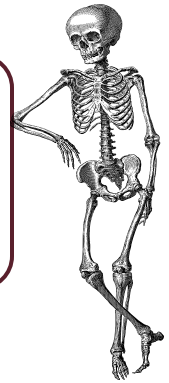
ANATOMY

بسم الله الرحمن الرحيم

FINAL | Lab 3

peritoneum, esophagus, stomach, & small intestine (duodenum, jejunum, ileum)

Written by: Layan Fawarseh



﴿ وَإِن تَتَوَلَّوْا يَسْتَبْدِلْ قَوْمًا غَيْرَكُمْ ثُمَّ لَا يَكُونُوا أَمْثَالَكُم ﴾

اللهم استعملنا ولا تستبدلنا

فريق دوبامين العلمي - THE SCIENTIFIC TEAM OF DOPAMINE - APPROVED 0500251

قريب

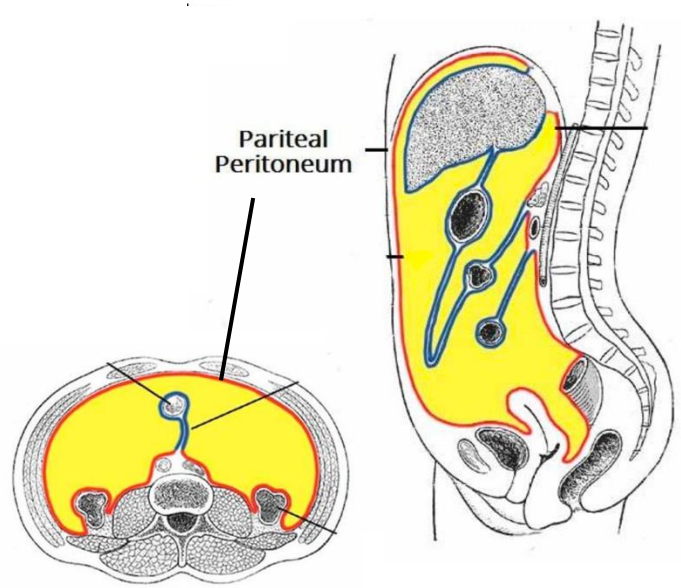
اللهم لك الحمد ولك الفضل والثناء الحسن، ربِّ اشرح لي صدري ويسّر لي أمري واحلل عقدة من لساني، اللهم لا سهل إلا ما جعلته سهلًا وأنت تجعل الحزن إذا شئت سهلًا، اللهم تقبّل هذا العلم مني واجعل كل حرف وكلمة أدرسها خالصةً لوجهك الكريم، ولا تجعلني أغتر بما وهبتني من علم وقدرة فلا حول ولا قوة إلّا بك، اللهم أعنّي على الدراسة ولا تجعل قلبي يملُّ منها وكن معي في كل لحظة ووفّقني لما تحب وترضى، اللهم ارزقني من الدرجات أعلاها وأفضلها في الدنيا والآخرة ورضّني بما قضيت لي، اللهم سهّل عليّ ما صَعُبَ حفظه ويسّر لي ما استغلق فهمه واجعل هذا العلم حجة لي لا علي، اللهم بارك لي في وقتي وأصلح لي شأني كله ولا تكلني إلى نفسي طرفة عين، اللهم اهدني وسدّدني 🌸

Slides index:

Peritoneum

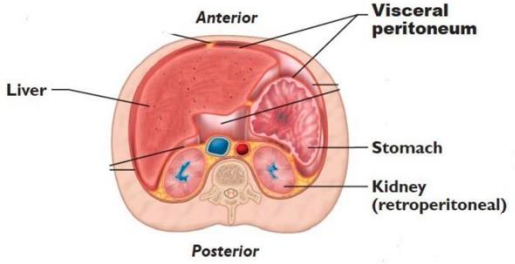
1.Parietal peritoneum:

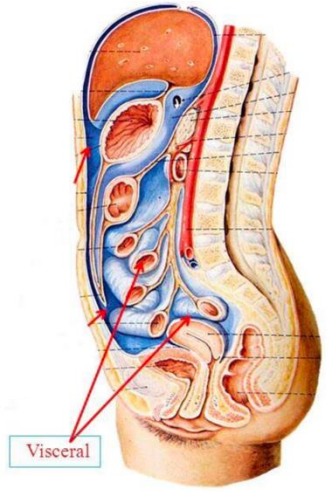
- It line the Ant. Abdominal wall.
- covers the pelvic viscera.
- line the diaphragm superiorly.
- line and attached to post Abdominal wall.



2. Visceral peritoneum:

- it cover the abdominal viscera





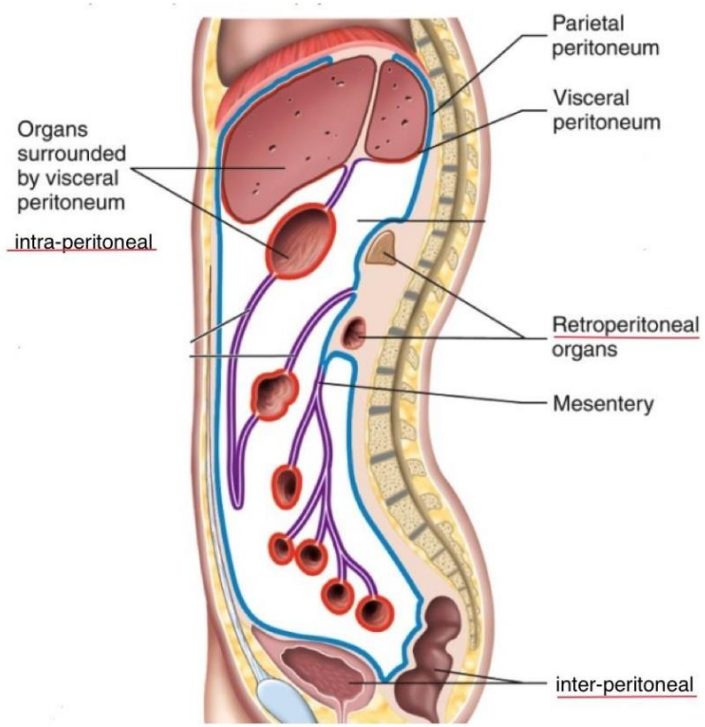
Peritoneum – con.

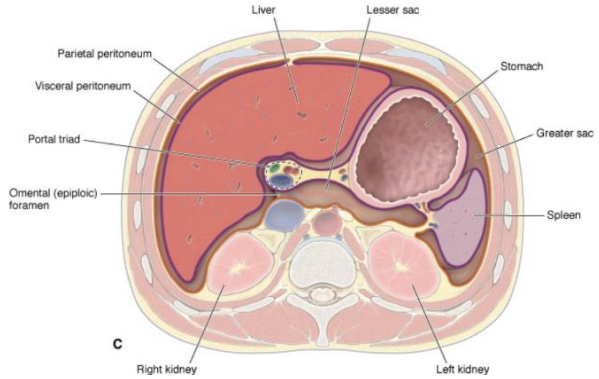
3- The relationship between viscera and peritoneum classified as:

A. Intraperitoneal viscera, example: stomach, jejunum, ileum.

B. Retroperitoneal viscera, example: kidney, pancreas.

C. Interperitoneal viscera, example: liver, gallbladder, urinary bladder





Peritoneum – con.

4. The peritoneal reflection:

A. Omenta

B. Mesentery

C. Ligaments

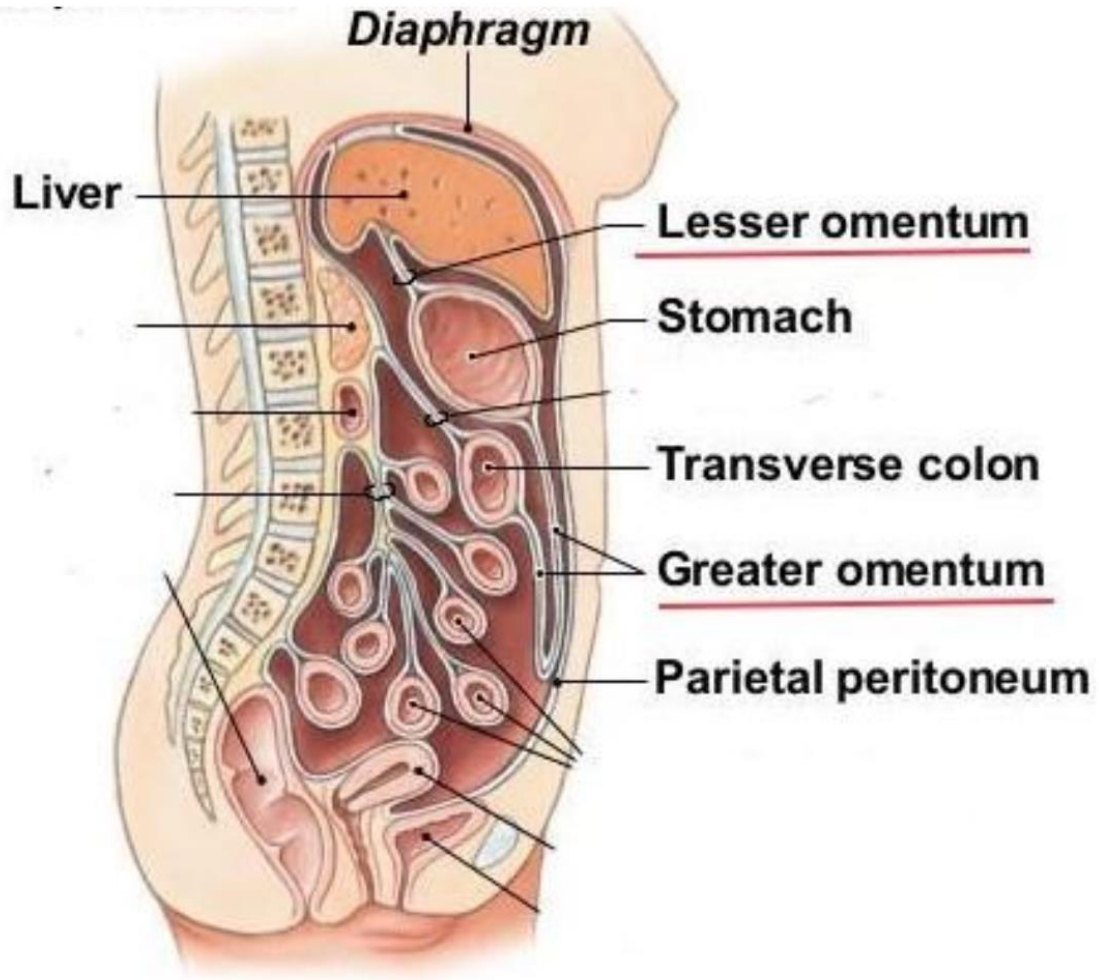
Peritoneum – con.

4. The peritoneal reflection:

A. Omenta:

1- lesser omentum.

2- Greater omentum.



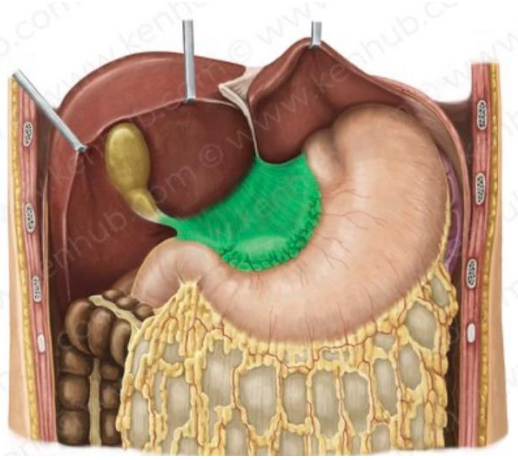
Peritoneum – con.

4. The peritoneal reflection:

A. Omenta:

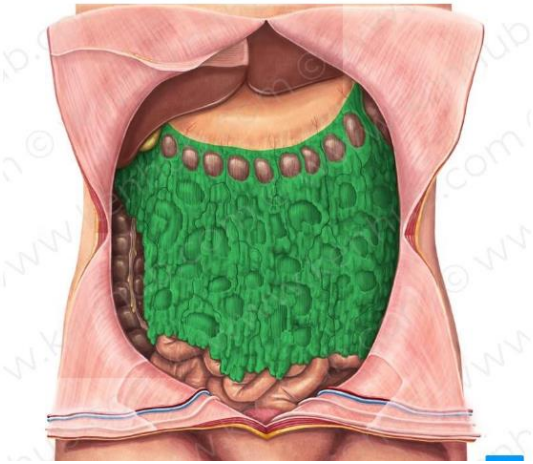
1. Lesser omentum:

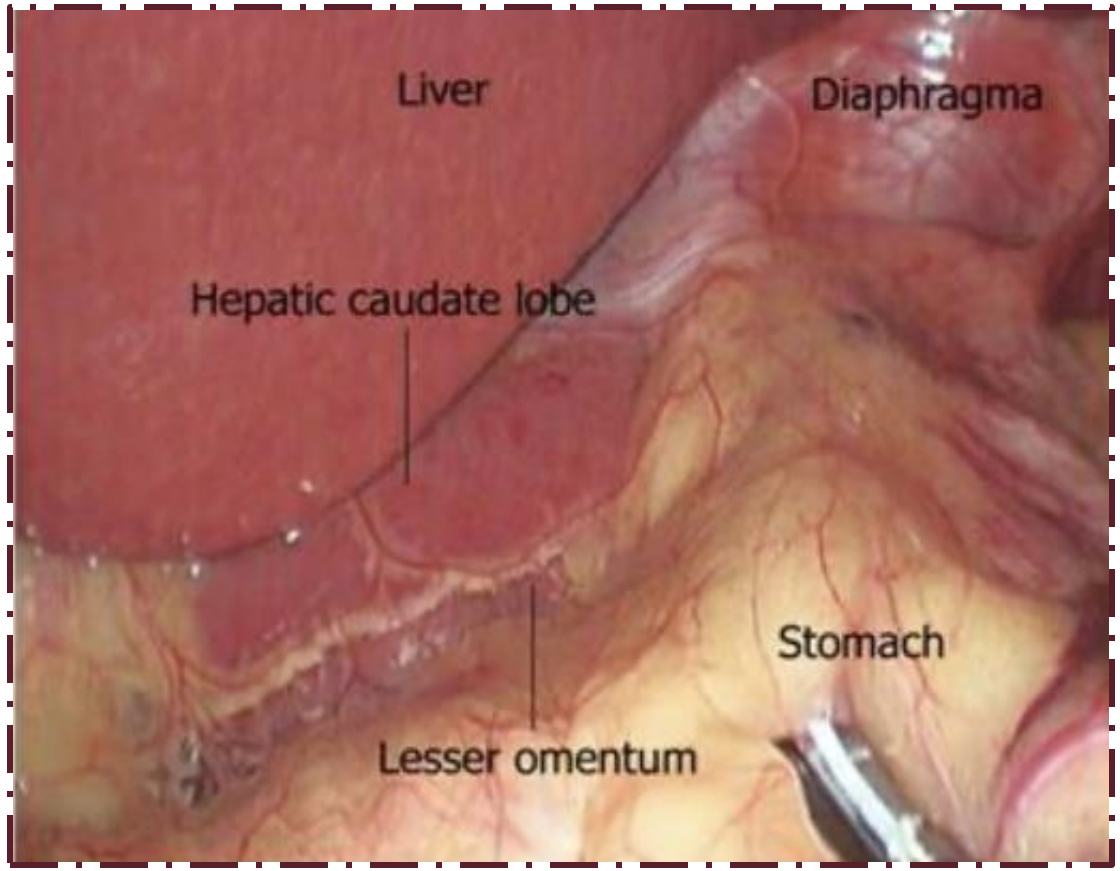
- Attachment: it extends from porta hepatis, fissure of ligamentum venosum to lesser curvature of stomach and superior part of duodenum.
- content: Blood vessels (Rt. & Lt. gastric vessels), Lymph nodes & lymphatic vessels, Fat, and Autonomic N.S: sympathetic + parasympathetic (vagus nerve)

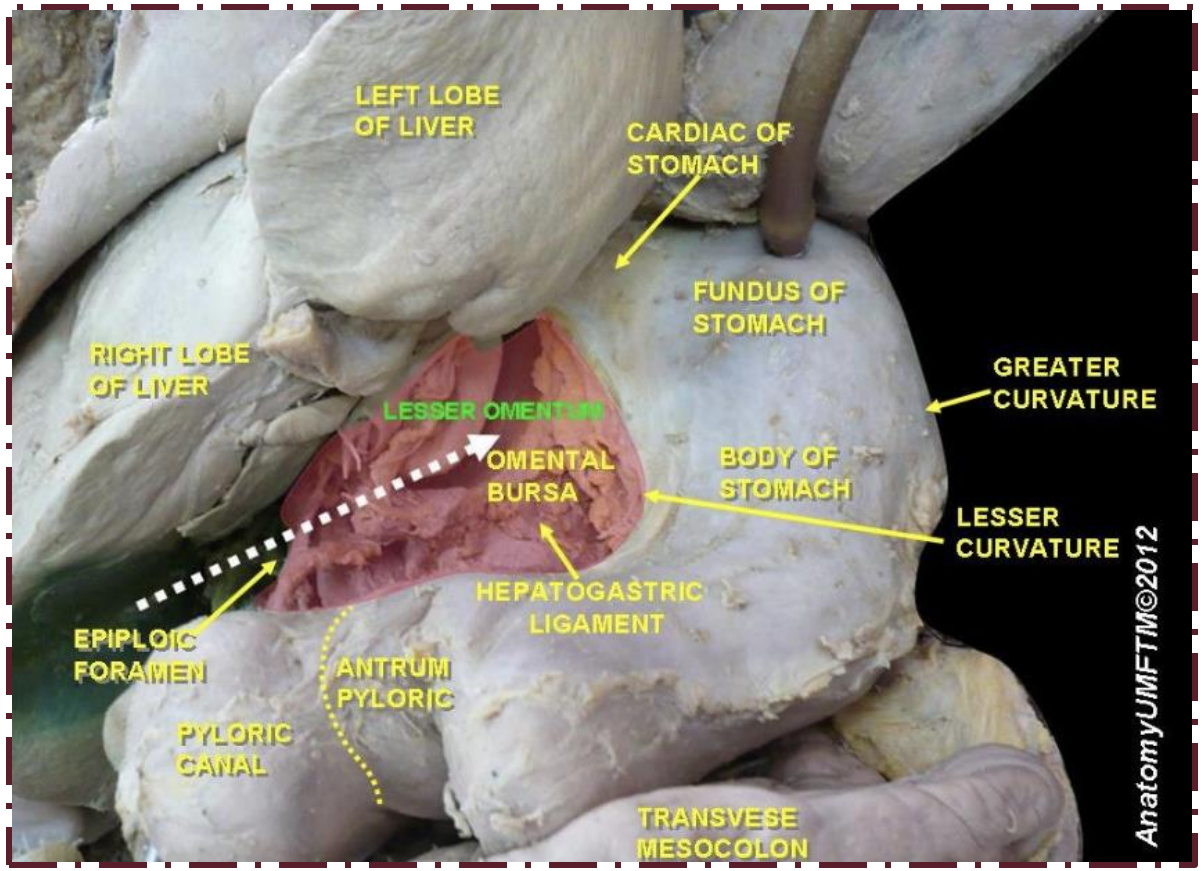


1. Greater omentum:

- Attachment: it extends from 1st inch of duodeneum and greater curveture to transverse colon.
- content: Gastroepiploic vessels & short gastric, Lymph nodes & lymphatic vessels, Fat, and Autonomic N.S: sympathetic + parasympathetic (vagus nerve)







Lesser Omentum

Peritoneum – con.

4. The peritoneal reflection:

B. Mesentery

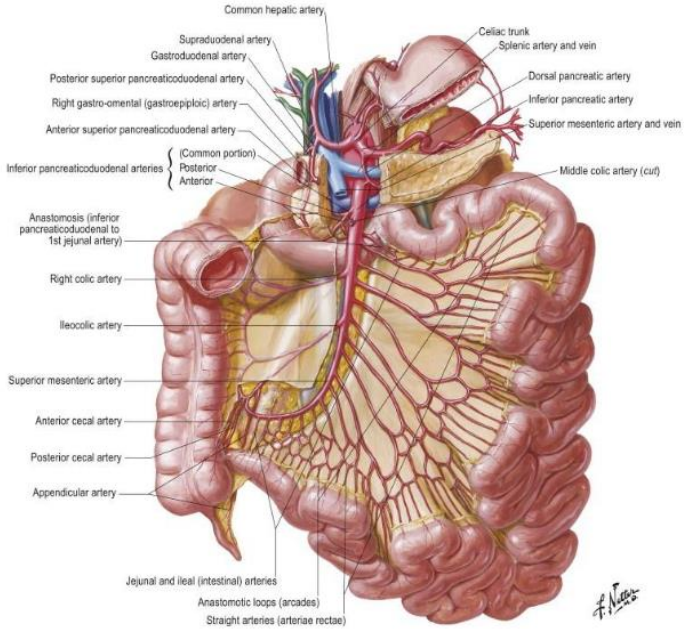
	Mesentery of small intestine	Mesoappendix	Mesocolon transverse.	Mesocolon sigmoid
Attachment	P.A.W – small intestine (jejunum and ileum).	Terminal ileum – appendix	Transvers colon – P.A.W.	Sigmoid colon – pelvic wall.
content	Branches of superior mesentric vessels, lymaphatics, fat, nerves plexus , arcades and vasa-recta.	Appendiceal artery	Blood vessels (proximal 2/3 superior mesentric artery, lateral 1/3 inferior mesentric artery), nerves, lymphatics, fat.	

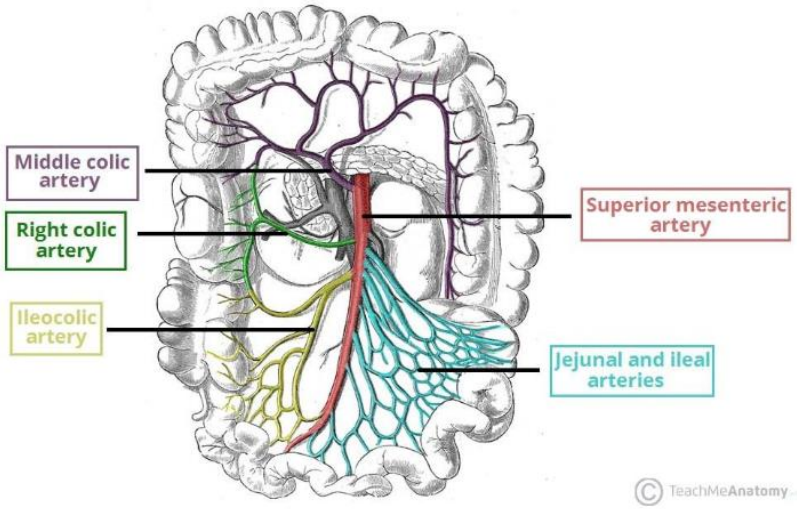
Check the pictures in the next slide

P.A.W = Posterior Abdominal Wall

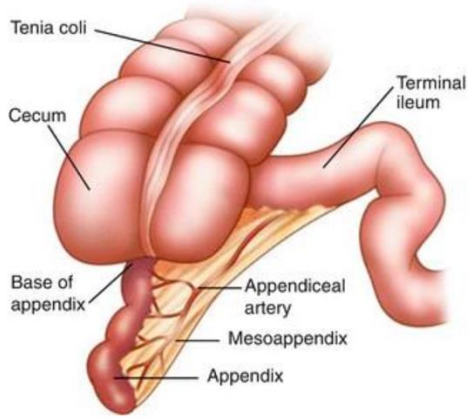
حسبي الله لا إله إلّا هو
عليه توكّلت وهو رب
العرش العظيم

- Mesentery of small intestine:

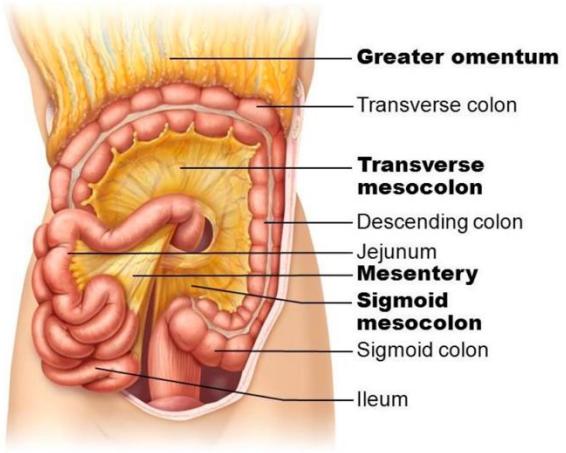


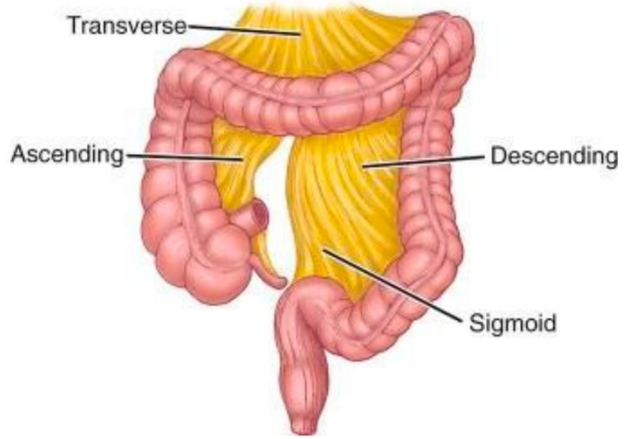


- Mesoappendix:



- Mesocolon (transverse and sigmoid):





Peritoneum – con.

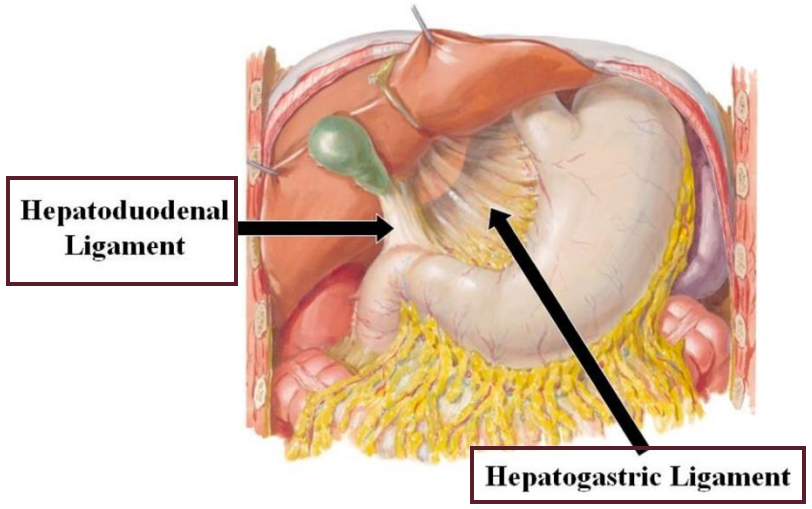
4. The peritoneal reflection:

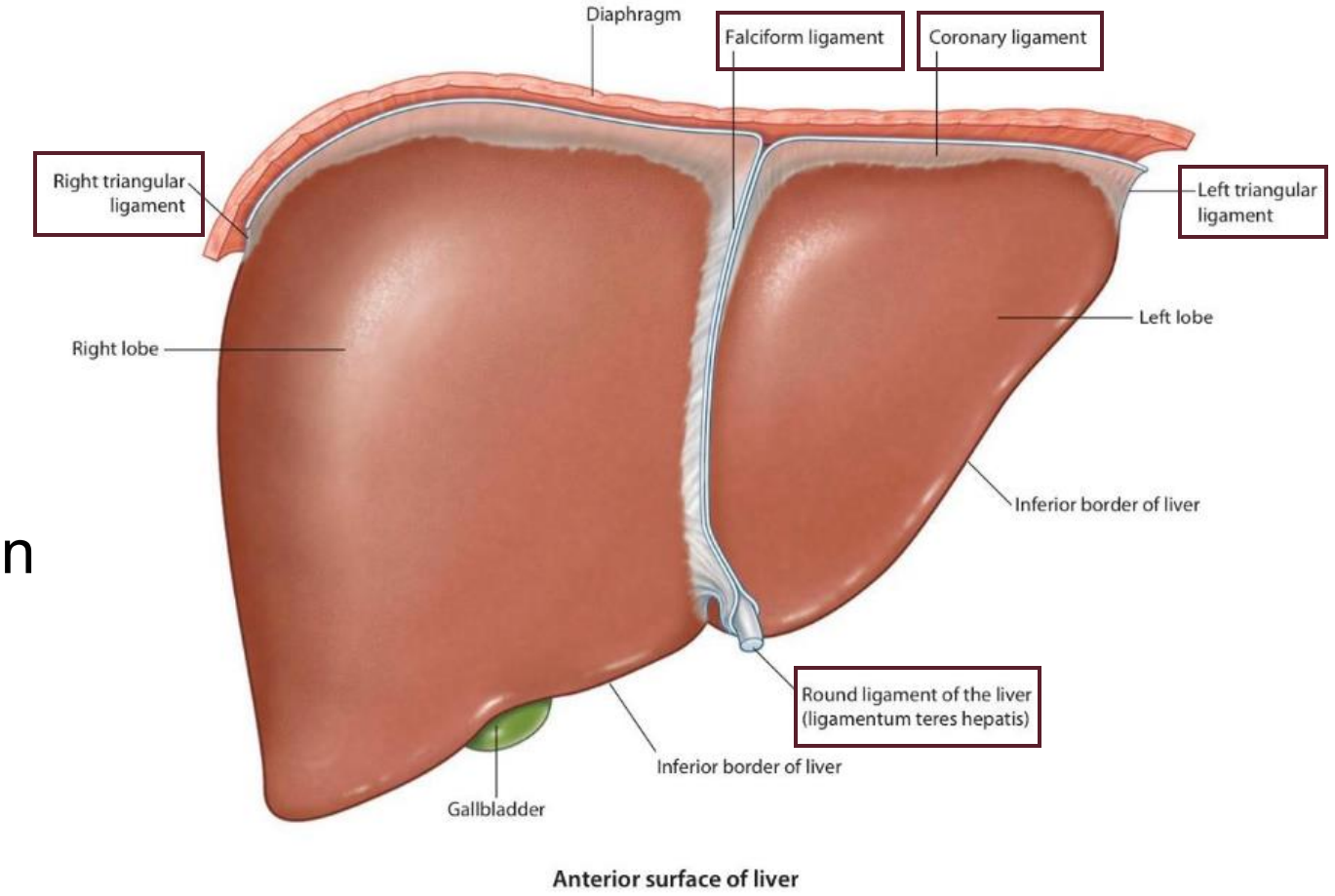
C. Ligaments:

- The ligaments of the liver.
- The ligaments of the stomach.
- The ligaments of the spleen.
- The suspensory ligament of duodenum.

Ligaments of the liver

1. The falciform ligament of liver
2. The ligamentum teres hepatis
3. The coronary ligament
4. The right triangular ligament
5. The left triangular ligament
6. The hepatogastric ligament
7. The hepatoduonedenal ligamen



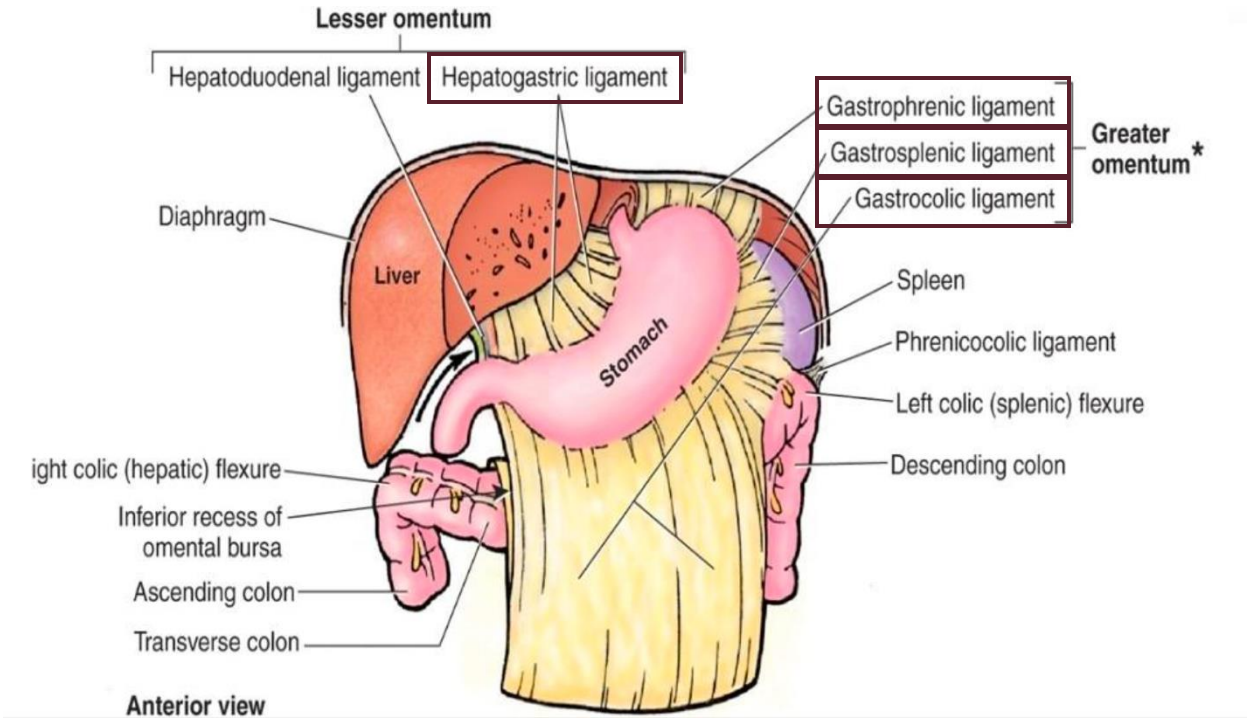


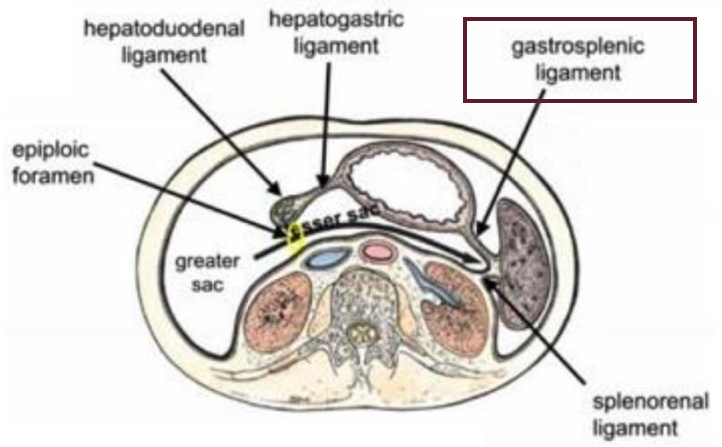
Anterior surface of liver

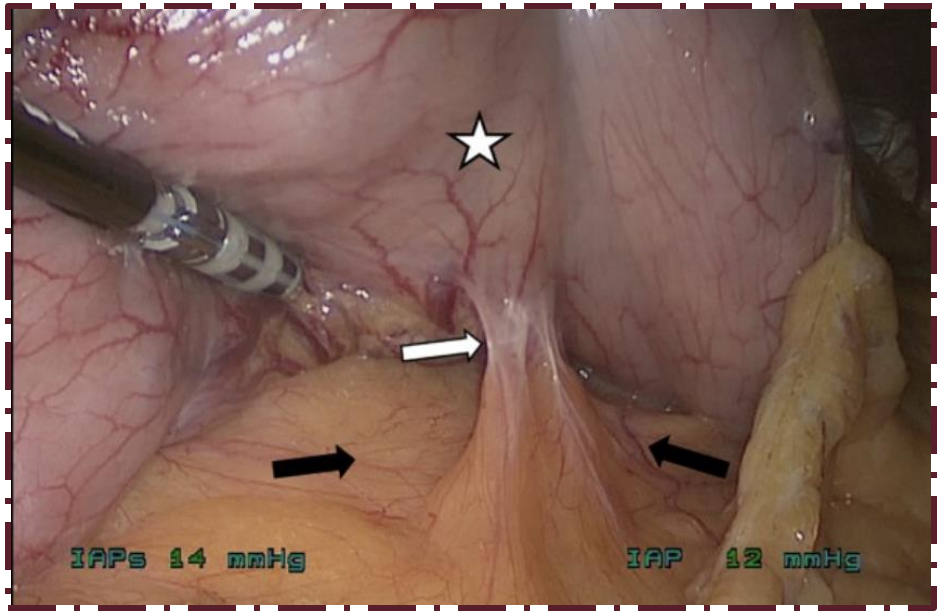
Ligaments of the stomach

لا إله إلّا الله

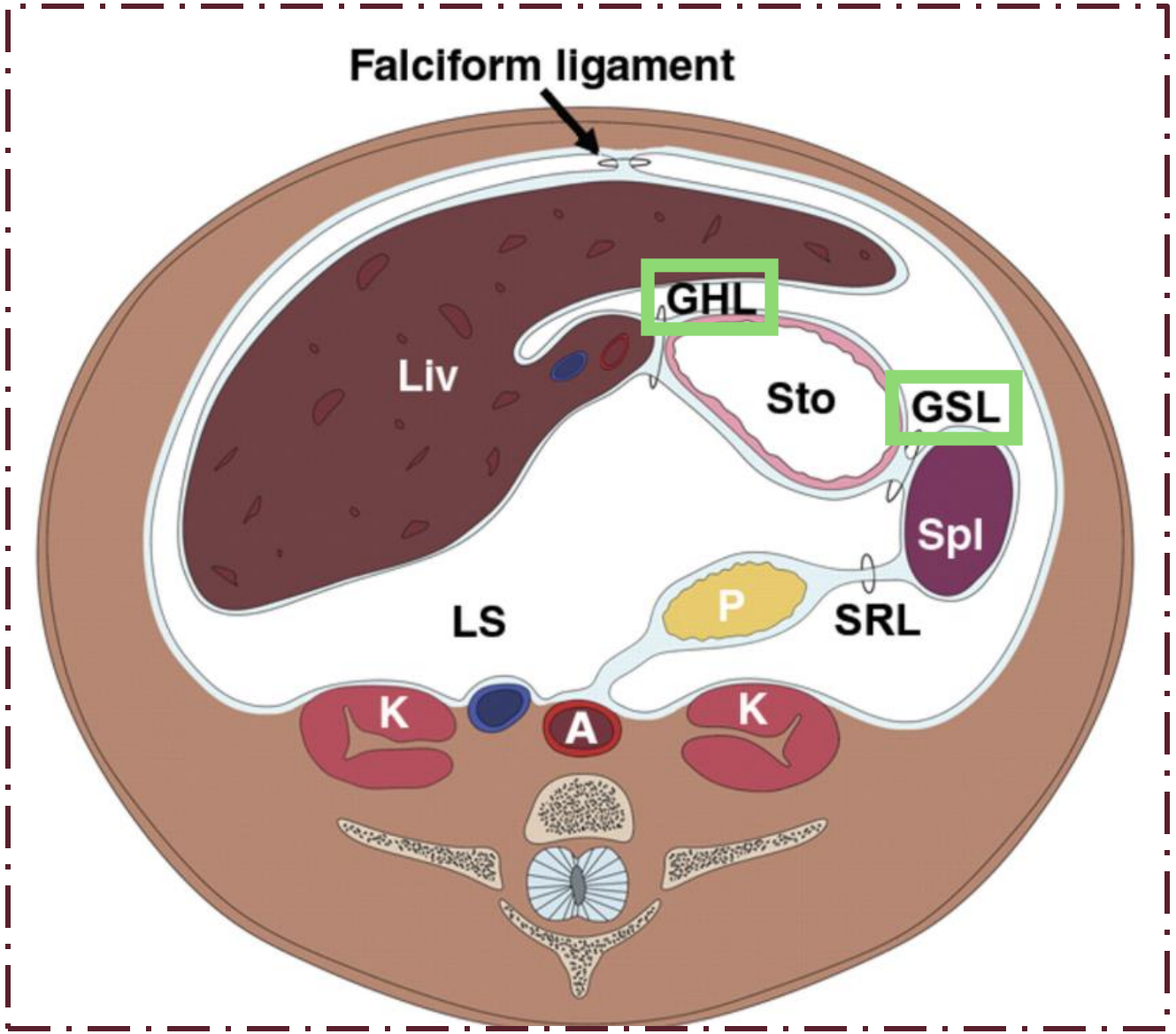
1. Hepatogastric ligament
2. Gastrosplenic ligament
3. Gastrophrenic ligament
4. Gastrocolic ligament
5. Gastropancrestic ligament







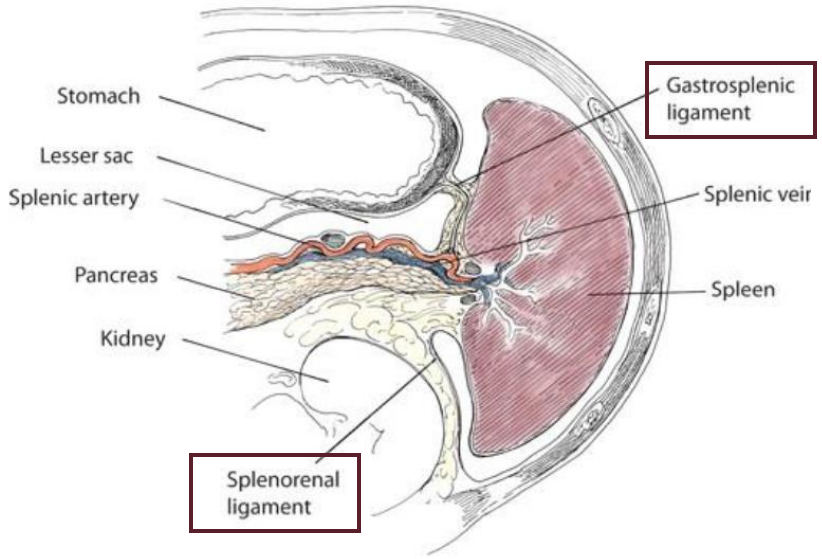
Gastropancrestic ligament

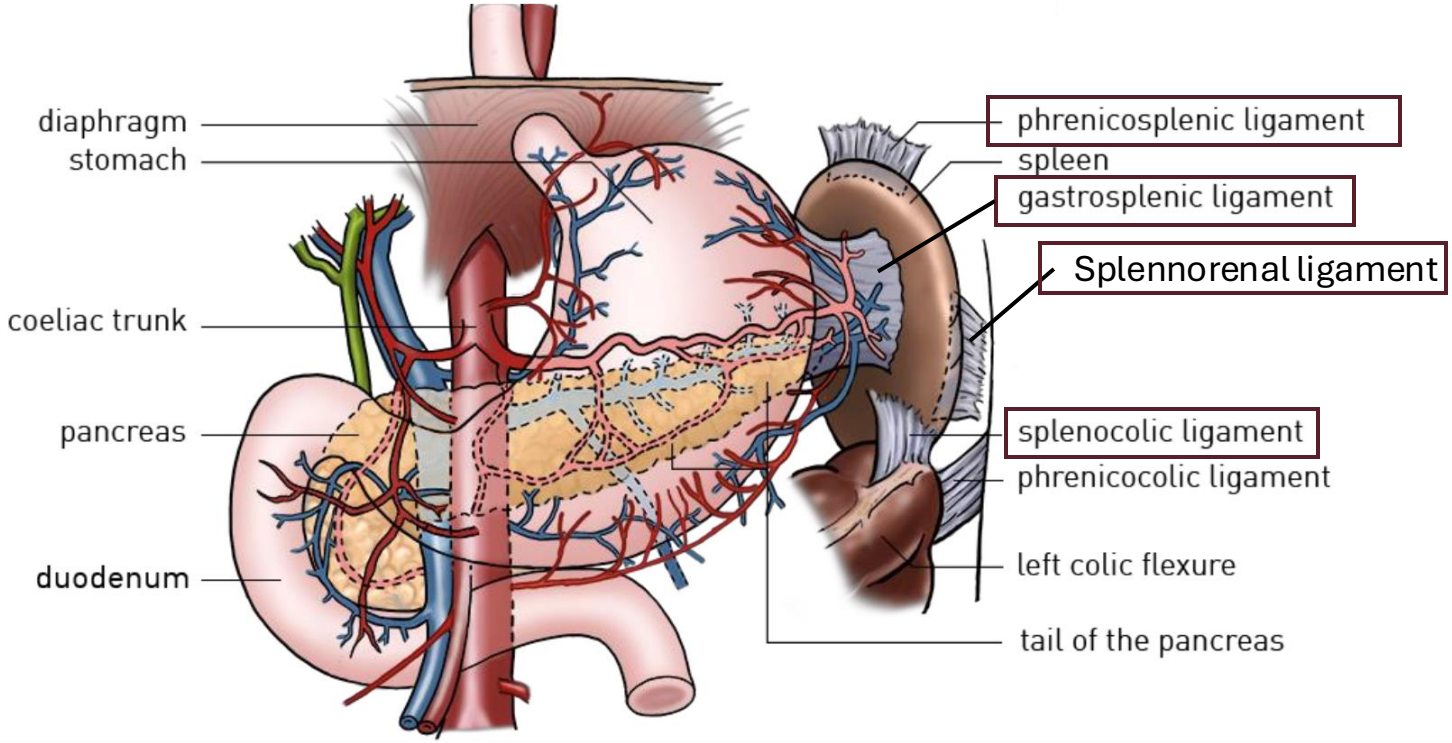


Ligaments of the spleen

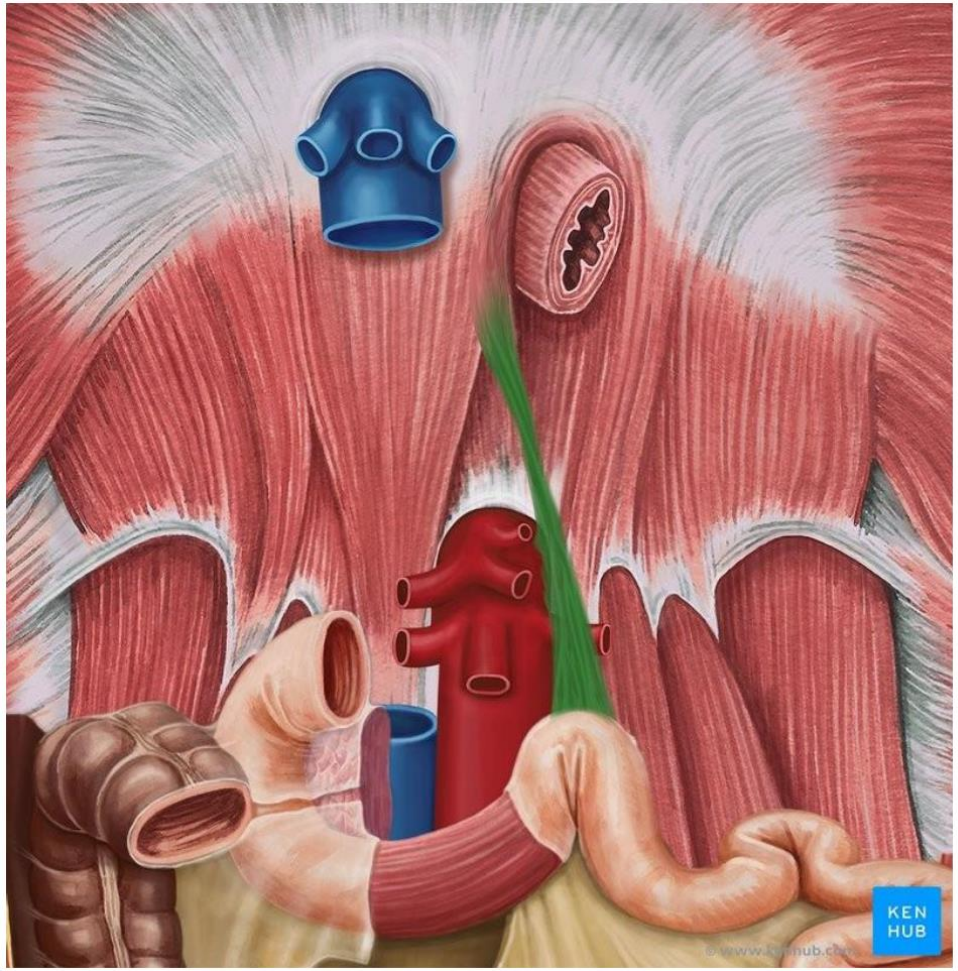
اللهم صلِّ على محمد وعلى آل
محمد كما صلّيت على إبراهيم
وعلى آل إبراهيم إنك حميد مجيد

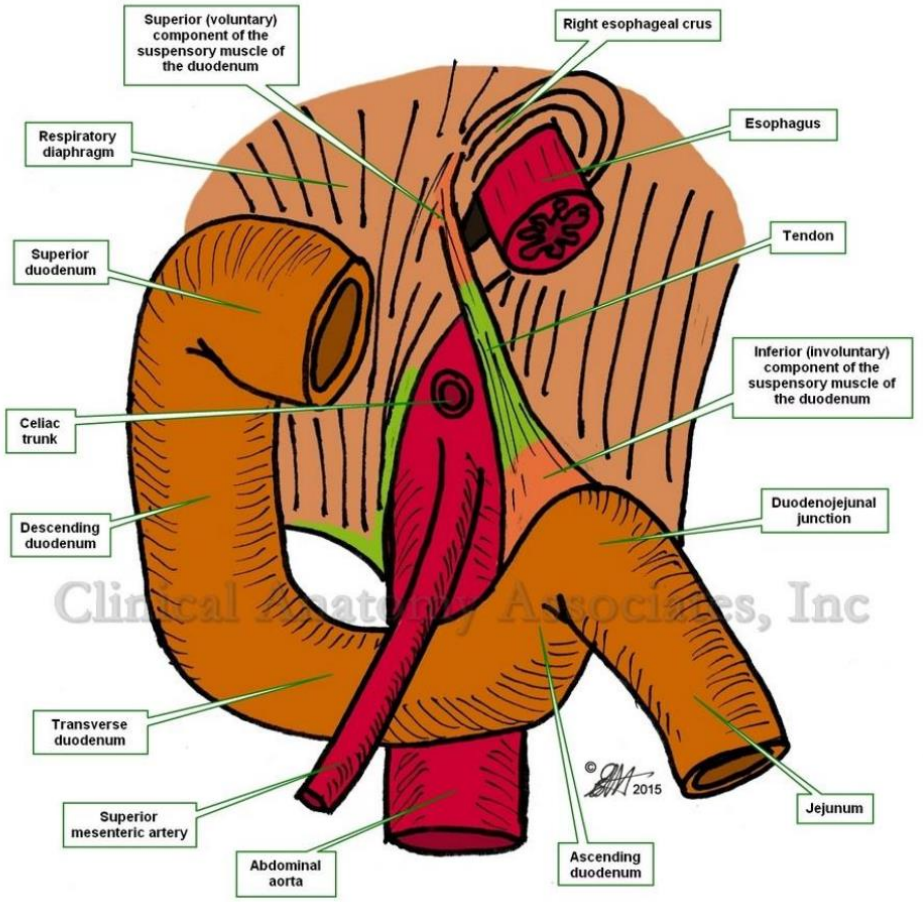
1. Gastrosplenic ligament
2. Splenorenal ligament
3. Phrenicosplenic ligament
4. Splenocolic ligament





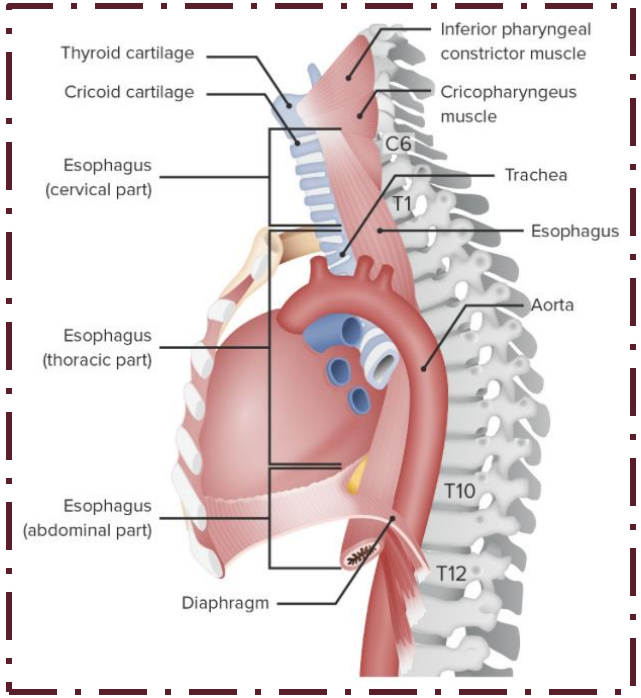
The suspensory ligament of duodenum (Treitz)

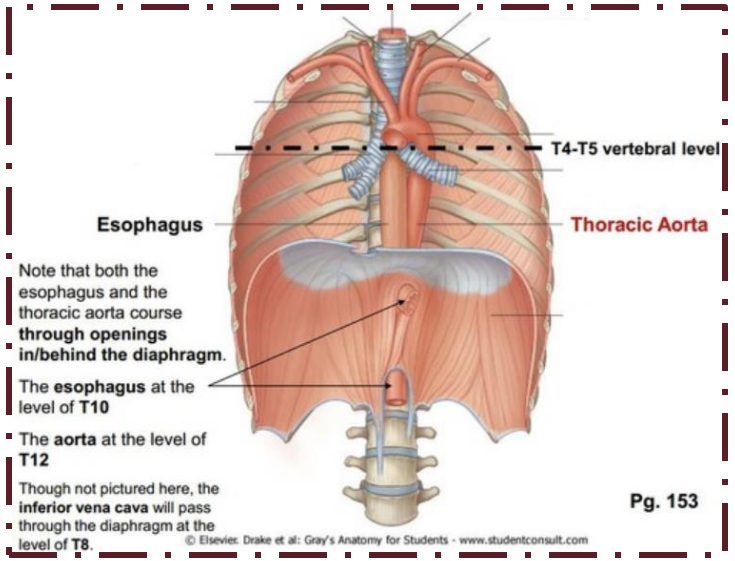




Esophagus

- The esophagus is a tubular structure about 10 in. (25 cm) long that joins the pharynx to the stomach.
- Enter the abdomen through esophageal opening (level of T10) in the right crus of diaphragm.
- has thoracic part and abdominal part





Esophagus

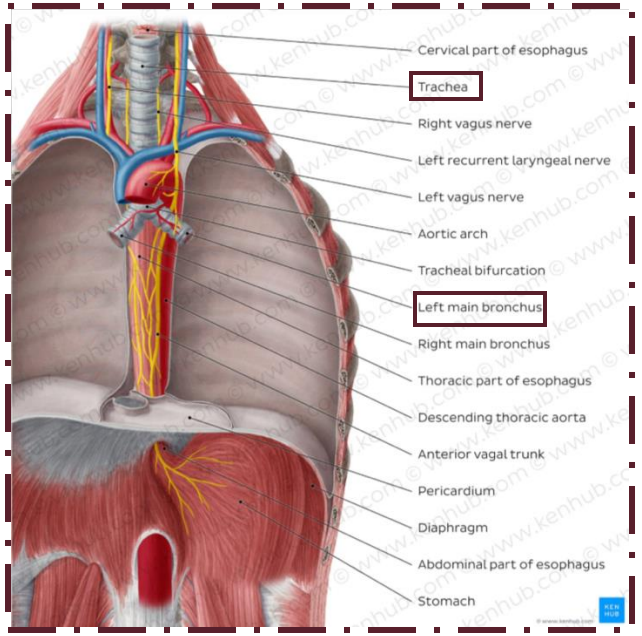
1. Relations of thoracic part:

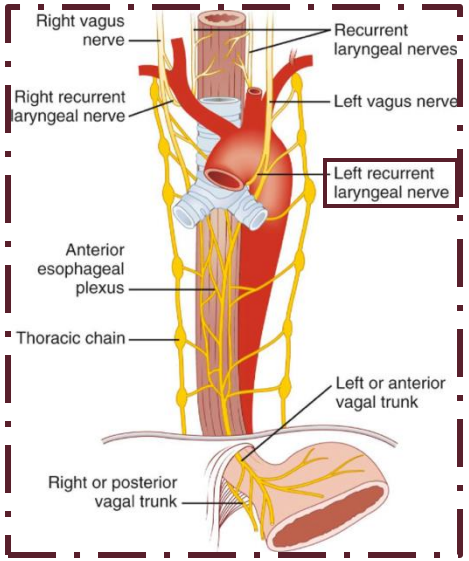
- **Anteriorly:** trachea, left recurrent laryngeal n., left bronchus, pericardium

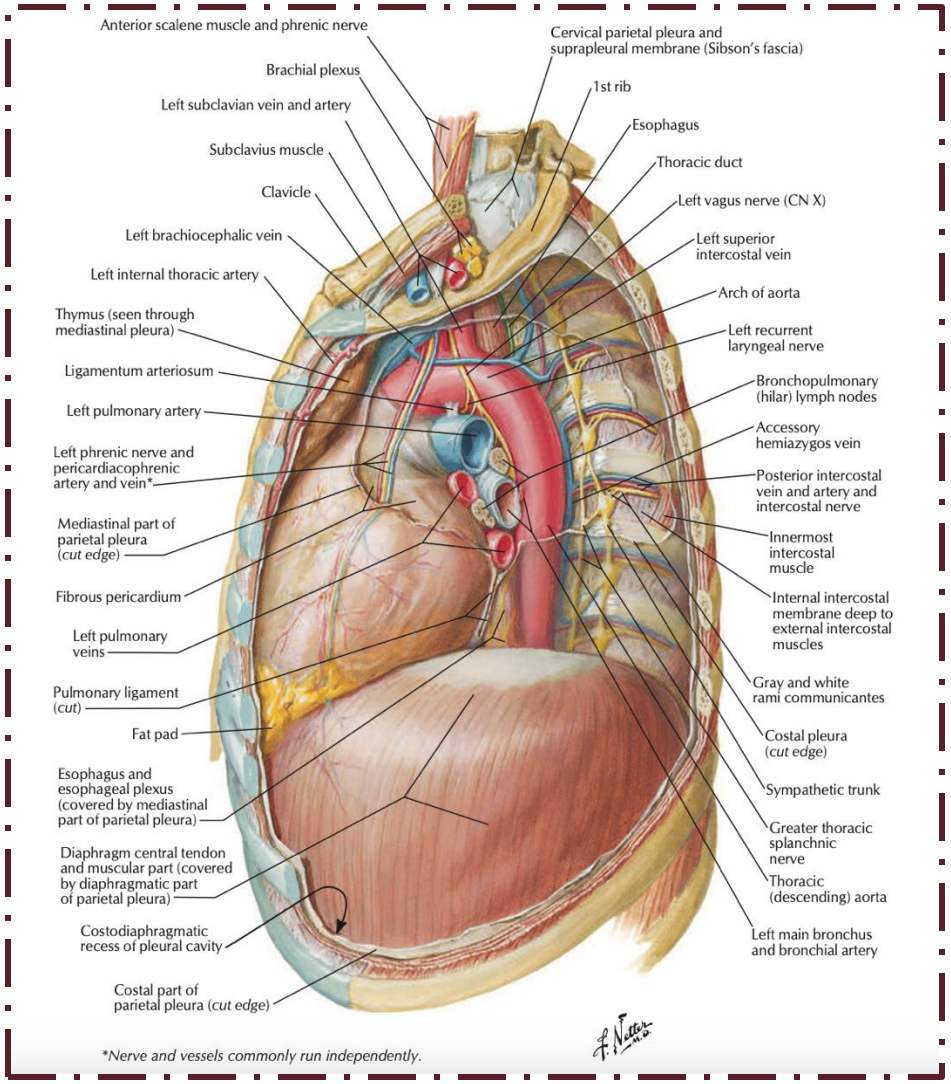
- **Posteriorly:** thoracic vertebra, thoracic duct, azygous vein, Rt posterior intercostal arteries, descending thoracic aorta

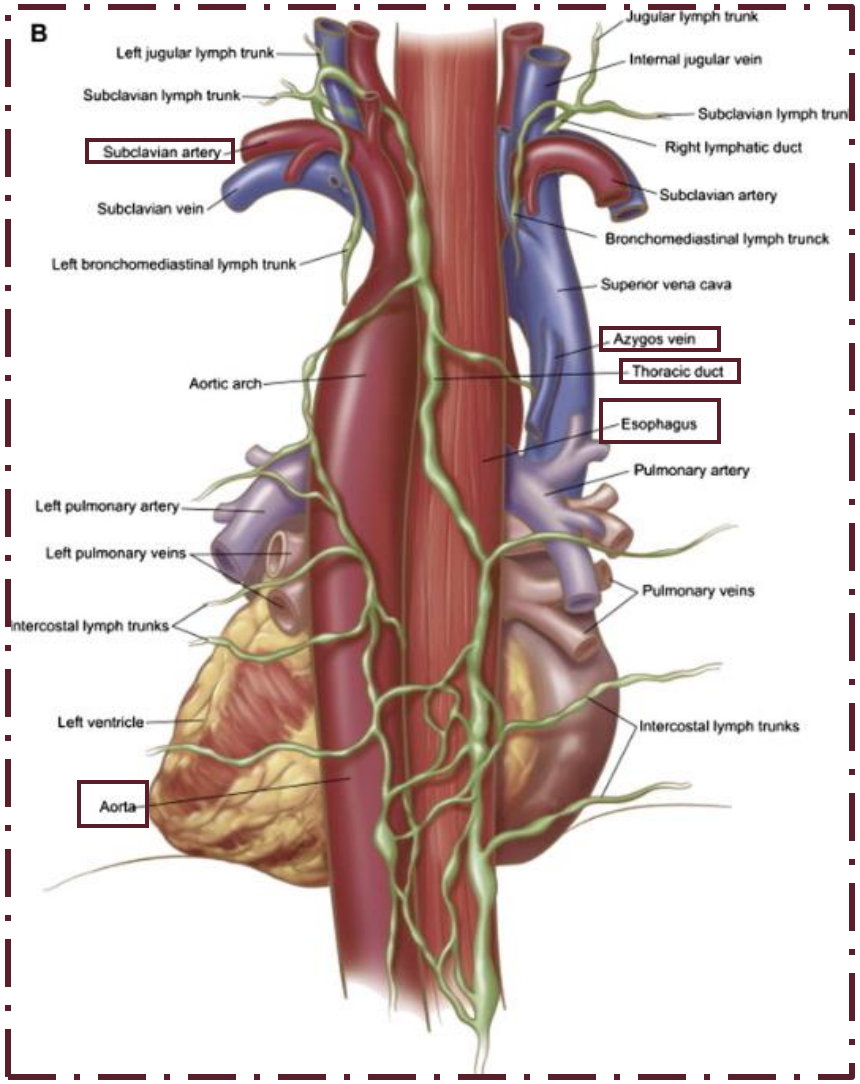
- **Right side:** The right mediastinal pleura and the terminal part of the azygos vein

- **Left side:** The left subclavian artery, the aortic arch, the thoracic duct, and the left mediastinal pleura and lung.









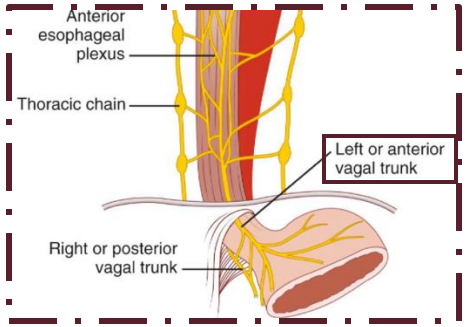
- Do you see all these structures in this picture? I included them to show you the pericardium and its relation to the esophagus only (:
- You can take a closer look to make sure that you know most of the structures if you'd like.

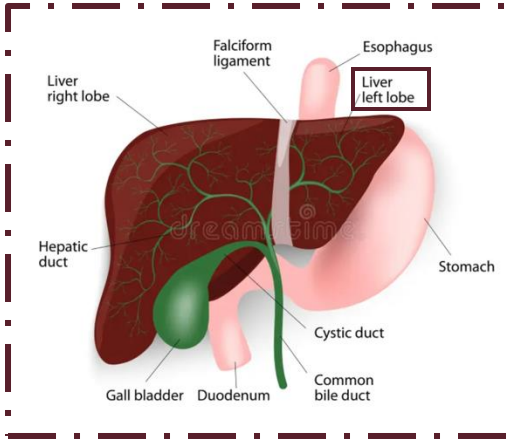
Esophagus

2. Relations of abdominal part:

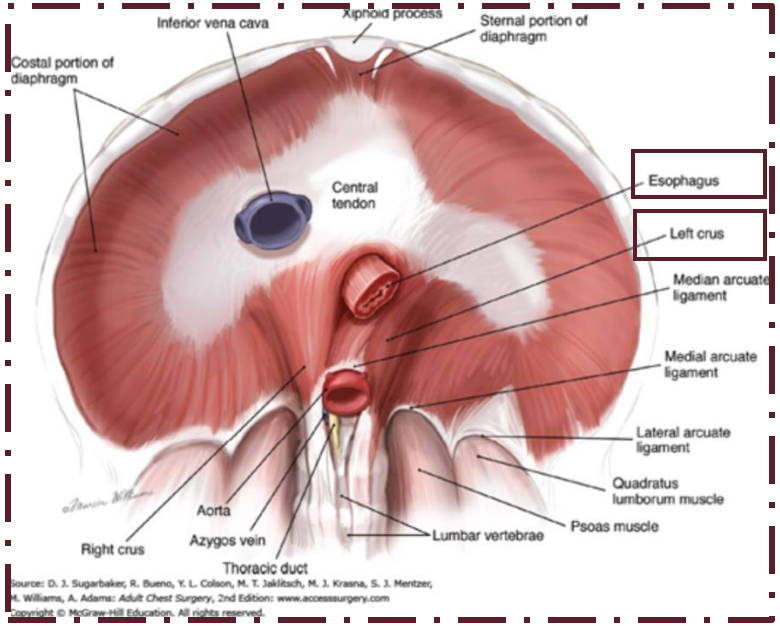
لسا مطولييين!!
قوم أتوضأ وصلّ
ركعتين وارجع كمّل

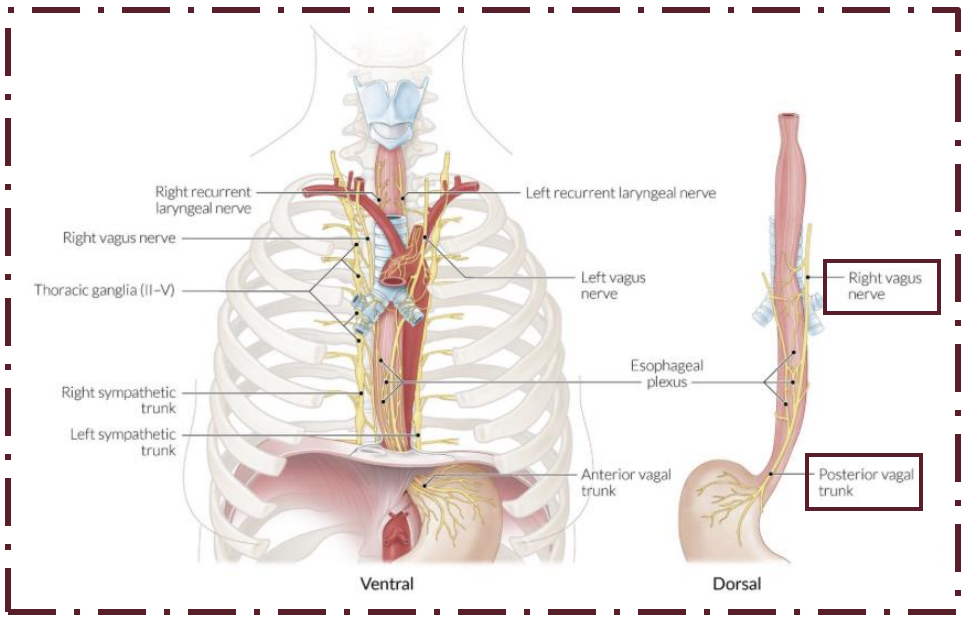
- Anteriorly: left lobe of the liver & left vagus nerve





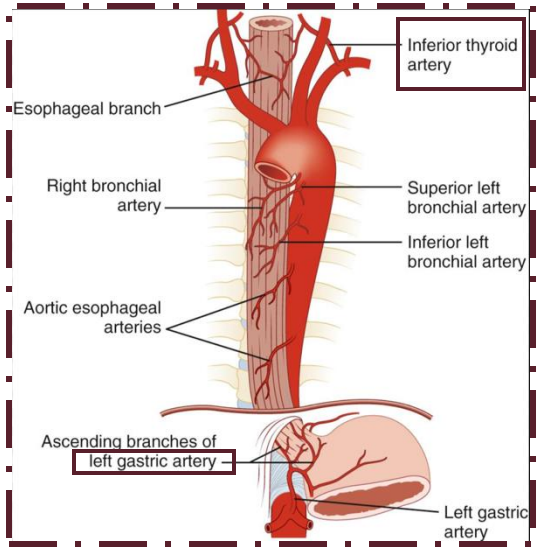
- Posteriorly: left crus of the diaphragm & right vagus nerve

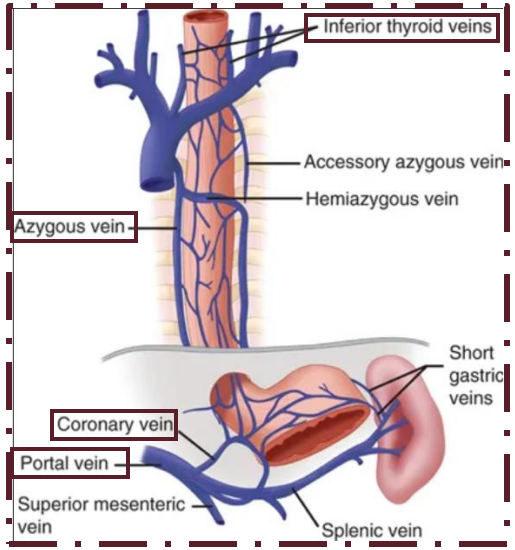


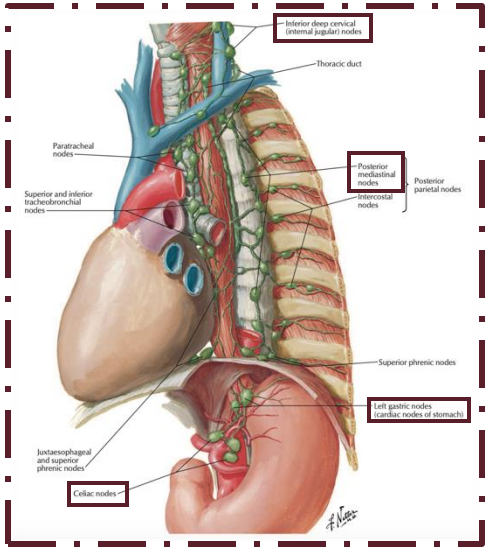


Esophagus

SECTION	Artery	Vein	Lymph Nodes
Upper third	Inferior thyroid artery	Drain into the inferior thyroid veins	Drain into the deep cervical nodes
Middle third	Descending thoracic aorta	Drain into the azygos veins	Drain into the superior and posterior mediastinal nodes
Lower third	Branches from the left gastric artery	Drain into the left gastric vein, a tributary of the portal vein	Drain into nodes along the left gastric blood vessels and the celiac nodes

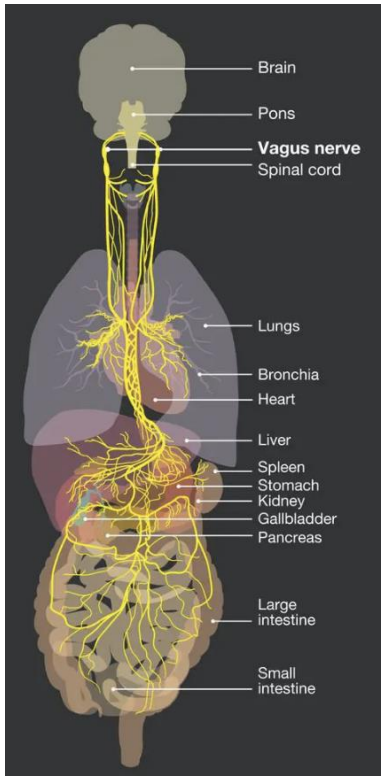






Esophagus

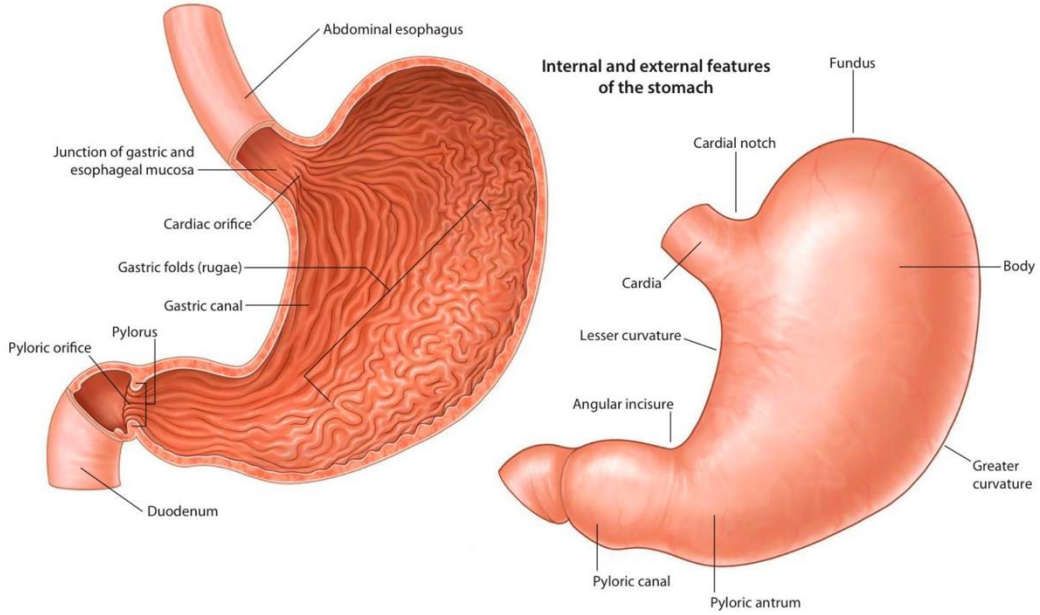
- **Innervation:** The esophagus is supplied by parasympathetic and sympathetic efferent and afferent fibers via the vagi and sympathetic trunks.

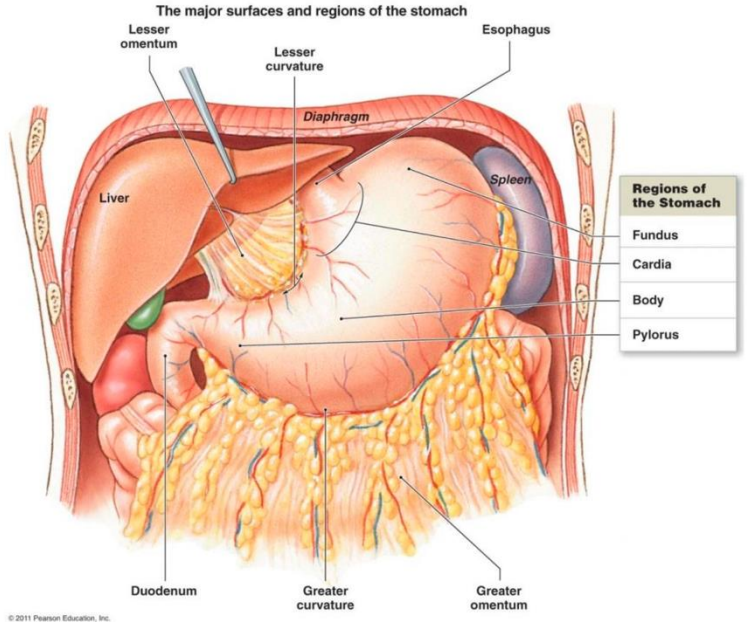


sympathetic trunks

Stomach

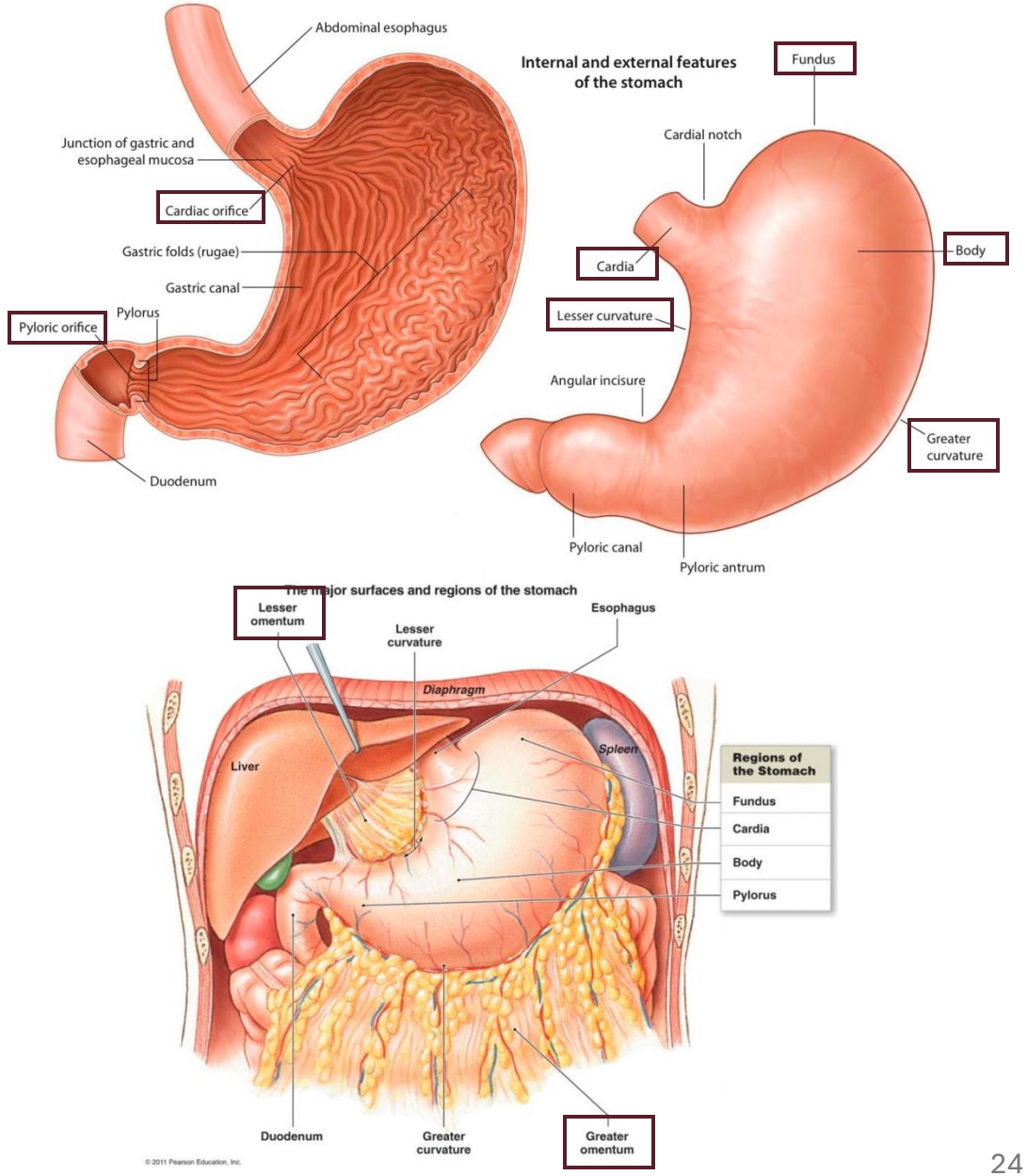
- The stomach is a dilated part of the alimentary canal.
- Between the esophagus and the small intestine.
- It occupies the left upper quadrant mainly in the epigastric region.
- Shape of the stomach: It is roughly J-shaped especially in thin person BUT Steer horn in obese person
- folds of mucosa: “RUGAE”
- incisura angularis: sharp angular depression in the lesser curvature of the stomach at the junction of the body with the pyloric canal.





Stomach

- Parts: Cardia, Fundus, Body, and Pylorus.
- Surfaces: Anterior & posterior.
- curvature: Lesser & Greater.
- Orifices: Cardiac & Pyloric.
- Omenta: Lesser & Greater.



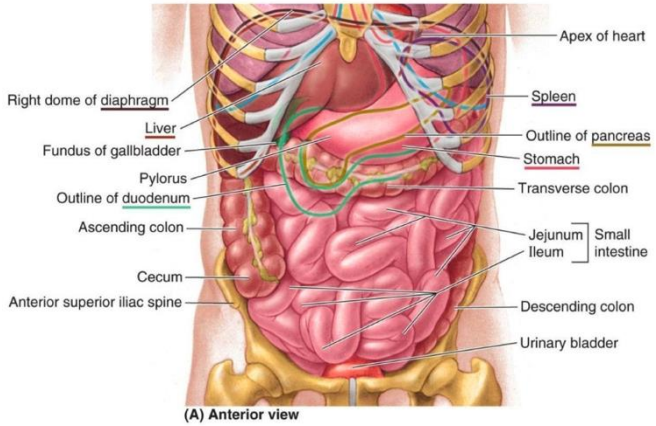
Stomach

اللهم بارك على محمد وعلى آل
محمد كما باركت على إبراهيم
وعلى آل إبراهيم إنك حميد مجيد

- **Relations of stomach:**

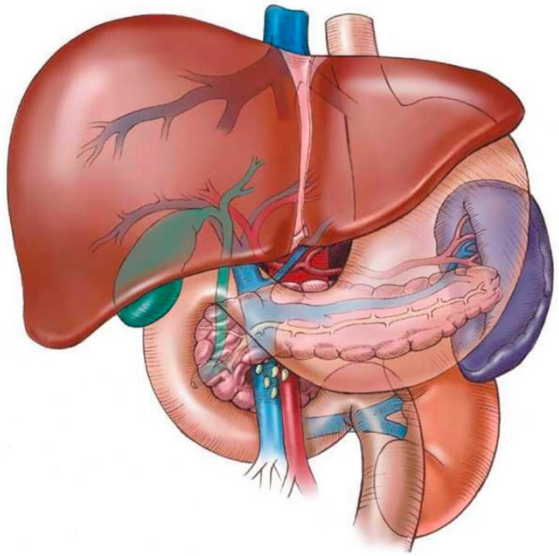
- **Anterior- superior:**

Anterior abdominal wall, left costal margin, left pleura & lung, diaphragm, left lobe of the liver.



- **Posteriorly = stomach bed:**

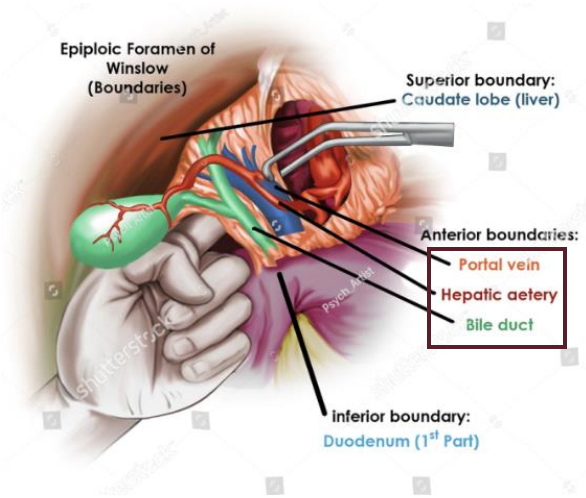
lesser sac, left crus of diaphragm, spleen (as angle, part ant. and part post. and from the left boundary of the lesser sac), left suprarenal gland, upper part of left kidney, splenic artery, body of pancreas, transverse mesocolon, transverse colon.

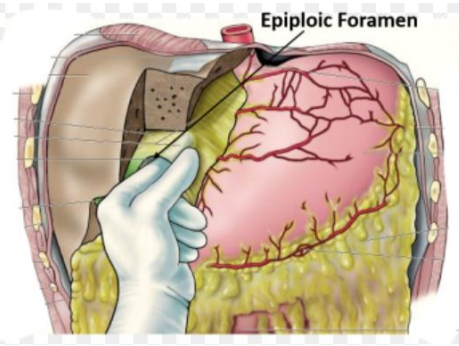


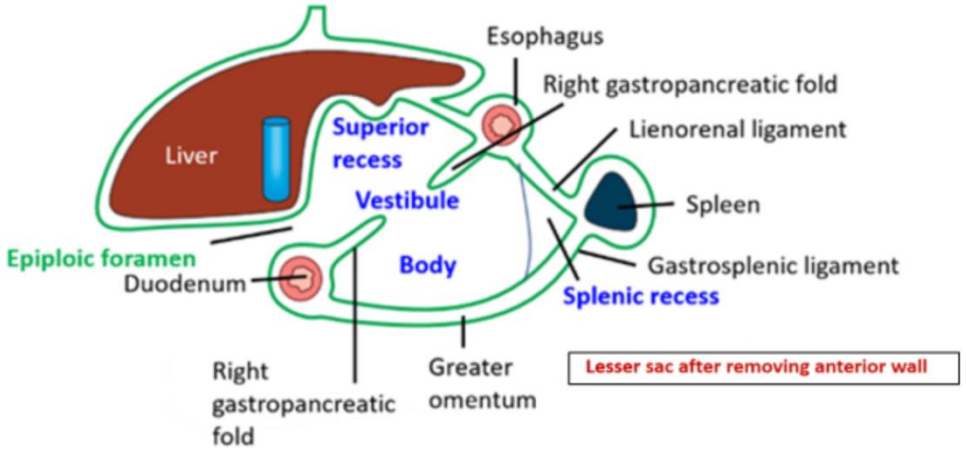
Stomach

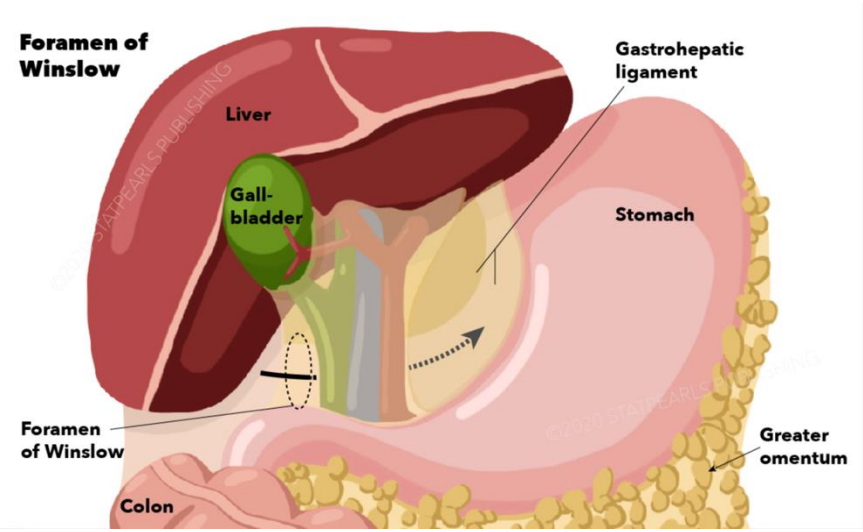
- **Epiploic foramen (foramen of winslow):**
- is a small vertical passage between the greater sac and the lesser sac, allowing communication between these two spaces.
- Boundaries:

- anterior: the free edge of the lesser omentum (hepatoduodenal ligament) which contains the common bile duct, hepatic artery proper, and portal vein between its two layers.
- posterior: peritoneum covering the inferior vena cava.





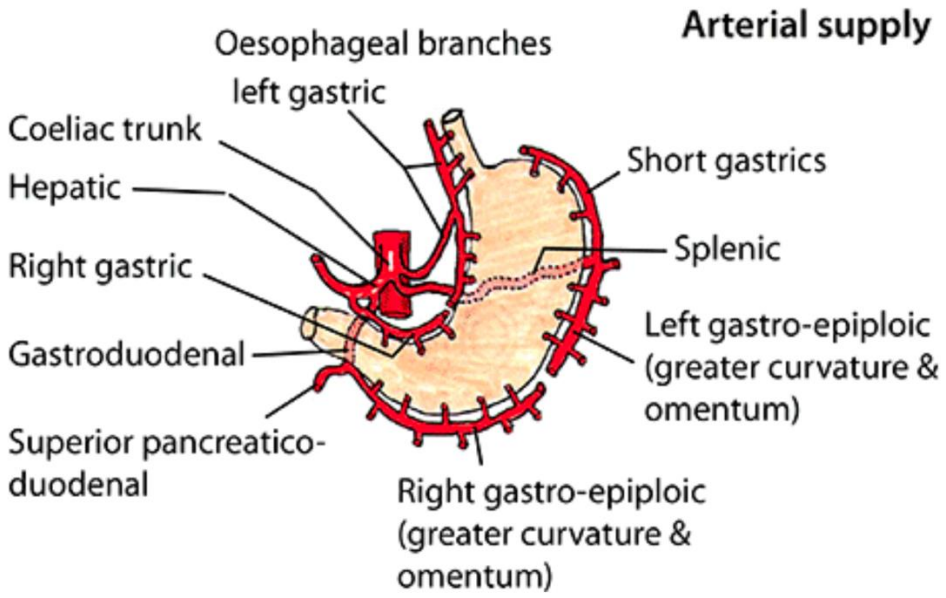


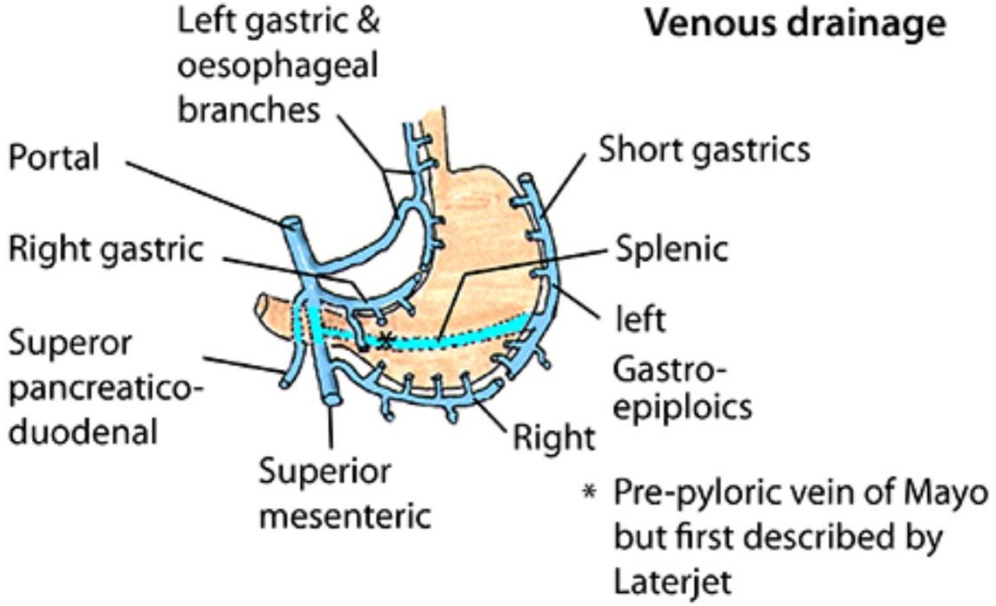


Stomach

- **Blood supply:** branches of celiac trunk (left gastric artery, right gastric artery, short gastric artery, left and right gastroepiploic arteries)

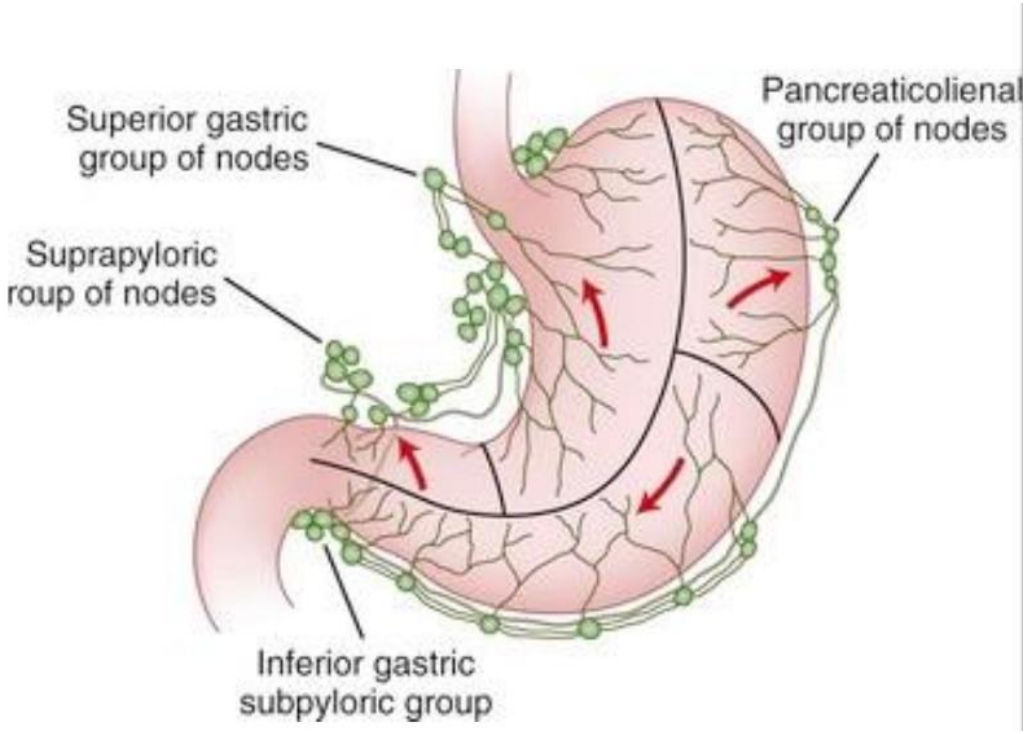
- **veins:** drain into portal circulation



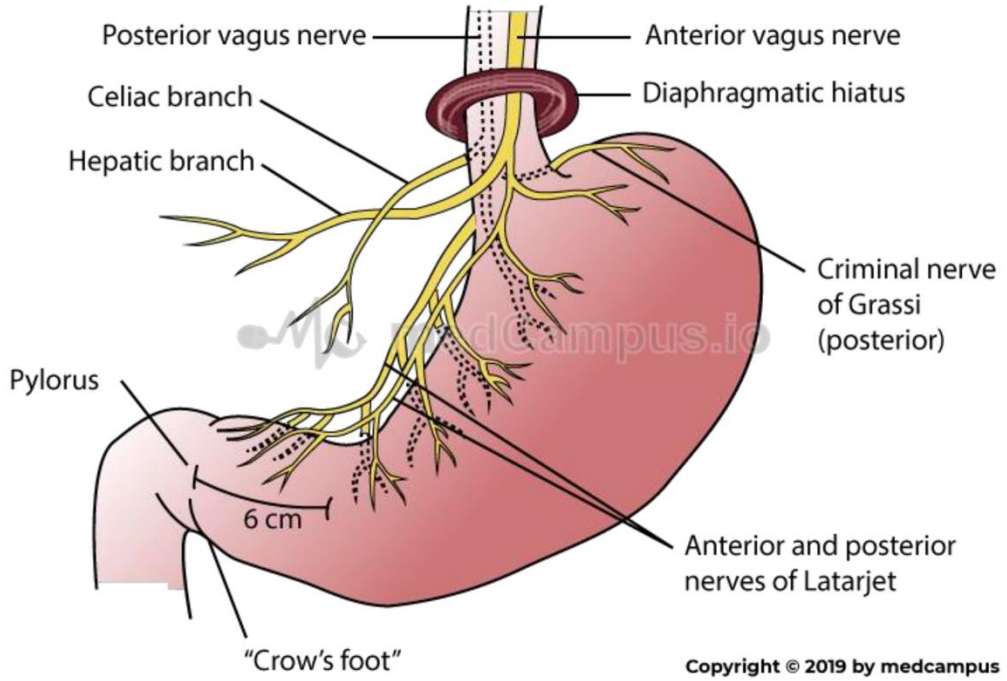


Stomach

- **lymphatic drainage:** gastroepiploic nodes + short gastric nodes>> celiac nodes

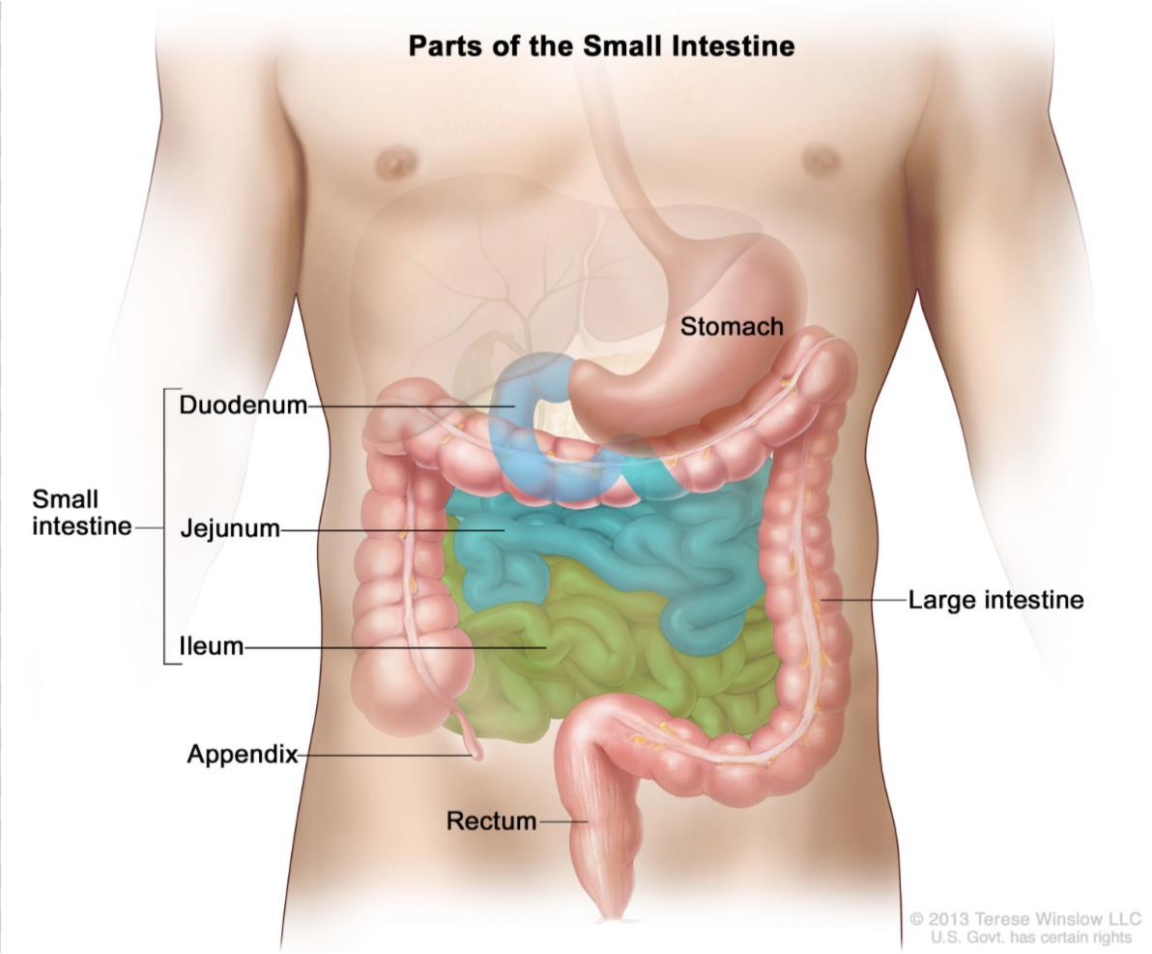


- **Nerve supply:** anterior and posterior vagal trunk.



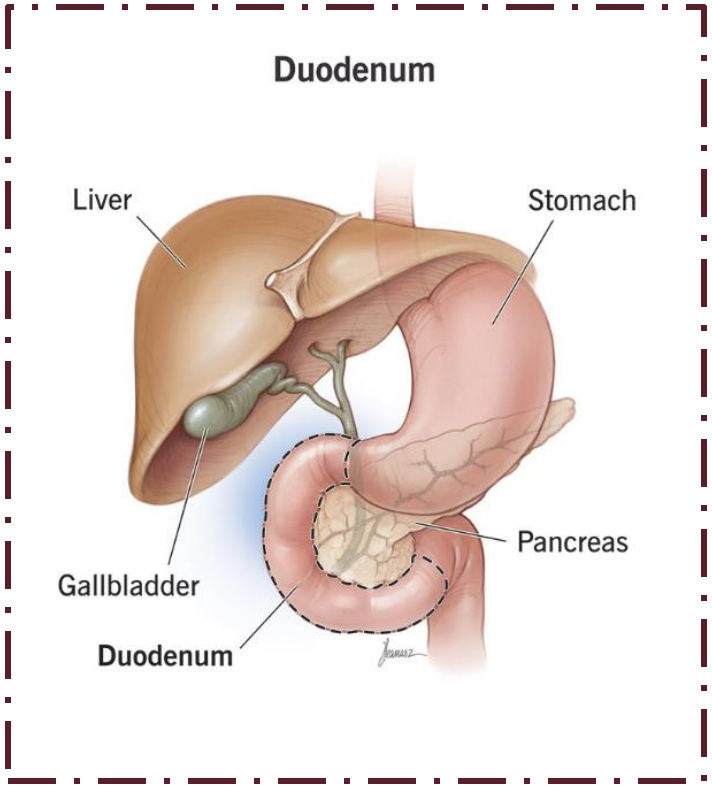
Small intestine

- Divided into three parts: the duodenum, the jejunum, and the ileum.



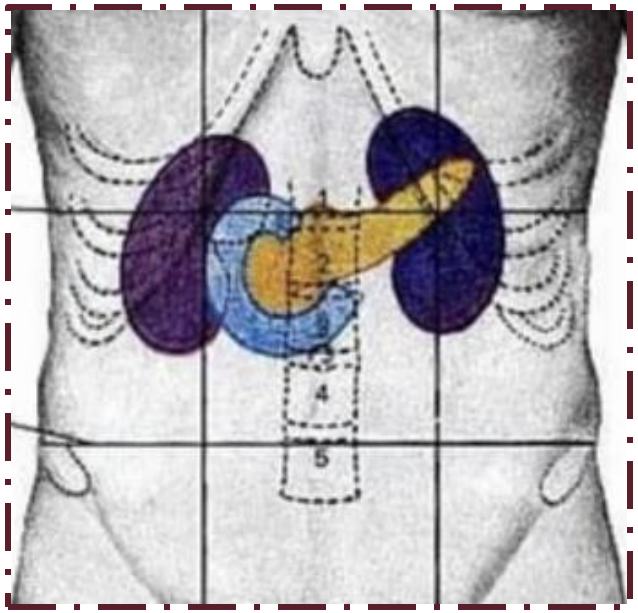
Duodenum

- The duodenum is C shaped tube, is about 25cm (10 inches) and is retroperitoneal except the first and last inches.
- Curves around the head of pancreas.
- It is important because it receives the opening of the bile and pancreatic ducts.

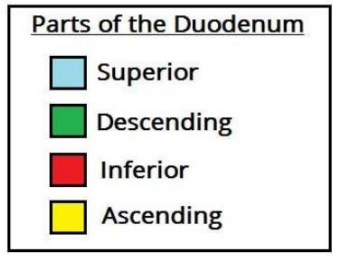


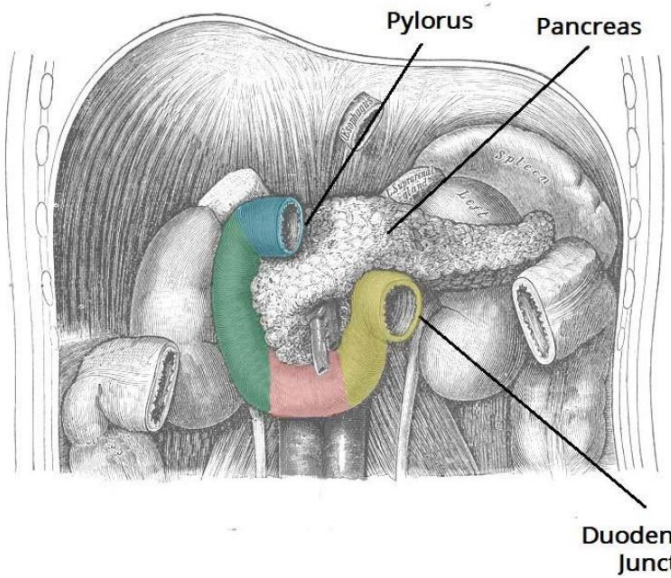
Duodenum

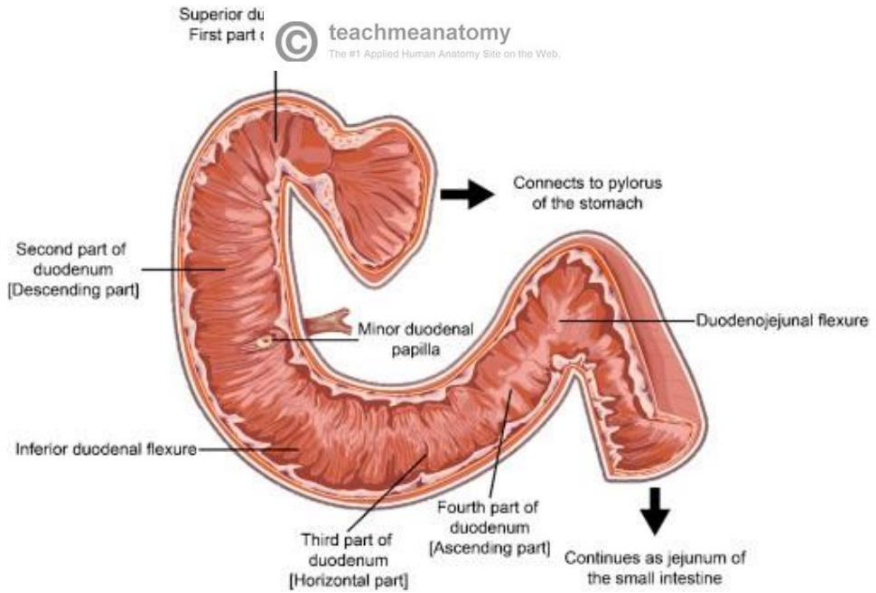
1. **Parts:** 4 parts.
2. **Site:** in the epigastric and umbilical regions.
3. **Length:** is about 25cm (10 inches) and is retroperitoneal except the first and last inches.

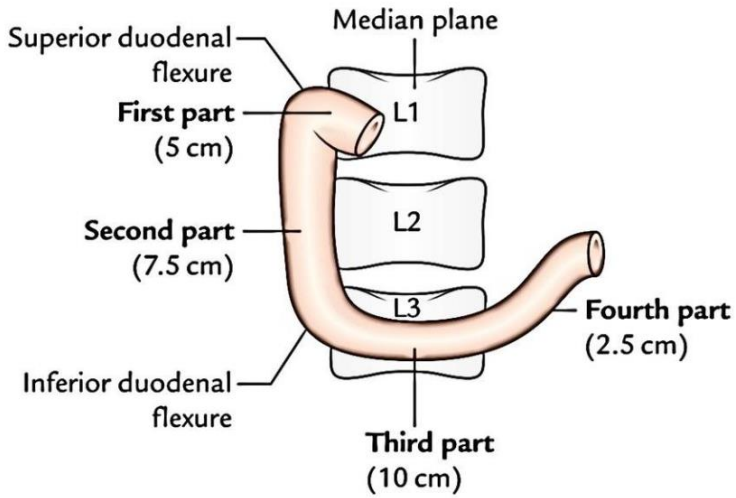


Duodenum


Parts of the Duodenum
Superior
Descending
Inferior
Ascending


Pylorus
Pancreas
Duodenojejunal Junction


teachmeanatomy
Connects to pylorus of the stomach
Second part of duodenum [Descending part]
Minor duodenal papilla
Duodenojejunal flexure
Inferior duodenal flexure
Third part of duodenum [Horizontal part]
Fourth part of duodenum [Ascending part]
Continues as jejunum of the small intestine


Median plane
Superior duodenal flexure
First part (5 cm)
Second part (7.5 cm)
Inferior duodenal flexure
Third part (10 cm)
Fourth part (2.5 cm)
L1
L2
L3

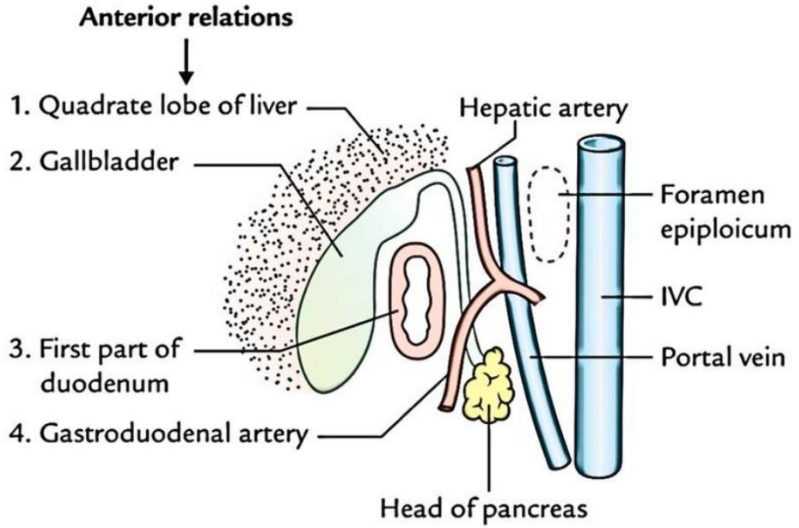
Duodenum

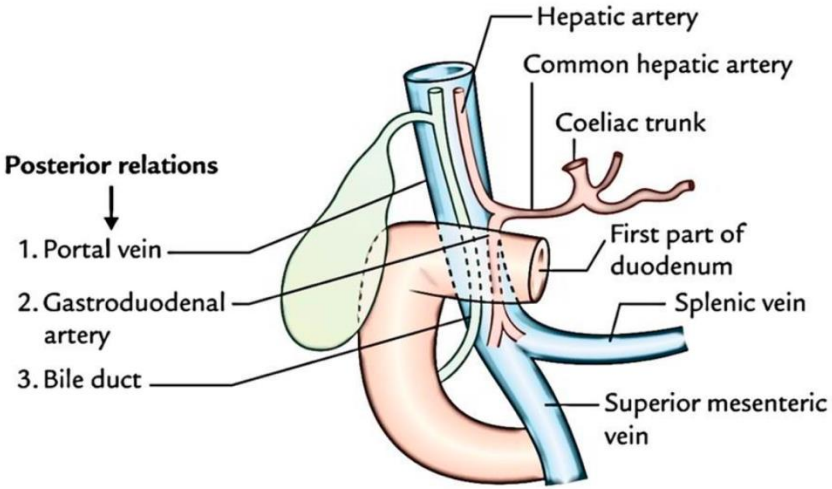
First part of duodenum (2 inches):

- The first part begins from the pyloduodenal junction. At the level of the transpyloric line.
- Runs upward and backward at the level of the 1st lumbar vertebra 1 inch to the right.

Relations of the first part:

- Anteriorly: The liver (quadratus lobe), The gall bladder
- Superiorly: The epiploic foramen
- Posteriorly: The lesser sac, the bile duct, the portal vein, Inferior vena cava gastroduodenal Artery (if there is a peptic ulcer on the posterior wall of the 1st inch perforation and infiltration may occur along with bleeding from this artery)
- Inferiorly: The head of the pancreas





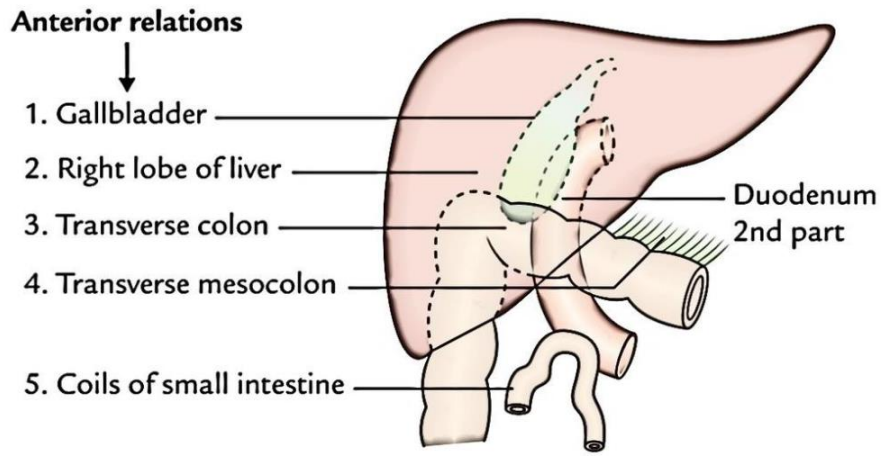
Duodenum

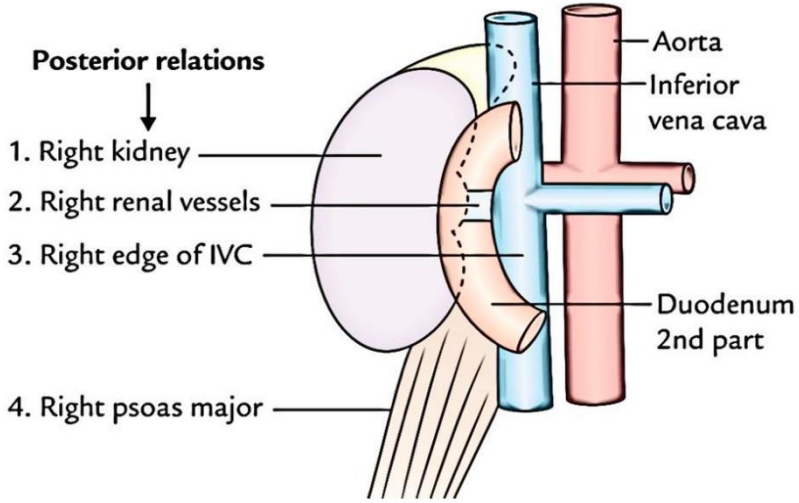
Second part of duodenum (3inches):

Importance of the 2nd part: it receives the common bile and pancreatic ducts.

Relations of the second part :

- Anteriorly: The gallbladder (fundus), the right lobe of the liver, the transverse colon, the coils of small intestine
- Posteriorly: Hilum of the right kidney, the right ureter
- Laterally: Right colic flexure, ascending colon, right lobe of the liver
- Medially: Head of the pancreas, Bile and pancreatic ducts





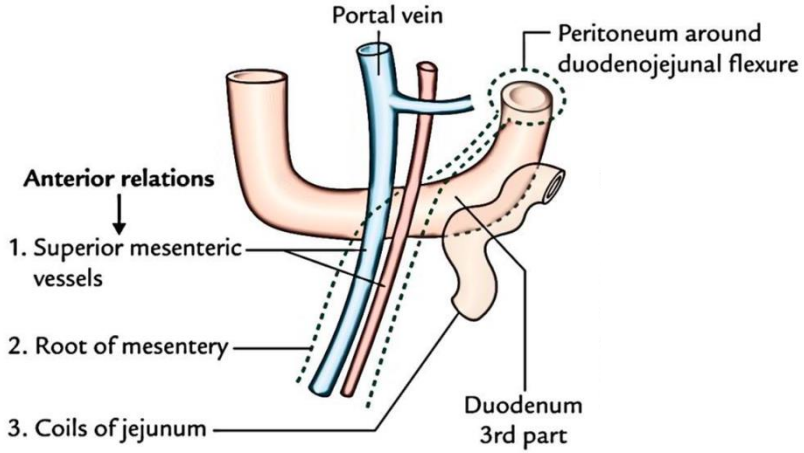
Duodenum

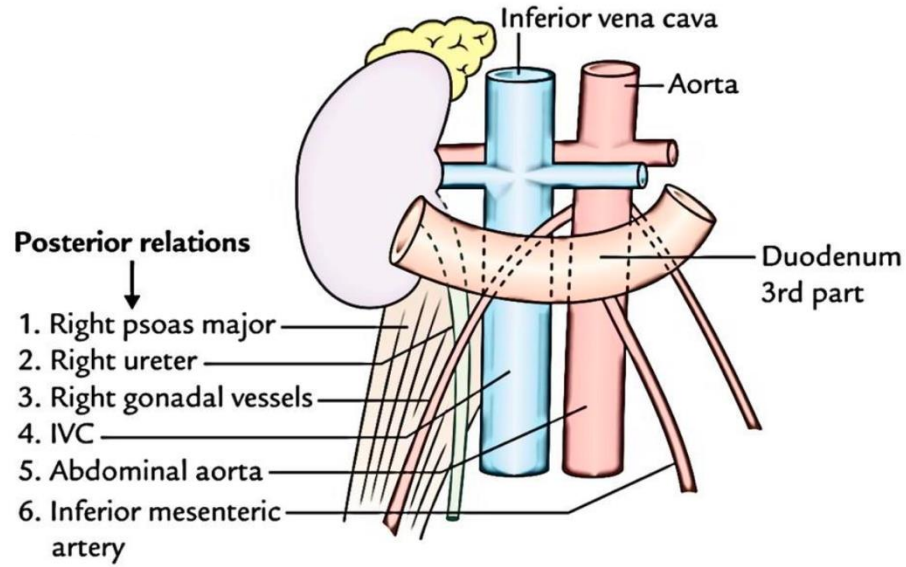
Third Part of the Duodenum(4 inches):

Runs horizontally to the left, in front of the vertebral column. On the subcostal plane.

Relations of the third part :

- Anteriorly: The root of the mesentery of the small intestine, the superior mesenteric vessels contained within the mesentery coils of the jejunum
- Posteriorly: The right ureter, the right psoas muscle, the inferior vena cava, the aorta
- Superiorly: The head of pancreas
- Inferiorly: Coils of jejunum





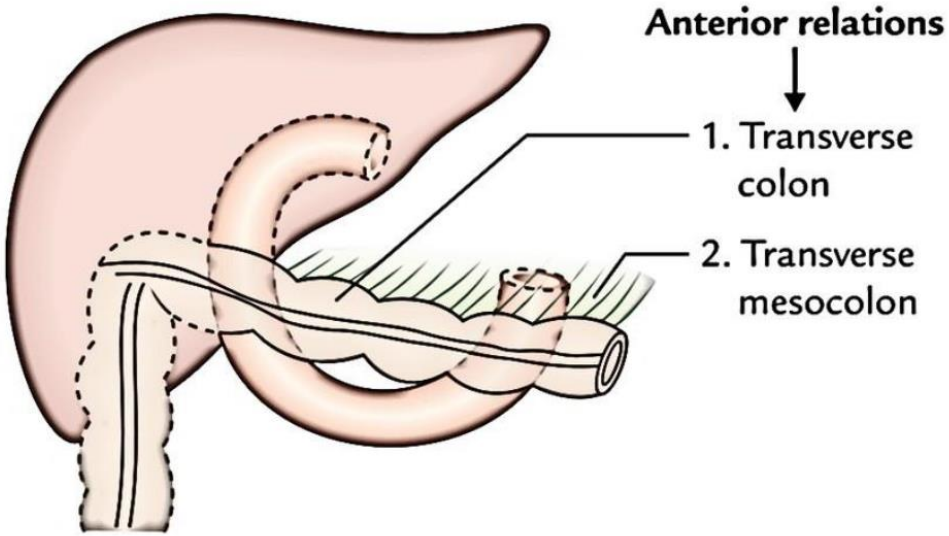
Duodenum

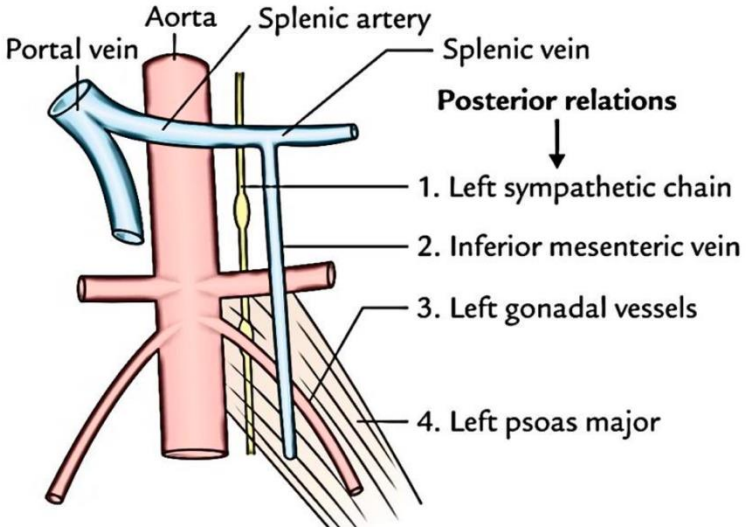
Forth Part of the Duodenum (1inch)

- Runs upward to the left.
- Ends in the duodenojejunal junction at the level of the 2nd lumbar vertebrae 1 inch to the left.
- The junction (flexure) is held in position by the ligament of Treitz, which is attached to the right crus of the diaphragm (duodenal recess).

Relations of the third part :

- Anteriorly: The beginning of the root of the mesentery, Coils of the jejunum
- Posteriorly: Left psoas major muscle, The sympathetic chain on the left margin of the aorta
- Superiorly: Uncinate process of the pancreas

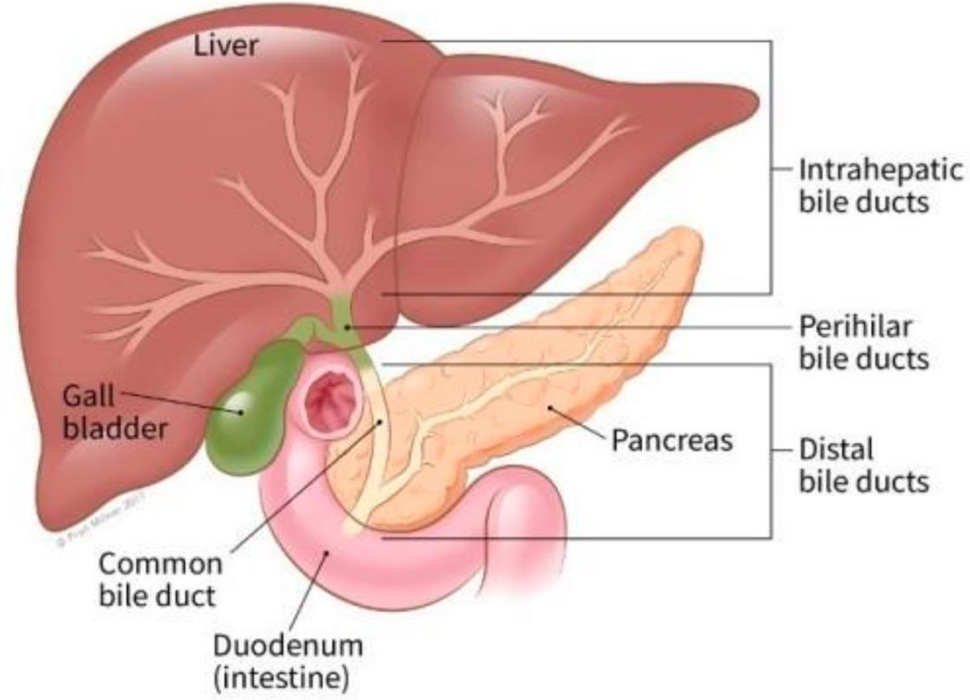


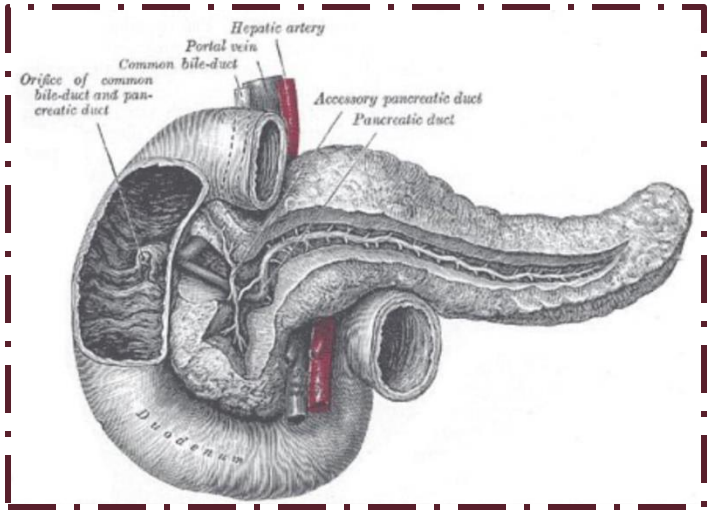


Duodenum

Relations of pancreas and bile ducts to the Duodenum:

- The common bile duct and the pancreatic duct have the same opening in the duodenum. When they meet, they form a bulge in the duodenal wall called ampulla of vater.
- Around it is a sphincter called sphincter of Oddi (a smooth muscle).
- We call the opening from inside the major duodenal papilla, sometimes there is another opening 1 inch above the major papilla for accessory pancreatic ducts called minor duodenal papilla.

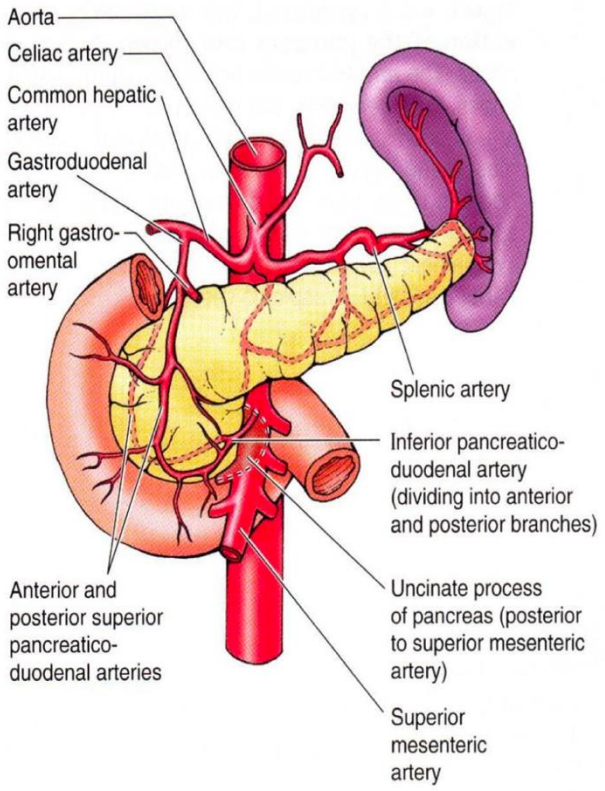




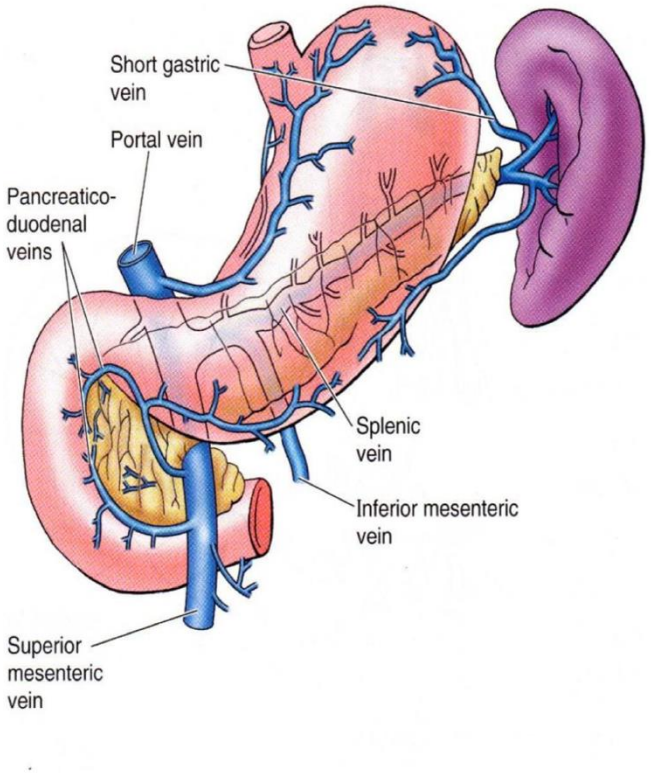
Duodenum

Blood supply and Venous drainage of the duodenum:

- Blood supply:
upper half: superior pancreaticoduodenal artery
Lower half: inferior pancreaticoduodenal artery



- venous drainage:
upper half: portal vein
Lower half: superior mesenteric vein

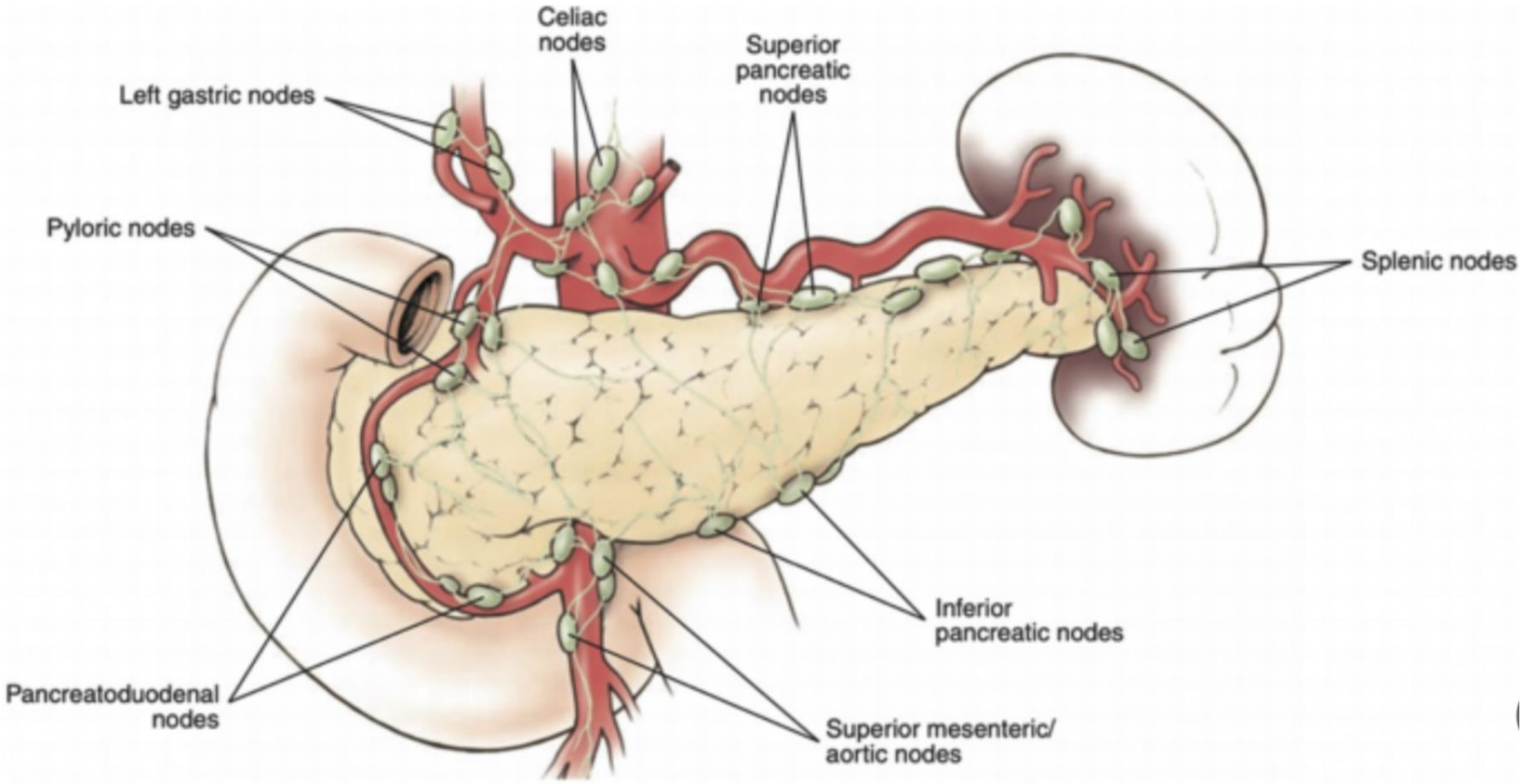


Duodenum

أشهد أنّ لا إله إلّا الله وأشهد
أن محمدًا عبده ورسوله

Lymphatic drainage:

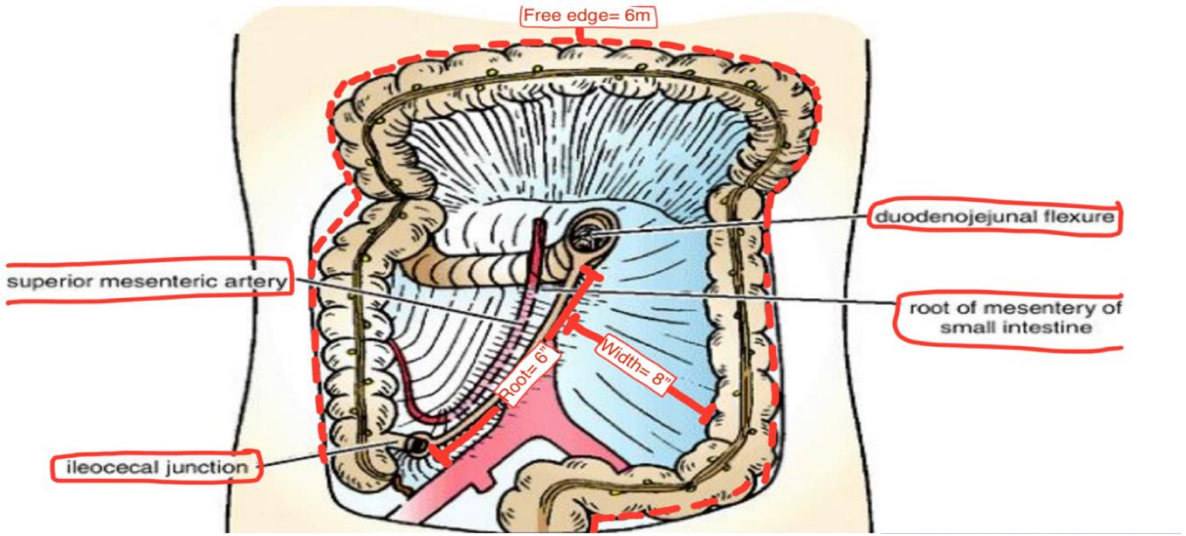
via pancreaticoduodenal nodes → gastroduodenal node → celiac nodes
Pancreaticoduodenal nodes → superior mesenteric nodes



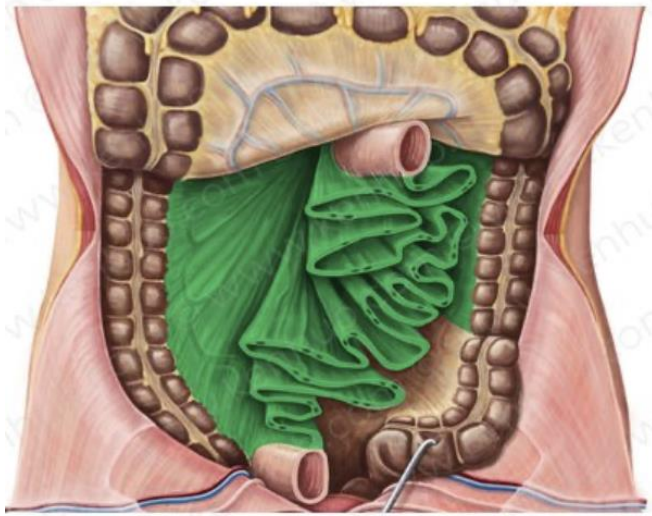
Jejunum and Ileum

- The jejunum and ileum measure about 20 ft (6 m) long
- The jejunum begins at the duodenojejunal flexure
- The ileum ends at the ileocecal junction.
- The coils of jejunum and ileum are freely mobile and are attached to the posterior abdominal wall by a fan shaped fold of peritoneum known as the **mesentery of the small intestine:**

- root of the small intestine mesentery: 6 inches = 15 cm attached to P.A.W, start in the level of L1; 1inch to the left.
- content of the small intestine mesentery: Branches of superior mesentric vessels, lymaphatics, fat, nerves plexus , arcades and vasa-recta.



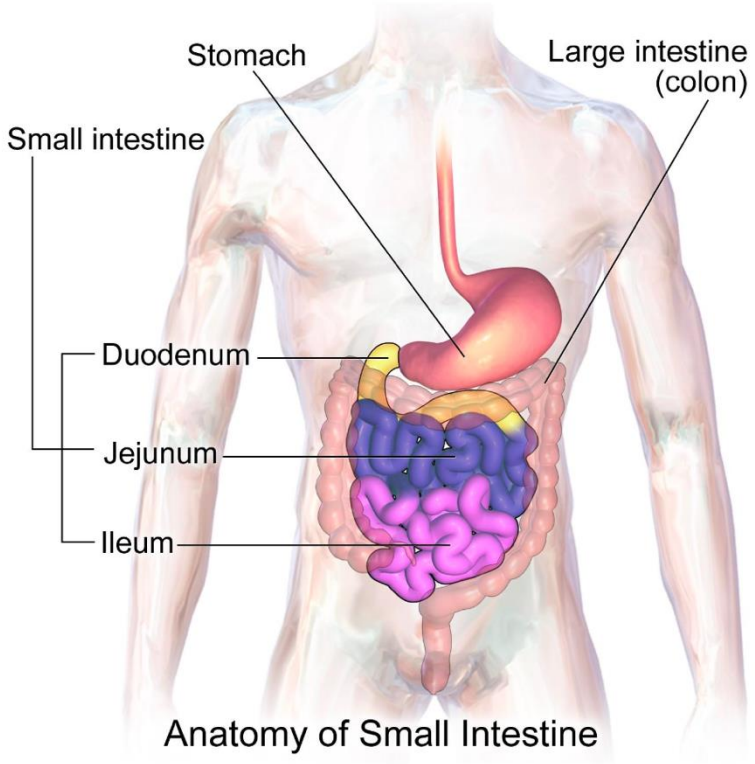
root of the small intestine mesentery



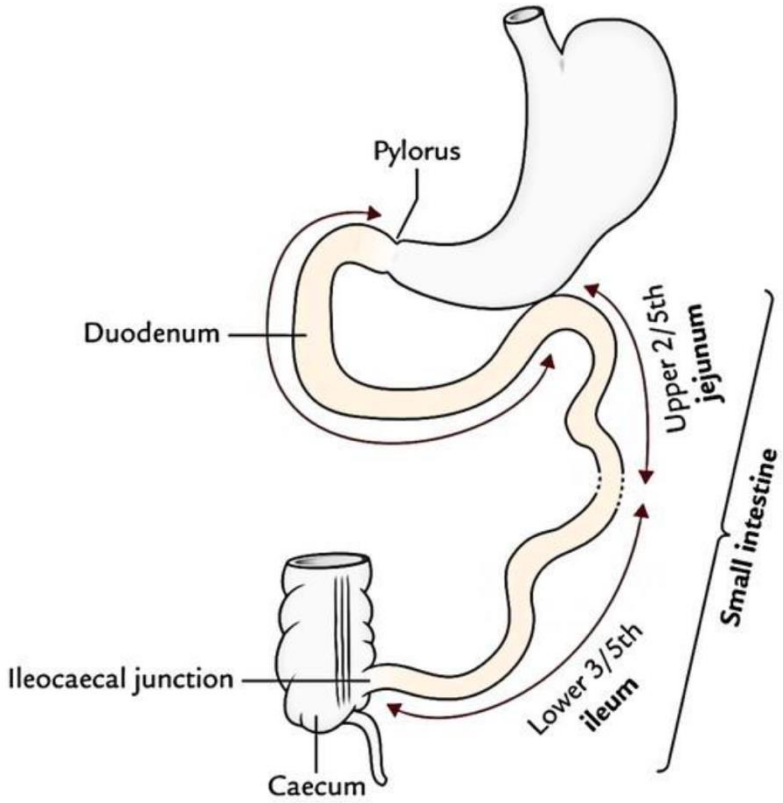
Free edge of the small intestine mesentery

Jejunum and Ileum

1. Site and length of the Jejunum and Ileum



Anatomy of Small Intestine

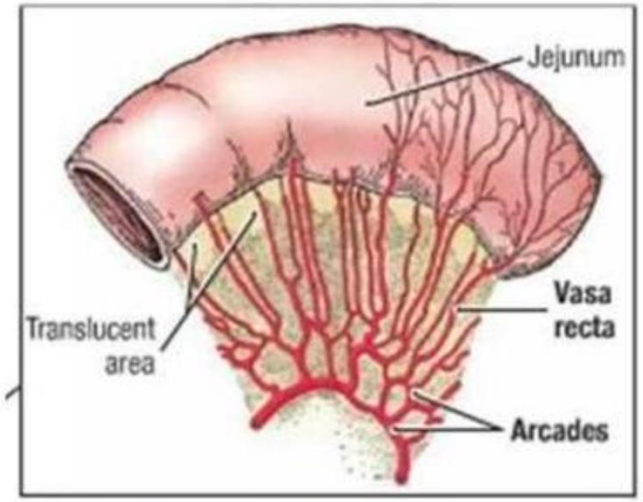


Jejunum and Ileum

Figure out more differences in the table next slide

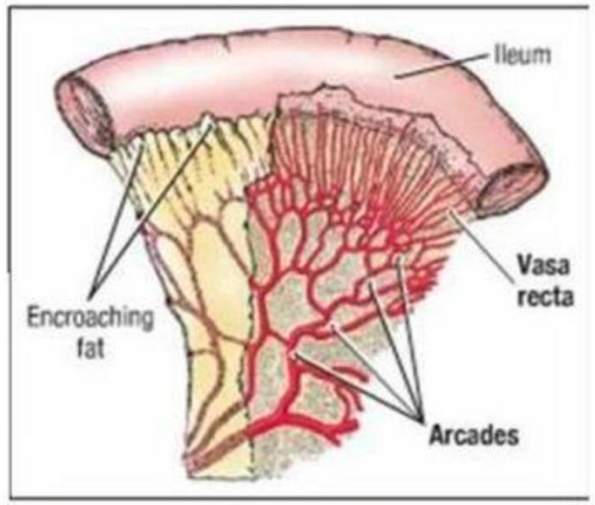
2. Differences between the Jejunum and Ileum

Jejunum



- Less complex arterial arcades
- Longer Vasa Recta
- More plicae circulares, thicker, more highly folded
- No fat in mesentery

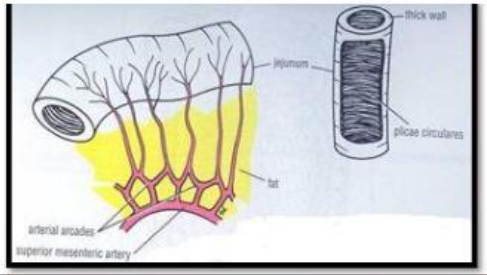
Ileum

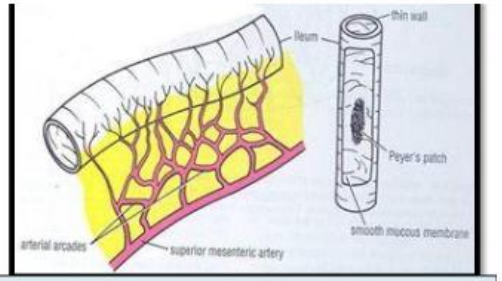


- More complex arterial arcades
- Shorter Vasa Recta
- Less plicae circulares, thinner less folded
- Fat present in mesentery

Jejunum and Ileum

2. Differences between the Jejunum and Ileum - con.



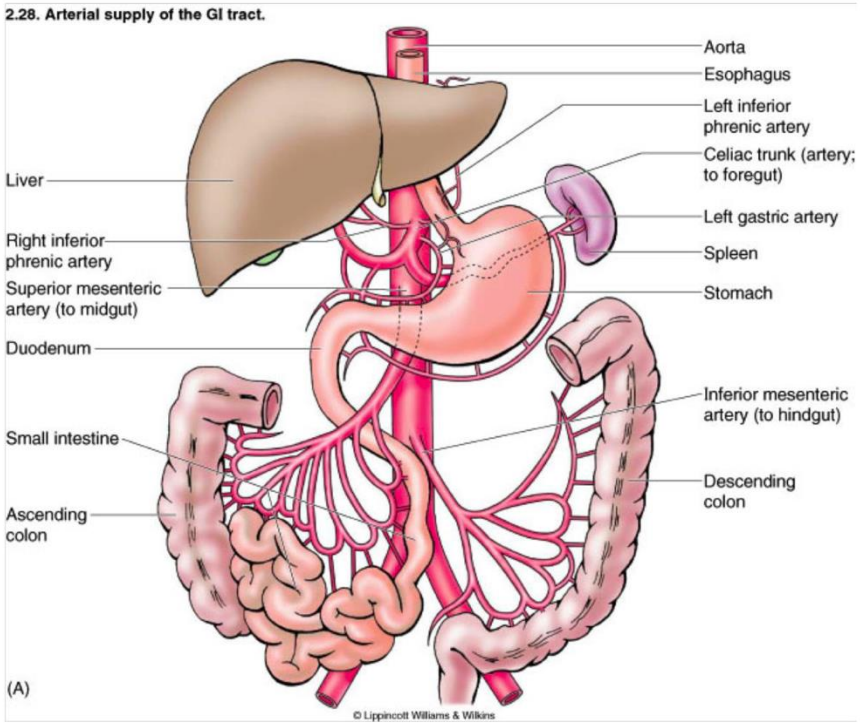


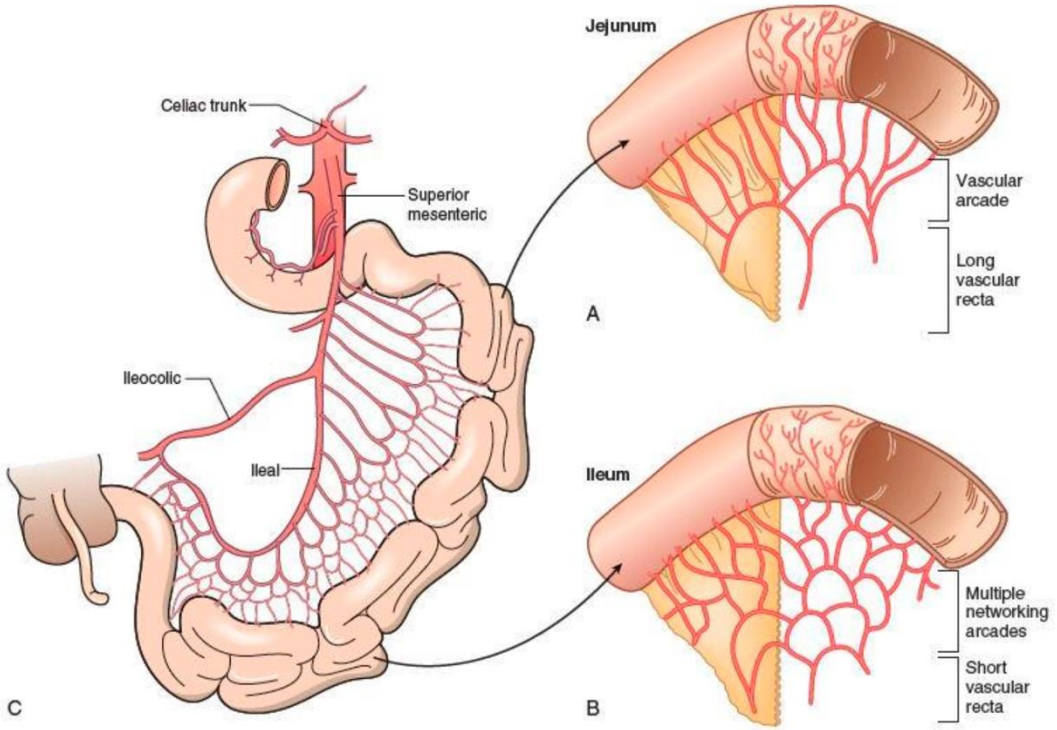
	JEJUNUM	ILEUM
LENGTH	Shorter (proximal 2/5)	Longer (distal 3/5)
DIAMETER	Wider	Narrower
WALL	Thicker (more plicae circulares)	Thinner (less plica circulares)
APPEARANCE	Dark red (more vascular)	Light red (less vascular)
VESSELS	Less arcades (long terminal branches)	More arcades (short terminal branches)
MESENTERIC FAT	Small amount near intestinal border	Large amount near intestinal border
LYMPHOID TISSUE	Few aggregations	Numerous aggregations (Peyer's patches)

Jejunum and Ileum

3. Blood supply:

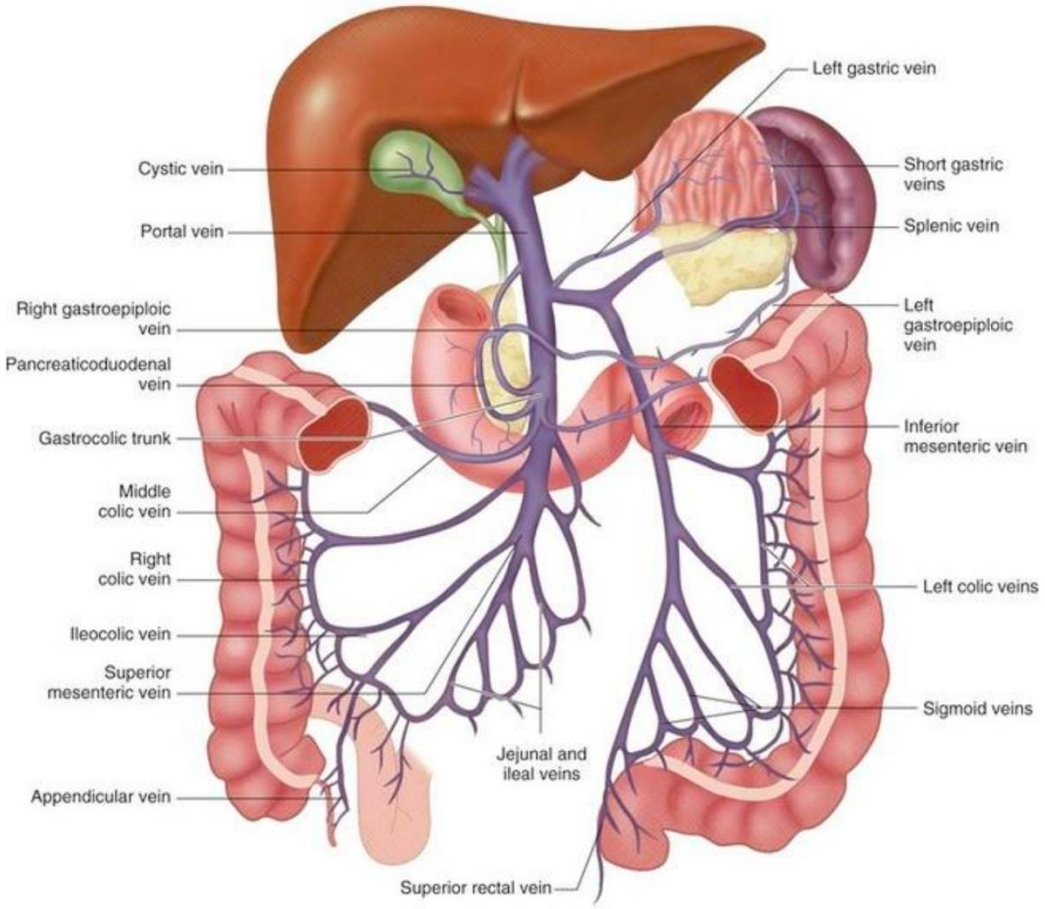
branches of superior mesenteric artery, ileocolic artery (the lowest part of ilium)



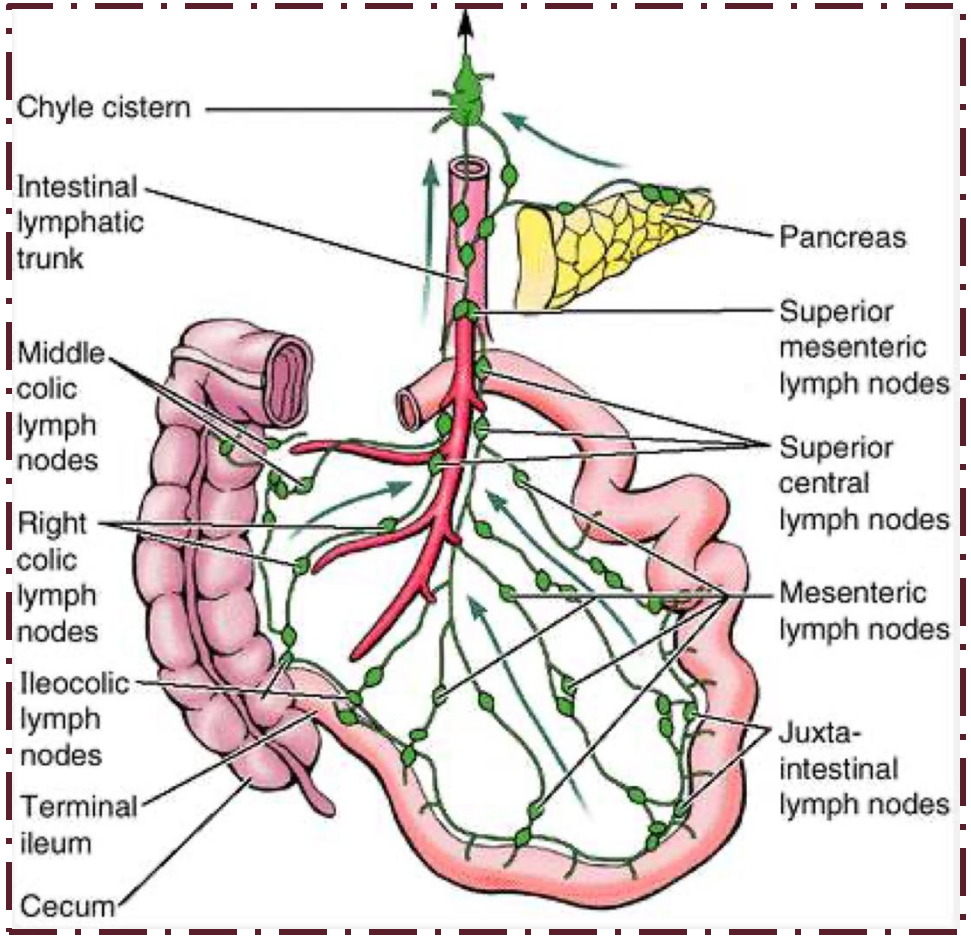


Jejunum and Ileum

4. Venous drainage: superior mesenteric vein



5. Lymphatic drainage: superior mesenteric nodes



For any feedback, scan the code or click on it.

Corrections from previous versions:

Versions	Slide # and Place of Error	Before Correction	After Correction
V0 → V1			
V1 → V2			

رسالة من الفريق العلمي:

قال رسول الله صلى الله عليه وسلم: "الدنيا سجن المؤمن، وجنة الكافر"، أخرجه مسلم عن أبي هريرة.

ومن اللطائف التي ذُكرت أن الحافظ ابن حجر لما كان قاضي القضاة، مر يومًا بالسوق في موكب عظيم، وهيئة جميلة، فهجم عليه يهودي يبيع الزيت الحار، وأثوابه ملطخة بالزيت، وهو في غاية الرثاثة والشناعة، فقبض على لجام بغلته، وقال: يا شيخ الإسلام، تزعم أن نبيكم قال: الدنيا سجن المؤمن، وجنة الكافر. فأي سجن أنت فيه، وأي جنة أنا فيها؟ فقال: أنا بالنسبة لما أعد الله لي في الآخرة من النعيم، كأني الآن في السجن، وأنت بالنسبة لما أعد لك في الآخرة من العذاب الأليم، كأنك في جنة، فأسلم اليهودي.