The University Of Jordan
Faculty Of Medicine

Abdomen

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LAYERS OF THE ANTERIOR ABDOMINAL WALL

1-Skin

The skin is loosely attached to the underlying structures except at the umbilicus.

2-Superficial Fascia

The superficial fascia is divided into a superficial fatty layer (**Camper `s fascia**) and a deep membranous layer (**Scarpa's fascia**).

N.B. The deep fascia (being rich in collagen ,is non stretchable) is absent from the abdominal wall and perineum)

The abdomen must be stretchable For pregnancy and containing the food

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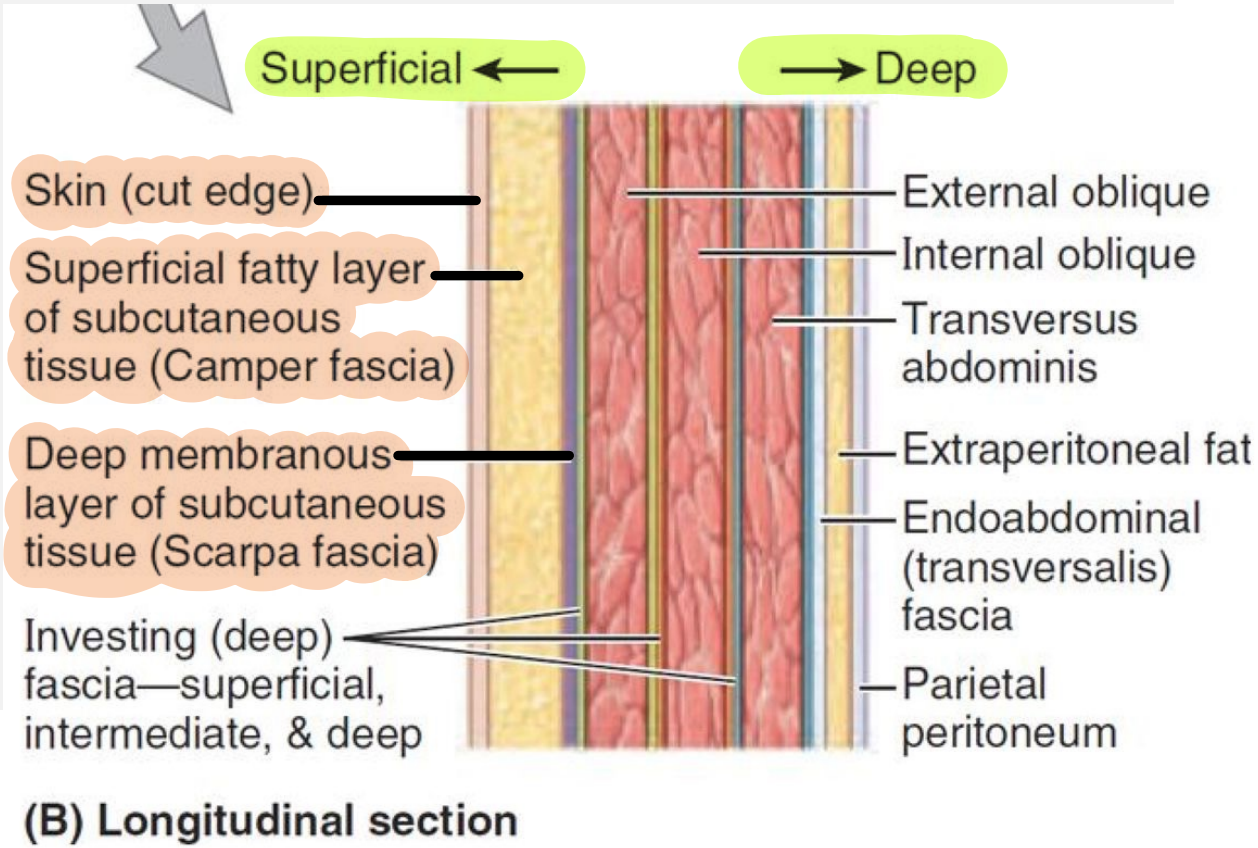

(B) Longitudinal section

Layers of the Anterior Abdominal Wall cont.

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3-Muscles of the Anterior Abdominal Wall

1- External Oblique 2-Internal Oblique 3- Transversus Abdominis

4-Rectus Abdominis 5- Pyramidalis

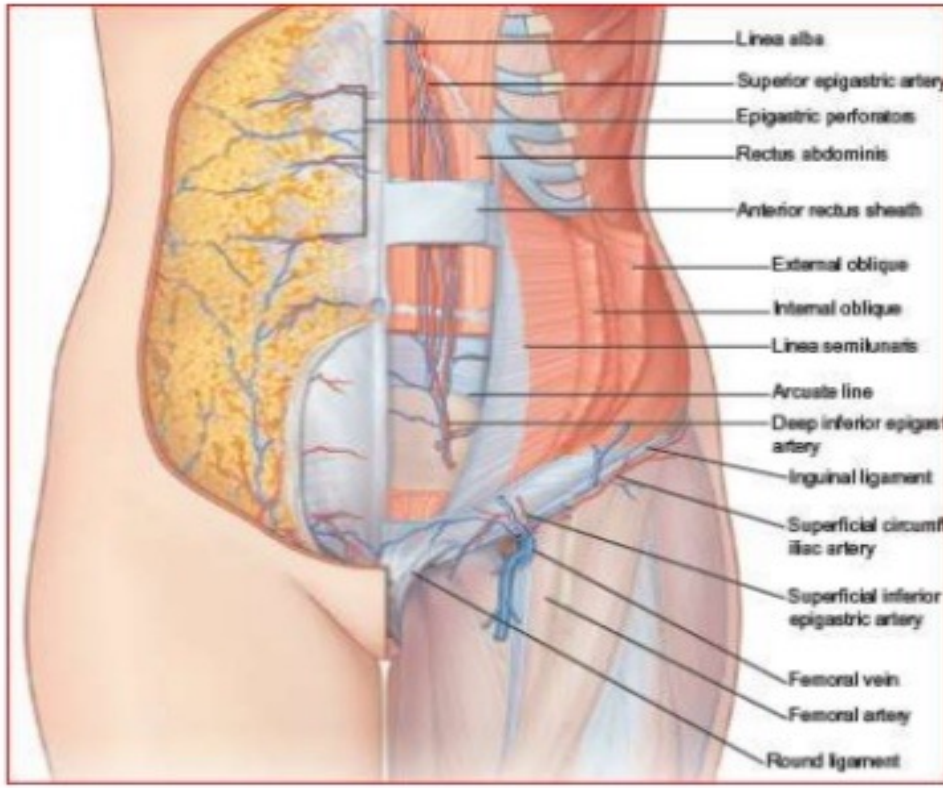
4-Fascia Transversalis

5-Extraperitoneal Fat

6-Parietal Peritoneum

Muscles of Posterior Abdominal Wall

1. Psoas major
2. Iliacus
3. Quadratus lumborum



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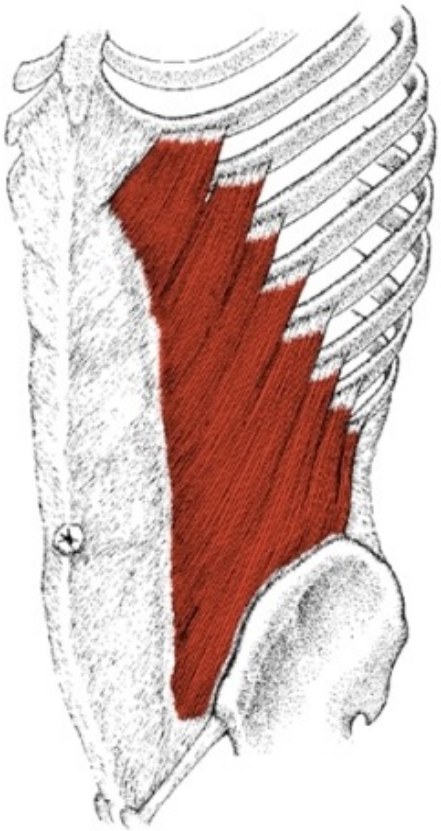
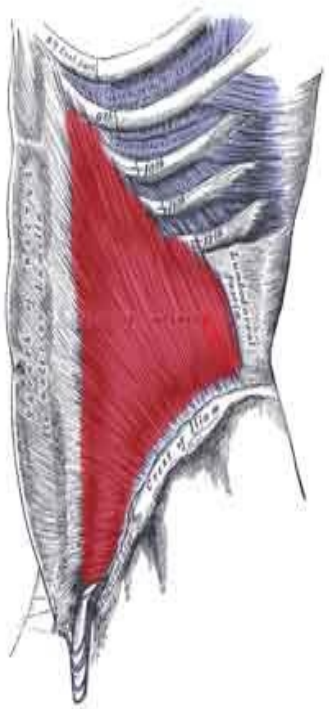
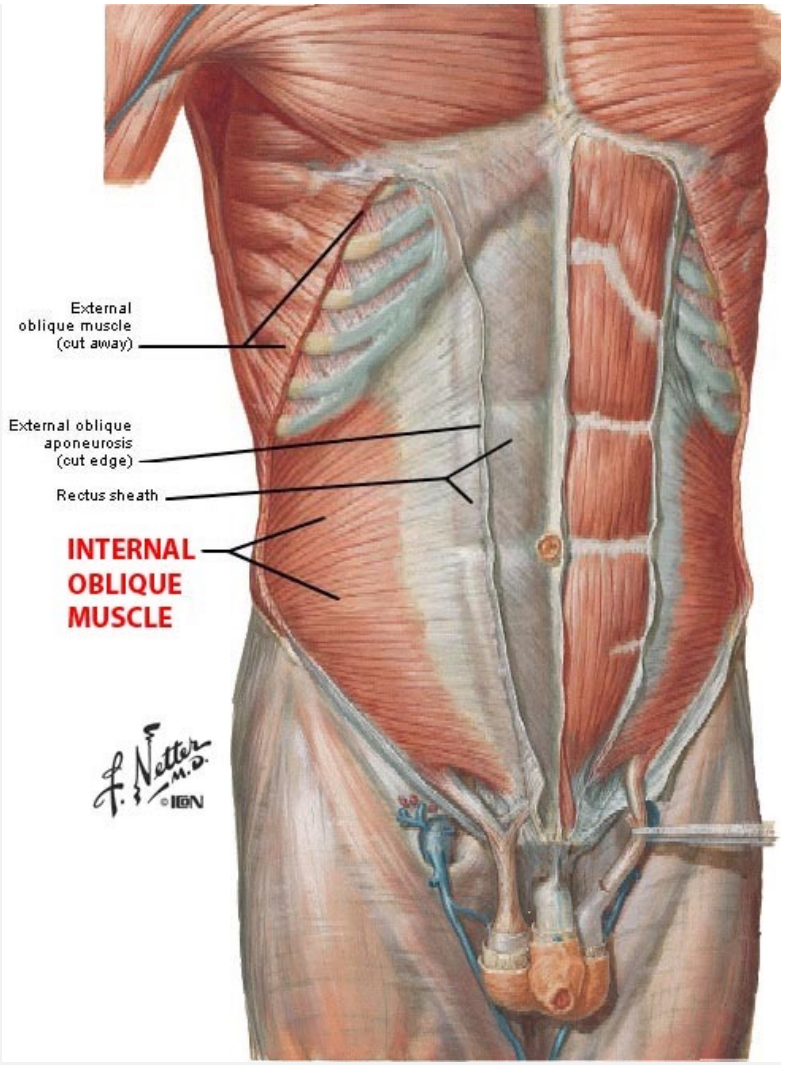
External Obliques





Internal Oblique

External Oblique



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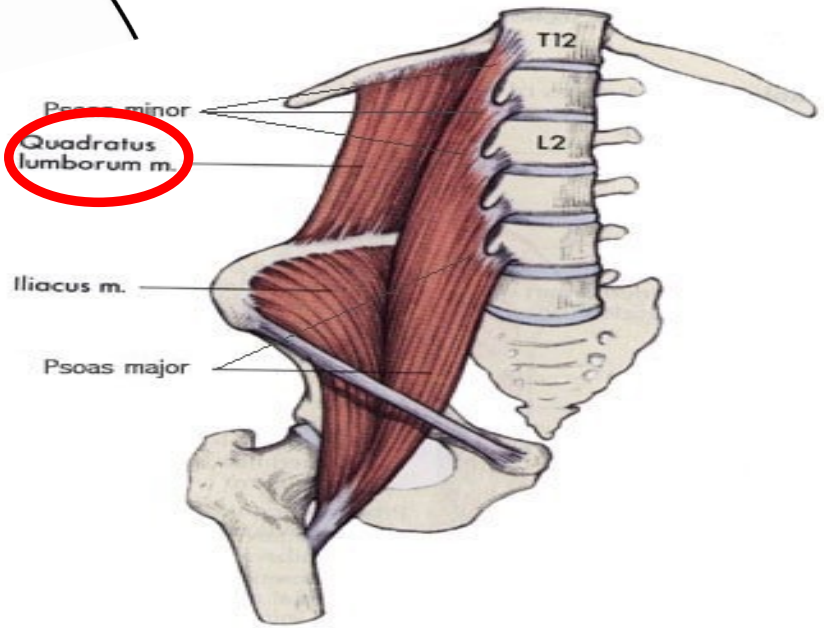
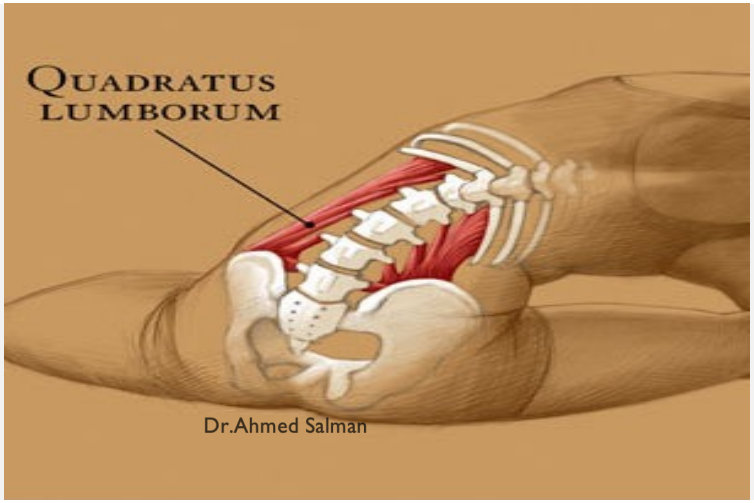

T12
L2
Quadratus lumborum m.
Iliacus m.
Psoas major


QUADRATUS LUMBORUM
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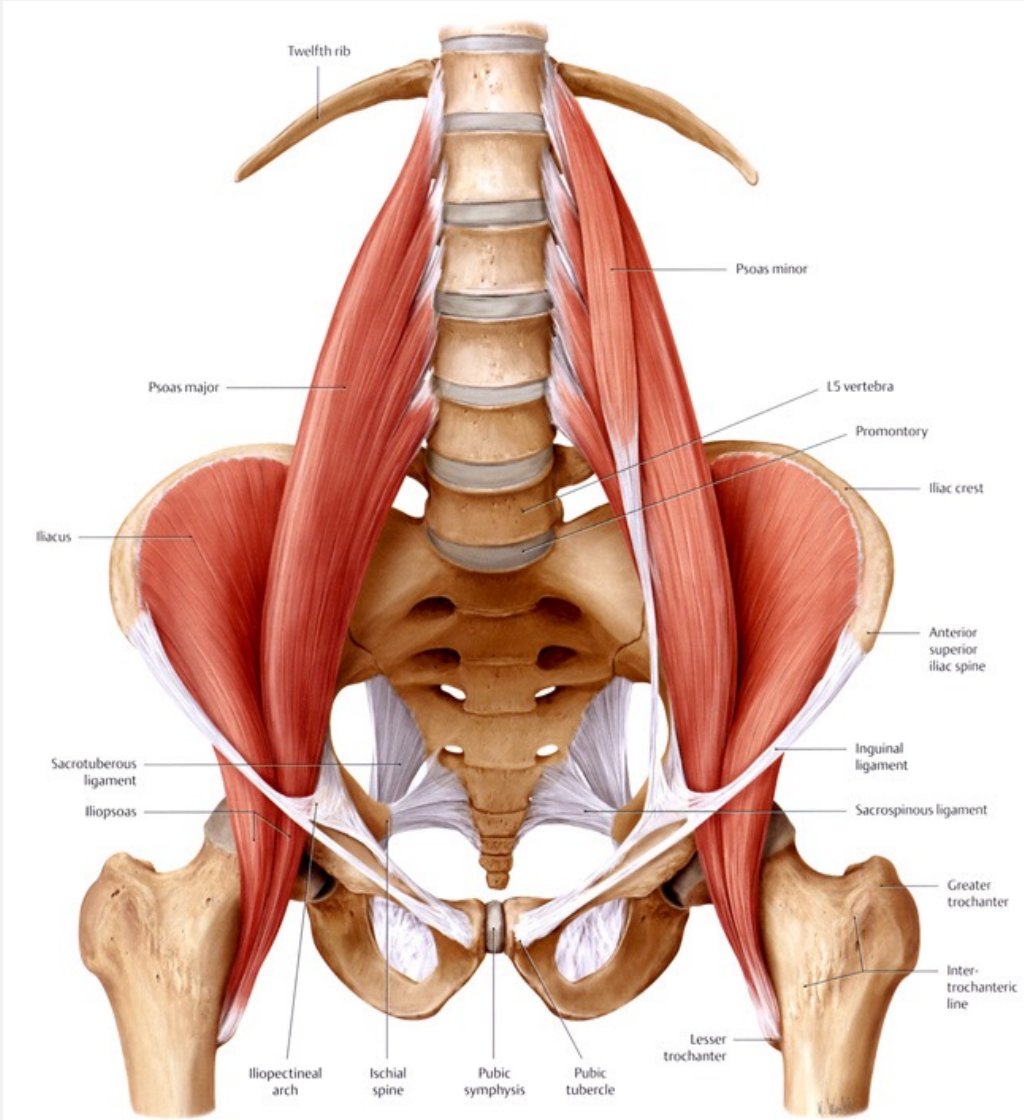
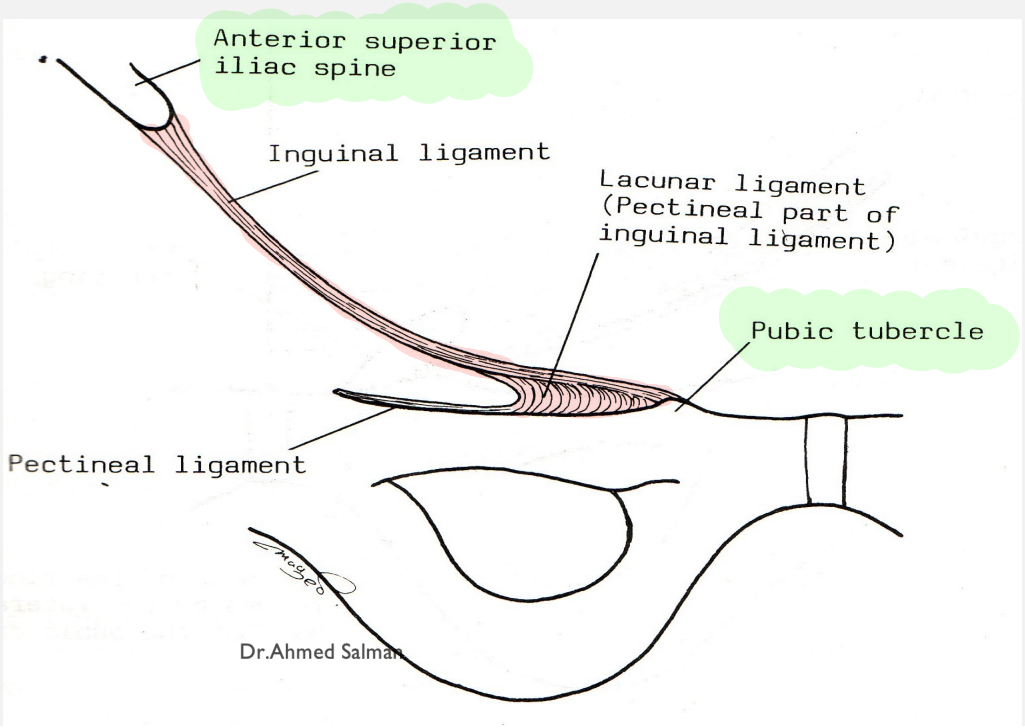
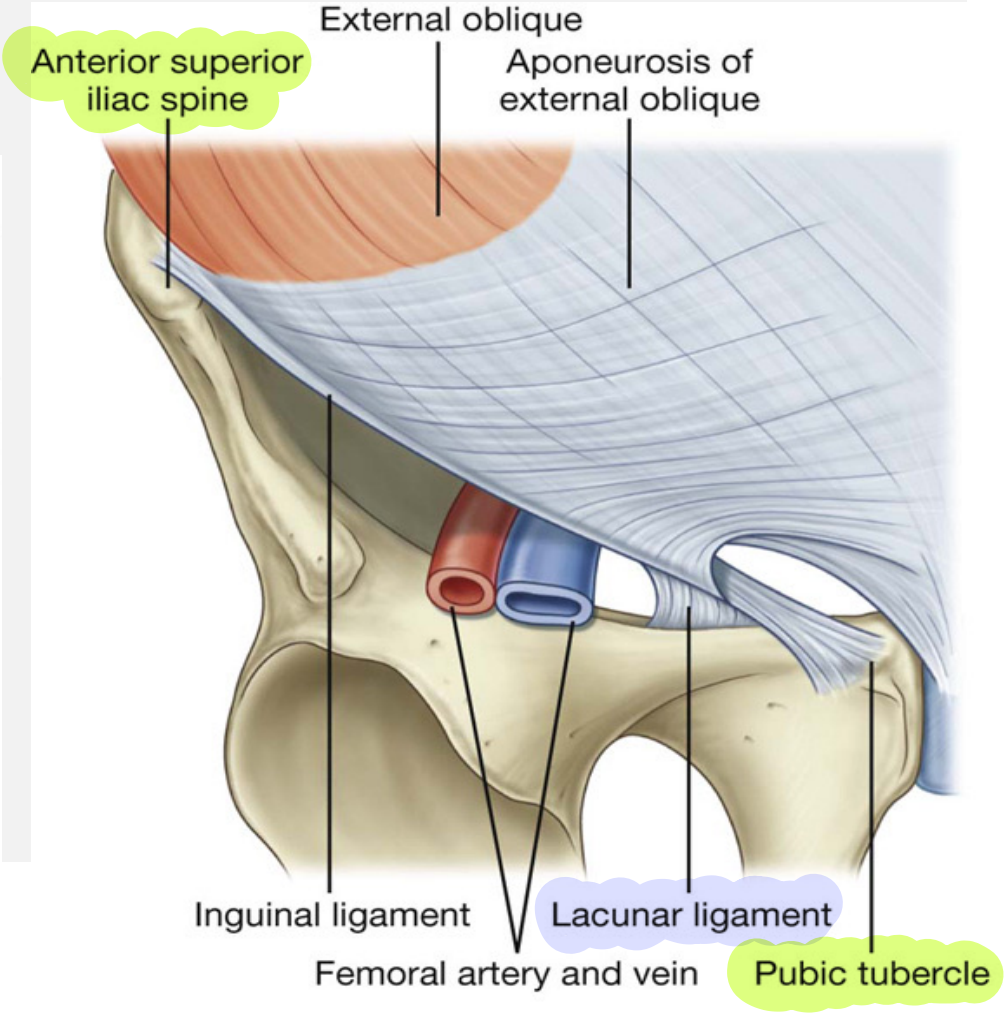

Twelfth rib
Psoas minor
Psoas major
L5 vertebra
Promontory
Iliac crest
Iliacus
Anterior superior iliac spine
Sacrotuberous ligament
Inguinal ligament
Iliopsoas
Sacrospinous ligament
Greater trochanter
Inter-trochanteric line
Lesser trochanter
Iliopectineal arch
Ischial spine
Pubic symphysis
Pubic tubercle

Inguinal Ligament

It is the lower border of external oblique aponeurosis

Attachment: It attached to anterior superior iliac spine and pubic tubercle.





Canal mean connecting the external of the body with the abdominal cavity

Inguinal canal

It is oblique passage in the lower part of the anterior abdominal wall, just above the medial 1/2 of the inguinal ligament.

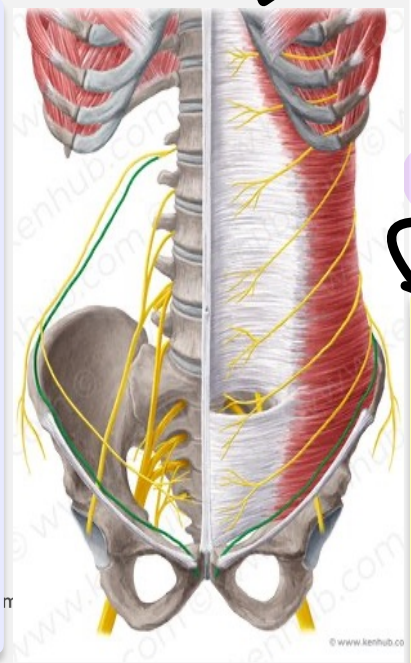
It Extends between superficial and deep inguinal rings It has 2 opening

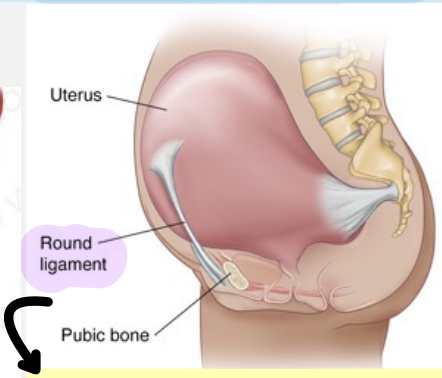
Structures passing through the canal :-

1-Spermatic cord in males or round ligament in females

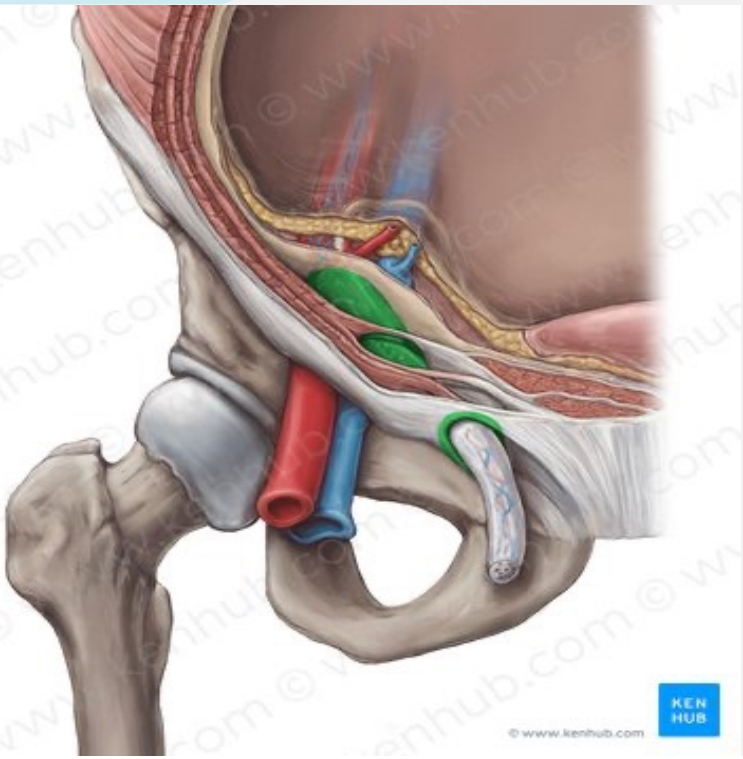
2- Ilioinguinal Nerve

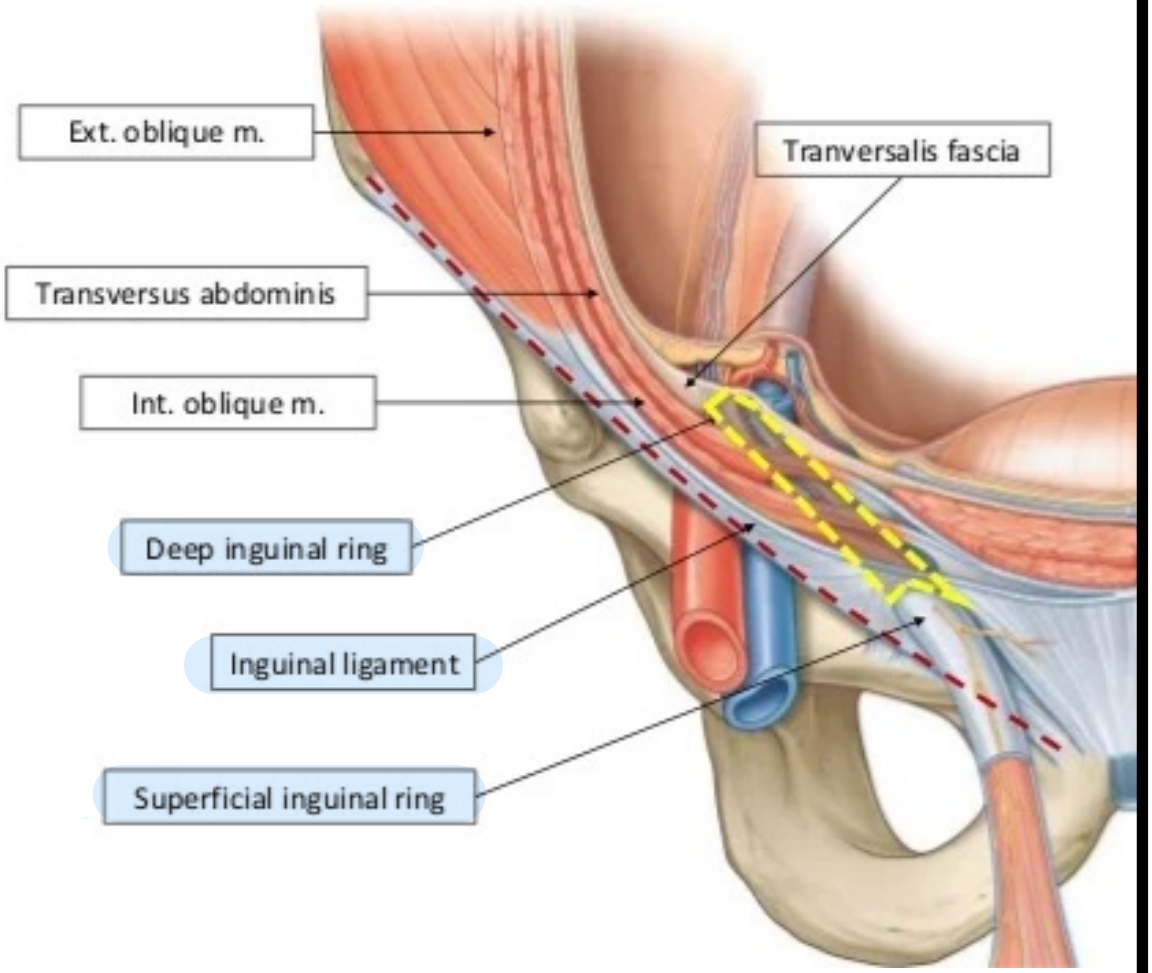
A structure that contain many nerves, arteries veins and the vas difference extend from the scrotum to the abdominal cavity

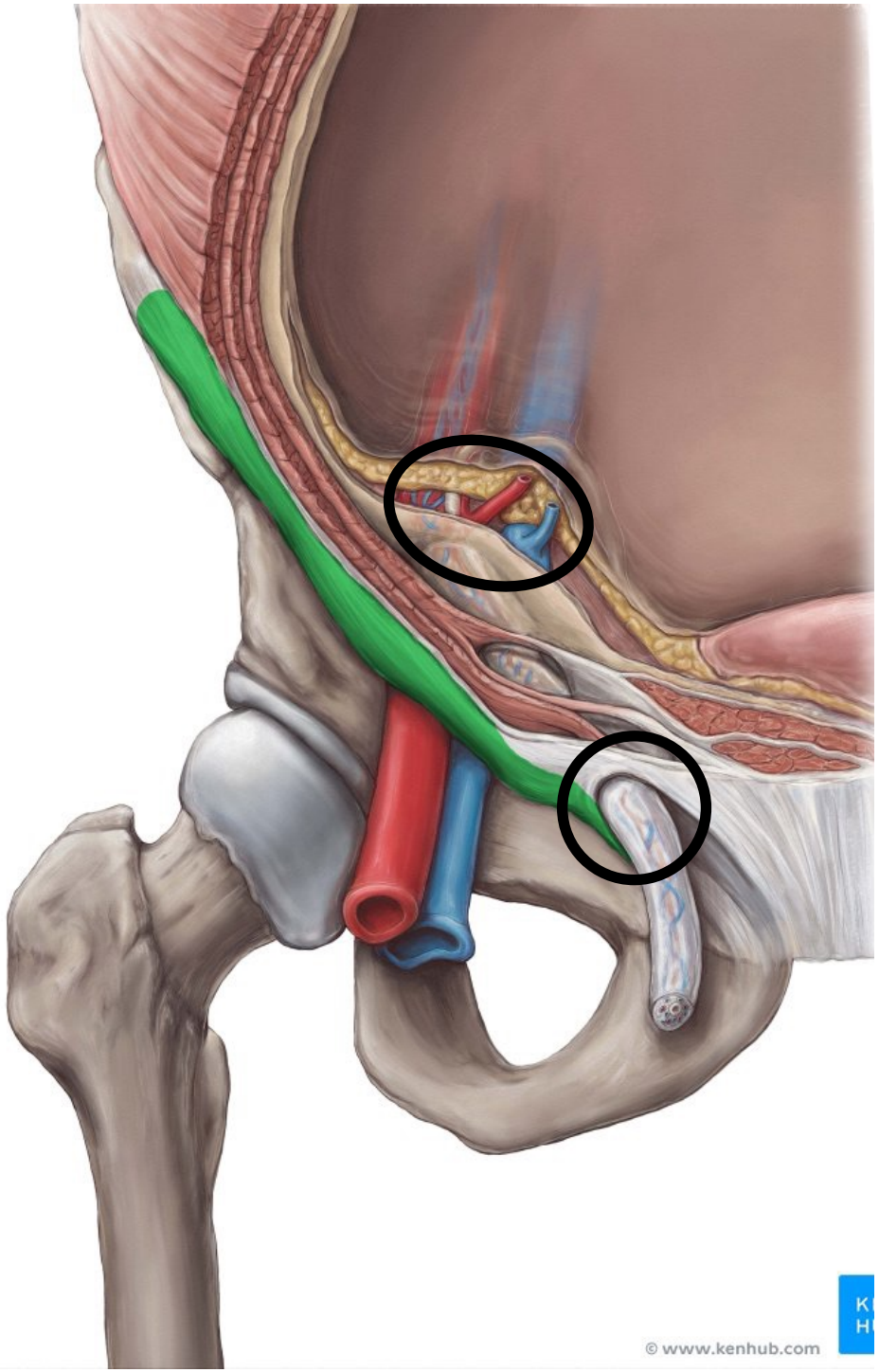




Round ligament extent from the body of uterus and attach to the superficial fissia of abdomen cavity to stabilize the uterus




Ext. oblique m.
Tranversalis fascia
Transversus abdominis
Int. oblique m.
Deep inguinal ring
Inguinal ligament
Superficial inguinal ring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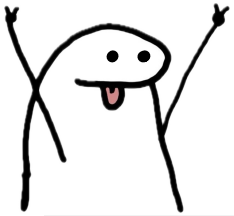

Indirect inguinal hernia	Direct inguinal hernia
It herniates through the deep inguinal ring along the canal, then through the superficial inguinal ring down to scrotum	It herniates through the inguinal triangle
It lies lateral to inferior epigastric artery	It lies medial to the inferior epigastric artery
It is much more common in males than females	It is common in old men and is rare in women

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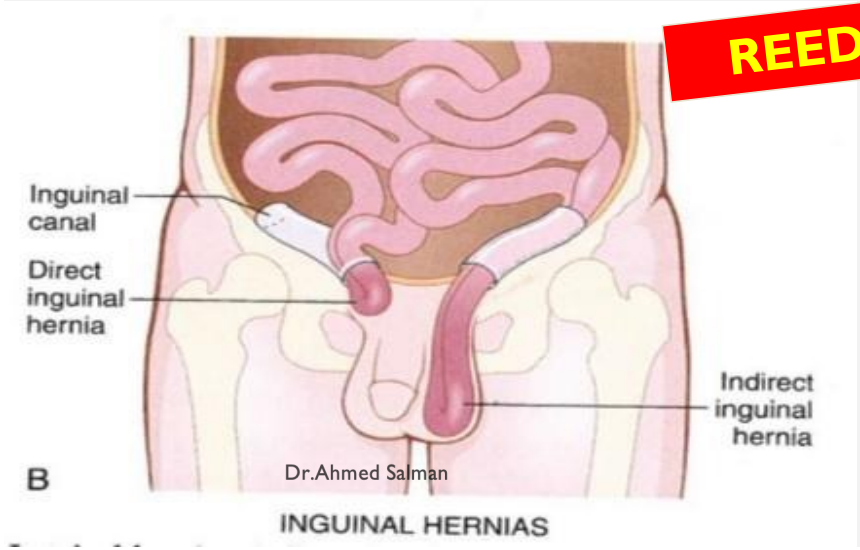
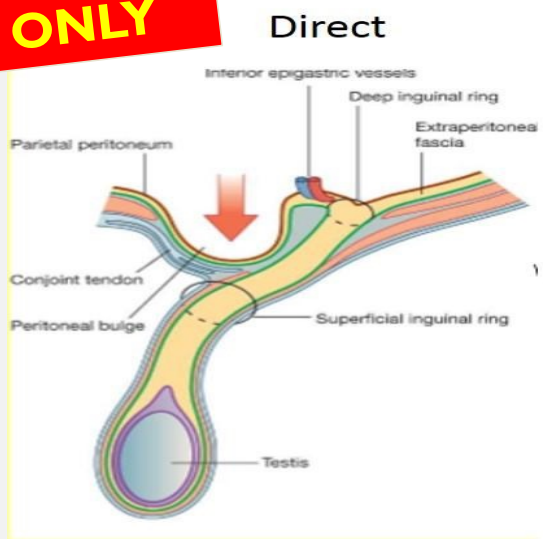
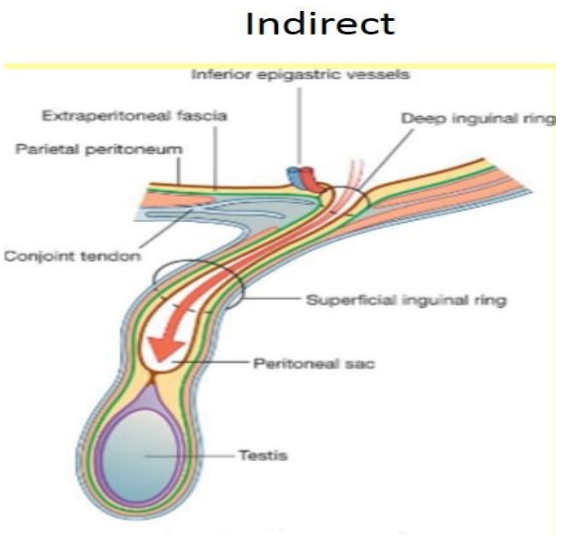






Abdominal regions (Nine regions)

Two vertical midclavicular lines (left and right)

Two horizontal:

1-Subcostal ;through lower edge of 10th costal cartilage and (L3 vertebra)

2- Transtubercular ;through tubercles of iliac crests (L5 vertebra)

These lines forms 9 abdominal regions

Right hipochondrium - epigastrium - left hipochondrium

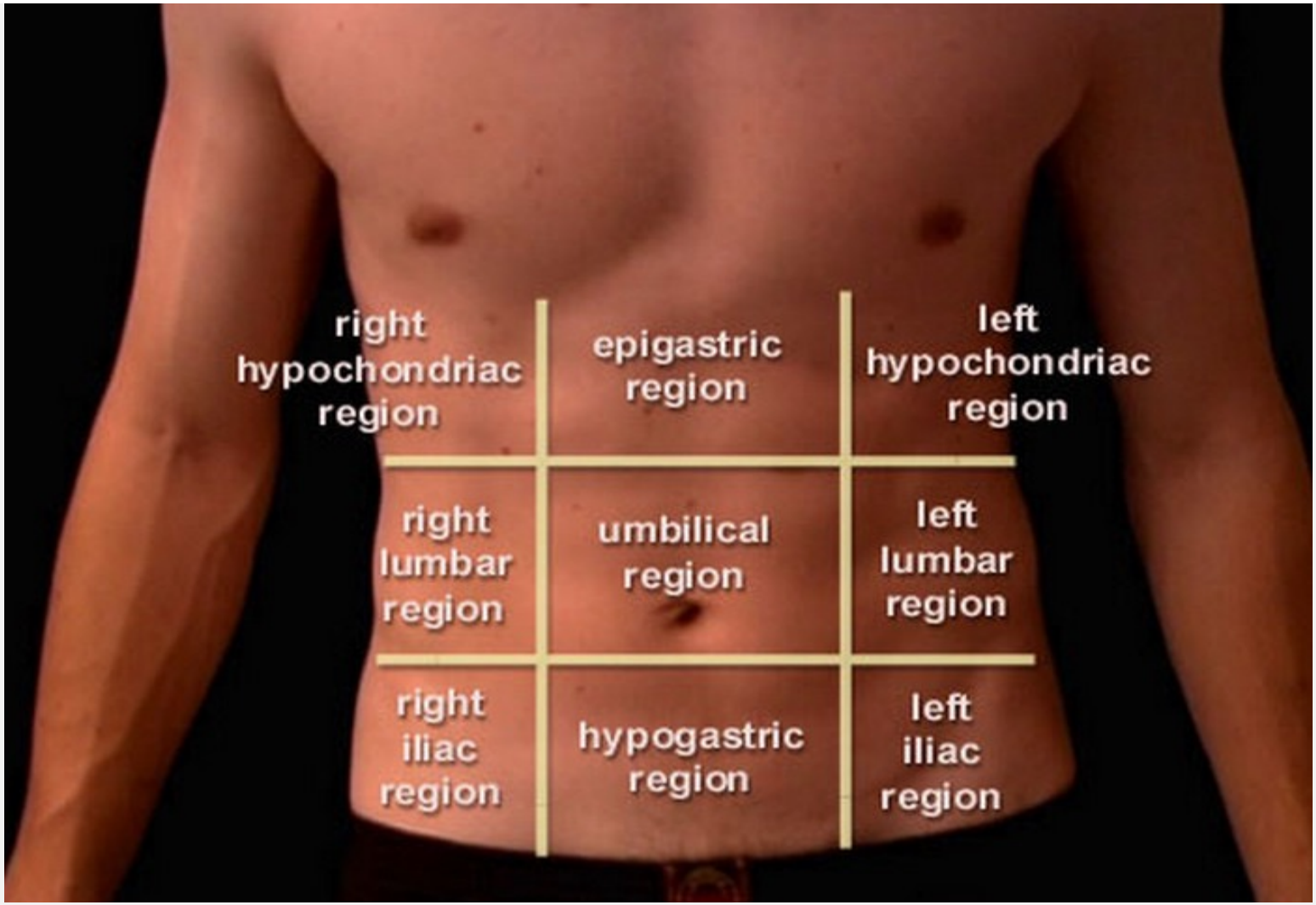
Right lumbar - umbilical - left lumbar

right Iliac (inguinal) - hypogastrium - left iliac (inguinal)

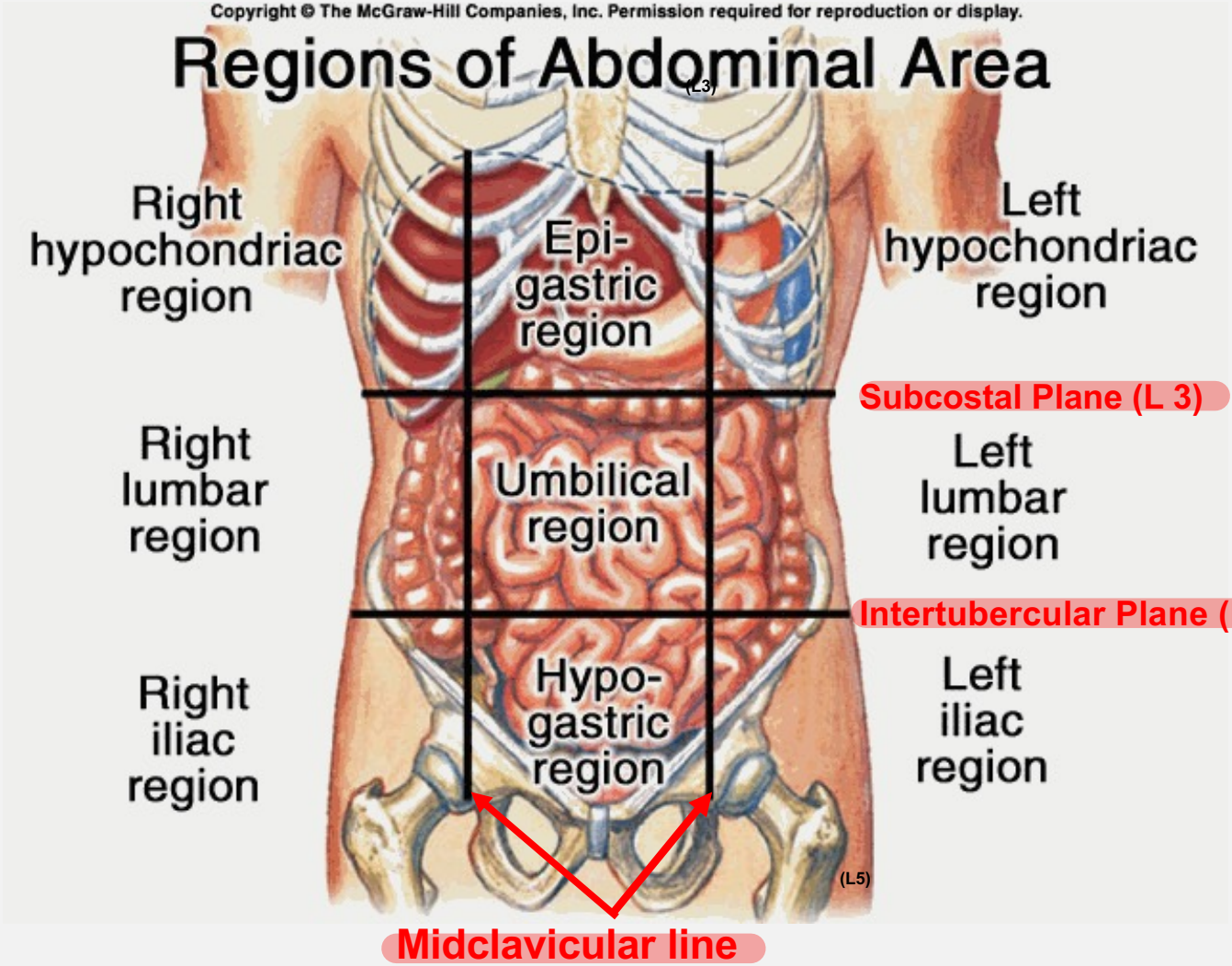
Liver

If it extend to the right lumber region then it's enlarged (HYPERTROPHY)

The stomach is in the left hypochondriac region , epi-gastric region and extend to the umbilical region (the stomach can strech)



Abdominal regions



Pass under the costal cartilage

Pass through the tubercle of the iliac crest

We will talk about it in general without the details

The peritoneum

Peritoneum is a serous membrane, which lines the abdominal cavity and is reflected over the viscera.

The peritoneum has two layers; ***parietal and visceral,*** with peritoneal cavity in between.

Supplied by a somatic nerve

The *parietal layer* lines the ***interior of the anterior and posterior*** abdominal walls, the lower surface of the diaphragm.

The *visceral layer* : surrounds the ***abdominal viscera .***

Cover the abdominal organ

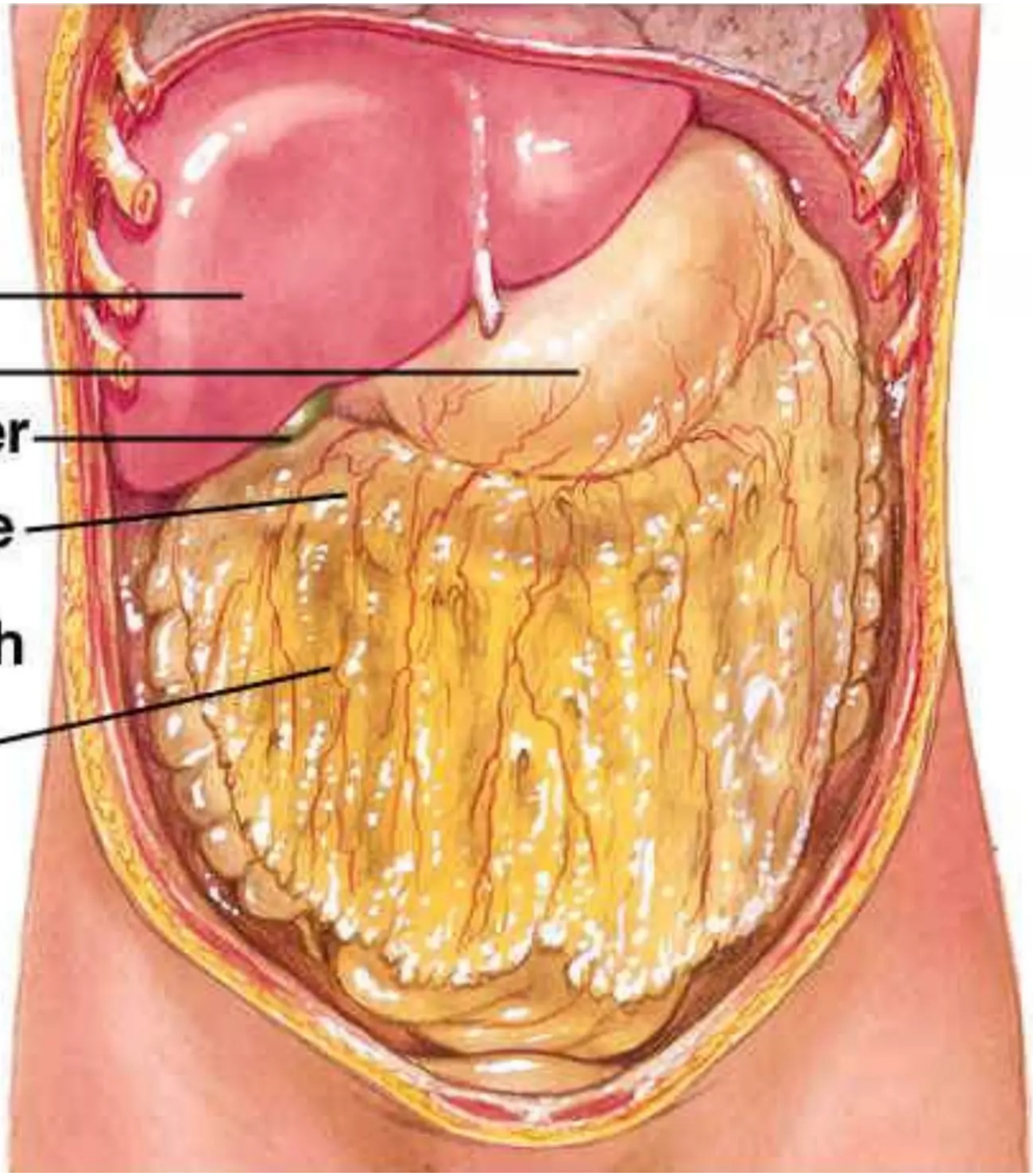
Supplied by an autonomic nerve

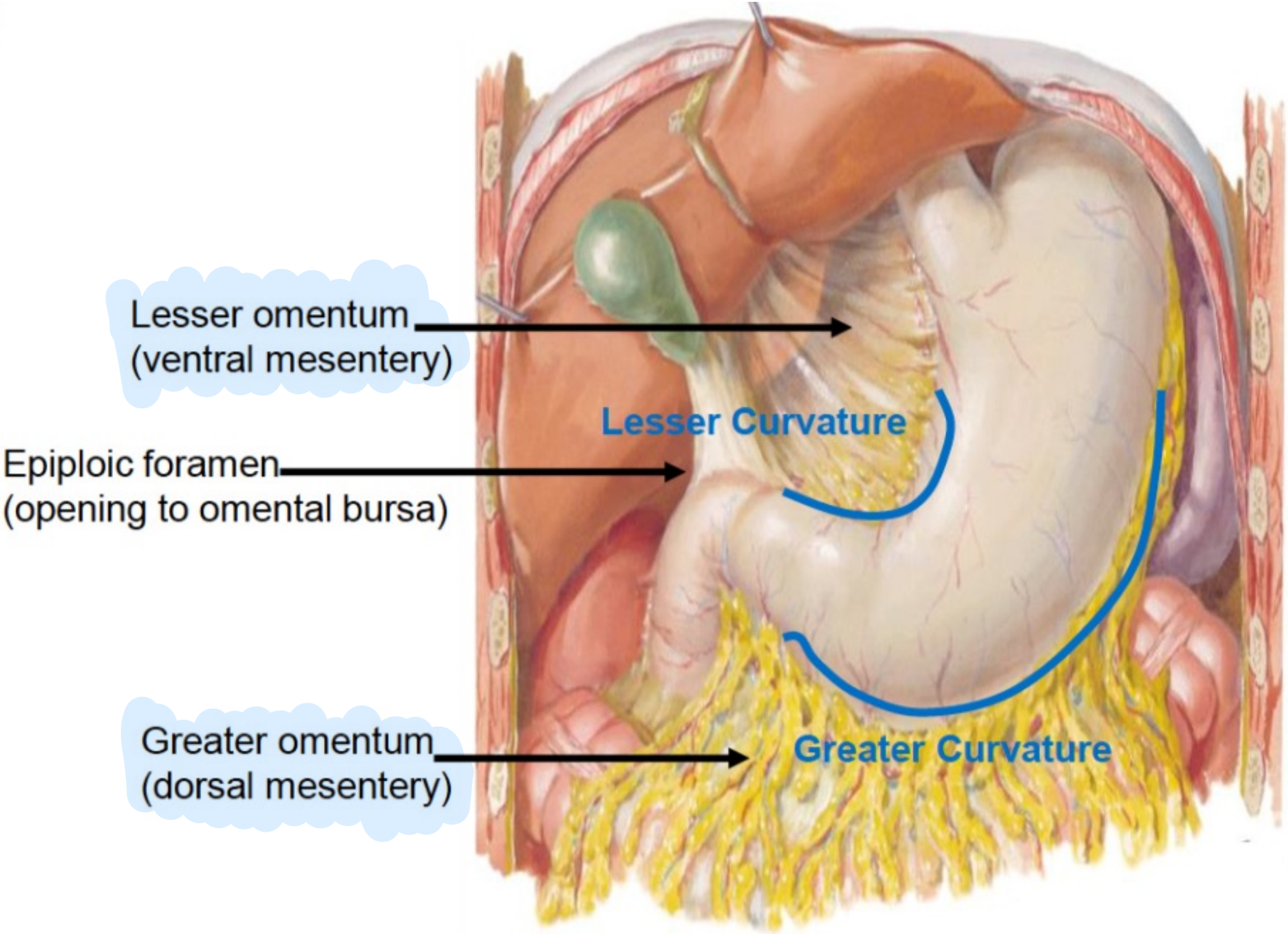
Extra note for knowledge 🙃

1) If a patient get a Caesarean section or Appendicitis he couldn't eat or drink immediately after the surgery , any patient that get full (anesthesia) he couldn't eat or drink until the (full recovery). Because There is no reflexes - the food will get through the larynx and to the respiratory tract .

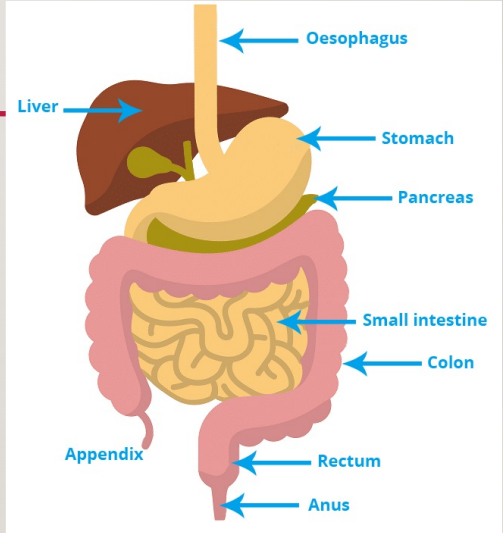
2) If there is an operation (surgery) with an insertion in the peritoneum (the police man of the abdomen) [The reflex related Aries]- the intestines will feel the danger resulting in a Temporary paralysis in the intestine for (6-8 hours) after the intestinal movement go back to the normal condition the patient can eat .

Greater Omentum




Lesser omentum
(ventral mesentery)
Epiploic foramen
(opening to omental bursa)
Greater omentum
(dorsal mesentery)
Lesser Curvature
Greater Curvature

GASTROINTESTINAL TRACT



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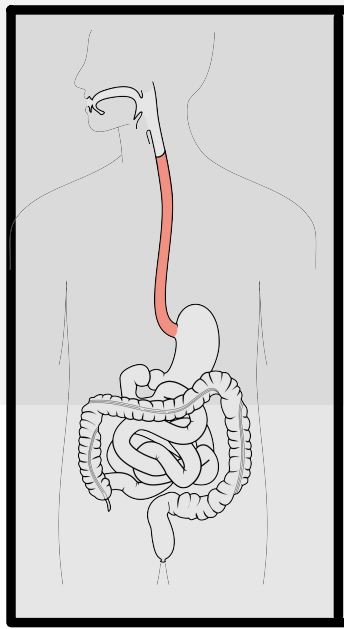
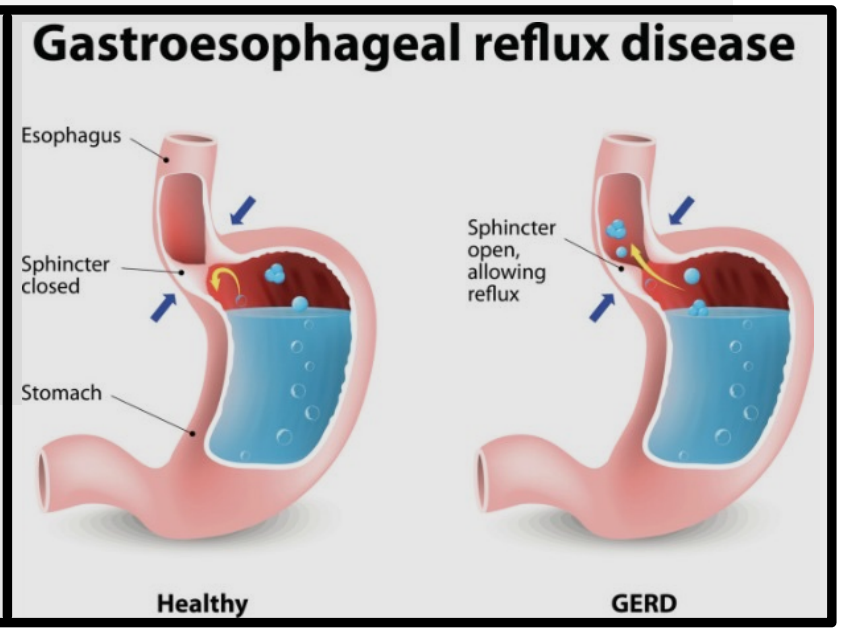
THE DIGESTIVE SYSTEM

- **DIGESTIVE TUBE**
- The mouth cavity.
- The pharynx.
- The esophagus.
- The stomach.
- The small intestine.
- The large intestine.

DIGESTIVE GLANDS

* The salivary glands.
* The liver.
* The pancreas.





The stomach

There is a kink or a curve in the esophagus to prevent the food to go back.
Medical condition : gastric reflux

- It is widest part of the digestive tube.
- It lies in epigastrium, left hypochondrium & umbilical regions
- **It has 2 ends:**

Cardiac end:

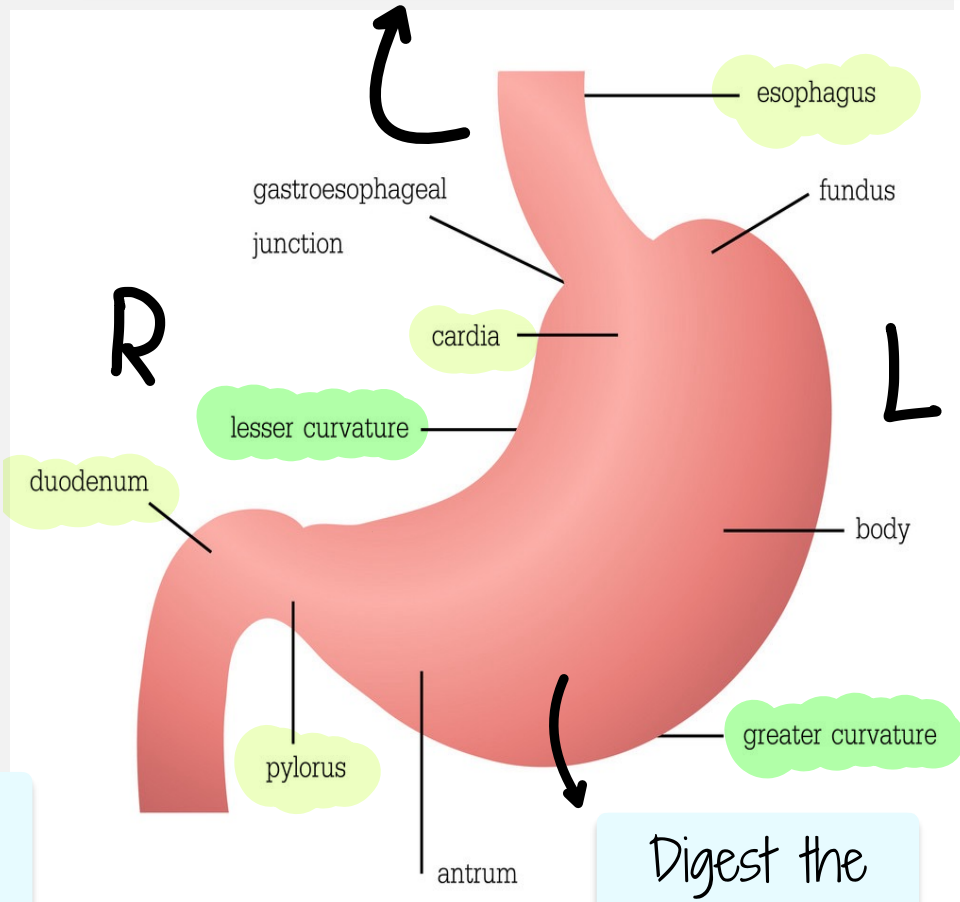
- Connected with the esophagus.

-It is guarded by physiological sphincter

Pyloric end:

- Connected to the duodenum.

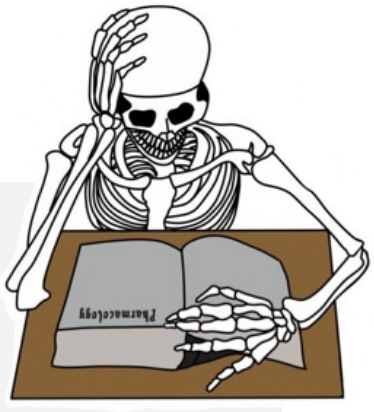
- It is guarded by anatomical sphincter (thick circular fibers)



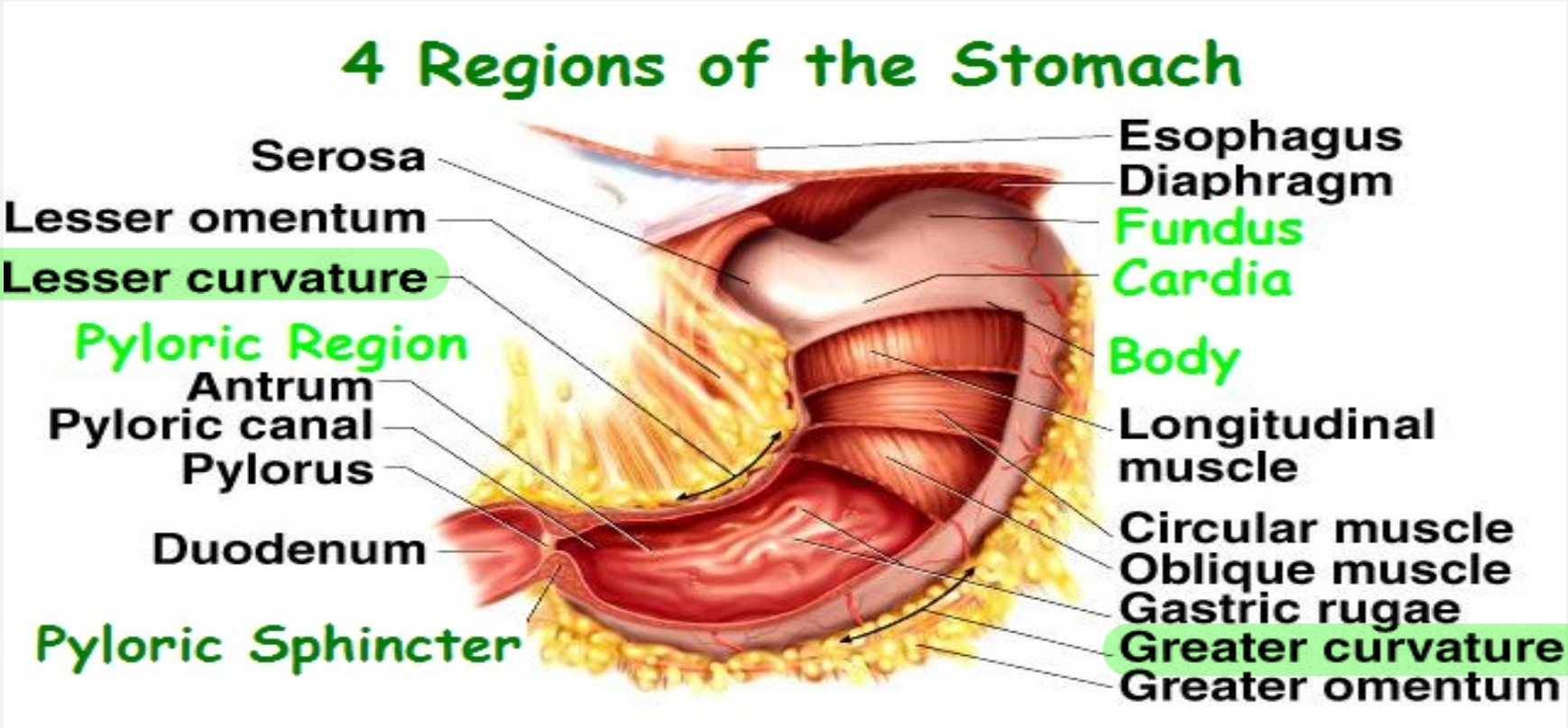
Contraction and relaxation to open and close the opening (end)

It has smooth muscle and under control of autonomic system in-voluntary movement

Digest the food before go to the S.I



- It has 2 surfaces: Anterior & posterior.
- It has 2 curvatures:
- Lesser curvature above & to the right.
- Greater curvature below & to the left.

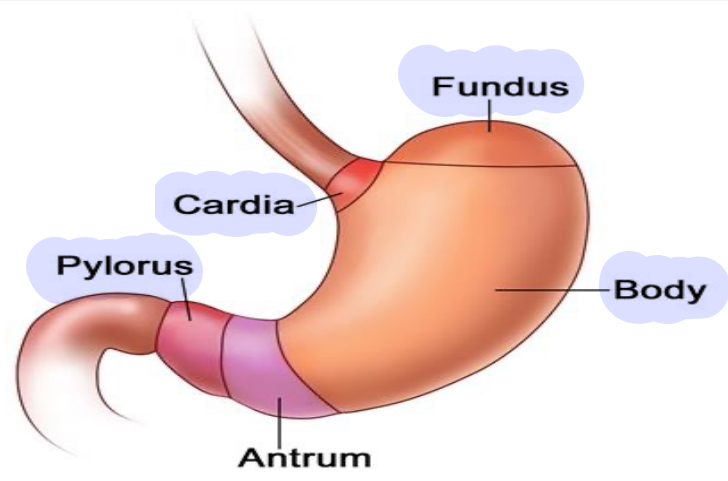


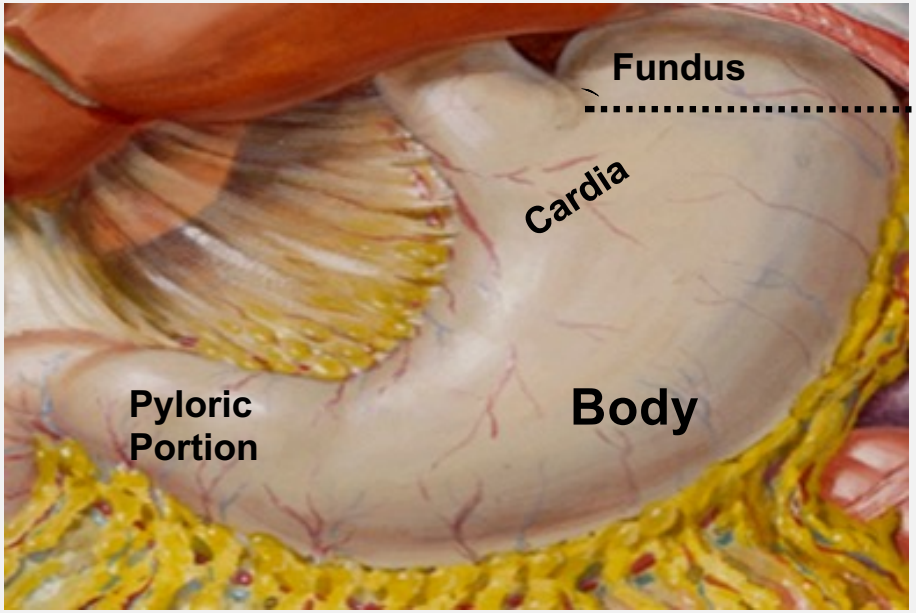
Regions of the stomach

A)Cardiac portion:

- Fundus: above the level of esophageal opening
- Cardia: It is the uppermost part of the stomach
- Body

B) **Pyloric portion**

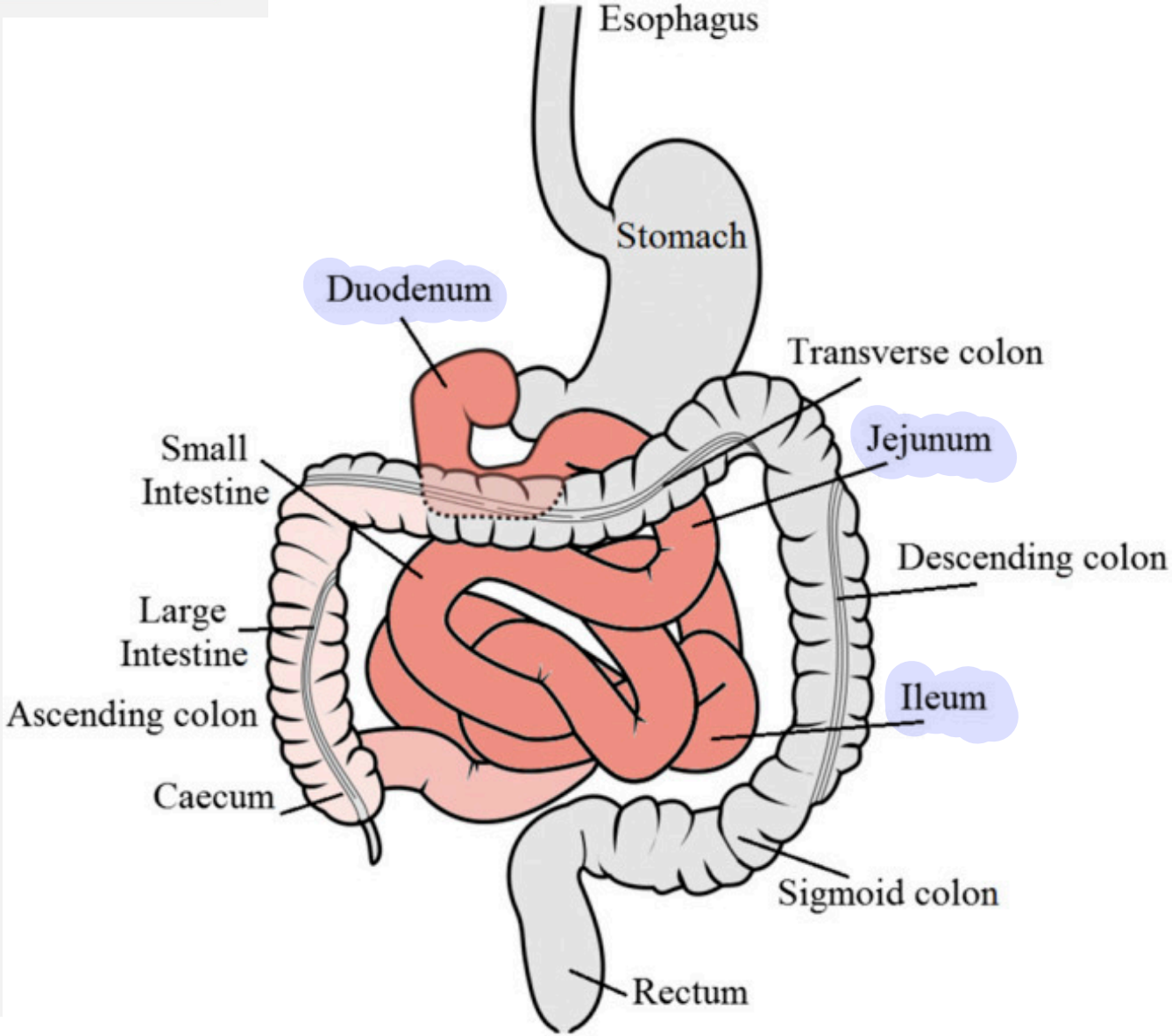




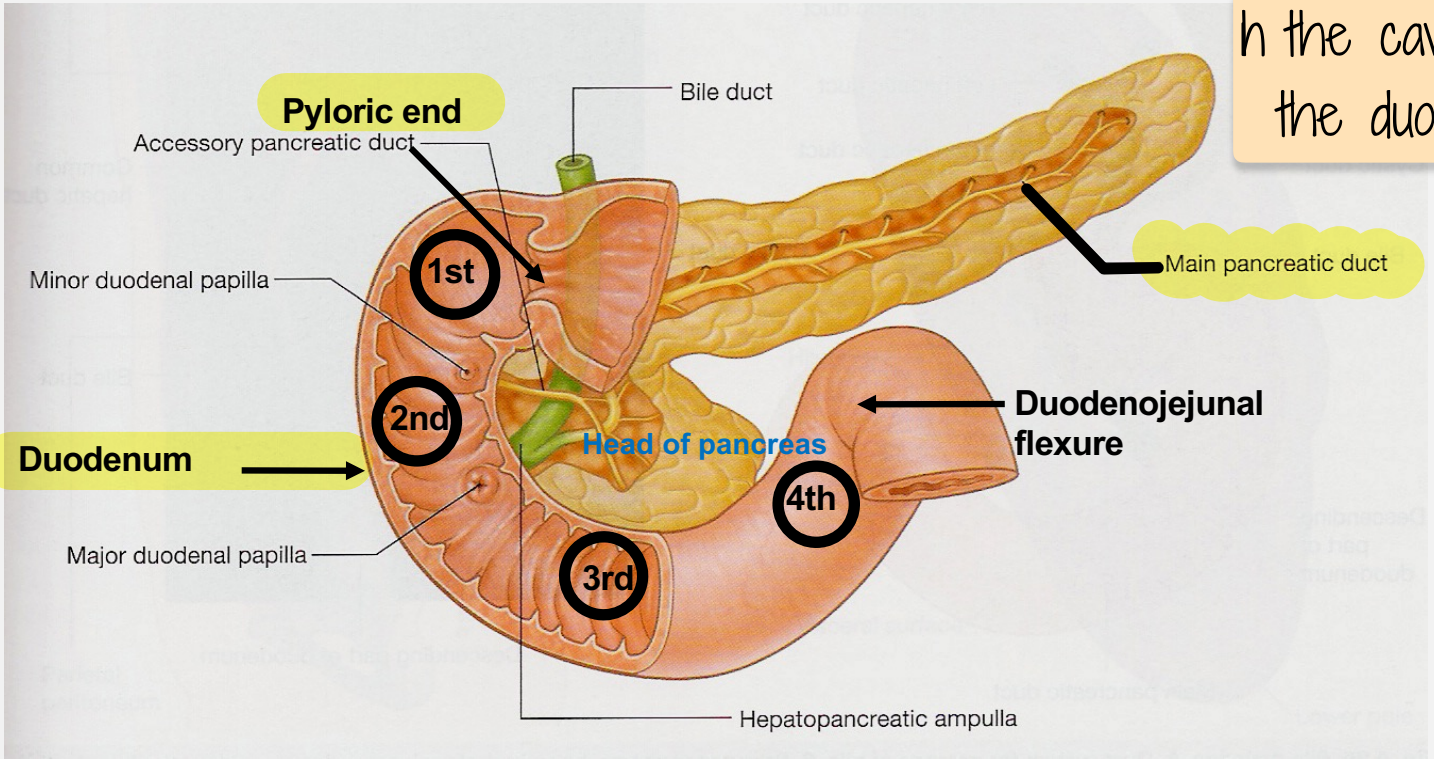
The small intestine

- It is divided into 3 parts:

1) The duodenum
2) The jejunum.
3) The ileum.



- The duodenum is divided into 4 parts (1st, 2nd, 3rd & 4th).
- It receives opening of the pancreatic & common bile ducts in the middle of its 2nd part.



h the cavity of the duodenum

The pancreas Both Exocrine + endocrine gland

The 2nd part is very important because it receive 2 ducts :
Common bile duct (CBD) and Pancreatic duct that combine together and open in the 2nd part of duodenum

The large intestine

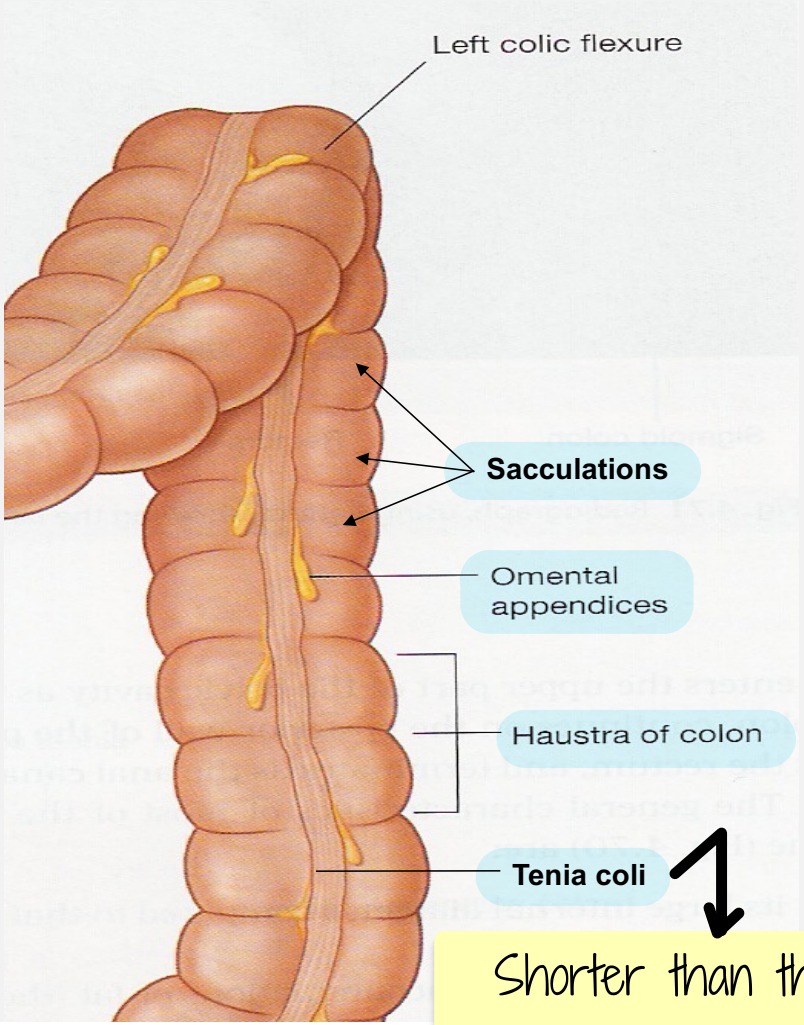
- It is characterized by the presence of:

➢ **Haustrations** (grooves)

➢ **Sacculations** (it is divided into small sacs).

➢ **Teniae coli:** 3 muscular bands.

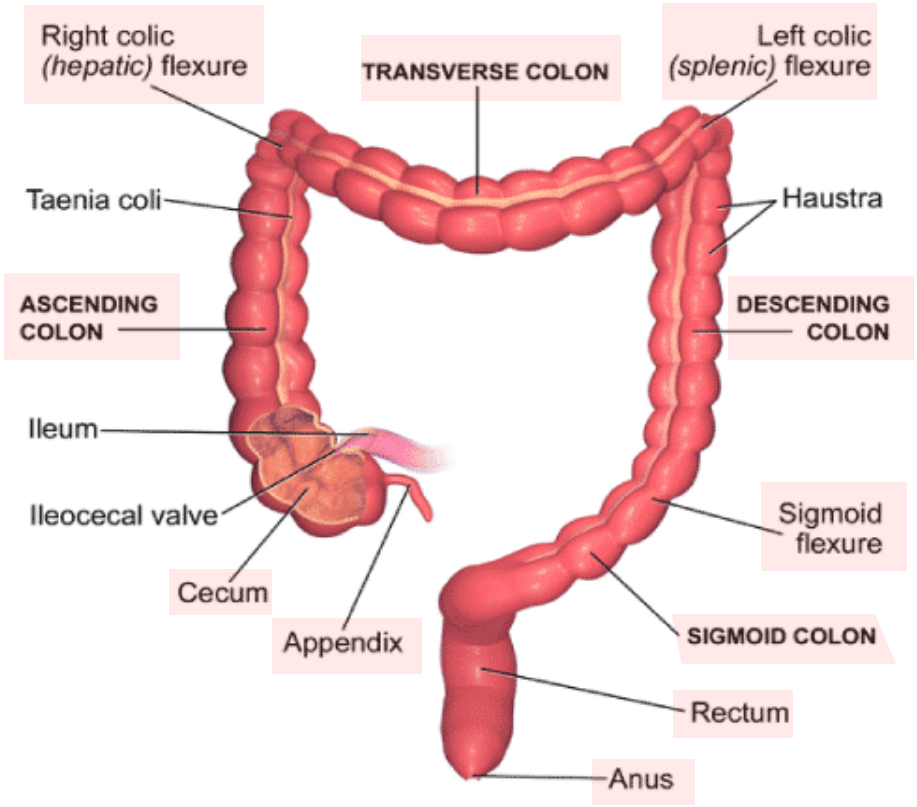
➢ **Appendices epiploicae**: small appendices filled with fat.



Shorter than the large intestine resulting in grooves in it

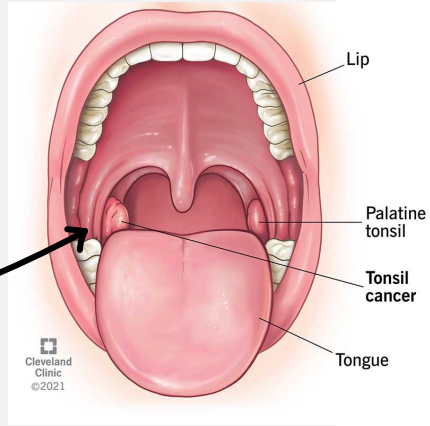
Components of the large intestine

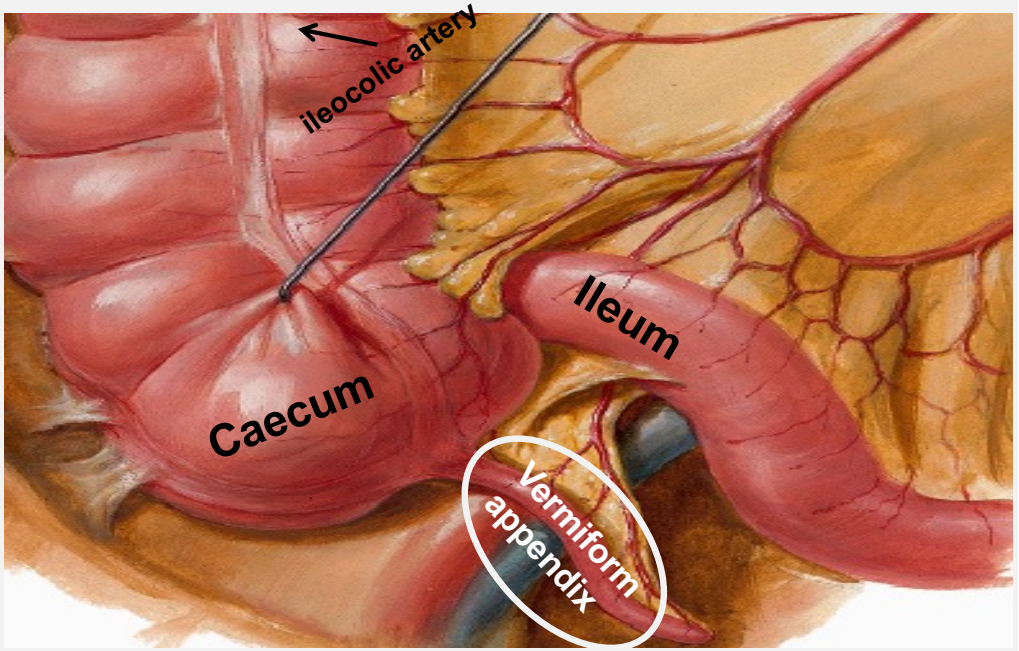
- The caecum & vermiform appendix.
- The colon (ascending, transverse, descending & sigmoid) , Right & left colic flexures.
- The rectum.
- The anal canal



Vermiform appendix:

- It is attached to the Caecum about one inch below the ileocaecal junction.
- It lies in the right inguinal region.
- It is very rich in lymphoid follicle **(Tonsil of the abdomen).**



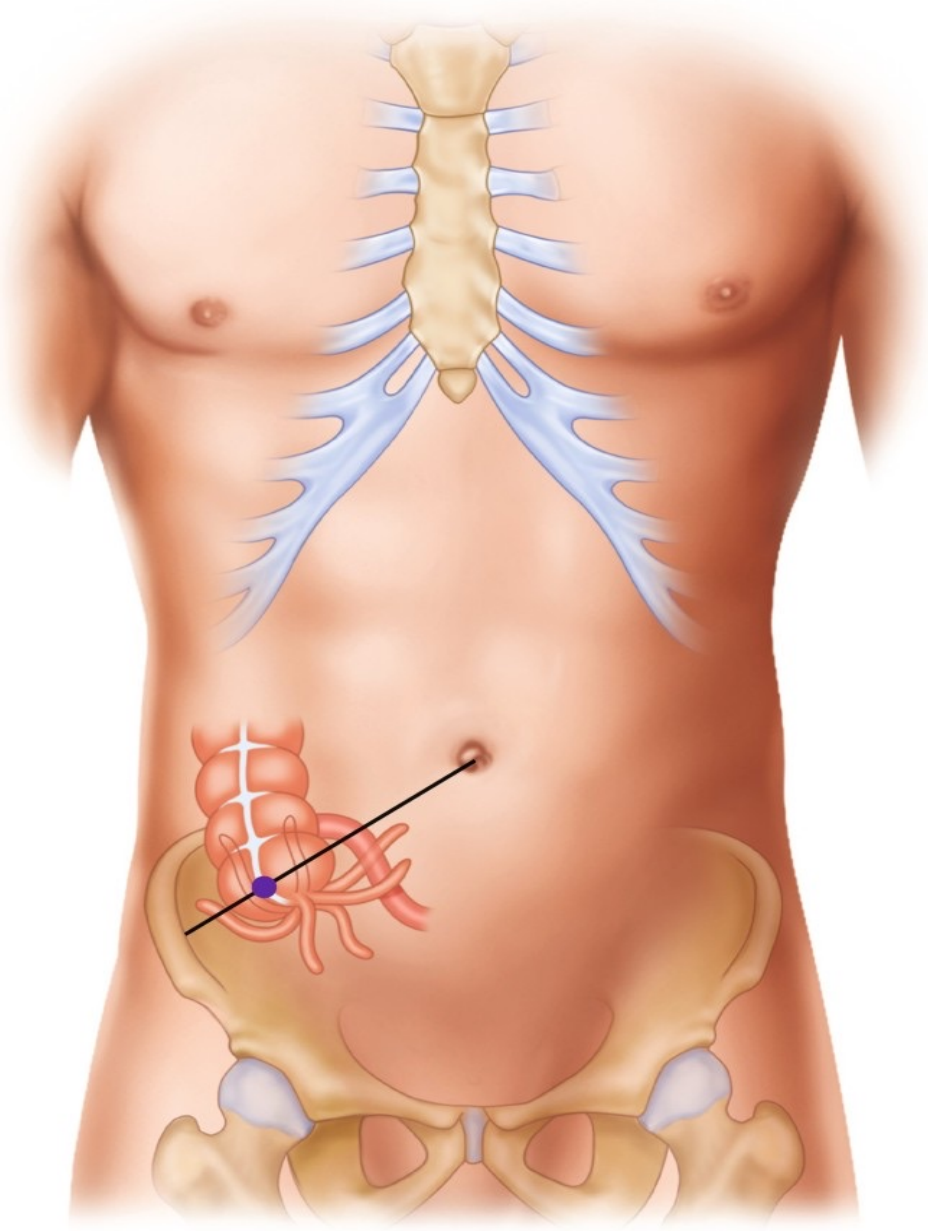


Surface anatomy of the appendix

The base of the appendix is represented by **McBurney's point** which is "The point at the junction of the lateral 1/3 & medial 2/3 of a line extending between the anterior superior iliac spine (ASIS) & the umbilicus.

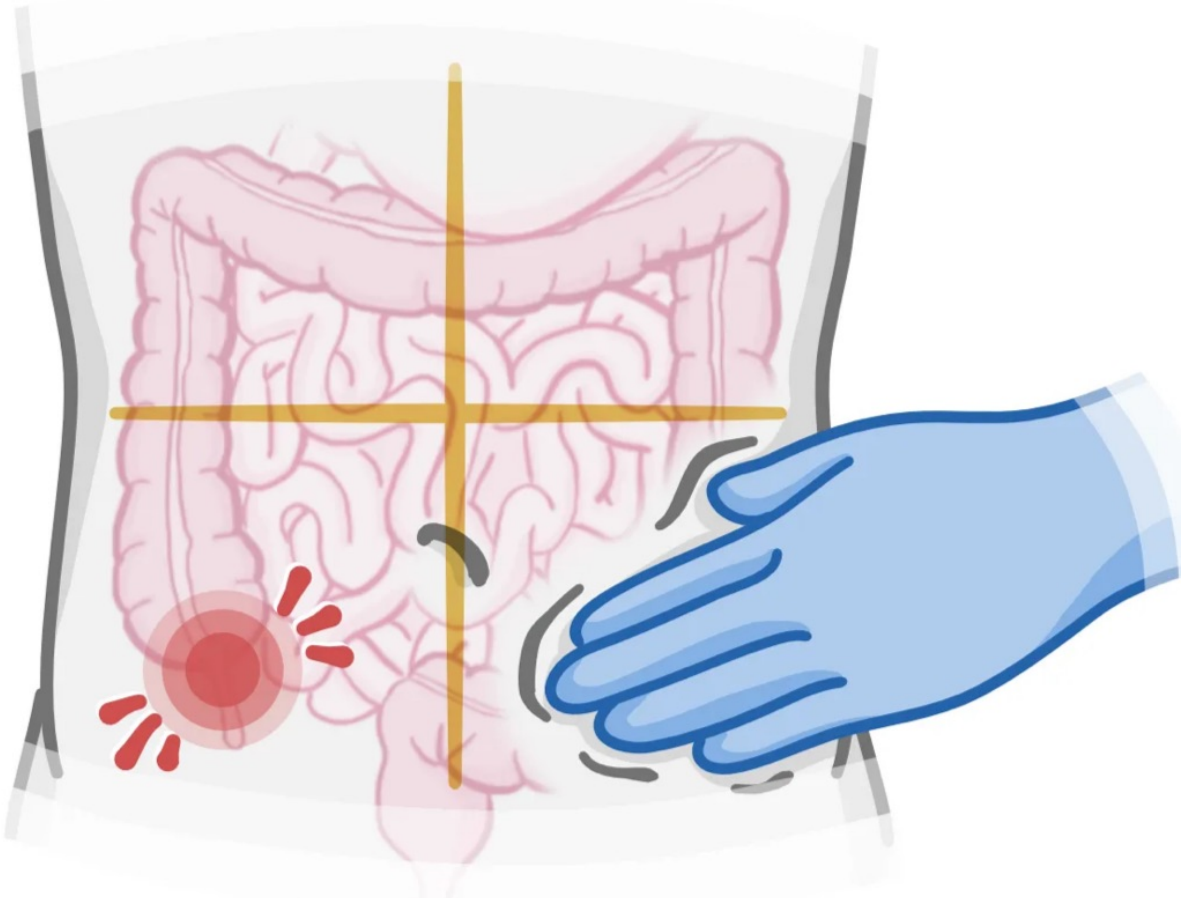
The appendix is autonomically supplied , sensitive to stretch not pressure

So The patient feel the pain when lifting the pressure.

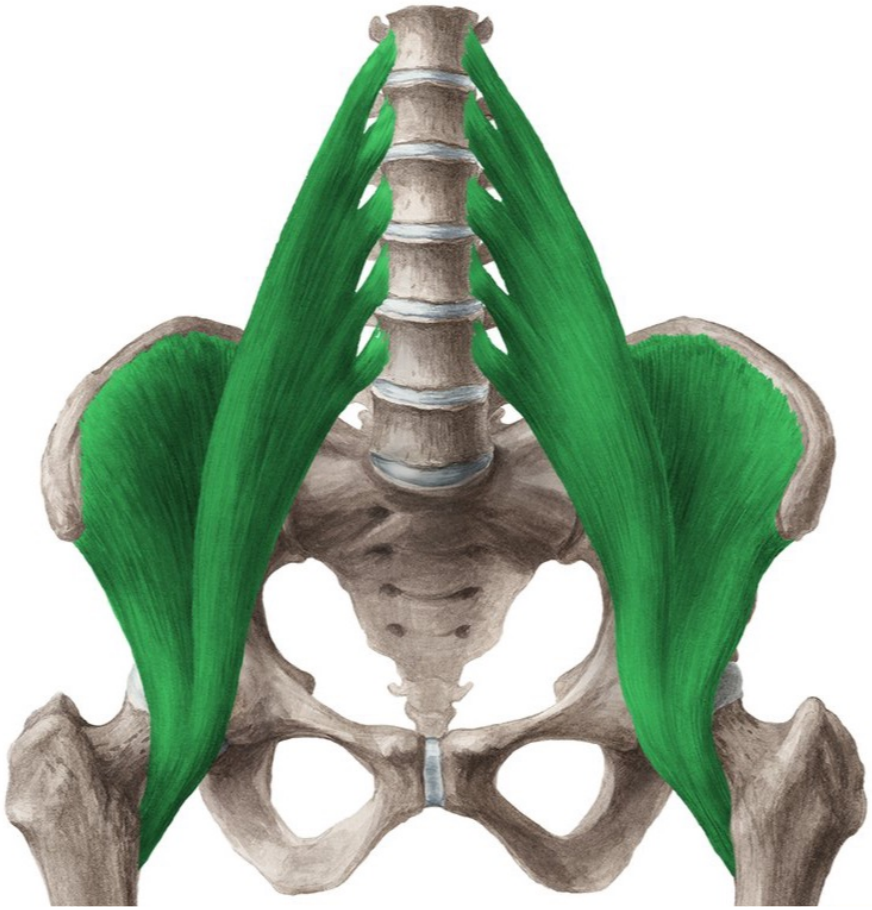


2 way to diagnose if there is an appendix inflammation

tenderness is pain or discomfort when an affected area is touched. It should not be confused with the pain that a patient perceives without touching . On the other hand the patient's will fell pain in the appendix When the pressure is suddenly released, appendicitis pain



When testing for inflammation in the appendix of the psoas major muscle, one method is the psoas major sign test when the patient has a pain upon flexion of the trunk or flexing for the thigh , suggesting irritation in the inflamed area.



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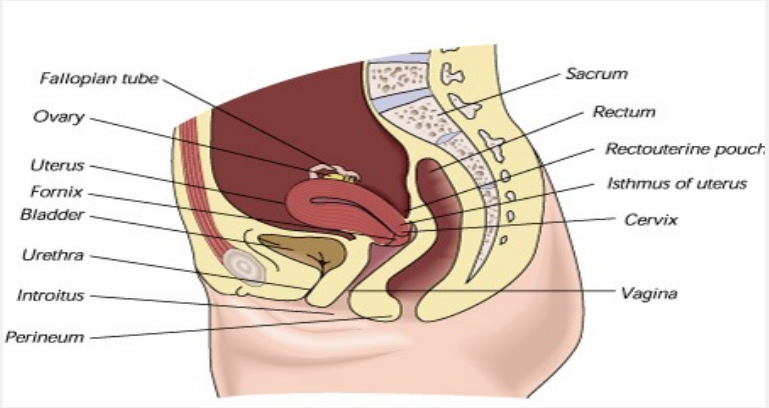
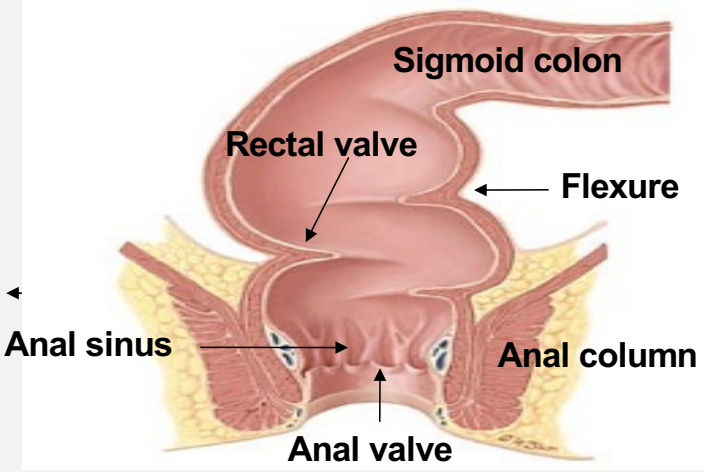
The rectum

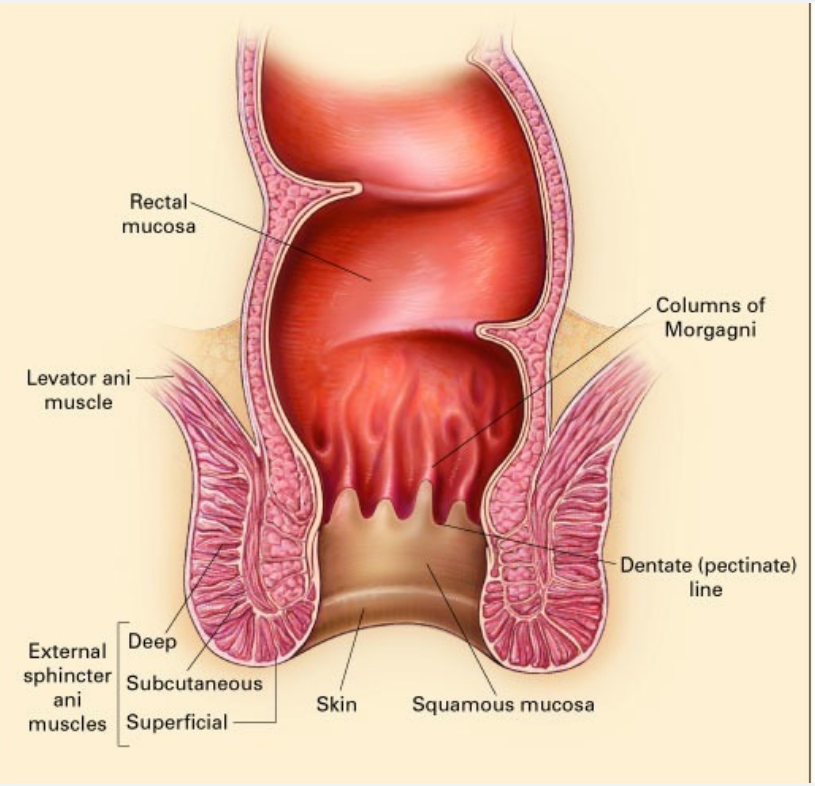
- **Beginning :** at the 3rd sacral vertebra as a continuation of the sigmoid colon
- **Ends** : 1.5 inches below & in front of the coccyx to become continuous with the anal canal.



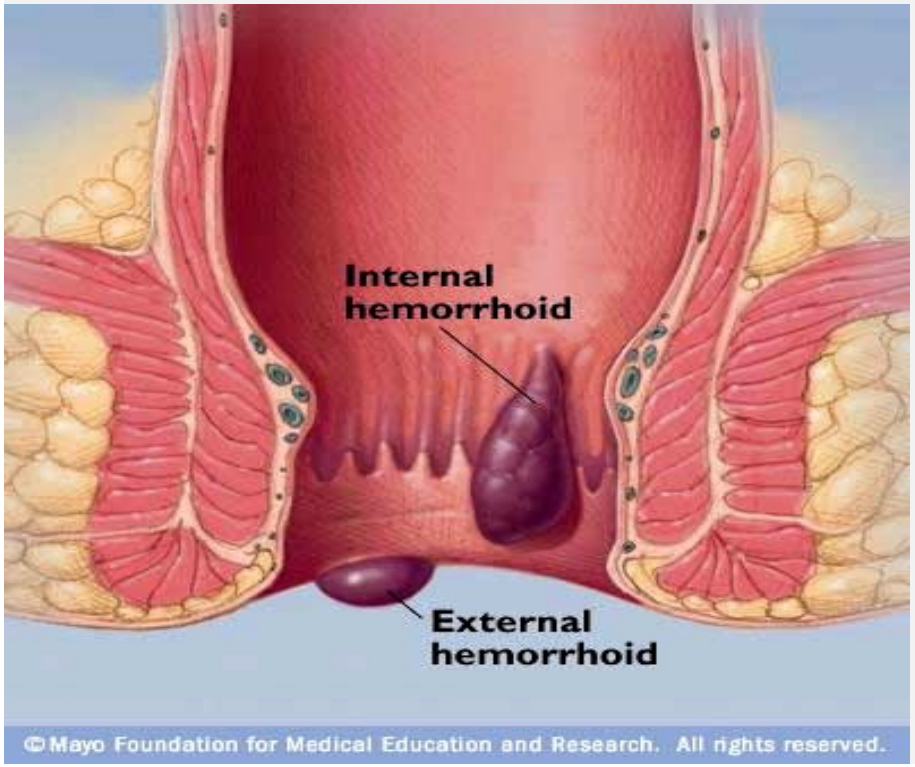


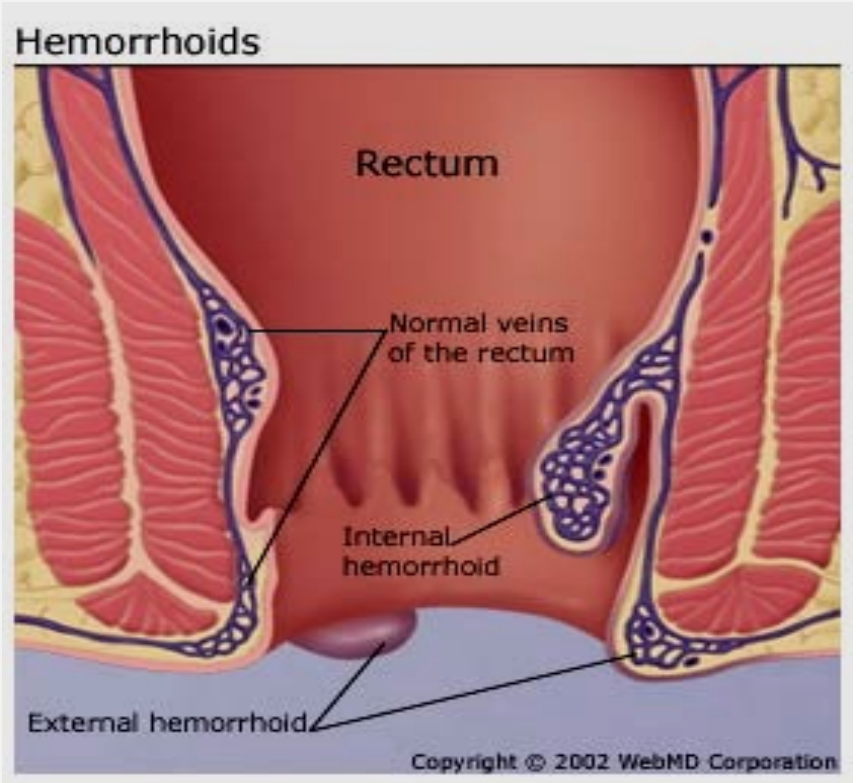
The anal canal

- It begins one inch below & in front of the coccyx & is directed downwards & backwards.
- **Its upper part** is insensitive to general sensations (supplied by autonomic fibers). Sensitive to stretch
- **Its lower part** is sensitive to general sensations (supplied by somatic fibers). Sensitive to pressure and pain



- Dilatation of the submucosal venous plexus of the rectum & anal canal may results in internal or external hemorrhoids (piles).





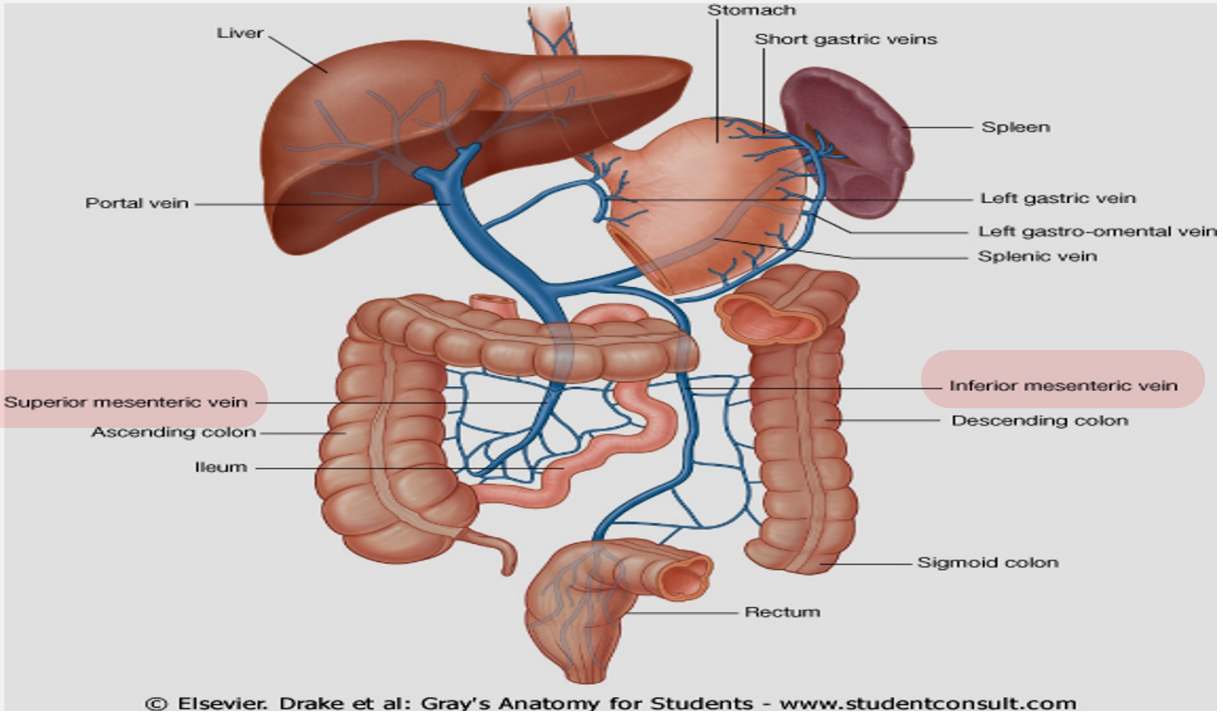
Portal circulation

The portal vein drains the alimentary canal from the esophagus to the upper ½ of the anal canal, pancreas & spleen to the liver.

Detoxification

The portal vein:

- Is formed by the union of the splenic & superior mesenteric veins **behind neck of pancreas** .
- It ends in porta hepatis .



The salivary glands

There are 3 pairs of salivary glands (Parotid, Submandibular & sublingual salivary glands).

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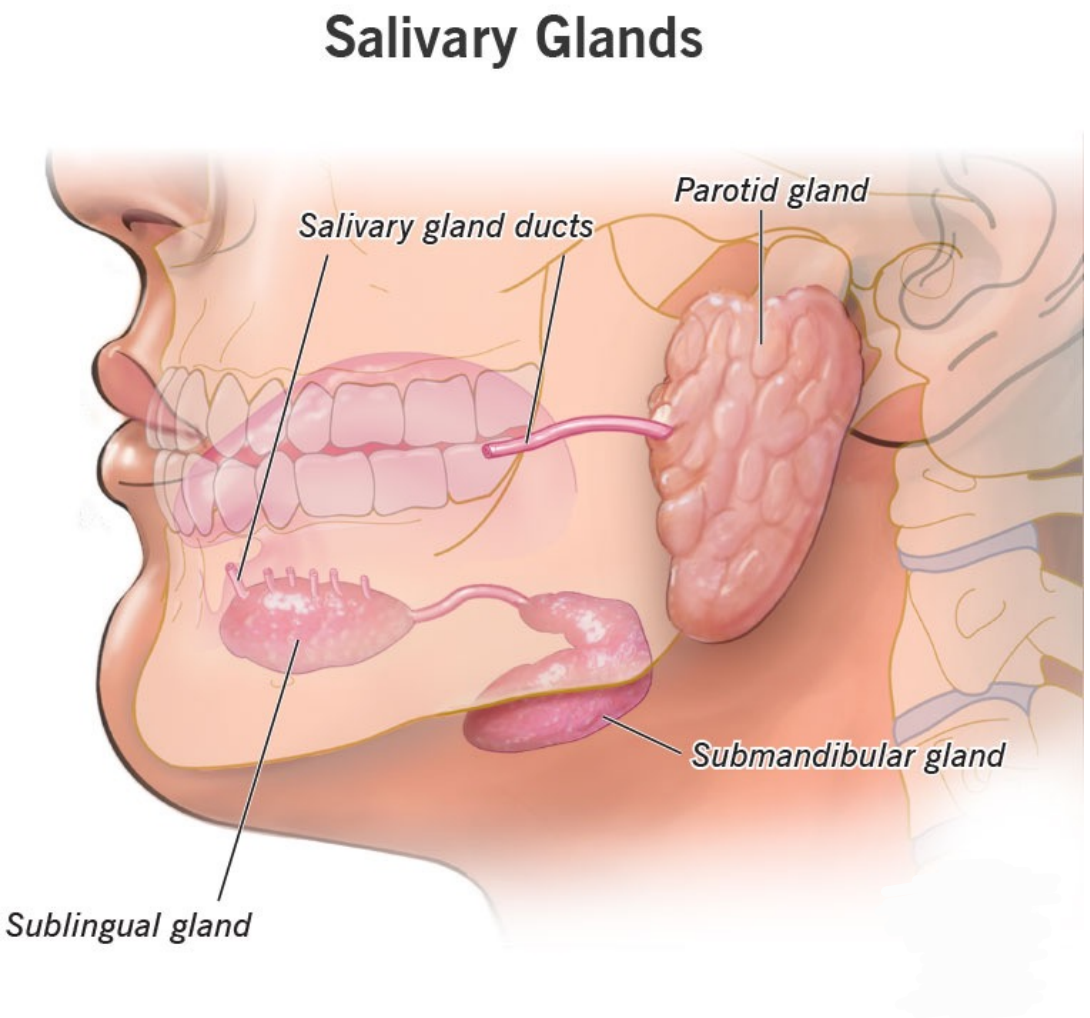
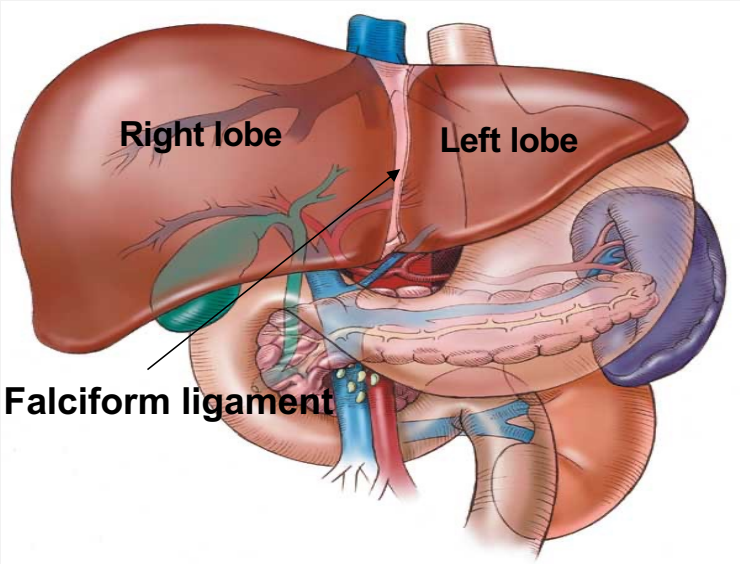
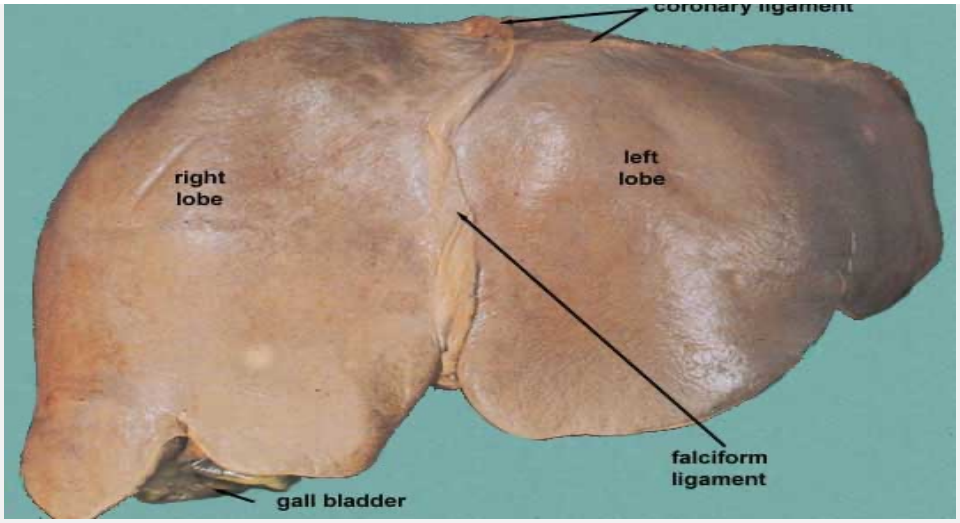
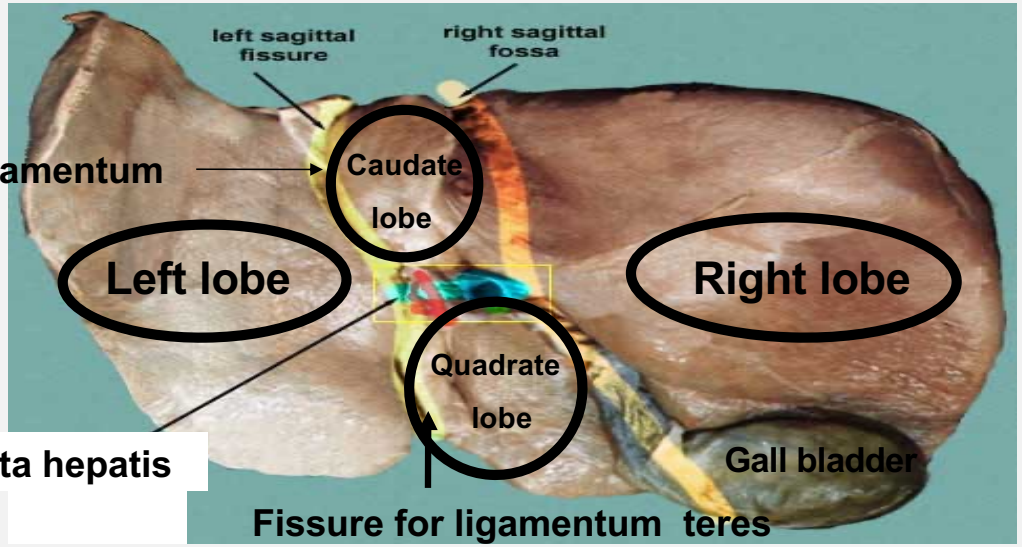


The liver

- It is largest organ in the body .
- It lies in the right hypochondrium, epigastrium & left hypochondrium.
- It is divided into large right & small left lobe .
- The right lobe contains 2 additional lobes;
  - Quadrate lobe and caudate lobe .







Fissure for ligamentum venosum

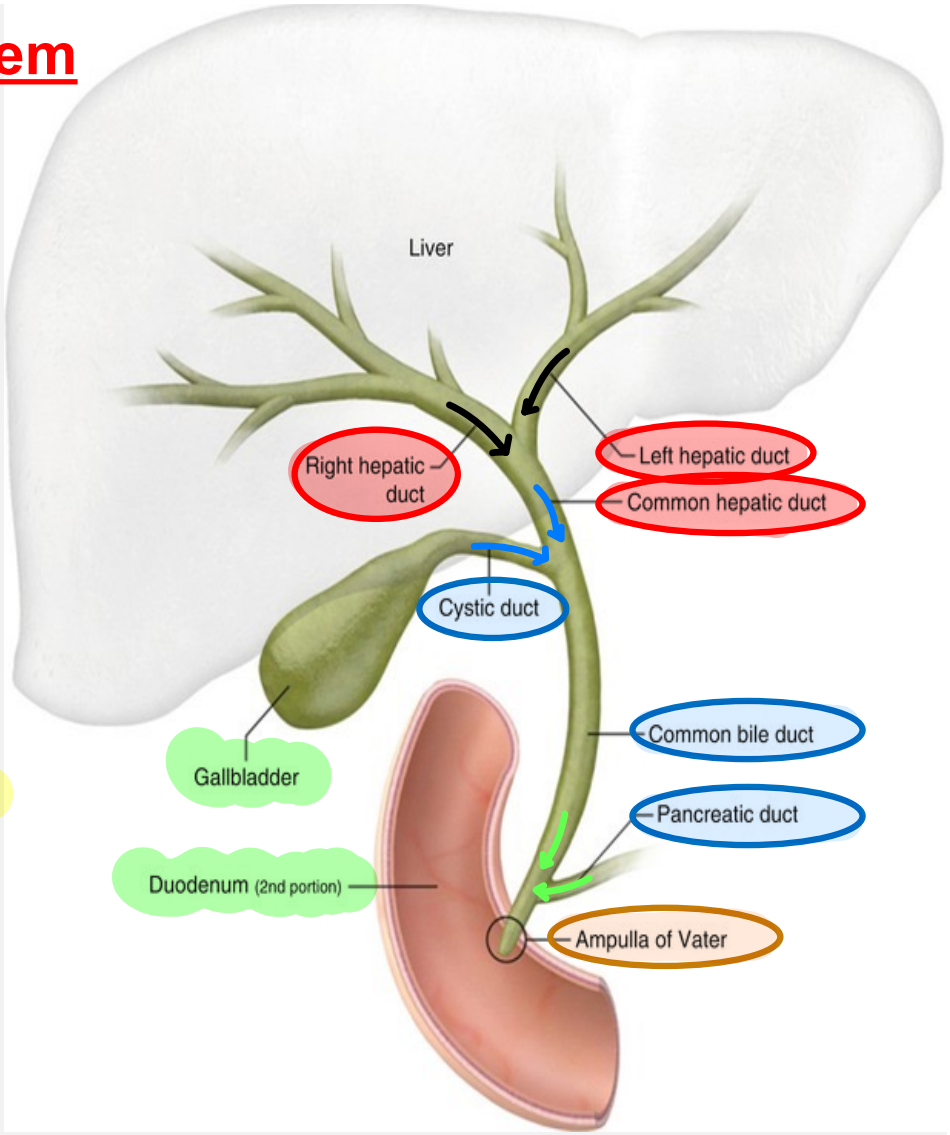
Porta hepatis

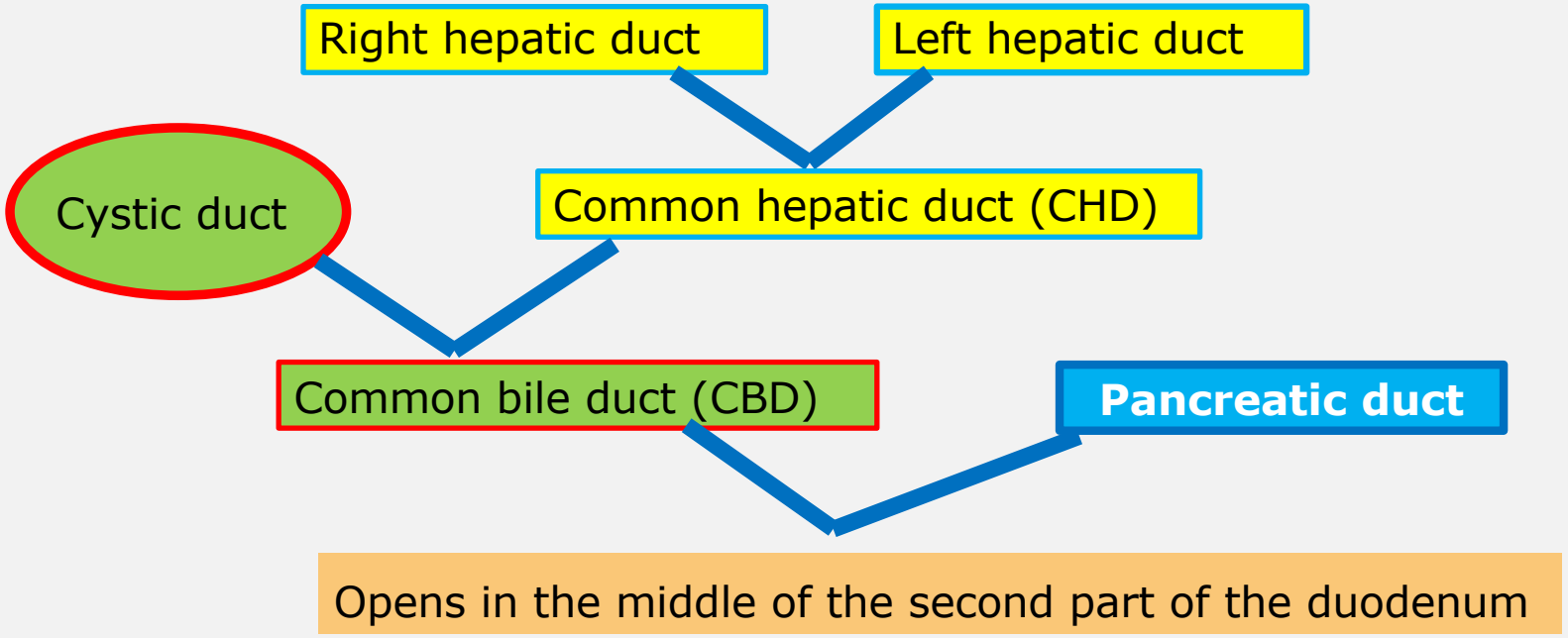
The System that produce and secrete the biliary

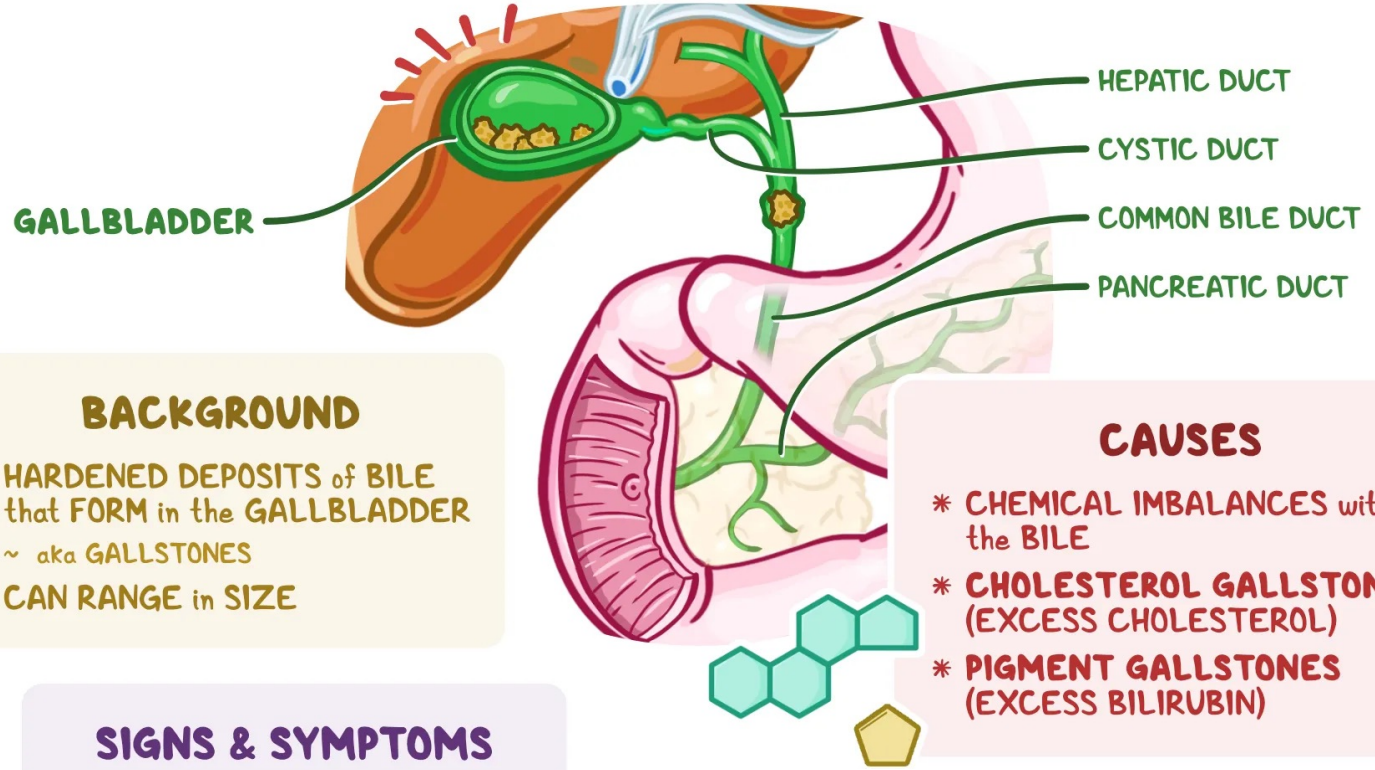
The biliary system

It consists of:

- Gall bladder
- Right & left hepatic ducts from the right & left lobes of the liver.
- They join to form common hepatic duct (CHD).
- CHD joins the cystic duct of the gall bladder & form together the common bile duct (CBD).
- CBD joins the main pancreatic duct that opens in the middle of the second part of the duodenum.




Right hepatic duct
Left hepatic duct
Cystic duct
Common hepatic duct (CHD)
Common bile duct (CBD)
Pancreatic duct
Opens in the middle of the second part of the duodenum



Extra note just for knowledge

BACKGROUND

* HARDENED DEPOSITS of BILE that FORM in the GALLBLADDER
  ~ aka GALLSTONES
* CAN RANGE in SIZE

CAUSES

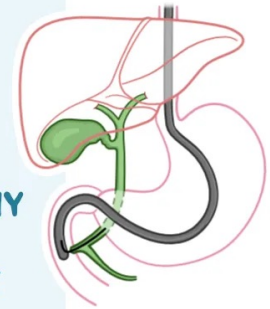
* CHEMICAL IMBALANCES within the BILE
* **CHOLESTEROL GALLSTONES** (EXCESS CHOLESTEROL)
* **PIGMENT GALLSTONES** (EXCESS BILIRUBIN)

SIGNS & SYMPTOMS

* USUALLY ASYMPTOMATIC
* **BILIARY COLIC**
  ~ SEVERE, RAPIDLY INTENSIFYING ABDOMINAL PAIN
  ~ LOCALIZED to UPPER RIGHT or CENTRAL ABDOMEN
  ~ TRIGGERED at NIGHT after FATTY MEAL

DIAGNOSIS

* ABDOMINAL ULTRASOUND
* ENDOSCOPIC ULTRASOUND
* **ENDOSCOPIC RETROGRADE CHOLANGIOPANCREATOGRAPHY (ERCP)**
  ~ MAY ALSO be USED as TREATMENT

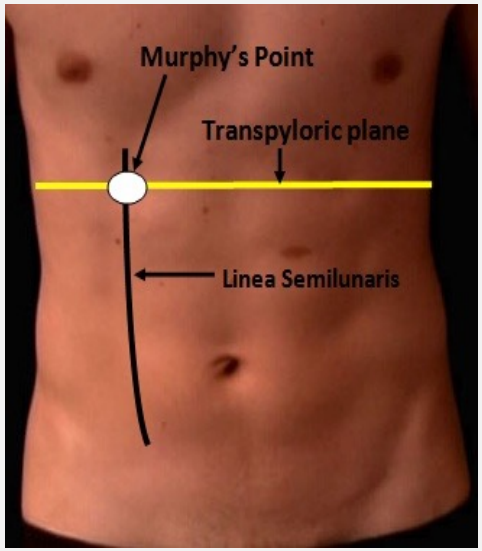


If the patient have gallstones that will result in removing the gall bladder , why ?
Because we will be of afraid that those stones will close the common bile duct so the biliry can't go to the duodenum so it will go back to the blood

The gallbladder

- It is formed of fundus , body and neck
- Surface anatomy of fundus of gallbladder:

  Murphy's point where linea semilunaris crosses the tip of the 9th costal cartilage at the transpyloric plane.(L1)



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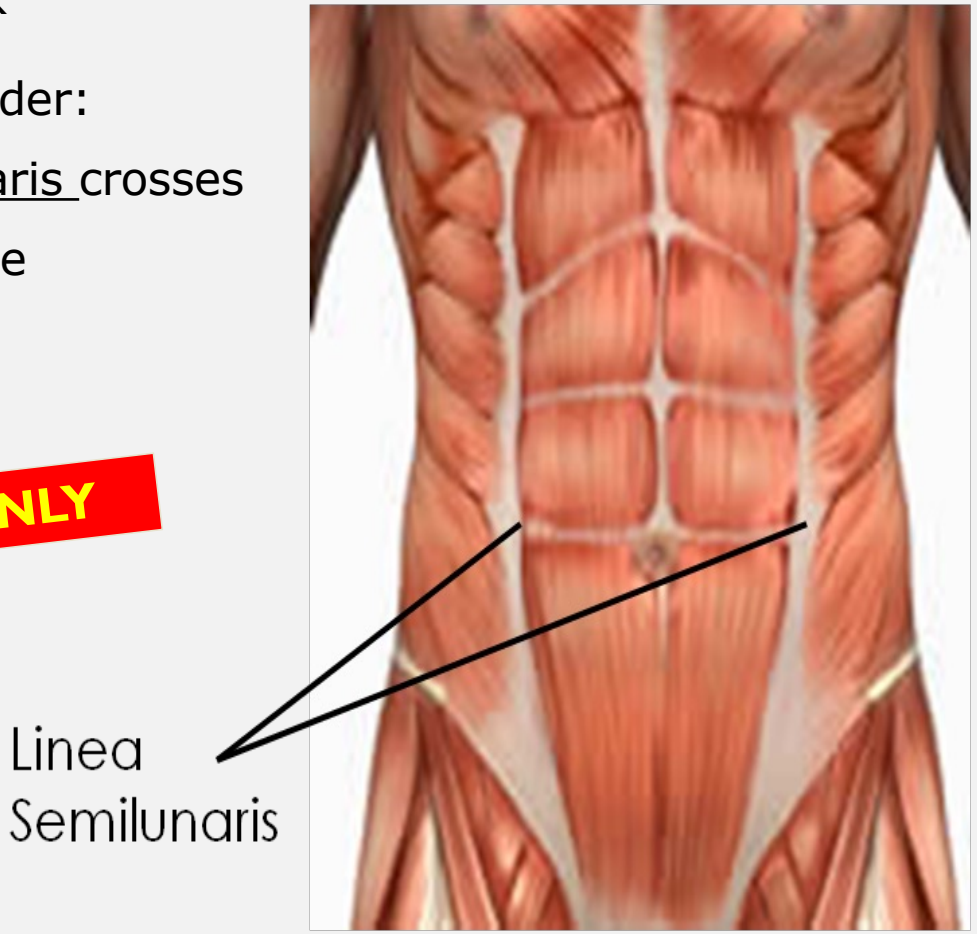
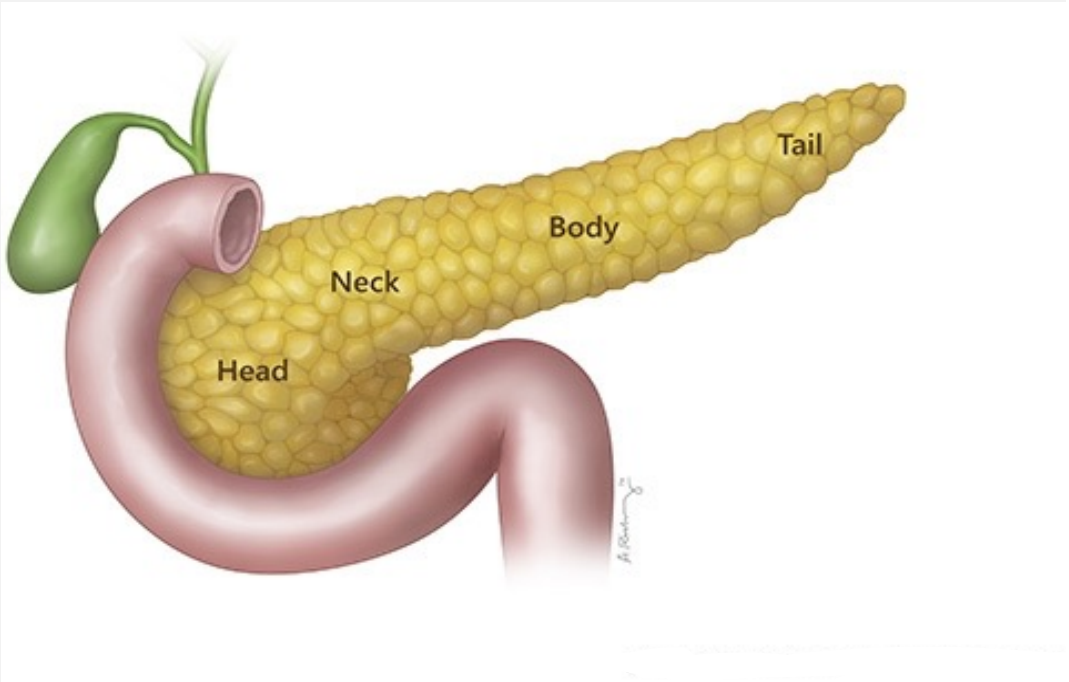


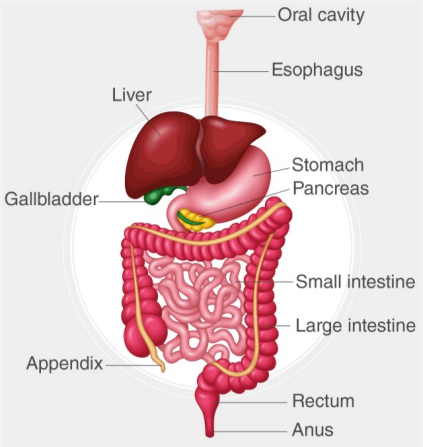
The pancreas

- It is both exocrine & endocrine gland.
- It is divided into 4 parts: head, neck, body & tail



General topography of GIT

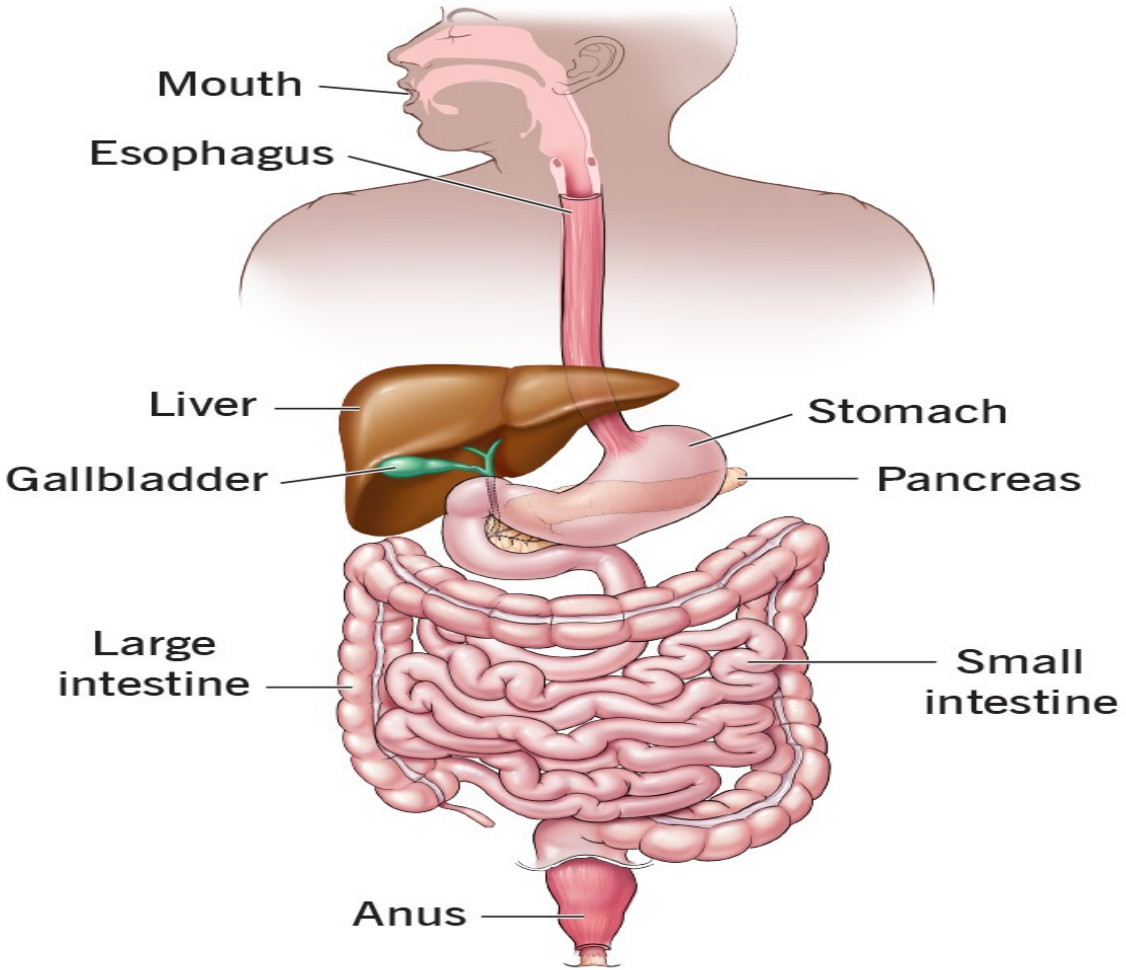
The GIT is divided into 3 parts; foregut, midgut, and hindgut



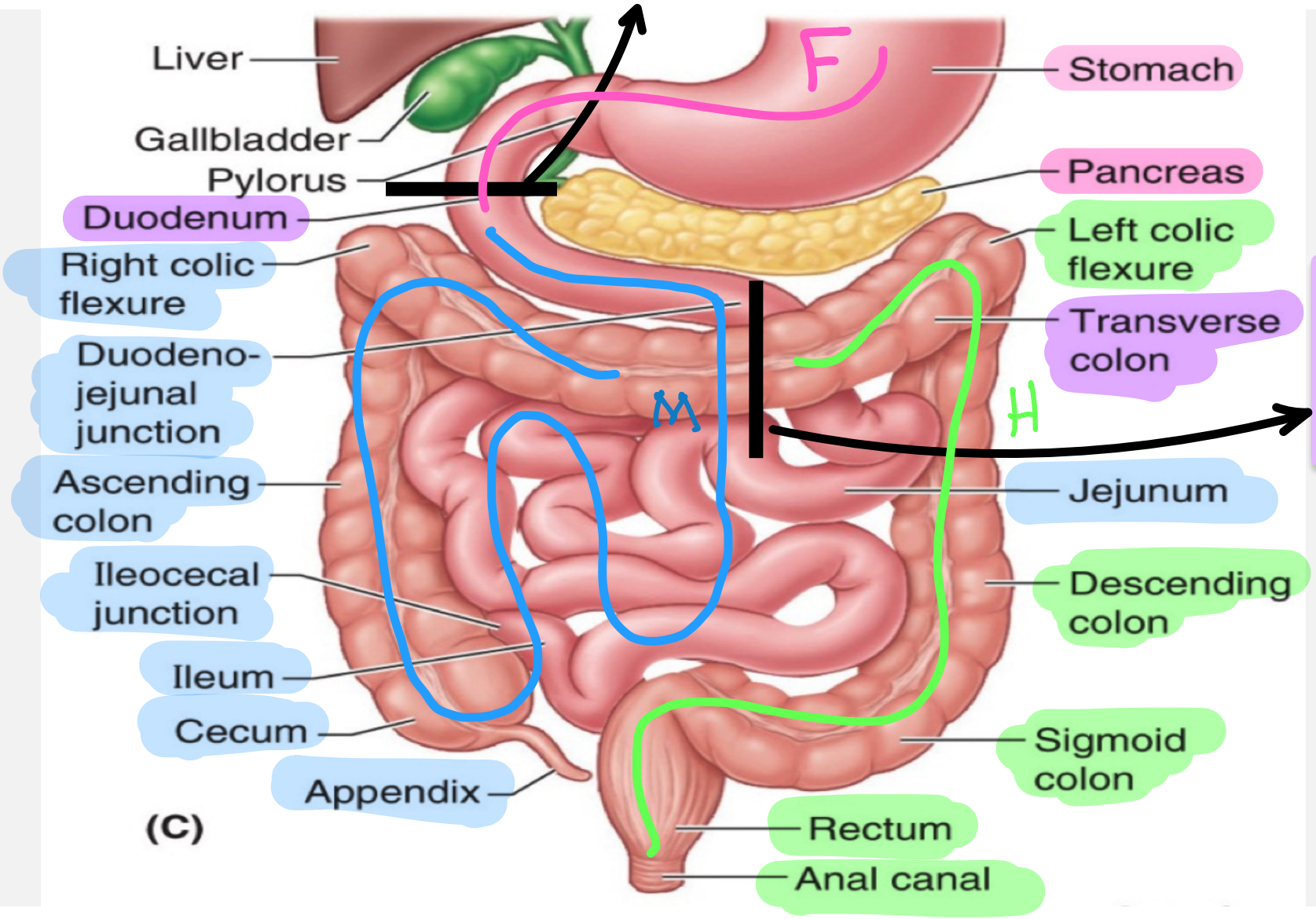
شغل مخك ما بتخسر اشي 🌝

	Foregut	Midgut	Hindgut
Components	Abdominal end of esophagus, stomach, duodenum down to entrance of bile duct, liver, spleen, pancreas	Lower 1/2 of the duodenum, jejunum, ileum, large intestine as far as the right 2/3 of the transverse colon	The rest of large intestine down to the pectinate line of the anal canal
Arterial supply	Coeliac artery	Superior mesenteric artery	Inferior mesenteric artery
Venous drainage **(REED ONLY)**	End in the portal venous system **EXCEPT** lower part of anal canal		
Autonomic nerve supply **(REED ONLY)**	**Parasympathetic** Vagus nerve **Sympathetic** T5-T11 segments of the spinal cord → greater and lesser splanchnic nerves	**Parasympathetic** Vagus nerve **Sympathetic** T5 -T11 segments of the spinal cord → greater and lesser splanchnic nerves	**Parasympathetic** Pelvic splanchnic nerves (S2, 3, 4) **Sympathetic** L1, L2 segments → lumbar splanchnic nerves

Digestive system

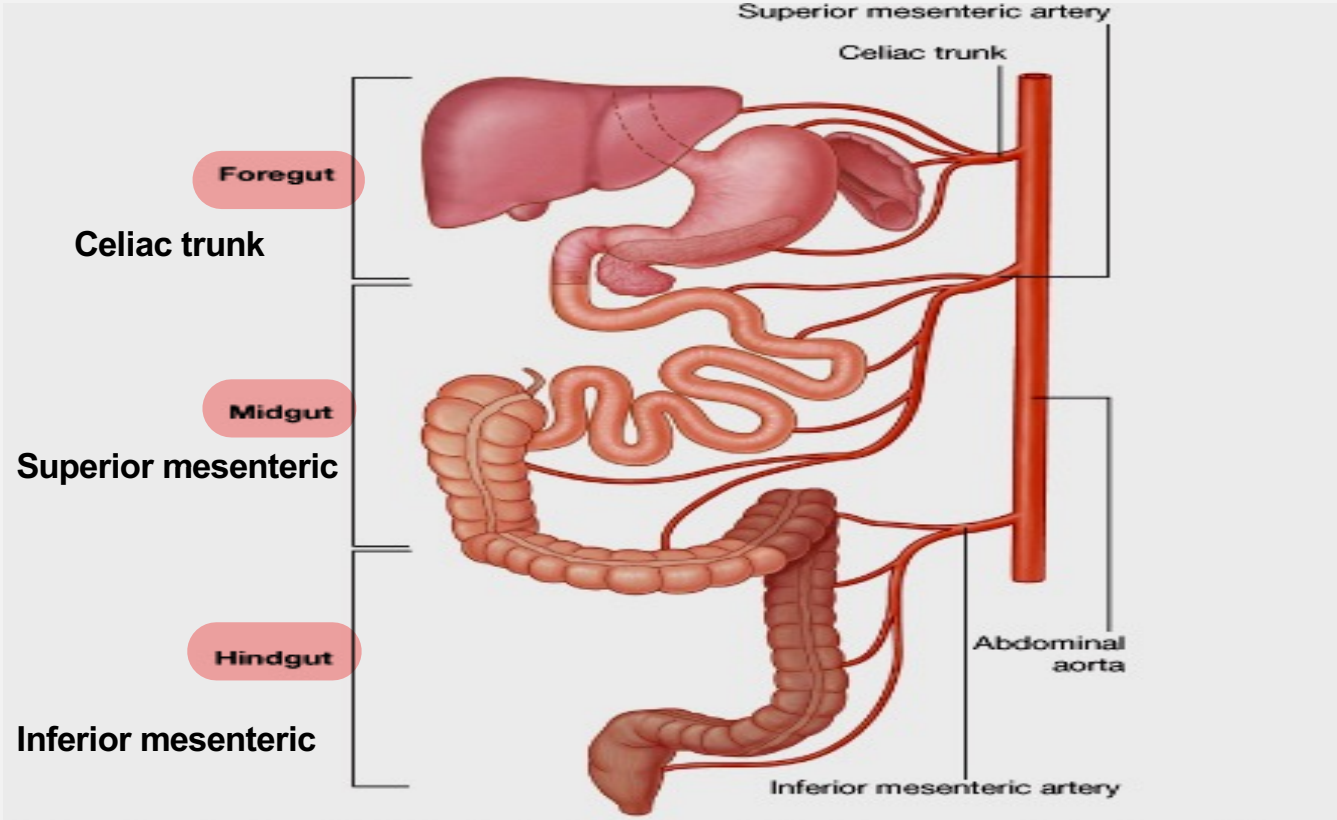


In the 2nd part of the duodenum



h the transverse colon between the right 2\3 and left 1\3

Blood supply of the gut



Thank you

Dr.Ahmed Salman