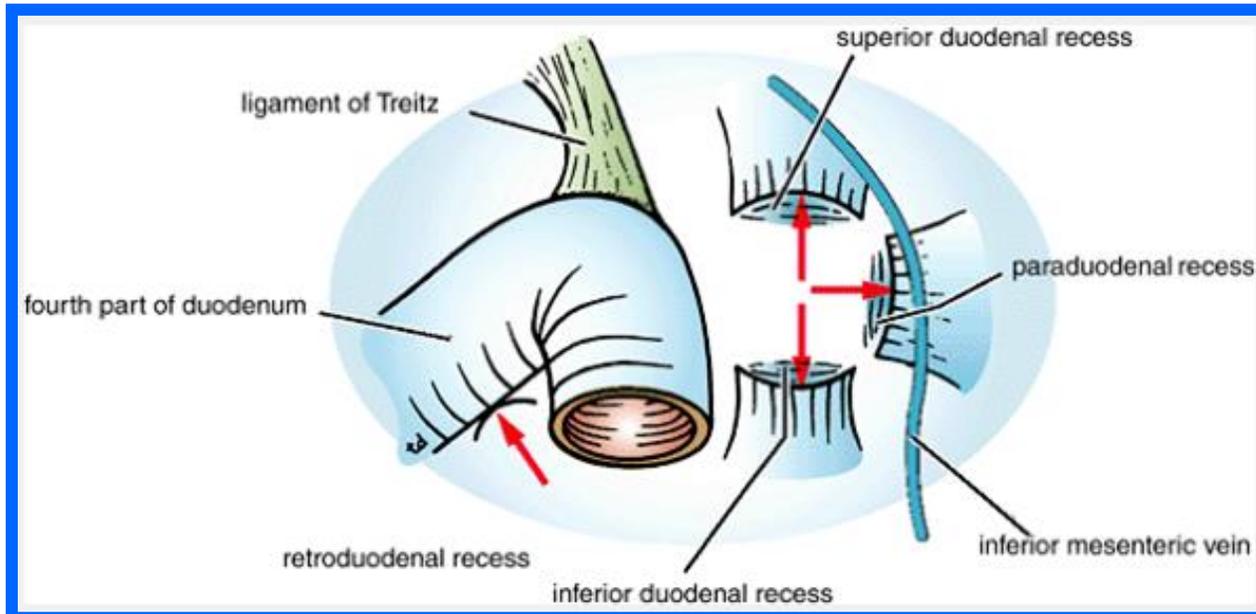
The opening into the lesser sac (**Epiploric Foramen**) has the following boundaries

- ✓ **Anteriorly:** Free border of the lesser omentum, **the bile duct, the hepatic artery,** and **the portal vein.**
- ✓ **Posteriorly:** **Inferior vena cava**
- ✓ **Superiorly:** Caudate process of the caudate lobe of the liver
- ✓ **Inferiorly:** First part of the duodenum



Duodenal Recesses

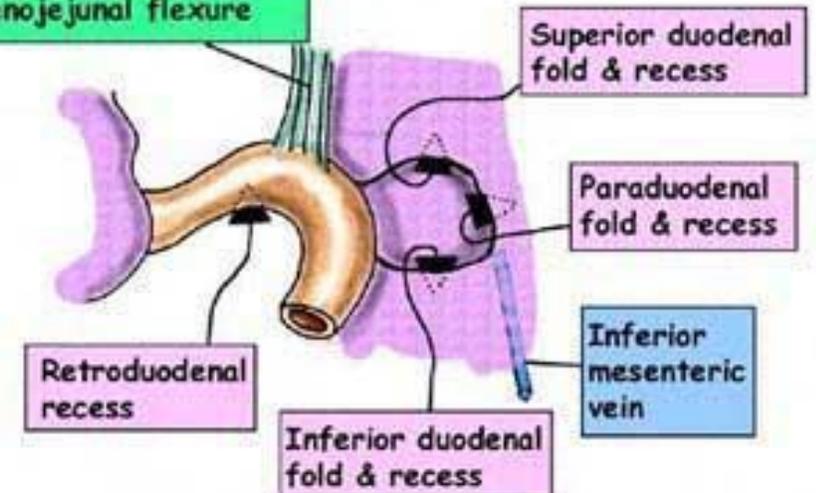
Close to the **duodenojejunal junction**, there may be four small pocket like pouches of peritoneum called the **superior duodenal**, **inferior duodenal**, **paraduodenal**, and **retroduodenal** recesses.



PERITONEAL RECESSES

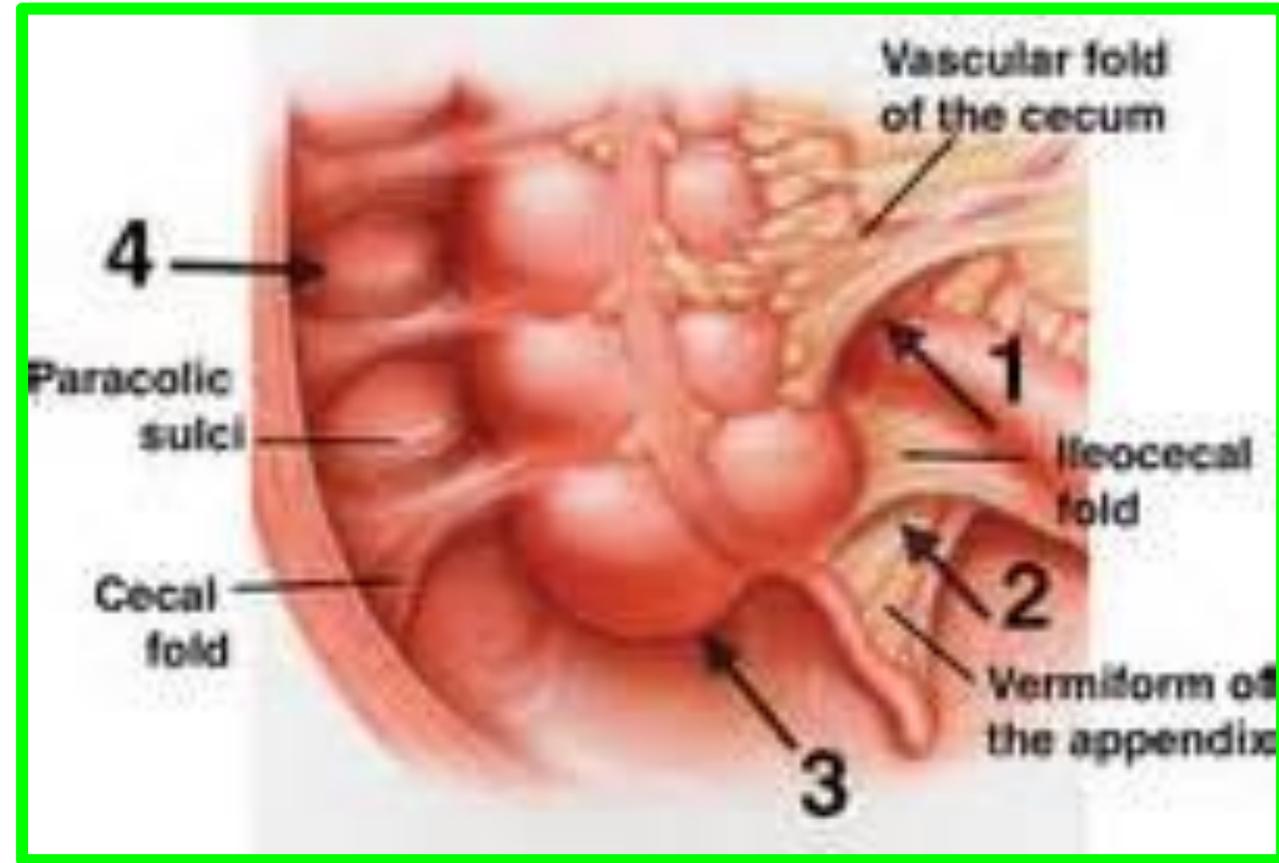
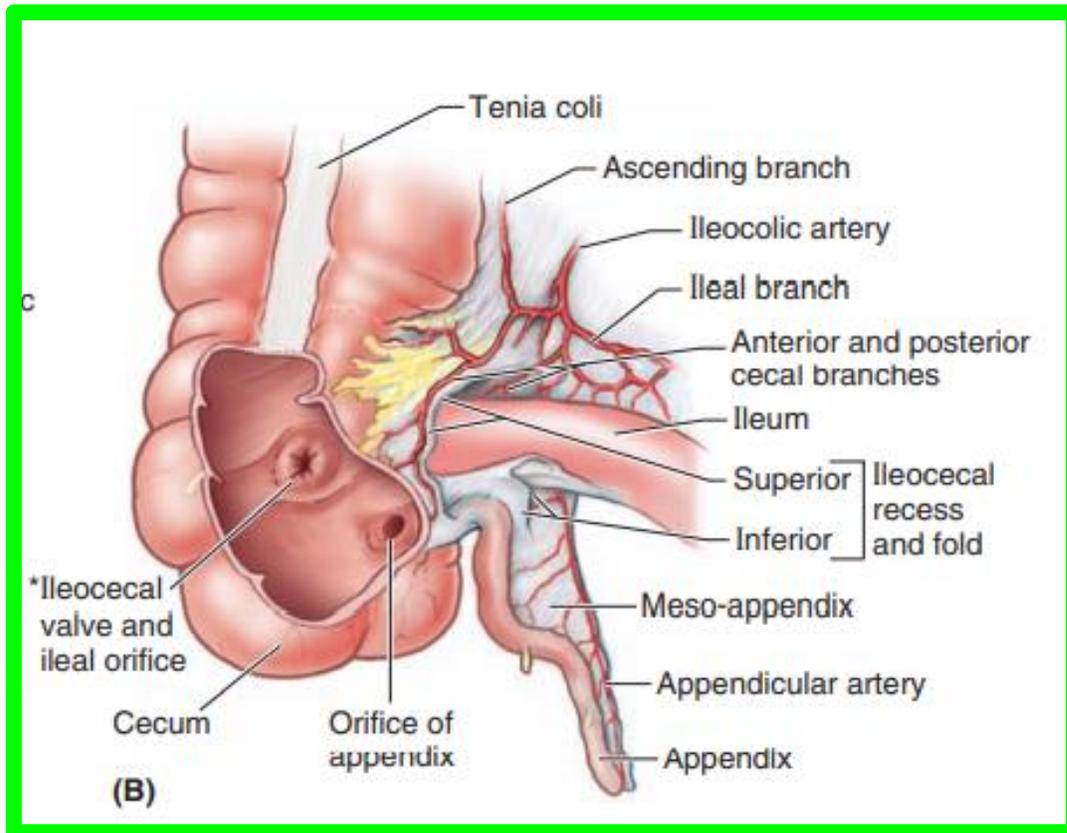
There are a number of small recesses, as shown below, that are potential areas for internal herniation of bowel or other structures

Ligament of Treitz
Thin band of smooth muscle from right crus, passing anterior to aorta/renal vessels but behind pancreas, to blend with outer coat of duodenojejunal flexure



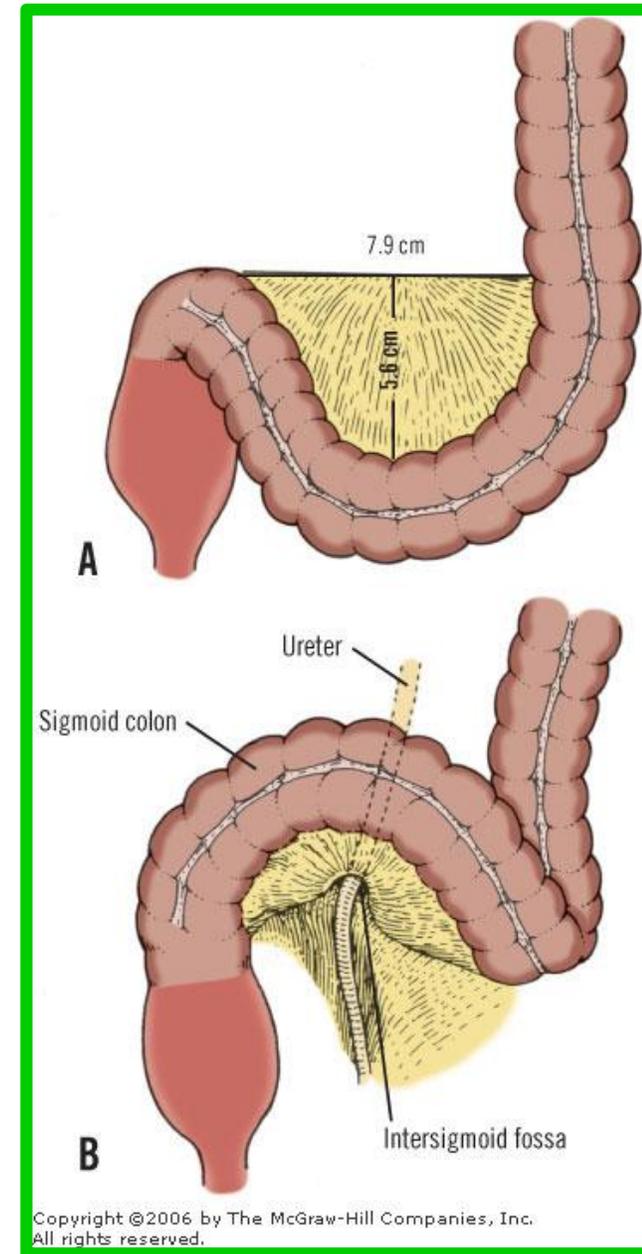
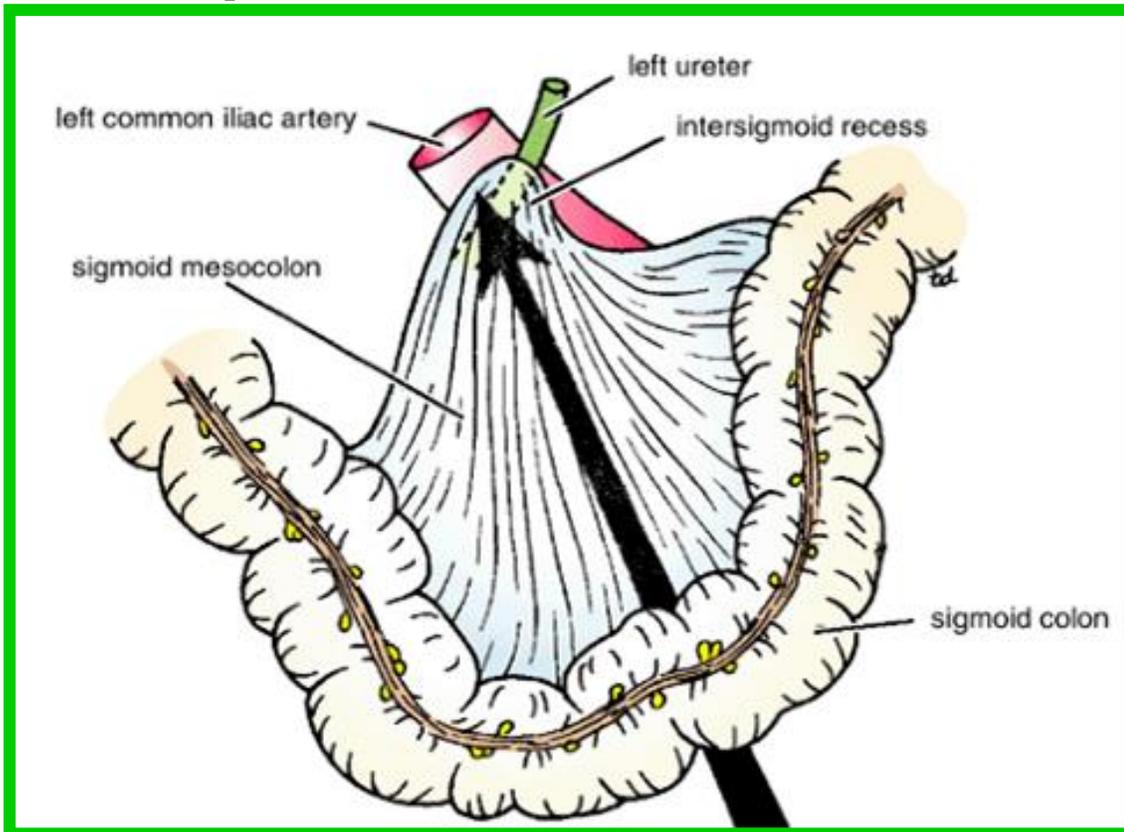
Cecal Recesses

Folds of peritoneum close to the cecum produce 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.



Sunday 14 April 2024

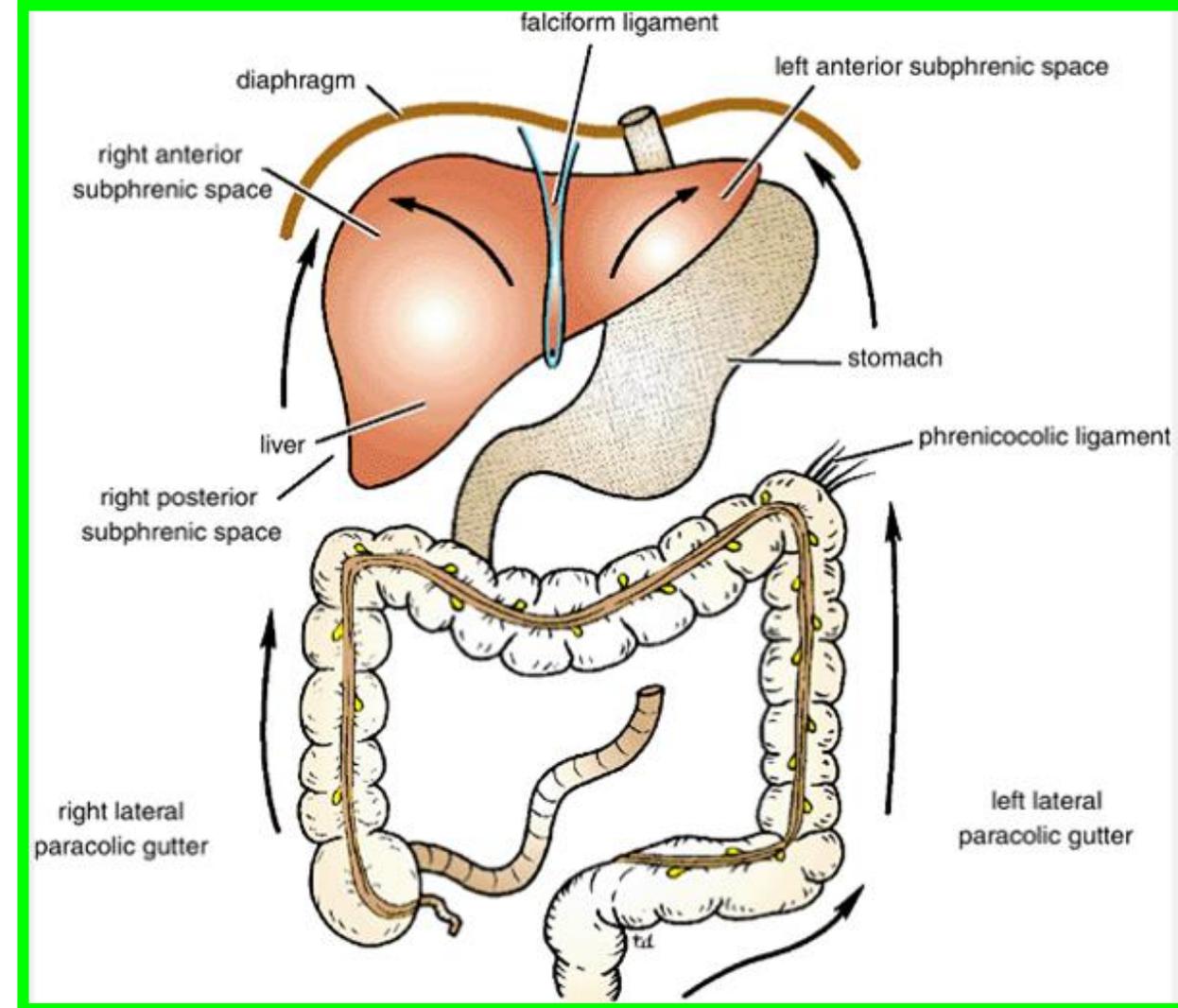
Dr. Aiman AL - Maathidy

Peritoneal Pouches, Recesses, Spaces, and Gutters

Subphrenic Spaces

The right and left anterior subphrenic spaces lie between the diaphragm and the liver, on each side of the falciform ligament.

❖ These two spaces are closed above by the superior layer of the **coronary ligament** and the anterior layer of the **left triangular ligament** respectively

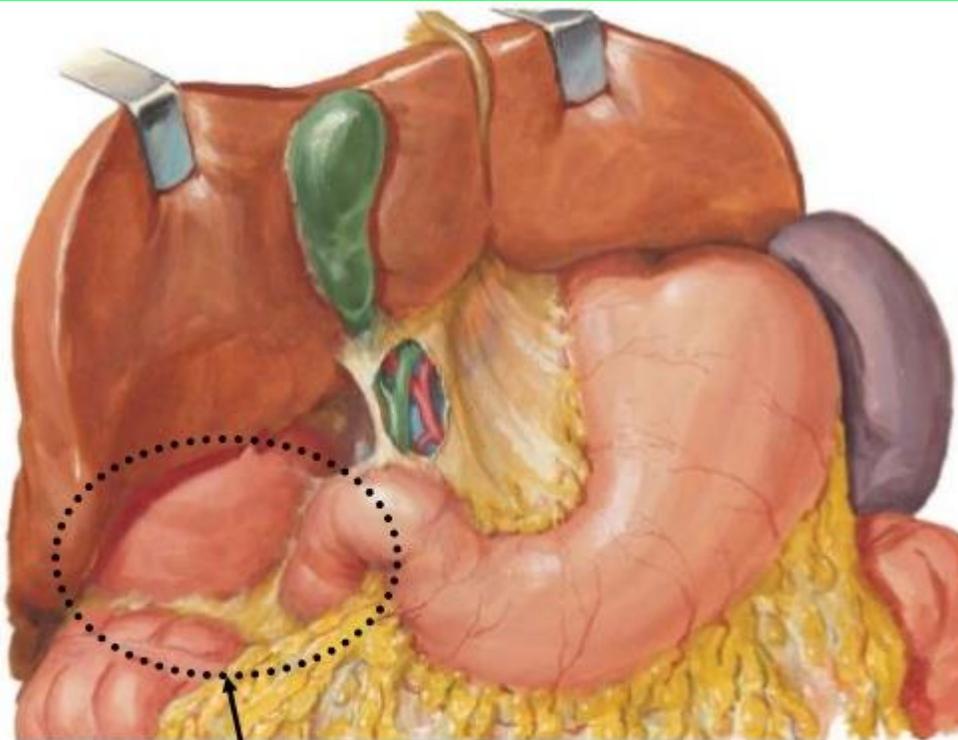


Subphrenic Spaces

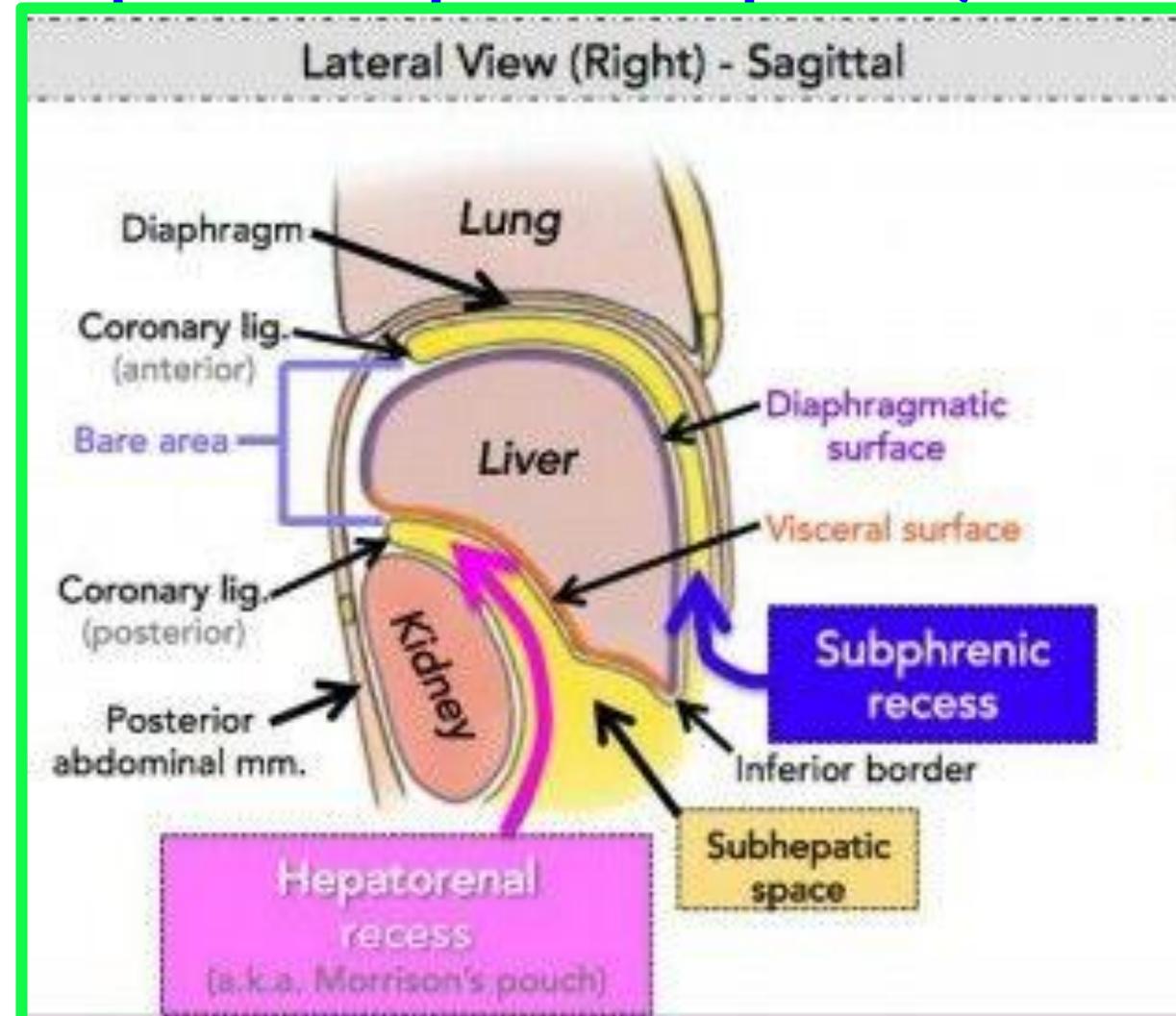
27

Dr. Aiman AL - Maathidy
Sunday 14 April 2024

The **right posterior subphrenic** Behind the right lobe of the liver and in front of the right kidney is the **right subhepatic space or hepatorenal pouch (of Morison)**.

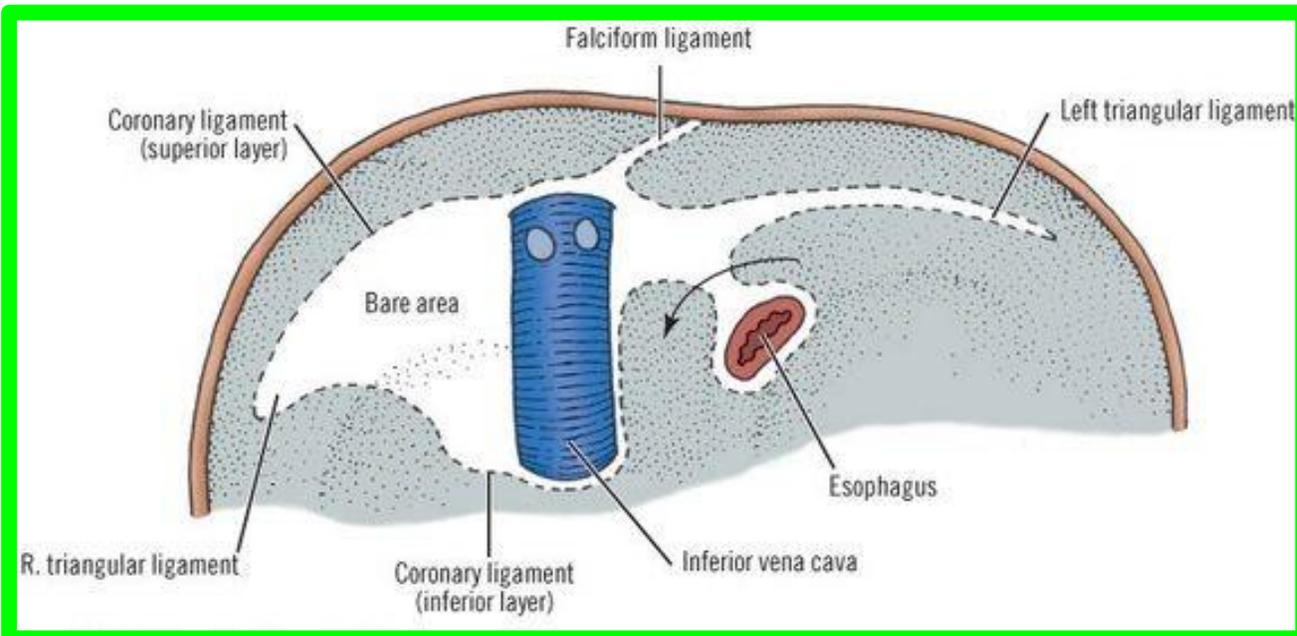


Hepato-renal pouch of Morison



Subphrenic Spaces

This space is closed above by the inferior layer of the coronary ligament and the small right triangular ligament. To the right it is bounded by the abdominal surface of the diaphragm. On the left side the space communicates through the epiploic foramen with the lesser sac or left subhepatic space.

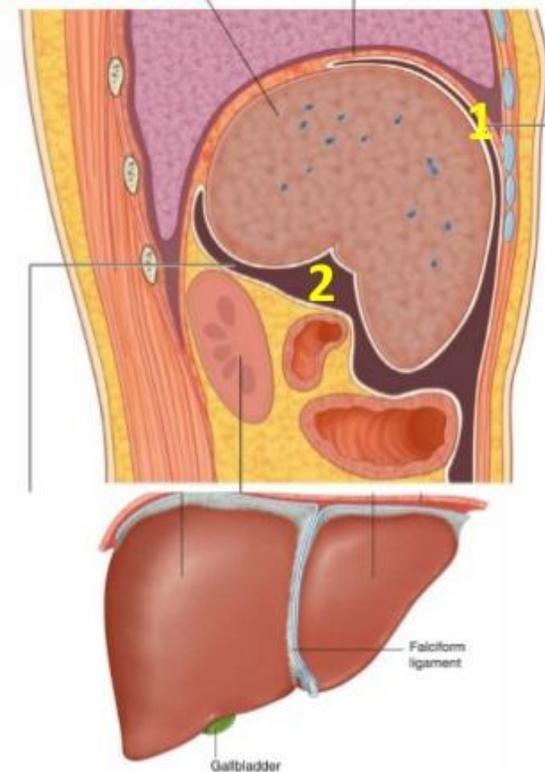


Diaphragmatic surface of liver

- 2 recesses have an important in this surface ...

- 1) The **subphrenic recess** separates the diaphragmatic surface of the liver from the diaphragm and is divided into right and left areas by the **falciform ligament**, a structure derived from the ventral mesentery in the embryo.

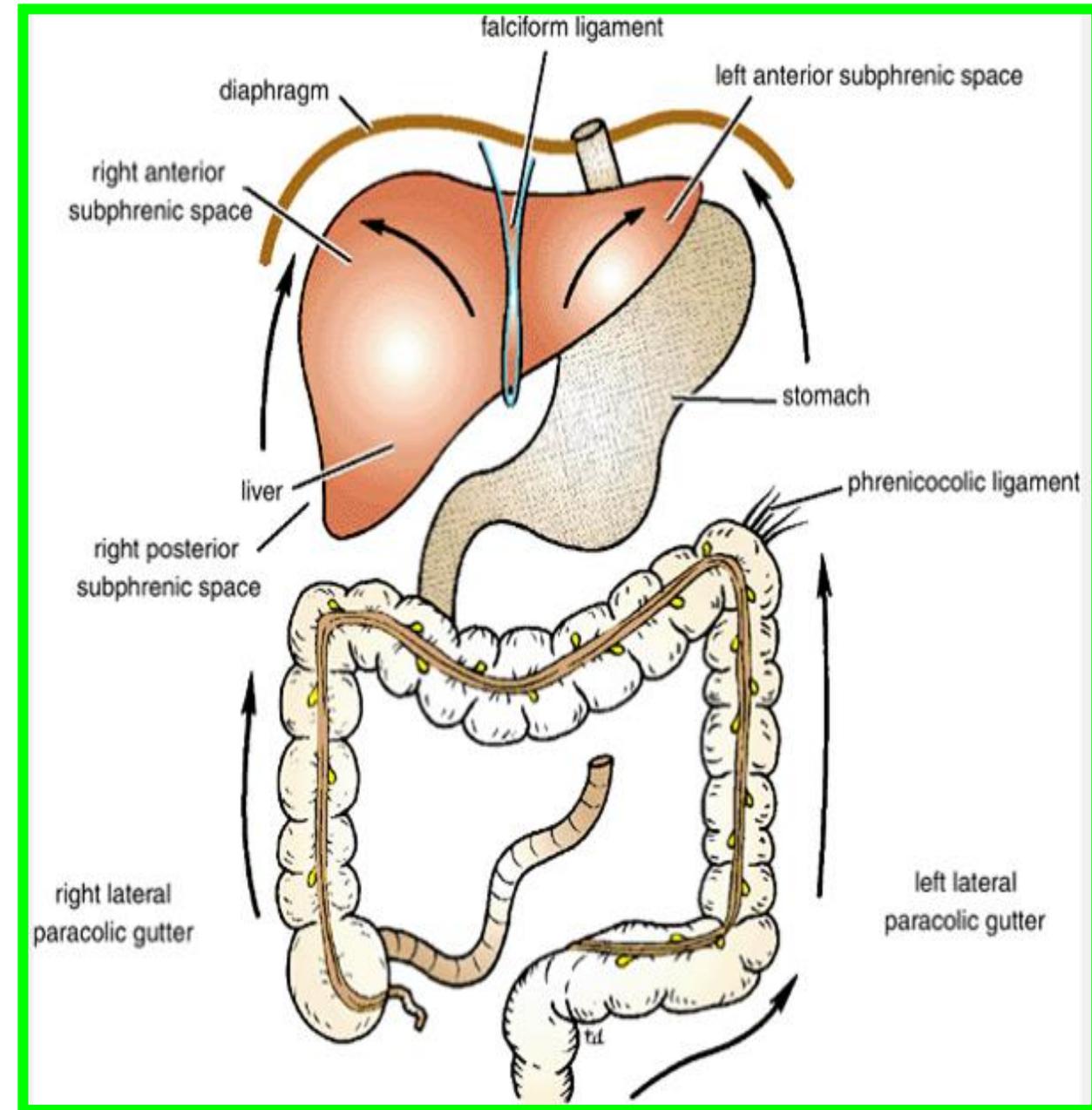
- 2) The **hepatorenal recess** is a part of the peritoneal cavity on the right side between the liver and the right kidney and right suprarenal gland.



Paracolic Gutters

The **paracolic gutters** lie on the lateral and medial sides of the ascending and descending colons, respectively .

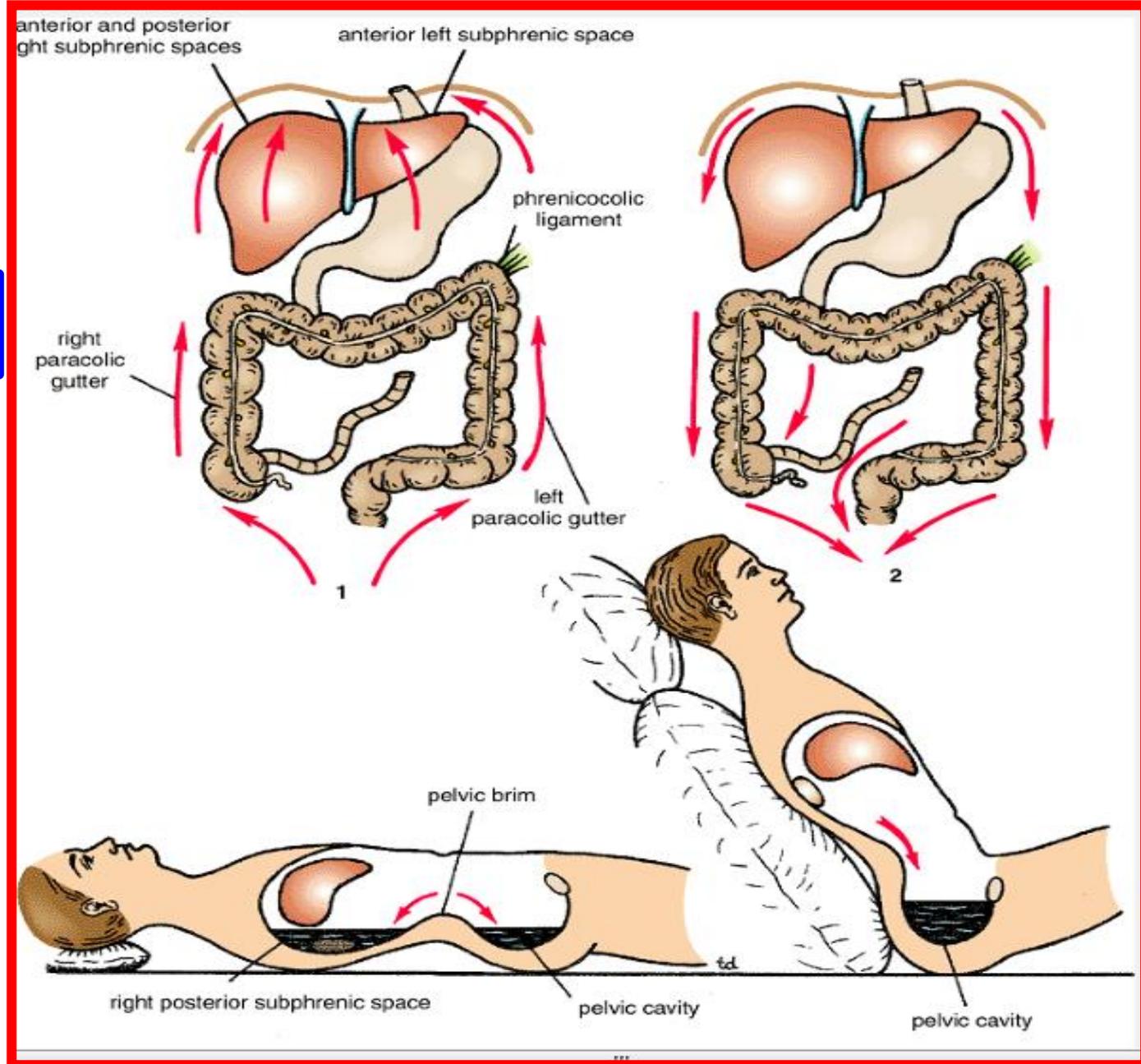
❖ The **subphrenic spaces** and the **paracolic gutters** are **clinically important** because they may be sites for the collection and movement of infected peritoneal fluid.



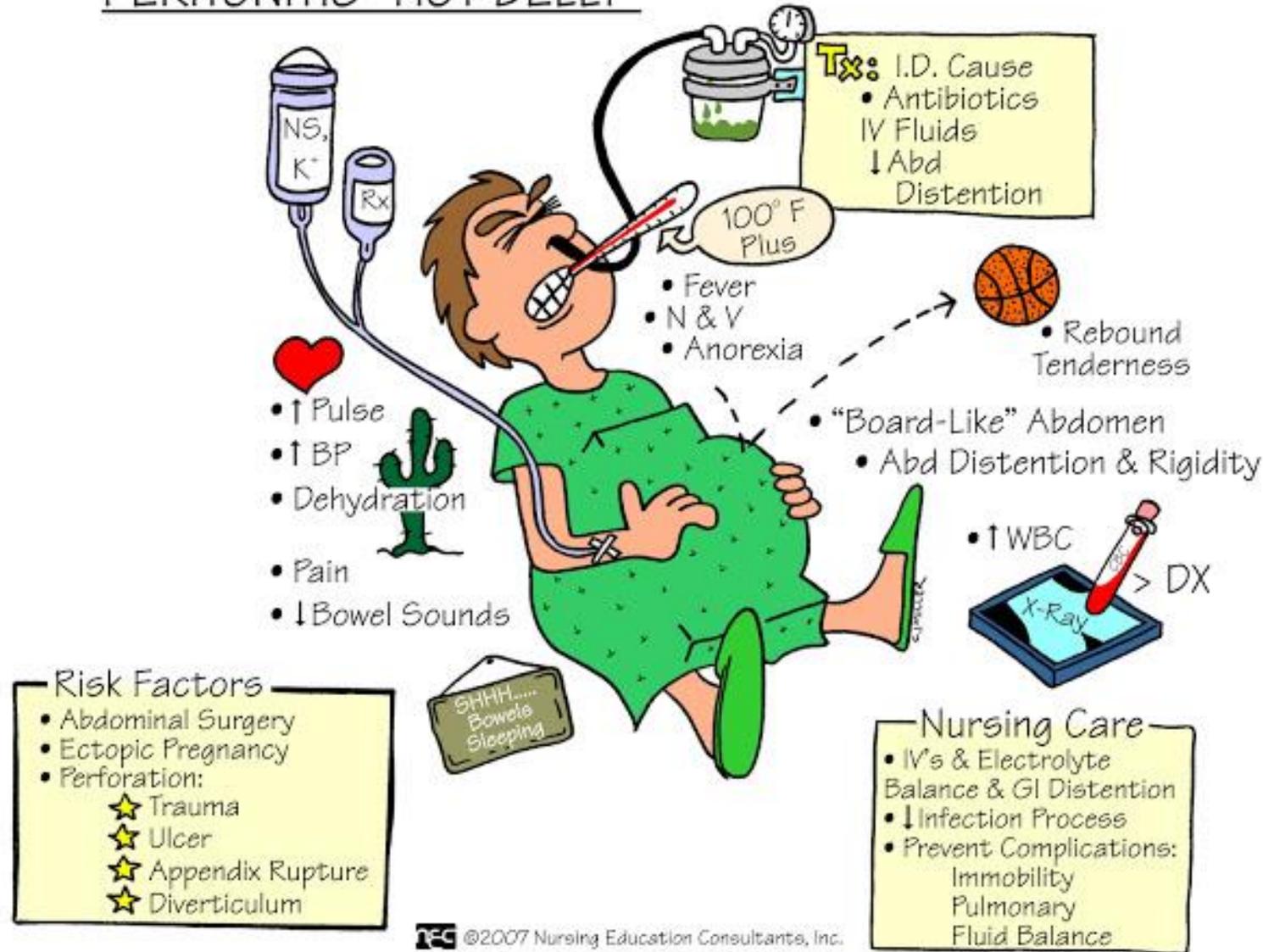
Peritonitis and Ascites ???

Fluid in Omental Bursa ???

Abdominal Paracentesis ???



PERITONITIS "HOT BELLY"



Peritonitis and Ascites ???



Abdominal Paracentesis ???



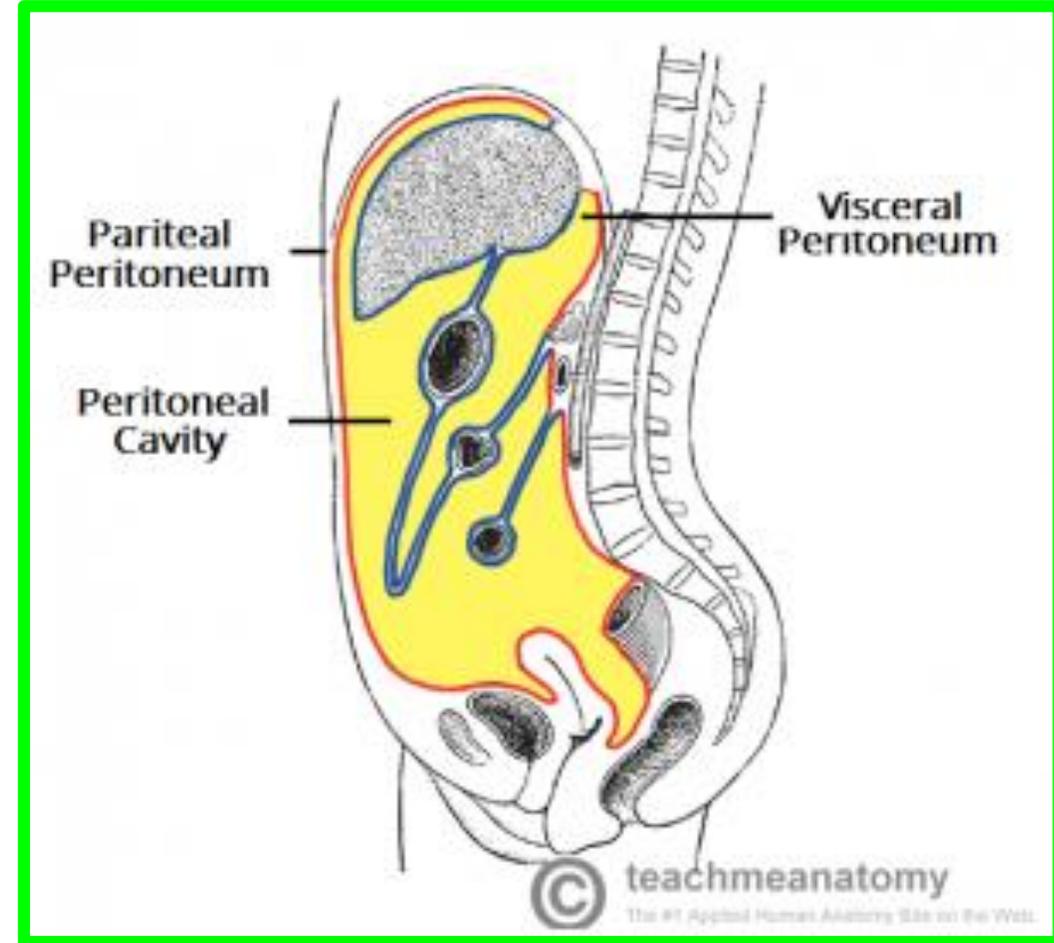
Nerve Supply of the Peritoneum

The **parietal peritoneum** is sensitive to pain, temperature, touch, and pressure.

❖ The parietal peritoneum lining the **anterior abdominal wall** is supplied by the lower six thoracic and first lumbar nerves.

❖ The **central part of the diaphragmatic peritoneum** is supplied by the phrenic nerves; **peripherally**, the diaphragmatic peritoneum is supplied by the lower six thoracic nerves

❖ The **parietal peritoneum** in the **pelvis** is mainly supplied by the obturator nerve, a branch of the lumbar plexus.



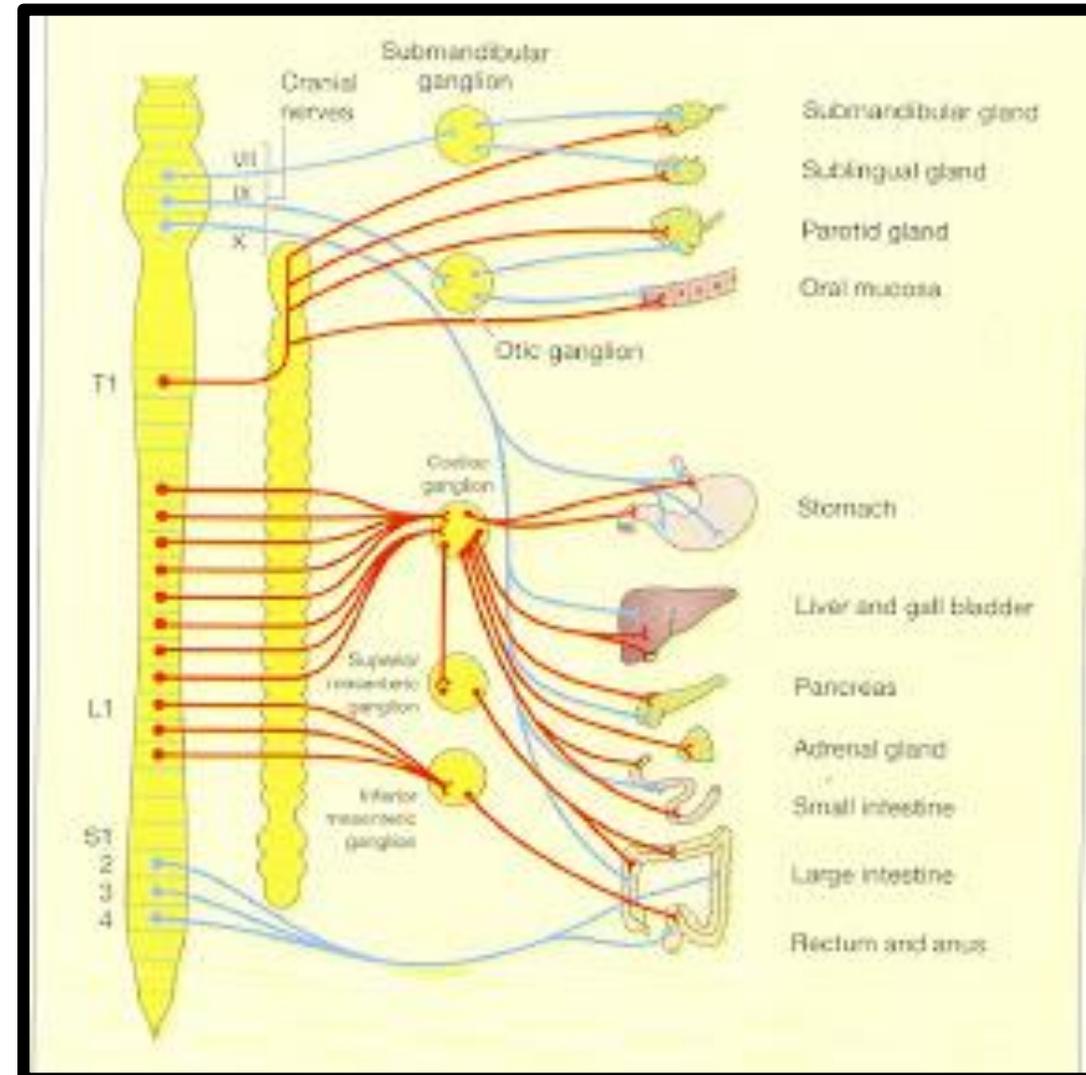
Nerve Supply of the Peritoneum

❖ The **visceral peritoneum** is sensitive only to stretch and tearing and is not sensitive to touch, pressure, or temperature

❖ It is supplied by **autonomic afferent nerves** that supply the viscera or are traveling in the mesenteries.

❖ **Overdistention of a viscus** leads to the sensation of pain.

❖ The mesenteries of the small and large intestines are sensitive to **mechanical stretching**



Dr. Aiman AL - Maathidy
Sunday 14 April 2024

