

25 cm = esophagus ← * نَفْسُ مَدْرَكٍ
 the dilated portion of GIT ← مَسَامِيْرُ رَايَا
 25 cm = duodenum ← مَرَضُو *

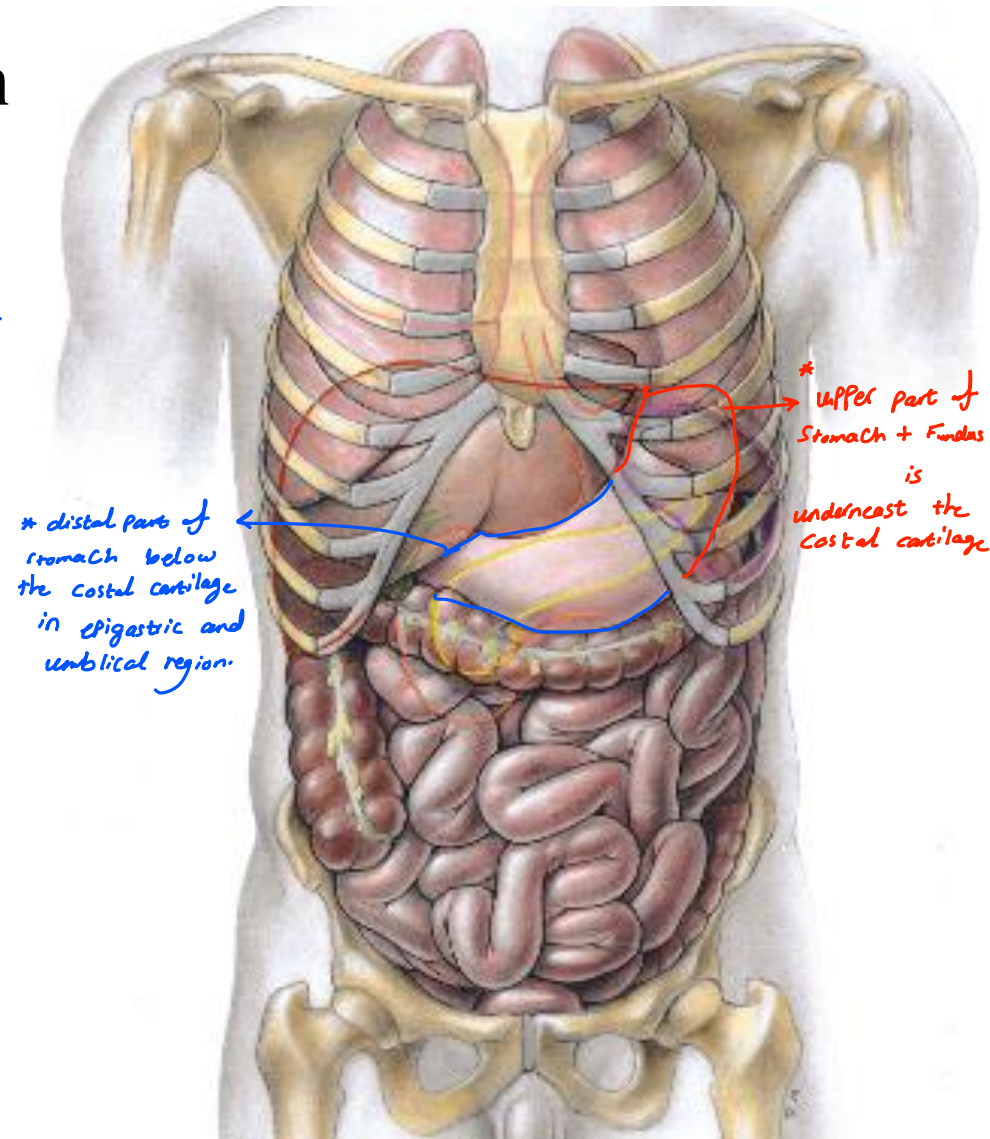
STOMACH

- The Stomach is situated in the upper part of the abdomen, extending from beneath the left costal margin region into the epigastric and umbilical regions.

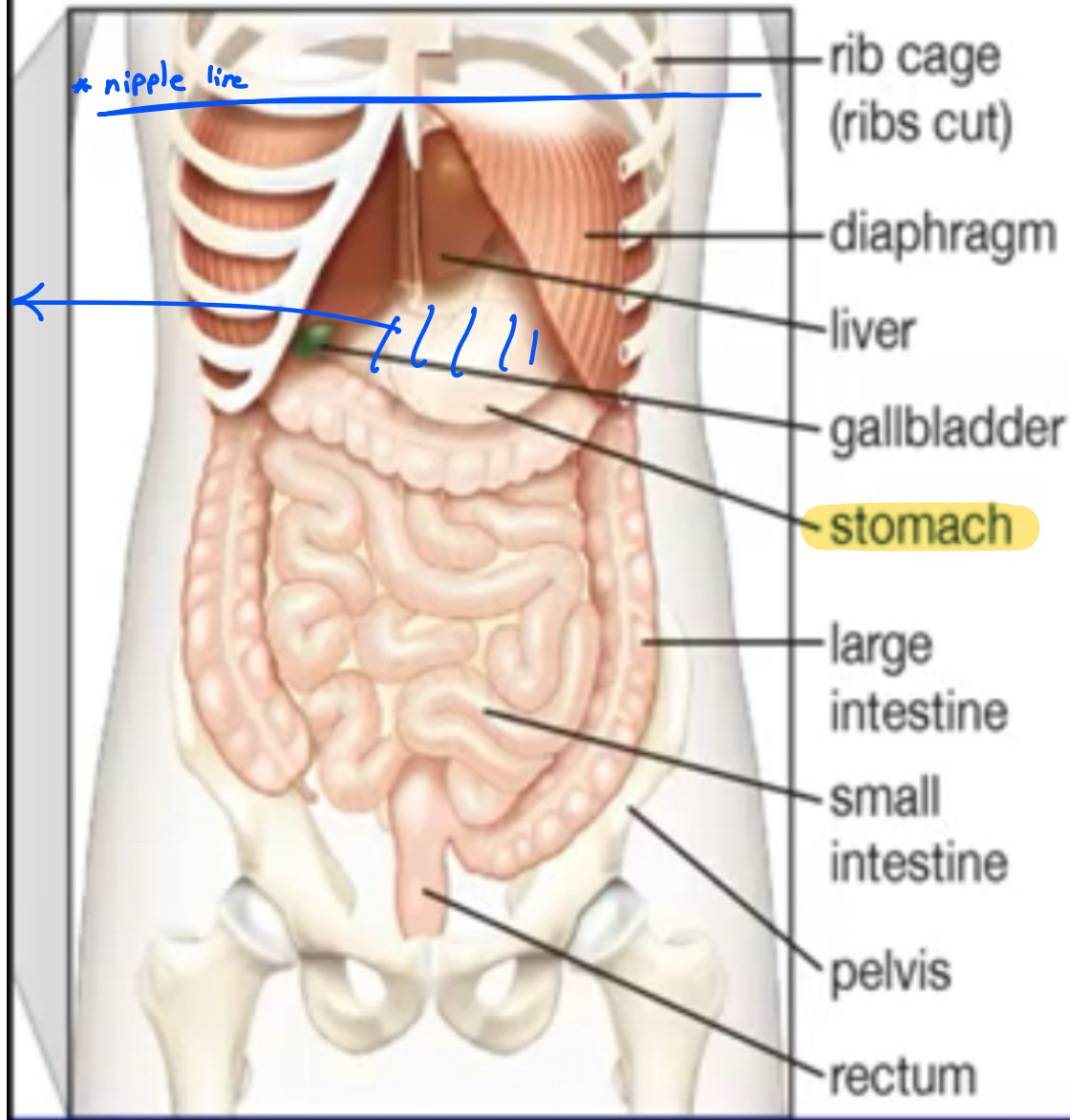
- Much of the stomach lies under cover of the lower ribs.

* So pain in stomach may lie in:

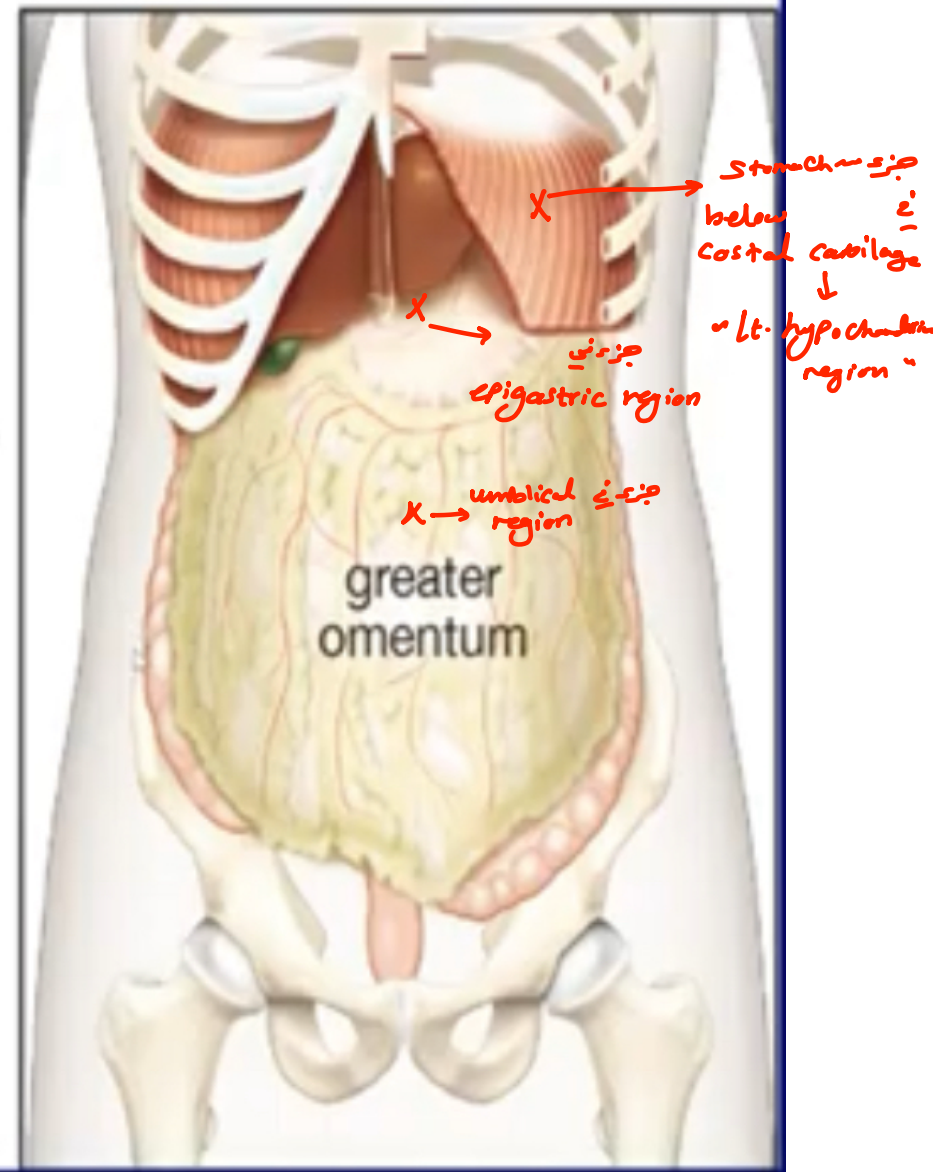
- Lt. hypochondrium region
- epigastric region
- umbilical region.



Abdominal organs in situ



Abdominal organs with greater omentum



* The proximal half of the stomach lies under the ribs extend from the nipple line to costal cartilage.

* Thoracoabdominal structures: liver
spleen
diaphragm
upper 1/2 of stomach.

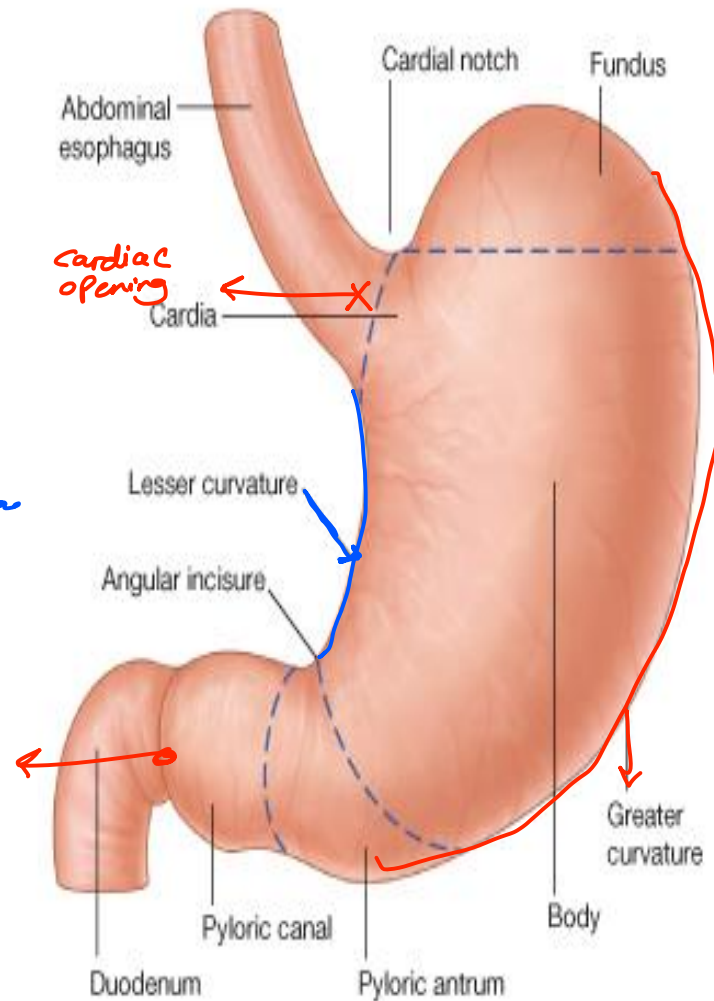
* epigastric region * غالباً في منطقة البطن

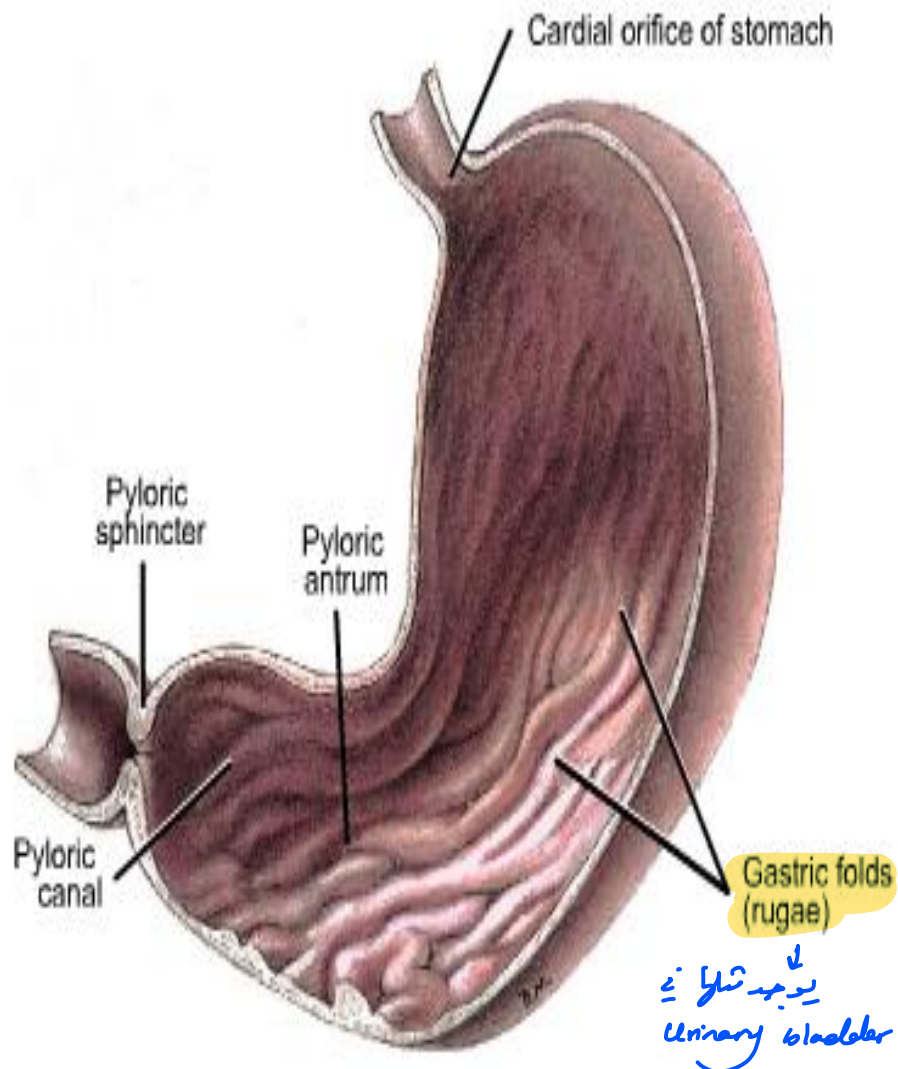
* Stomach is introabdominal organ (X).
thoraco-abdomen.

* The main or half of stomach lies in abdomen (✓).

STOMACH

It is roughly J shaped and has two openings, the cardiac and pyloric orifices; two curvatures, the greater and lesser curvatures; and two surfaces, an anterior and a posterior surface.



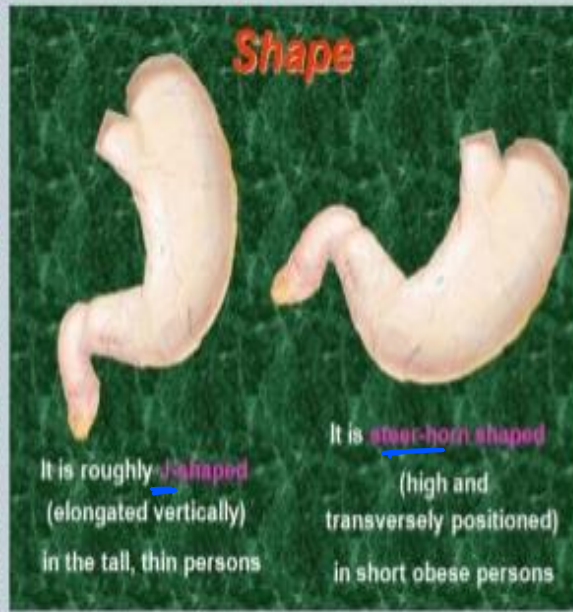


inside of stomach there is
Fold of mucosa and submucosa
that found obviously when stomach
is empty and looks flat when
stomach distended.

STOMACH

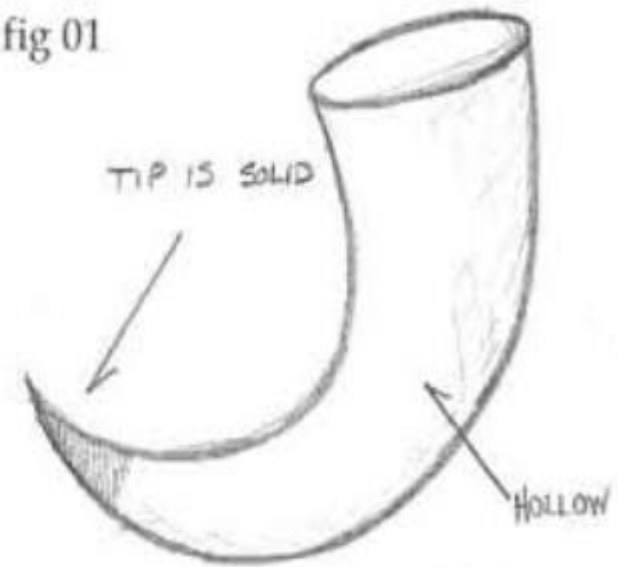
- The stomach is relatively fixed at both ends but is very mobile in between.
- It tends to be high and transversely arranged in the short, obese person *(Steer-Horn Stomach)*.
في ما يتلوه الشخص ناقص
- Elongated vertically in the tall, thin person *(J-shaped Stomach)*.
في ما يتلوه الشخص ممتد
- Its shape undergoes considerable variation in the same person and depends on the volume of its contents, the position of the body, and the phase of respiration.

Position and Shape of Stomach



* stew horn shape

fig 01

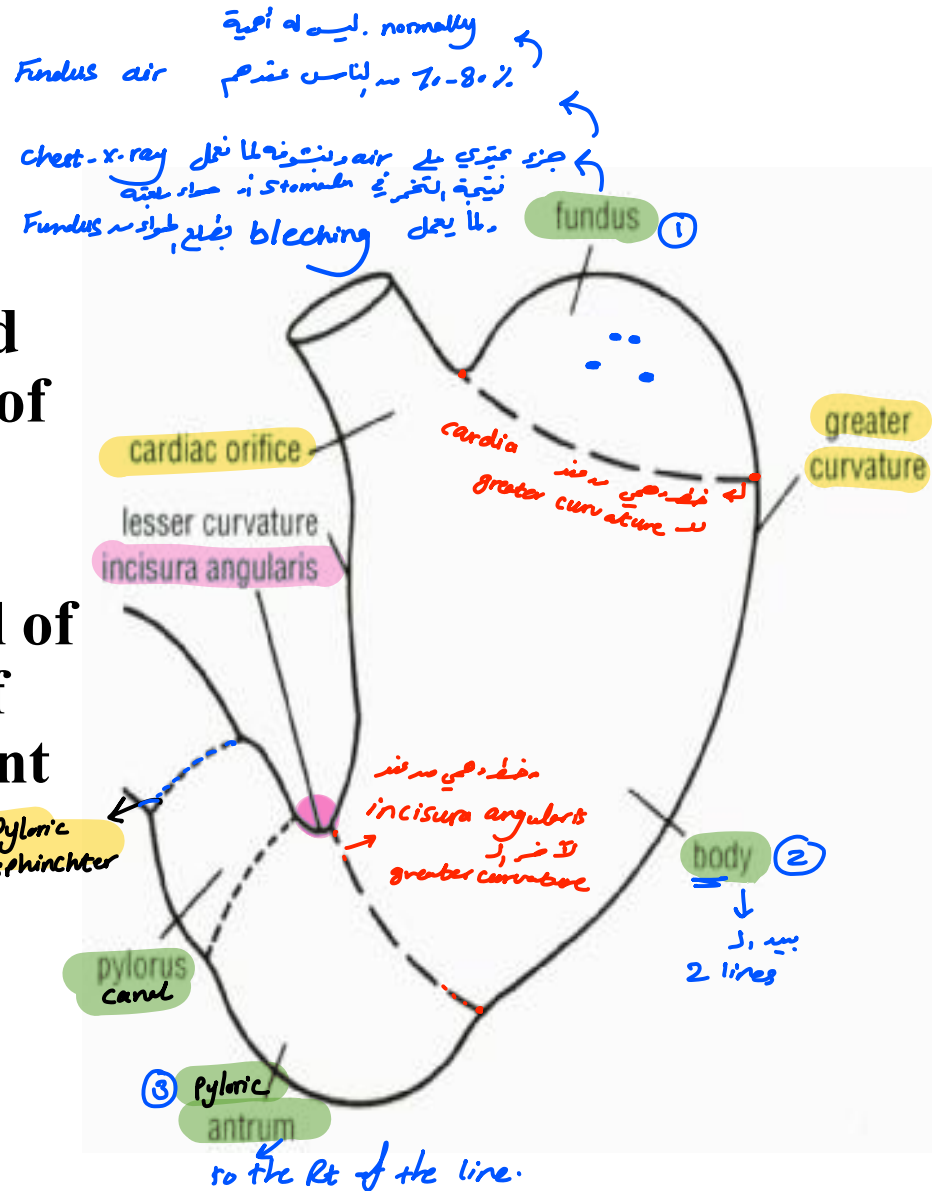


STOMACH

The stomach is divided into the following parts:

The Fundus is dome-shaped and projects upward and to the left of the cardiac orifice. It is usually full of gas.

The Body extends from the level of the cardiac orifice to the level of the Incisura Angularis, a constant notch in the lower part of the lesser curvature.



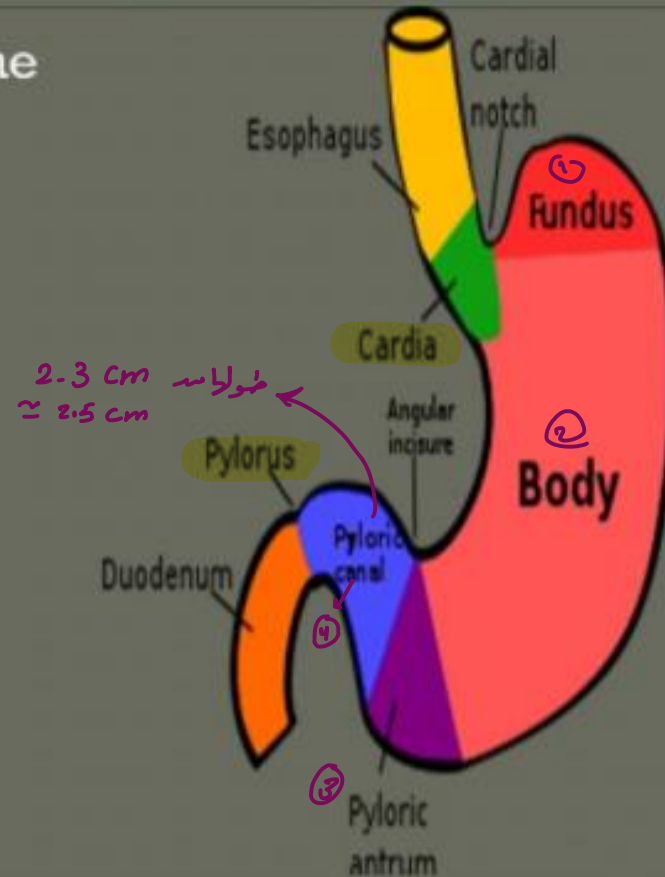
Parts of stomach

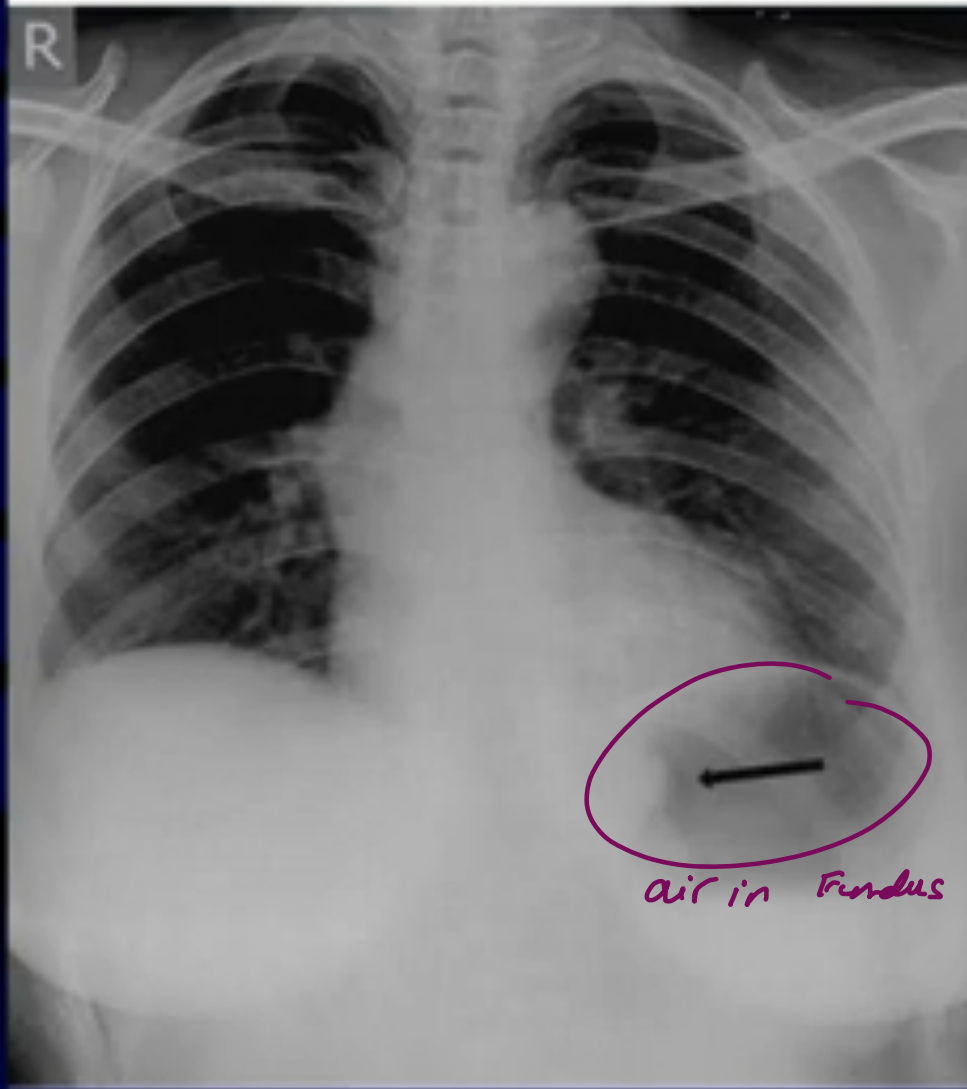
The stomach is divided into the following parts :

1- Fundus:

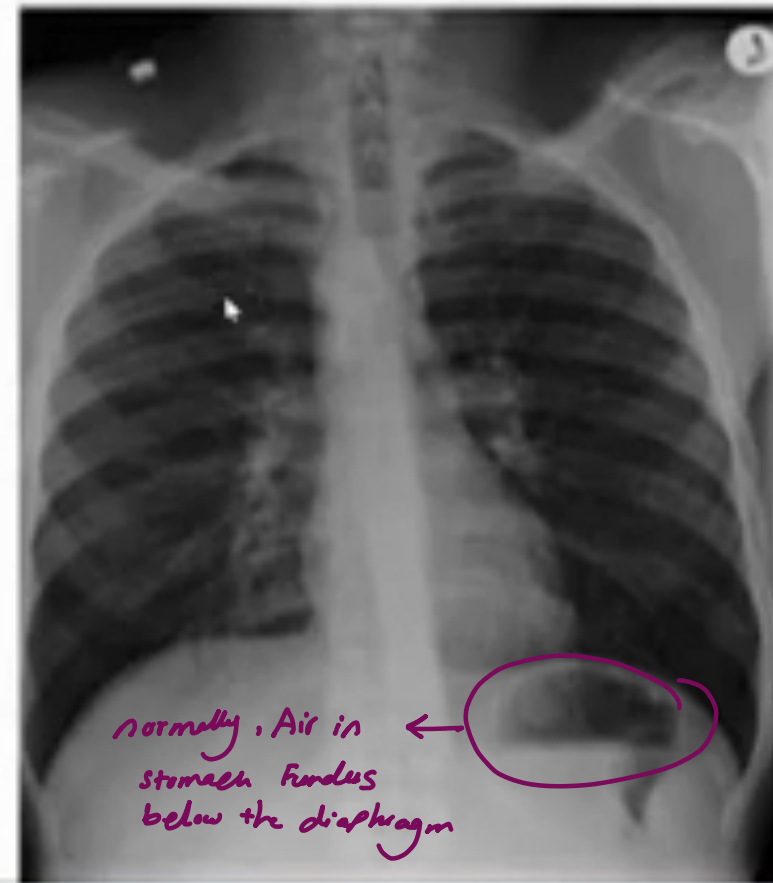
- Dome-shaped
- Projects upward and to the left of the cardiac orifice
- It is usually full of gas.

* cardiac sphincter is physiological
but pylorus sphincter is an true
anatomical.





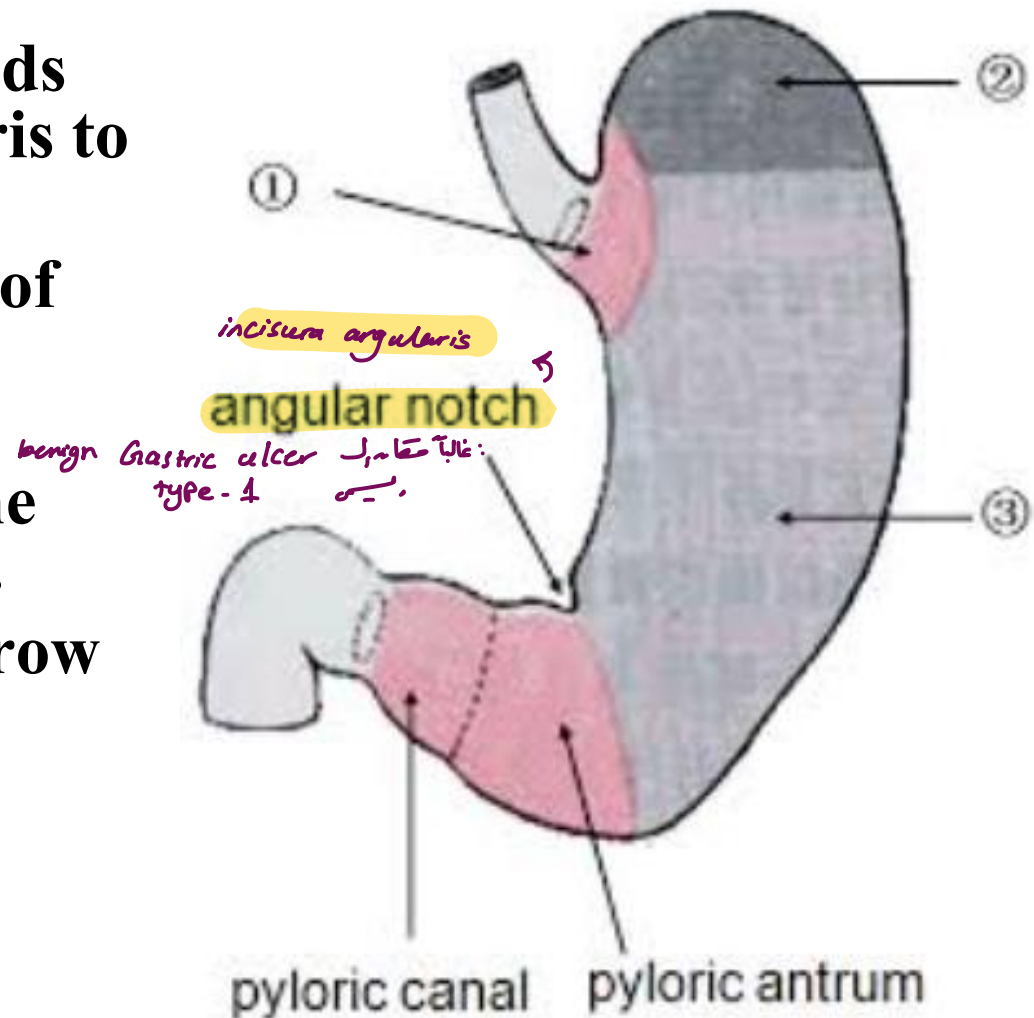
Gas in Fundus of Stomach...

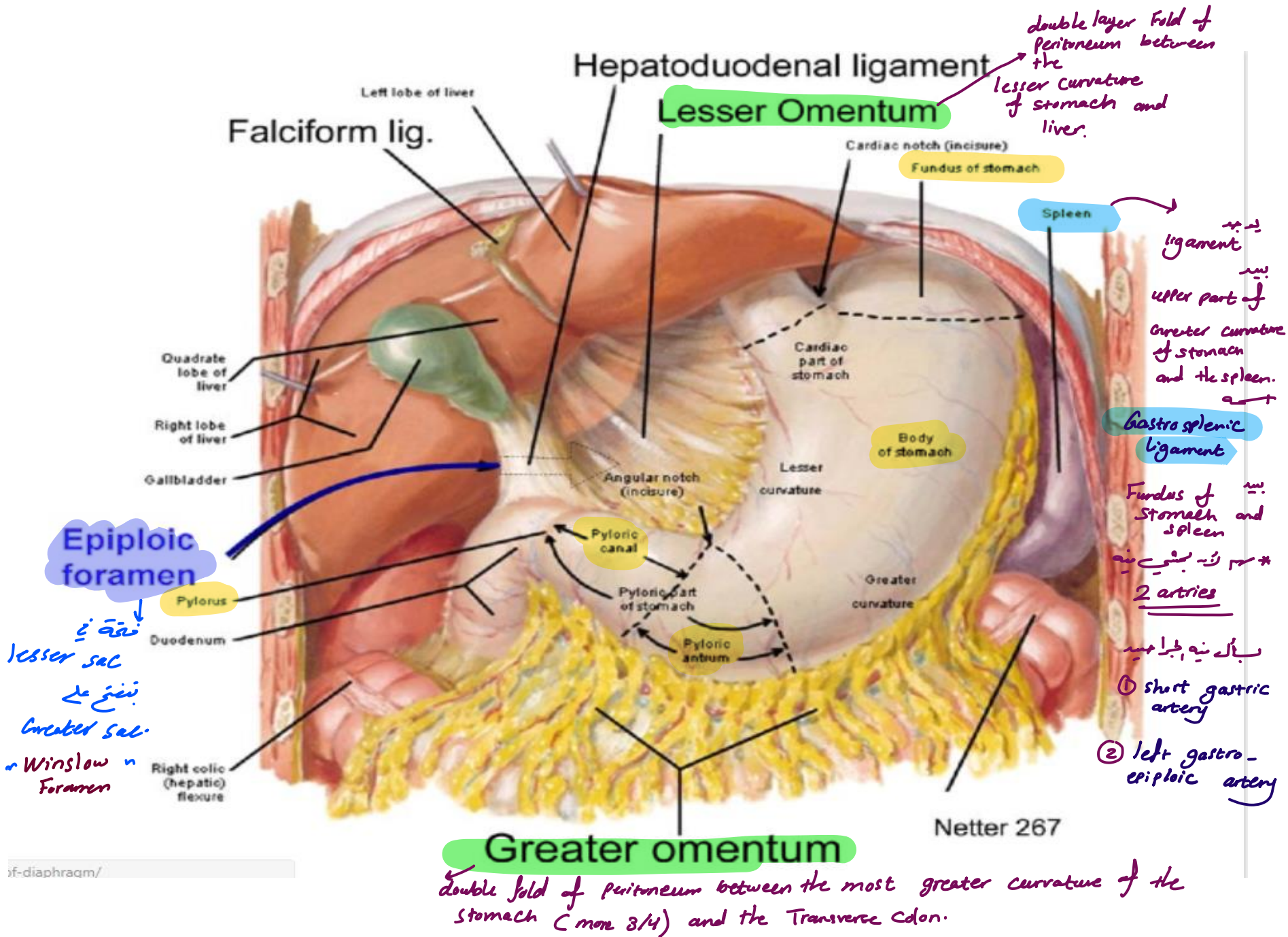


* X-ray : Posterior . Anterior view

STOMACH

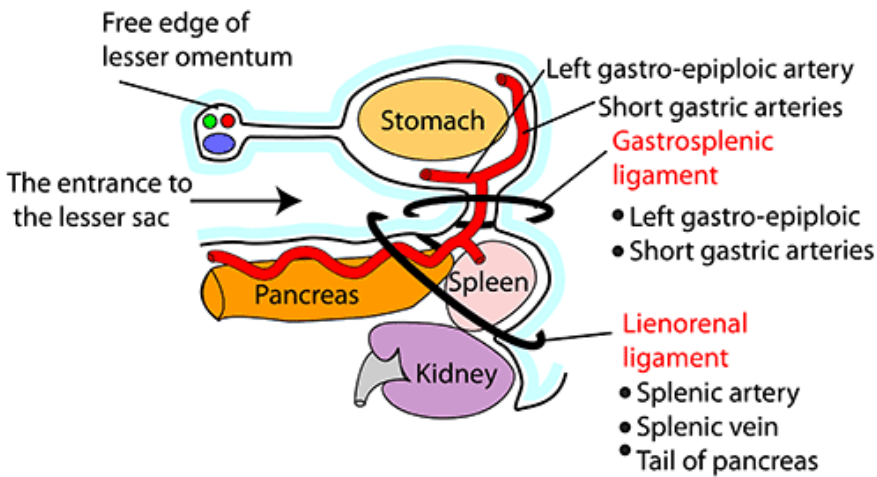
- The Pyloric Antrum extends from the incisura angularis to the pylorus.
 - It is dilatation just to RT of body.
 - The Pyloric Canal is the tubular narrow part of the stomach 2-3 cm in length.
 - Pyloric sphincter the narrow thickened end of stomach cavity.
- true anatomical





LIENORENAL & GASTROSPLENIC LIGAMENTS

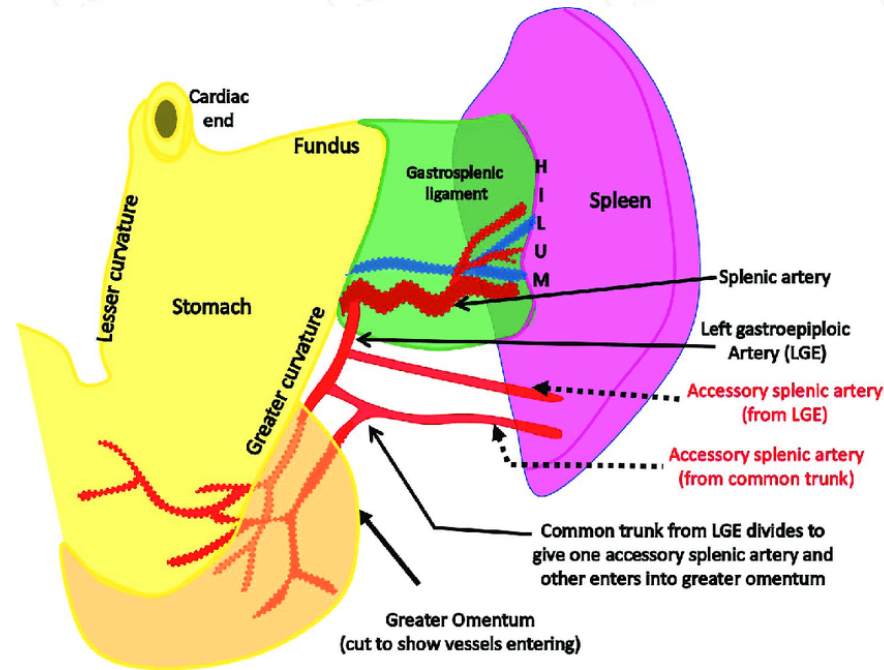
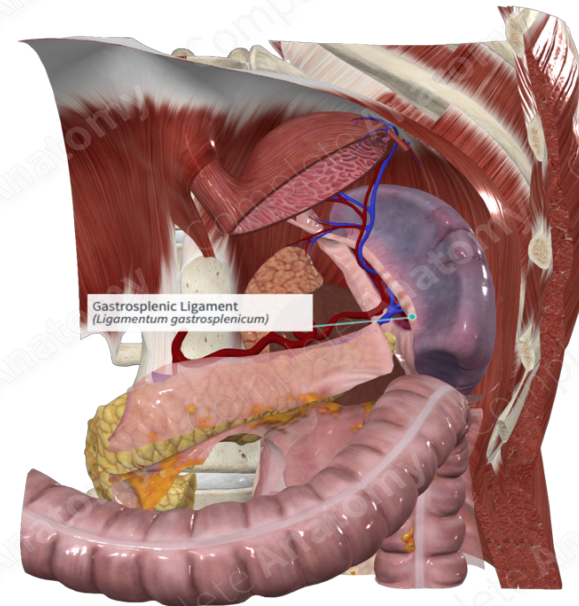
AXIAL SECTION ACROSS FAR LEFT SIDE OF LESSER SAC



The **gastrosplenic ligament** contains the short gastric & left gastro-epiploic vessels

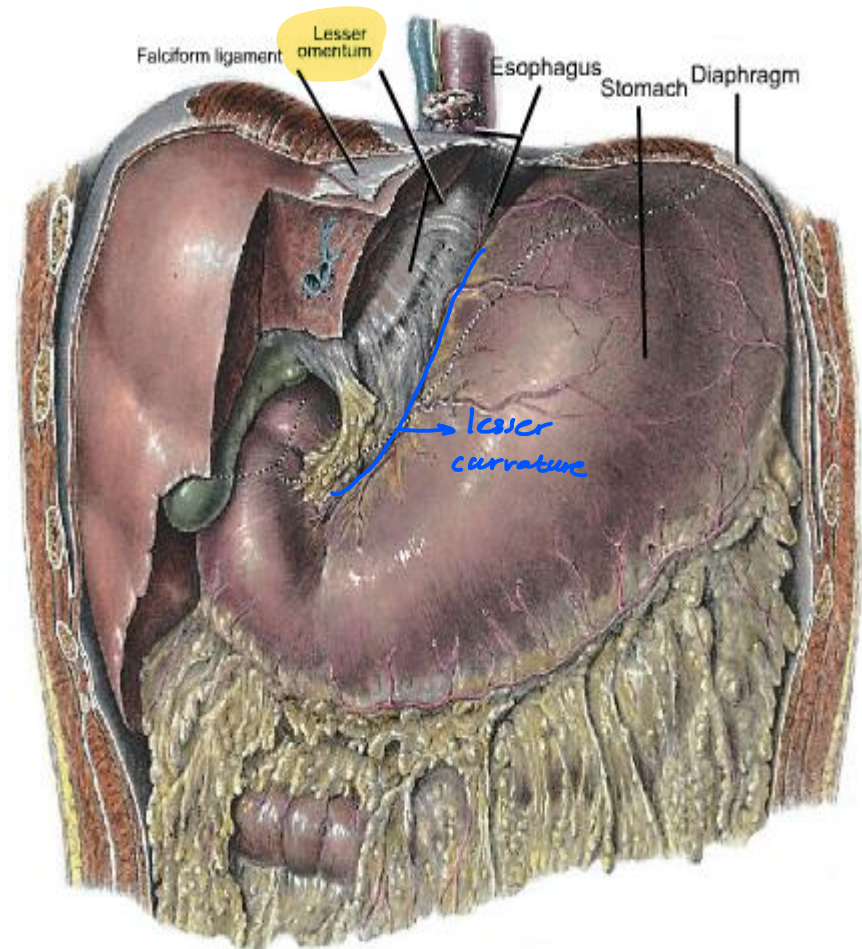
The **lienorenal ligament** contains the tail of pancreas & splenic vessels)

The two ligaments are the remnants of the the dorsal mesentery of the stomach. The ventral mesentery is the lesser omentum and the falciform ligament



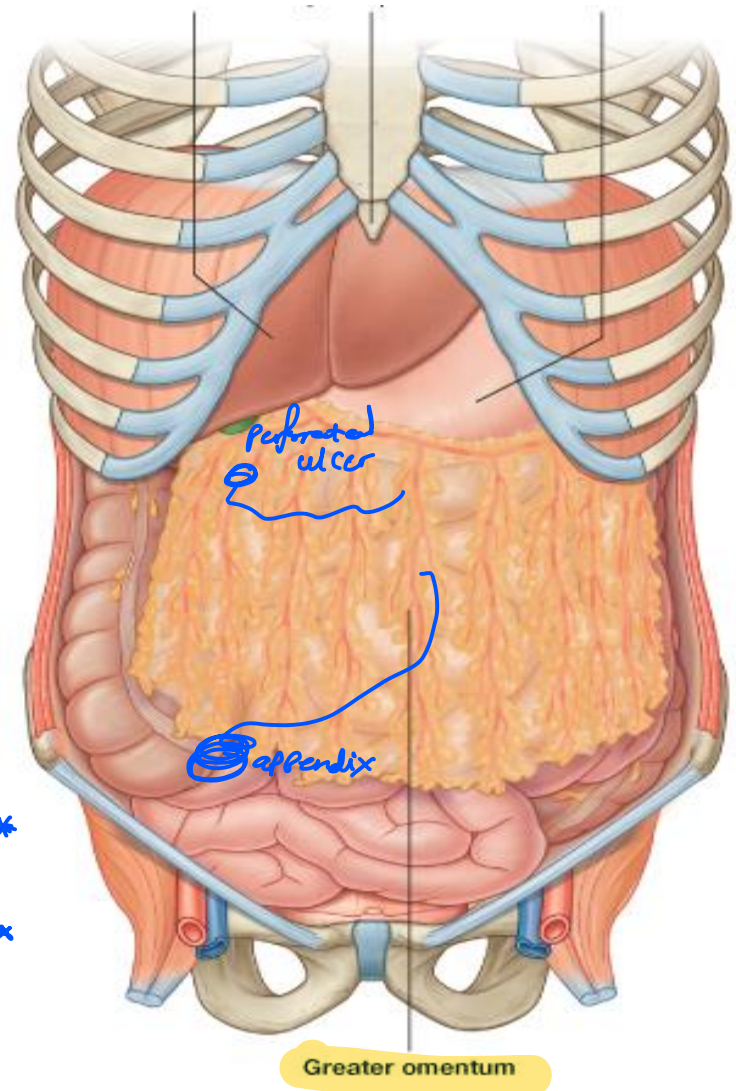
STOMACH

- The Lesser Curvature forms the right border of the stomach and extends from the cardiac orifice to the pylorus.
- It is suspended from the liver by the lesser omentum.



STOMACH

- The Greater Curvature is much longer than the lesser curvature and extends from the left of the cardiac orifice, over the dome of the fundus, and along the left border of the stomach to the pylorus.

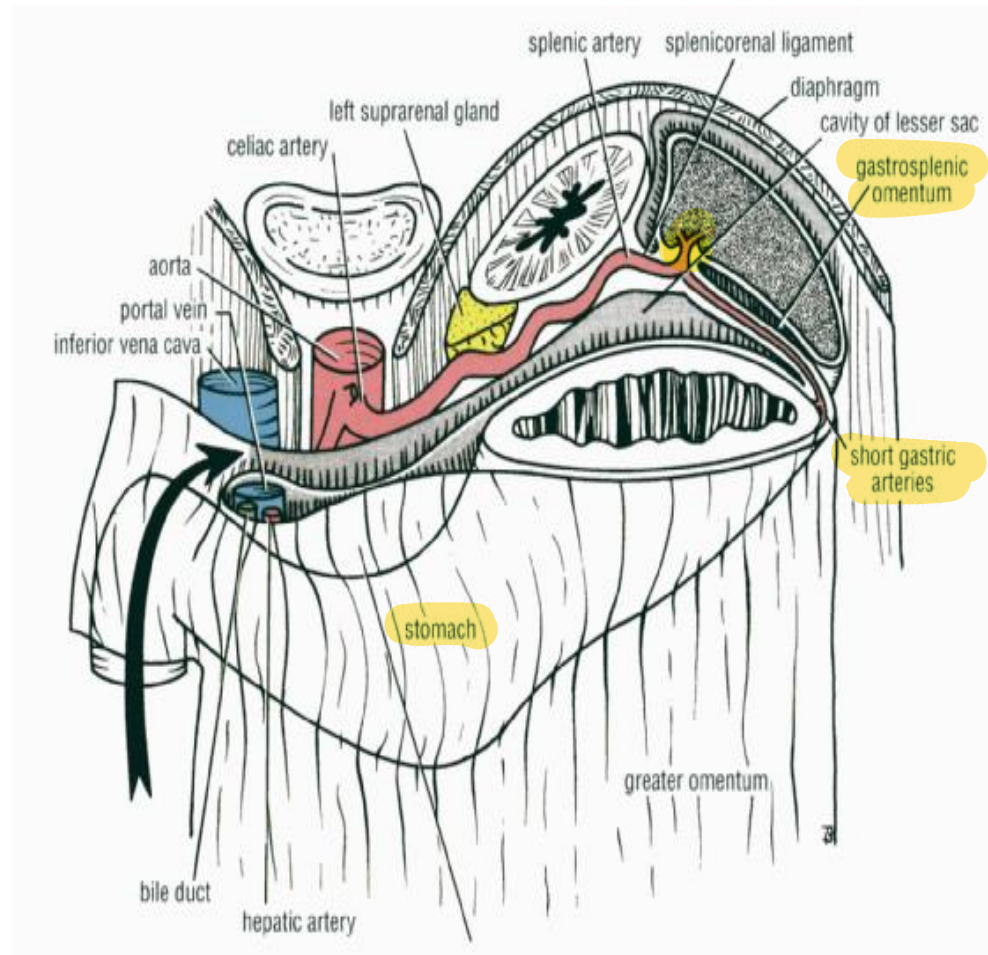


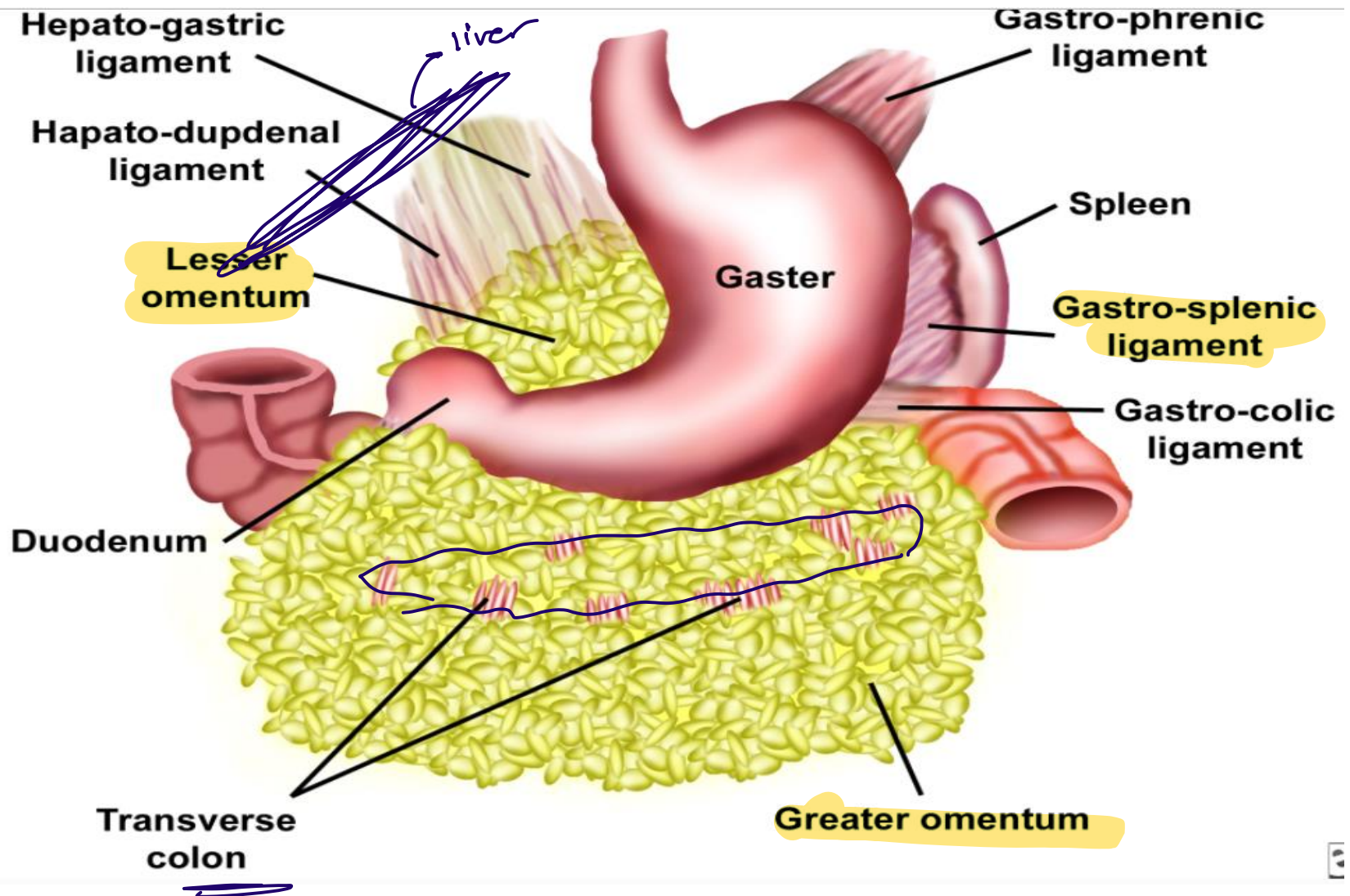
* Greater omentum يسمى بـ police man of the abdomen
 لأنه لما يكون في الزاوية العلوية - اع مكانه الزاوية
 * شدة appendicitis - صلاتي ٩٠٠ اع له appendix بجدار صفي
 سفعة الزاوية
 * د perforated ulcer - صلاتي ٩٠٠ اع مكانه القرحة المفتحة.

STOMACH

✚ The Gastro Splenic
(ligament) extends from
the upper part of the
greater curvature to the
spleen.

✚ The Greater Omentum
extends from the lower^{3/4}
part of the greater
curvature to the transverse
colon.





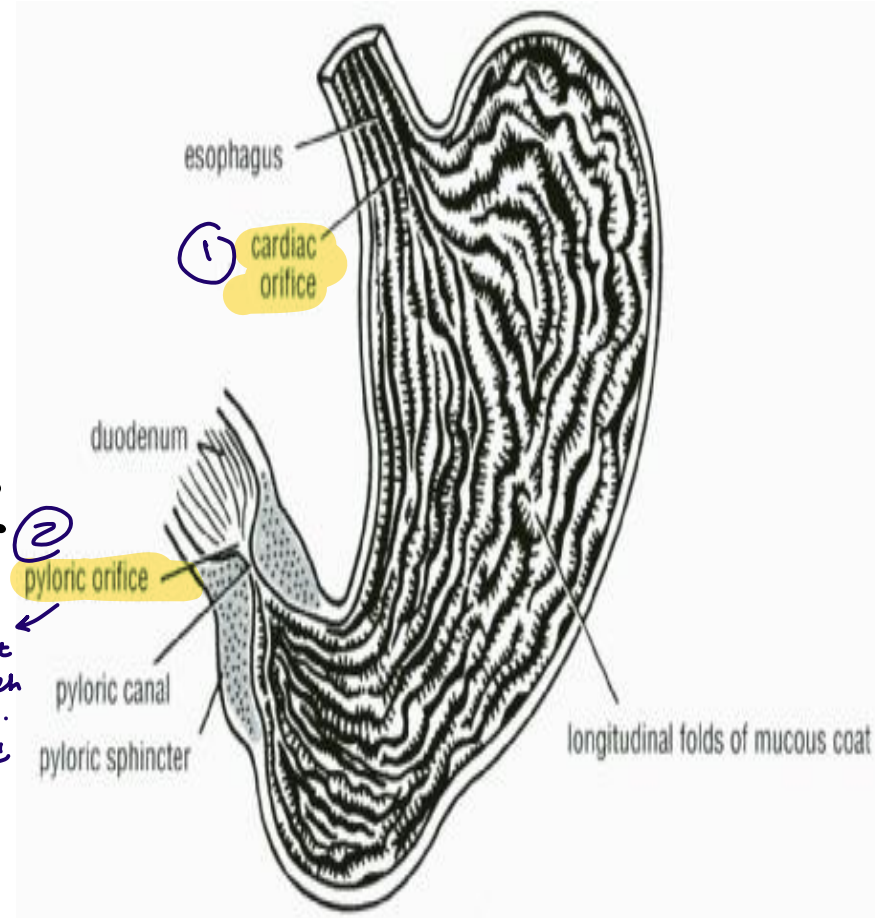
STOMACH → 2 opening : ① cardia . ② pylorus .

→ to prevent esophageal reflux and esophagitis

■ The **cardiac orifice** is where the esophagus enters the stomach.

■ Although **no anatomic sphincter** can be demonstrated here, a **physiologic mechanism** exists. that prevents regurgitation of stomach contents into the **esophagus**.

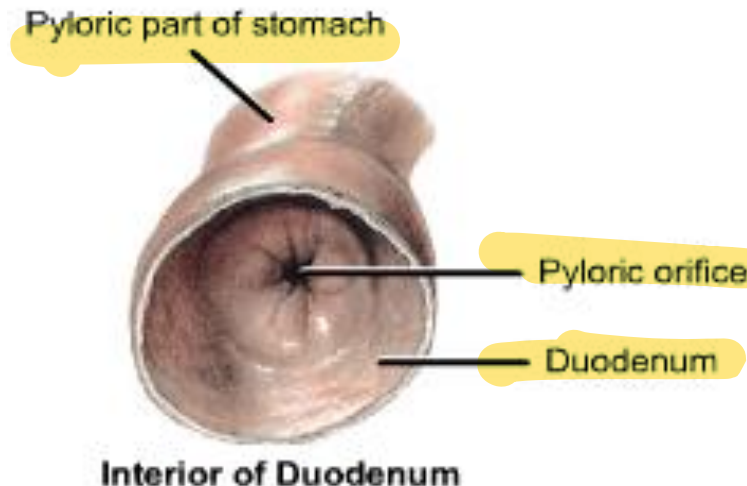
to prevent food reach duodenum.
لأنه يحتاجه بعضه



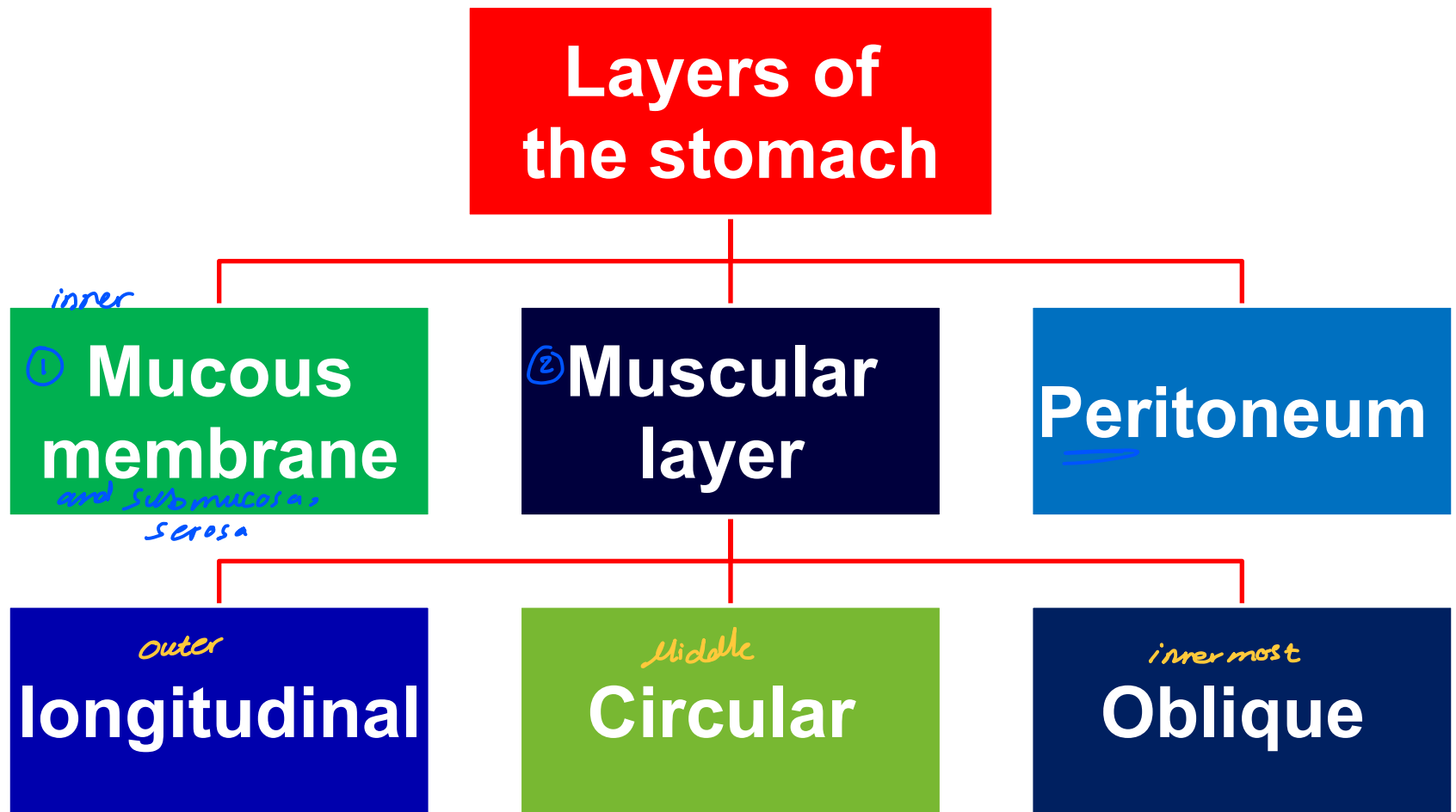
STOMACH

- * What lies in Trans pyloric plane?
- ① Fundus of gall bladder
 - ② Pylorus of stomach
 - ③ junction between D₁, D₂

- The pyloric orifice is formed by the pyloric canal, which is about (2.5 cm) long.
- The circular muscle coat of the stomach is much thicker here and forms the Anatomic and Physiologic Pyloric Sphincter.
- The pylorus lies on the Trans-Pyloric Plane, and its position can be recognized by a slight constriction on the surface of the stomach.
- The pyloric sphincter controls the rate of discharge of the stomach contents into the duodenum.



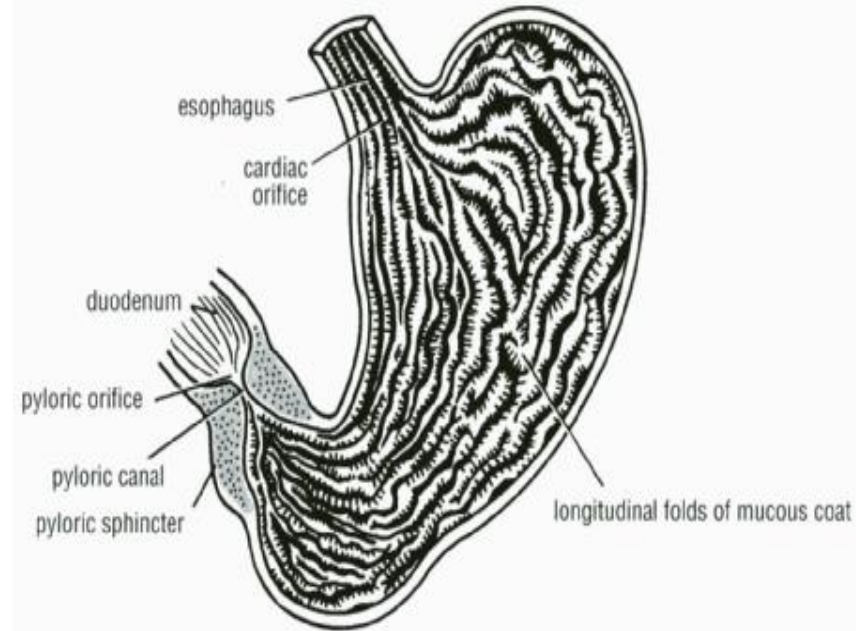
LAYERS OF THE STOMACH



stomach is extralayer ←
outer longitudinal + inner circular muscles → GIT is

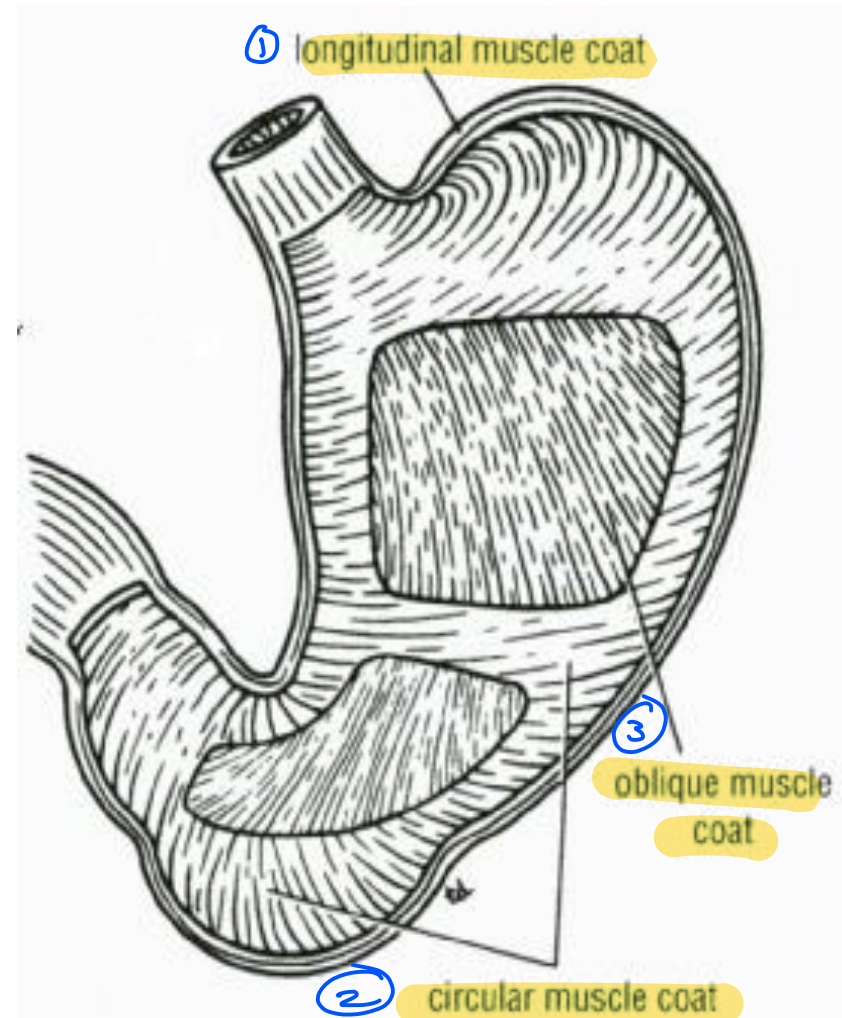
STOMACH

- The ***Mucous Membrane*** of the stomach is thick and vascular and is thrown into numerous folds, or ***Rugae***, that are mainly longitudinal in direction.
- The folds flatten out when the stomach is distended.
and be obviously when stomach empty.



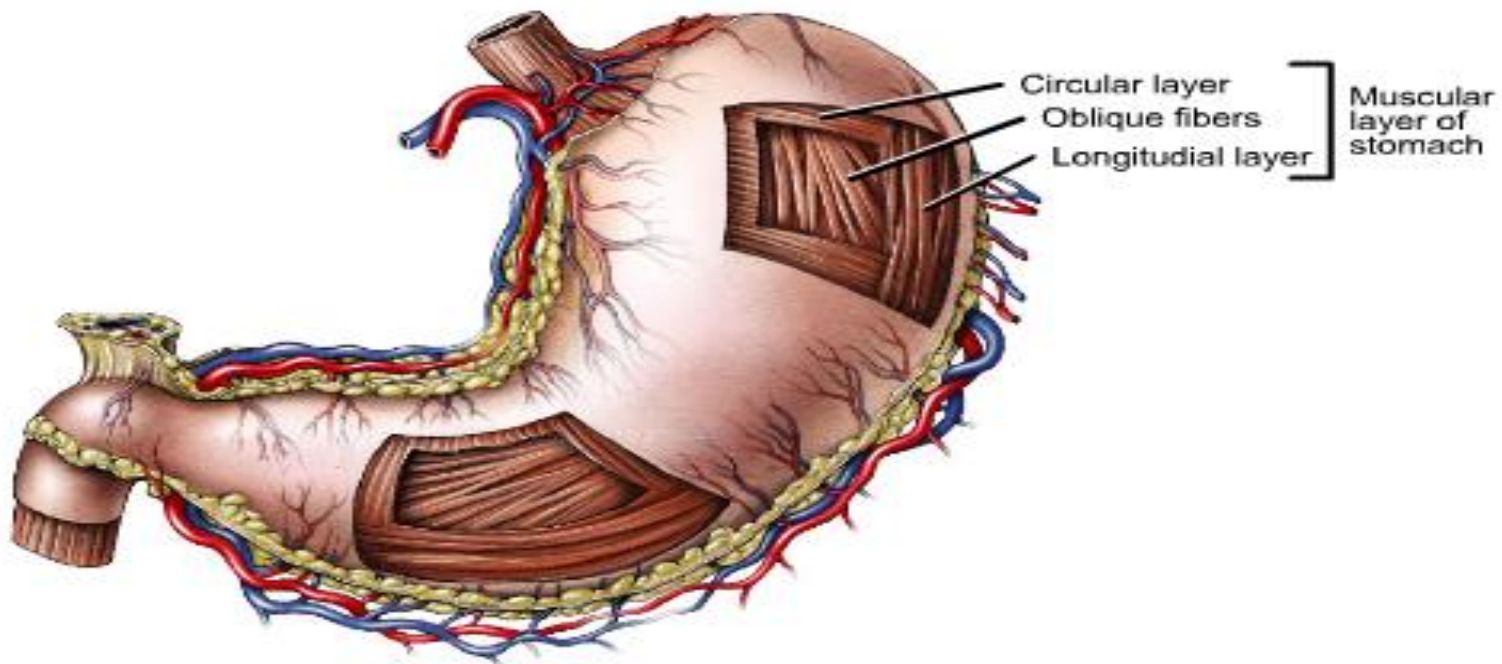
STOMACH

- The **muscular wall** of the stomach contains longitudinal fibers, circular fibers, and oblique fibers.
- The **longitudinal fibers** *outer* are the most superficial and are the most concentrated along the curvatures.



STOMACH

- The **inner circular fibers** encircle the body of the stomach and are greatly thickened at the pylorus to form the pyloric sphincter.
- Few circular fibers are found in the region of the fundus.

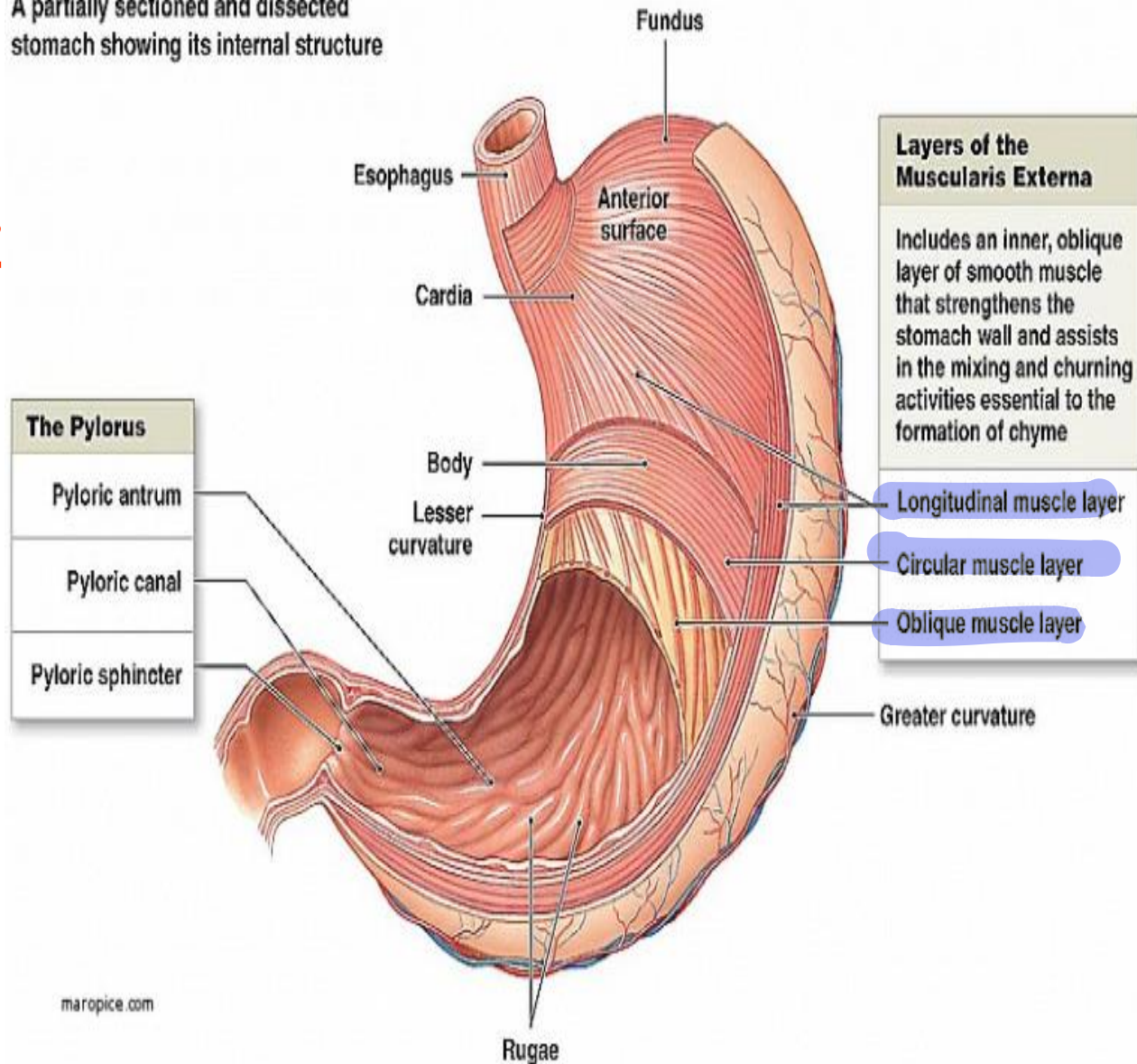


STOMACH

A partially sectioned and dissected stomach showing its internal structure

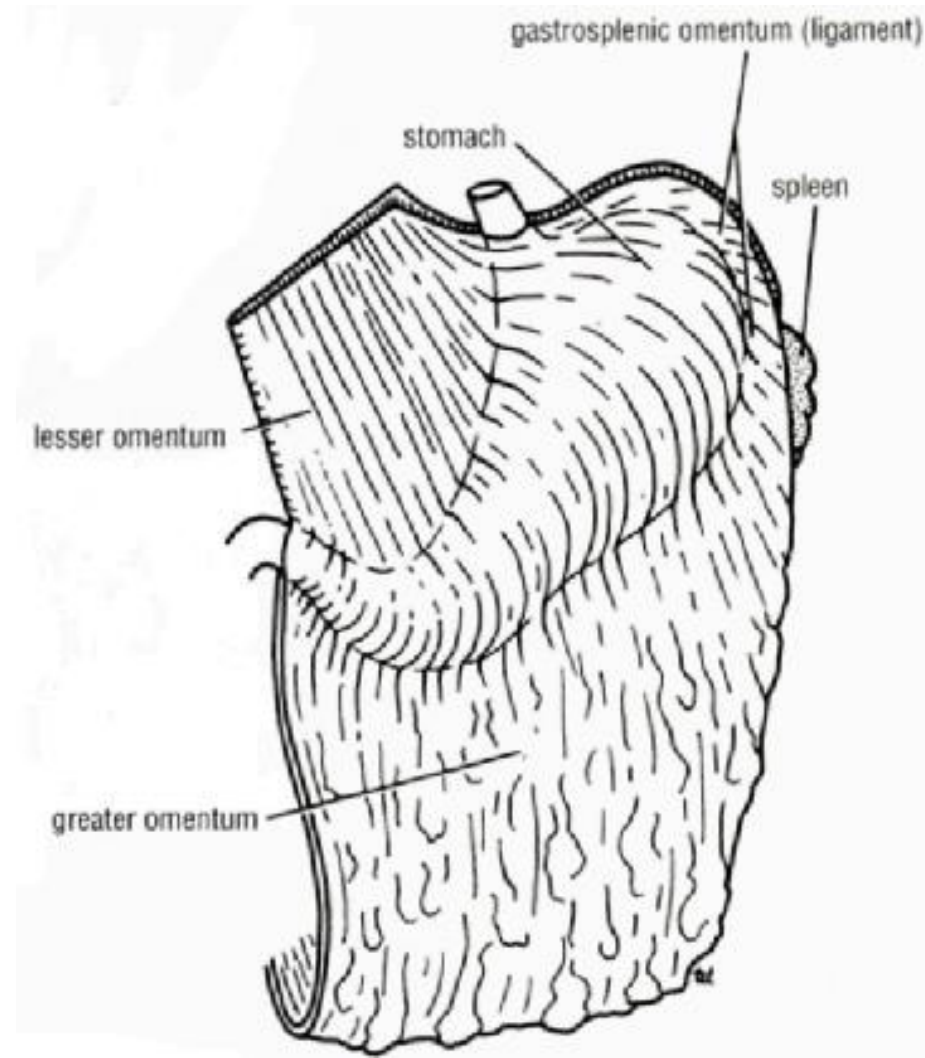
The *oblique fibers* form the innermost muscle coat.

They loop over the fundus and pass down along the anterior and posterior walls, running parallel with the lesser curvature.



STOMACH

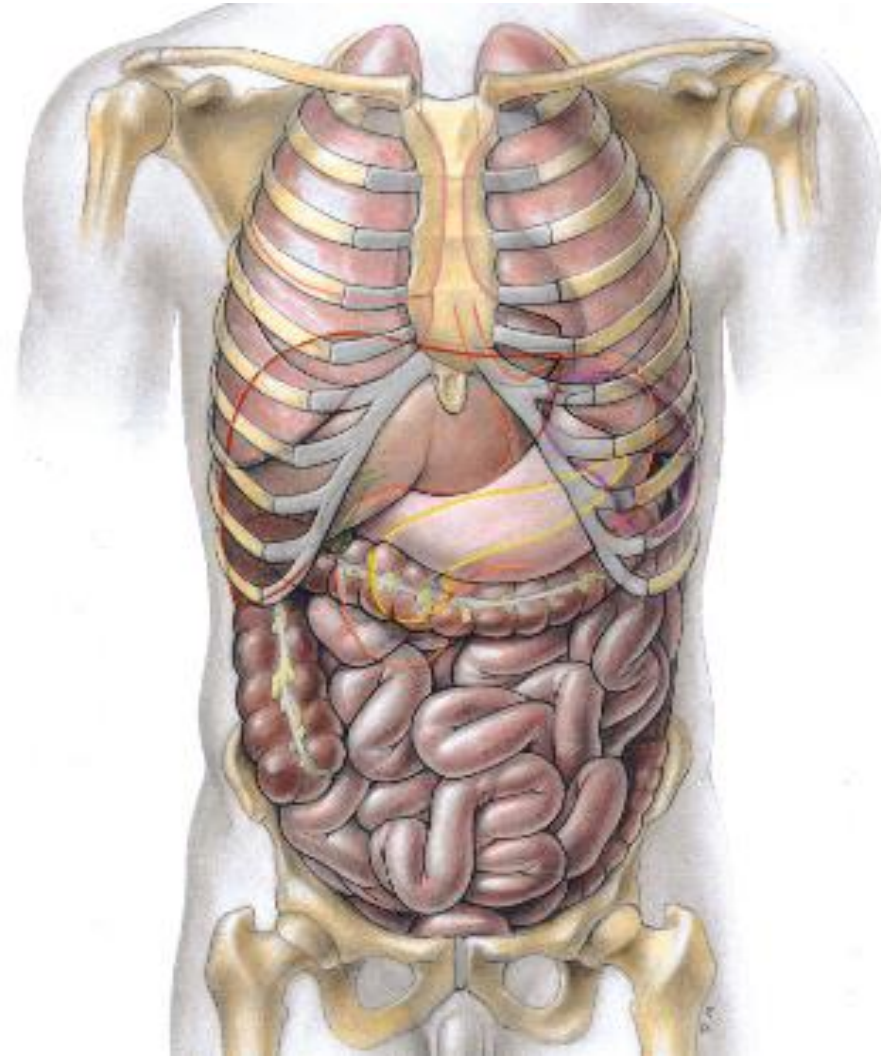
- **The *Peritoneum*** (visceral peritoneum) completely surrounds the stomach.
- It leaves the lesser curvature as the *lesser Omentum* and the greater curvature as the *gastrosplenic* omentum and the *Greater Omentum*.



RELATIONS OF THE STOMACH

Anteriorly:

- Anterior abdominal wall.
- Left costal margin.
- Left pleura and lung.
- Diaphragm.
- Left lobe of the liver.



RELATIONS OF THE STOMACH

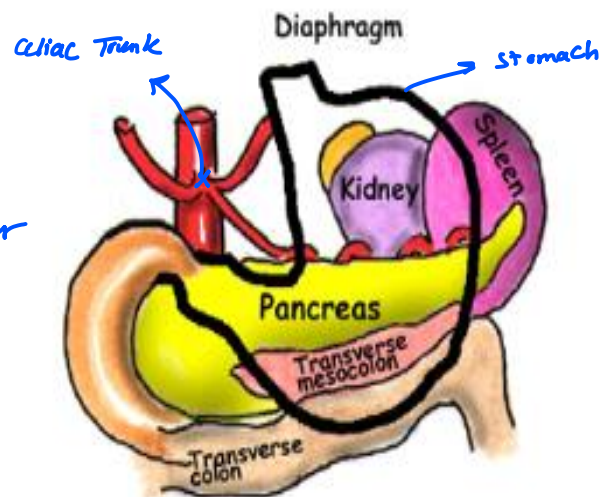
? what lies behind the stomach bed ←

- **Posteriorly: Stomach Bed**
- **lesser sac.**
- **Diaphragm.**
- **Spleen.**
- **Splenic artery.** *arise from celiac Trunk*
tortuous artery lies in the upper border of pancreas.
- **Left suprarenal gland.**
- **Upper part of the left kidney**
- **Pancreas.**
- **Transverse mesocolon.**
- **Transverse colon.**

** Branches of celiac Trunk :*

- ① *left gastric artery.*
- ② *Tortuous artery (splenic)*
- ③ *hepatic artery*

STOMACH - RELATIONS



ANTERIOR

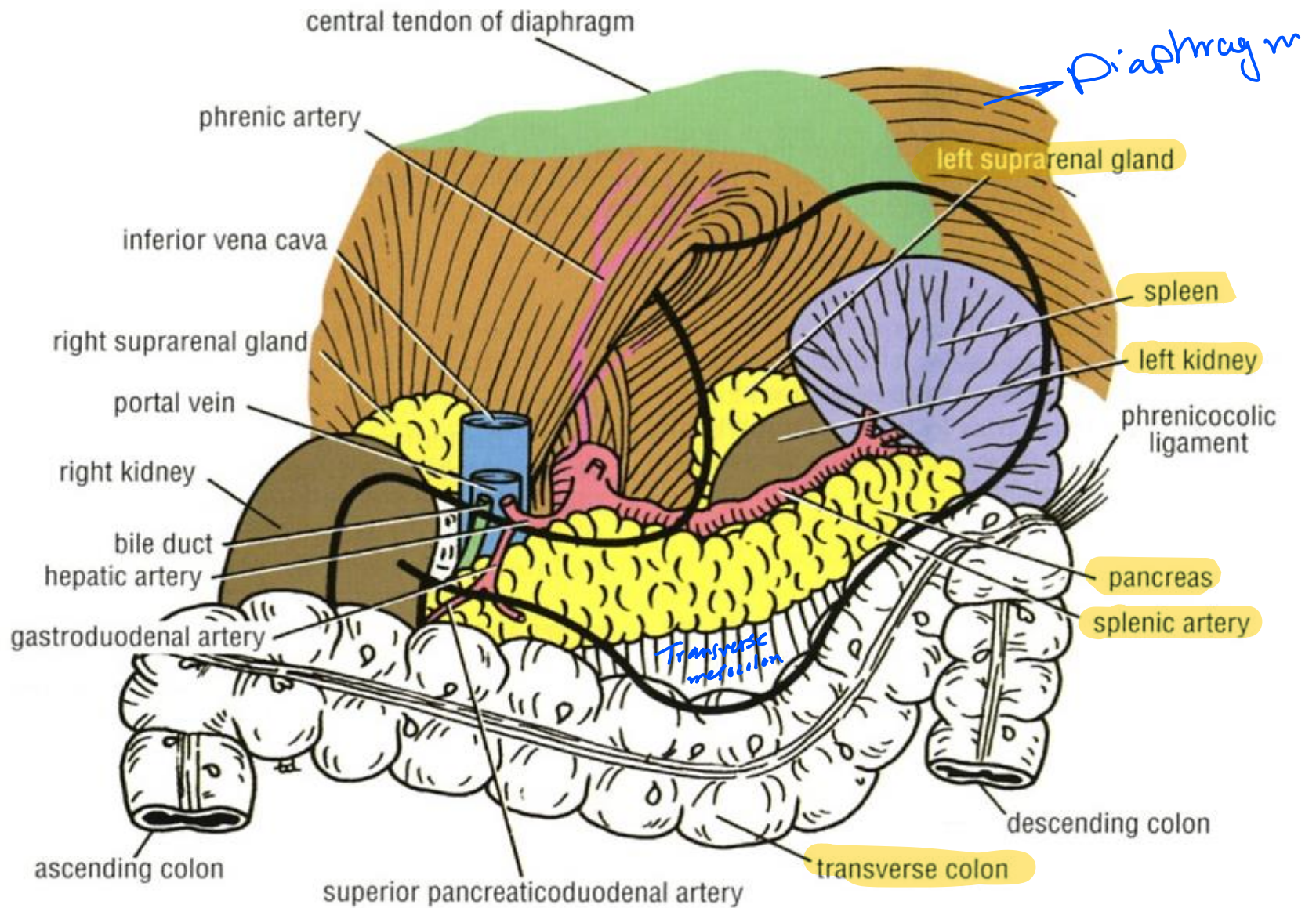
Abdominal wall
Left costal margin
Diaphragm
Left lobe of liver

SUPERIOR

Left dome of diaphragm

POSTERIOR

Lesser sac
Pancreas
Transverse mesocolon
Transverse colon
Left kidney/suprarenal gland
Spleen/splenic artery

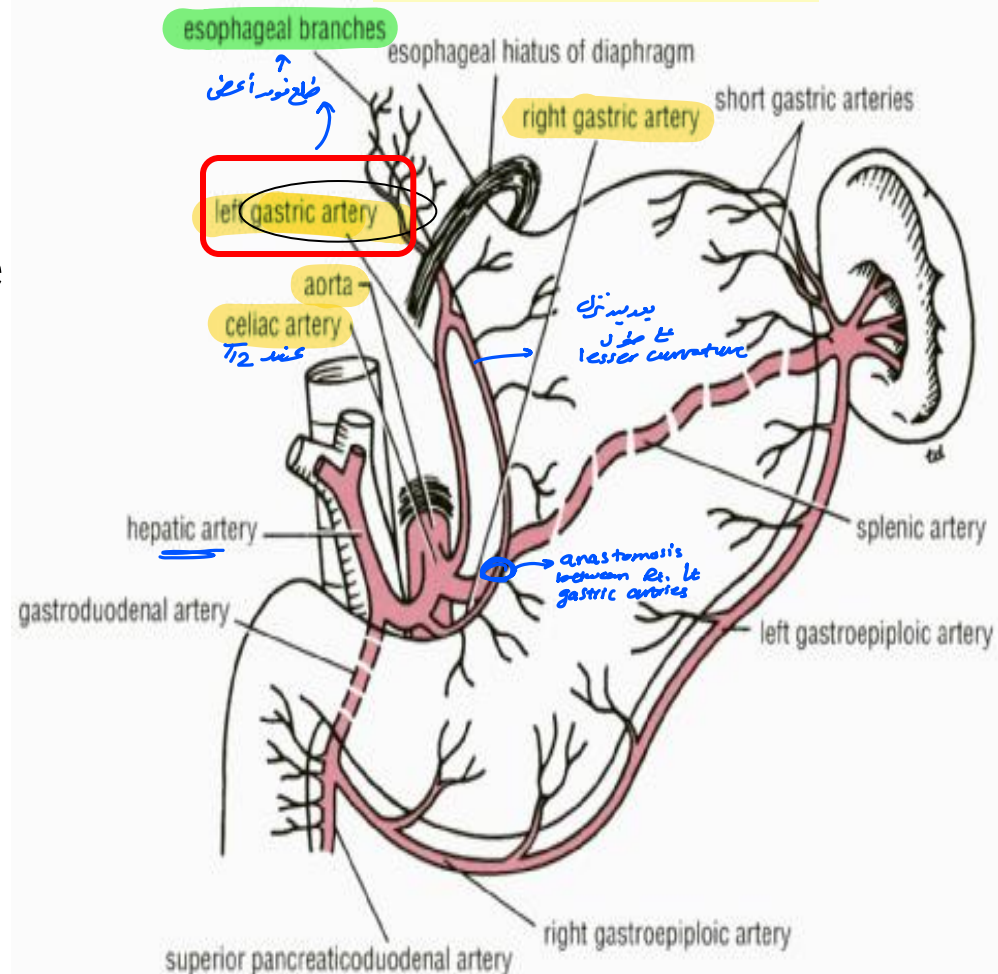
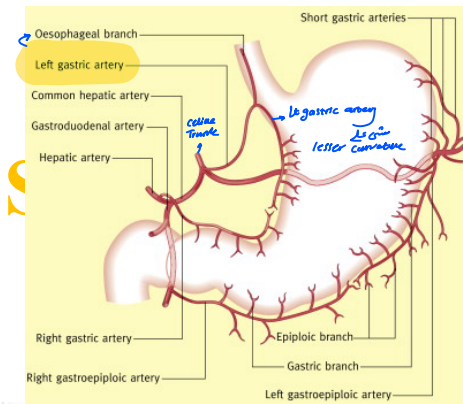


BLOOD SUPPLY OF THE STOMACH

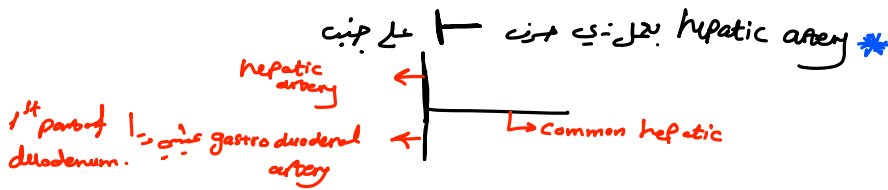
Biggest artery of the stomach.
1st branch of celiac Trunk (T₁₂)

The **left Gastric Artery** passes upward and to the left to reach the esophagus and then descends along the lesser curvature of the stomach.

It supplies the lower third of the esophagus and the upper right part of the stomach.

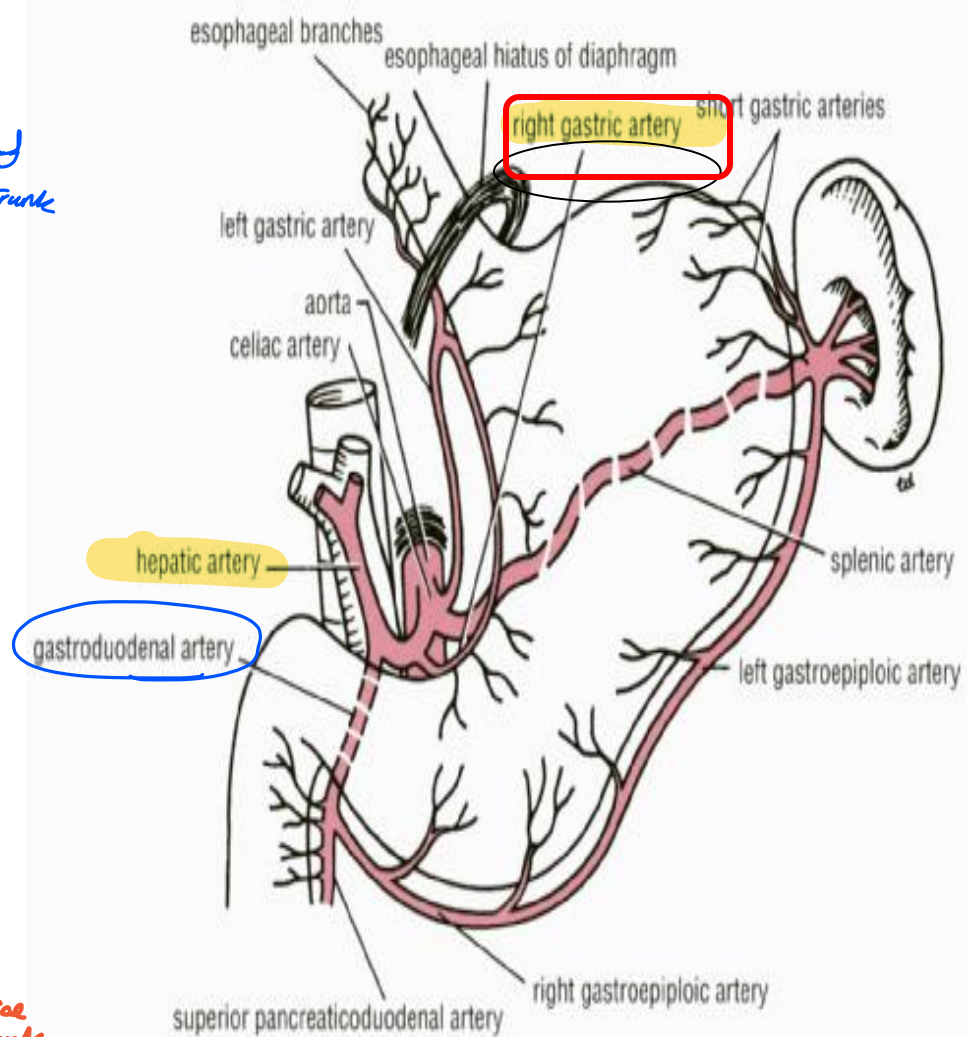
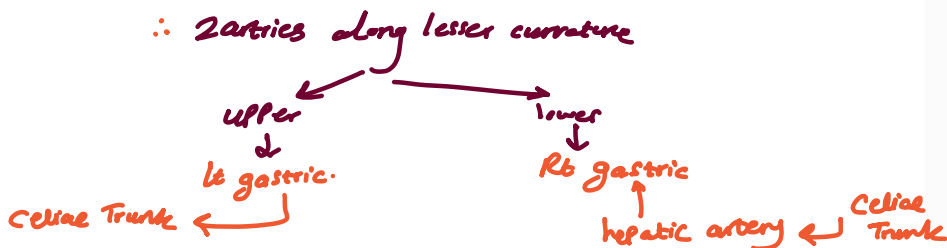


BLOOD SUPPLY OF THE STOMACH



- The **Right Gastric Artery** arises from the ^{common} **Hepatic** ^{branch celiac} artery at the upper border of the pylorus and runs to the ^{gastric artery} left along the lesser curvature.

- It supplies the lower right part of the stomach.**



BLOOD SUPPLY OF THE STOMACH

- The **Short Gastric Arteries** arise from the **Splenic Artery** at the hilum of the spleen and pass forward in the gastrosplenic (ligament) to supply the fundus.

مع
Lb. gastrosplenic artery

* في عليات فتحة الحجاب (hiatus hernia)

لذلك يتم ربط كل Short arteries

خبره، Fundulus of stomach

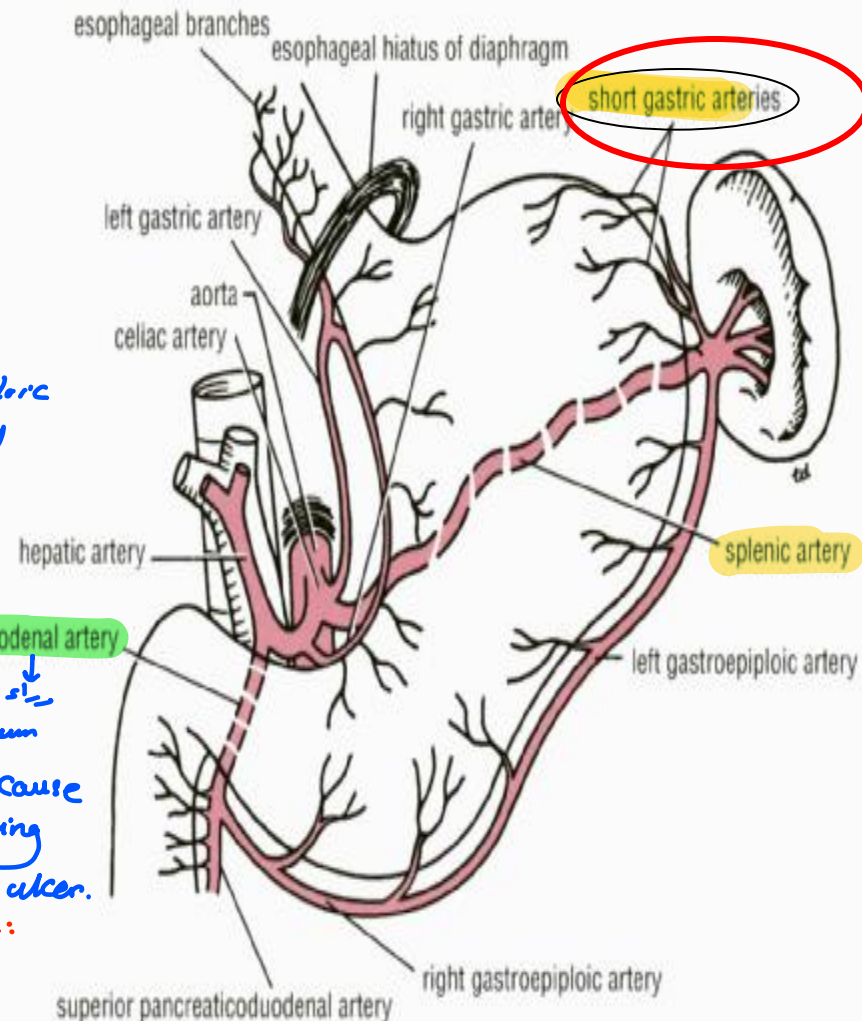
منه سينتظف مفتح

gastroduodenal artery
1st part of duodenum

which might cause
sever to bleeding
in duodenum ulcer.

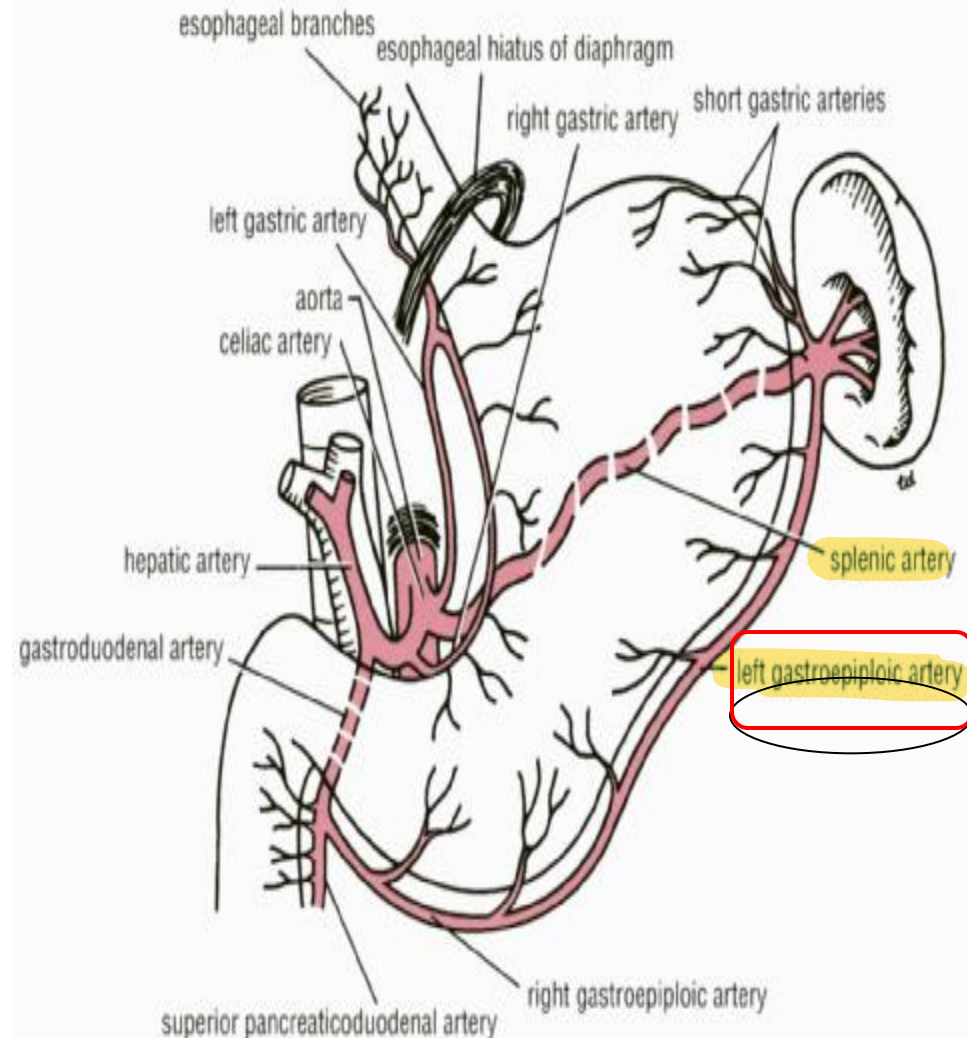
لذلك يتم ربطه بالبريد
تجعل نزيه.

سلكية مونة في الجراحة.



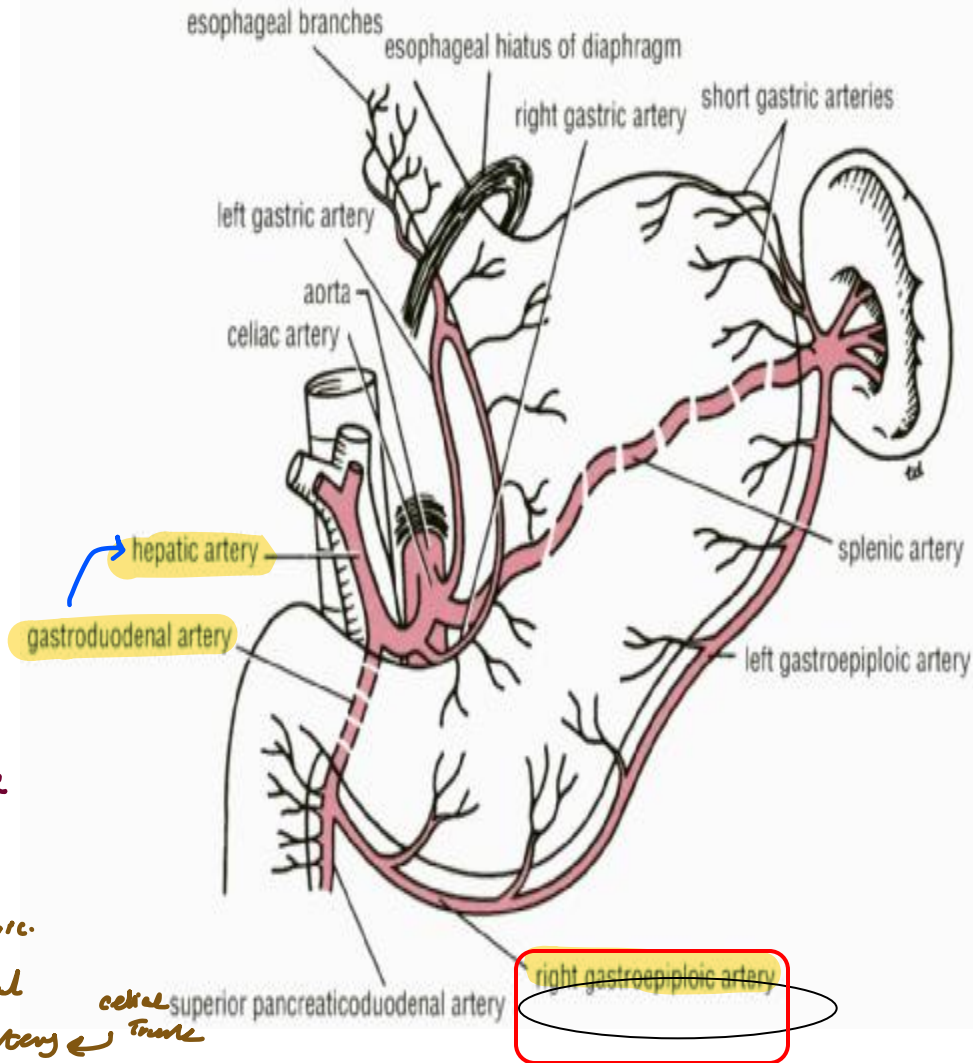
BLOOD SUPPLY OF THE STOMACH

The **Left Gastroepiploic Artery** arises from the **splenic artery** at the hilum of the spleen and passes forward in the **gastrosplenic omentum (ligament)** to supply the stomach along the **upper part of the greater curvature**.



BLOOD SUPPLY OF THE STOMACH

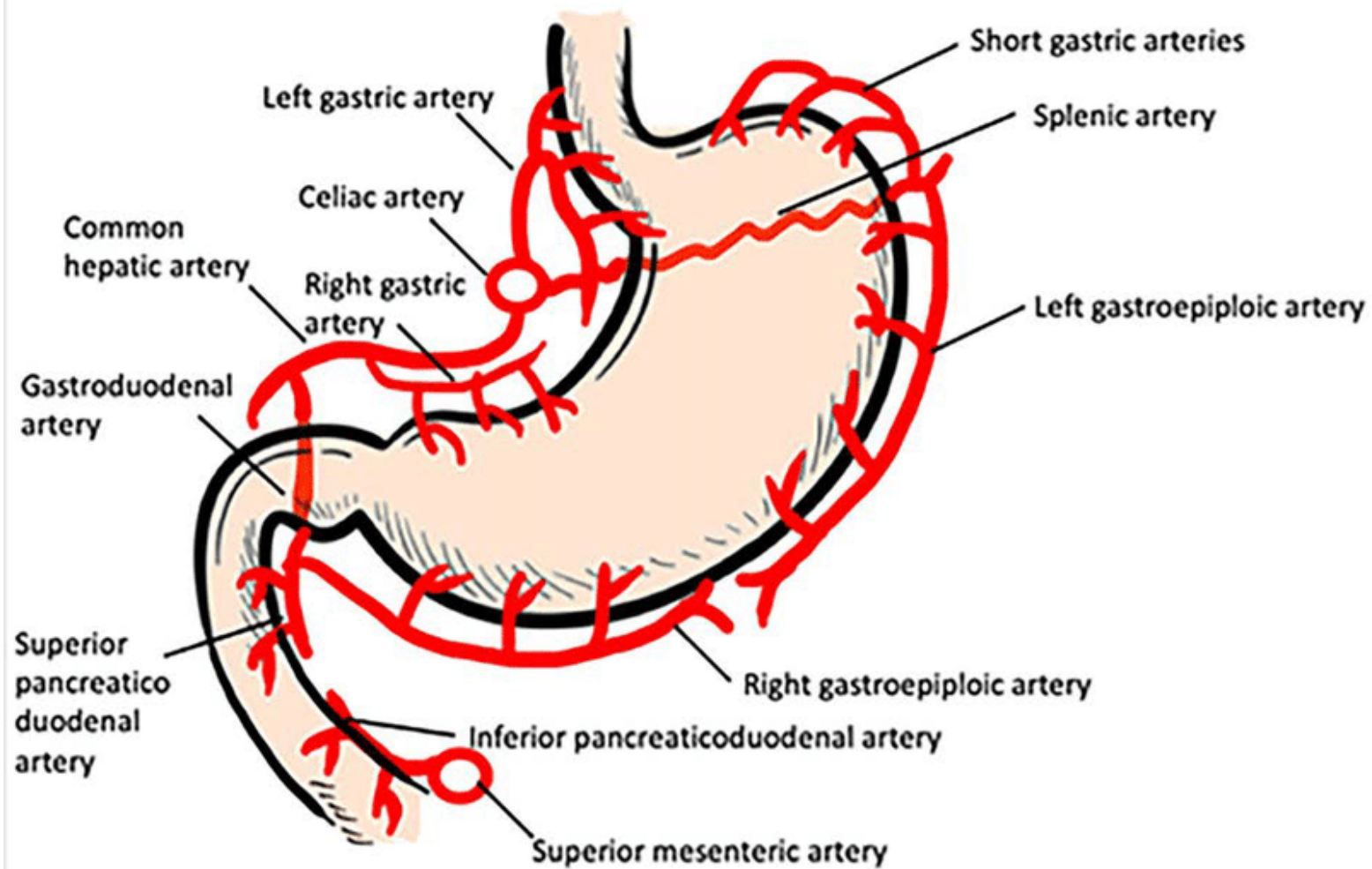
- The **Right Gastroepiploic Artery** arises from the **gastro duodenal branch** of the **hepatic artery**.
- It passes to the left and supplies the stomach along the **lower part of the greater curvature**.



∴ 2 arteries along greater curvature

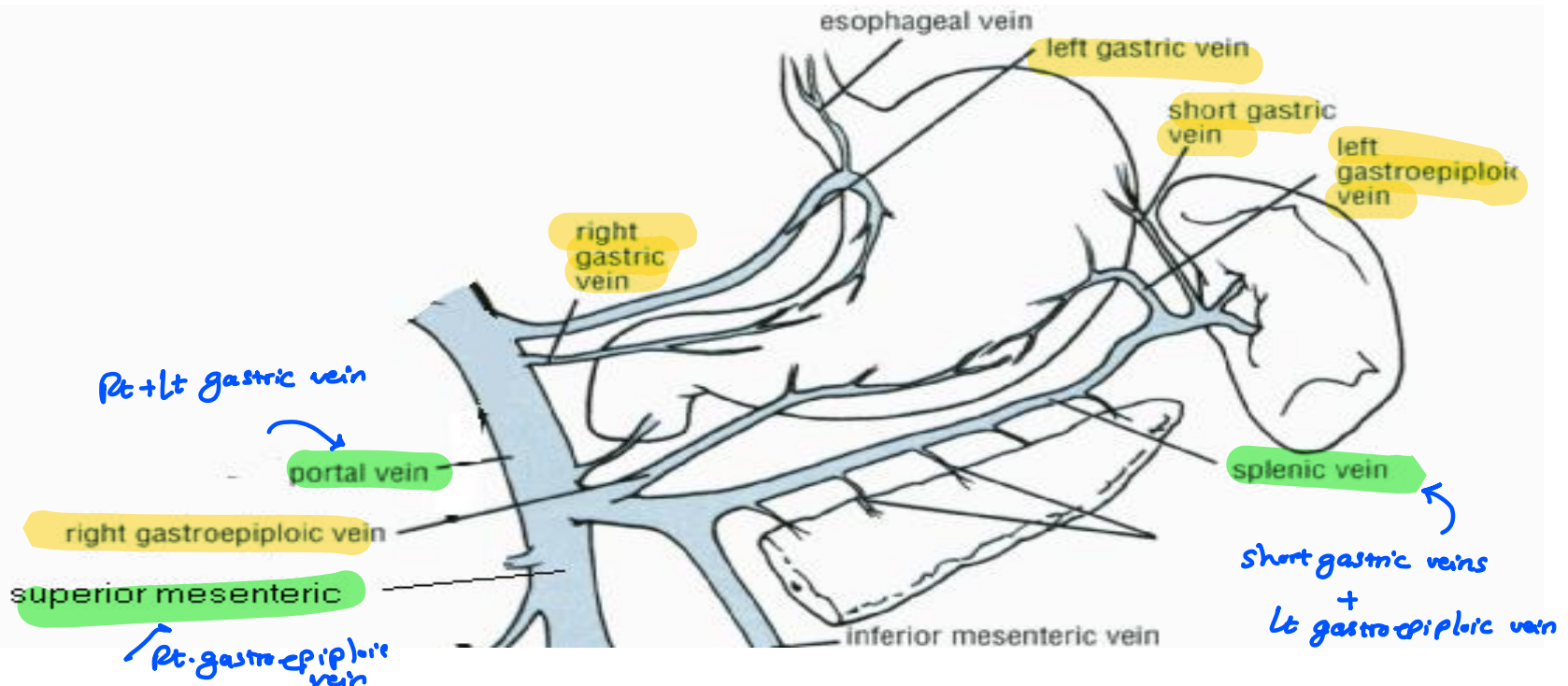
upper
↓
L. gastroepiploic A.
↑
splenic artery
↑
celiac trunk

lower
↓
Rt. gastroepiploic.
↑
gastroduodenal
↑
hepatic artery
↑
celiac trunk



VENOUS DRAINAGE OF THE STOMACH

- The veins drain into **Portal Circulation.** → to liver
- The left and right gastric veins drain directly into the portal vein.
- The short gastric veins and the left gastroepiploic veins join the splenic vein.
- The right gastroepiploic vein joins the superior mesenteric vein.



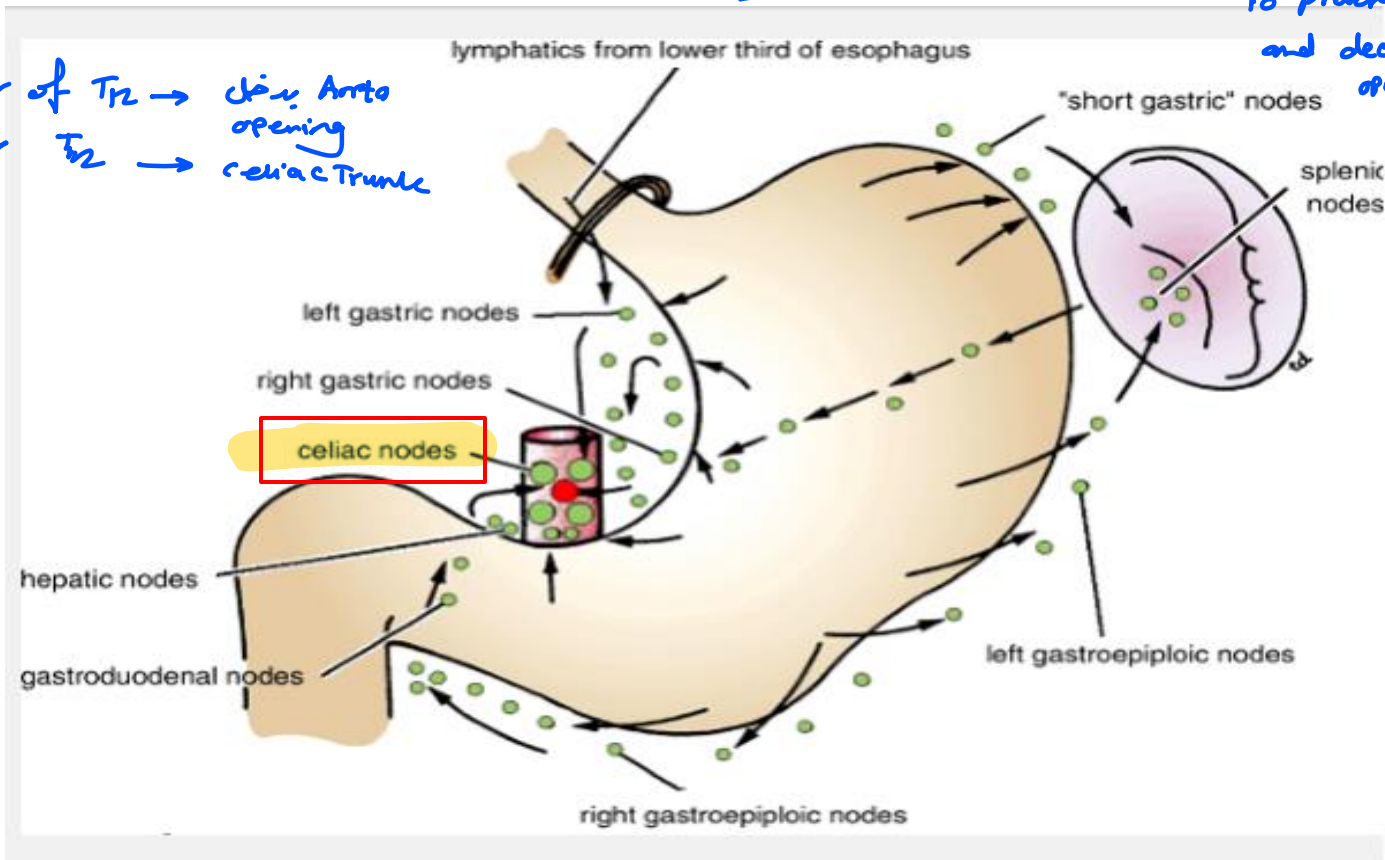
LYMPH DRAINAGE OF THE STOMACH

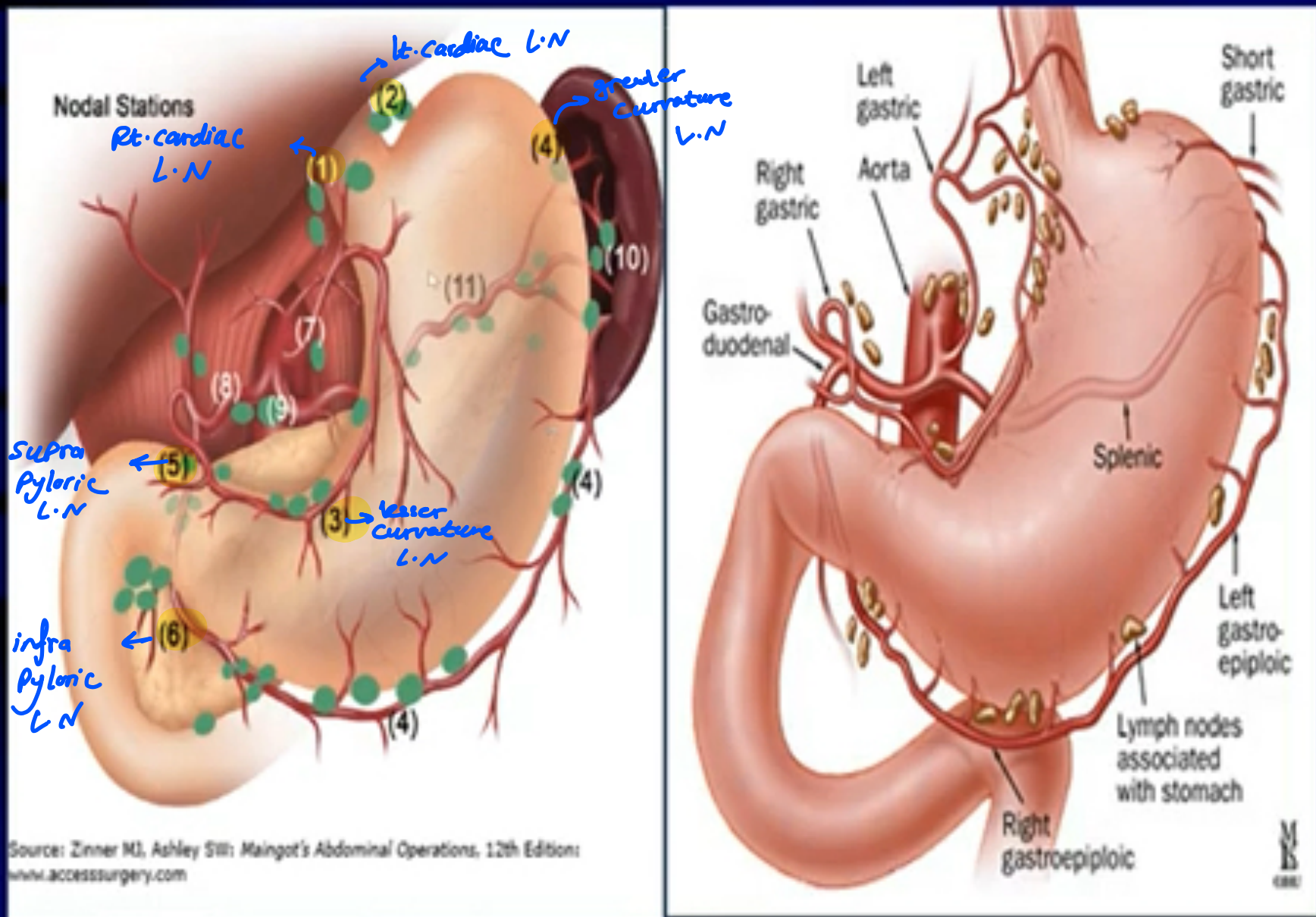
- The lymph vessels follow the arteries.
- All lymph from the stomach eventually passes to the celiac nodes located around the root of the Celiac Artery on the posterior abdominal wall (**Celiac lymph nodes**).

C lower border of T₁₂ } Abdominal Aorta ~ طالع ~ Celiac Trunk ~

→ in cancer stomach, we remove celiac lymph nodes to prevent metastasis and decrease the cancer opportunity to spread.

upper border of T₁₂ → د.ب. Arto opening
lower of T₁₂ → celiac Trunk

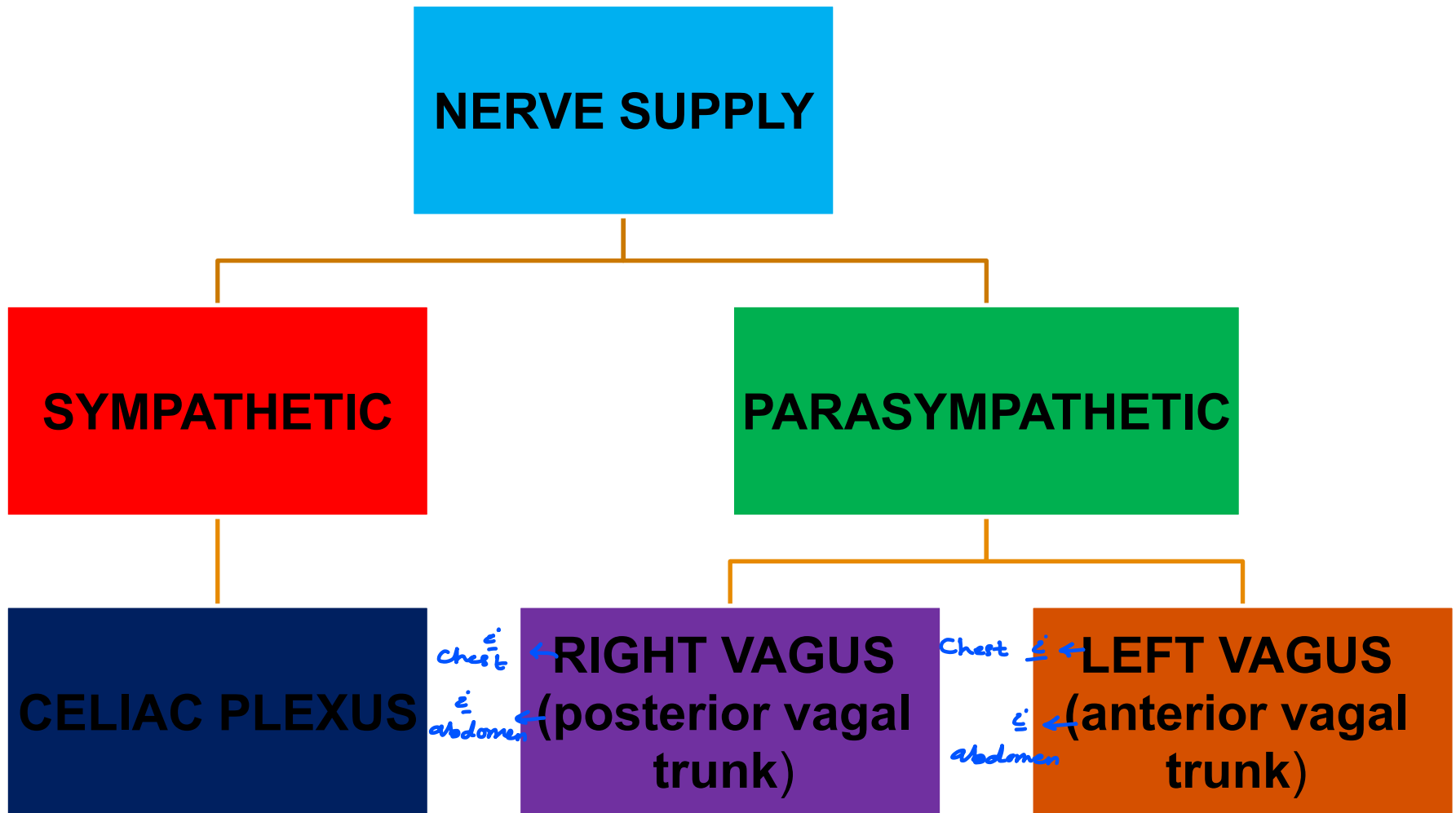




- * Lymph nodes around the stomach in 3 levels:
- D_1 level: lymph nodes very close to the stomach 1 → 6
 - D_2 level: 7-11
 - D_3 level:

$D_1 + D_2 \Rightarrow$ celiac lymph nodes

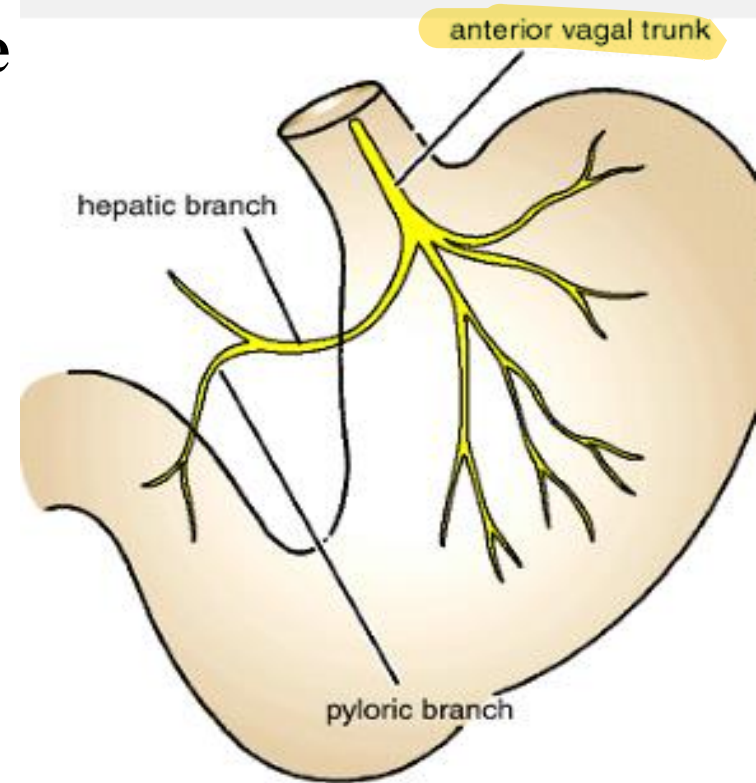
NERVE SUPPLY OF THE STOMACH



NERVE SUPPLY OF THE STOMACH

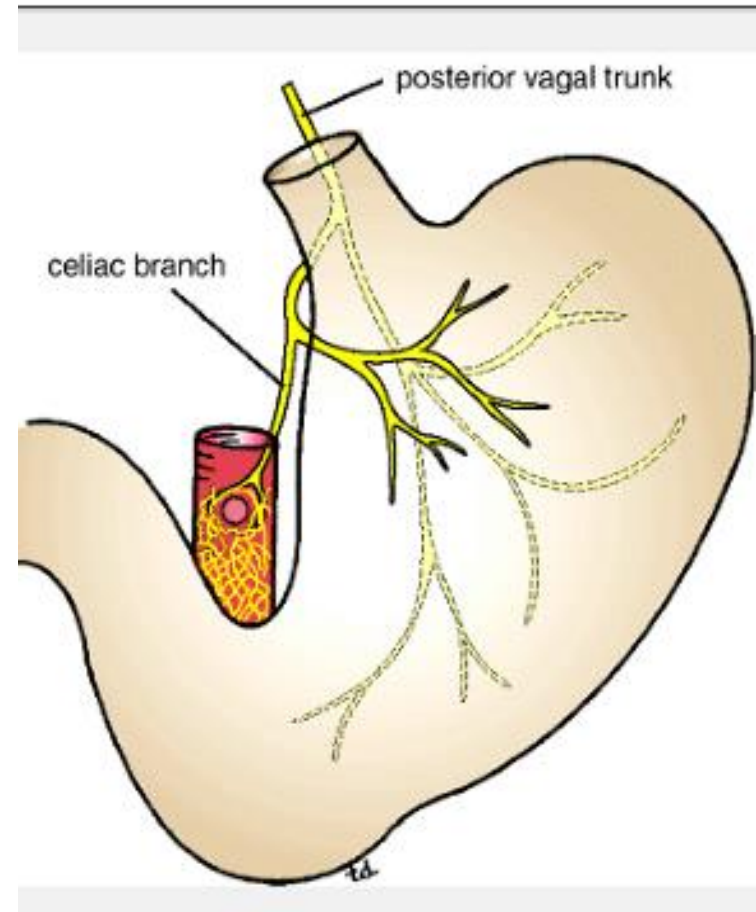
→ ایک نروس ہے 70% سے زیادہ
→ 2-3 nerves سے 20-40% سے کمالات
→ ایک نروس ہے 30% سے کم

- **The Anterior Vagal Trunk**, enters the abdomen on the **anterior surface** of the **esophagus**.
- The trunk, which may be **Single or Multiple**, then divides into **branches** that supply the **anterior surface** of the **stomach**.
- A large **Hepatic Branch** passes up to the liver, and from this a **Pyloric Branch** passes down to the pylorus.



NERVE SUPPLY OF THE STOMACH

- The **Posterior Vagal Trunk**, enters the abdomen on the posterior surface of the esophagus.
پست. وگال - پشت سطح آندک - رزق کایک
پست. وگال - رزق کایک
- The **Single Trunk** then divides into branches that supply mainly the posterior surface of the stomach.
رزق کایک - رزق کایک
- A large branch passes to the **celiac and superior mesenteric plexuses** and is distributed to the intestine as far as the splenic flexure and to the pancreas.

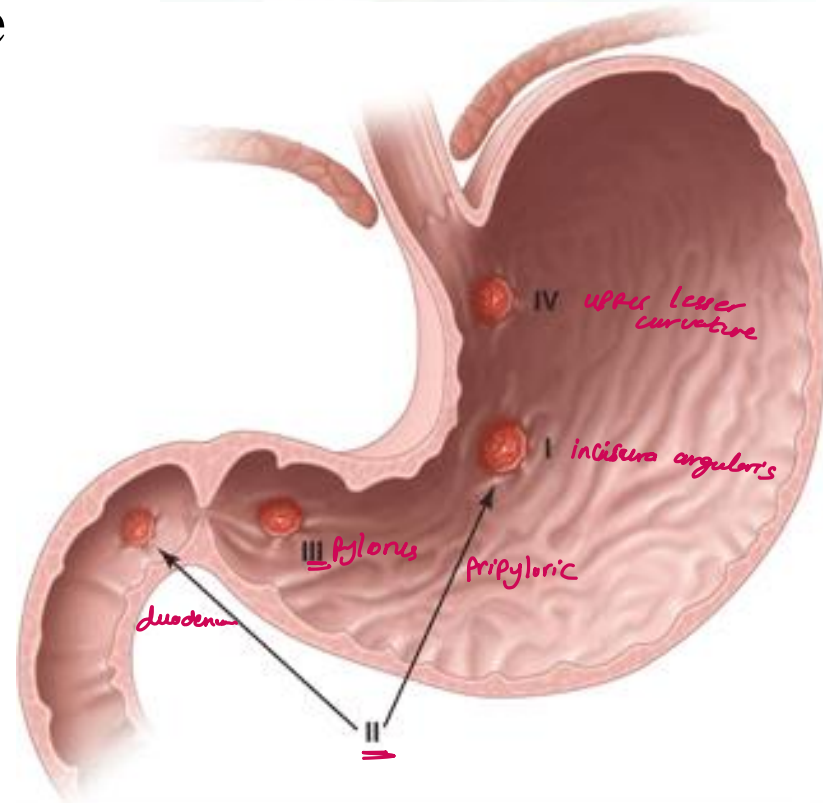


4 Types of ulcers:

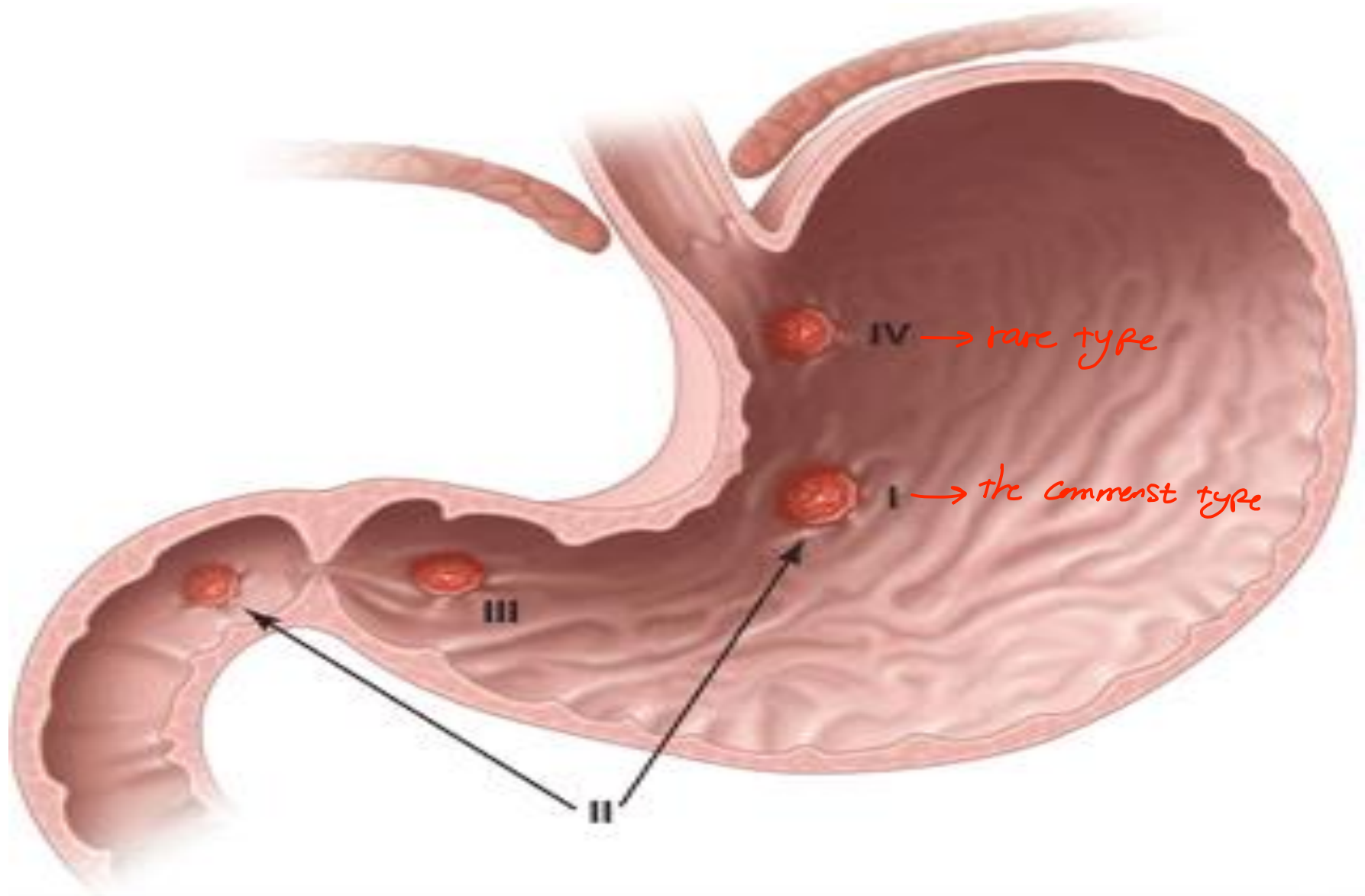
- type 1 → ^②incisura angularis.
- type 2 → duodenal + gastric ulcer
- type 3 → inside Pylorus
- type 4 → upper part of lesser curvature.

← GASTRIC ULCER

- Gastric ulcers occur in the alkaline-producing mucosa of the stomach, usually on or close to the **lesser curvature**.
- A chronic ulcer invades the muscular coats and, in time, involves the peritoneum so that the stomach adheres to neighboring structures.
- An ulcer situated on the posterior wall of the stomach may perforate into the lesser sac or become adherent to the pancreas.
- Erosion of the pancreas produces pain referred to the back.



Types of gastric ulcers



بنتون فيه

GASTROSCOPY

→ esophagus + stomach + duodenum (1st + 2nd)
ports only

- Gastroscopy is the viewing of the mucous membrane of the stomach through an illuminated tube fitted with a lens system.
- The patient is anesthetized and the gastroscope is passed into the stomach, which is then inflated with air.
- With a flexible fiber optic instrument, direct visualization of different parts of the gastric mucous membrane is possible.
- It is also possible to perform a mucosal biopsy through a gastroscope.



NASOGASTRIC INTUBATION

N-G Tube

-  Nasogastric intubation is a common procedure and is performed to:
- ◆ Empty the stomach. → *مستعمل ليعمل ما يستفخ
من شدة الحموضة*
 - ◆ Decompress the stomach in cases of intestinal obstruction.
 - ◆ Before operations on the gastrointestinal tract.
 - ◆ Obtain a sample of gastric juice for biochemical analysis.

