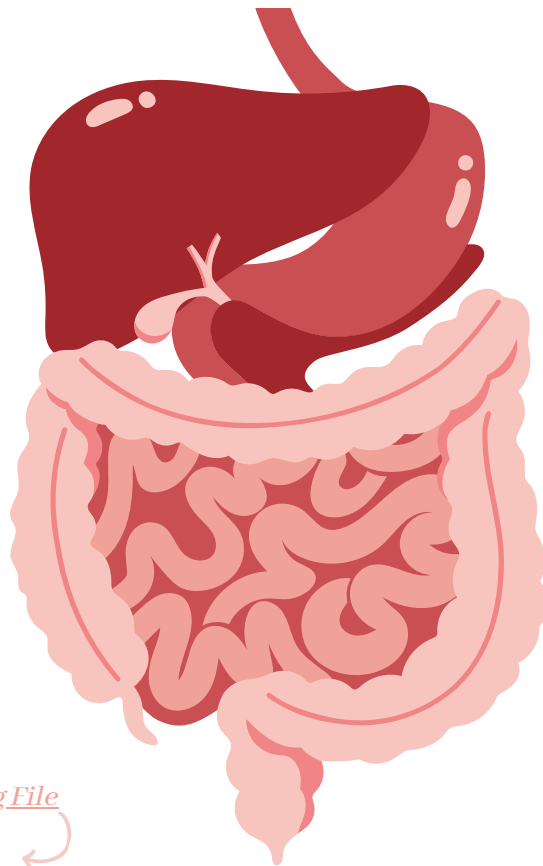




Esophagus & Stomach

GNT Block




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- ◆ Main Text
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- ◆ Drs' Notes
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Objectives

 Describe the anatomical view of the **Esophagus**; extent & length, parts, constrictions, **relations**, **blood & nerve supply** and **lymphatic**.

 Describe the anatomical view of the **Stomach**; **location**, shape, parts, **relations**, **blood & nerve supply** and **lymphatic**.

This lecture was presented by :

Dr. Zahid Kaimkhani

Dr. Amal Al-Rabiah



You can find Atlas by [Clicking HERE!](#)

Esophagus

The Esophagus is a tubular structure about 25 cm long.

The esophagus begins as the continuation of the pharynx at the level of the 6th cervical vertebra.

At the level of the 10th thoracic vertebrae the esophagus pierces the diaphragm to join the stomach. It then ends at the level of the 11th thoracic vertebrae.

Divided into three parts:

1 Cervical

2 Abdominal

3 Thoracic

Cervical relations

Posteriorly:

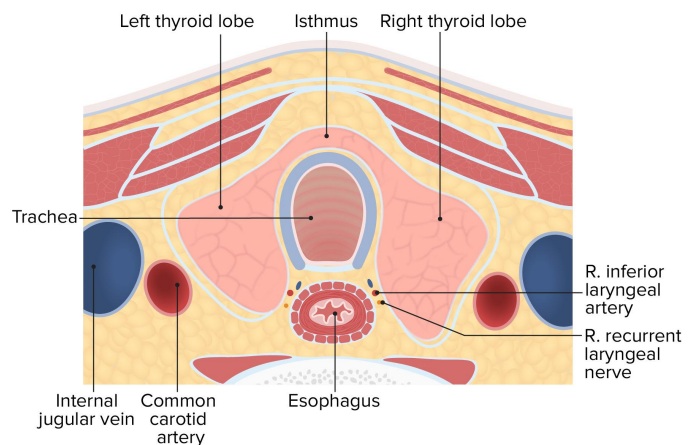
- Vertebral column.

Laterally:

- lobes of the thyroid gland.

Anteriorly:

- Trachea
- Recurrent laryngeal nerves.



Abdominal relations

Fibers from the right crus of the diaphragm form a **sling** around the esophagus. At the opening of the diaphragm, the esophagus is accompanied by:

- The **Two Vagi**
- **Branches of the Left Gastric Vessels**
- Lymphatic Vessels.

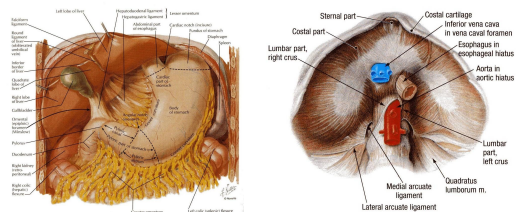
In the abdomen, the esophagus descends for 1.3 cm and joins the stomach.

Anteriorly it is related to:

- left lobe of the liver.

Posteriorly it is related to:

- the left crus of the diaphragm.

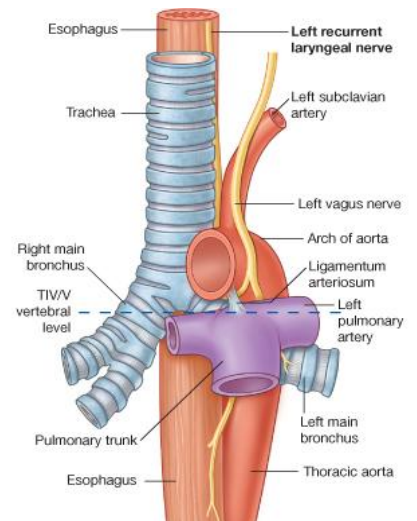


Thoracic Esophagus

MCQ

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

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

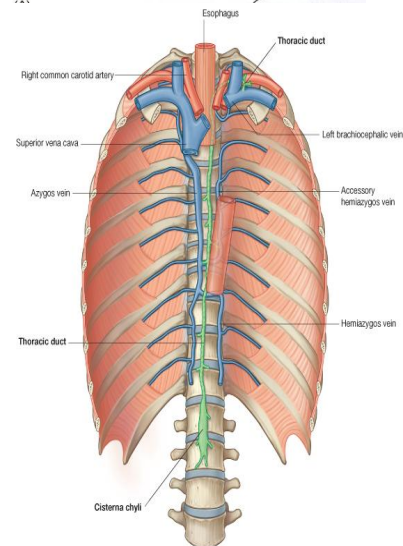
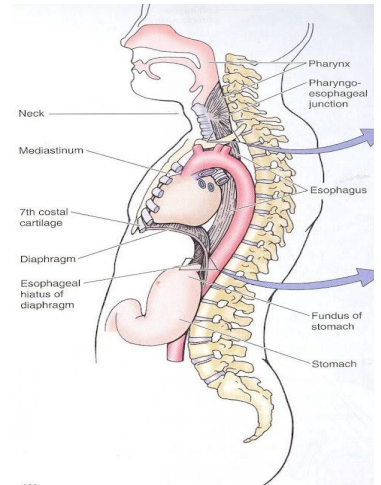


Anterior Relations

- Trachea
- Left Atrium
- Pericardium
- Left principal bronchus
- Left recurrent laryngeal nerve

Posterior Relations

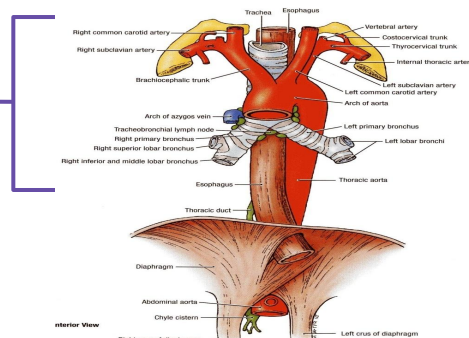
- Bodies of the thoracic vertebrae
- Thoracic duct
- Azygos vein
- Right posterior intercostal arteries
- Descending thoracic aorta (at the lower end)



Lateral Relations

On the Right side:

- Mediastinal pleura.
- Terminal part of the azygos vein.



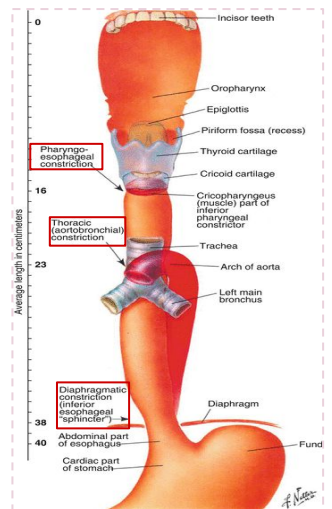
On the Left side:

- Mediastinal pleura.
- Left subclavian artery.
- Aortic arch.
- Thoracic duct.

Esophagus Constrictions

The esophagus has 3 anatomic constrictions:

- The **first (Narrowest)** is at the junction with the **pharynx (15 cm from incisor teeth)**.
- The **second** is at the **crossing with the aortic arch and the left main bronchus. (27 cm)**
- The **third** is at the **junction with the stomach. (38 cm)**
- They have a considerable clinical importance. **Why?**
- Also when crossed by arch of aorta 22 cm.



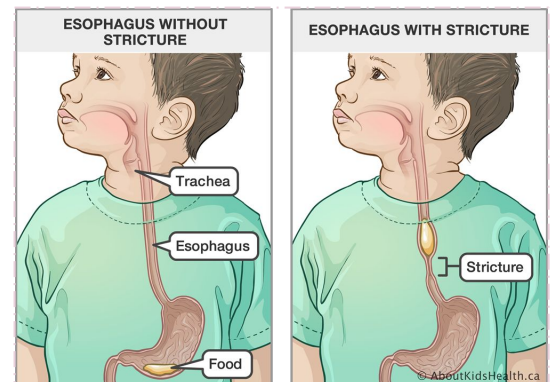
In this picture what is the importance of the scale?
So we know whether the constriction is physiological or pathological (stricture)

Clinical importance:

They may cause difficulties in passing an esophagoscope.

In case of swallowing of caustic liquids (mostly in children), this is where the burning is the worst and **strictures** develop.

The esophageal strictures are a common place of the development of the **esophageal carcinoma**.

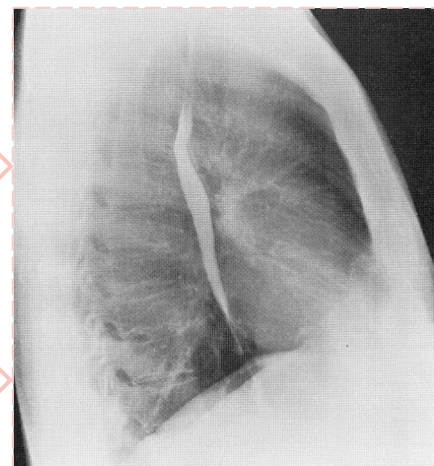


Oesophagus and left atrium:

There is a close relationship between the left atrium of the heart and the esophagus.

What is the clinical application?

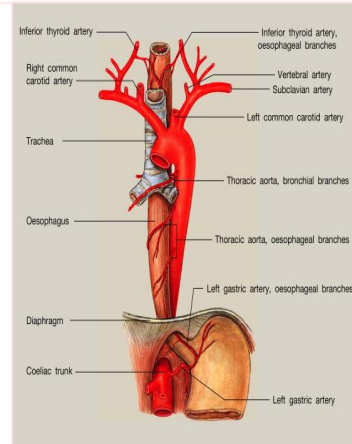
- A barium swallow in the esophagus will help the physician to **assess the size of the left atrium (Dilation)** as in case of a heart failure.



Oesophagus Supply

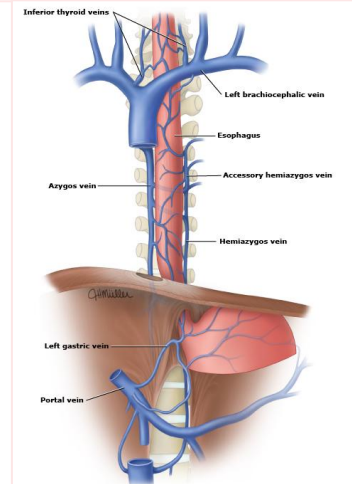
Arterial Supply

- Upper third is supplied by the **inferior thyroid artery**.
- The middle third by the **thoracic aorta**.
- The lower third by the **left gastric artery**.



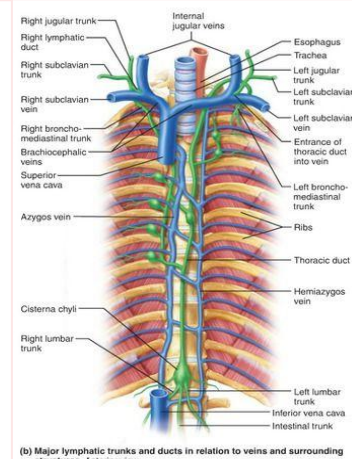
Venous Drainage

- The upper third drains into the **inferior thyroid veins**.
- The middle third into the **azygos veins**.
 - The lower third into the **left gastric vein**, which is a tributary of the **portal vein**.



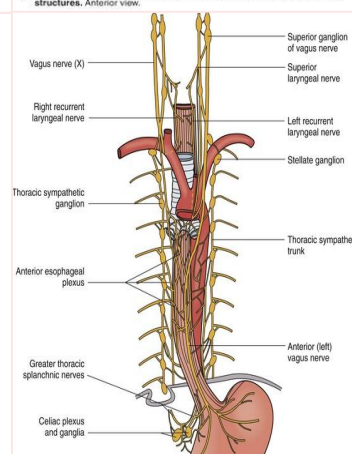
Lymphatic drainage

- The upper third is drained in the **deep cervical nodes**.
- The middle third is drained into the **superior and inferior mediastinal nodes**.
- The lower third is drained in the **celiac lymph nodes** in the abdomen.



Nerve supply

- It is supplied by sympathetic fibers from the **sympathetic trunks**.
- The parasympathetic supply comes from the **vagus nerves**.
- Inferior to the roots of the lungs, the vagus nerves join the sympathetic nerves to form the **esophageal plexus**.
- The **left vagus** lies **anterior** to the esophagus.
- The **right vagus** lies **posterior** to it.



Stomach

Location:

It is the most dilated part of the alimentary canal and roughly resembles the letter “J”.

It is located in the upper part of the abdomen.

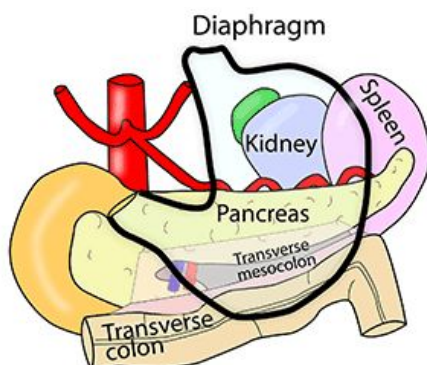
It extends from beneath the left costal region into the epigastric and umbilical regions.

Much of the stomach is protected by the lower ribs.

Relations:

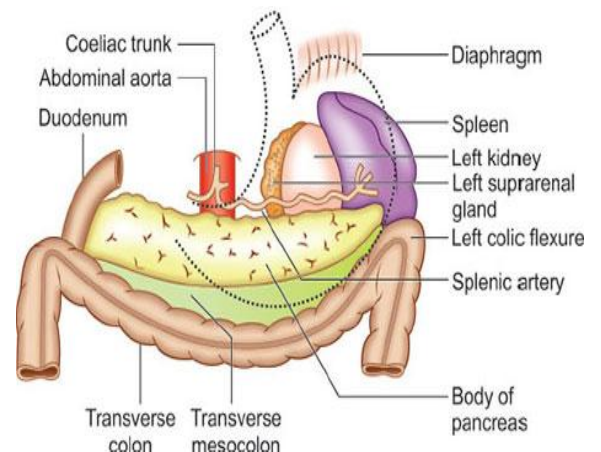
Posterior (Stomach bed)

1. Left crus of diaphragm.
2. Left suprarenal gland.
3. Part of left kidney.
4. Spleen.
5. Splenic artery.
6. Pancreas.
7. Transverse mesocolon.
8. Transverse colon.
9. Lesser sac. (AKA Omental bursa)



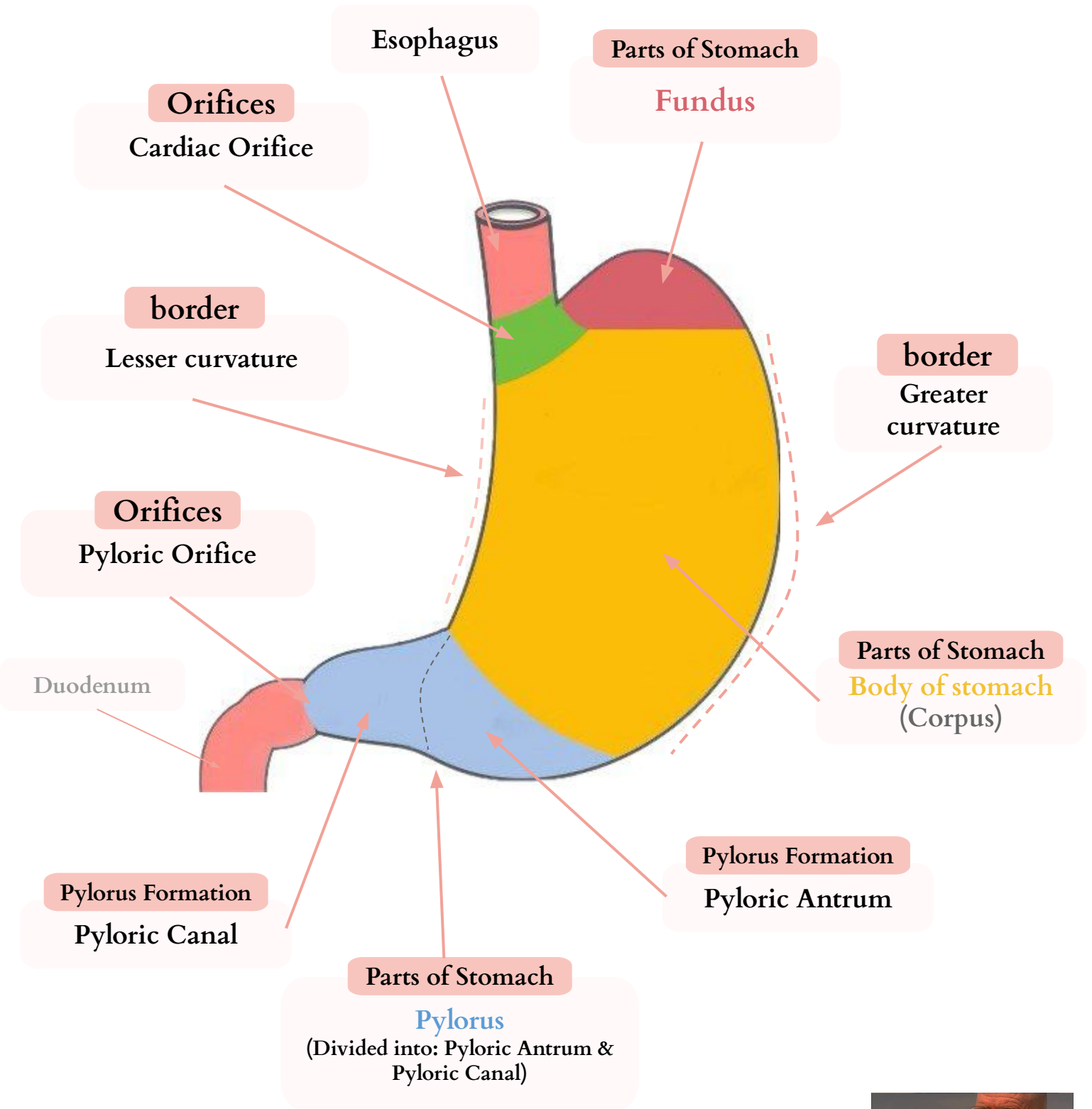
Anterior

1. Anterior abdominal wall
2. Left costal margin
3. Left pleura & left lung
4. Diaphragm
5. Left lobe of the liver



All structures on the posterior aspect are separated from the stomach by the peritoneum of lesser sac EXCEPT the **spleen which is separated by the greater sac.**

Stomach Parts



Stomach Parts

2 Orifices

A) Cardiac Orifice

1- It is the site of the Gastroesophageal sphincter (It's a physiological rather than an anatomical Sphincter).

2- Consist of circular smooth muscles (under vagal and hormonal control).

3- **Lies opposite to the left seventh costal** cartilage 2.5 cm from the sternum (**T10**).

4- Function: prevents esophageal regurgitation (reflux).

B) Pyloric Orifice

A) Lesser curvature

1- Forms the Right border of the stomach

2- Extends from the cardiac orifice to the pylorus (Opening of stomach to Duodenum).

3- Attached to the **liver by lesser omentum** (gastrohepatic ligament)

B) Greater curvature

1- Forms the Left border of the stomach

2- Extends from the cardiac orifice to the pylorus.

3- Its upper part attached to the spleen by **gastrosplenic ligament**.

4- Its lower part attached to the **transverse colon by greater omentum**.

2 Borders

3 Parts

A) Fundus

1- Dome shaped, usually full of gases

2- Located to the left of the cardiac orifice. It reaches the **left 5th intercostal** space just below the **apex of the heart**

B) Body

1- Extends from the level of the **Fundus** to the level of **incisura angularis**

2- Incisura angularis is a constant notch on the lesser curvature

C) Pylorus

The **pylorus** is a tubular part of the stomach. It lies in the **transpyloric plane L1** (1 cm) to the **right of the midline** made of:

A) Pyloric Antrum

Extends from incisura angularis to the pylorus

B) Pyloric canal

cavity of the pylorus

C) Pyloric Sphincter

Thick muscular End

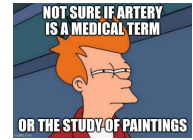
Pylorus

Surfaces

1) Anterior surface

2) Posterior surface

Stomach Supply



Arterial Supply

5 arteries, runs on:

- **Lesser curvature:**

- **Right gastric:** from hepatic artery of celiac (to the left Along the lesser curvature).

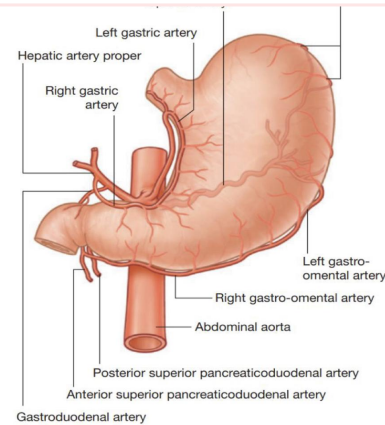
- **Left gastric:** a branch of celiac artery.

- **Greater curvature:**

- **Right gastroepiploic:** from gastroduodenal artery of hepatic (to the left Along the greater curvature).

- **Gastrosplenic ligament:**

- **Short gastric Arteries - Left gastroepiploic** (Both arise from splenic artery).



Venous Drainage

Corresponds to the arteries and all of them drain in the portal circulation

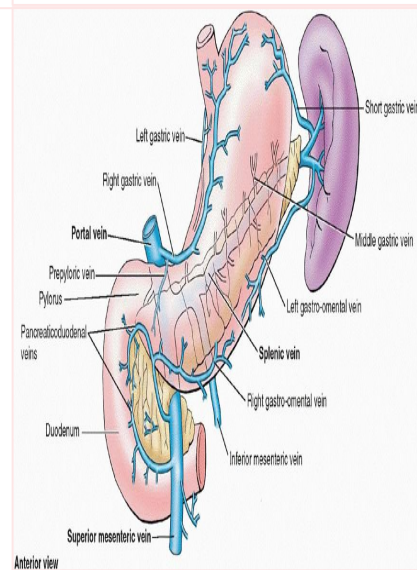
- **Right and left gastric veins** drain **directly** into the **portal vein**.

- **Right gastroepiploic vein** drain in the **superior mesenteric vein**.

- **Short gastric and left gastroepiploic** veins join the **splenic vein**.

- **Pre-pyloric vein of mayo**

It a an indicator of the site of the pyloric sphincter (which is an anatomical sphincter).

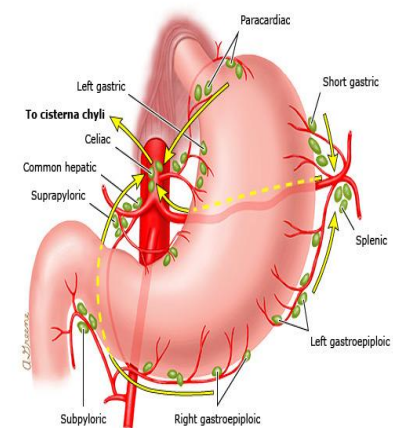


Lymphatic drainage

1- The lymph vessels Follow the arteries and drains first into:

- Left and right gastric nodes
- Left and right gastroepiploic nodes
- Short gastric nodes

2- Ultimately, all lymph nodes of the stomach is collected at the **celiac nodes**.



Nerve supply

- **Sympathetic:** derived from **celiac plexus**

- **Parasympathetic:** from both **vagi**.

A- Anterior vagal trunk:

- Formed from the **left vagus**.

- Supplies the **anterior surface** of the stomach.

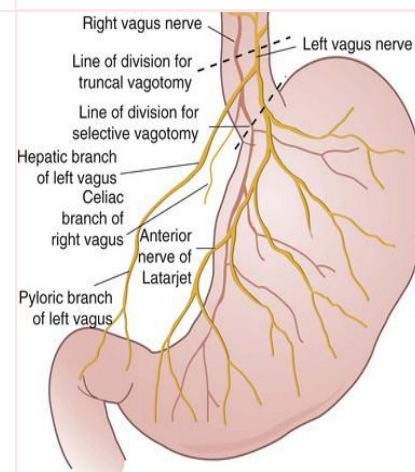
- Gives off a **hepatic** branch, and from it a branch to the **pylorus**.

B- Posterior vagal trunk:

- Formed from the **right vagus**.

- Supplies the **posterior surface** of the stomach.

- Gives off a large branch to the **celiac** and **superior mesenteric plexuses**.

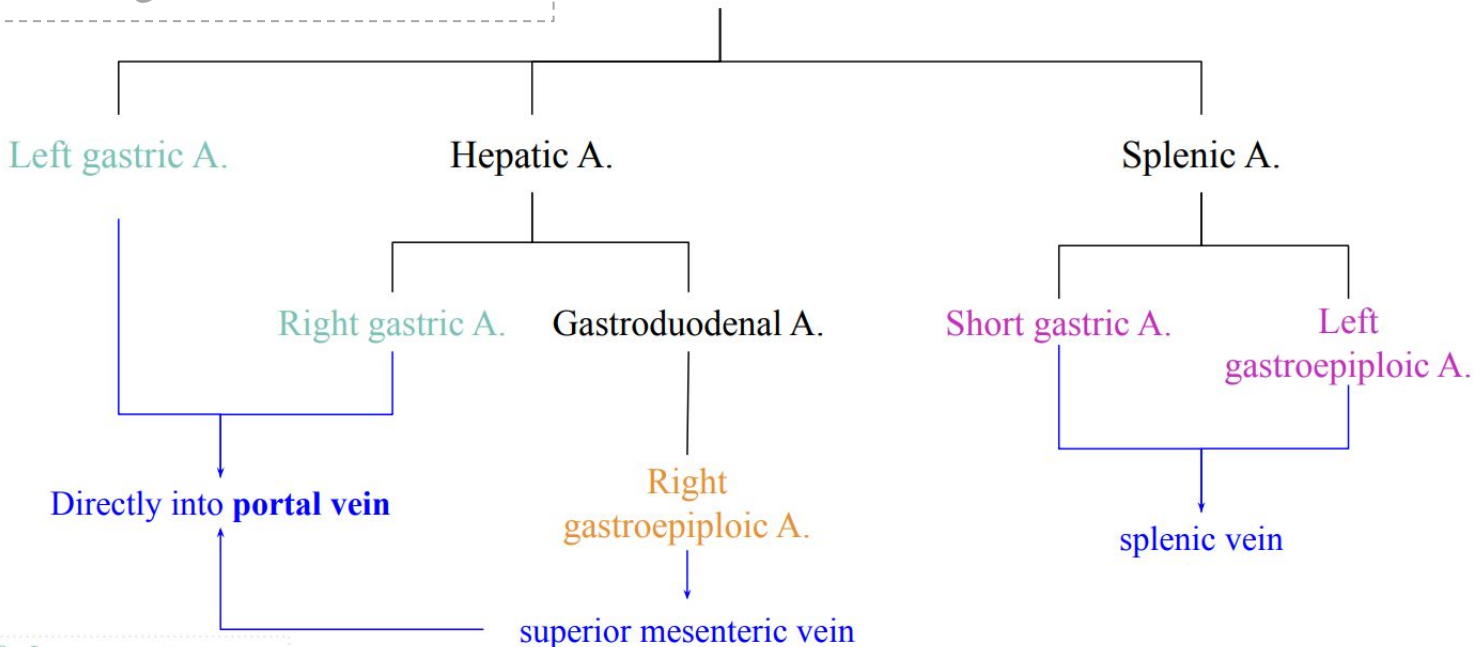


Blood supply of the Stomach

EXTRA

Thanks to Aroub Almahmoud for this diagram.

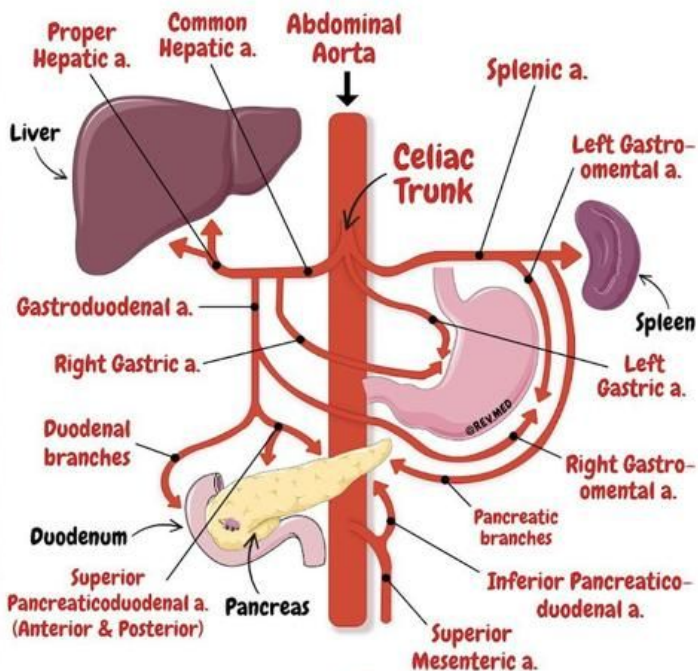
Celiac Trunk



- On Lesser curvature
- On Greater curvature
- On Gastrosplenic ligament
- Venous Drainage

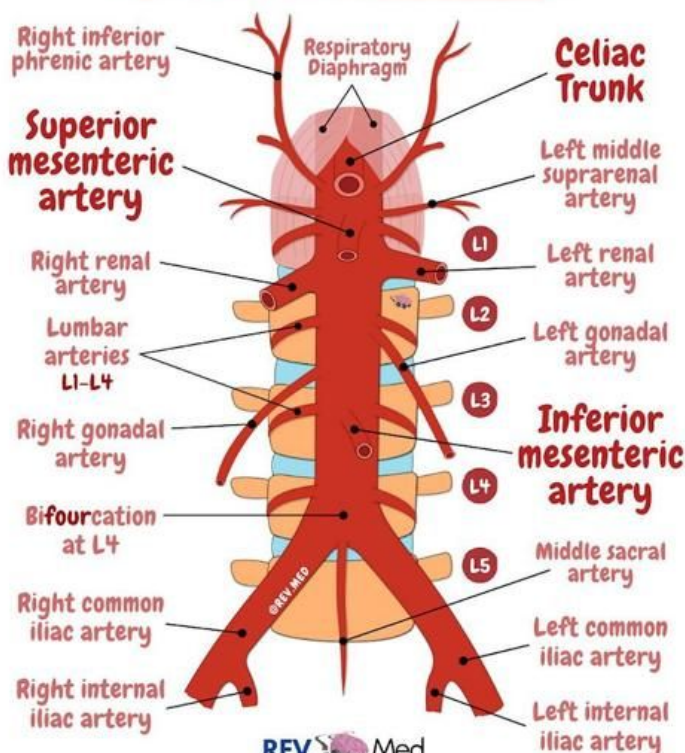
Abdominal Aorta

BRANCHES



REV Med

Abdominal Aorta



REV Med

MCQs

Q1. The greater omentum connects the stomach to which structures?

- | | | | |
|-----------|---------------------|----------|---------------------|
| A. Spleen | B. Transverse colon | C. Liver | D. All of the above |
|-----------|---------------------|----------|---------------------|

Q2. Which of the following is NOT an anterior relation of the oesophagus?

- | | | | |
|------------|----------------|----------------|--------------------------------|
| A. Trachea | B. Azygos vein | C. Left atrium | D. Left recurrent laryngeal N. |
|------------|----------------|----------------|--------------------------------|

Q3. Which one of these statement is true regarding the 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. Gives off a branch to the celiac mesenteric plexus |
|--------------------------------|--|---|---|

Q4. The bolus enters into the stomach from the esophagus to the stomach through?

- | | | | |
|----------------------|-------------------|------------------|--------------------|
| A. Pyloric sphincter | B. Fundic orifice | C. Angular notch | D. Cardiac orifice |
|----------------------|-------------------|------------------|--------------------|

Q5. At which level does the oesophagus pierce the diaphragm?

- | | | | |
|--------|--------|-------|-------|
| A. T10 | B. T11 | C. C6 | D. T8 |
|--------|--------|-------|-------|

Q6. Which one of the following posterior relations is NOT separated from stomach by peritoneum of lesser sac?

- | | | | |
|-----------|-------------------|-------------|----------------|
| A. Spleen | B. Splenic artery | C. Pancreas | D. Left kidney |
|-----------|-------------------|-------------|----------------|

A1. B A2. B A3. C A4. D A5. A A6. A

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Team Leaders

Faris Alzahrani

Norah Almohaimeed

Salman Althunayan

Raseel Almutairi


Team Members


Khalid Alsobei

Lama Alsuliman

Faisal Alhejji

Aljoharah Alkhalifah

 Mohammed Alarfaj

 Wafa Alakeel

Mohammed Alqutub

Sarah Alshahrani

Aban Basfar

Fatimah Alghamdi

Faisal Alshowier

Shahad Alzaid

Sultan Albaqami

Reuf Alahmari

Moath Alhudaif

Lama Alotaibi

Reem Alomair

Haya Alajmi

Norah Alhazzani

Renad M Alshehri

 **Special Thanks to Moath Alhudaif & Aleen Alkulyah for the Design and to Norah Almania for the Logo!**

 **Anatomy.med443@gmail.com**