



# Esophagus And Stomach

Gastrointestinal block-Anatomy-Lecture 3

Editing file



# Objectives

 **At the end of the lecture, students should be able to:**

- Describe the anatomy of the esophagus; extent, length, parts, strictures, relations, blood & nerve supply and lymphatic.
- Describe the anatomy of the stomach; location, shape, parts, relations, blood & nerve supply and lymphatic.

**Color guide :**

Only in boys slides in **Green**

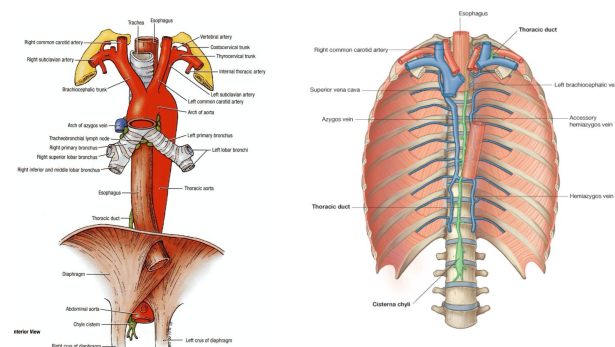
Only in girls slides in **Purple**  
important in **Red**

Notes in **Grey**



# Esophagus

- It is a tubular structure about 25 cm long and is divided into three parts
- Extends from **C6** (end of pharynx) → In the thoracic part it bends to the left but at the **level of the sternal angle**, aortic arch and left main bronchus push it again to the midline → Until it pierces diaphragm at **T10** → Crosses the diaphragm for **1.3 cm** to join the stomach **in the abdomen** = (end in the level of **T11**)



1

Cervical

## Relations

### Anterior:

- Trachea
- Recurrent laryngeal nerves

### Posterior:

- Vertebral column

### Lateral:

- Lobes of Thyroid gland

2

Thoracic

## Relations

### Anterior:

- Trachea
- Left Recurrent laryngeal nerve
- Left principal bronchus
- Left atrium and pericardium

### Posterior:

- Bodies of Thoracic Vertebrae
- Thoracic Duct
- Azygos vein
- Descending Thoracic aorta (end only)
- Right posterior intercostal arteries

### Lateral:

- **Right:**
  - Right Mediastinum pleura
  - Terminal end of azygos vein
- **Left:**
  - Left Mediastinum pleura
  - Aortic arch
  - Left subclavian artery
  - Thoracic duct

3

Abdominal

## Relations

### Anterior:

- Left lobe of the liver

### Posterior:

- Left crus of the diaphragm

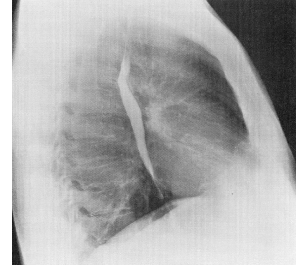
• Fibers from the right crus form a sling around the esophagus  
 • At the opening of the diaphragm it's accompanied by:

- Two vagi
- Left gastric vessels
- Lymphatic vessels



# Clinical Aspects: Esophagus

- There's a close relationship between the esophagus and left atrium.
- A **barium swallow** will help physicians assess the size of the left atrium (**Dilation**) in case of heart failure or long standing mitral stenosis



The esophagus has **3** anatomic constrictions:

First one (**16 cm**):

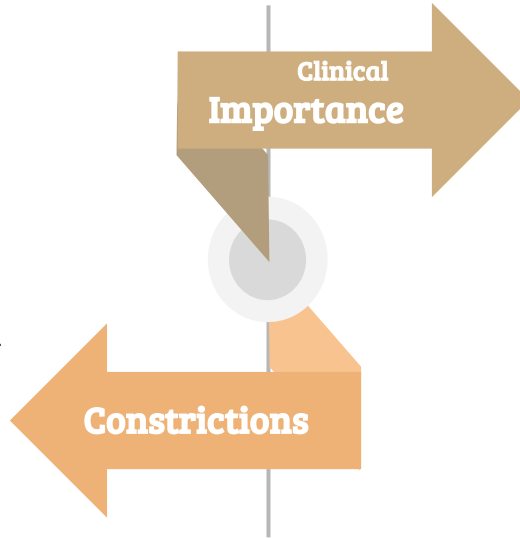
- Located at the junction with the pharynx

Second one (**23 cm**):

- Located at the crossing with the aortic arch and left main bronchus

Third one (**38 cm**)

- Located at the junction with the stomach

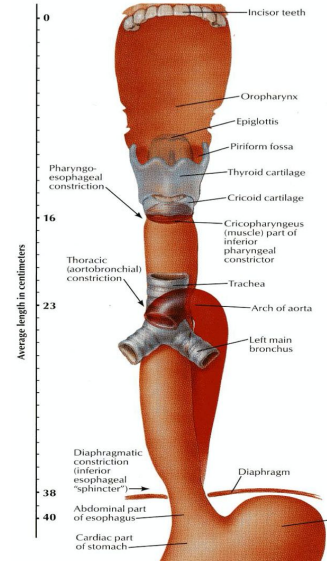


1. They might cause difficulties in passing a gastroscope

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

3. Esophageal strictures are common place for **esophageal carcinoma**

The importance of this scale is that when a doctor inserts the gastroscope, they can know where the levels of constriction is so they can move the gastroscope with caution



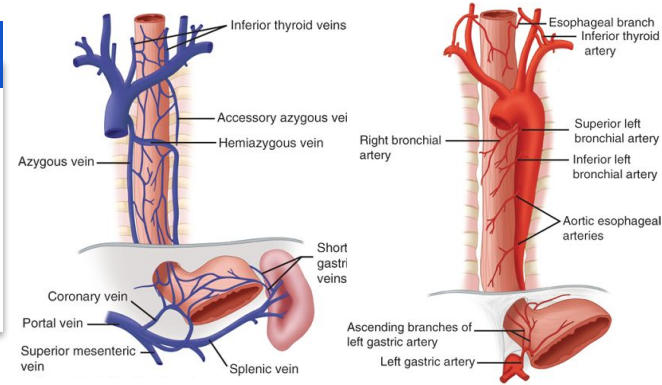
# Esophagus Supply

## Arterial Supply

- Upper third: **inferior thyroid artery.**
- Middle third: **thoracic aorta.**
- Lower third: **left gastric artery.**

## Venous Drainage

- Upper third: **inferior thyroid veins.**(drains into IJV)
- Middle third: **azygos veins.** (drains into SVC)
- The lower third: **left gastric vein** (portal vein tributary)

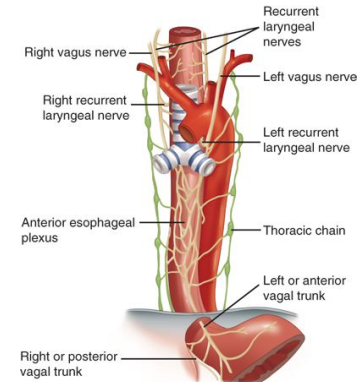


## Nerve Supply

- Sympathetic: **sympathetic trunks**
- Parasympathetic: **Vagus nerves**
  - Left vagus **becomes anterior to the esophagus.**
  - Right vagus **becomes posterior to the esophagus.**
- Below the inferior root of the lungs the vagus nerve joins the sympathetic trunk to form the **esophageal plexus**

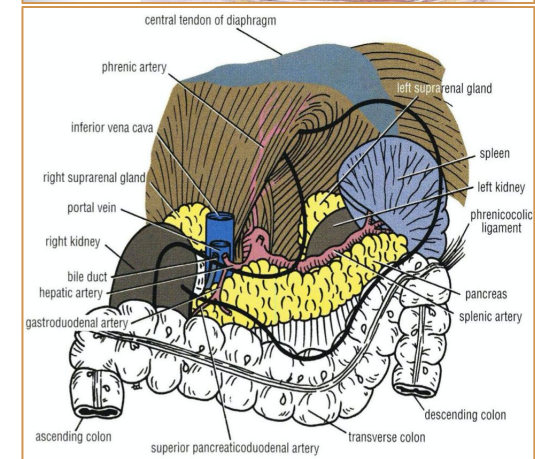
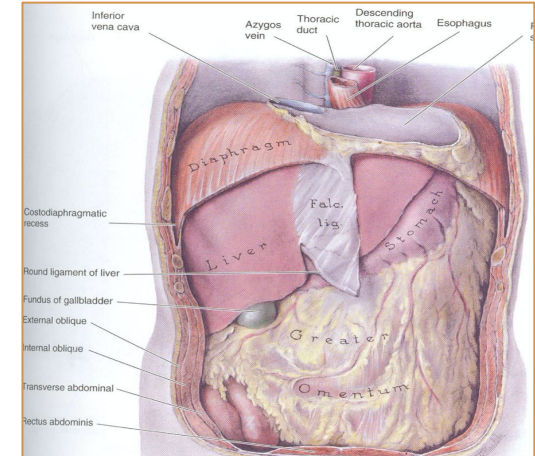
## Lymph Drainage

- Upper third: **Deep cervical nodes**
- Middle third: **Superior and inferior mediastinal nodes**
- Lower third: **Celiac nodes**



# Stomach

- 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	
Anterior	Posterior (Stomach bed)
<ol style="list-style-type: none"> <li>1. Anterior abdominal wall</li> <li>2. Left costal margin</li> <li>3. Base of the left pleura</li> <li>4. Base of the left lung</li> <li>5. Diaphragm</li> <li>6. Left lobe of the liver</li> </ol>	<ol style="list-style-type: none"> <li>1. Left crus of diaphragm</li> <li>2. Left suprarenal gland</li> <li>3. Part of left kidney</li> <li>4. Spleen</li> <li>5. Splenic artery</li> <li>6. Pancreas</li> <li>7. Transverse colon and mesocolon</li> <li>8. Lesser sac</li> </ol>
<ul style="list-style-type: none"> <li>• All structures on the posterior aspect are separated from the stomach by the <b>peritoneum of lesser sac</b> except the <b>spleen</b> which is separated by the <b>greater sac</b></li> </ul>	

# Stomach Parts

## 2 Orifices

### 1) Cardiac Orifice

- Gastro-esophageal sphincter (physiological)
- Consist of circular smooth muscles under vagal and hormonal control
- lies opposite to the left seventh costal cartilage 2.5 cm from the sternum
- Prevents esophageal reflux (regurgitation)

### 2) Pyloric Orifice

## 2 Borders

### 1) Lesser curvature

- Right border
- Extends from the cardiac orifice to the pylorus.
- Attached to the liver by lesser omentum (**gastrohepatic ligament**)

### 2) Greater curvature

- Left border
- Extends from the cardiac orifice to the pylorus.
- At upper part it's attached to the spleen by **gastrosplenic ligament**
- At lower part it's attached to the transverse colon by **greater omentum**

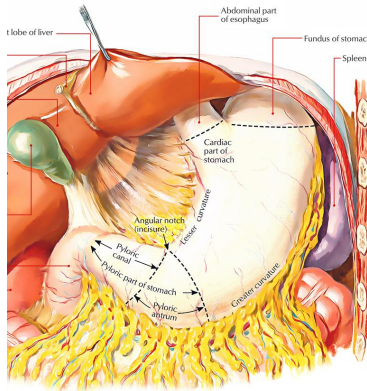
## 2 Surfaces

### 1) Anterior surface

(anterosuperior)

### 2) Posterior surface

(posteroinferior)



## 3 Parts

### 1) Fundus

- Dome shaped part that is full of gases
- Located to the left of the cardiac orifice at the **left 5th intercostal space just below the apex of the heart**

### 2) Body

- Extends from Fundus to incisura angularis
- **Incisura angularis** is a constant notch on the lesser curvature

### 3) Pylorus

## Pylorus Formation

Tubular part of stomach lies in the **transpyloric plane L1** (1 cm) to the right of the midline

Made of:

### 1) Pyloric Antrum

- Extends from incisura angularis to the pylorus

### 2) Pyloric canal

- cavity of the pylorus

### 3) Pyloric Sphincter

- Thick muscular End

# Stomach Supply

## Arterial Supply (5)

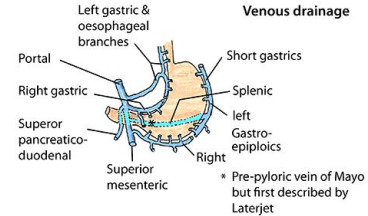
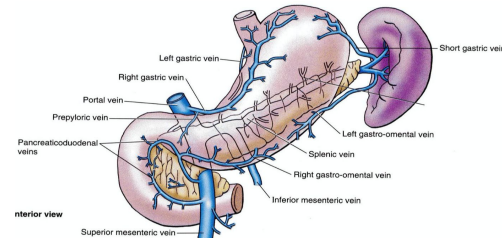
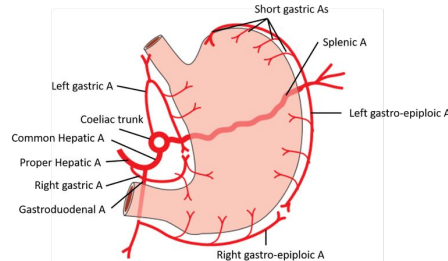
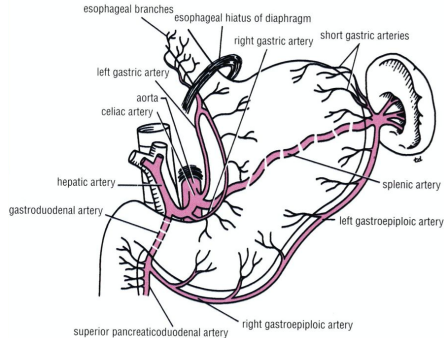
Runs on:

- **Lesser curvature:**
  - **Right gastric** (hepatic artery of celiac)
  - **Left gastric** (a branch of celiac artery)
- **Greater curvature:**
  - **Right gastroepiploic** (from gastroduodenal artery of hepatic)
  - **Gastrosplenic ligament:**
    - **Short gastric arteries and Left gastroepiploic** (from splenic artery)

## Venous Drainage (5)

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

- **Right and left gastric** drain directly into the **portal vein**
- **Short gastric and left gastroepiploic veins** drain into the **splenic vein**
- **Right gastroepiploic vein** drain into the **superior mesenteric vein**

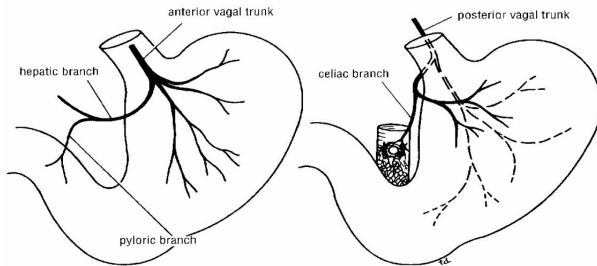




# Stomach Supply

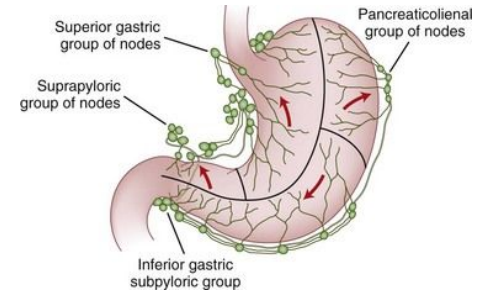
## Nerve supply

- Sympathetic: derived from **celiac plexus**
- Parasympathetic: from both **Vagus nerves**
  - **Anterior vagal trunk**: Formed from the left vagus, supplies the anterior surface of the stomach and gives a **hepatic** branch that gives a branch to **pyloric**
  - **Posterior vagal trunk**: Formed from the right vagus supplies the posterior surface of the stomach and gives a branch to the **celiac** and **superior mesenteric plexuses**



## Lymphatic drainage

- The lymph vessels Follow the arteries and drain first into:
  - **Left and right gastric nodes**
  - **Left and right gastroepiploic nodes**
  - **Short gastric nodes**
- Ultimately they drain into the **celiac nodes**



# QUIZ



Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8
C	C	A	B	C	A	B	A

**Q1:** At which level does the esophagus ends ?

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

**Q2:** Which of the following is a lateral relation of the cervical Esophagus?

- A. Trachea
- B. Aortic arch
- C. Lobes of thyroid gland
- D. Pericardium

**Q3:** Which of the following is a direct branch of the celiac artery?

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

**Q4:** barium swallow will help to assess which of the following?

- A. left ventricle dilation
- B. left atrial dilation
- C. Right atrial dilation
- D. Right ventricle dilation

**Q5:** Which one is from the posterior relations of the stomach :

- A. Anterior abdominal wall
- B. Diaphragm
- C. Left crus of diaphragm
- D. Base of the left pleura

**Q6:** The Lesser curvature is attached to which of the following?

- A. liver by gastrohepatic ligament
- B. liver by gastrosplenic ligament
- C. Colon by lesser omentum
- D. Colon by gastrosplenic ligament

**Q7:** The Fundus of the stomach is located at which level?

- A. 4th intercostal space just below the apex of the heart
- B. 5th intercostal space just below the apex of the heart
- C. 5th intercostal space just above the apex of the heart
- D. 6th intercostal space just above the apex of the heart

**Q8:** Second esophageal constriction is located at which of the following?

- A. at the crossing with the aortic arch and left main bronchus
- B. at the junction with the stomach
- C. at the junction with the pharynx
- D. at the junction with the Larynx



# Members board

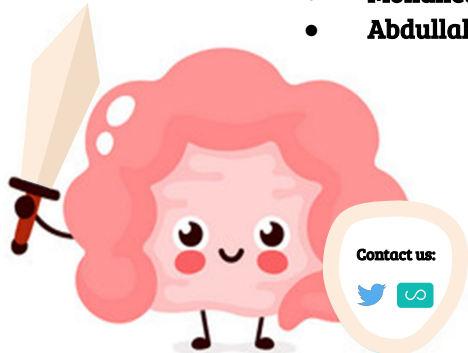


## Team leaders

### ● **Abdulrahman Shadid**

#### Boys team:

-  **Mohammed Al-huqbani**
- **Salman Alagla**
- **Ziyad Al-jofan**
- **Ali Aldawood**
- **Khalid Nagshabandi**
- **Sameh nuser**
- **Abdullah Basamh**
- **Alwaleed Alsaleh**
- **Mohaned Makkawi**
- **Abdullah Alghamdi**



### ● **Ateen Almutairi**

#### Girls team :

- **Ajeed Al Rashoud**
- **Taif Alotaibi**
- **Noura Al Turki**
- **Amirah Al-Zahrani**
- **Alhanouf Al-haluli**
- **Sara Al-Abdulkarem**
- **Renad Al Haqbani**
- **Nouf Al Humaidhi**
- **Jude Al Khalifah**
- **Nouf Al Hussaini**
- **Danah Al Halees**
- **Rema Al Mutawa**
- **Maha Al Nahdi**
- **Razan Al zohaifi**
- **Ghalia Alnufaei**