



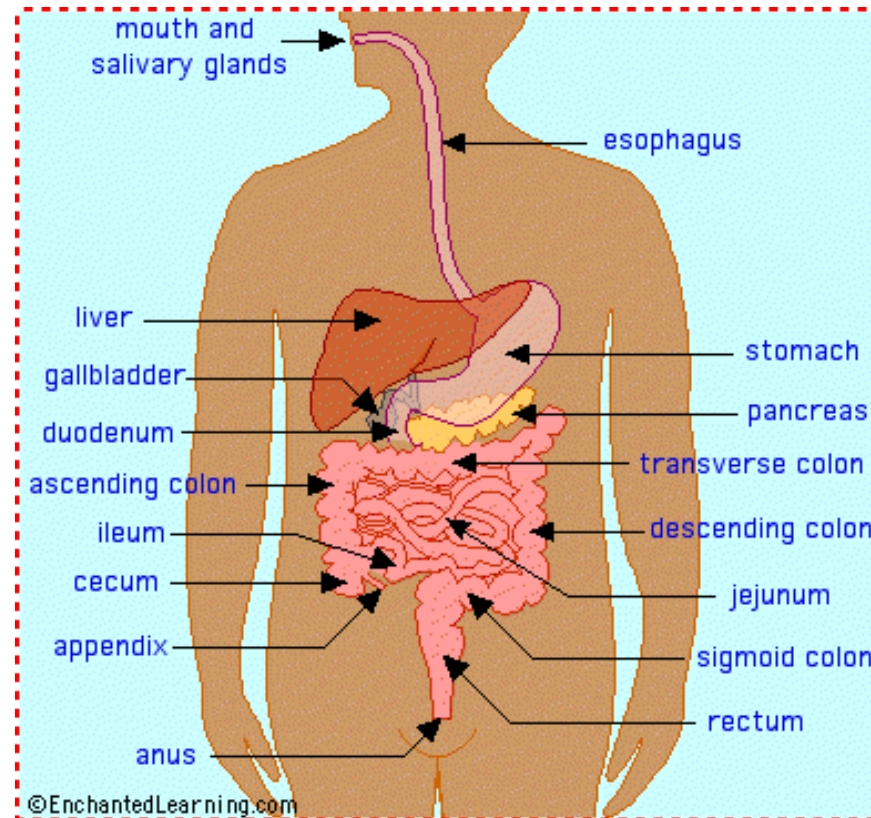
# OUTLINE

- Introduction to the Digestive System
- Divisions
  - Alimentary Canal
  - Accessory Organs
- Organs
- Location
- Functions

The digestive system is a continuous tube that begins at the mouth and ends at the anus.

Measuring about 30 feet long in the average adult, it is known as the alimentary canal or gastrointestinal tract. It has 3 functions: the digestion of food into nutrients, the absorption of nutrients into the bloodstream, and the elimination of solid wastes.

## What is the digestive system?



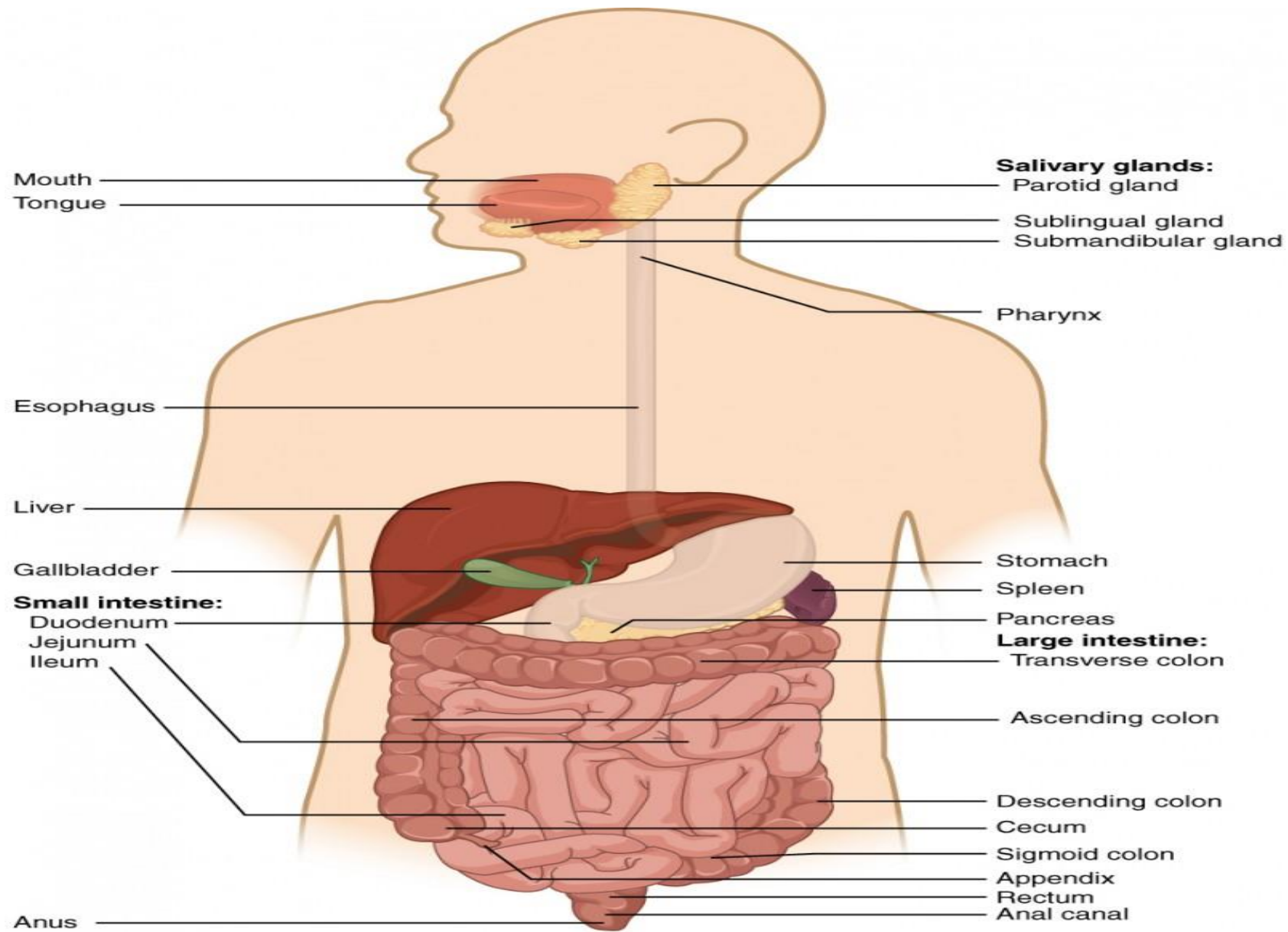
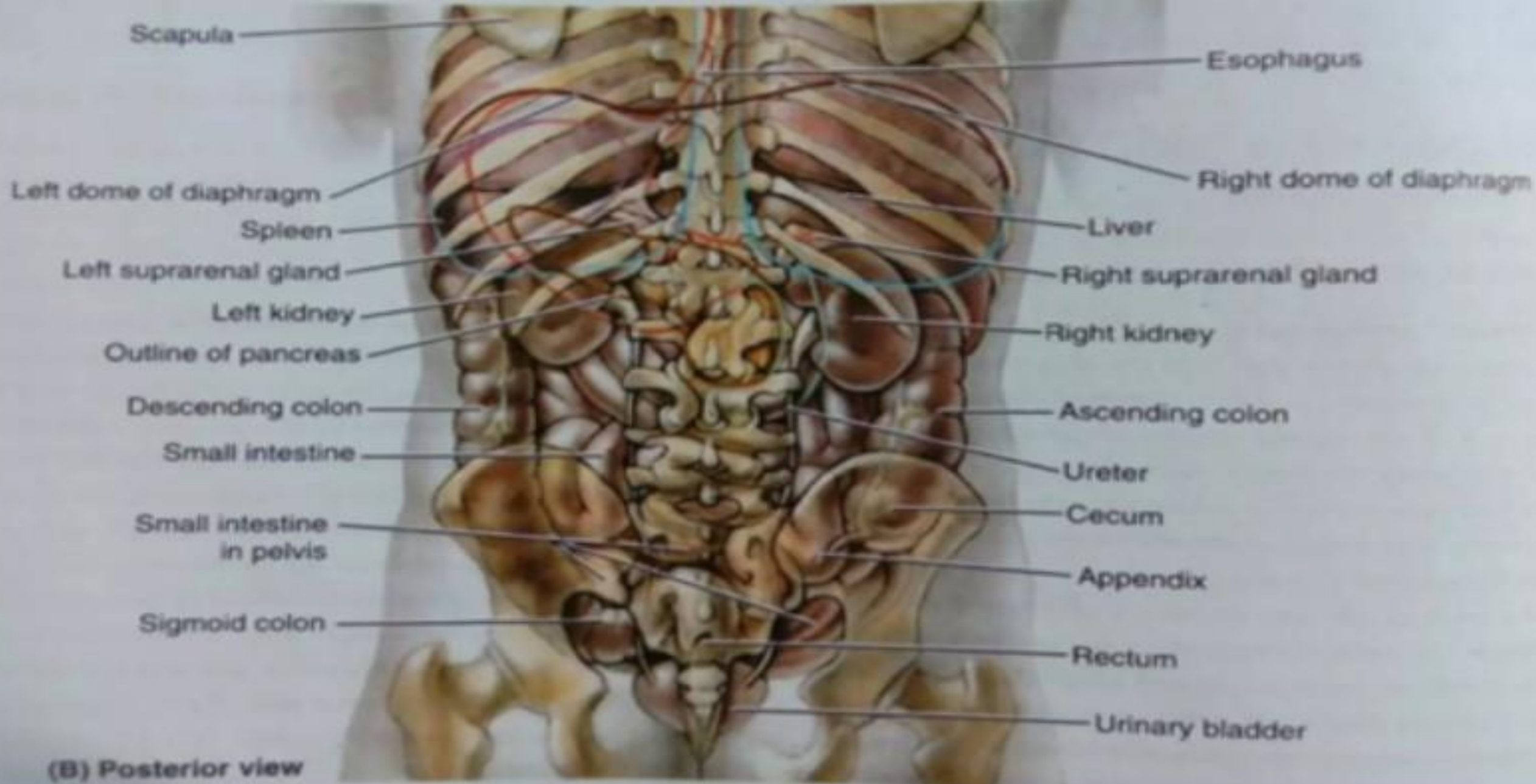


Fig: Anterior view of the Digestive System



**Fig: Posterior view of the Digestive System**

# DIVISIONS

The Digestive System consists of 2 parts: the **Alimentary Canal**, and their **Accessory Organs**.

The alimentary canal is also called the digestive tract OR **gastrointestinal tract** *GIT* (though GIT is technically stomach + intestines only).

The alimentary canal is the long tube that runs from the mouth through to the anus.

# ALIMENTARY CANAL

The main parts of the Alimentary Canal are:

- \* Mouth (Oral cavity)
- \* Pharynx (Throat)
- \* Stomach
- \* Large intestine
- \* Oesophagus (also esophagus)
- \* Small intestine
- \* Rectum and anal canal (anus).

# ACCESSORY ORGANS

The Accessory Organs include other organs (mainly glands) that aid digestion. These include:

- **Tongue, salivary glands and tonsils** (for mouth)
- **Tubular mucous glands** (for pharynx, oesophagus, large intestine)
- **Liver, Gallbladder, and Pancreas** (for small intestine);
- **Epiglottis**: which tips posteriorly at the pharynx to prevent food from entering the larynx/respiratory tract.
- **Mesentery\*** (newly discovered organ that helps hold the intestines to the posterior abdominal cavity).



**Digestion starts in the mouth, where food is chewed and mixed with saliva to form a **bolus**.**

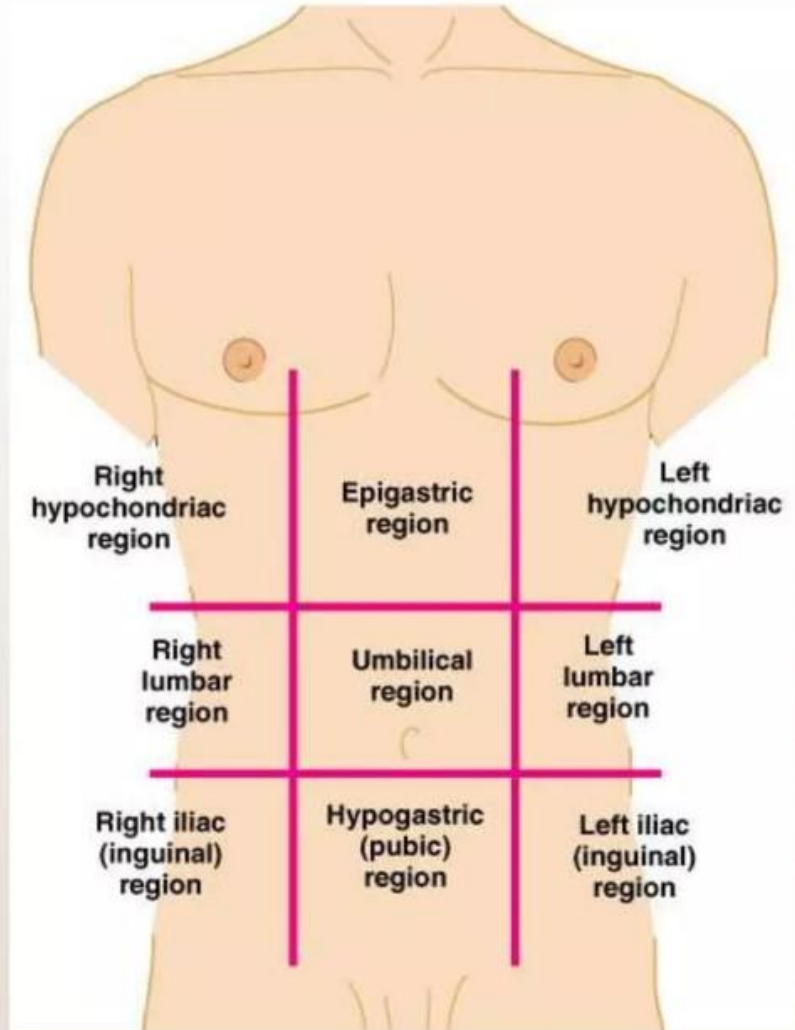
**The bolus produced is then swallowed down the pharynx and oesophagus via **peristaltic contractions** and into the stomach.**

**In the stomach, it is mixed with gastric juice to form a semifluid substance called **chyme**, then moved to the duodenum (small intestine).**

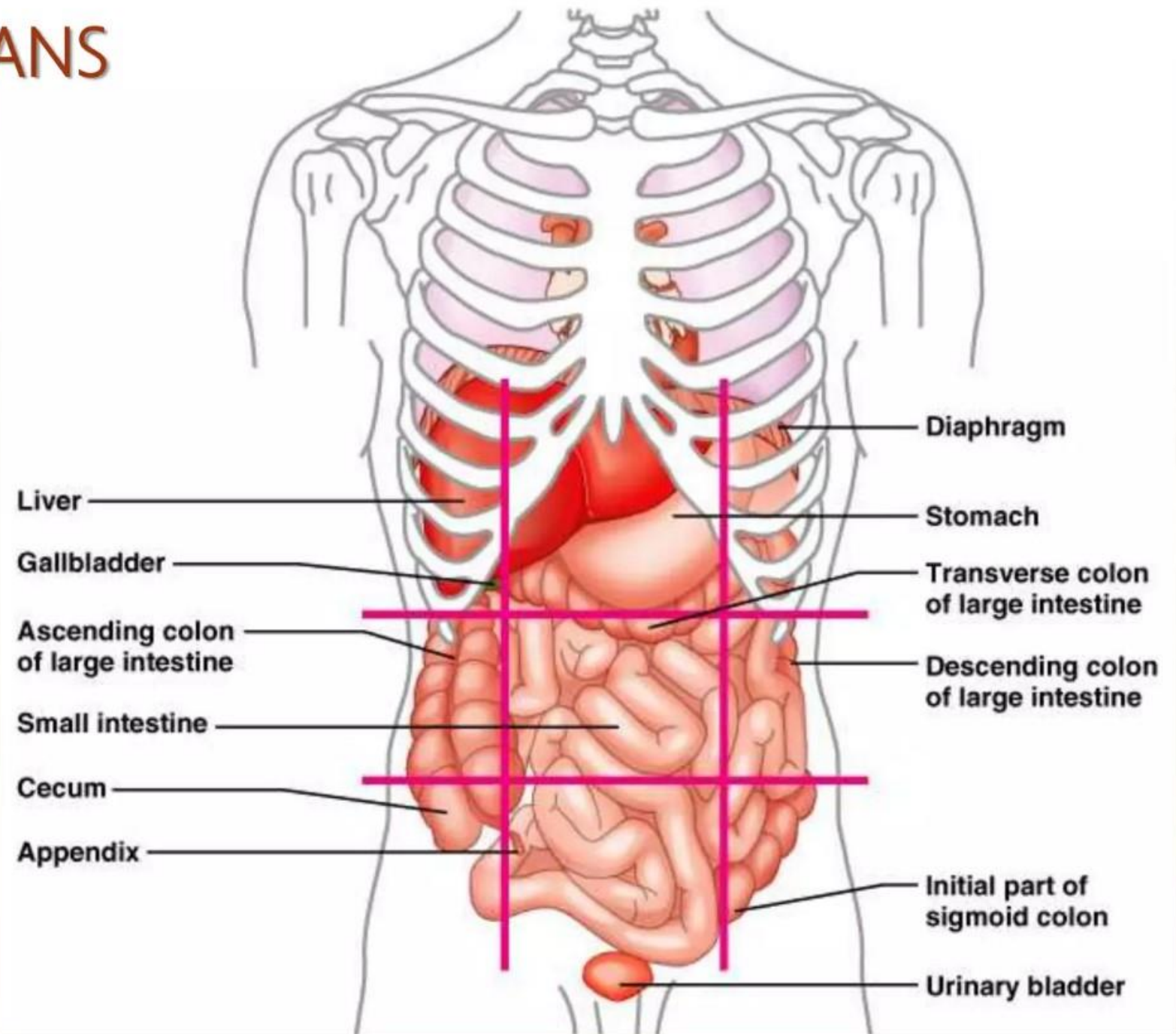
**Most of the digestion takes place in the stomach and duodenum of the small intestine.**

**Water and some minerals are reabsorbed in the colon of the large intestine. The chyme is turned to **faeces**. The faeces is defecated from the anus via the rectum.**

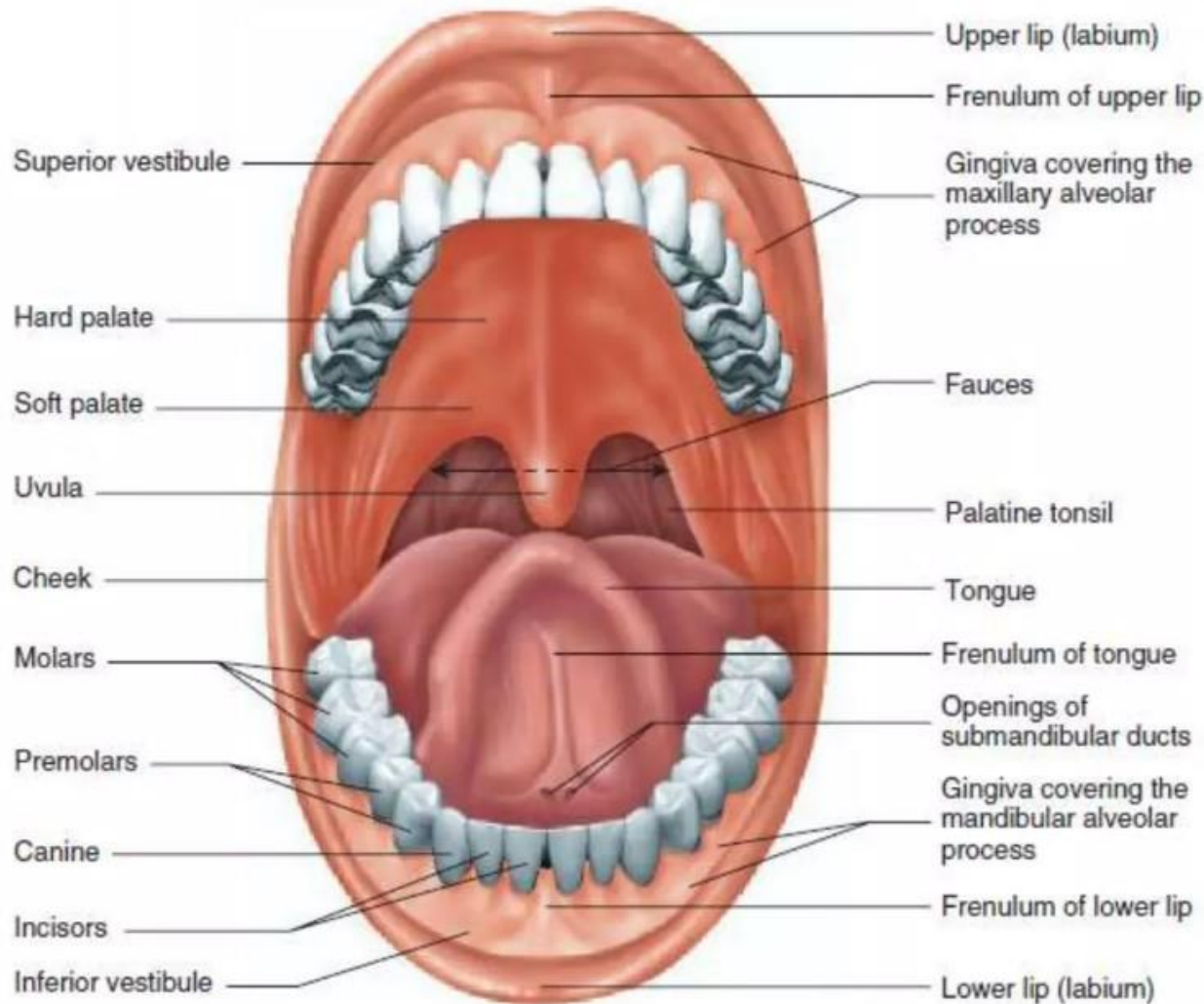
# LOCATION OF ORGANS



*Fig: Abdominopelvic Regions*



# MOUTH (ORAL CAVITY)



The mouth or oral cavity is bounded by muscles and bones:

*Anteriorly* – by the lips

*Posteriorly* – it is continuous with the oropharynx (part of pharynx)

*Laterally* – by the muscles of the cheeks

*Superiorly* – by the bony hard palate and muscular soft palate

*Inferiorly* – by the muscular tongue and the soft tissues of the floor of the mouth.

# TONGUE

The tongue is a large, muscular organ that occupies most of the oral cavity.

It is attached by its base to the *hyoid bone*, and by thin fold of tissue called the *frenulum*, to the floor of the mouth.

A groove called the **terminal sulcus** divides the tongue into two parts.

- Anterior: covered by **papillae** (contains some taste buds).
- Posterior: contains few small glands and a large amount of lymphoid tissue, the **lingual tonsil**.

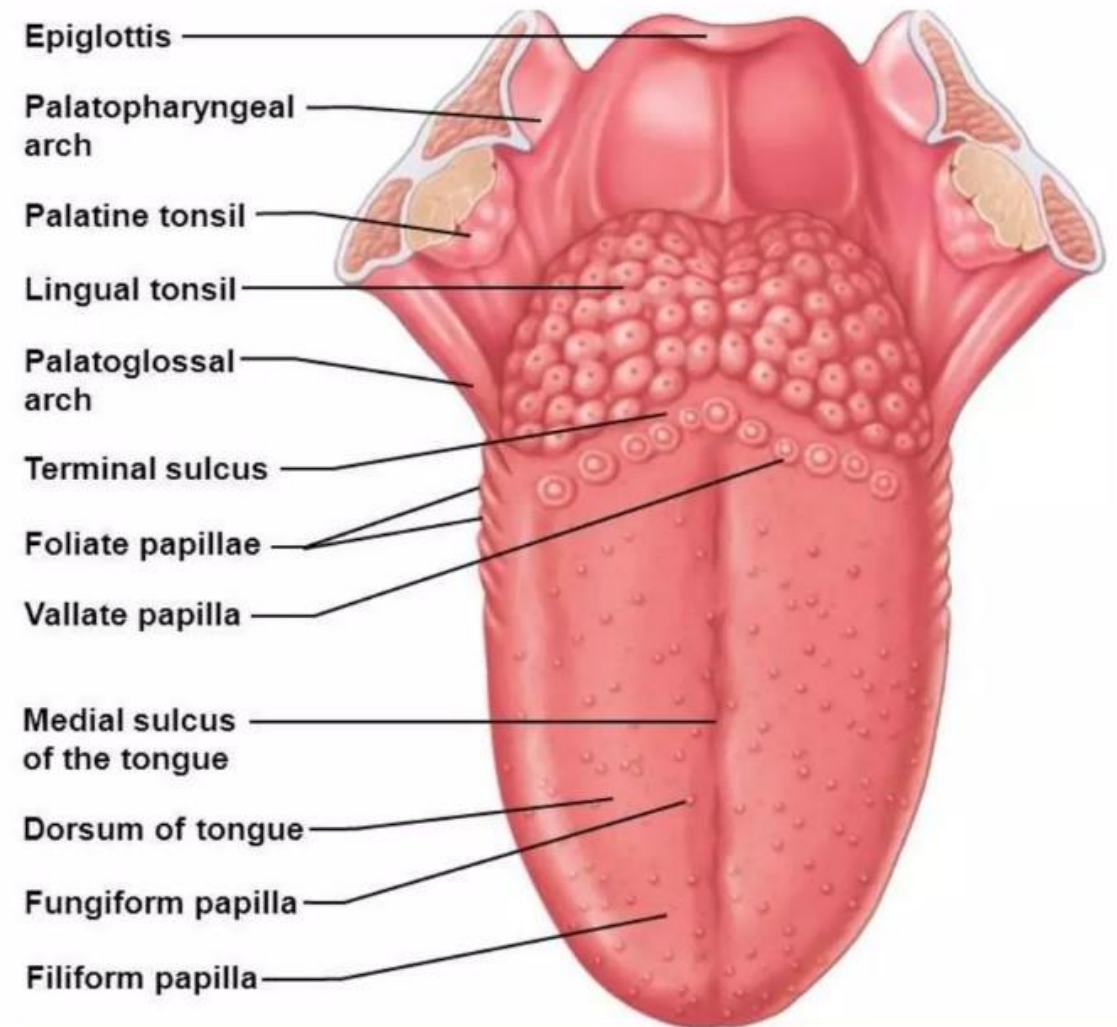


Fig: Dorsal surface of tongue & tonsils

# TEETH (SKELETAL)

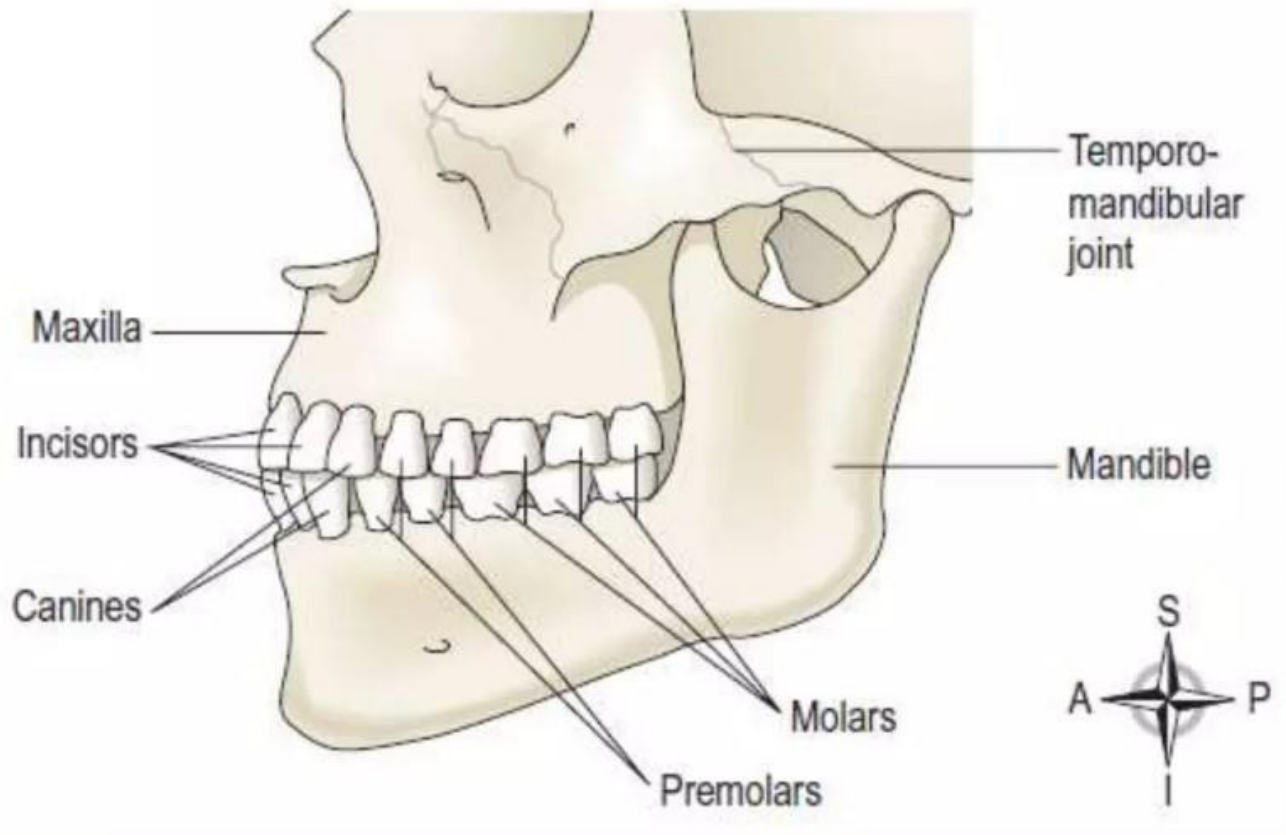


Fig: Skeletal system of the mouth

The teeth are embedded in the mandible and maxilla bones.

Movement of the mandible (lower jaw) allows chewing. The mandible is the only moveable bone in the jaw.

There are 20 temporary teeth. Later, 32 permanent teeth replace the 20.

There are **incisors** (8), **canines** (4), **premolars** (8), and **molars** (12).

# ANATOMY OF TEETH

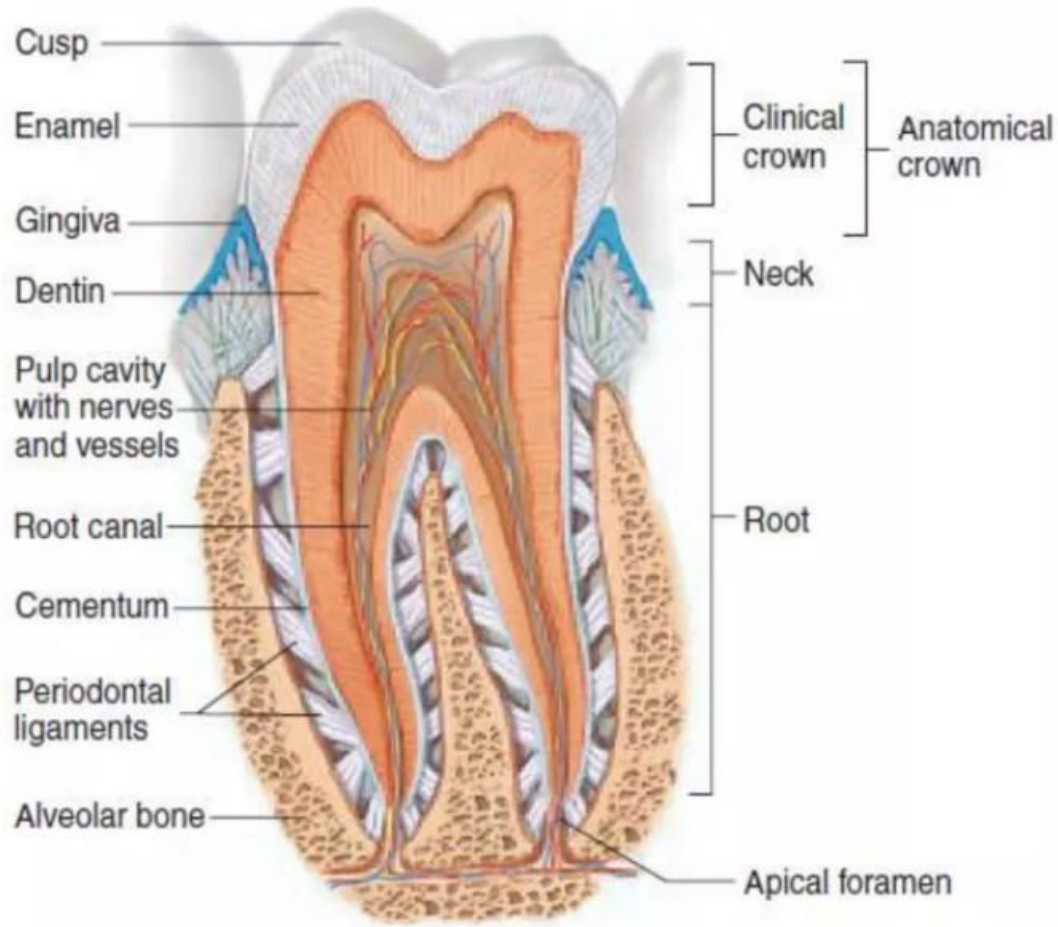


Fig: Cross section of a lower tooth

The teeth is composed of a crown, neck and root. The crown is covered by thin but hard *enamel*.

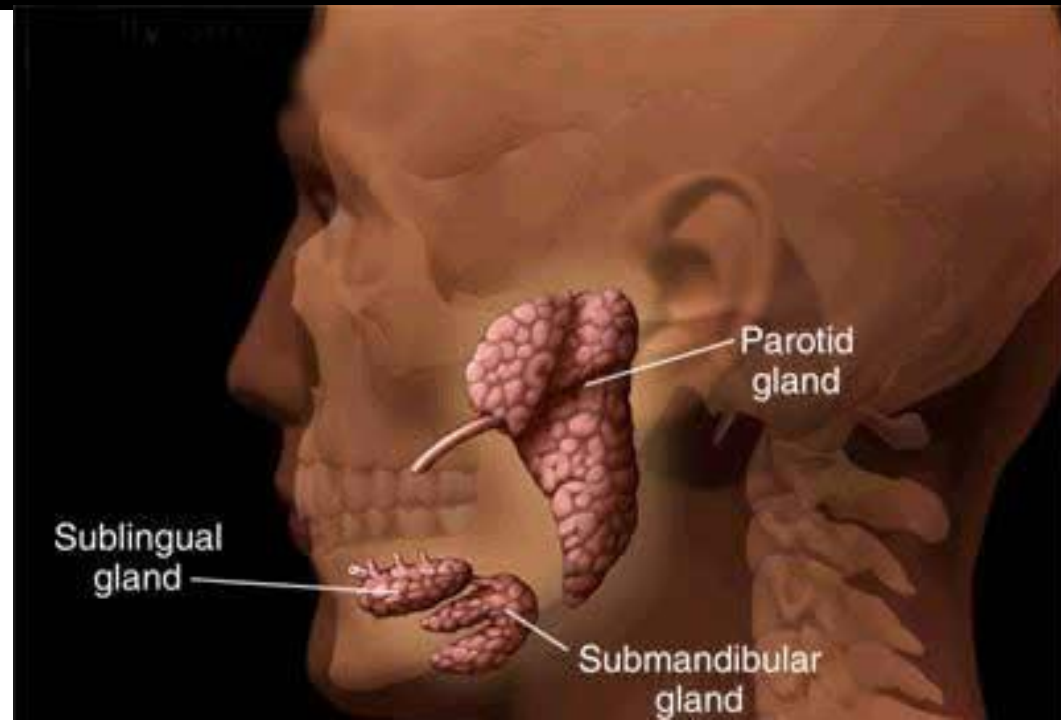
The root is covered with bone-like *cementum*, which secures the tooth in its socket. *Periodontal ligaments* hold the teeth in the alveoli.

Blood vessels and nerves enter the tooth through the *apical foramen*.

The tongue and teeth are important for proper mastication of food, and also for speech.

# **The mouth: salivary glands**

**Three pairs of glands open into the oral cavity, producing saliva: the parotid, sublingual and submandibular glands.**



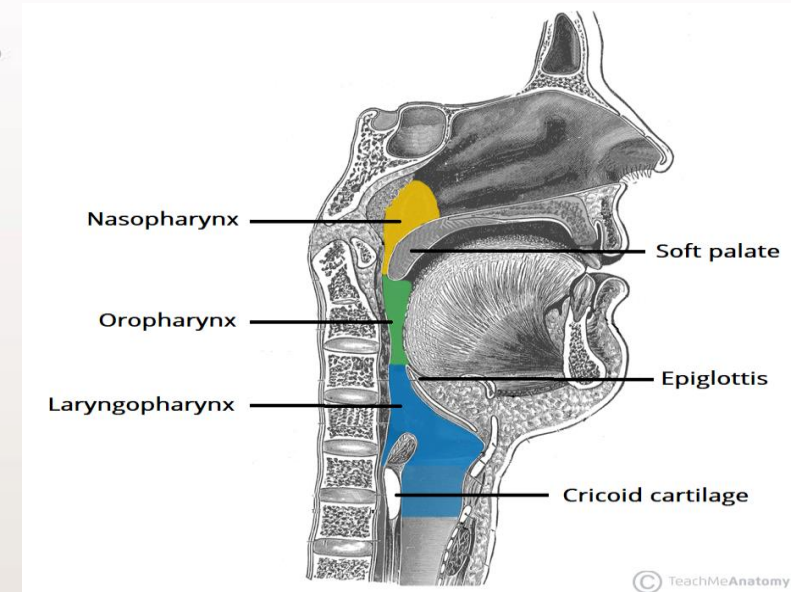
**The sensory organs such as the nose and eyes send a message to the brain, the brain sends the message to the salivary glands, and they secrete the chemicals to begin the digestive process.**

# PHARYNX

It connects to the oral cavity anteriorly, and is continuous with the oesophagus. Food passes from the oral cavity into the pharynx then to the oesophagus below it.

The pharynx consists of three parts:

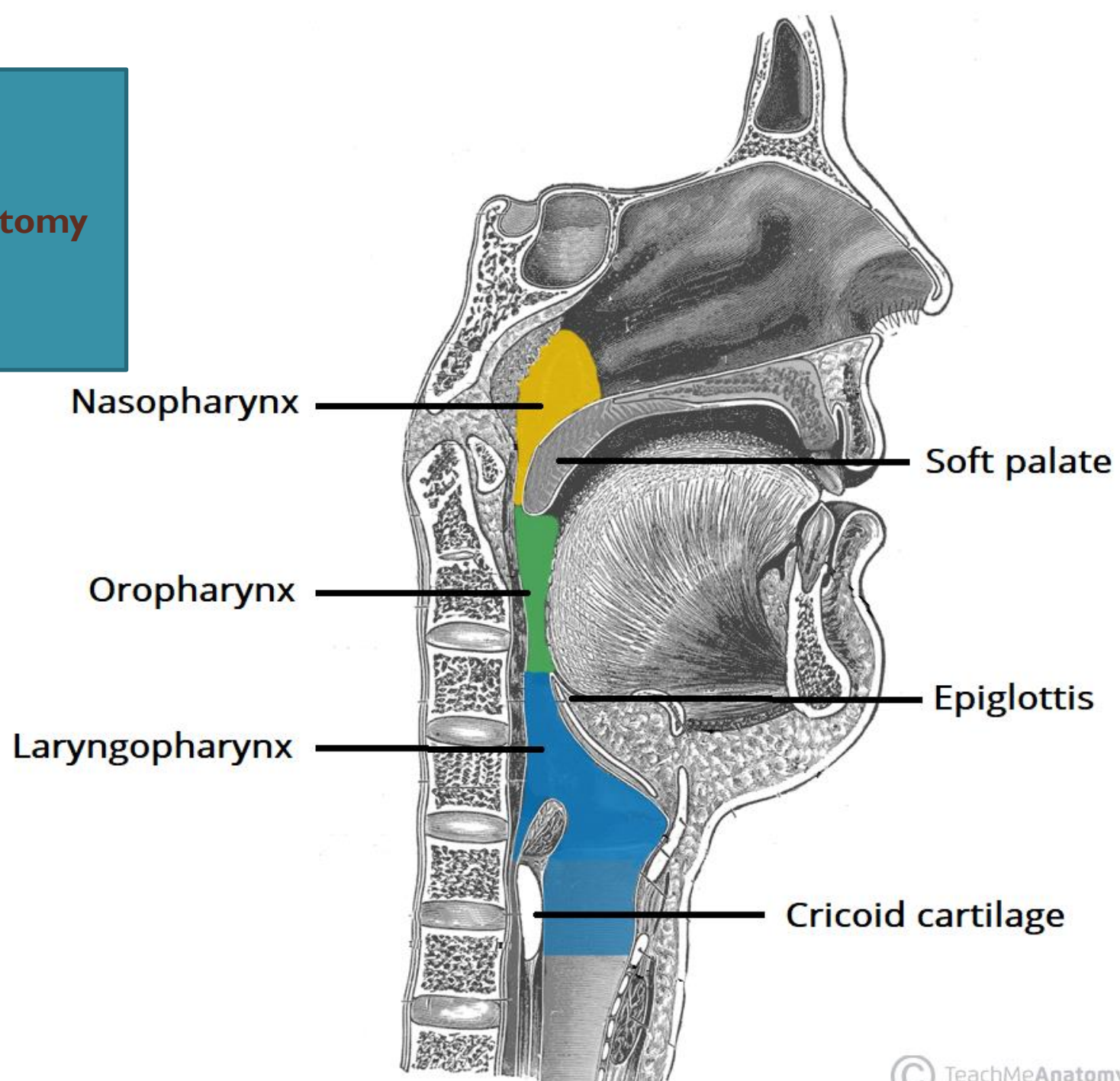
- nasopharynx,
- oropharynx, and the
- laryngopharynx.



It prevents food from entering the nasal cavity (by the soft palate) and the lower respiratory tract (by the epiglottis).



## Pharynx anatomy



# EPIGLOTTIS

Nasopharynx



Soft palate  
Superior pharyngeal constrictor  
Middle pharyngeal constrictor  
Epiglottis  
Inferior pharyngeal constrictor  
Upper esophageal sphincter  
Esophagus

(b) 1. During the pharyngeal phase, the soft palate is elevated, closing off the nasopharynx. 2. The pharynx is elevated (*blue arrows indicate muscle movement*).



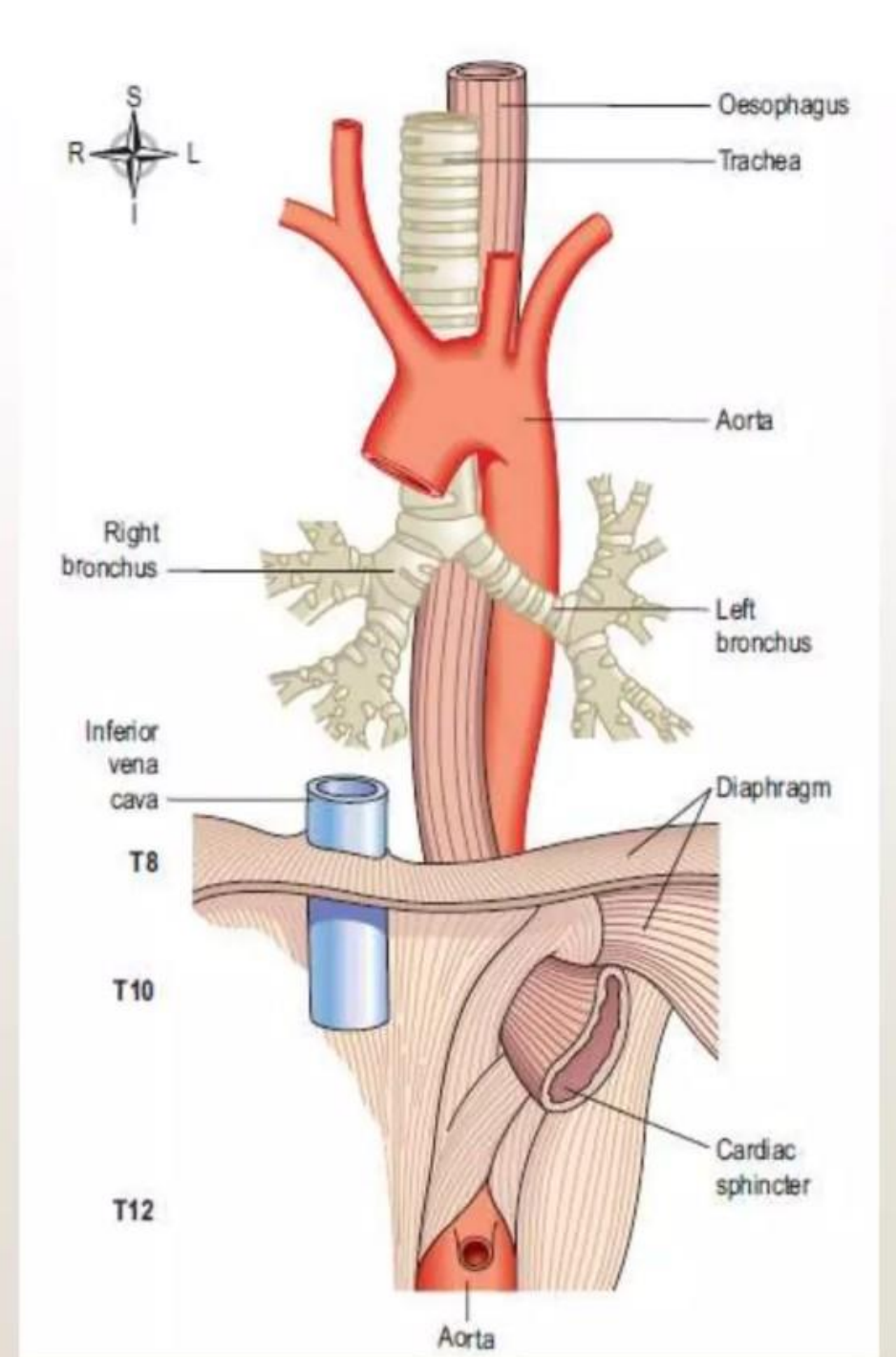
Epiglottis  
Opening of larynx

Figs: Actions of soft palate and Epiglottis in Pharynx during swallowing

# OESOPHAGUS

Also called gullet or esophagus, it is an organ through which food passes from the pharynx to the stomach, aided by *peristaltic contractions*, of its musculature.

It is about 25 cm long and 2 cm in diameter, and **lies in the median plane (mediasternum)** in the thorax, anterior to the spinal column, but posterior to the trachea.

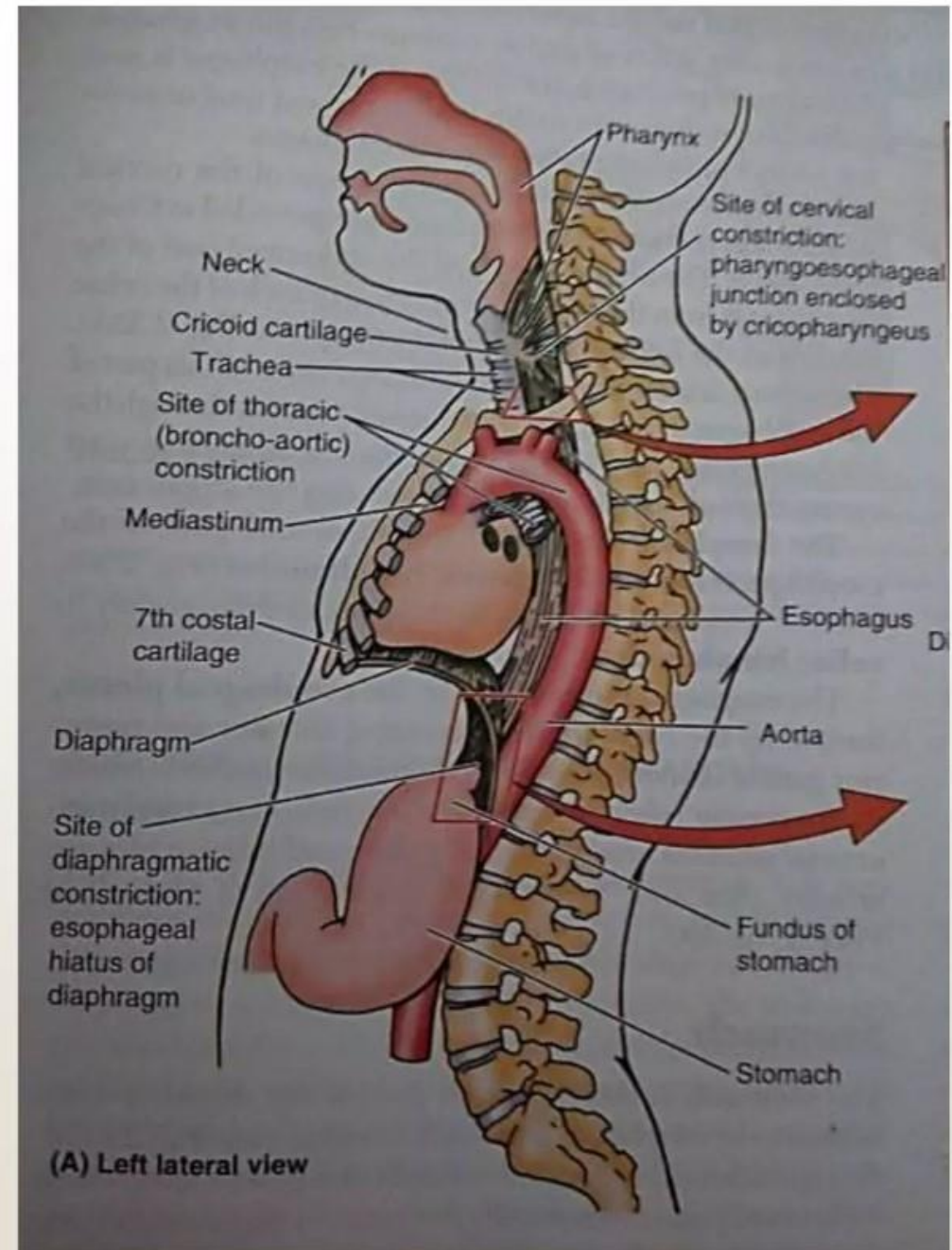


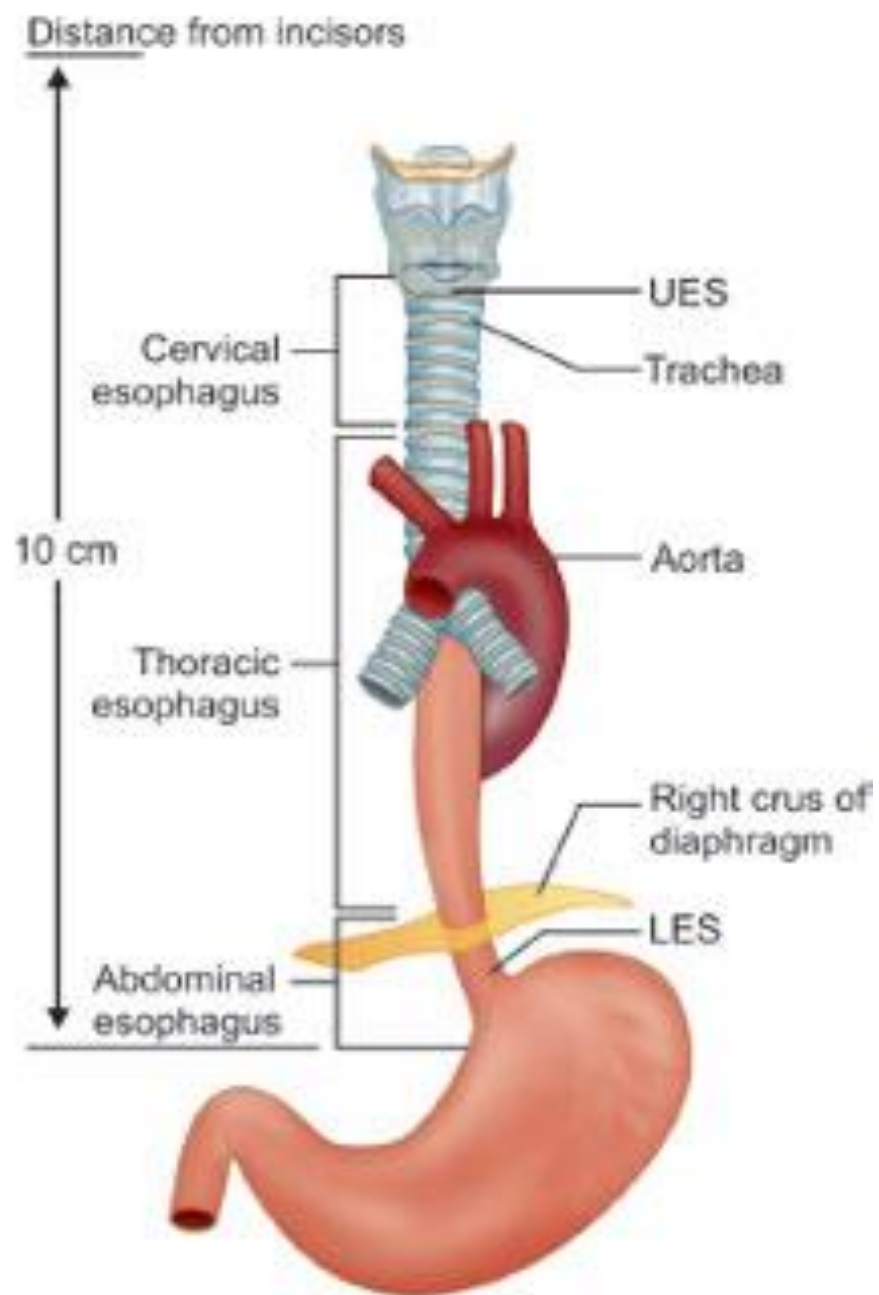
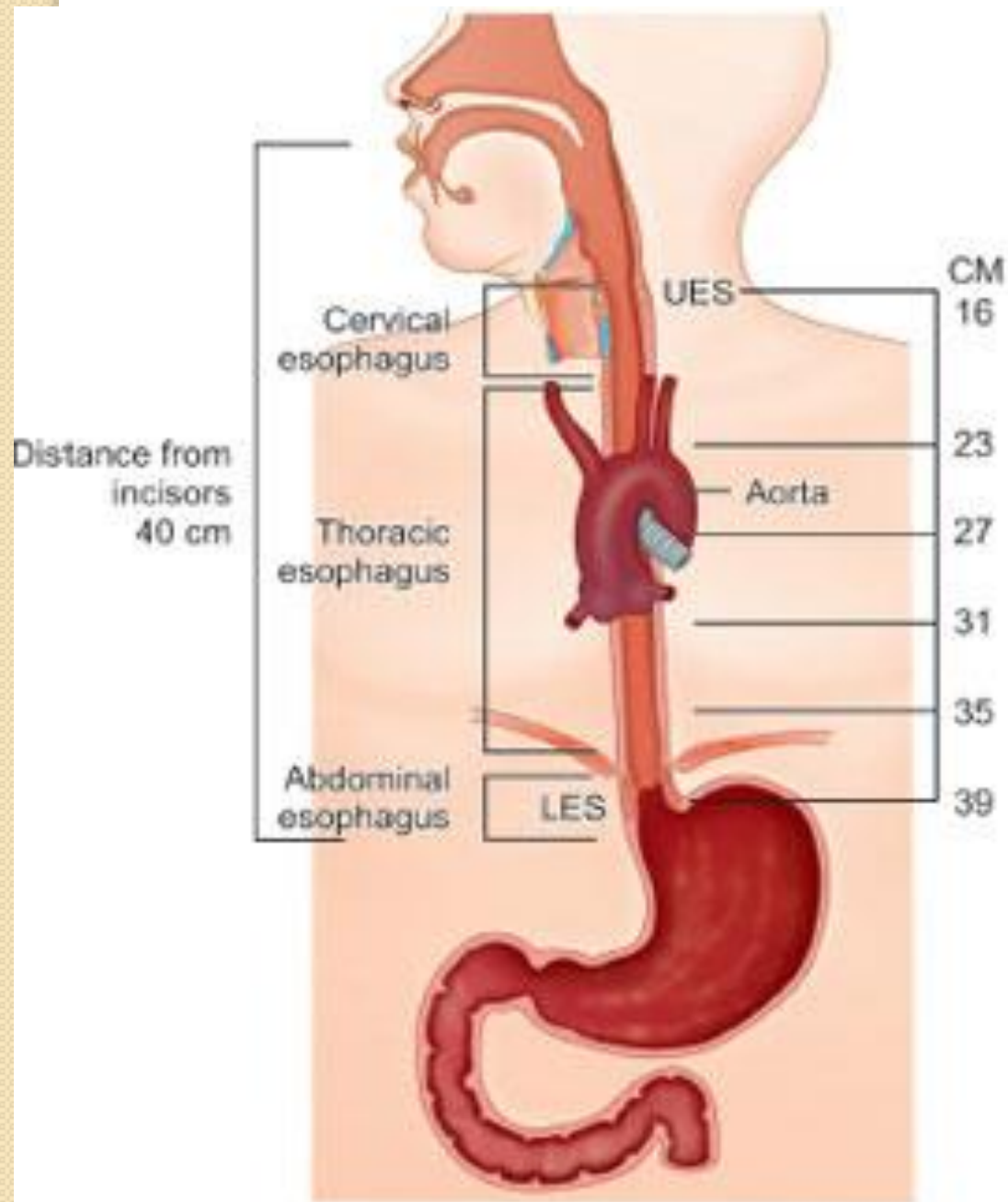
# CONSTRICTIONS OF THE OESOPHAGUS

The oesophagus follows the curvature of the vertebral column.

It also has 3 constrictions (narrowing), where adjacent structures produce impressions:

1. Cervical Constriction (**Upper Oesophageal Sphincter**) – where Pharynx meets Oesophagus.
2. Thoracic (Broncho-Aortic) Constriction – where it is first crossed by arch of aorta.
3. Diaphragmatic Constriction: where it passes through the oesophageal hiatus of the diaphragm at T10, before entering the stomach.





THANK YOU