



Duodenum

Stomach

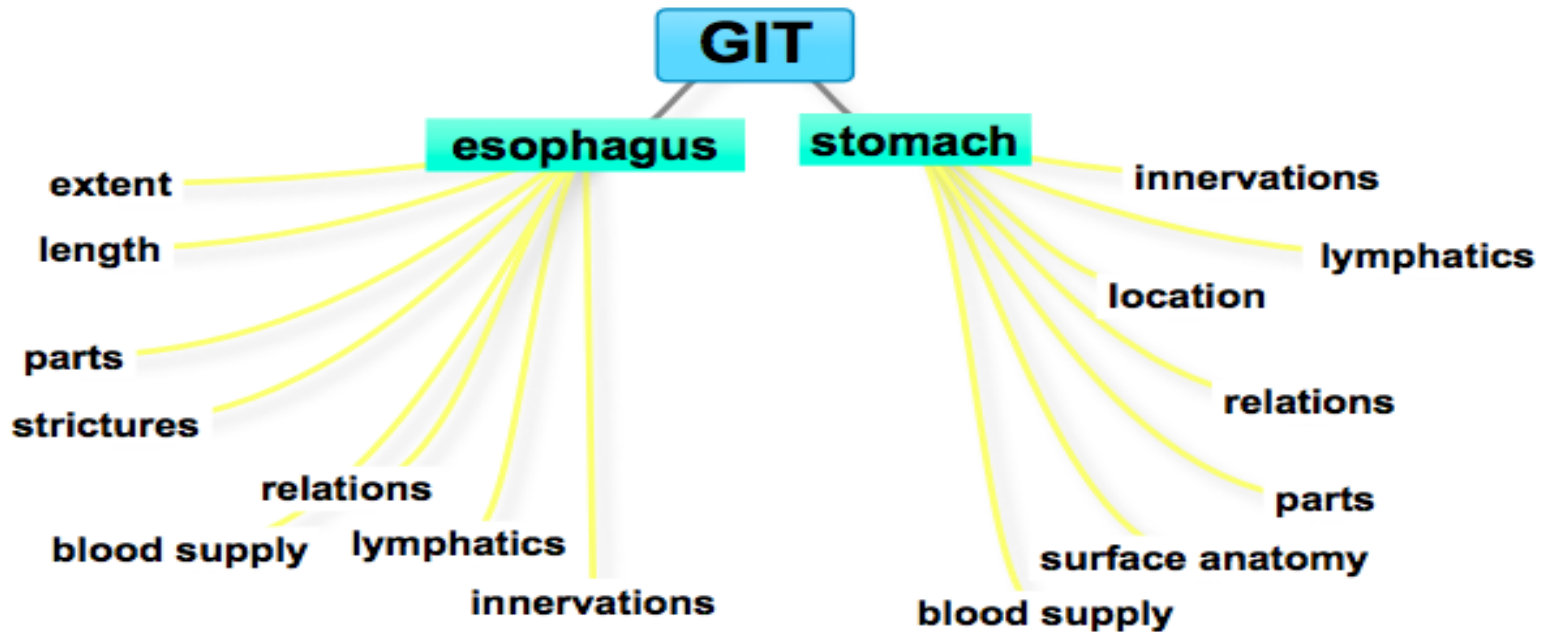
Colon

Jejunum

L1 ESOPHAGUS & STOMACH

Rectum

MIND MAP



Dr. Ahmed Kamal

[Esophagus](#) & [Stomach](#)

22, 23 relations ,24 blood supply

Khan academy medicine

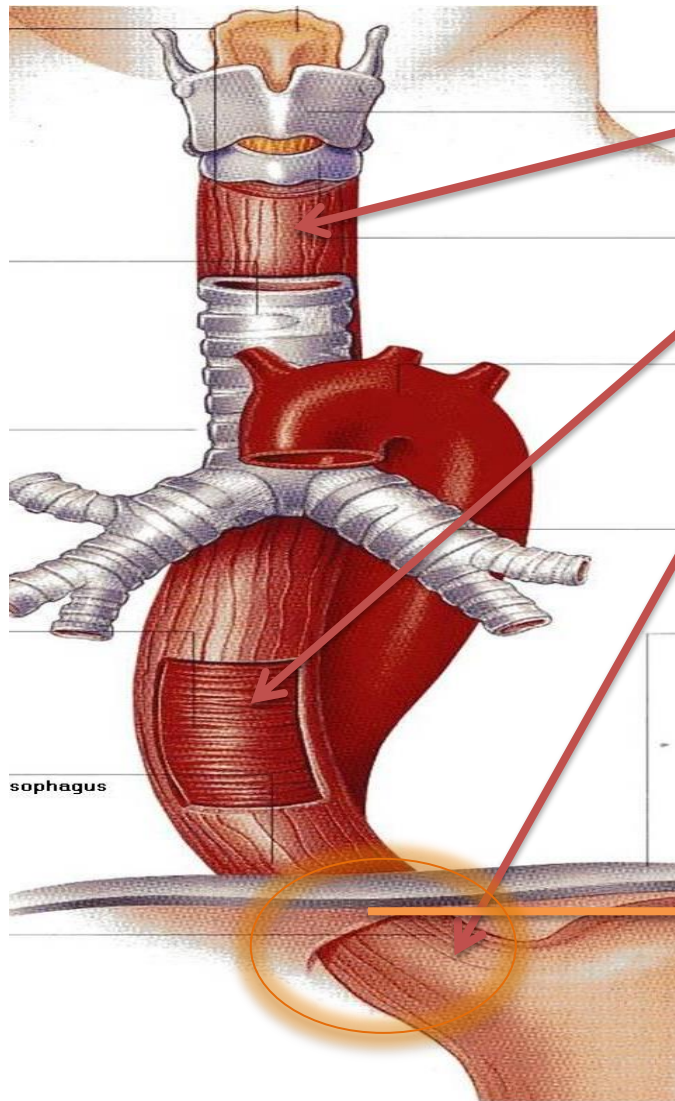
[Esophagus](#) & [Stomach](#)

Anatomy Zone

[3D Anatomy Tutorial](#)

C6	<ul style="list-style-type: none"> The esophagus begins as continuation of pharynx Site of 1st esophageal constriction
T4	<ul style="list-style-type: none"> Sternal angle Crossing of esophagus with the aortic arch & the left main bronchus (2nd constriction)
T10	<ul style="list-style-type: none"> The esophagus pierces the diaphragm to join stomach 3rd constriction
T11	The end of esophagus
L1	Transpyloric plane (site of pyloric canal)

ESOPHAGUS



Constitutes 3 parts

- ① Cervical
- ② Thoracic (longest part)
- ③ Abdominal (shortest part)

It's a **25cm** long tubular structure extending from the Pharynx at **C6** and it pierces the diaphragm at **T10** and joins the stomach.

In the **thorax**, it passes downward and to the **left** through superior **mediastinum** then to posterior **mediastinum**.

At the level of the **sternal angle**, the **aortic arch** pushes the **esophagus** again to the **midline**.

Diaphragmatic opening:

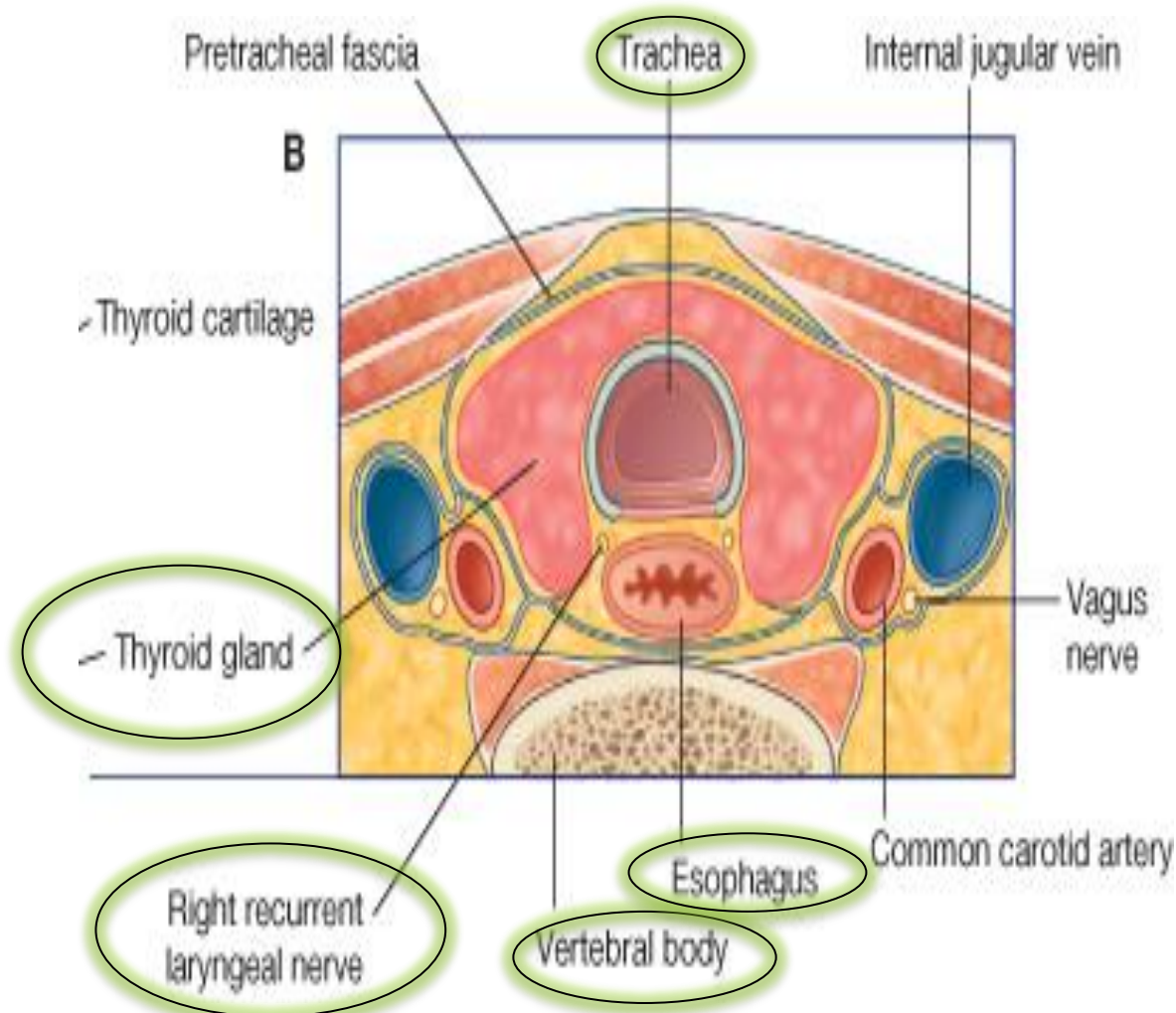
- **Esophagus**
- **2 Vagi**
- **Branches of Left gastric vessels**
- **Lymphatic vessels**

Fibers from the **right crus** of the diaphragm form a **sling** around the esophagus.

Relations

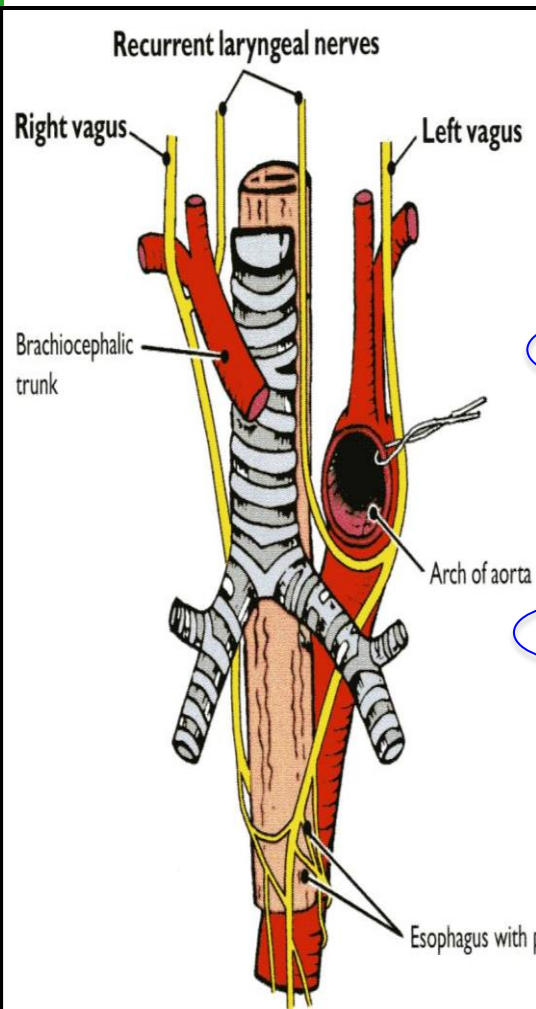
Part	Anterior	Posterior	Laterally
Cervical	Trachea and the recurrent laryngeal nerves	Vertebral column	Lobes of the Thyroid gland
Thoracic	<ol style="list-style-type: none"> ① Trachea ② Left recurrent laryngeal nerve ③ Left principal bronchus ④ Pericardium ⑤ Left atrium 	<ol style="list-style-type: none"> ① Bodies of the thoracic vertebrae ② Thoracic duct ③ Azygos vein ④ Right posterior intercostal arteries ⑤ Descending thoracic aorta (at the lower end) 	<p><u>On the Right side:</u></p> <ul style="list-style-type: none"> • Right mediastinal pleura • Terminal part of the azygos vein. <p><u>On the Left side:</u></p> <ul style="list-style-type: none"> • Left mediastinal pleura • Left subclavian artery • Aortic arch • Thoracic duct
Abdomen	Left lobe of liver	Left crus of diaphragm	_____

Cervical part of Esophagus

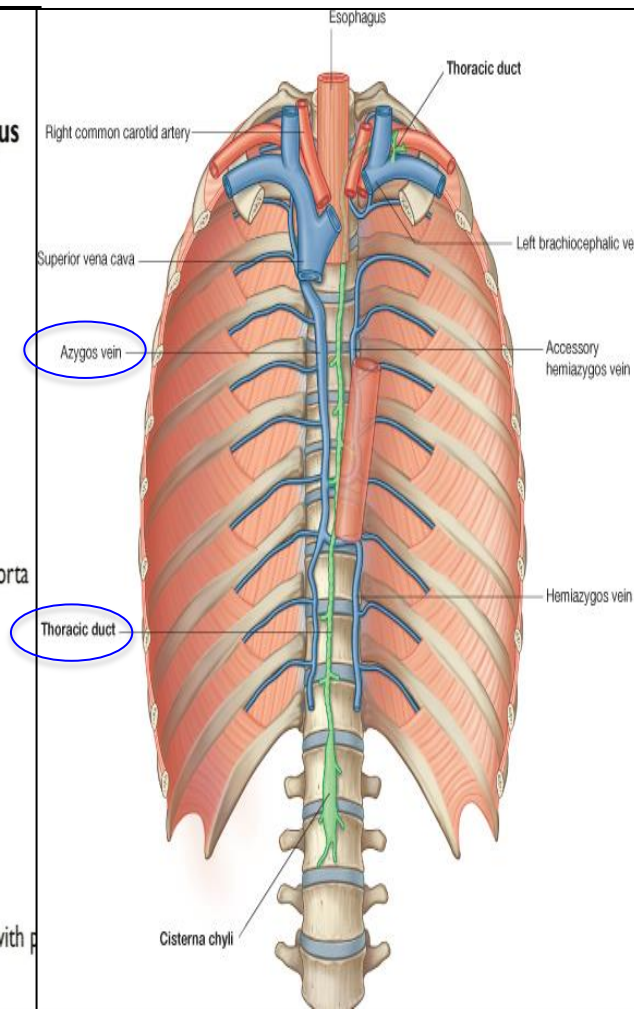


Thoracic part of Esophagus

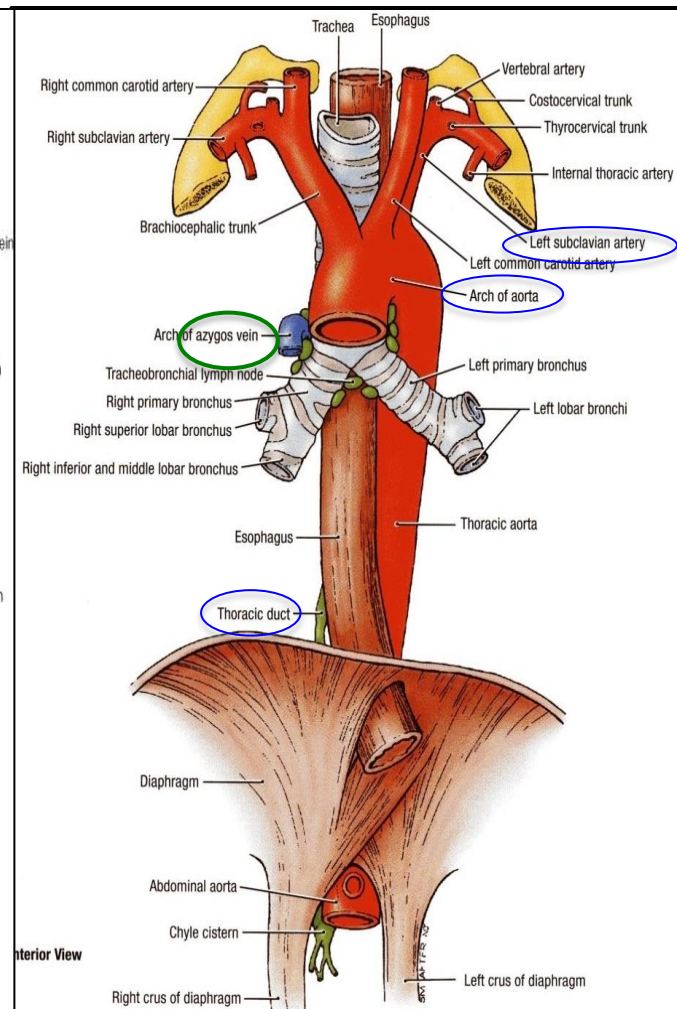
Anterior



Posterior



R Lateral L



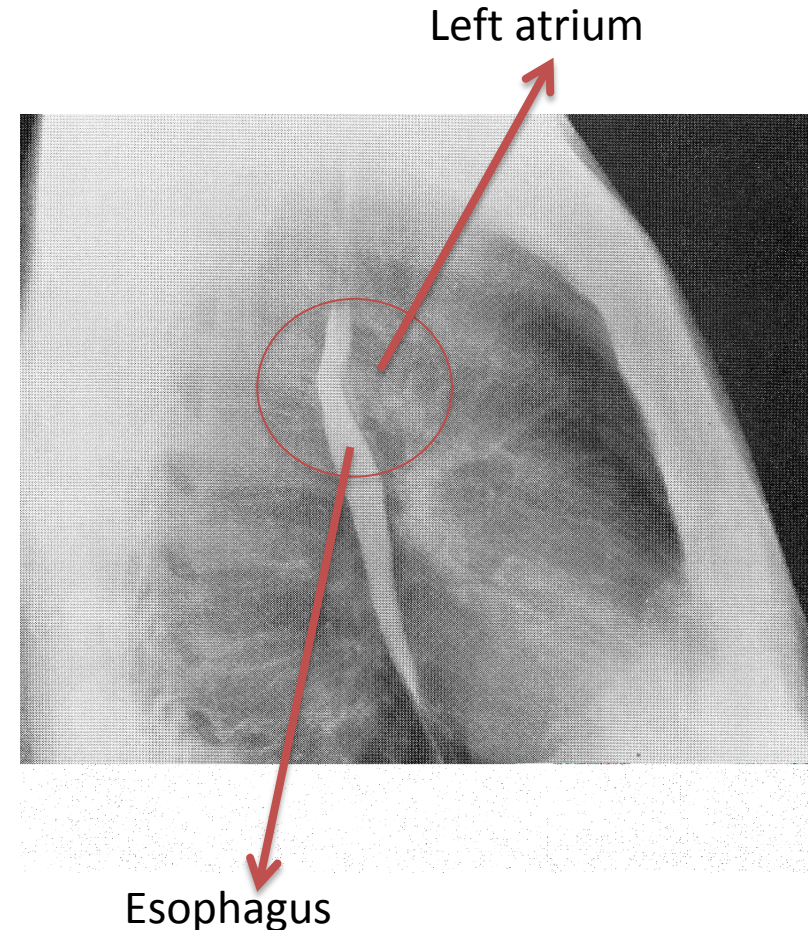
Anterior View

Barium X-ray of the upper gastrointestinal tract

The **esophagus** is closely related to the **left atrium**. A barium swallow in the esophagus will help the physician to **assess the size of the left atrium**.

The left atrium is **dilated** in cases of long standing **mitral stenosis** or **heart failure**.

Barium sulfate is mixed with water and swallowed orally, because it is a radio opaque substance it does not allow the passage of X-rays. As a result areas coated by Barium sulfate will appear white on an X-ray film.



Esophageal constrictions

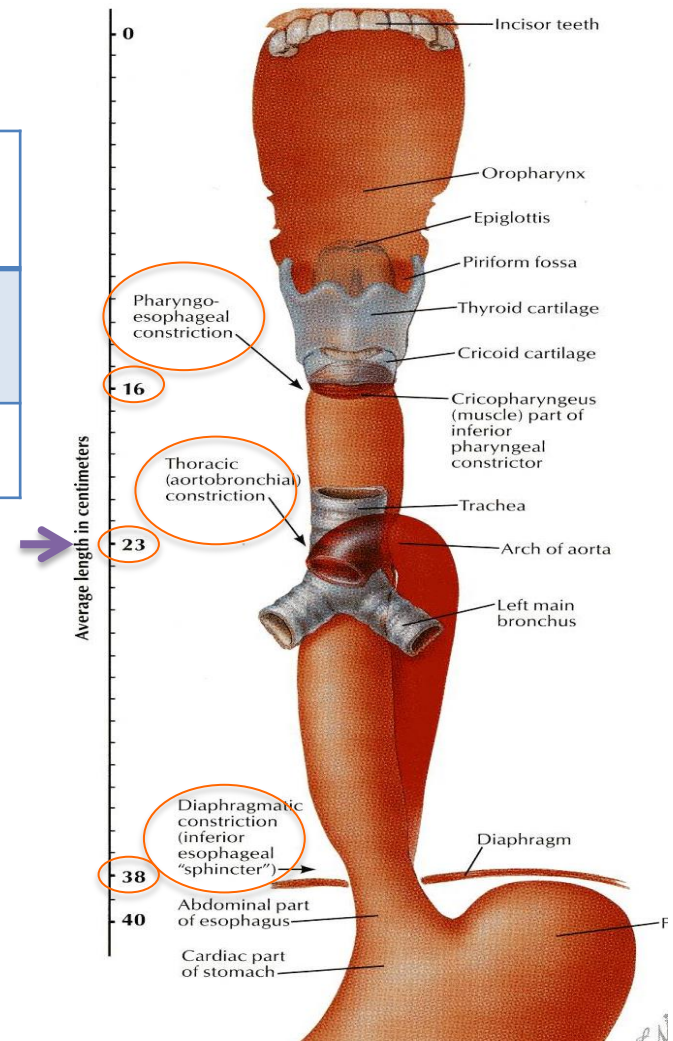
The esophagus has 3 anatomic constrictions:

First	is at the junction with the pharynx (pharyngoesophageal junction)	(C6)
Second	is at the crossing with the aortic arch and the left main bronchus	(T4).
Third	is at the junction with the stomach	(T10)

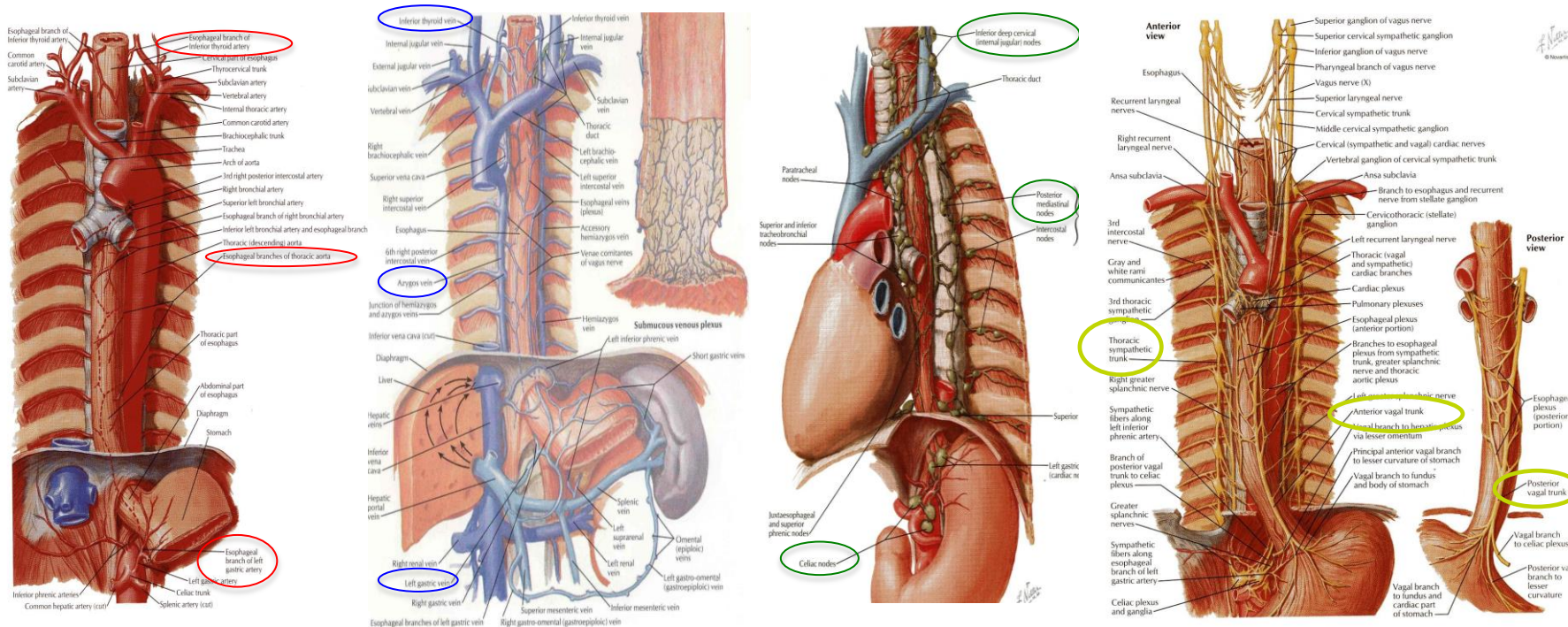
Clinical significance:

- ① Difficult to pass the *esophagoscope* in these regions
- ② Areas of worst burning and stricture development in cases of swallowing caustic liquids (children)
- ③ Common sites of esophageal carcinoma
- ④ They mark certain lengths in the scale from the upper incisor teeth

(These measurements are clinically important for endoscopy and endoscopic surgeries of the esophagus.)



	Arterial supply	Venous drainage	Lymphatic drainage imp. Coz cancer is common in Esophagus	Nerve supply
Upper third	inferior thyroid artery	inferior thyroid veins	the deep cervical nodes	Sympathetic: sympathetic trunks Parasympathetic: vagus nerves,
Middle third	thoracic aorta	azygos veins.	posterior, superior and inferior mediastinal nodes.	<i>Note: inferior to the roots of lungs the vagus nerves join the sympathetic nerves and form the esophageal plexus</i>
Lower third	left gastric artery	the left gastric vein (tributary of Portal vein)	the celiac lymph nodes in the abdomen	<i>(the left vagus lies anterior to the esophagus and the right vagus lies posterior)</i>



STOMACH

The abdominal cavity is divided into 9 compartments:

by:

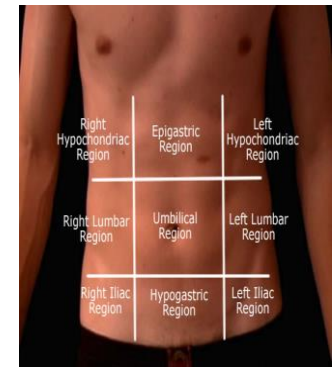
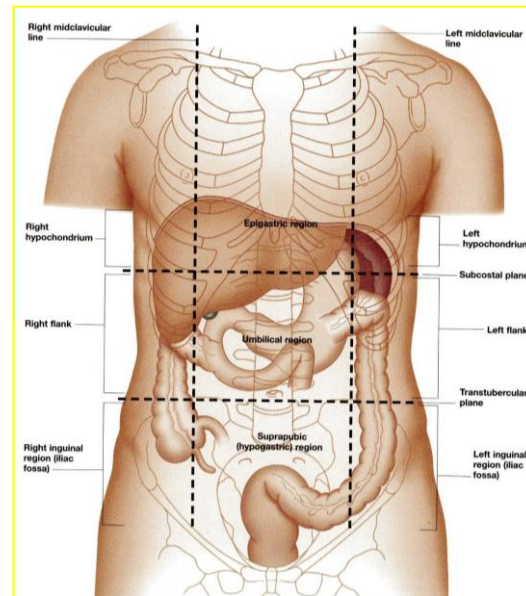
2 Vertical planes:

2 Midclavicular lines.

2 Horizontal planes:

Subcostal line (L3)

Intertubercular line. (L5)

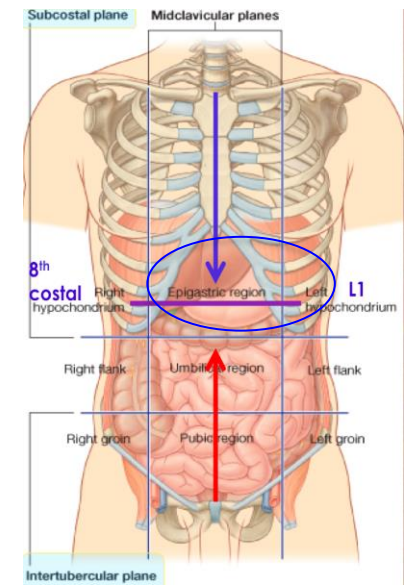


Umbilical region > small intestine
Right lumbar ,iliac > ascending colon
Right iliac > secum , appendix
Right hypochondriac > Liver
Epigastric > liver , stomach
Left hypochondriac > stomach

STOMACH

- is a **dilated** part of the alimentary canal.
- It is located in the **upper part of the abdomen.**
- **It extends from beneath the left costal margin into the epigastric and umbilical regions.**
- Most of the stomach is protected by the lower ribs.
- It is **roughly J-shaped.**

The shape of stomach depends on the status (empty, full of food, tall or sort person and sitting or standing)



PARTS OF STOMACH

2 Orifices:

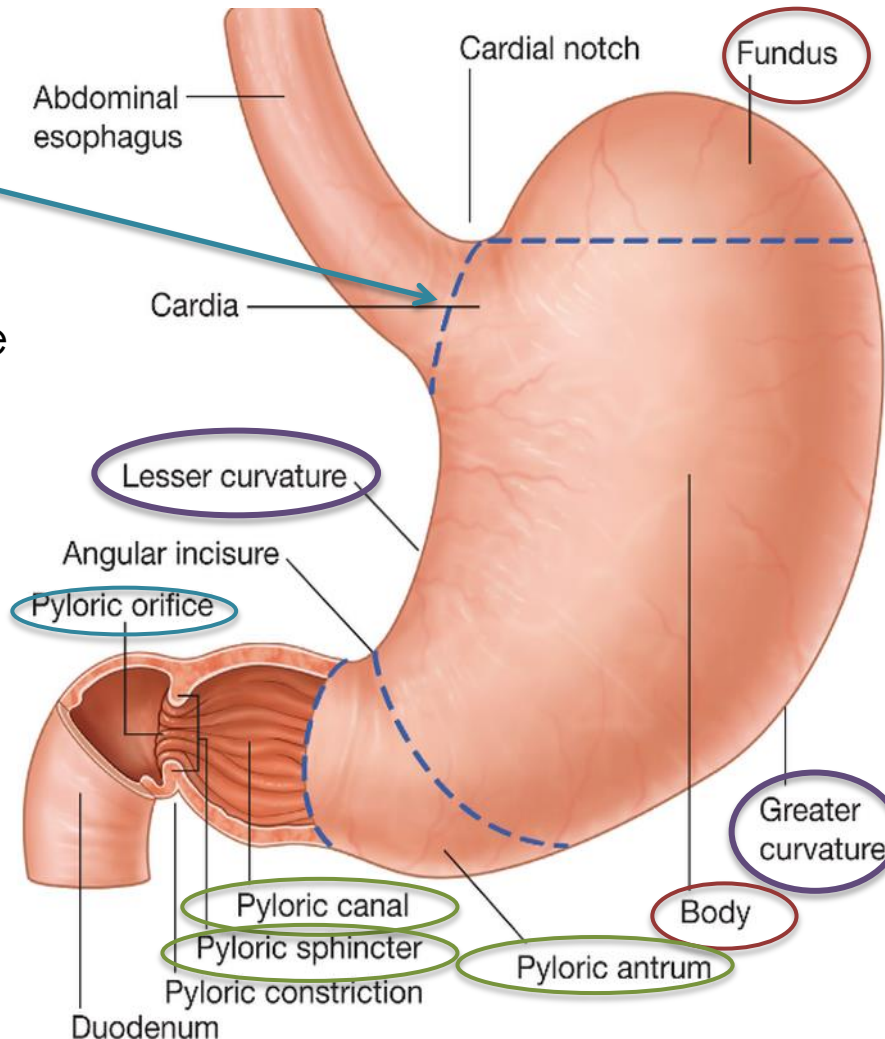
Cardiac orifice
Pyloric orifice

2 Borders:

Greater curvature
Lesser curvature

2 Surfaces:

Anterior surface
Posterior surface



3 Parts:

Fundus

Body

Pylorus:

The pylorus is formed of 3 parts

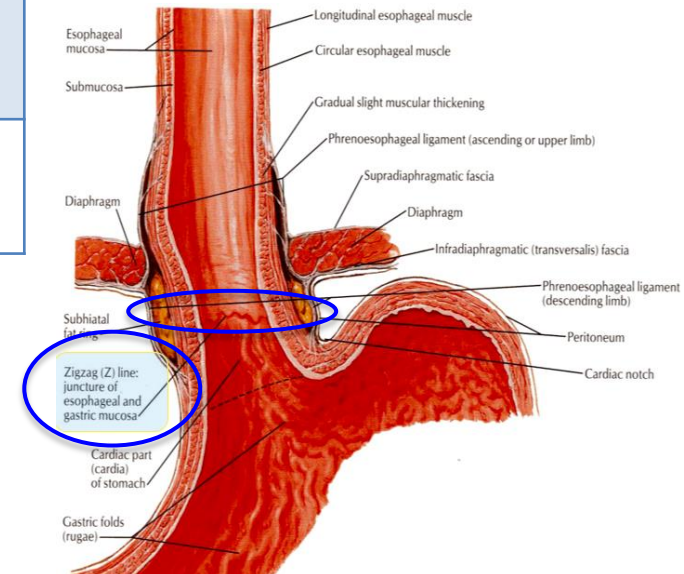
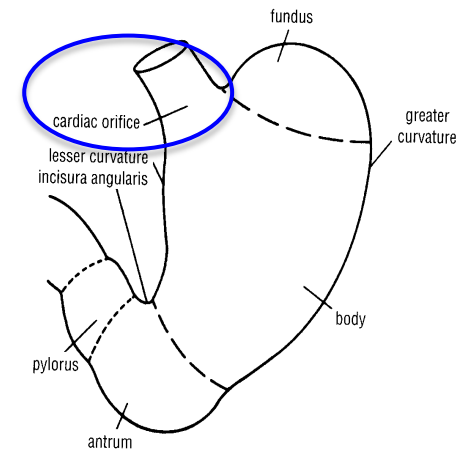
Pyloric antrum

Pyloric canal

Pyloric sphincter

CARDIAC ORIFICE

site	gastro- esophageal sphincter.
type	physiological rather than an anatomical, sphincter.
Component	circular layer of smooth muscle (under vagal and hormonal control).
Function	Prevents gastroesophageal reflux (GER) (regurgitation)
note	abrupt mucosal transition from esophagus to stomach (Z- line)

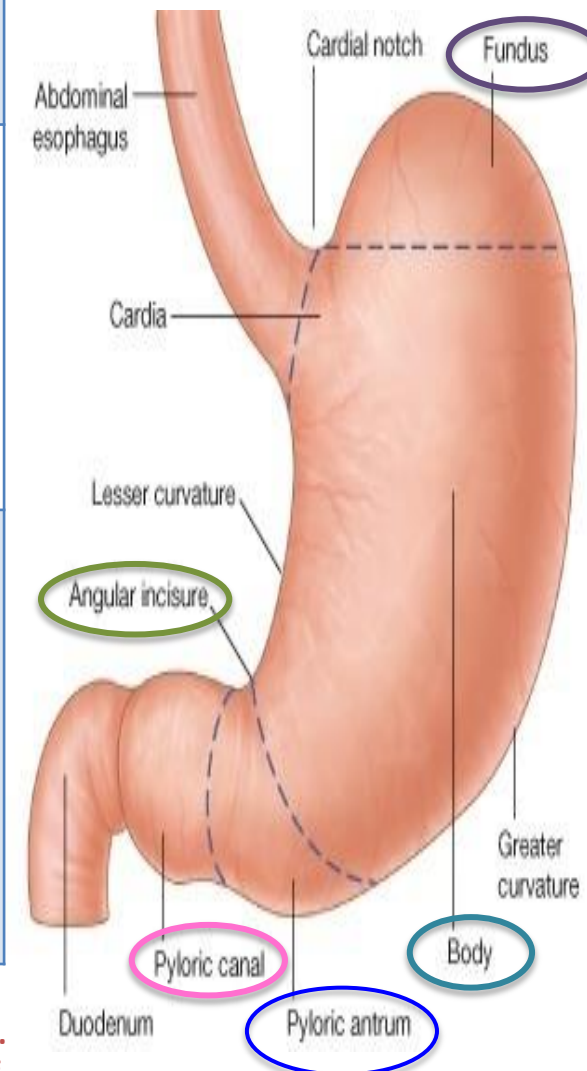


surface anatomy

Cardiac orifice lies opposite **the left seventh costal cartilage 2.5 cm.** from the sternum **(T10).**

PARTS OF STOMACH

part	FUNDUS	BODY	PYLORUS
shape	Dome-shaped		pylorus is a tubular part of the stomach.
Location	to the left of the cardiac orifice. Its summit قمة reaches to the left 5th intercostal space .	Extends from: The level of the fundus , to The level of <u>Incisura Angularis</u>	pyloric antrum extends from <u>Incisura angularis</u> to the pylorus
NOTE	full of gas . In X-Ray film it appears black .	<u>Incisura Angularis:</u> A constant notch on the lesser curvature	It lies in the transpyloric plane L1 . It has a thick muscular end called pyloric sphincter . (anatomical sphincter) The cavity of the pylorus is the pyloric canal



surface anatomy

The fundus : reaches to the left fifth intercostal space a little below the apex of the heart.

Pyloric orifice lies on **transpyloric plane** 1 cm. to the right of the middle line, at the level of

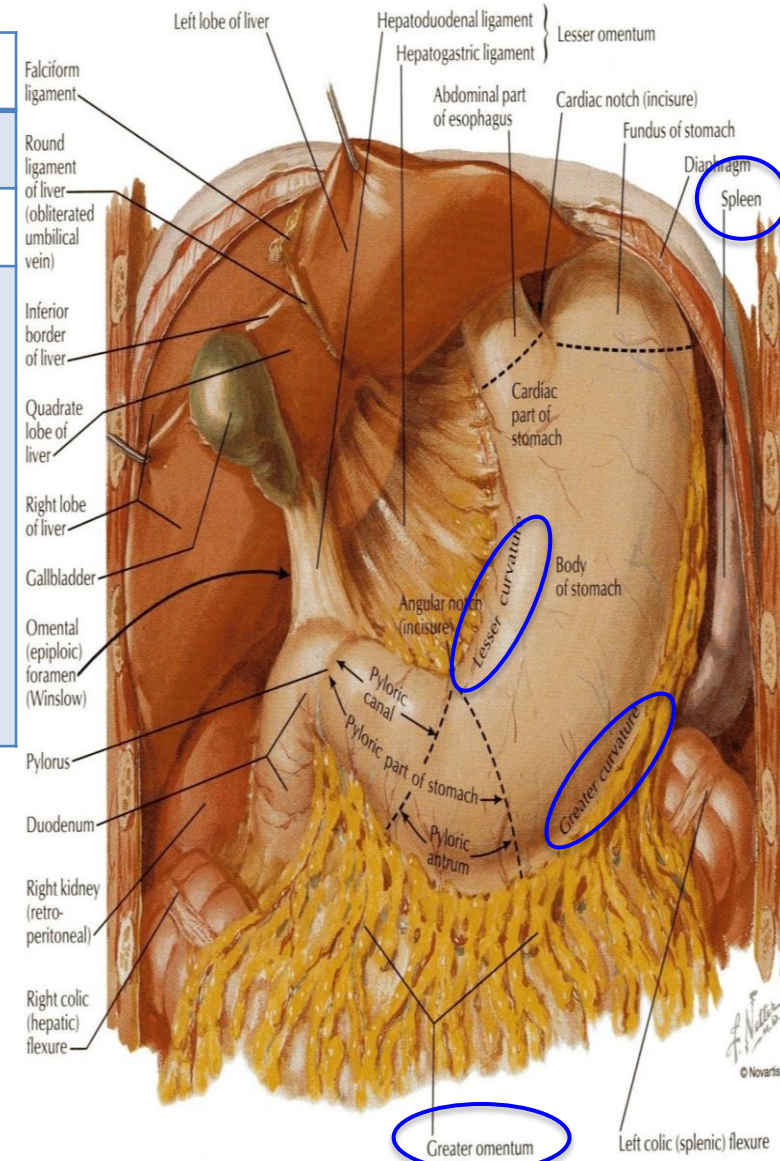
GREATER & LESSER CURVATURE

	LESSER	GREATER *
Forming	right border	left border
Extension	from the cardiac orifice to the pylorus .	
Attachment	to the liver by the lesser omentum .	Its upper part is attached to the spleen by gastrosplenic ligament Its lower part is attached to the transverse colon by the greater omentum .

*It is **4 to 5** times as the lesser curvature.
greater omentum; police man of the abdomen
Prevent the inflammation to spread in the peritoneum
Because it has lymphatic

surface anatomy

Lesser curvature a curved line, concave to the right joining these 2 points.
Greater curvature is a curved line drawn from the cardiac orifice to the summit of the fundus, then downward and to the left, finally turning medial toward to the pyloric orifice, passing through the intersection of the left lateral with the transpyloric line.



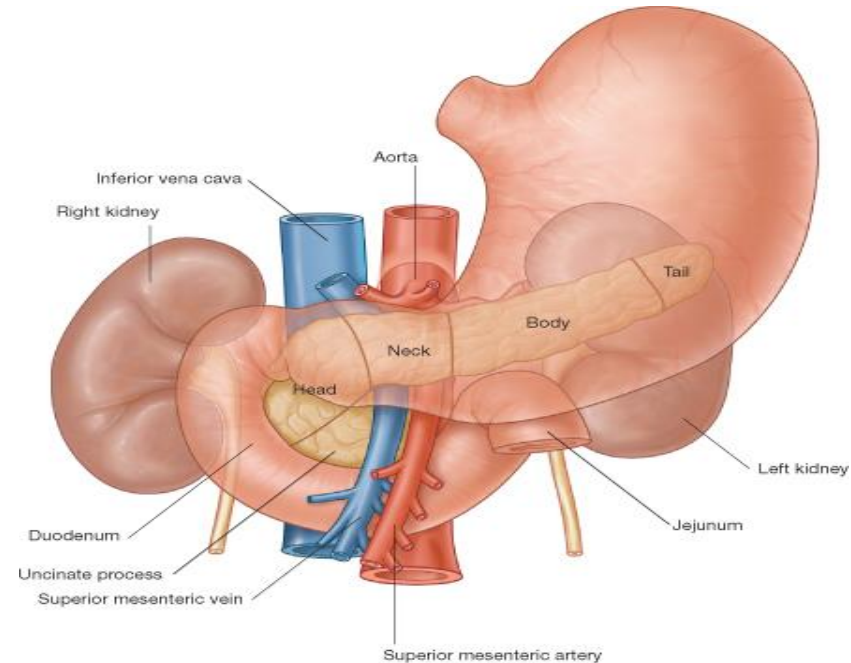
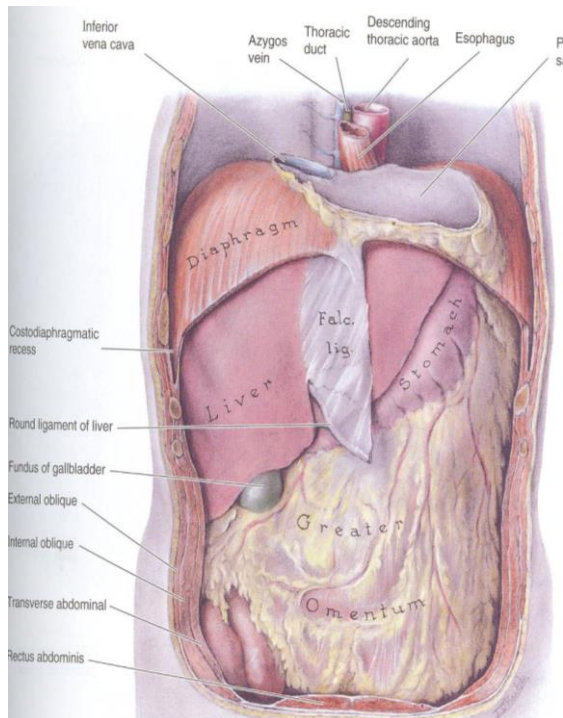
RELATIONS

ANTERIOR RELATIONS

Anterior abdominal wall.
Left costal margin.
Left pleura & **left** lung.
Diaphragm.
Left lobe of the liver.

POSTERIOR RELATIONS

Stomach Bed:
Peritoneum (Lesser sac).
Left crus of diaphragm
Left suprarenal gland.
 Part of **left** kidney
Spleen.
Splenic artery.
Pancreas.
Transverse mesocolon.

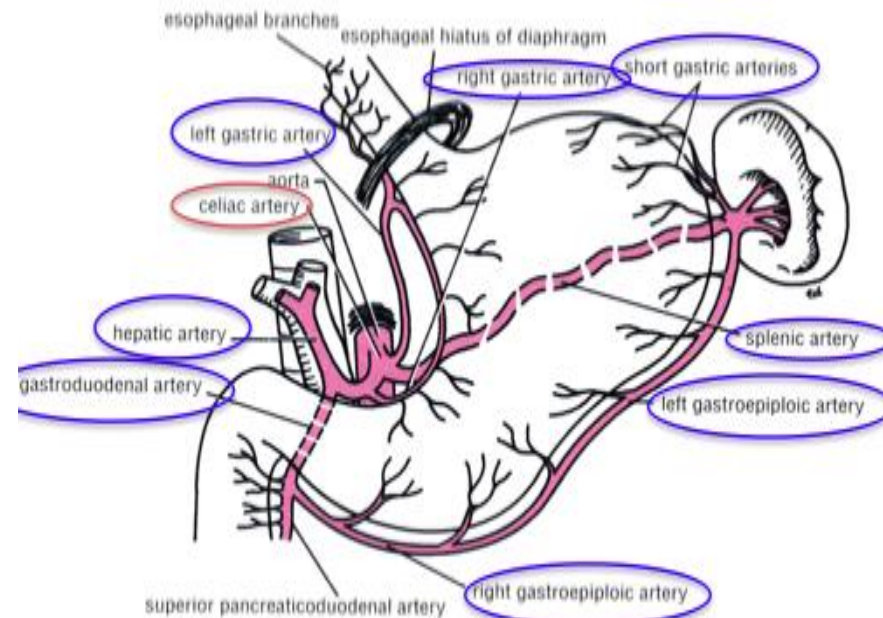
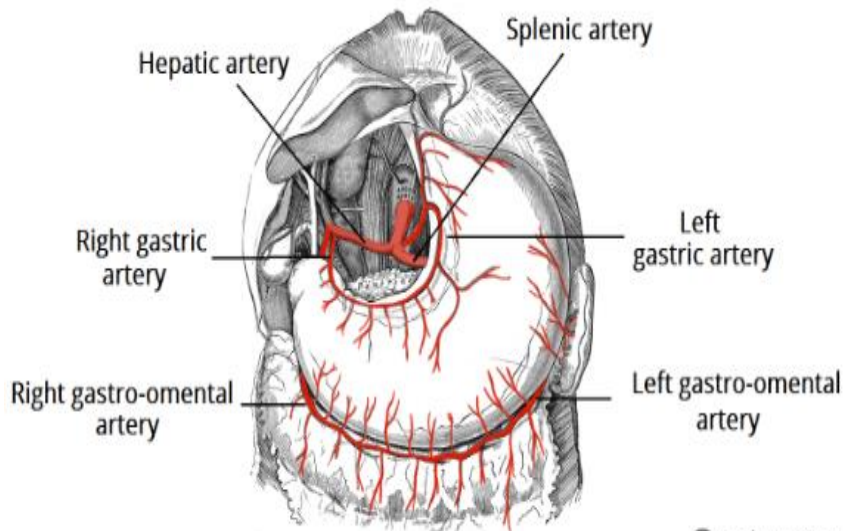


They are separated from the stomach by **Peritoneum of the Lesser sac (except the spleen)**.
Lesser sac the most immediate part behind stomach

ARTERIES

5 arteries:
As it is derived from the foregut all are branches of the celiac trunk

Name	1.Left gastric artery:	2- Right gastric artery:	3-Short gastric arteries	4- Left gastroepiploic artery:	5- Right gastroepiploic artery:
Arise from	celiac artery.	hepatic of celiac.	splenic artery.	splenic artery	gastroduodenal artery of hepatic
Corse	Runs along the lesser curvature	Runs to the left along the lesser curvature.	Pass in the gastrosplenic ligament to the <u>fundus</u>	Pass in the gastrosplenic ligament , along the greater curvature	Passes to the left along the greater curvature.



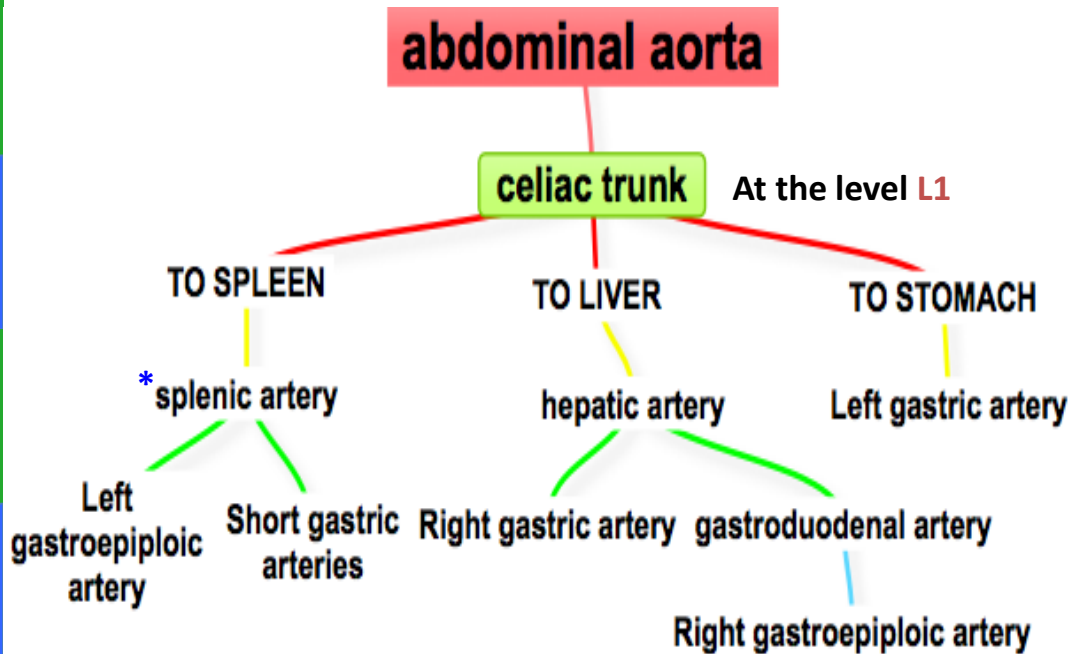
To understand

During development the gut tube divided into : all the guts received blood supply from **abdominal aorta**

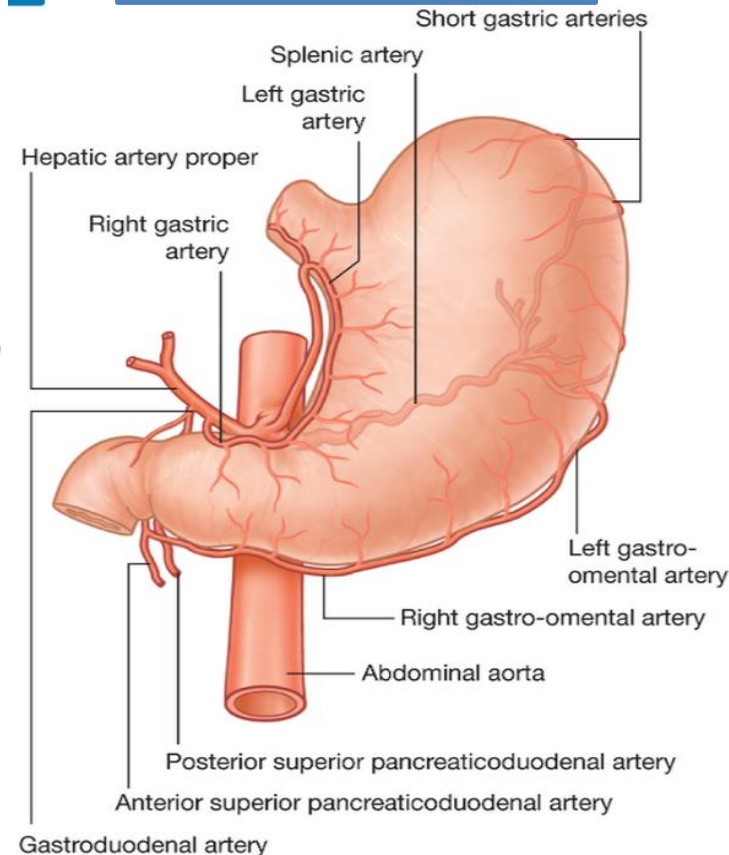
Fore gut → celiac trunk → esophagus & stomach & upper ½ of duodenum

mid gut → superior mesenteric → lower ½ duodenum & jejunum & ileum & cecum & appendix & ascending colon & right 2/3 of transverse colon

Hind gut → inferior mesenteric → left 1/3 transverse colon & descending colon & pelvic colon & rectum & upper part of rectal canal



Gastroepiploic = Gastro-omental



* Lesser curvature :

Right & Left gastric artery

* Greater curvature:

Right & Left gastroepiploic artery

* Fundus:

Short gastric arteries

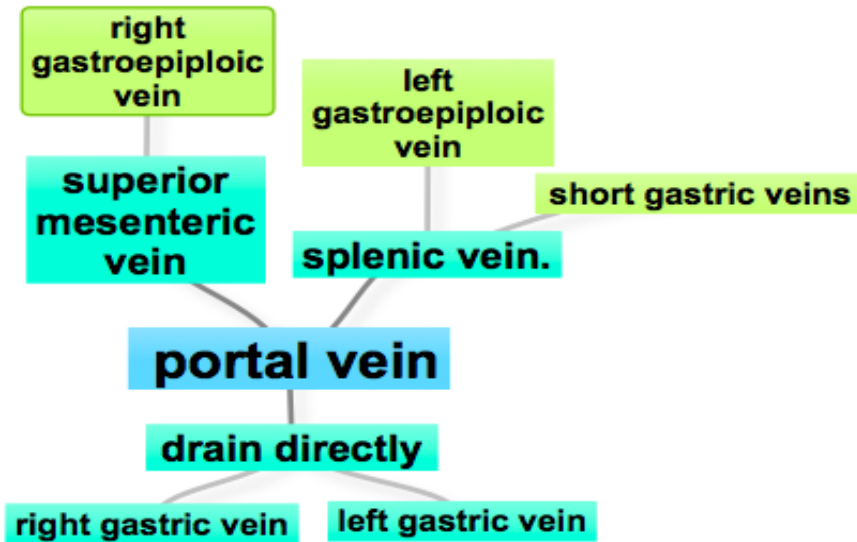
* Tortuous course artery:

Facial , lingual , uterine , splenic arteries

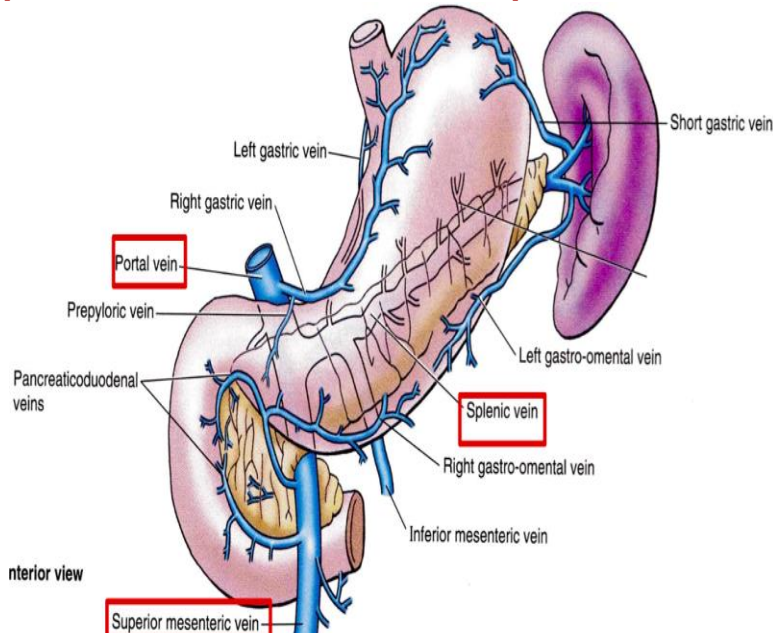
Celiac trunk: branches **L**eft **H**and **S**ide (LHS):

Left gastric artery **H**epatic artery **S**plenic artery

VEINS

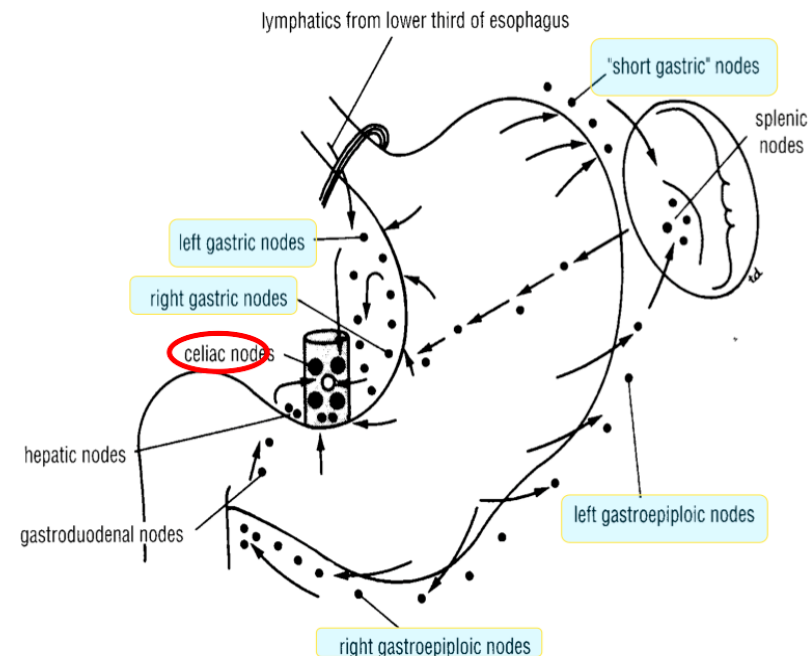


*portal vein : behind neck of pancreas



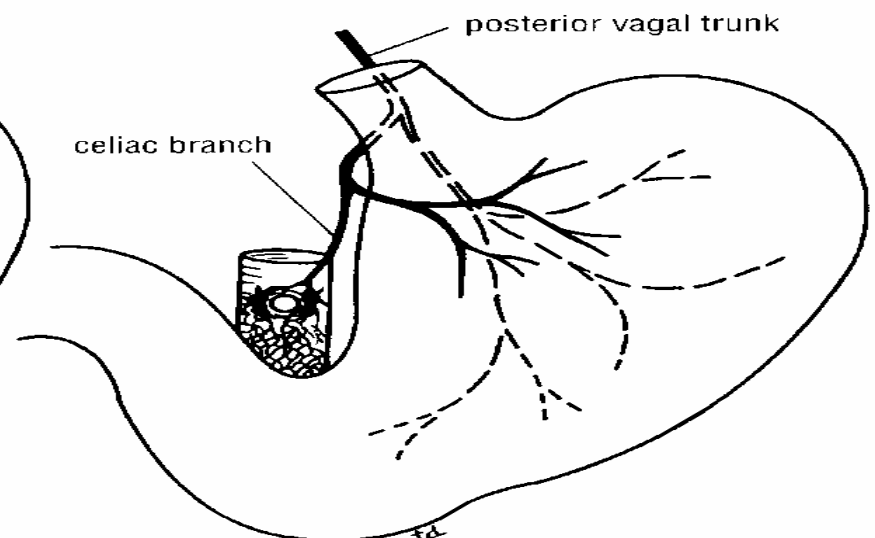
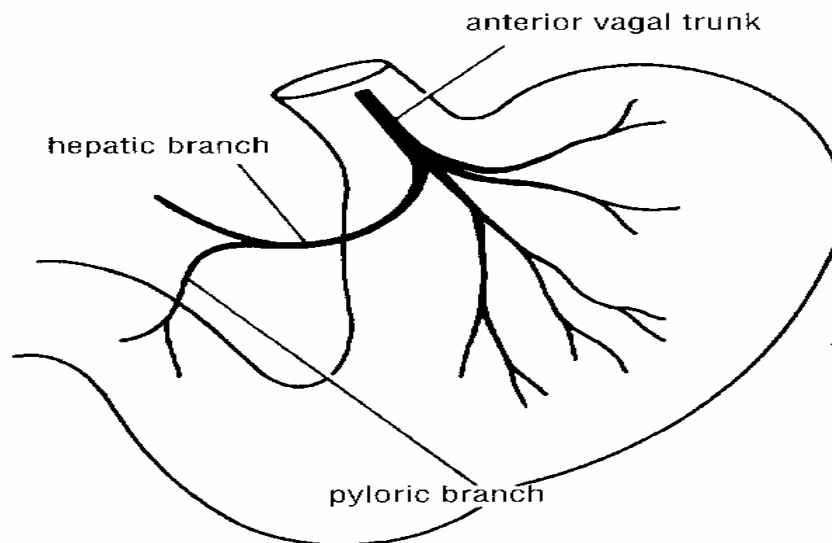
LYMPH DRAINAGE

- The lymph vessels follow the arteries.
- They first drain to the:
 - Left and right gastric nodes
 - Left and right gastroepiploic nodes and the
 - Short gastric nodes
- Ultimately, all the lymph from the stomach is collected at the **celiac nodes**.



NERVE SUPPLY

Sympathetic fibers	Parasympathetic fibers	
Vasoconstrictors Antiperistaltic carry pain sensation	motility & secretory	
celiac plexus	<u>Anterior vagal trunk</u>	<u>Posterior vagal trunk</u>
	<ul style="list-style-type: none"> • Formed from the left vagus • Supply the anterior surface of the stomach • Gives off a hepatic branch and from it - a branch to the pylorus. 	<ul style="list-style-type: none"> • Formed from the right vagus • Supply the posterior surface of the stomach • Gives off a large branch to the celiac and the superior mesenteric plexuses



MCQs

1. which one of the following is related to oesophagus in cervical region anteriorly :

- recurrent laryngeal nerve .A
- thoracic duct .B
- left atrium .C
- thyroid gland .D

2. oesophagus begins as continuation of pharynx at the level of :

- C4 .A
- C5 .B
- C6 .C
- T6 .D

3. all of the following are the arterial supply of the oesophagus except :

- inferior thyroid .A
- thoracic aorta .B
- left gastric .C
- right gastric .D

4. lesser curvature of the stomach extend from to

- fundus , Incisura Angularis .A
- cardiac orifice , pylorus .B
- cardiac orifice , Pyloric sphincter .C

5. which one of the following posterior relations is NOT separated from stomach by periostrium :

- spleen .A
- splenic artery .B
- pancreas .C
- left kidney .D

6. pyloric orifice located at level of

- transpyloric plane , t10 .A
- transpyloric plane , l1 .B
- fifth intercostal space , l1 .C
- fifth intercostal space , t10 .D

7. Which one of the following veins drain directly into portal vein

- A. Right gastric vein
- B. Left gastroepiploic vein
- C. Right gastroepiploic vein
- D. Short gastric vein

8. Upper third of esophagus supplied by: A- Thoracic aorta.

- B- Inferior thyroid artery
- C- Left gastric artery
- D- right gastric artery

9. Which one of the following is not posterior to stomach (not component of stomach bed):

- a- left kidney
- b- transverse mesocolon
- c- left pleura
- d- pancreas

10. Right gastric artery that runs to the left along the lesser Curvature. is branch of ??

- A. celiac artery
- B. hepatic of celiac artery
- C. splenic artery
- D. gastroduodenal of hepatic

11- The abdominal cavity is divided into 9 compartments by :

- A. vertical and 2 horizontal planes .
- B. Subcostal and Intertubercular lines .
- C. 2 Midclavicular lines .
- D. B and C .

12- what is the correct relation to the cervical part of esophagus :

- A. Vertebral column Posteriorly , carotid sheath medially , Trachea Anteriorly .
- B. Vertebral column Posteriorly , carotid sheath laterally , Trachea Anteriorly .
- C. Vertebral column Posteriorly , prevertebral muscle Posteriorly,lobe of thyroid laterally .
- D. B and C .

13- what is the correct relation to the Thoracic part of esophagus :

- A. Left recurrent laryngeal nerve , Left principal bronchus , Left atrium Anteriorly .
- B. Bodies of the thoracic vertebrae , Thoracic duct , Left subclavian artery Posteriorly.
- C. Terminal part of the azygos vein On the left side laterally .
- D. All of them .

14- what is the correct relation to the Abdomen part of esophagus :

- A. Anteriorly, left crus of the diaphragm.
- B. Posteriorly , left lobe of the liver .
- C. A and b
- D. None all of them .

15- what is ARTERIAL SUPPLY of esophagus :

- A. Upper 1/3rd by the thoracic aorta.
- B. The middle third by the inferior thyroid artery.
- C. The lower third by the right gastric artery .
- D. None all of them .

16- what is VENOUS DRAINAGE of esophagus :

- A. The upper third drains in into the inferior thyroid veins .
- B. The middle third into the azygos artery .
- C. The lower third into the left gastric vein, which is a tributary of the renal vein .
- D. A and C .

17- what is the LYMPH DRAINAGE of esophagus :

- A. The upper third is drained in the deep celiac nodes .
- B. The middle third is drained into the superior and anterior mediastinal nodes .
- C. The lower third is drained in the cervical lymph nodes in the abdomen .
- D. all of them .
- E. none of them .

18- which one of these statement is not wrong :

- A. It is supplied by sympathetic trunks and vagus (esophageal plexus) .
- B. The *left* vagus lies posterior to the esophagus .
- C. The *right* vagus lies anterior to the esophagus .
- D. All of them .

19-Consists of a circular layer of smooth muscle (under vagal and hormonal control), Prevents (GER) regurgitation (reflux) :

- A. CARDIAC ORIFICE .
- B. pyloric sphincter .
- C. BODY .
- D. Incisura Angularis .

20-which one of the following is true about lesser curvature :

- A. Forms the right border of the stomach , Attached to the liver by the greater omentum .
- B. Forms the left border of the stomach .
- C. Forms the left border of the stomach , , Attached to the liver by the lesser omentum .
- D. Extends from the cardiac orifice to the pylorus .

21- which one of the following is true about greater curvature :

- A. Forms the left border of the stomach .
- B. Its upper part attached to the liver by gastrosplenic ligament .
- C. Its lower part is attached to the ascending colon by the greater omentum .
- D. All of them .

22-which one is not from the anterior relations of stomach :

- A. Anterior abdominal wall , Left costal margin , Left pleura & left lung .
- B. Diaphragm , Left lobe of the liver .
- C. Pericardium .
- D. None of them

23-which one is from the posterior relations of stomach :

- A. Right crus of diaphragm.
- B. Splenic vein .
- C. Transverse mesocolon .
- D. None of them .

24- ARTERIAL SUPPLY of stomach is derived from :

- A. from the foregut , all are branches of the cervical trunk .
- B. from the medgut, all are branches of the celiac trunk .
- C. from the medgut, all are branches of the lumbar trunk .
- D. from the foregut , all are branches of the celiac trunk .

25- Left gastric artery:

- A. It is a branch of celiac artery , Runs to the left along the lesser curvature .
- B. From the hepatic of celiac , Runs along the lesser curvature .
- C. It is a branch of celiac artery , Runs along the lesser curvature .
- D. None of them .

26- Right gastric artery:

- A. From the hepatic of celiac , Runs along the lesser curvature .
- B. from the splenic artery , Pass in the gastrosplenic ligament to the fundus
- C. from the gastroduodenal artery of hepatic , Passes to the left along the greater curvature .
- D. From the hepatic of celiac , Runs to the left along the lesser curvature .

27- Short gastric arteries :

- A. arise from the splenic artery , Passes to the left along the greater curvature .
- B. arise from the splenic artery , Pass in the gastrosplenic ligament, along the greater curvature .
- C. From the hepatic of celiac , Runs along the lesser curvature .
- D. arise from the splenic artery , Pass in the gastrosplenic ligament to the fundus .

28- Left gastroepiploic artery :

- A. arise from the splenic artery , Passes to the left along the greater curvature .
- B. arise from the splenic artery , Pass in the gastrosplenic ligament, along the greater curvature .
- C. from the gastroduodenal artery of hepatic .
- D. It is a branch of celiac artery , Runs along the lesser curvature .

29- Right gastroepiploic artery:

- A. from the gastroduodenal artery of hepatic , Runs along the lesser curvature .
- B. arise from the splenic artery , Pass in the gastrosplenic ligament, along the greater curvature .
- C. Passes to the left along the greater curvature , from the gastroduodenal artery of hepatic .
- D. It is a branch of celiac artery , Runs along the lesser curvature .

MCQs

30-which one of these is true about veins :

- A. The right and left gastric veins drain directly into the portal vein .
- B. The short gastric veins and the left gastroepiploic vein join the splenic vein .
- C. The right gastroepiploic vein drain in the superior mesenteric vein .
- D. All of them .

31- LYMPH DRAINAGE of stomach first drain to the:

- A. Left and right gastric nodes .
- B. Left and right gastroepiploic nodes .
- C. Short gastric nodes .
- D. All of them .

32- all the lymph from the stomach is collected at the

:

- A. Cervical nodes .
- B. celiac nodes .
- C. lumbar nodes .
- D. sacral nodes .

33- what is the nerve supply of stomach :

- A. Sympathetic .
- B. Parasympathetic .
- C. A and B .
- D. None of them .

34- which one of these statement is not wrong about Anterior vagal trunk :

- A. Formed from the right vagus .
- B. Supply the posterior surface of the stomach .
- C. Gives off a hepatic branch and from it - a branch to the pylorus .
- D. All of them .

35- which one of these statement is wrong about posterior vagal trunk :

- A. Formed from the right vagus .
- B. Supply the posterior surface of the stomach .
- C. Gives off a large branch to the celiac and the superior mesenteric plexuse .
- D. None of them .



Anatomy Team

433



GOOD LUCK

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