

The peritoneum

Prof. Oluwadiya KS, MBBS, FMCS(Orthop)

Website: <http://oluwadiya.com>

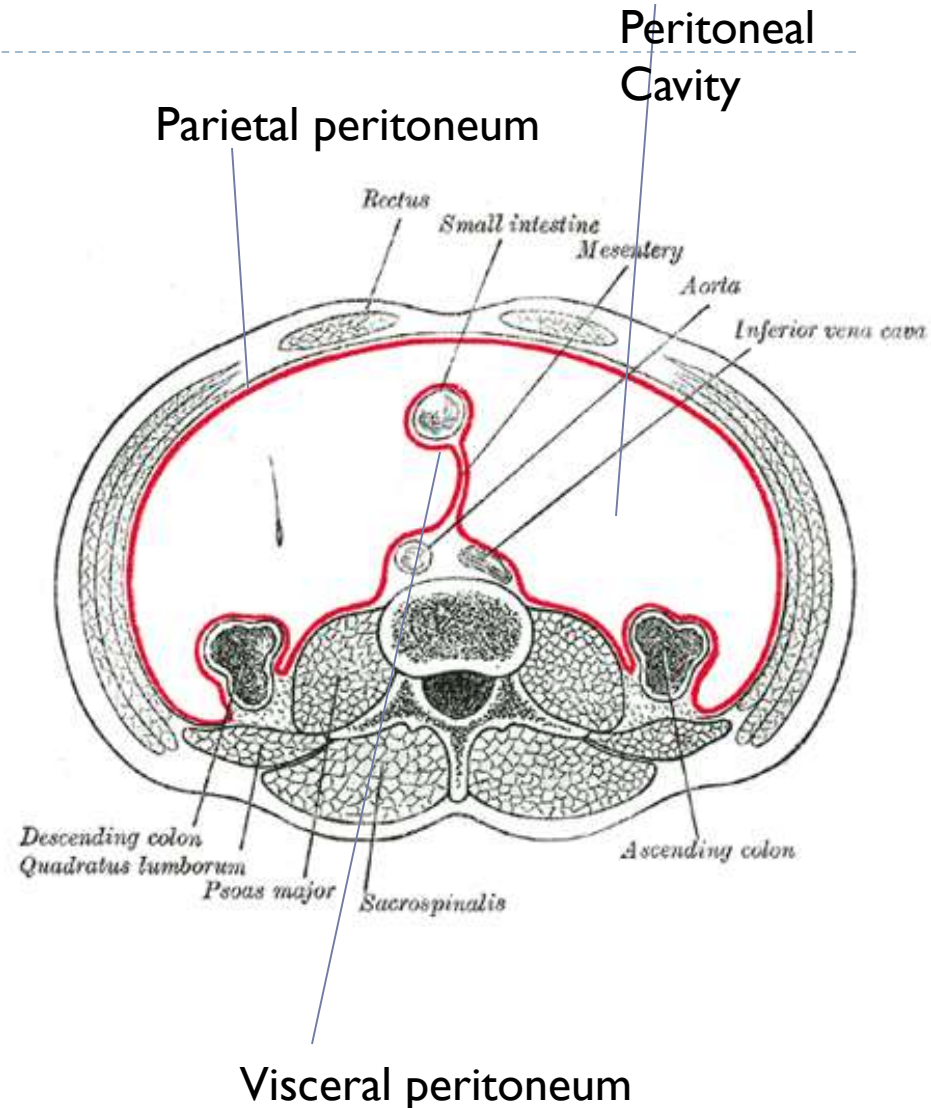
The peritoneum

- ▶ Serous membrane that lines the abdominopelvic cavity and invests the viscera
- ▶ The largest serous membrane in the body, with a surface area of about 22,000 cm²
- ▶ Basically divided into two parts:
 - i. Parietal peritoneum
 - ii. Visceral peritoneum



The peritoneum

- ▶ The parietal layer lines the abdominal and pelvic cavities and the abdominal surface of the diaphragm. Usually loosely adherent and can be easily teased off.
- ▶ The visceral layer covers the abdominal and pelvic viscera and includes the mesenteries. Usually tightly adherent to the organ it covers
- ▶ **Peritoneal cavity:** Potential space between the two layers



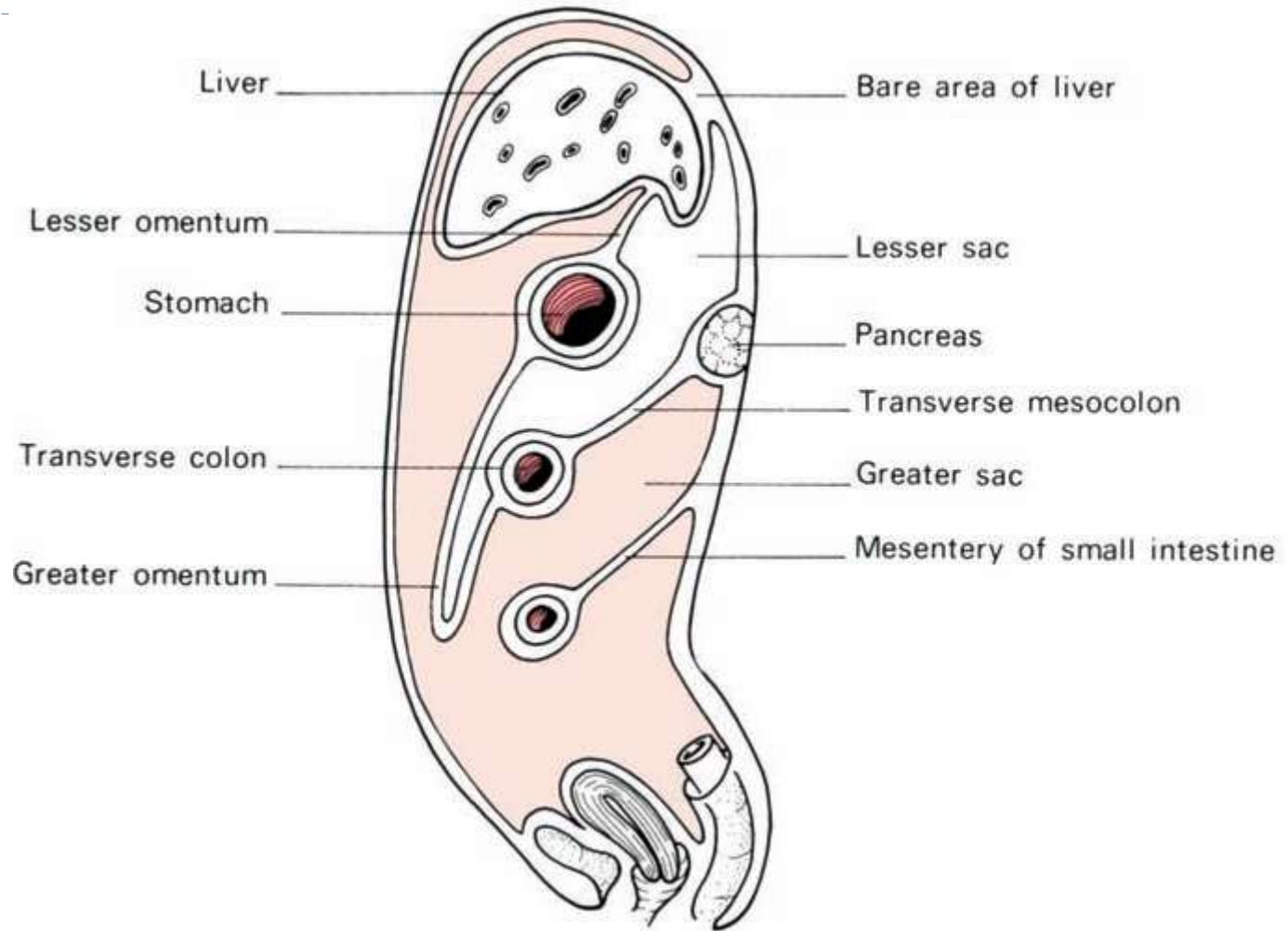
Peritoneal Cavity

▶ Divided into two parts:

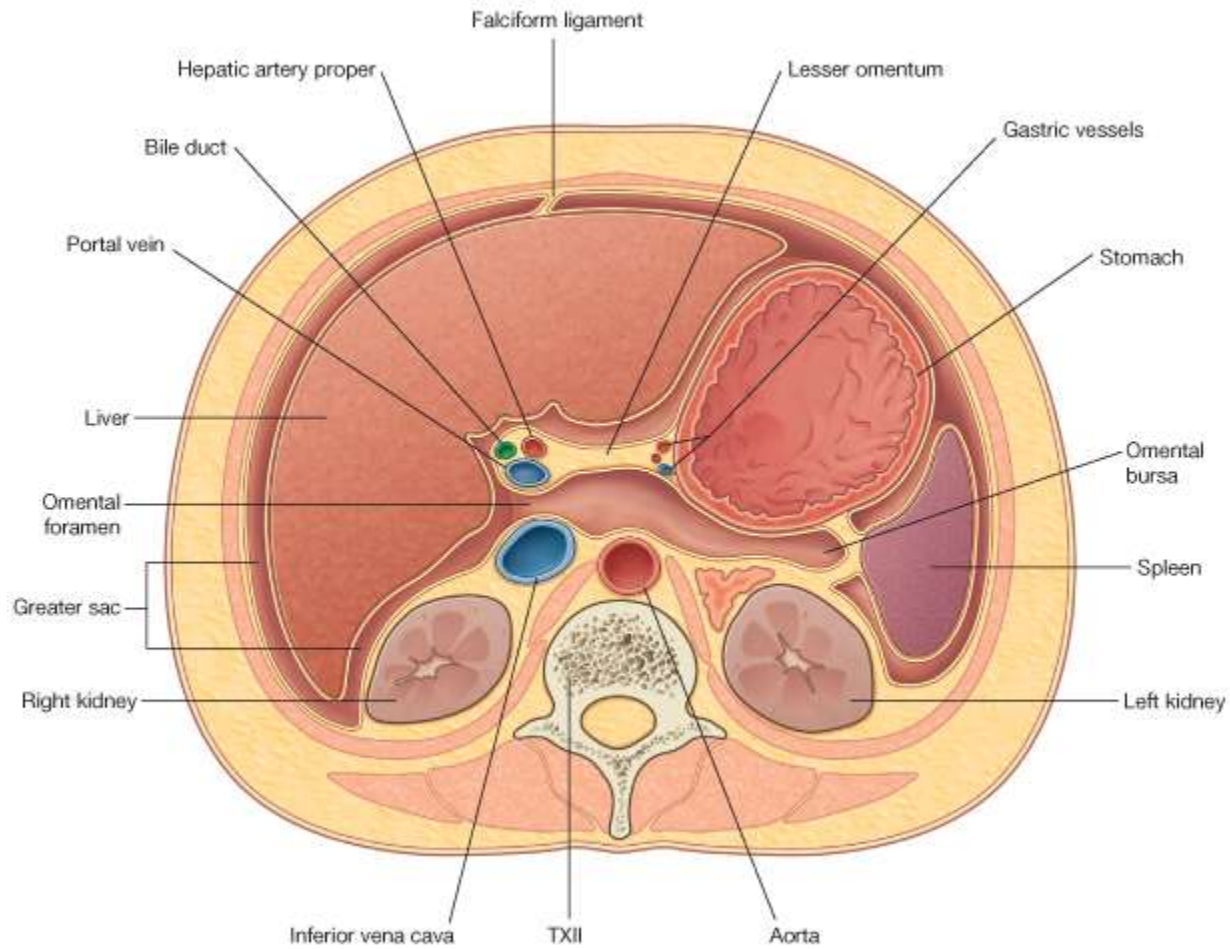
- i. **Greater sac** accounts for most of the space in the peritoneal cavity, beginning superiorly at the diaphragm and continuing inferiorly into the pelvic cavity-it is entered once the parietal peritoneum has been penetrated.
- ii. **Lesser sac commonly called omental bursa:** is a smaller subdivision of the peritoneal cavity posterior to the stomach and liver and is continuous with the greater sac through an opening, the omental foramen



Lesser and greater sacs



Lesser and greater sacs



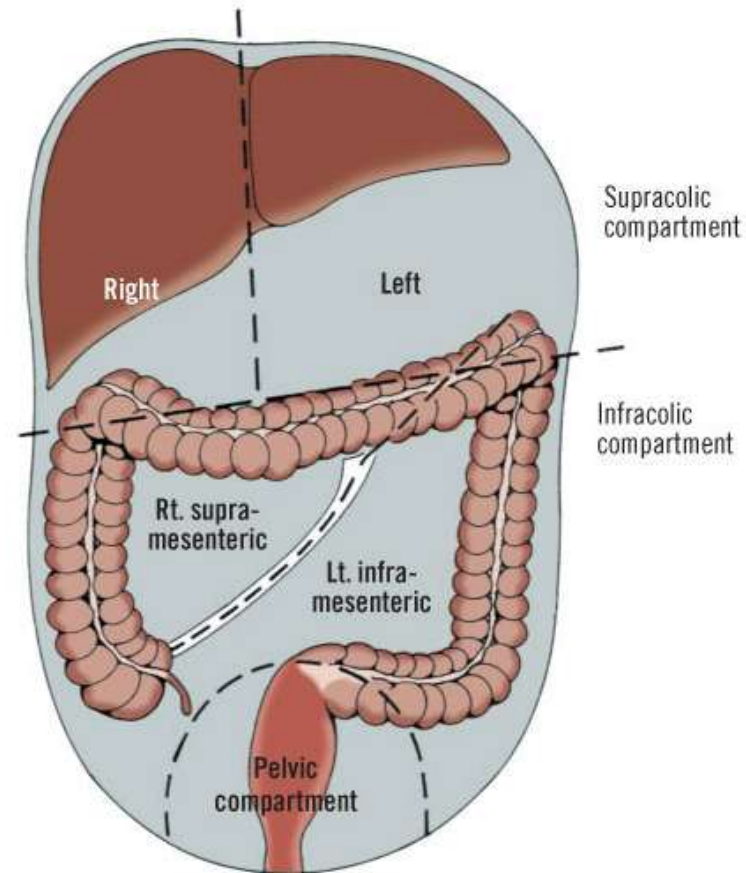
Peritoneal Compartments

▶ **Supra Colic**

- i. Right supracolic
 - (a) Rt & Left sub diaphragmatic spa
 - (b) Rt & Lt Sub hepatic spaces
- ii. Left supracolic

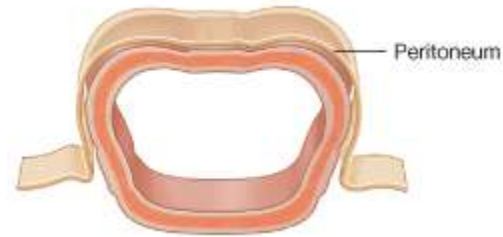
▶ **Infracolic**

- i. Rt Infracolic (supra mesenteric)
 - ii. Left Infracolic (inframesenteric)
 - iii. Rt paracolic gutter
 - iv. Lt paracolic gutter
 - v. Pelvic
-

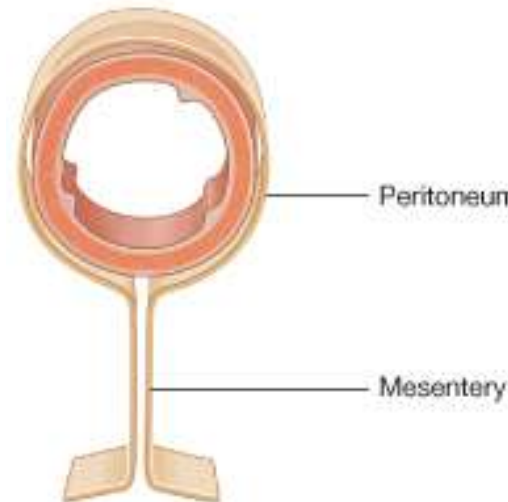


The peritoneum: layout

- ▶ An organ that is covered only in part by the peritoneum is referred to as a retroperitoneal organ.
- ▶ An organ that is covered by peritoneum essentially everywhere except for the site of entrance of vessels is referred to as an intraperitoneal organ.



Retroperitoneal



Intraperitoneal



Definitions

- ▶ **Mesentery**: double layer of peritoneum which connects the intestine to the abdominal wall
- ▶ A **peritoneal ligament** consists of a double layer of peritoneum that connects an organ with another organ or to the abdominal wall
- ▶ A **peritoneal fold** is a reflection of peritoneum that is raised from the body wall by underlying blood vessels, ducts, and obliterated fetal vessels
- ▶ A **peritoneal recess** or fossa, is a pouch of peritoneum that is formed by a peritoneal fold



Parts of the peritoneum

Omenta	Great omentum
	Lesser omentum
Mesenteries	Mesentery of the small bowel
	Mesoappendix
	Transverse mesocolon
	Pelvic mesocolon
Ligaments	Of liver
	Of urinary bladder
	Of uterus
Fossae	Duodenal
	Cecal
	Intersigmoid



Mesentery

- ▶ double layer of peritoneum which connects the intestine to the abdominal wall
- ▶ serves as continuation of visceral and parietal peritoneum
- ▶ provides a means for neurovascular communication between organ and body wall
- ▶ The mesentery of the small intestine is usually referred to simply as the mesentery
- ▶ Mesenteries of other specific parts of the alimentary tract are named accordingly: mesocolons, mesoesophagus, mesogastrium, and mesoappendix



Mesentery

- ▶ The mesentery of the small intestine is usually referred to simply as the mesentery
- ▶ Mesenteries of other specific parts of the alimentary tract are named accordingly:

Organ	Name
Transverse Colon	Transverse Mesocolon
Sigmoid colon	Sigmoid mesocolon
Appendix	Mesoappendix



Omentum

- ▶ Two layers of peritoneum, which pass from the the stomach and the first part of the duodenum to other viscera
- ▶ Two in number:
 - i. Greater omentum derived from the ventral mesentery
 - ii. Lesser omentum derived from the dorsal mesentery

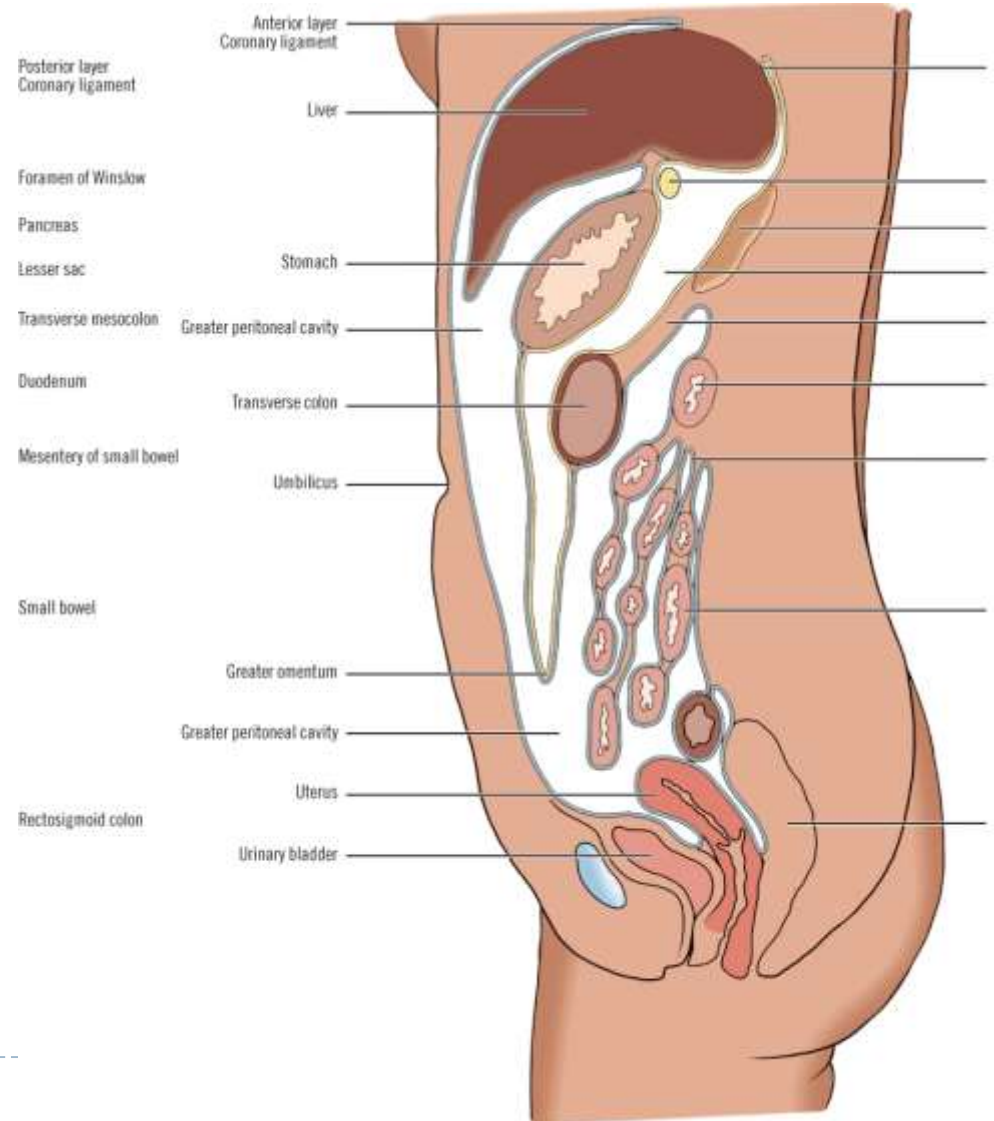
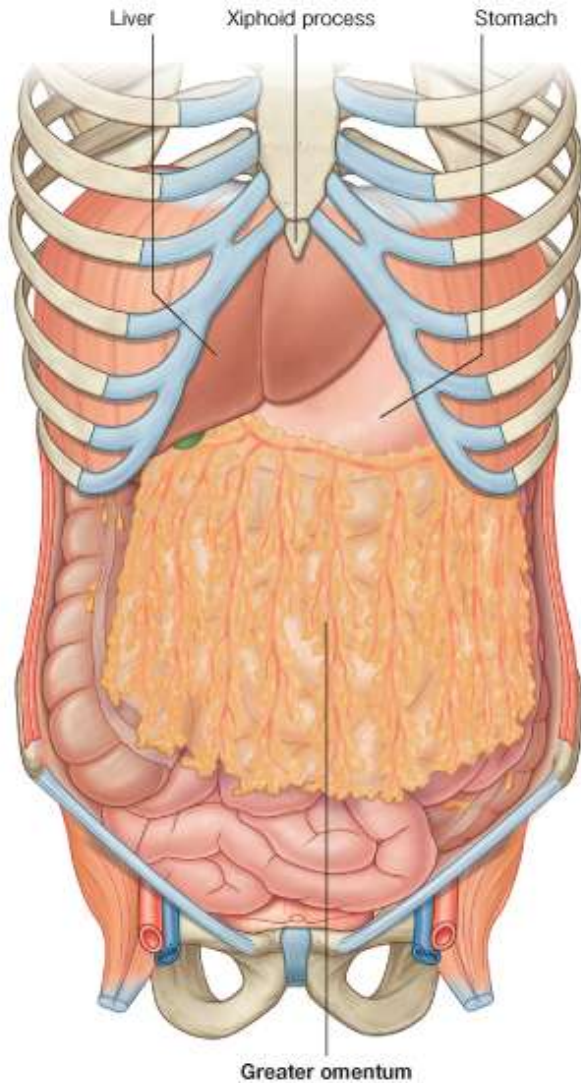


Greater omentum

- ▶ Hangs from the greater curvature of the stomach in the form of a thin-walled sac, which helps form the omental sac or bursa
- ▶ Extends downward as a free fat apron which covers loops of the small bowel and (occasionally) pelvic organs.
- ▶ It then folds back to be attached to the transverse colon
- ▶ **Contains:**
 - ▶ Fats
 - ▶ The right and left gastro-omental (epiploic) vessels



Greater omentum

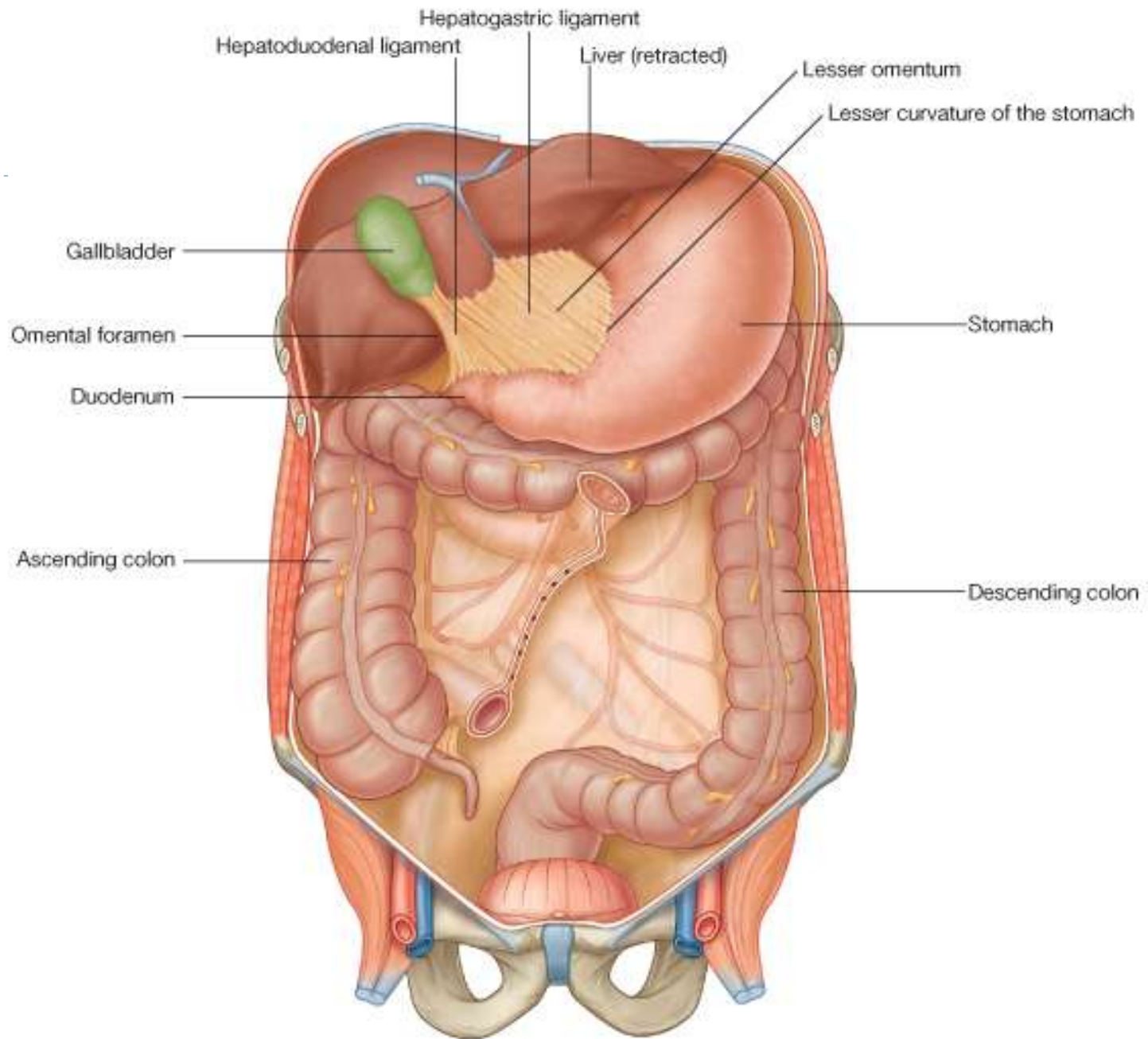


Lesser Omentum

- ▶ Extends from the lesser curvature of the stomach and the first part of the duodenum to the inferior surface of the liver. Divided into two parts:
 - i. **Hepatogastric ligament**, which passes between the stomach and liver;
 - ii. **Hepatoduodenal ligament**, which passes between the duodenum and liver.
- ▶ Contains the hepatic triad
 - i. (portal vein, cystic duct and the hepatic artery)
 - ii. Branches of the anterior vagus nerve
 - iii. Lymph nodes
 - iv. Right and left gastric arteries.



Lesser Omentum



Omental bursa (Lesser Sac)

- ▶ Potential space behind the stomach and the lesser sac.
- ▶ Because the anterior and posterior walls of the omental bursa slide smoothly over each other, it permits free movement of the stomach on the structures posterior and inferior to it (stomach).
- ▶ Opens into the Greater Sac through the Omental foramen (Foramen of Winslow)
- ▶ Divided into:
 - i. Superior recess
 - ii. Inferior recess

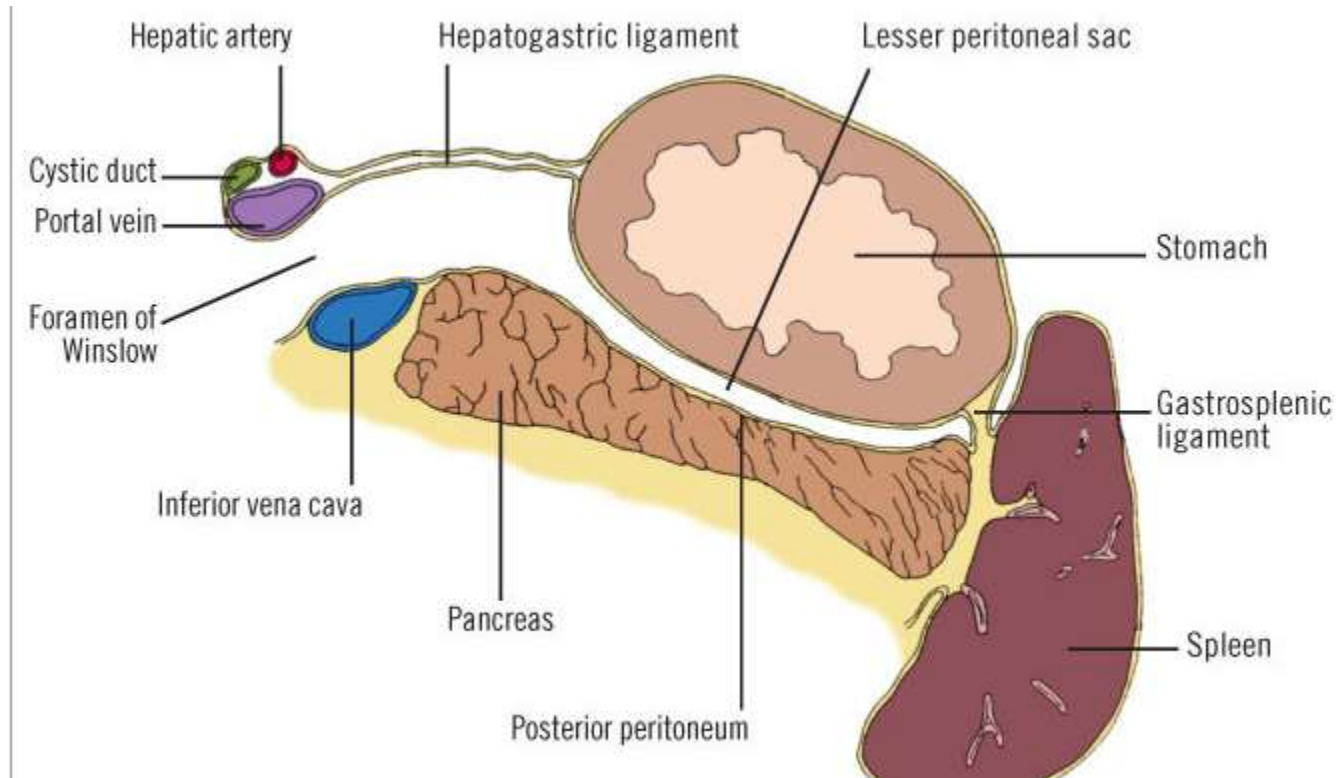


Boundaries of the Omental bursa

- ▶ **Anterior:** Hepatoduodenal ligament, the hepatic triad, hepatogastric ligament, the gastrosplenic ligament, and the stomach
- ▶ **Posterior:** Splenorenal ligament and the pancreas.
- ▶ **Right (Entrance):** omental (epiploic) foramen
- ▶ **Left:** in front, is the distal part of the gastrosplenic ligament; and behind is the distal part of the splenorenal ligament
- ▶ **Roof:** Caudate lobe of the liver, the coronary ligament on the right, and the abdominal esophagus on the left.
- ▶ **Floor:** Transverse colon and the transverse mesocolon.



Omental bursa (Lesser Sac)



The Omental foramen

- ▶ Usually admits two fingers.
- ▶ Used to be called epiploic foramen of Winslow
- ▶ The boundaries of the omental foramen are:
 - i. **Anteriorly:** the hepatoduodenal ligament (free edge of the lesser omentum), containing the portal vein, hepatic artery, and bile duct.
 - ii. **Posteriorly:** the IVC and right crus of the diaphragm, covered anteriorly with parietal peritoneum
 - iii. **Superiorly:** the liver, covered with visceral peritoneum
 - iv. **Inferiorly:** the superior or first part of the duodenum.



Folds in the peritoneum

- ▶ These are either:
 - a. Reflection of peritoneum
 - b. Raised from abdominal wall by an underlying structure

Inferior to the umbilicus

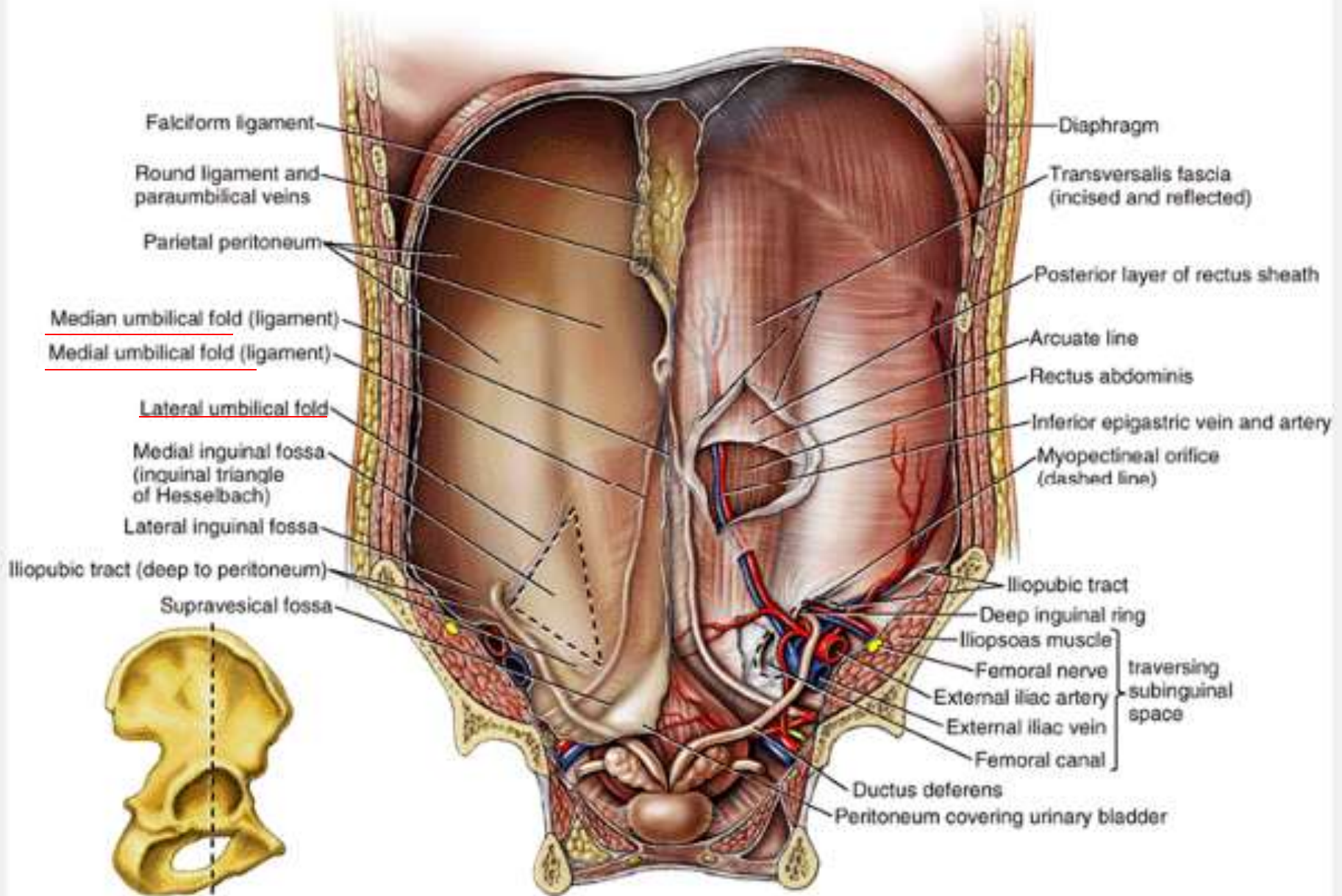
- They are three:
 - i. Median umbilical fold – urachus
 - ii. Medial umbilical fold – obliterated umbilical artery
 - iii. Lateral umbilical fold – inferior epigastric vessels

Superior to the umbilicus

- ▶ They are two:
 - i. Falciform ligament
 - ii. Round ligament of the liver (obliterated foetal umbilical vein)
-



Posterior view of the Anterior Abdominal wall showing peritoneal folds



Fossae / Recess of the peritoneum

Fossae and recesses may serve as potential sites for hernias

▶ Five in number:

1. Duodenal recess
2. Anterior abdominal wall fossae
3. Caecal recesses:
 - i. Superior ileocaecal
 - ii. Inferior ileocaecal
 - iii. Retrocaecal
4. Intersigmoid recess
5. Omental bursa



Anterior abdominal wall fossae

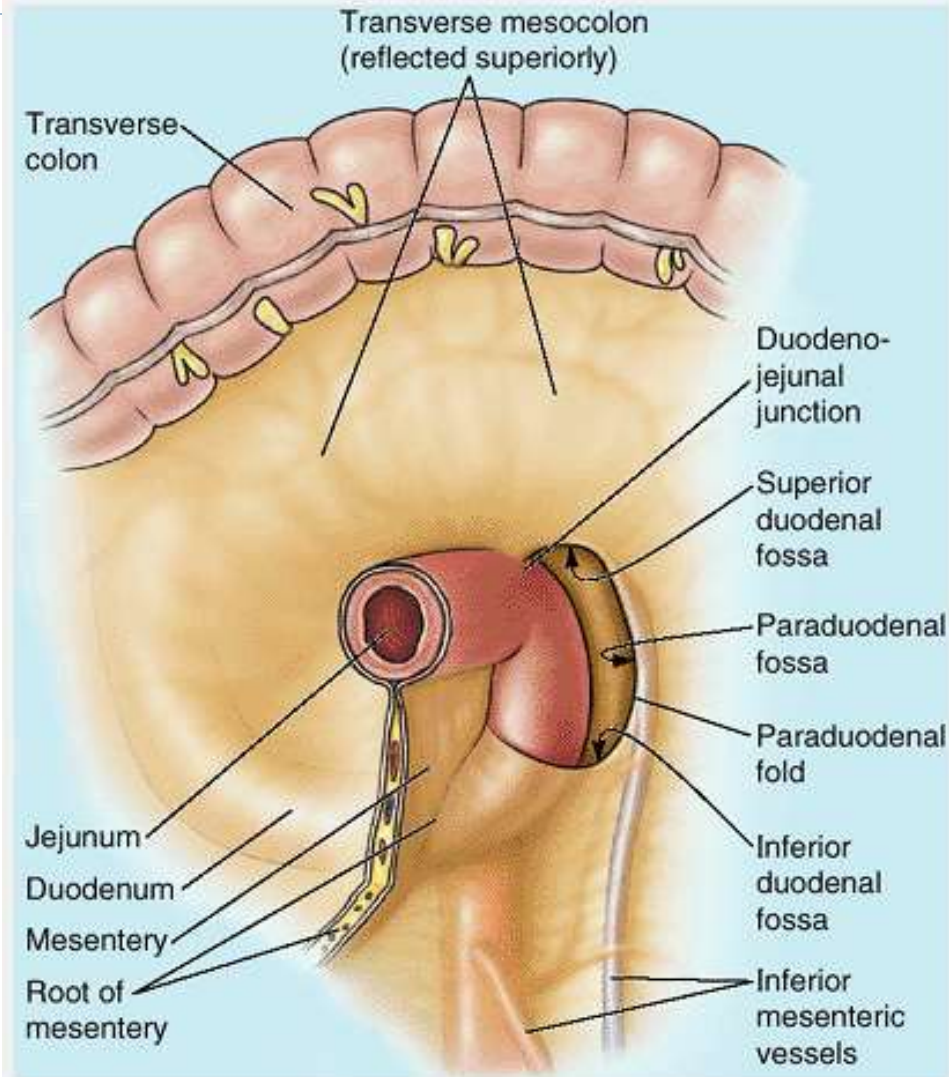
- ▶ **Supravesical fossae** between the median and the medial umbilical folds, formed as the peritoneum reflects from the anterior abdominal wall onto the bladder. The level of the supravesical fossae rises and falls with filling and emptying of the bladder.
- ▶ **Medial inguinal fossae** between the medial and the lateral umbilical folds. This area is also commonly called the Hesselbach triangles, and are potential sites for direct inguinal hernias.
- ▶ **Lateral inguinal fossae**, lateral to the lateral umbilical folds, include the deep inguinal rings and are potential sites for the most common type of hernia in the lower abdominal wall, the indirect inguinal hernia



Peritoneal Fossae / Recess: Paraduodenal fossae

- Located around the duodenojejunal flexure
- Formed by superior and inferior duodenal folds which encloses:
 - i. Superior and inferior duodenal fossae
 - ii. Paraduodenal fold which encloses:
 - iii. Paraduodenal fossae

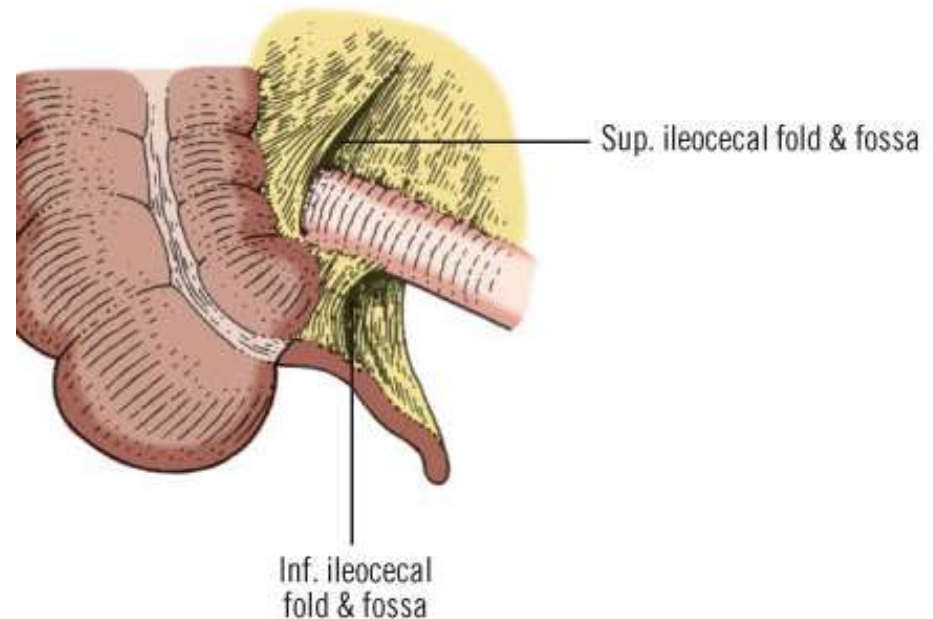
NOTE: Some of the folds/fossae are not always present.



Peritoneal Fossae / Recesses: Caecal recesses

Types

- Superior ileocaecal
- Inferior ileocaecal
- Retrocaecal



Peritoneal Fossae / Recesses: Caecal recesses

The superior ileocecal fossa has the following boundaries:

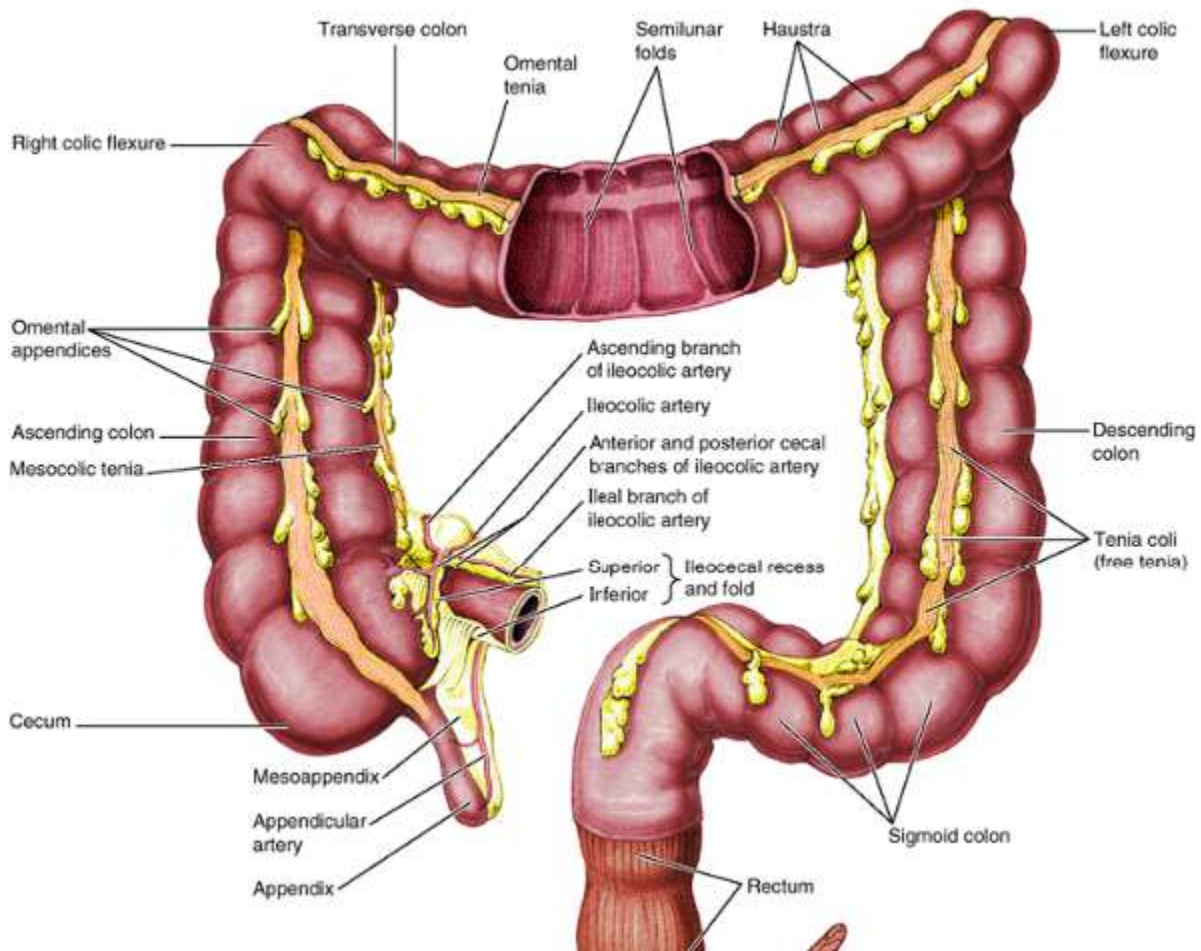
- ▶ *Anterior*: Ileocecal fold and ileocecal artery
- ▶ *Posterior*: Mesentery of terminal ileum and lateral right (ascending) colon
- ▶ *Medial*: Below the terminal ileum

The inferior ileocecal fossa has the following boundaries:

- ▶ *Anterior*: Ileocecal fold
- ▶ *Posterior*: Mesoappendix
- ▶ *Inferior*: Medial continuation of ileocecal fold
- ▶ *Superior*: Terminal ileum and mesentery

Retrocaecal fold is inconstant

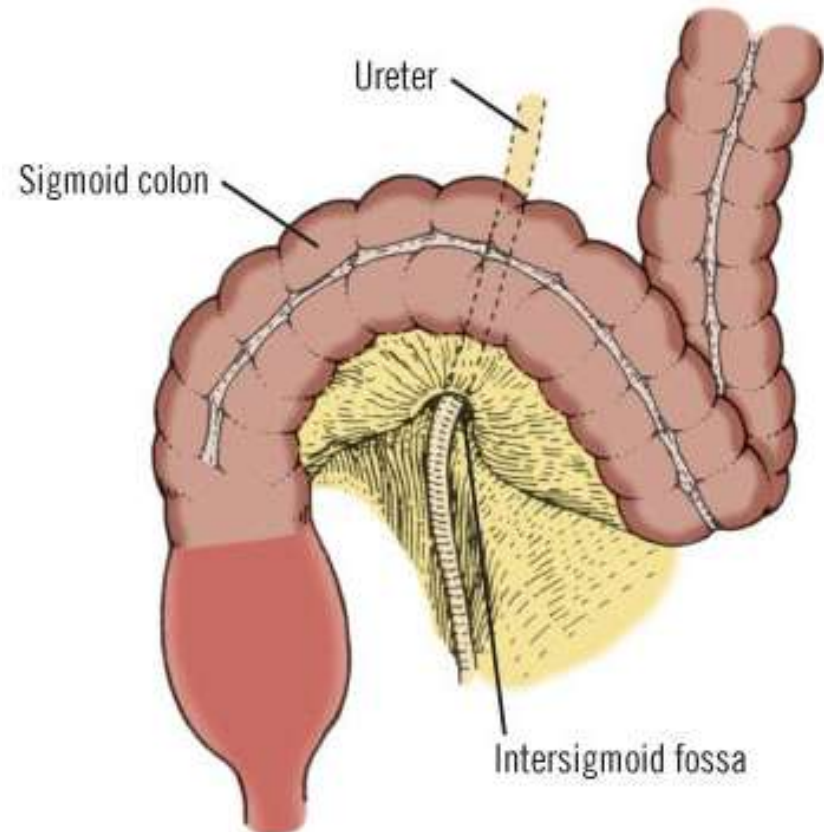




Peritoneal Fossae / Recesses

Intersigmoid recess

- Meso-sigmoid attached to posterior abdominal wall in relation to where the left ureter crosses the left common iliac artery.
- The intersigmoid recess is beneath the fold created by this attachment



Peritoneal Gutters

Right paracolic gutter

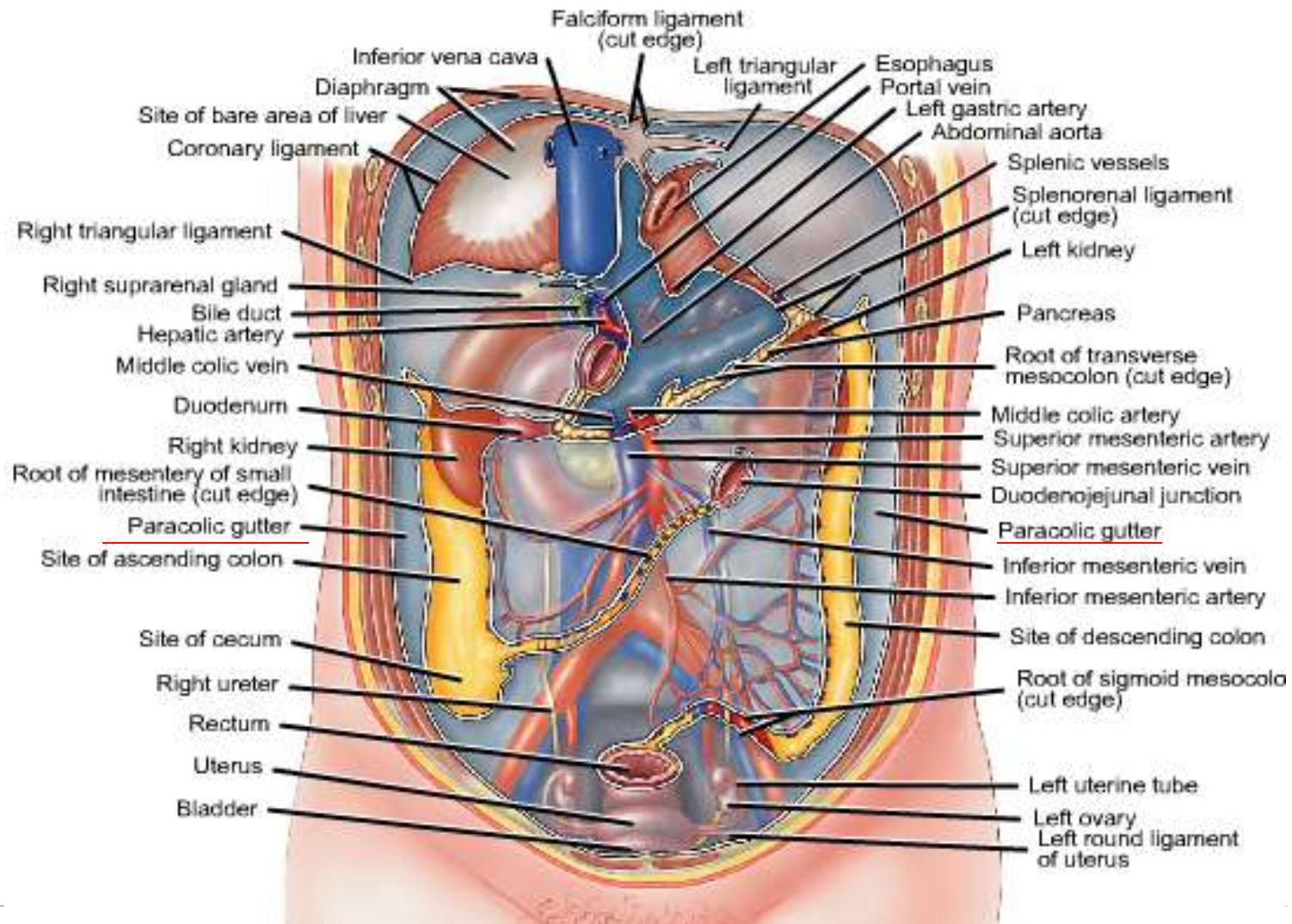
- ▶ Between mesentery of jejunum and ileum and ascending colon (no exit)

Left paracolic gutter

- ▶ Between mesentery of jejunum and ileum and descending colon (exit inferior)



Peritoneal Gutters



The Peritoneum: Innervation

- The parietal peritoneum is supplied by the same nerve supply to the overlying abdominal wall
 - Central aspect, diaphragmatic peritoneum
 - Phrenic nerve (C3-5) (referred pain)
 - Peripheral aspect, diaphragmatic peritoneum
 - Inter- and subcostal nerves (T7-T12)
 - Parietal (abdominal wall) peritoneum
 - T7-T12 and L1 (pain at precise point of stimulation)
- ▶ It is sensitive to touch, heat and cold, and laceration



The Peritoneum: Innervation

- ▶ The viscera peritoneum is supplied by the same nerve which supplies the organ it covers.
- ▶ Like a typical viscera organ, it is insensitive to mechanical stimulations such as touch, heat and cold, and laceration
- ▶ it is stimulated primarily by stretching and chemical irritation
- ▶ The pain thus produced is poorly localized



Any Question?

