

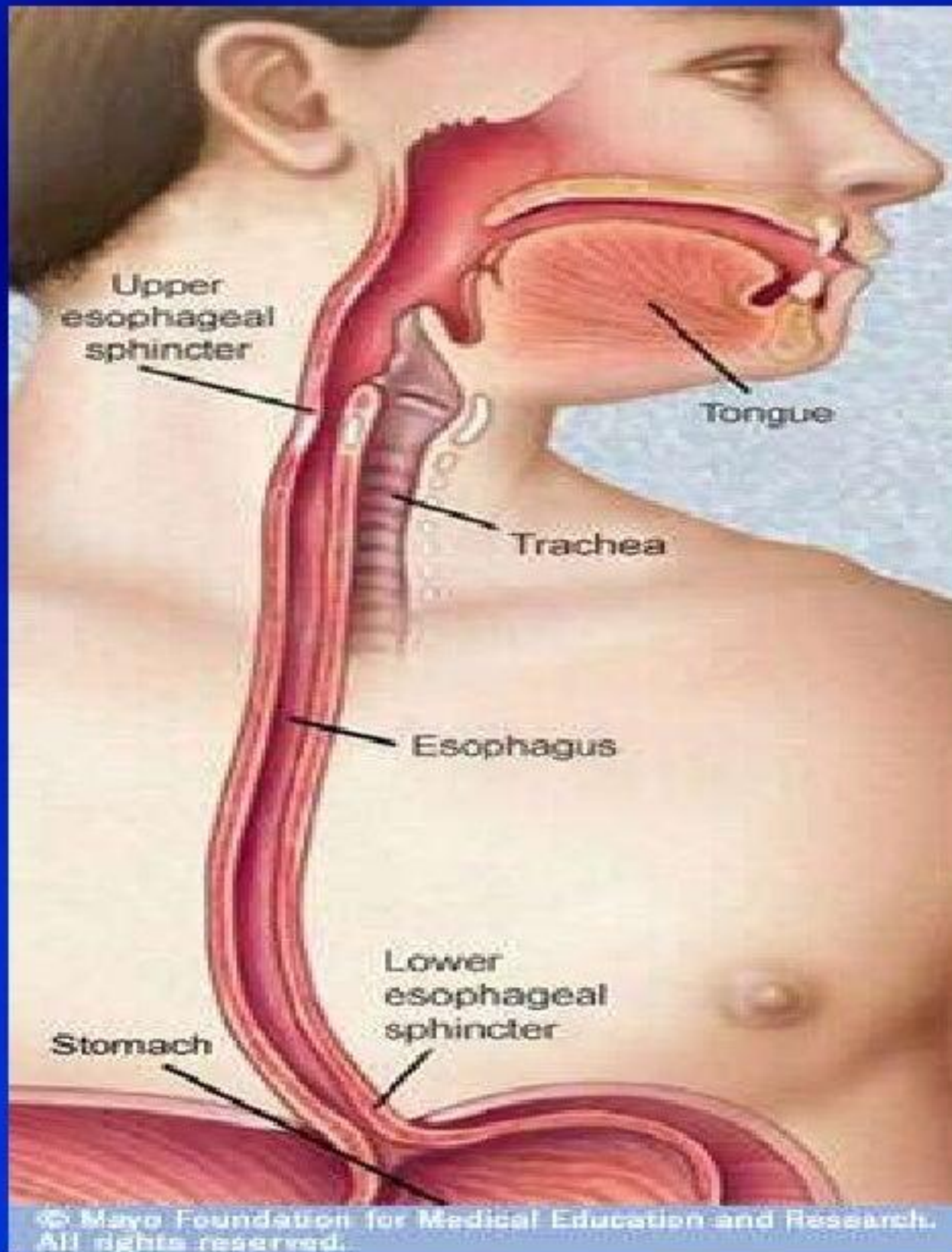
# **BARIUM SWALLOW**

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**RMMCH**



# INTRODUCTION

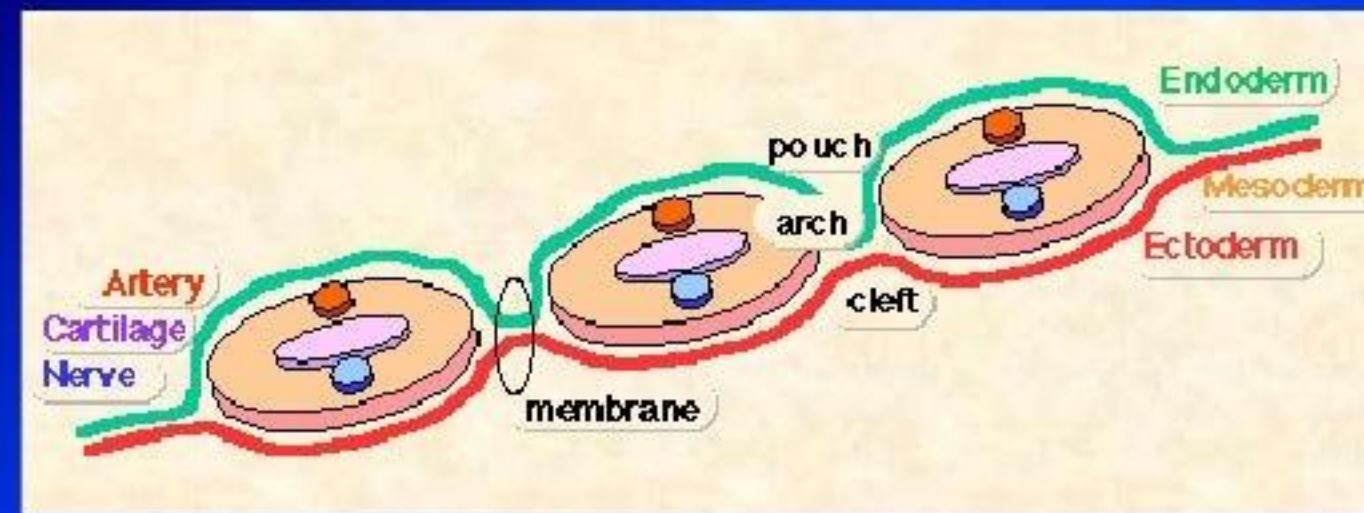


- Barium swallow is a radiological study of pharynx and esophagus upto the level of stomach with the help of contrast.



# EMBRYOLOGY OF PHARYNX

- Head & neck structures are derived from pharyngeal arches 1 & 2.
- Each arch contain similar component derived from endoderm,ectoderm & mesoderm.
- The cavity within the pharyngeal arches forms the pharynx.





# BOUNDRIES OF PHARYNX

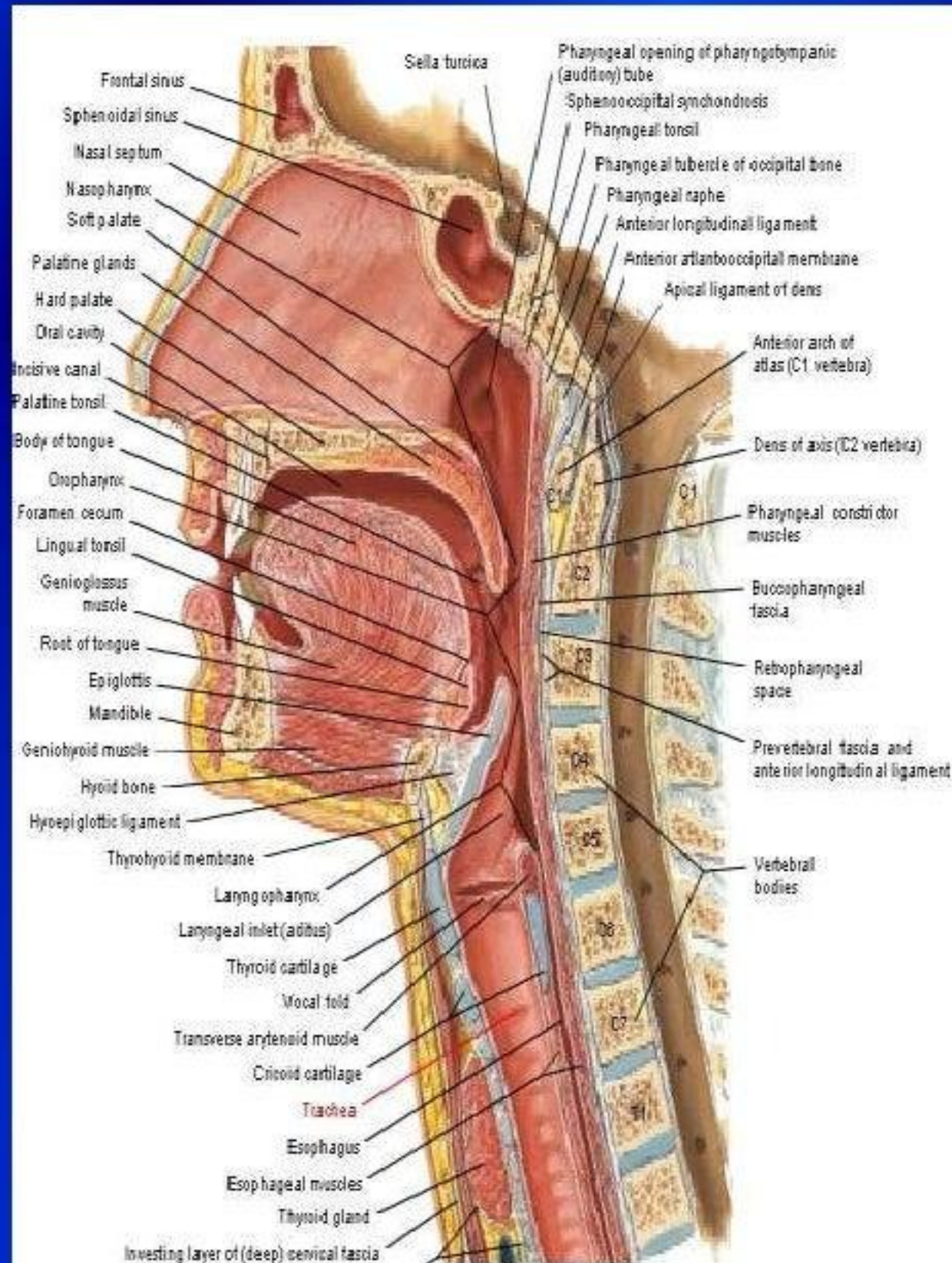
- Anteriorly-mouth & nasal choanae
- Superiorly-soft palate & portion of skull
- Inferiorly- postr of tongue
- Posteriorly- pharnygeal constrictors

# PARTS

- Naso - ant.pharynx joins nasal cavity
- Oro- midportion of pharynx joins oral cavity
- Hypo-inferior pharynx joins larynx.



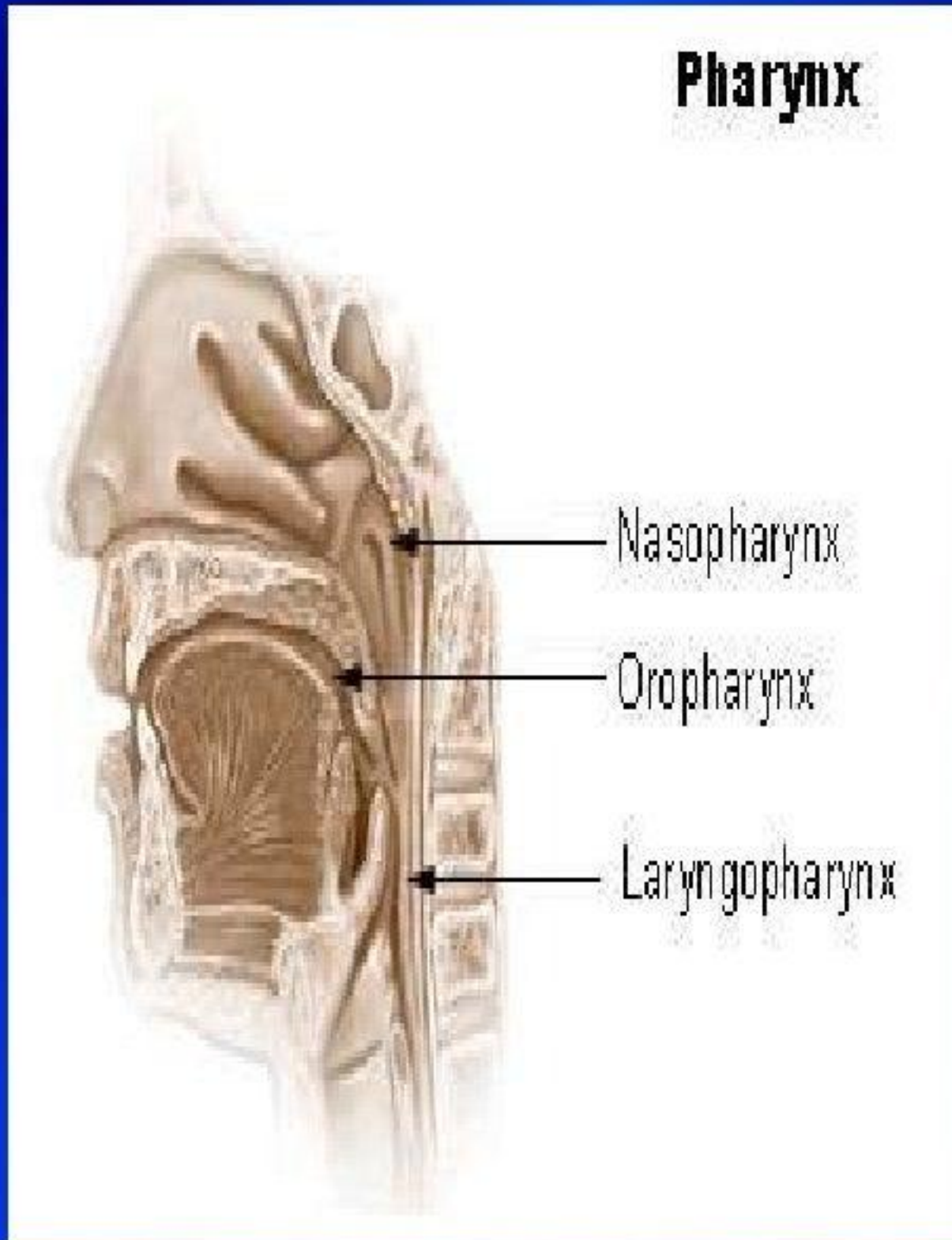
# NASOPHARYNX



- Lies behind the nasal cavity.
- Postero-superiorly this extends from the level of the junction of the hard and soft palates to the base of skull, laterally to include the fossa of Rosenmuller.
- The inferior wall consists of the superior surface of the soft palate.



# OROPHARYNX



- Lies behind the oral cavity.
- The anterior wall - the base of the tongue and the epiglottic valleculae.
- the lateral wall – tonsil, tonsillar fossa, and tonsillar (faucial) pillars;
- the superior wall - inferior surface of the soft palate and the



# LARYNGOPHARYNX / HYPOPHARYNX

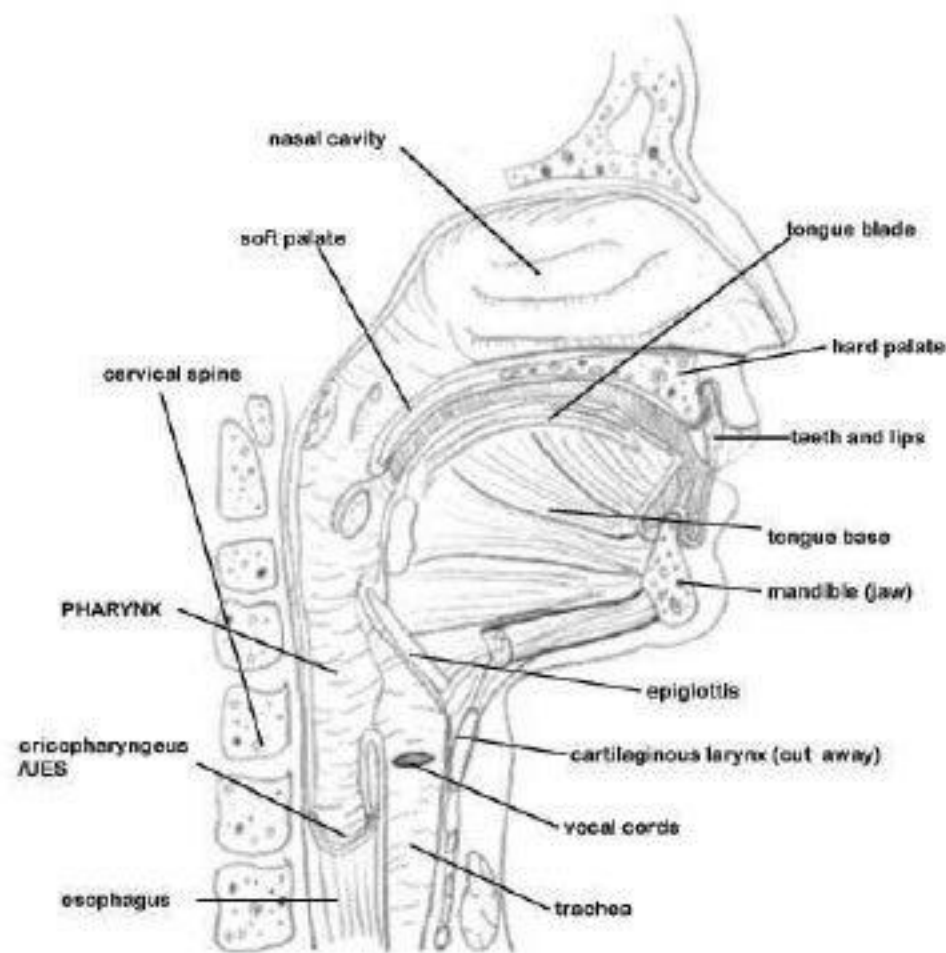


Figure 1—Swallowing Anatomy

- Levels between C4 to C6, it includes the pharyngo-esophageal junction (postcricoid area), the piriform sinus and the posterior pharyngeal wall.
- Lined with a stratified squamous epithelium.
- It lies inferior to the upright epiglottis and extends to the larynx, where the respiratory and digestive pathways diverge.
- At that point, the laryngopharynx is continuous with esophagus posteriorly.



# EMBRYOLOGY OF ESOPHAGUS

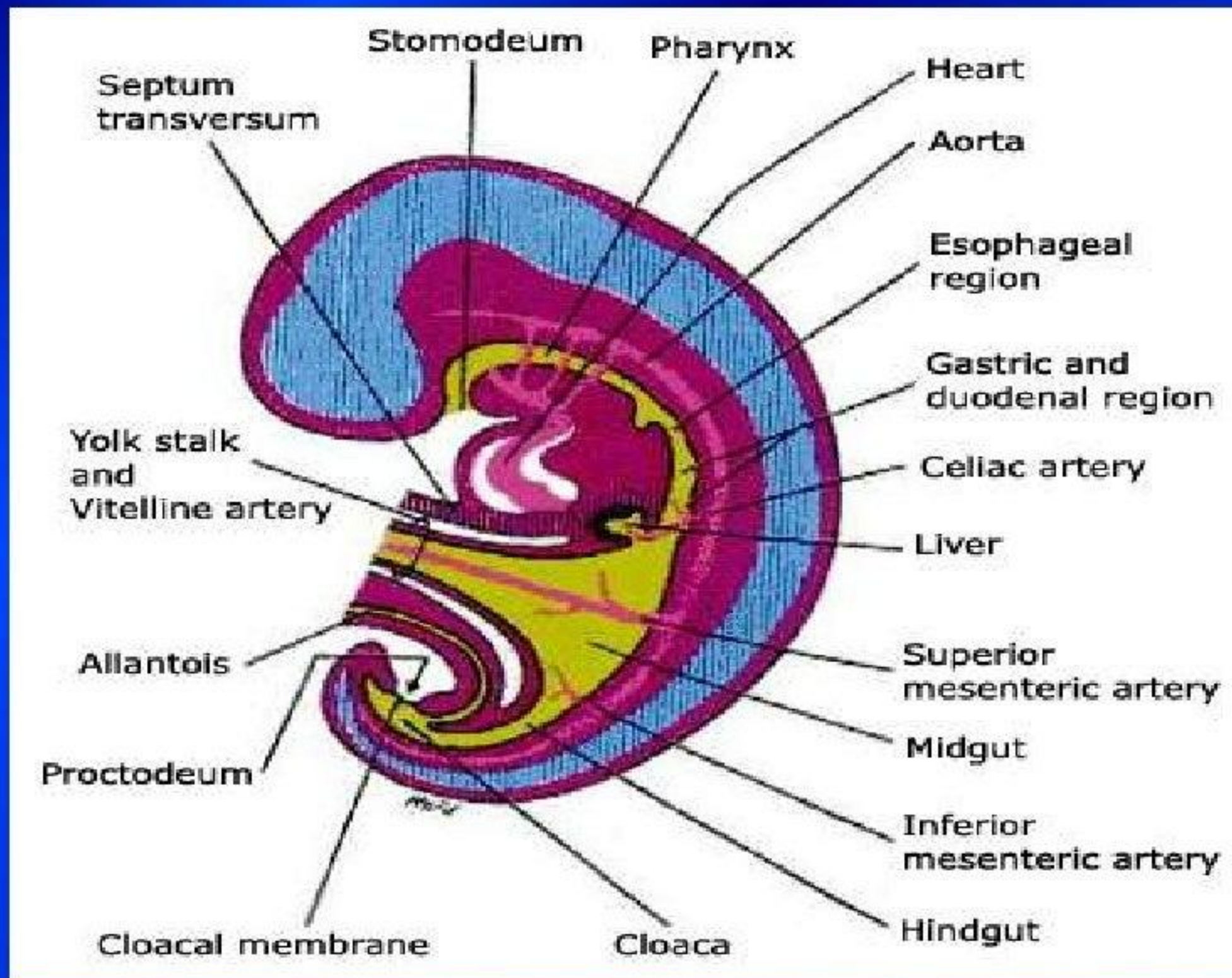
- Primitive gut tube forms during 4<sup>th</sup> week of gestation.
- It is derived from incorporation of the dorsal part of the definitive yolk sac into embryo due to embryonic folding.



- Primitive gut is divided into foregut, midgut and hindgut.
- Laryngotracheal diverticulum develop in the midline of the ventral wall of the foregut.
- The distal end enlarges to form lung buds, which is separated from the foregut by tracheo-esophageal folds.



# Primordial Gut





- Tracheo-esophageal fold fuse in midline to form tracheo-esophageal septum.
- The foregut divide into laryngotracheal tube(larynx,trachea,bronchi &lungs) ventrally and esophagus dorsally.
- Esophagus is initially short ,but lengthens with descent of heart and lungs.



respiratory  
diverticulum



week 3  
lateral view

tracheo-  
oesophageal  
septum



week 4  
front view

pharynx

trachea

lung  
bud



oesophagus  
end of week 4  
front view



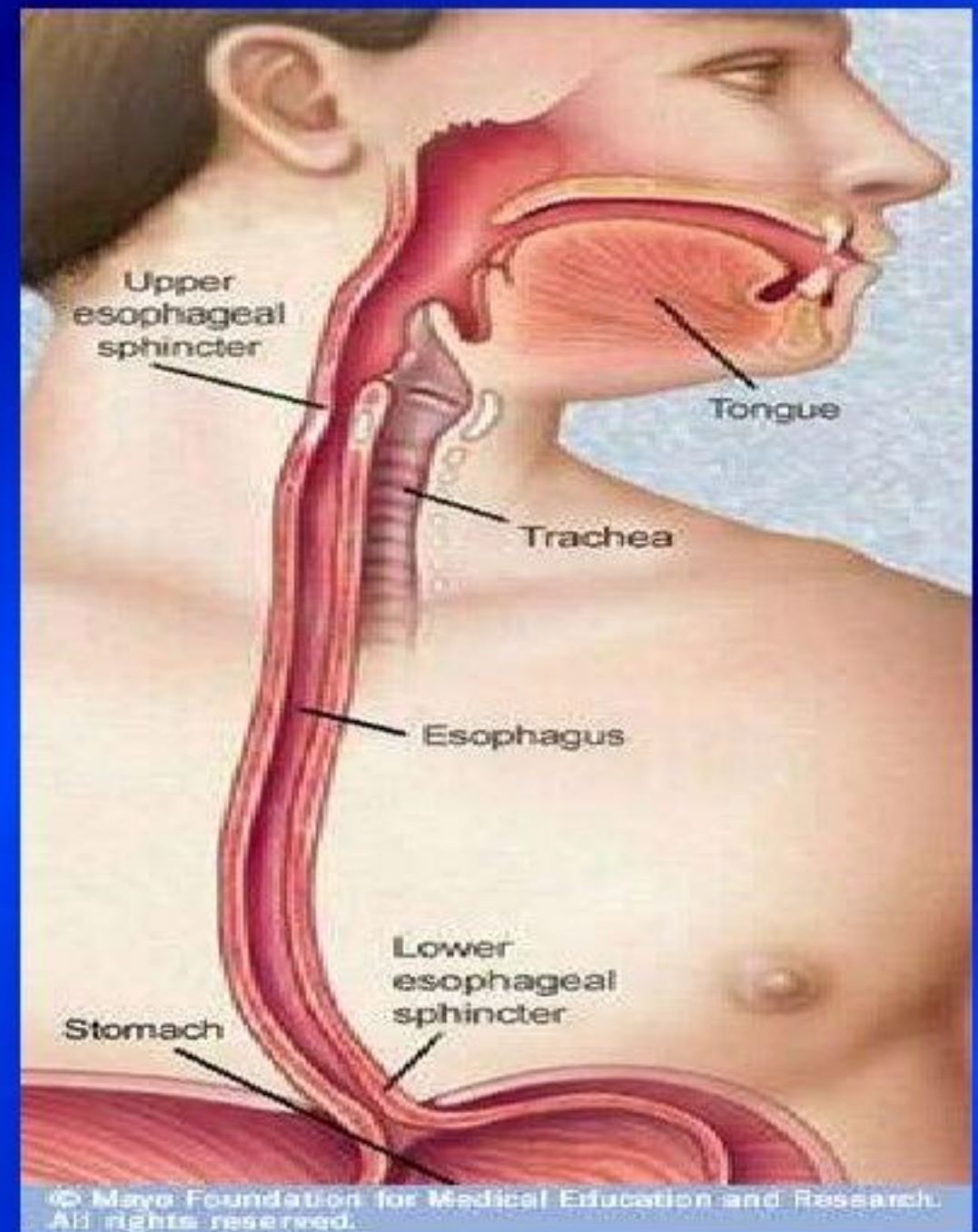
# CONGENITAL ANOMALIES

- esophageal atresia, EA,
- tracheoesophageal fistula, TEF,
- esophageal stenosis,
- esophageal cyst,
- tracheobronchial remnant,
- esophageal atresia and tracheoesophageal fistula, EA-TEF,
- esophageal web,
- esophageal muscular hypertrophy,
- esophageal duplications,
- columnar epithelium-lined lower esophagus,
- Barrett's esophagus, laryngotracheoesophageal cleft, LTEC



# ANATOMY OF ESOPHAGUS

- Flattened muscular tube, size 18 to 26cm beginning at lower border of cricoid cartilage (opp 6<sup>th</sup> cervical vertebra) and ending at cardiac orifice of stomach (opp 11<sup>th</sup> cervical vertebra)
- Divided into 3 anatomical segments  
i.e., cervical, thoracic & abdominal





- Cervical esophagus extend from pharyngeal junction to suprasternal notch and is abt 4-5cm.
- At this level, esophagus bordered anteriorly by trachea, post by vertebral column and lat by carotid sheath and thyroid gland.

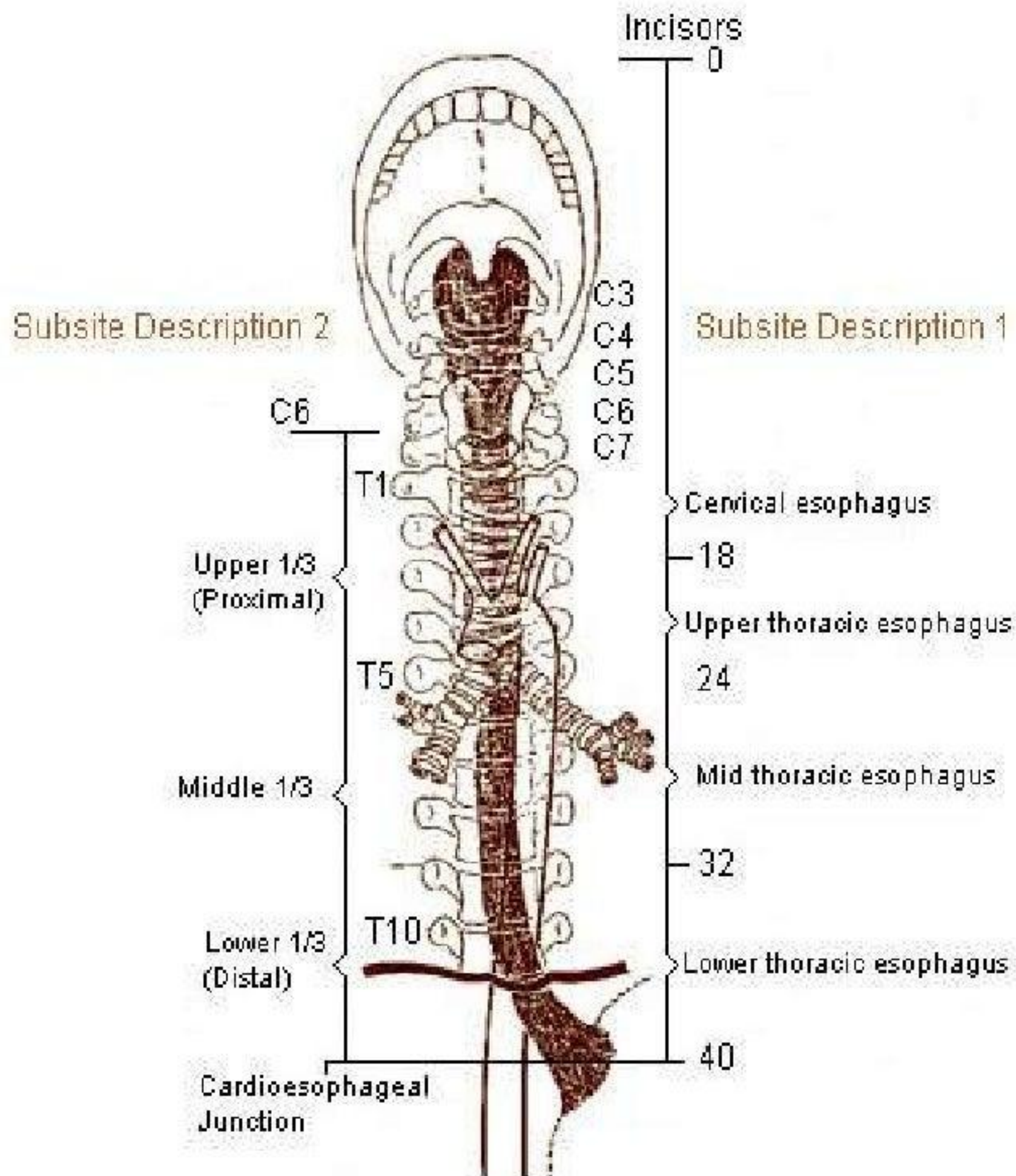


- Thoracic esophagus extend from suprasternal notch(opp T1) to diaphragmatic hiatus(opp T10).18cm in length.
- Anteriorly lies the trachea, rt pulmonary artery, left main bronchus & diaphragm.post it rest on vertebral column and closely related to thoracic duct, azygous & hemiazygous vein.



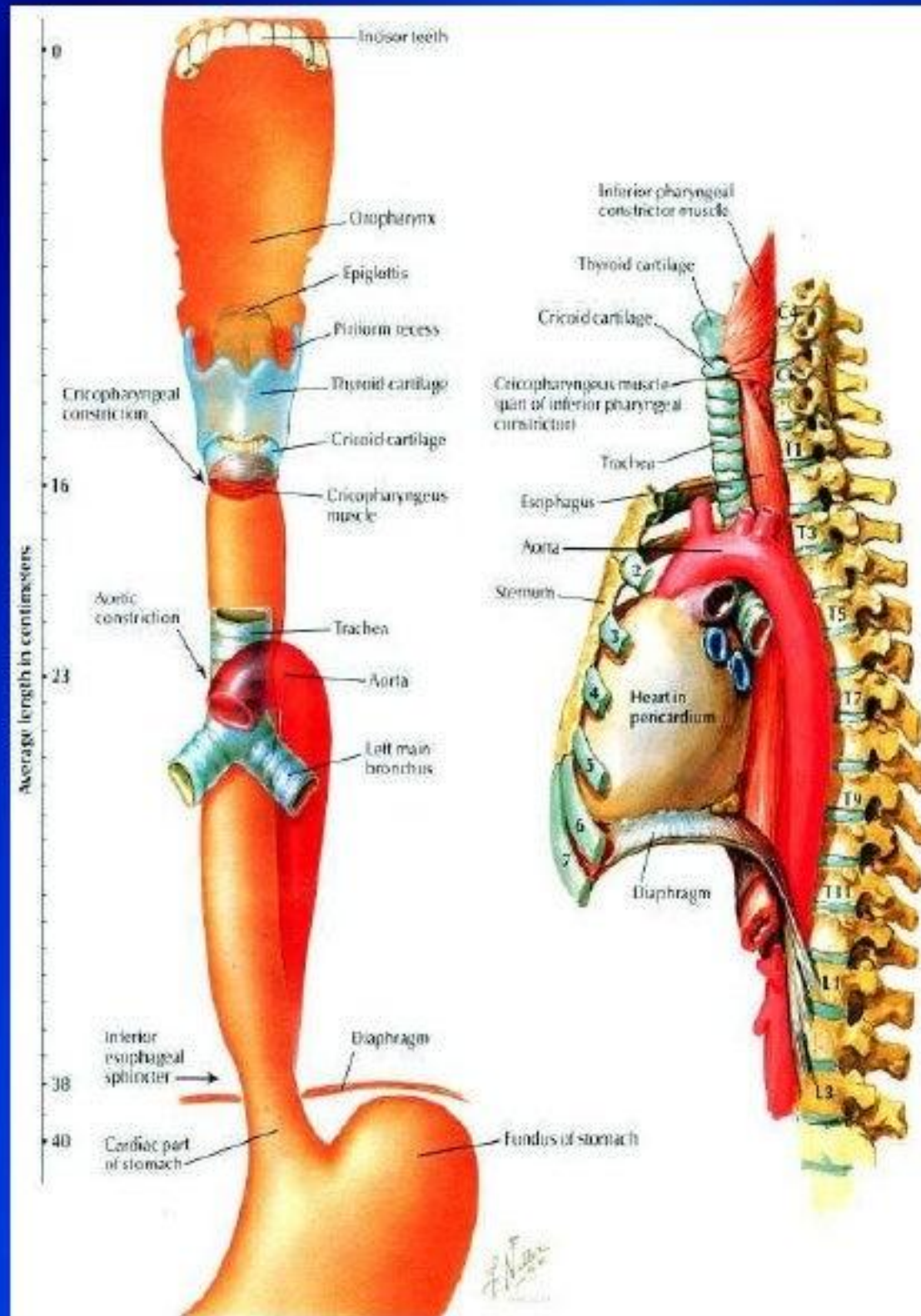
- Abdominal esophagus extend from diaphragmatic hiatus to orifice of cardia of stomach.size abt 1 cm.
- Its right border is continuous with lesser curvature & left border is demarcated from fundus by esophagogastric angle of implantation(angle of His)







# ESOPHAGEAL CONSTRICTION



- Superiorly: level of Cricoid cartilage, juncture with pharynx
- Middle: crossed by aorta and left main bronchi
- Inferiorly: diaphragmatic sphincter