SURGICAL ANATOMY PHARYNX

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SURGICAL ANATOMY PHARYNX

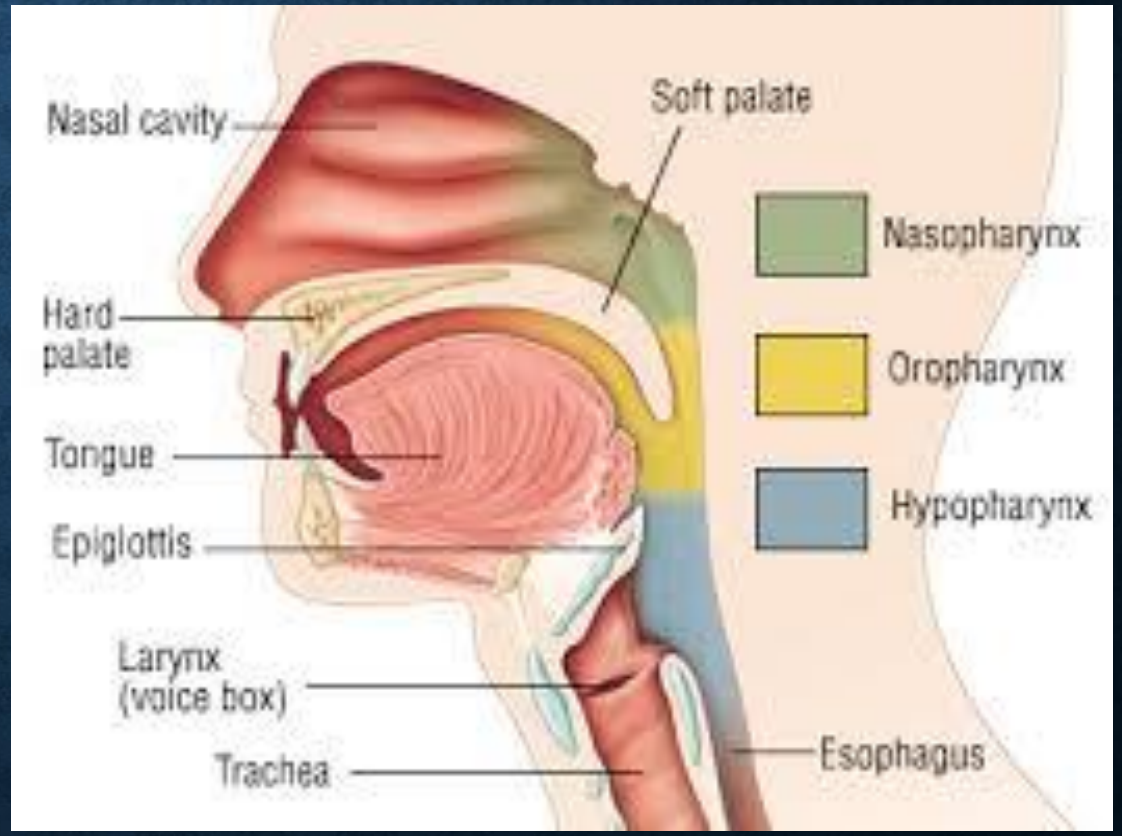
- Introduction
- Sites
- Histology
- Anatomy
- Applied anatomy

ANATOMY INTRODUCTION

- The pharynx is situated behind the nasal cavities, the mouth, and the larynx.
- It may be divided into nasal, oral, and laryngeal parts.
- Its upper, wider end lying under the skull.
- Its lower, narrow end becoming continuous with the oesophagus opposite the sixth cervical vertebra.

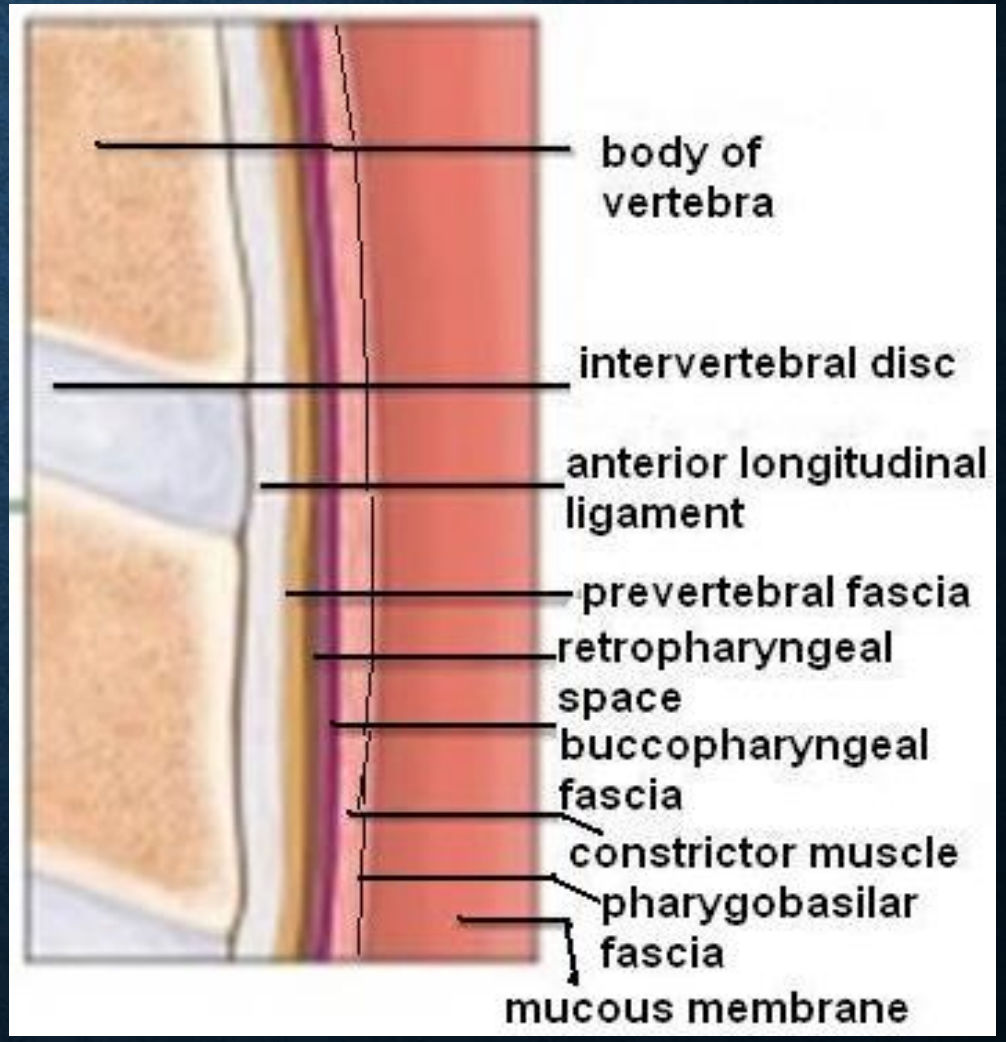
ANATOMY SITES

- Nasopharynx
- Oropharynx
- Hypopharynx



ANATOMY
HISTOLOGY

- It is a musculo-membranous wall, composed of:
  - ➢Mucosa & submucosa.
  - ➢Pharyngobasilar fascia.
  - ➢Muscles: circular & longitudinal.
  - ➢Buccopharyngeal fascia (middle layer of deep cervical fascia).



ANATOMY
HISTOLOGY

- Mucosa :

➢ Epithelium :

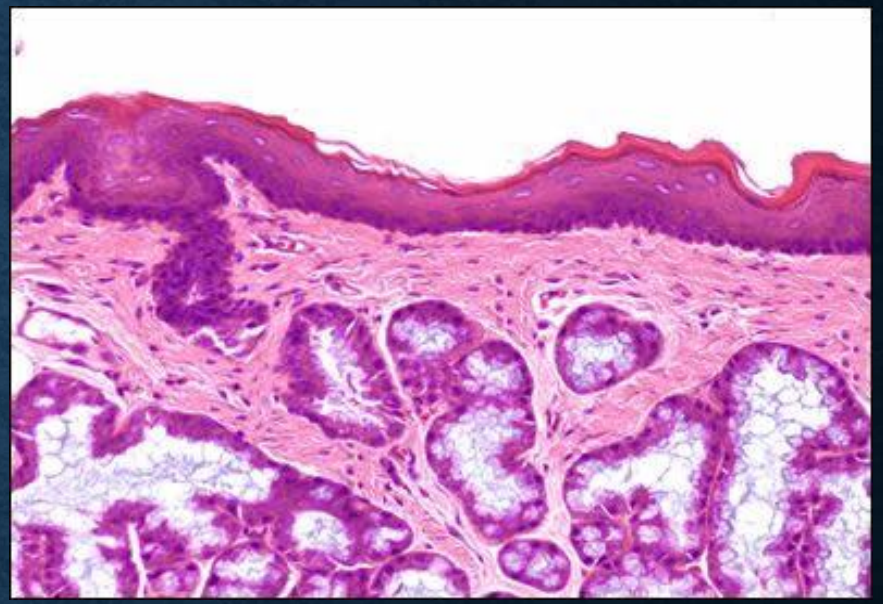
  ➢ Stratified squamous epithelium

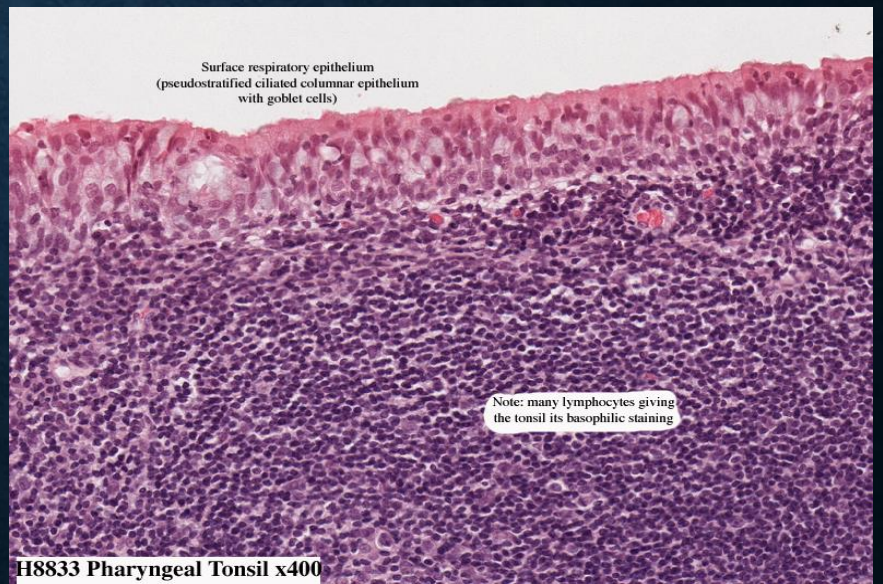
  ➢ pseudostratified ciliated columnar with goblet cells (pharyngeal tonsil i.e adenoid)

➢ Lamina propria :

  ➢ Minor salivary gland

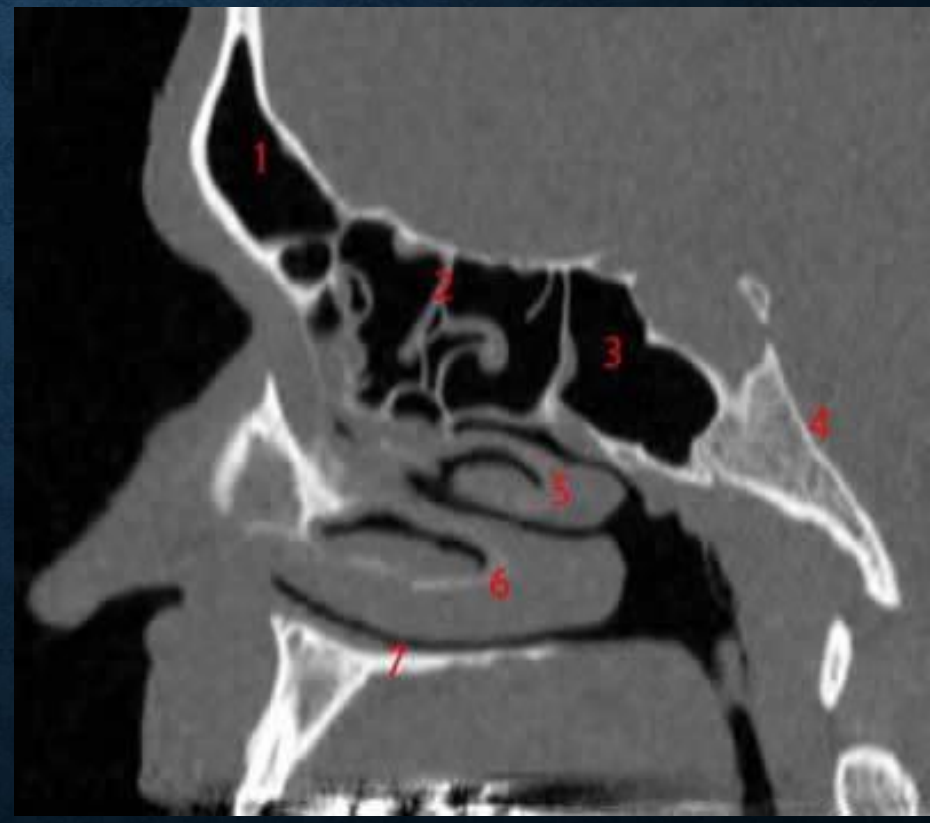
  ➢ Lymphoid tissue (adenoid , tonsil)





ANATOMY
NASOPHARYNX
BOUNDARIES

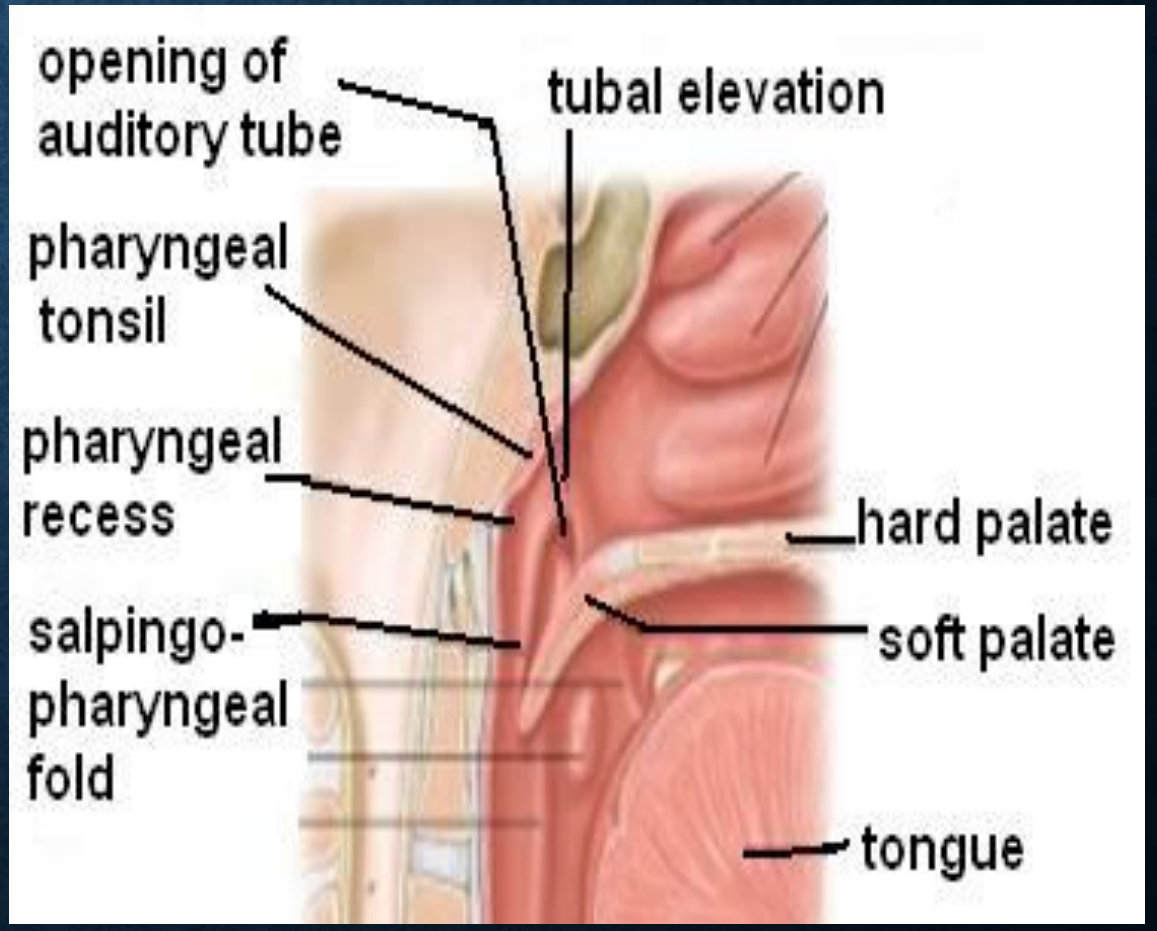
- Anterior : **nasal cavity** at the choanae
- Inferior : **oropharynx** at the lower border of the soft palate.
- Superior : **body of sphenoid** & basal part of the occipital bone , contain adenoid .
- Posterior : supported by anterior arch of **atlas (C1).**



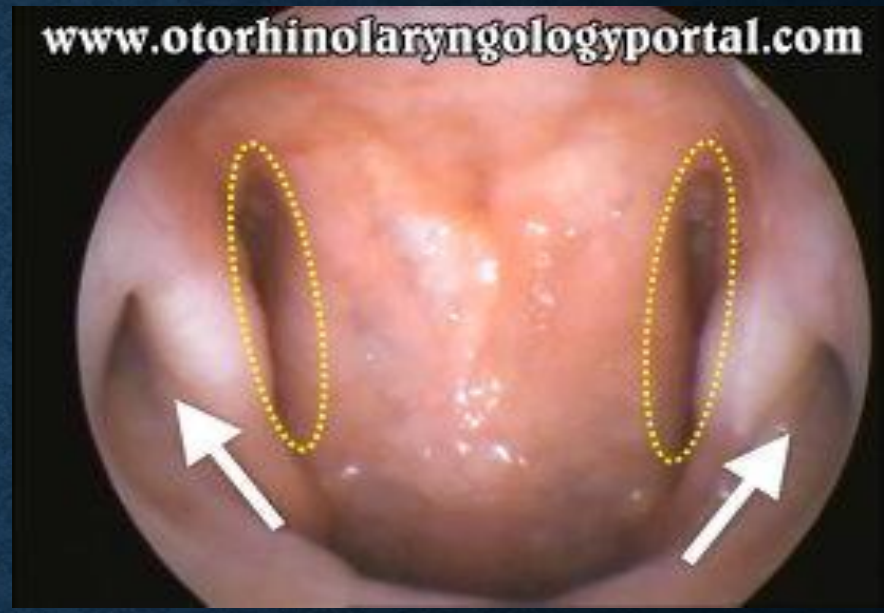
ANATOMY
NASOPHARYNX
LATERAL WALL

- Opening of auditory tube
- Tubal elevation (produced by posterior margin of tube)
- Pharyngeal recess
- Tubal tonsil
- Salpingopharyngeal fold (raised by salpingo-pharyngeus muscle)
- Nerve supply:

  Maxillary division of trigeminal (CNV)



ANATOMY NASOPHARYNX SUBSITES

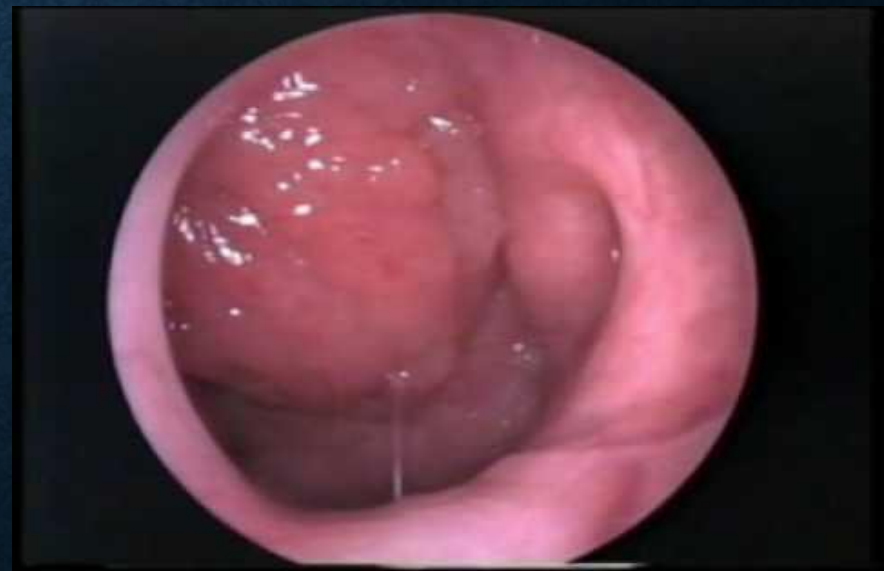


- Posterior wall
- Lateral wall
- Soft palate

Landmarks :

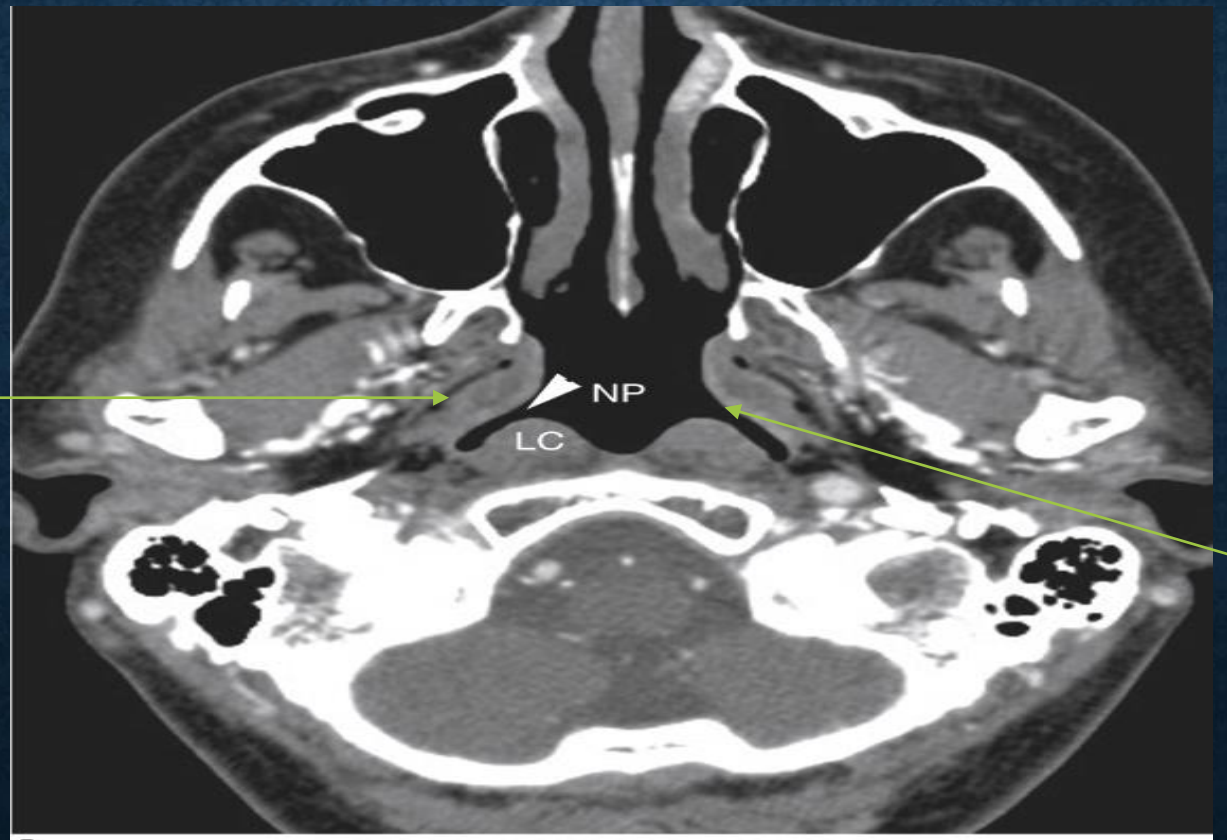
- ➢Eustachian tube. (Serous otitis media, adenoid hypertrophy).
- ➢The fossa of Rosenmuller,

(most common site of NP carcinoma)



ANATOMY NASOPHARYNX SUBSITES

Eustachian tube



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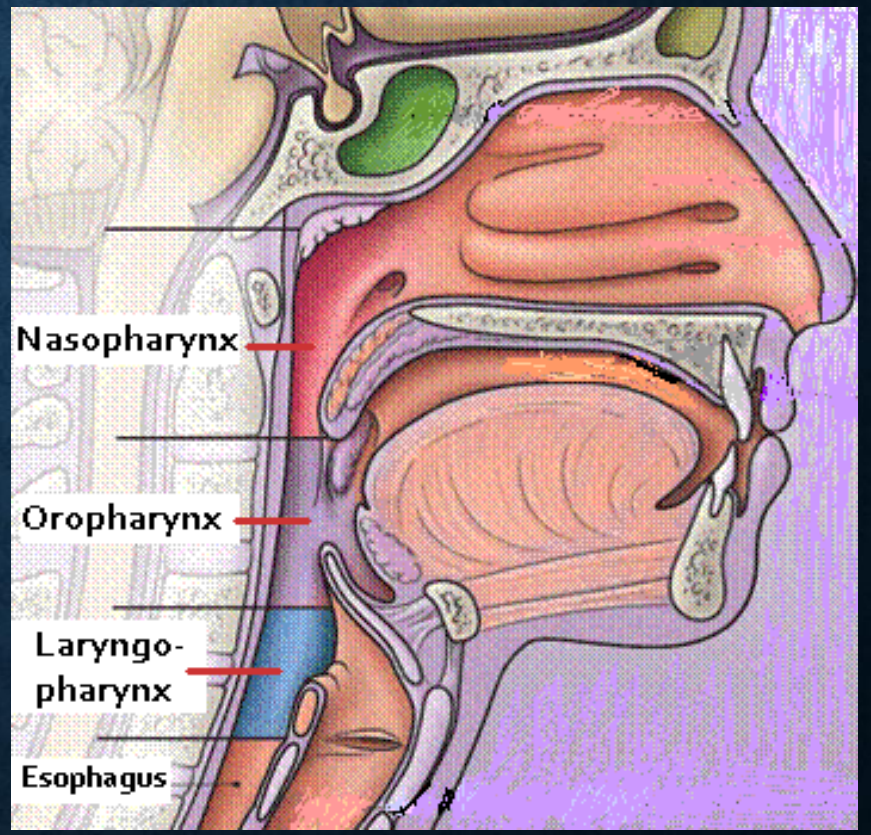
Source: Lalwani AK: *CURRENT Diagnosis & Treatment in Otolaryngology – Head & Neck Surgery, 3rd Edition:* www.accesssurgery.com

fossa of Rosenmuller

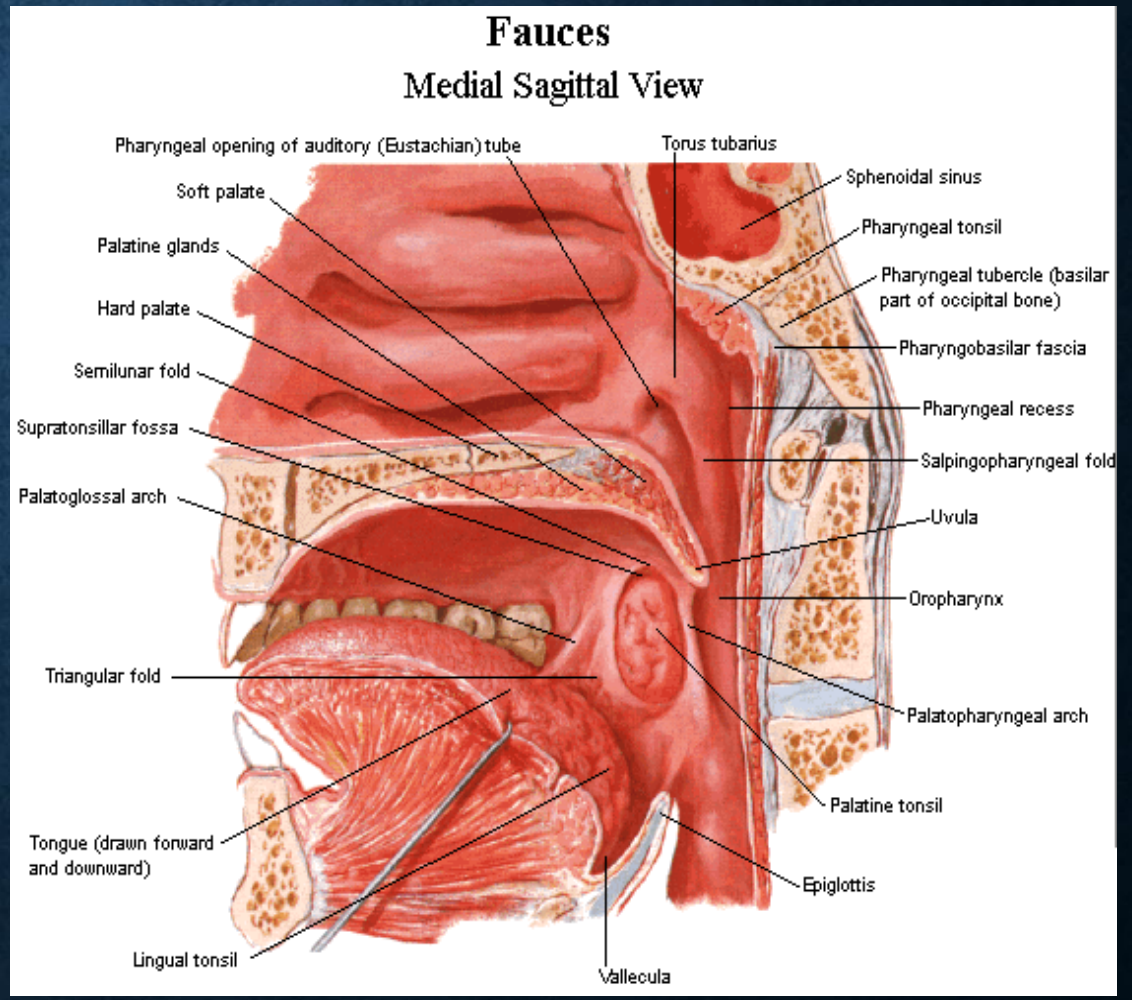
ANATOMY
OROPHARYNX

- Extends from soft palate to upper border of epiglottis.



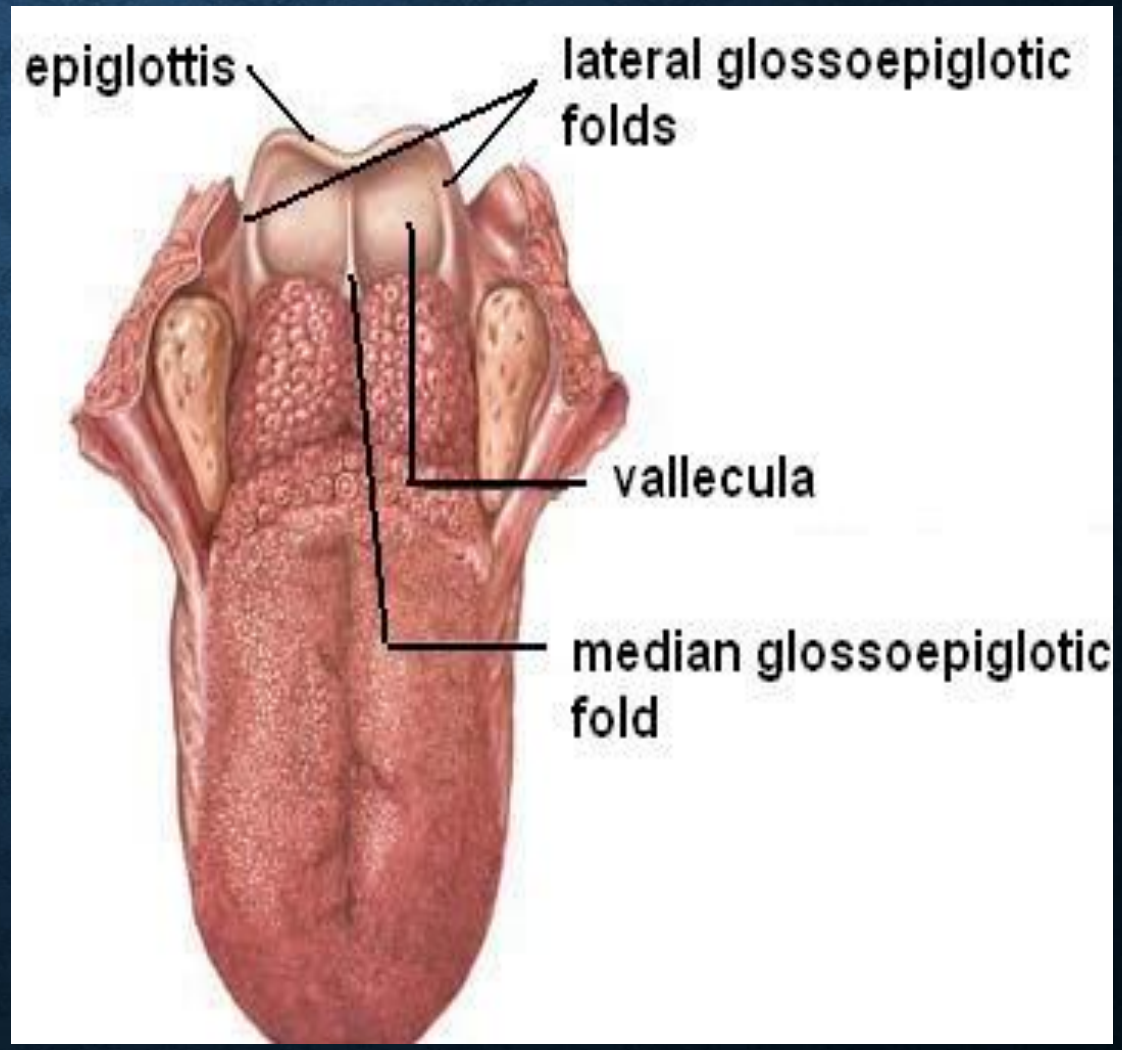
ANATOMY OROPHARYNX BOUNDARIES

- Anterior wall: opening of the oral cavity.
- Posterior wall: supported by body of C2 and upper part of body of C3 vertebra.
- Superior : soft palate and pharyngeal isthmus.



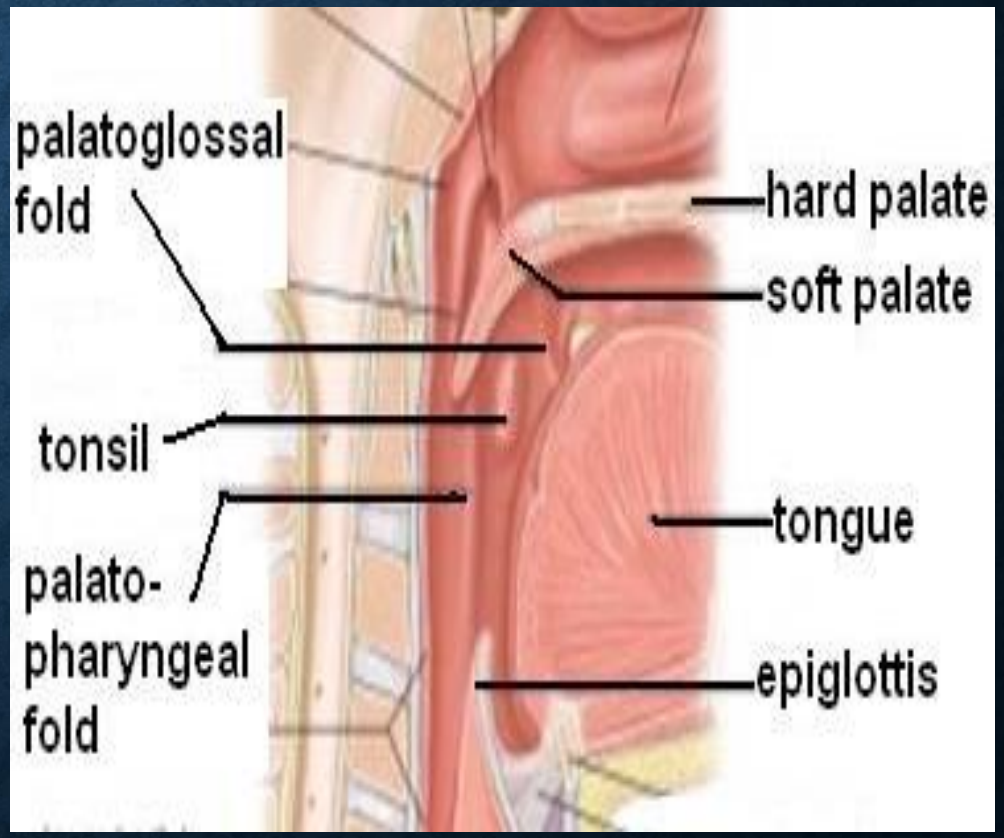
ANATOMY OROPHARYNX BOUNDARIES

- Inferior :
  - Posterior one third of tongue.
  - Median & lateral glossoepiglottic folds.
  - Valleculae.



ANATOMY OROPHARYNX BOUNDARIES

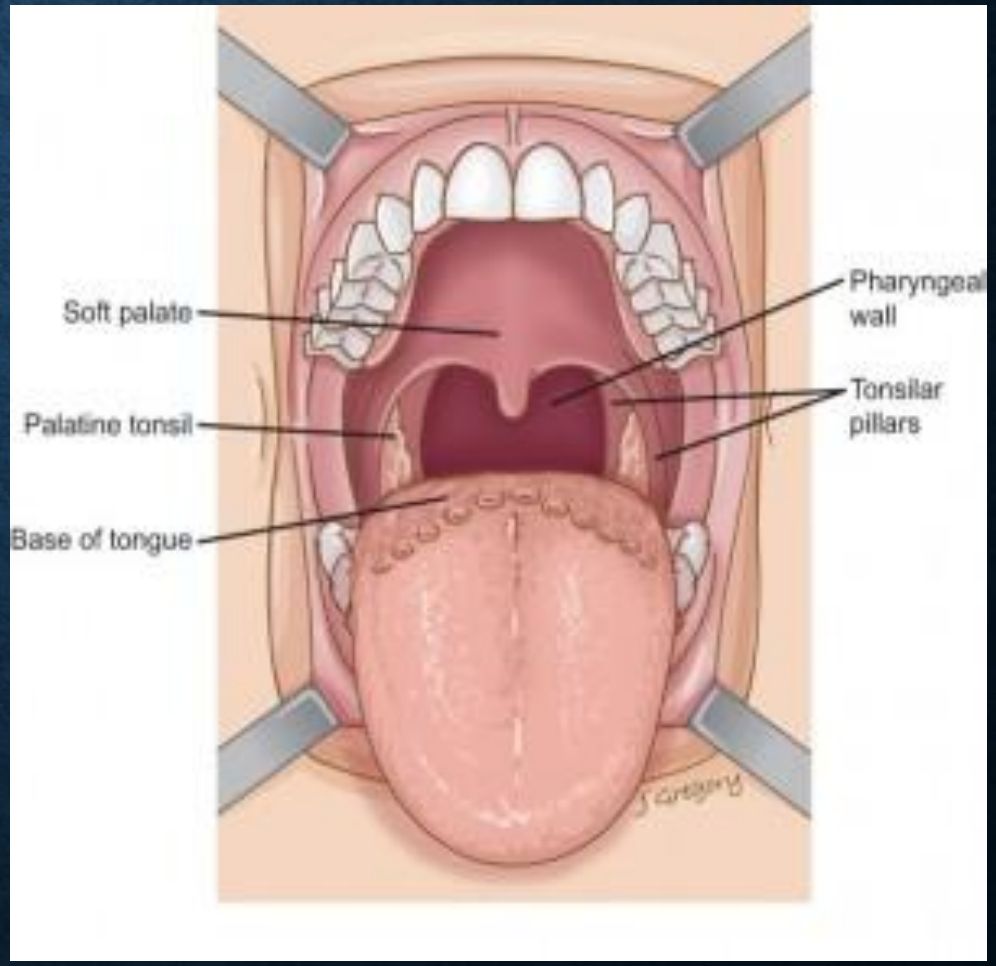
- Lateral wall
  - ➢Palatopharyngeal folds.
  - ➢Palatoglossal folds.
  - ➢Palatine tonsil.



ANATOMY OROPHARYNX SUBSITES

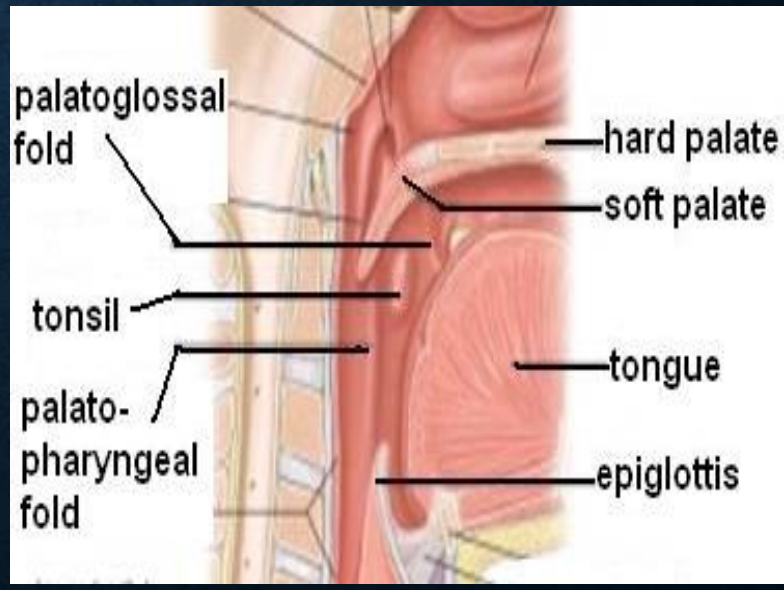
- Soft Palate.
- Tongue base
- Tonsil:
  - Tonsillar hypertrophy
  - Most common site of oropharyngeal Carcinoma.
- Lateral Pharyngeal Wall.
- Posterior Pharyngeal Wall.

Nerve supply : glossopharyngeal (CN IX).



OROPHARYNX
PALATINE TONSIL

- Subepitheial lymphoid tissue.
- Located in the palatine fossa, in the lateral wall of the oropharynx.
- Reaches its maximum size during early childhood, but after puberty diminishes in size .
- Lateral surface: covered by a fibrous capsule. (peritonsillar space)



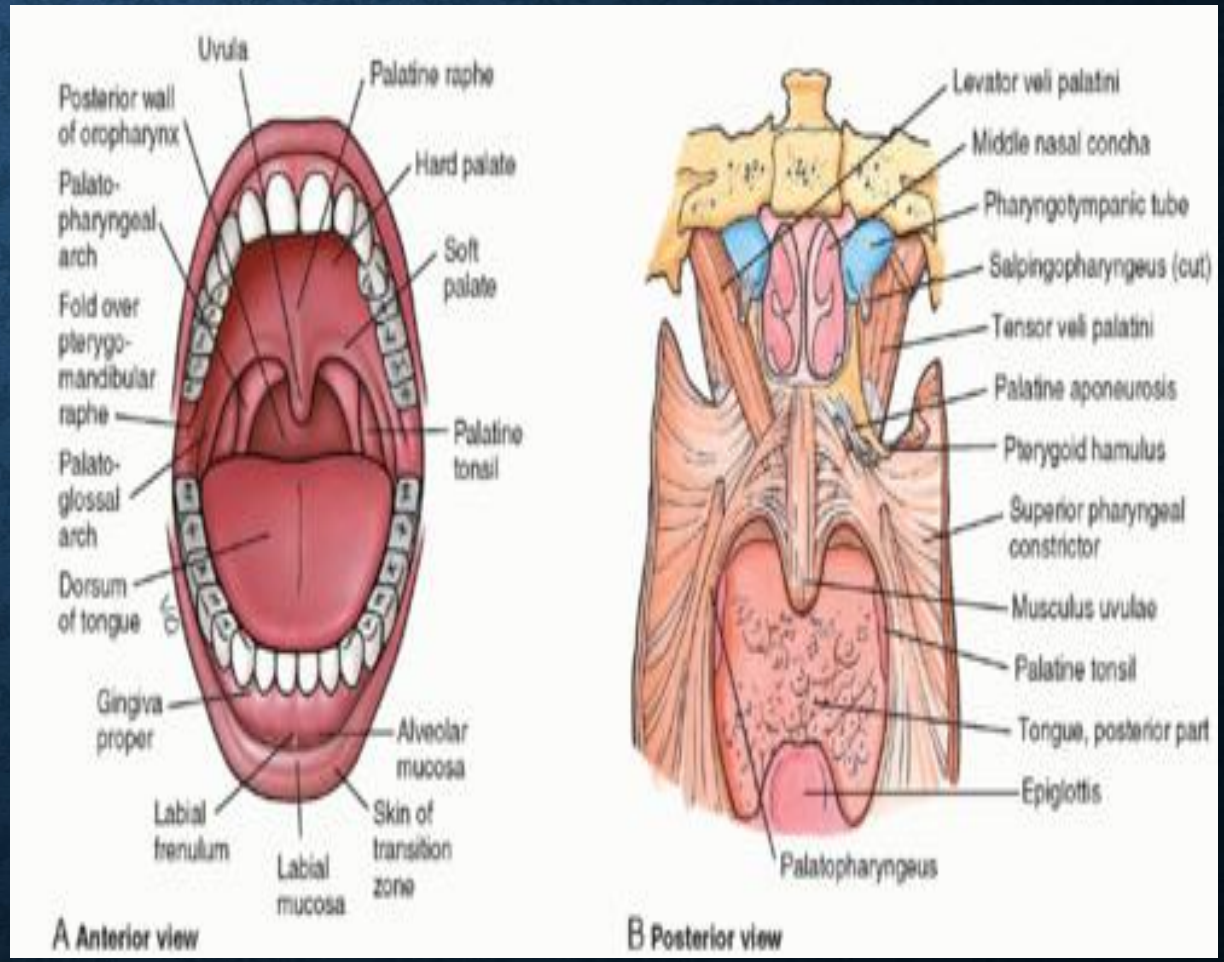
OROPHARYNX
SOFT PALATE

Palatine aponeurosis: skeleton where muscle inserted :

- Tensor veli palatine.
- Levator veli palatine.
- Uvular.
- Palatoglossus.
- Palatopharyngeal.

** cleft palate .

** nasal regurgitation & aspiration .



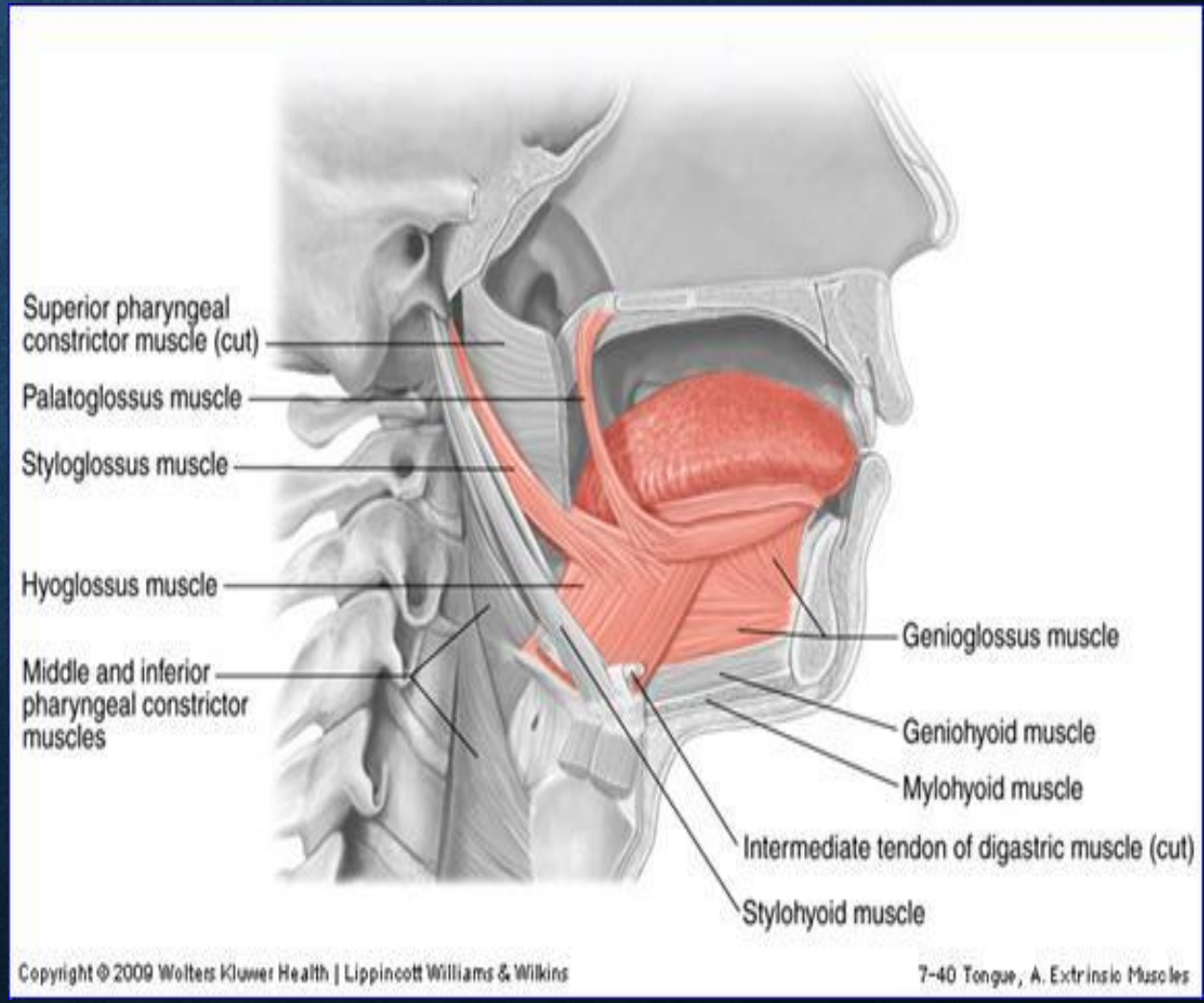
OROPHARYNX
BASE OF TONGUE (BOT)

Tongue muscles(extrinsic) :

- Palatoglossus.
- Stylogossus.
- Genioglossus.
- Hyoglossus.

Deep invasion by tumor :

- Tongue movement restriction
- Advanced tumor stage



OROPHARYNX NERVE SUPPLY

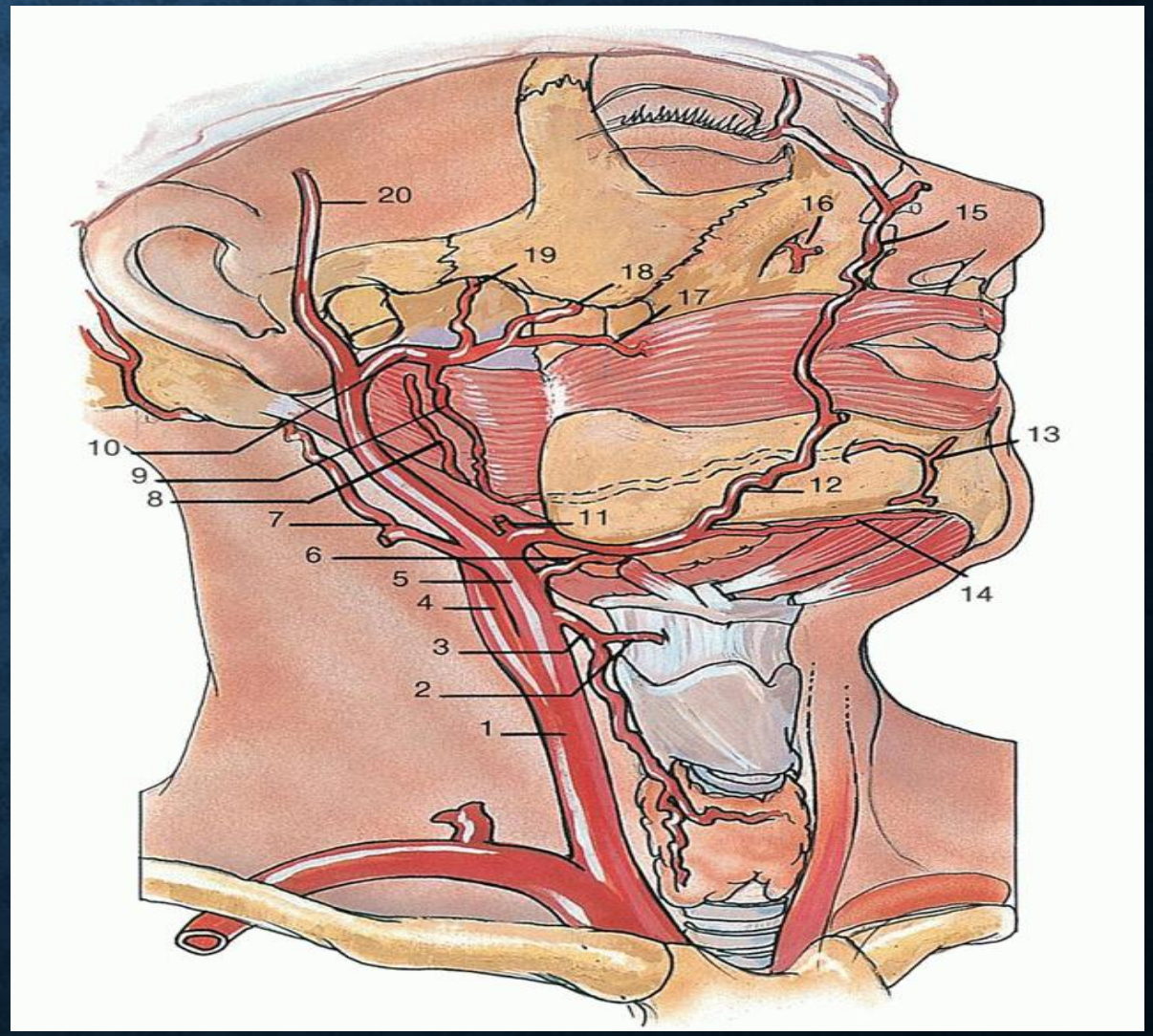
- Palate muscles supplied by(CN IX & X)
  - ➢Tensor veli palatine (CN V3)
- Tongue muscles supplied by (CN XII)
  - ➢ Palatoglossus (CN IX & X)

**Referred otalgia

OROPHARYNX BLOOD SUPPLY

ECA :

- Superior thyroid
- Lingual
- Occipital
- Facial
- Ascending pharyngeal
- Post auricular
- Internal maxillary
- Superficial temporal;



OROPHARYNX BLOOD SUPPLY

- Surgical ligation or embolization
  - Post tonsillectomy bleeding
- Lymphatics
  - (jugulodigastric node)

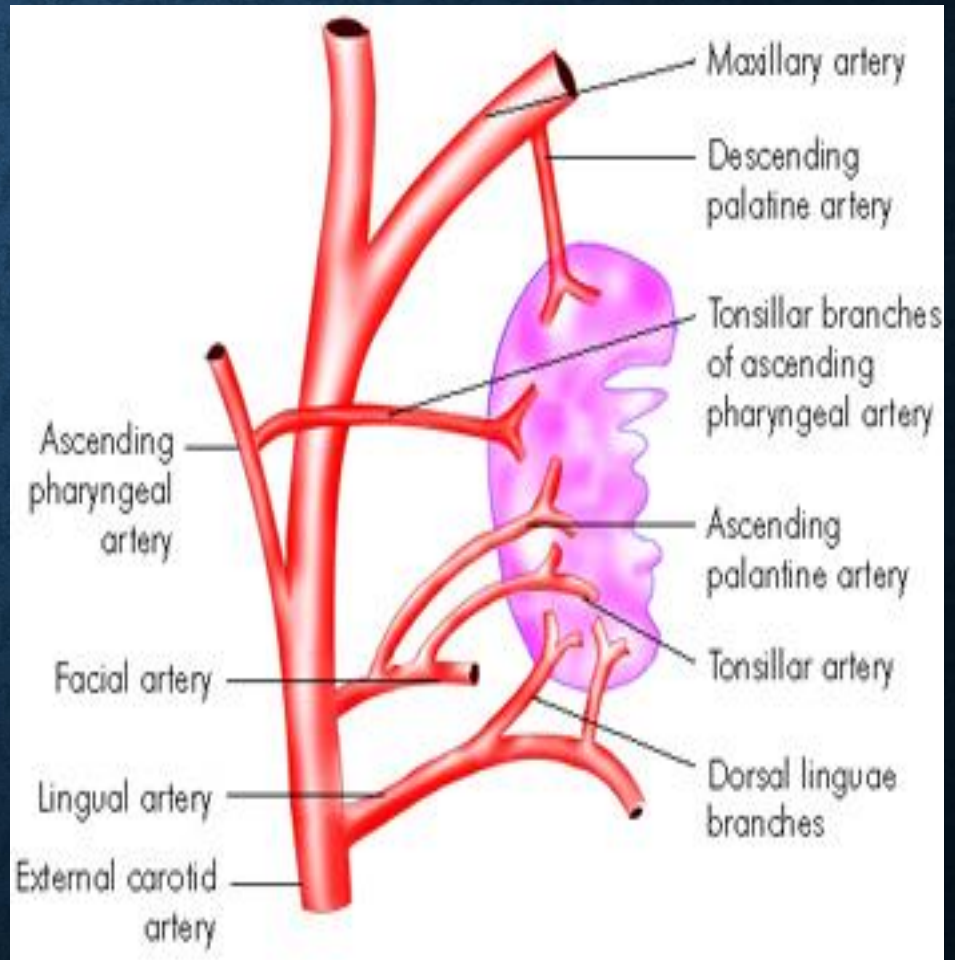


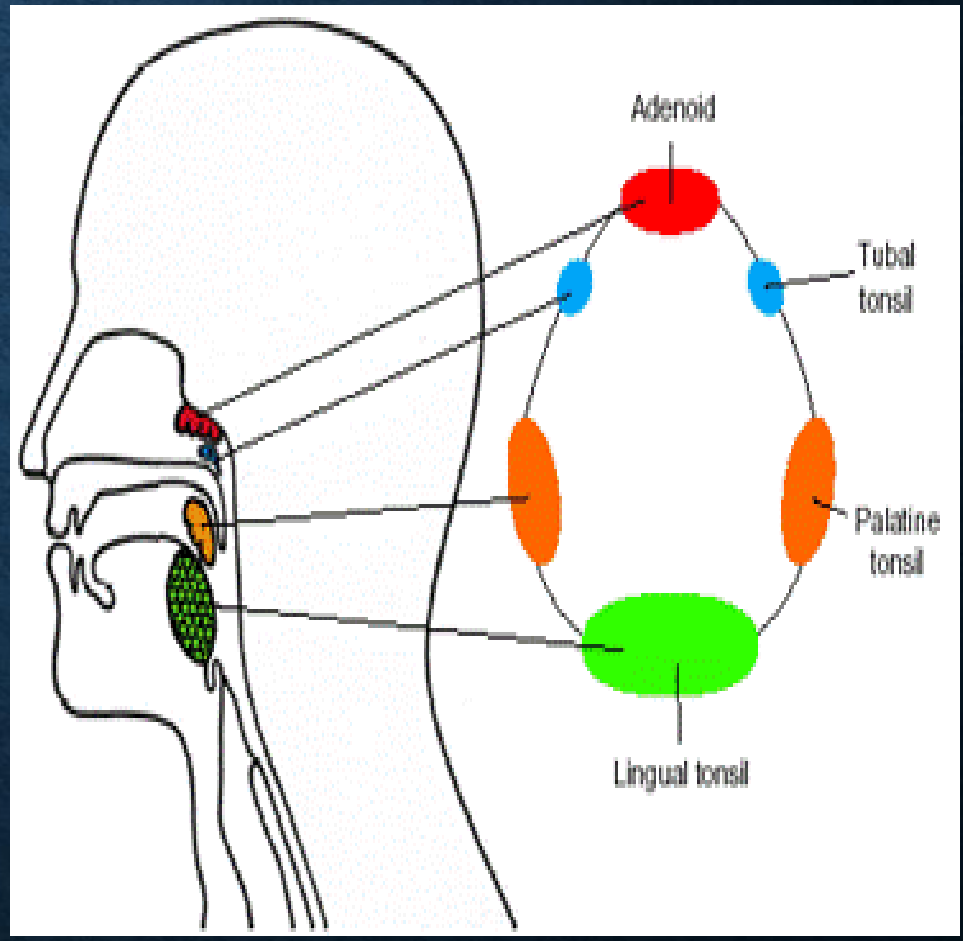
Fig. 50.3 Arterial supply of tonsil.

WALDEYER'S RING

- It is a lymphoid tissue ring located in the pharynx.

- Function as a barrier to infection especially in the first few years of life.

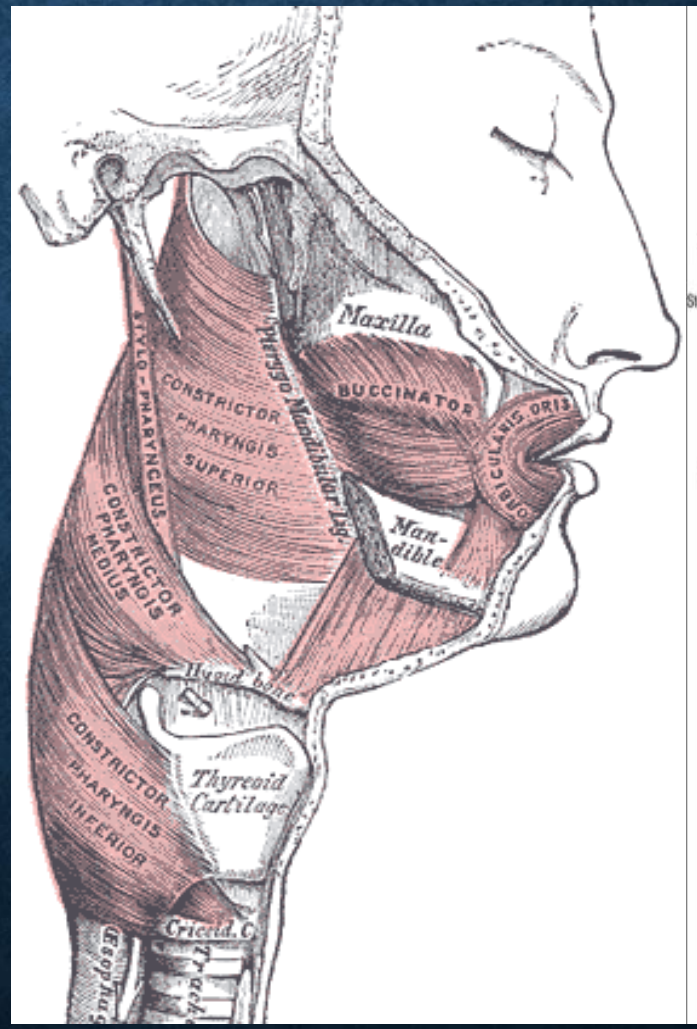
- Consists :
  - Adenoids (pharyngeal tonsils)
  - Tubal tonsil
  - Palatine tonsil
  - Lingual tonsil

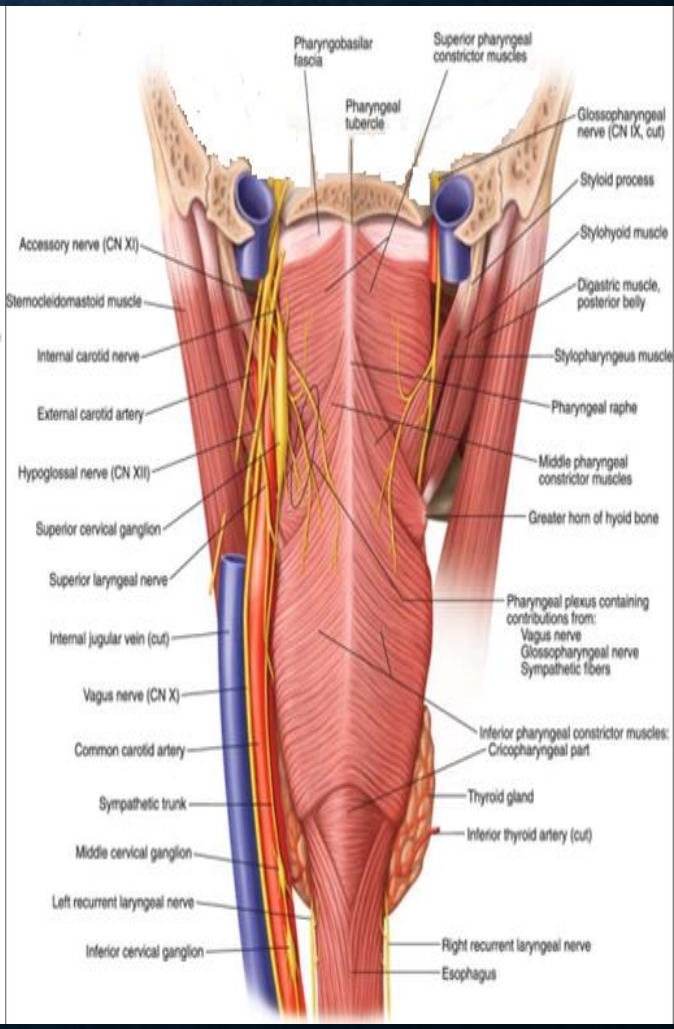


PHARYNX MUSCLES

- Superior, Middle & Inferior.
- Extend around the pharynx and are inserted posteriorly into a fibrous raphe that extends from the pharyngeal tubercle on the occipital bone to the esophagus.
- propel the bolus of food down into the esophagus

** dysphagia





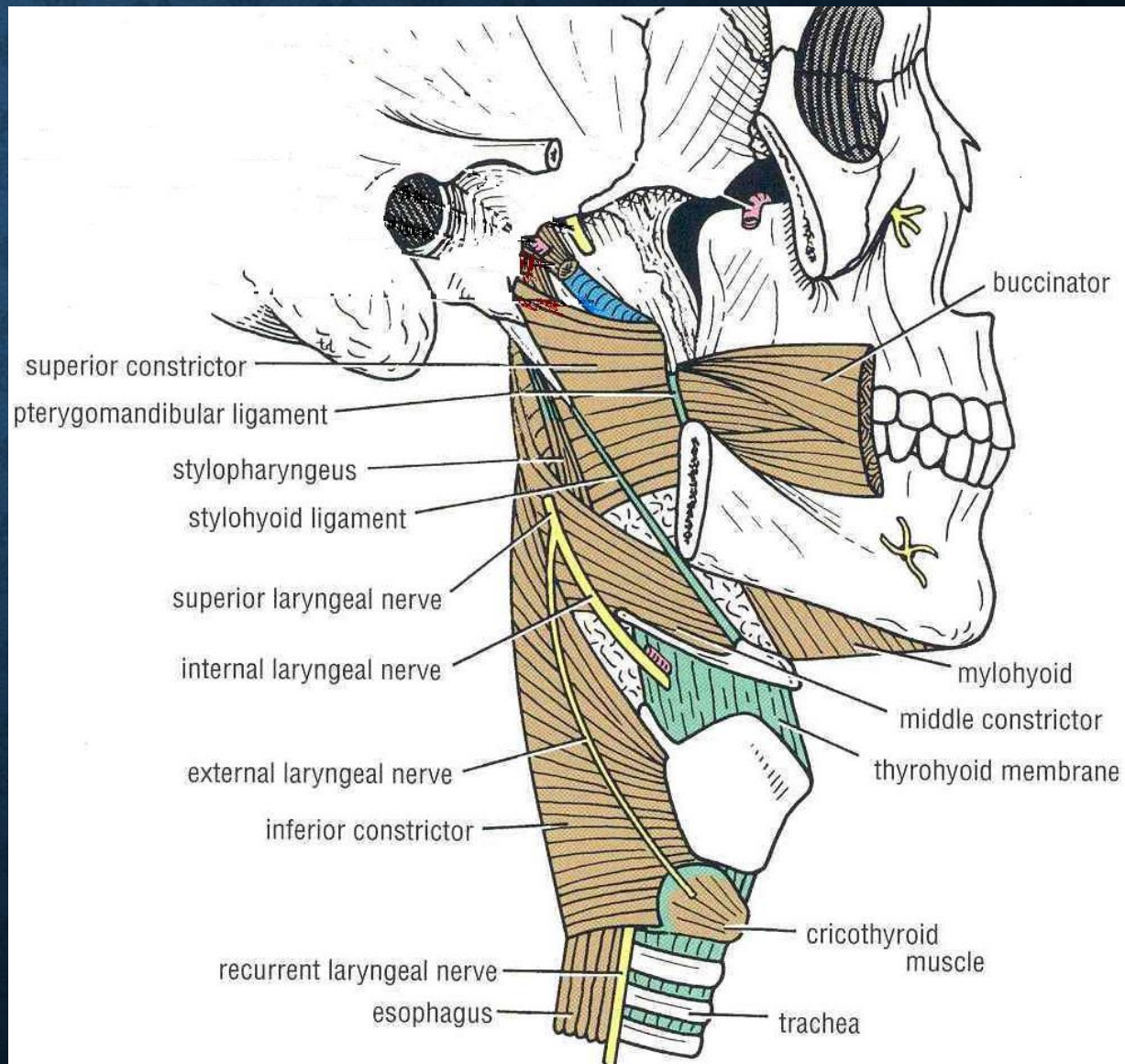
PHARYNX
INFERIOR CONSTRICTOR MUSCLE

- **Origin**: lamina of thyroid cartilage, cricoid cartilage
- **Insertion**: pharyngeal raphe

➢ **Cricopharygeus** (lower fibers of the inferior constrictor)

- ➢ act as a Upper esophageal sphincter.
- ➢ preventing the entry of air into the esophagus between the acts of swallowing

** CP spasm , dysphagia

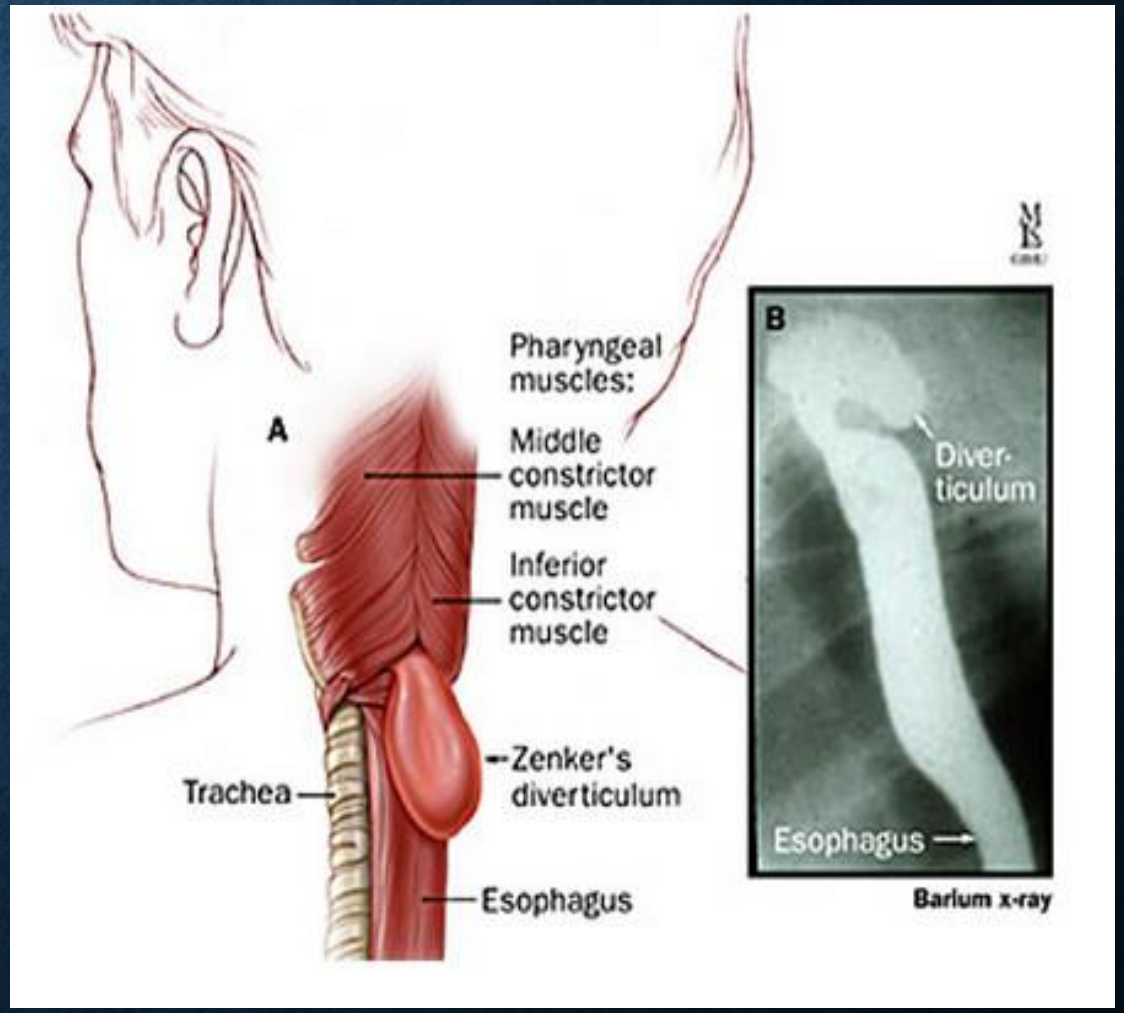


PHARYNX
INFERIOR CONSTRICTOR MUSCLE

- Area of weakness :

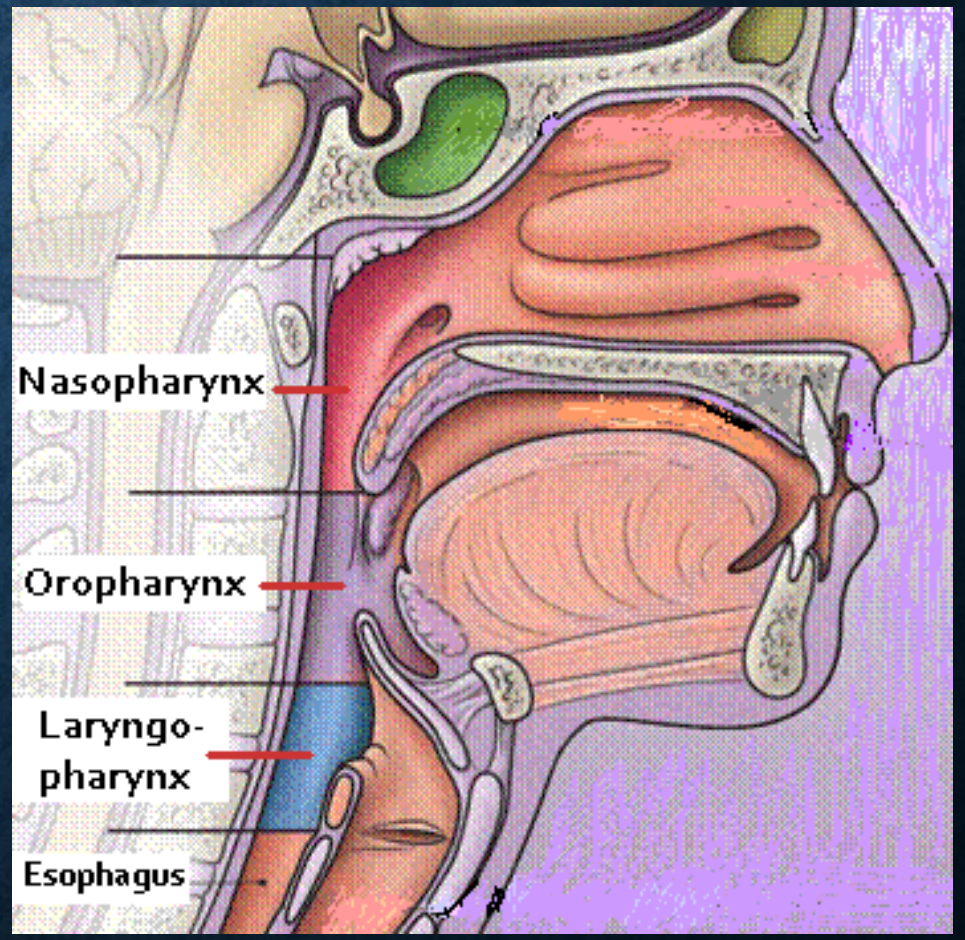
Killian's Triangle : Zenker's Diverticulum

➢ dysphagia & aspiration in elderly



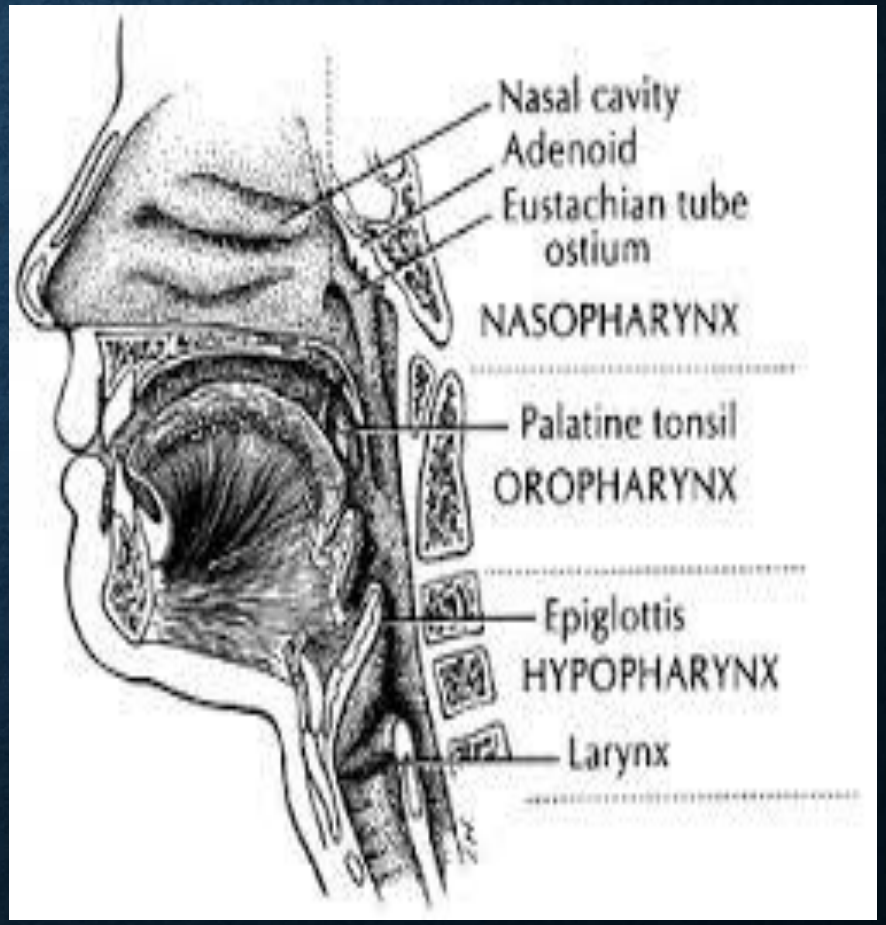
HYPOPHARYNX

- Extends from upper border of epiglottis to lower border of cricoid cartilage (C6).
- Narrowed to become esophagus .
- Nerve supply
  - Internal laryngeal branch (SLN) of the vagus nerve (CNX)



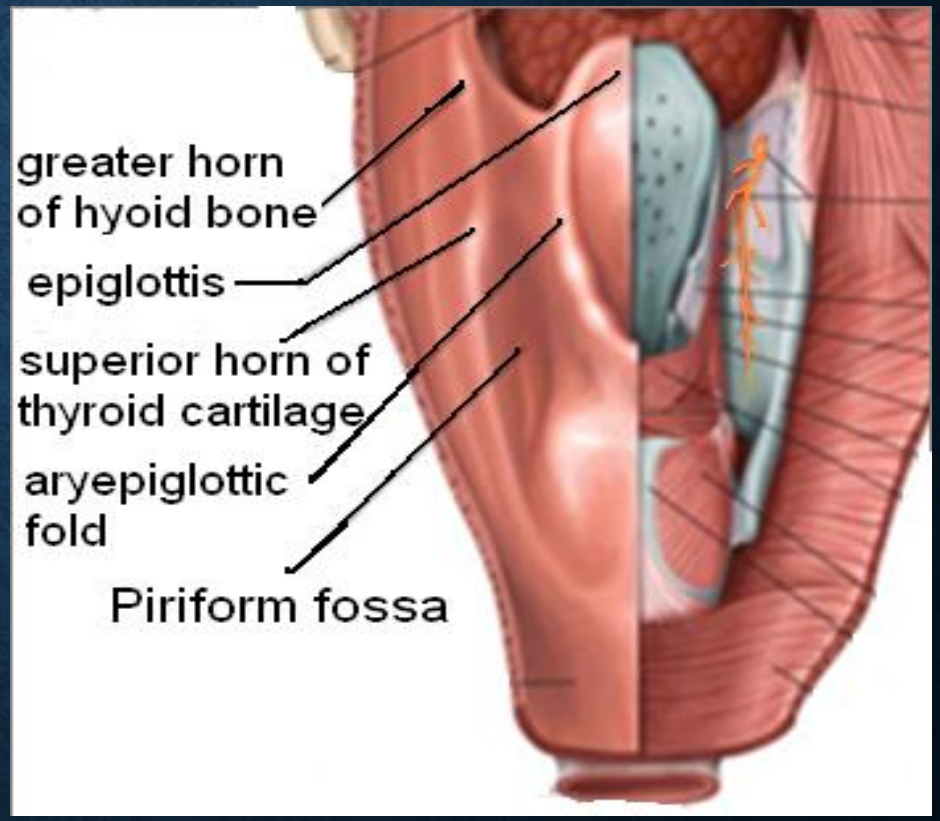
HYPOPHARYNX BOUNDRIES

- **Anterior** :
  - ➢ Opening of the larynx (upper part)
  - ➢Mucosa covering the posterior surface of larynx(lower part)
- **Posterior** :
  - ➢supported by bodies of C3, 4, 5, 6 vertebrae



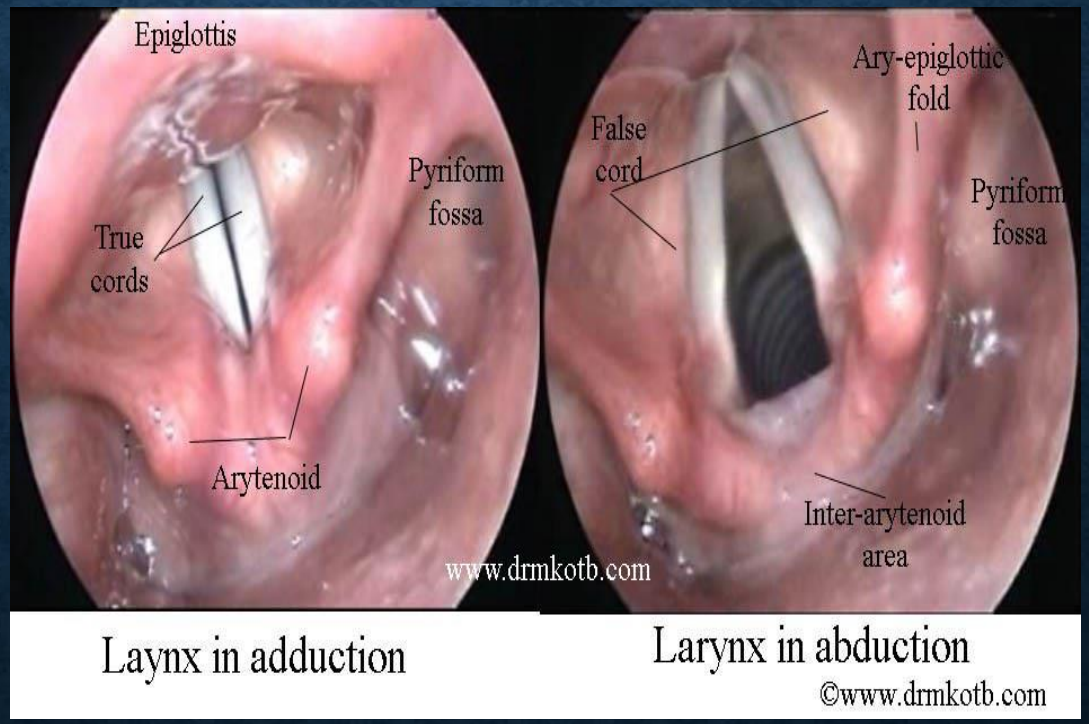
HYPOPHARYNX BOUNDARIES

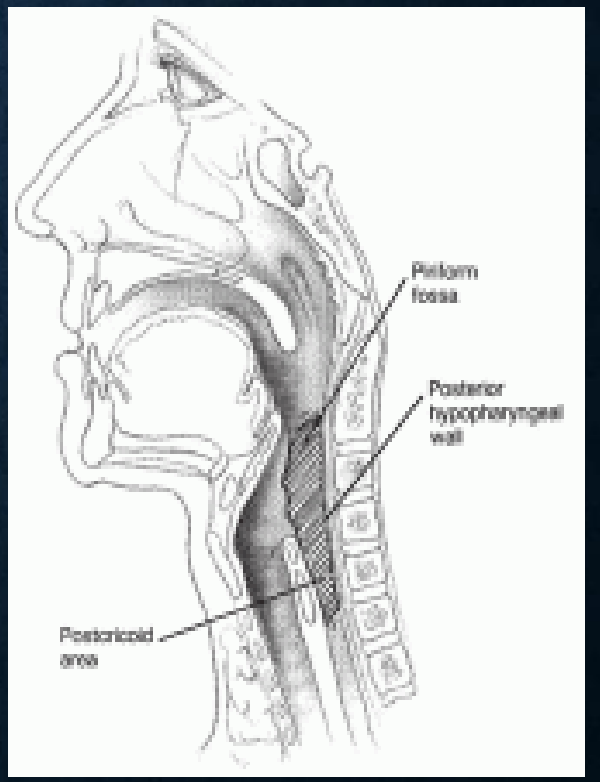
- Lateral wall:
  - Thyroid cartilage and thyrohoid membrane.
  - The piriform fossae



HYPOPHARYNX SUBSITES

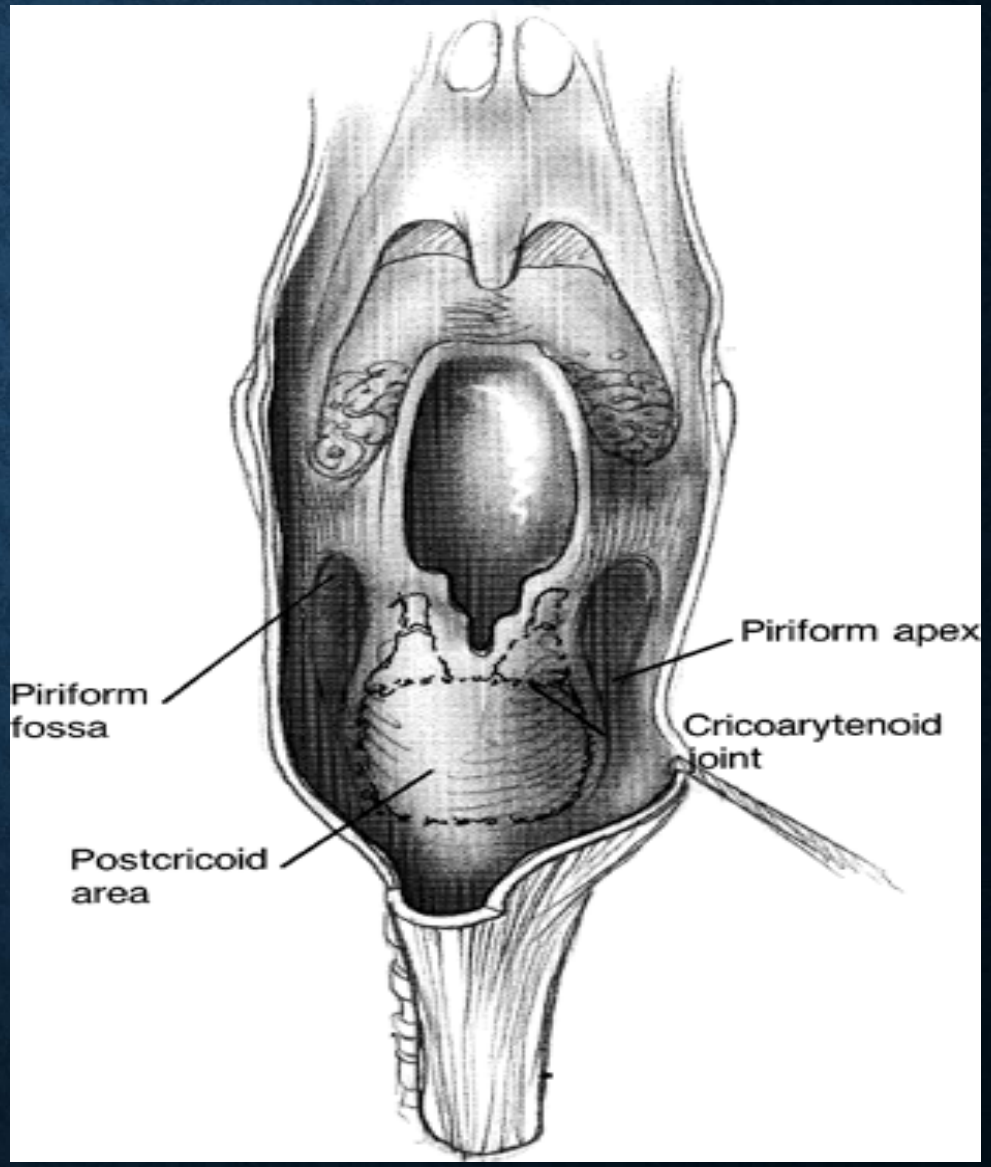
- **Pyriform Sinus:**
- **Posterior Pharyngeal Wall**
- **Postcricoid Region.**





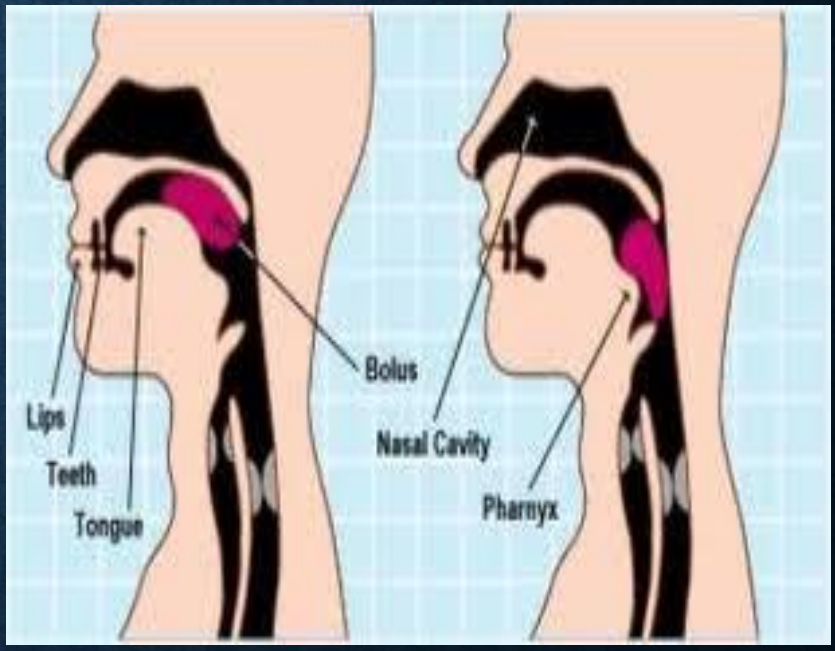
HYPOPHARYNX
PIRIFORM SINUS

- Most common site for hypopharyngeal cancer.
- Most common site of FB impaction (hypopharynx).
- Hypopharyngeal Lesion
  - Vocal cord paralysis (CA joint involvement)
  - Pooling of secretion proximally .
  - Referred otolagia (CNX involvement) .



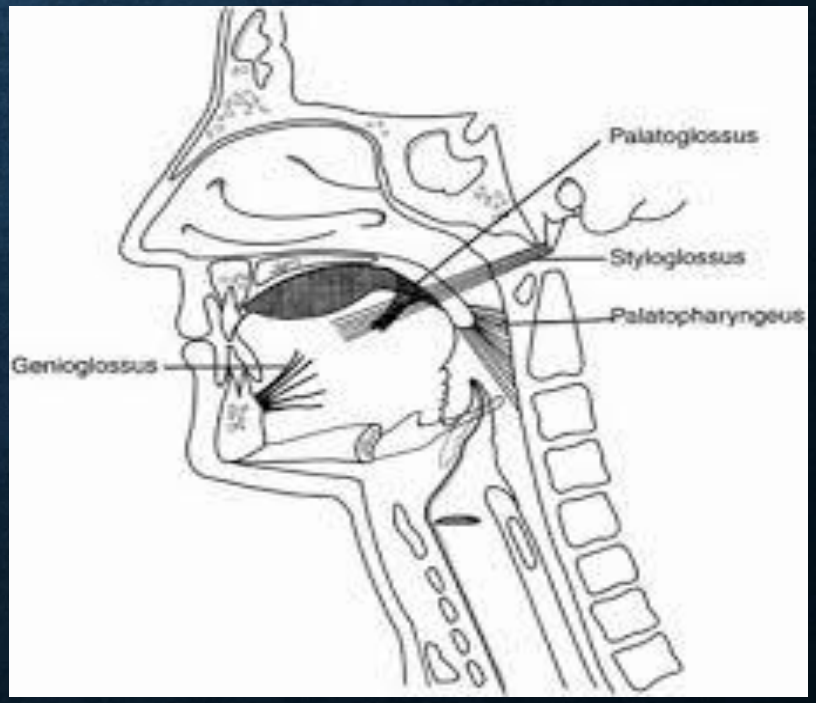
SWALLOWING
PHARYNGEAL PHASES

- Reflexive phase
  - (posterior pharyngeal wall receptors, CN IX and CN X)
- Transient time <1 sec in normal subjects



SWALLOWING
NASOPHARGEAL PHASE

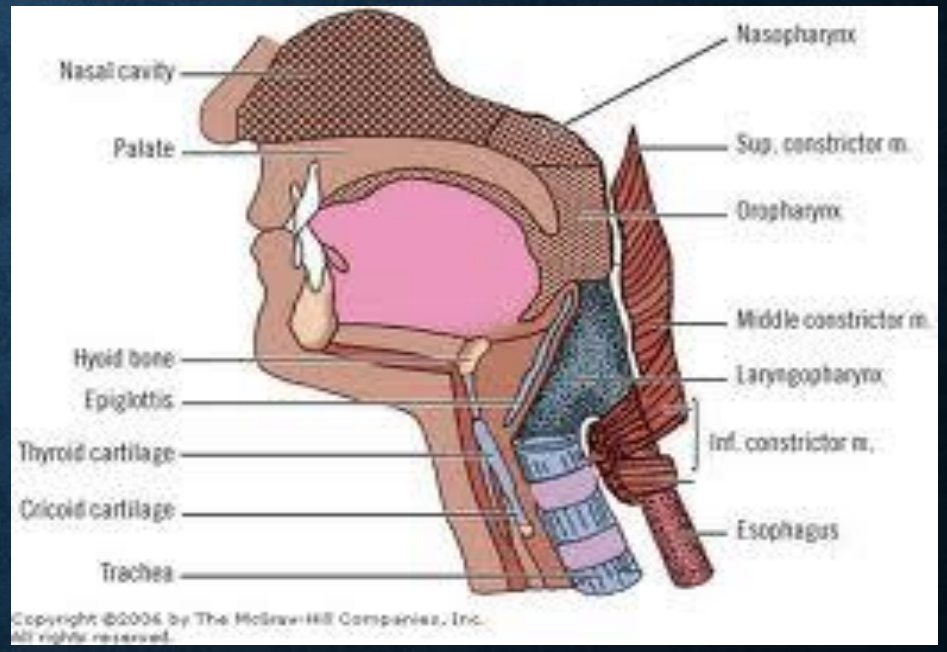
- Levator veli palatini
  - **Lifts** the soft palate
- Palatopharyngeous
  - **Tightens and raises** the pharynx and narrows the oropharyngeal inlet.
- Superior pharyngeal muscle contraction



SWALLOWING
OROPHARYNGEAL PHASE

- Base of Tongue Propels Bolus Past Vallecula
- squeezes against posterior pharynx

**Glossectomy patients have difficulty with bolus propulsion



CONCLUSION

- The pharynx has complicated anatomy to optimize physiology & function .
- Each site & subsites hase its own function.
- Missing site or subsites will comprimse the function leading to aspiration , dysphagia , speech impairment .
- Understanding surgical anatomy will lead to delectated surgical dissection.

Thank you