

# PALATE

Presented by :- Dr. Sushma Tomar  
Associate Professor  
Department of Anatomy

2-6-2020

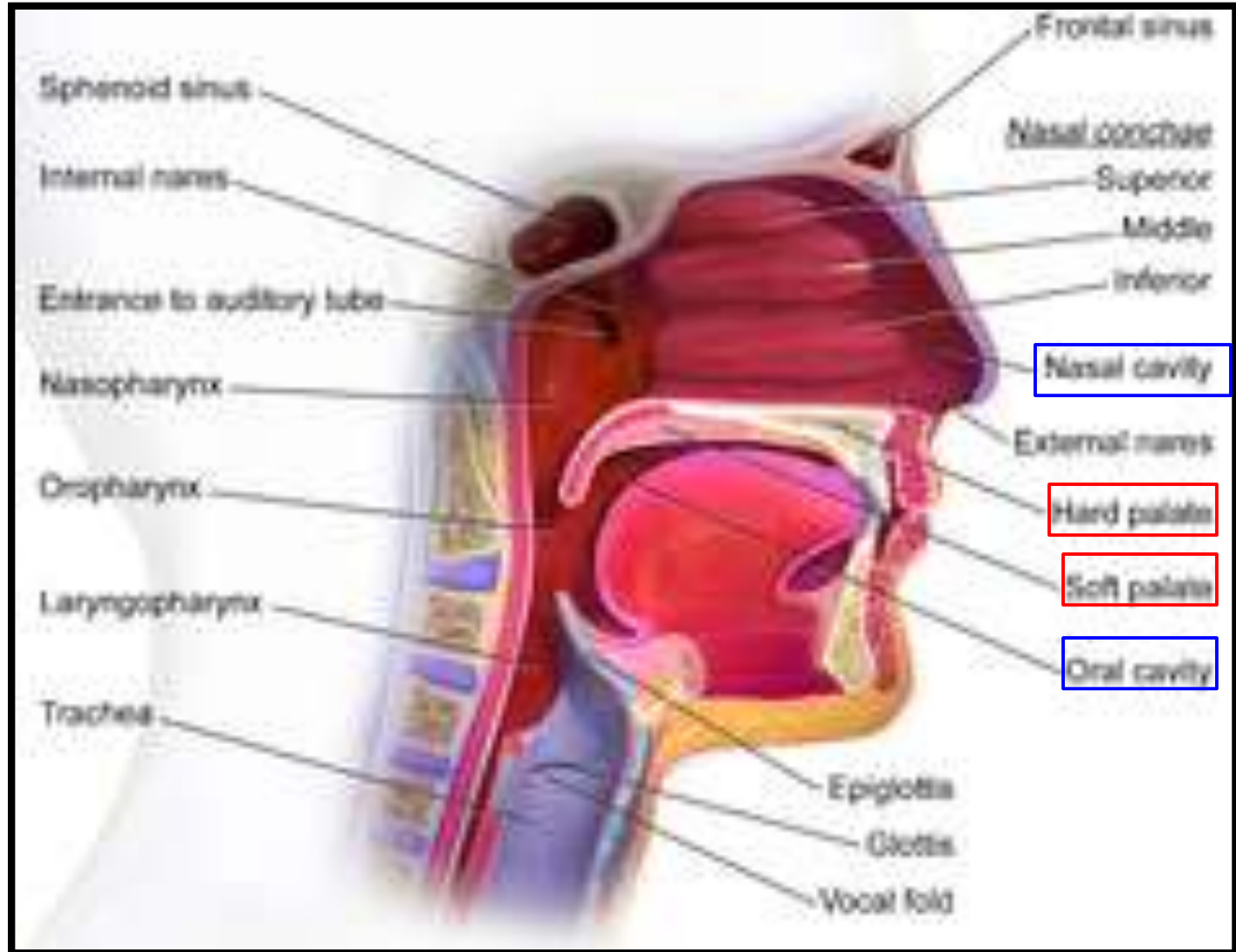
# Introduction

L. *palate*=roof of mouth

- It is a partition between the nasal and oral cavities.

## Parts- 2

- Hard palate.
- Soft palate.



# Hard Palate

# Introduction

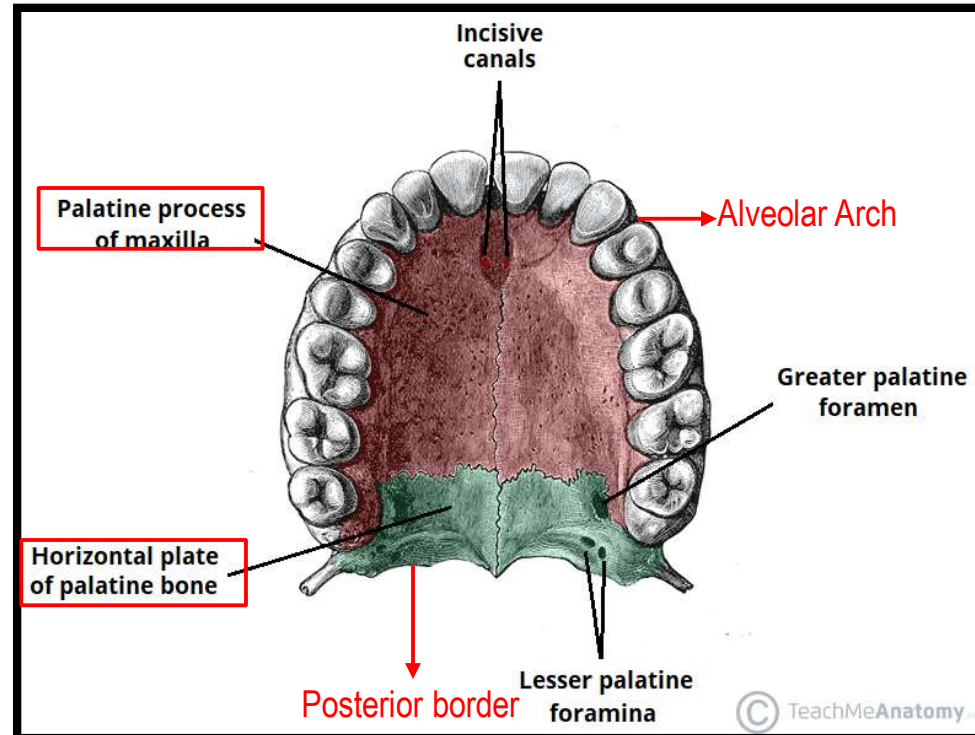
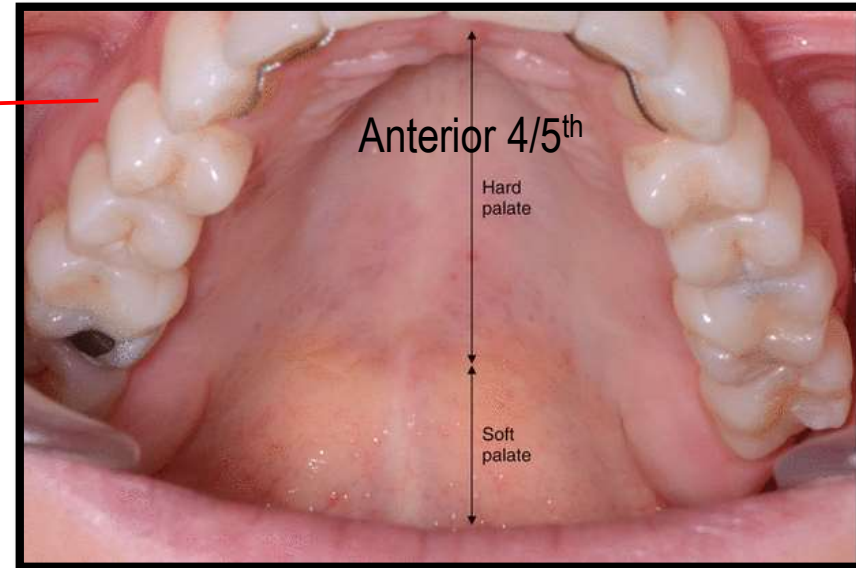
- Forms anterior 4/5<sup>th</sup> of the palate. Gums ←

## Formation-

Anterior 2/3<sup>rd</sup> – by palatine processes of maxillae.

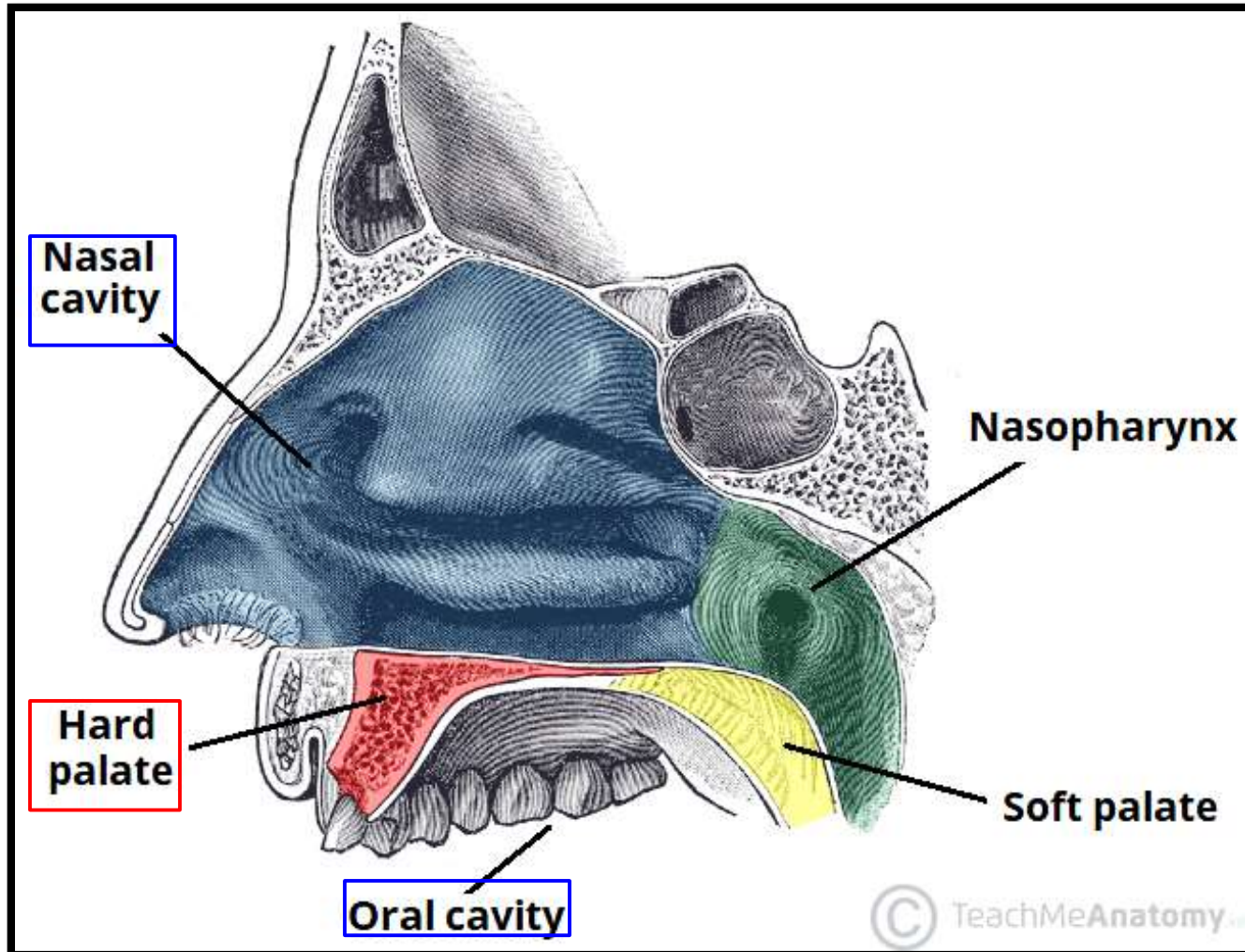
Posterior 1/3<sup>rd</sup> – by horizontal plates of palatine bones.

- It becomes continuous with maxillary alveolar arches and gums anterolaterally.
- Its posterior border provides attachment to soft palate.



# Introduction contd...

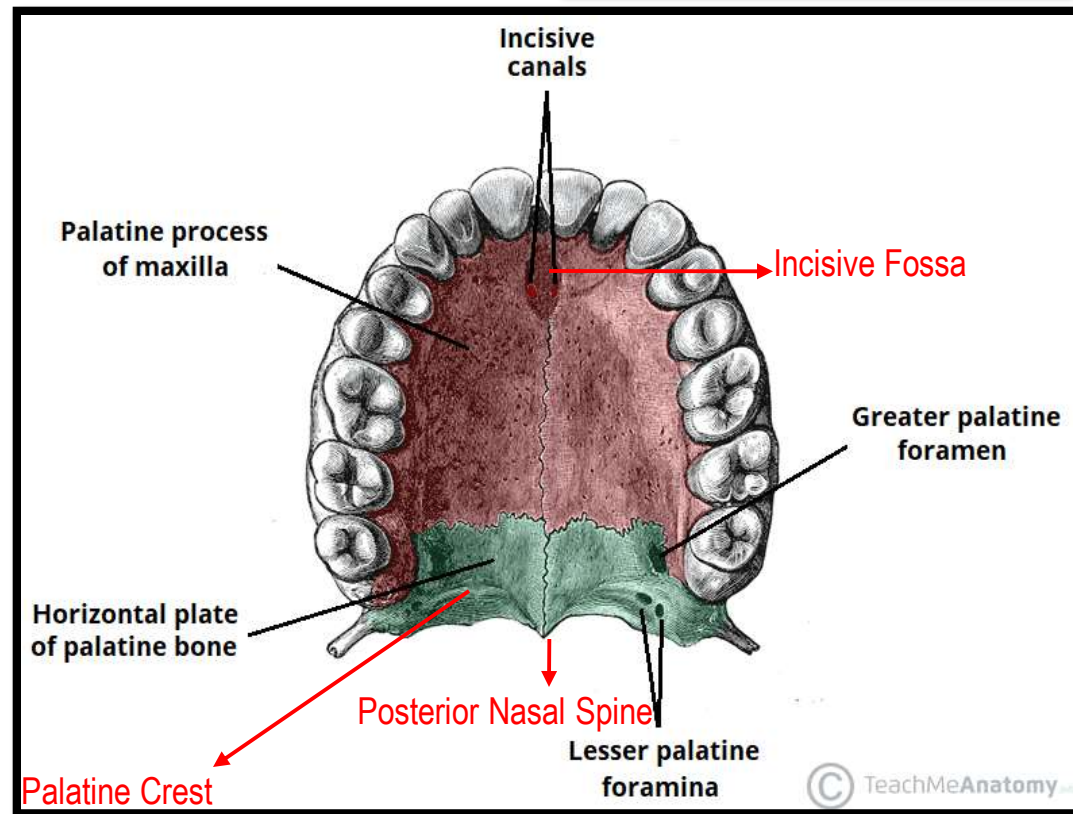
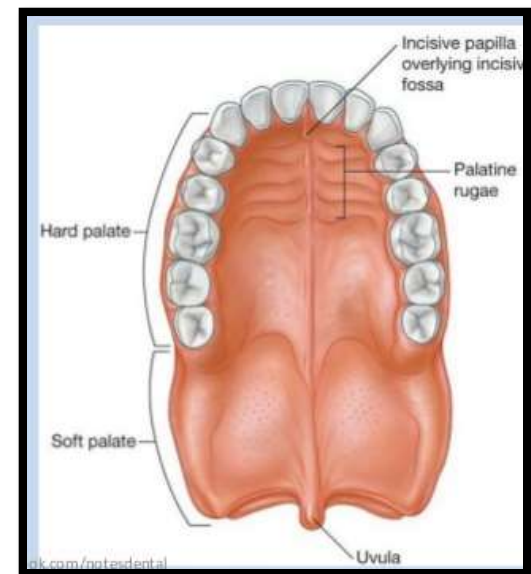
- Its superior surface forms the floor of nasal cavities.
- Its inferior surface forms the roof of oral cavity.



# Inferior Surface

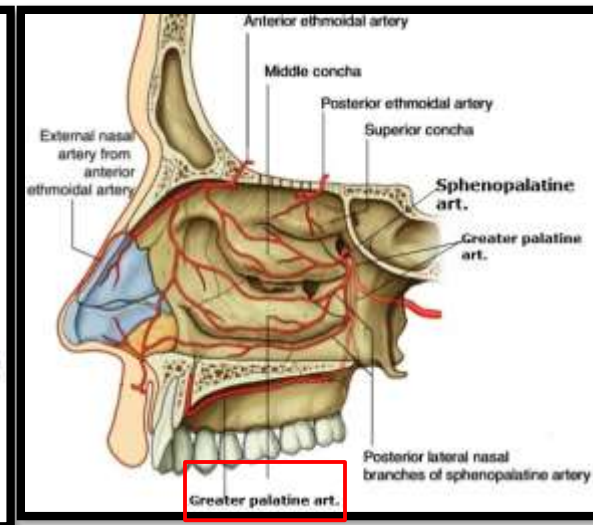
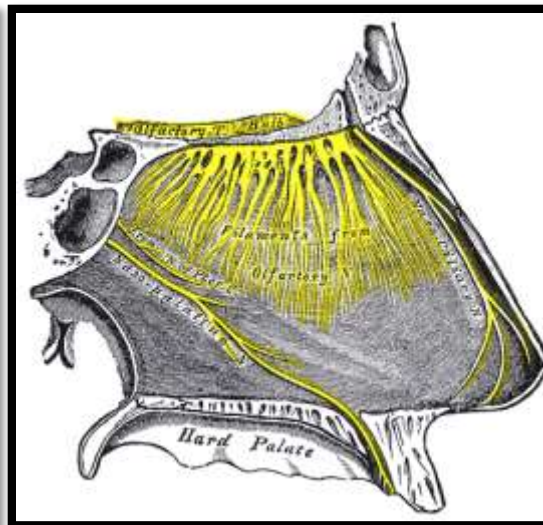
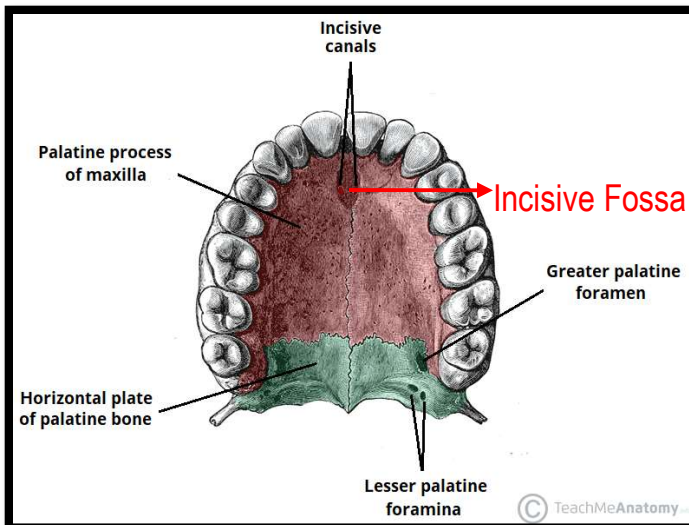
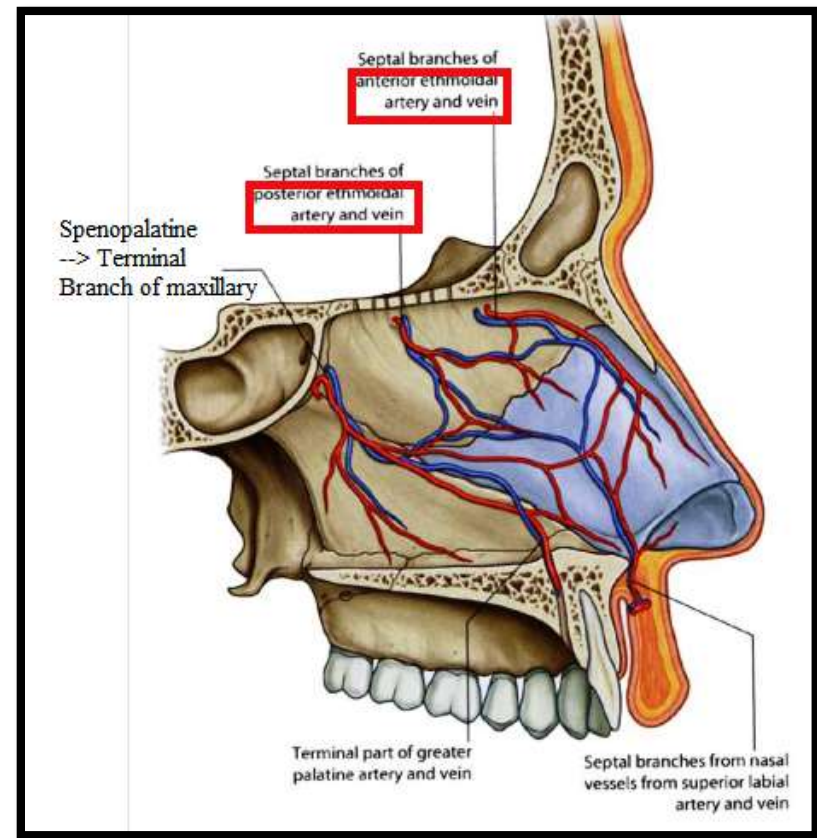
❖ Presents the following features:

- Incisive fossa.
- Greater palatine foramen.
- Lesser palatine foramina.
- Posterior nasal spine.
- Palatine crest.
- Masticatory mucosa.



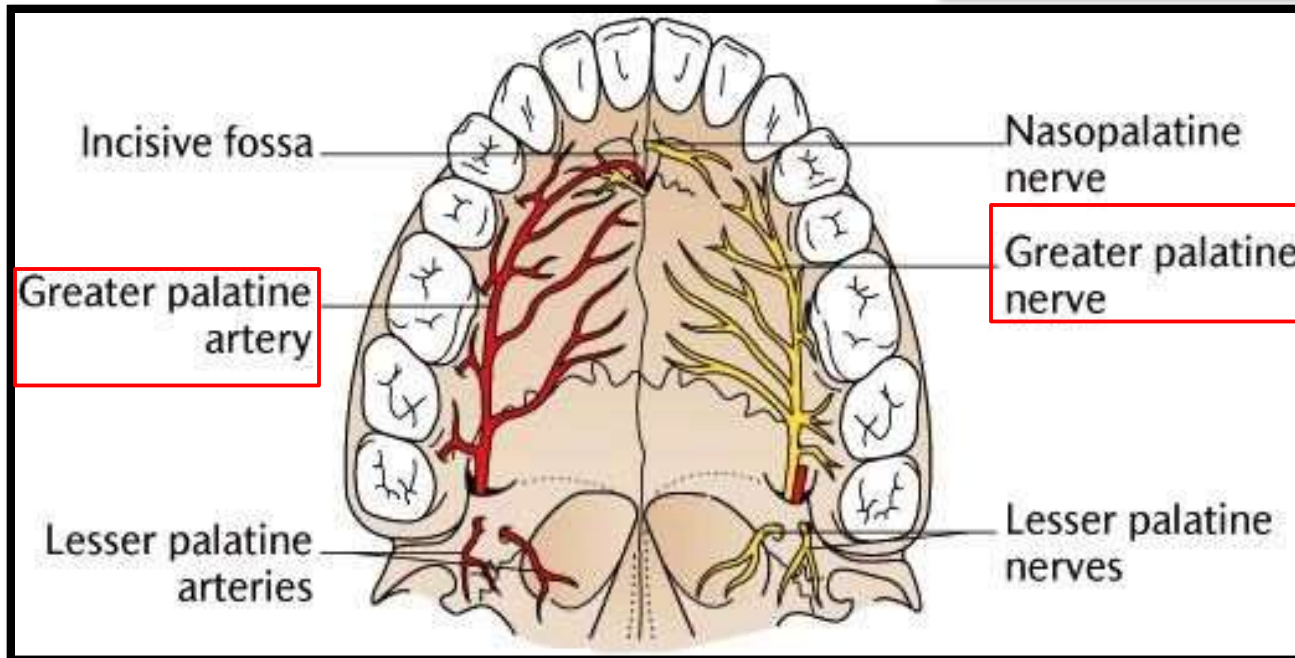
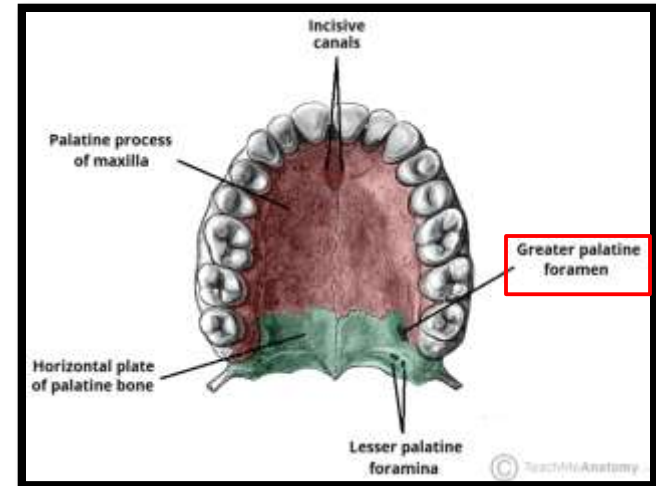
# Incisive Fossa

- A small pit anteriorly in the midline.
- It has openings of **incisive canals** in the form of **incisive foramina**.
- Each incisive canal transmits **Nasopalatine nerve** and **Greater palatine vessels**.



# Greater Palatine Foramen

- It lies in the posterolateral corner of hard palate, medial to last molar tooth.
- It transmits Greater palatine nerve and vessels.



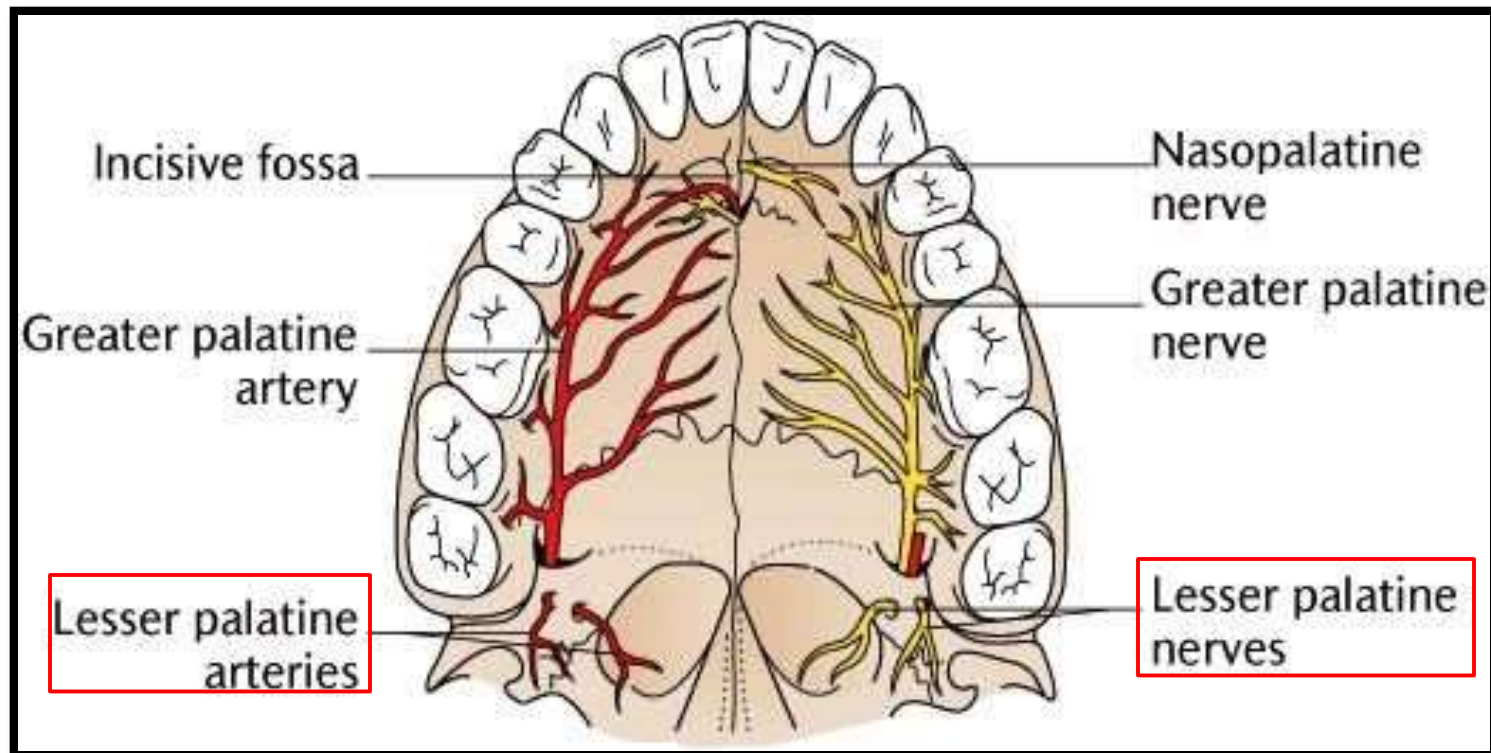


# Lesser Palatine Foramina

- 1-3 in number.

**Location-** just behind the Greater Palatine foramen.

- They are in the pyramidal process of palatine bone.
- They transmit **lesser palatine nerve** and **vessels**.

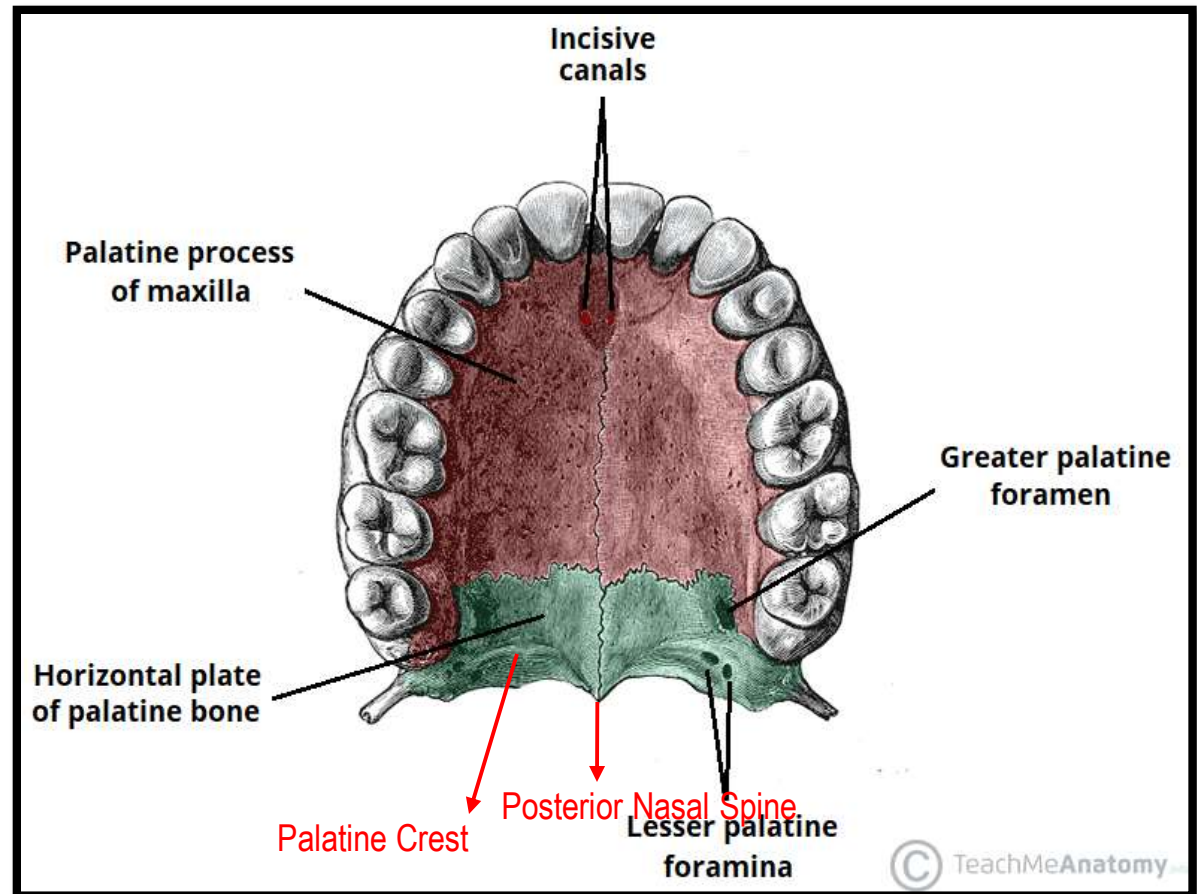


# Posterior Nasal Spine

- A conical projection in the median plane on posterior border of hard palate.

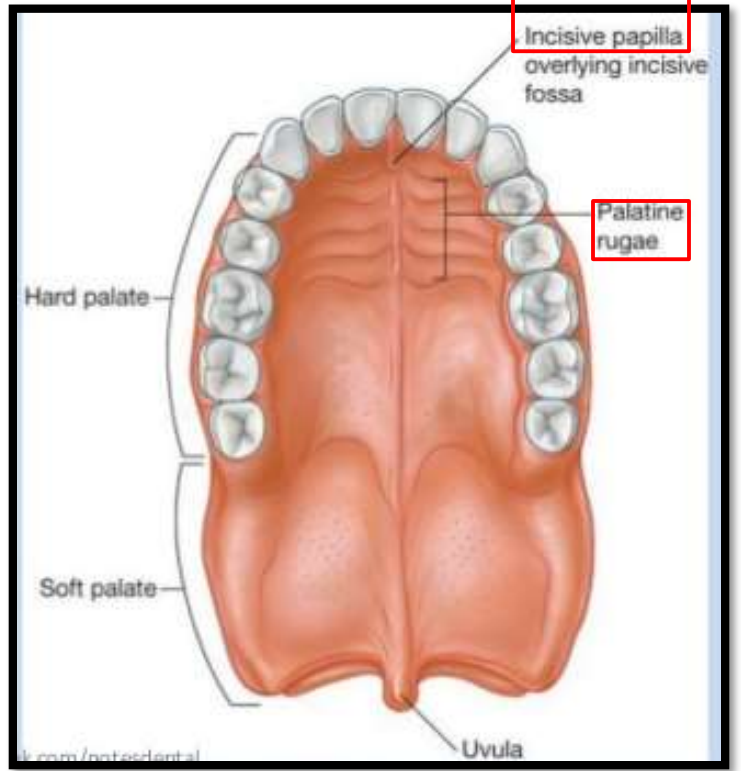
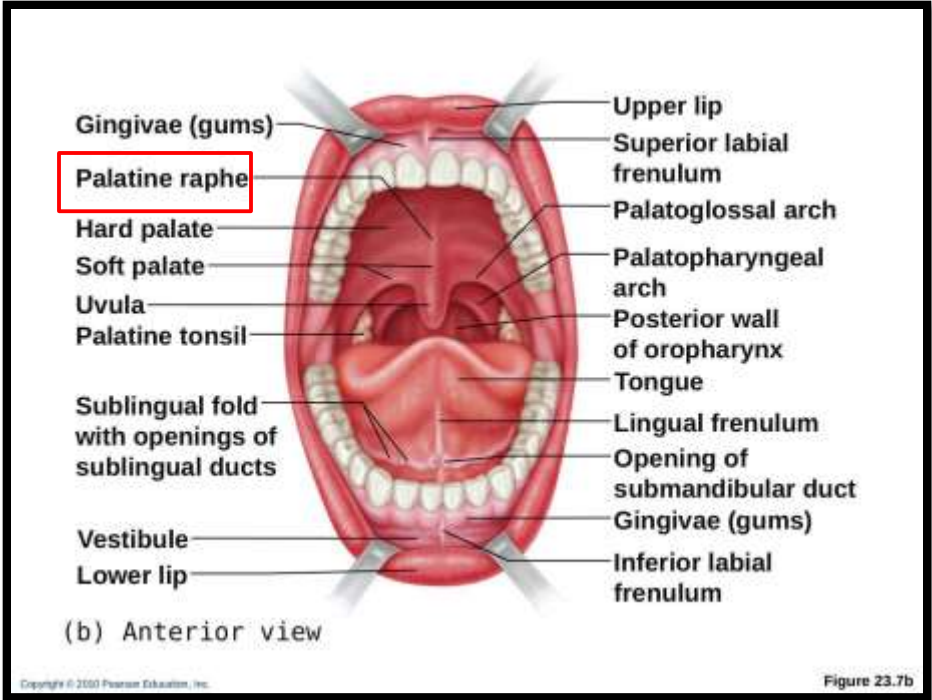
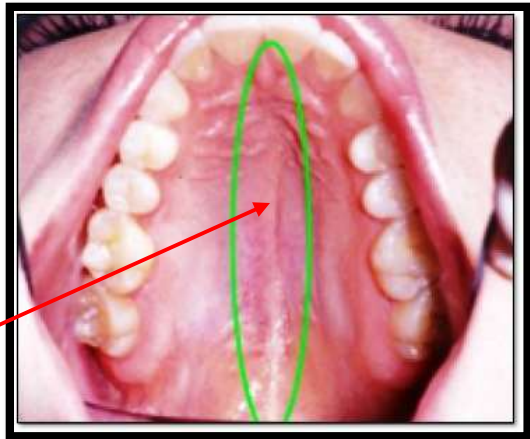
## Palatine Crest-

- A curved ridge near the posterior border of hard palate.



# Masticatory Mucosa

- It is the mucous membrane lining the hard palate.
- It is firmly adherent with the periosteum by multiple Sharpey's fibers.
- It presents **transverse masticatory ridges** on either side of midline.
- A narrow ridge extending anteroposteriorly in the midline from a papilla overlying the incisive fossa is known as **palatine raphe**.

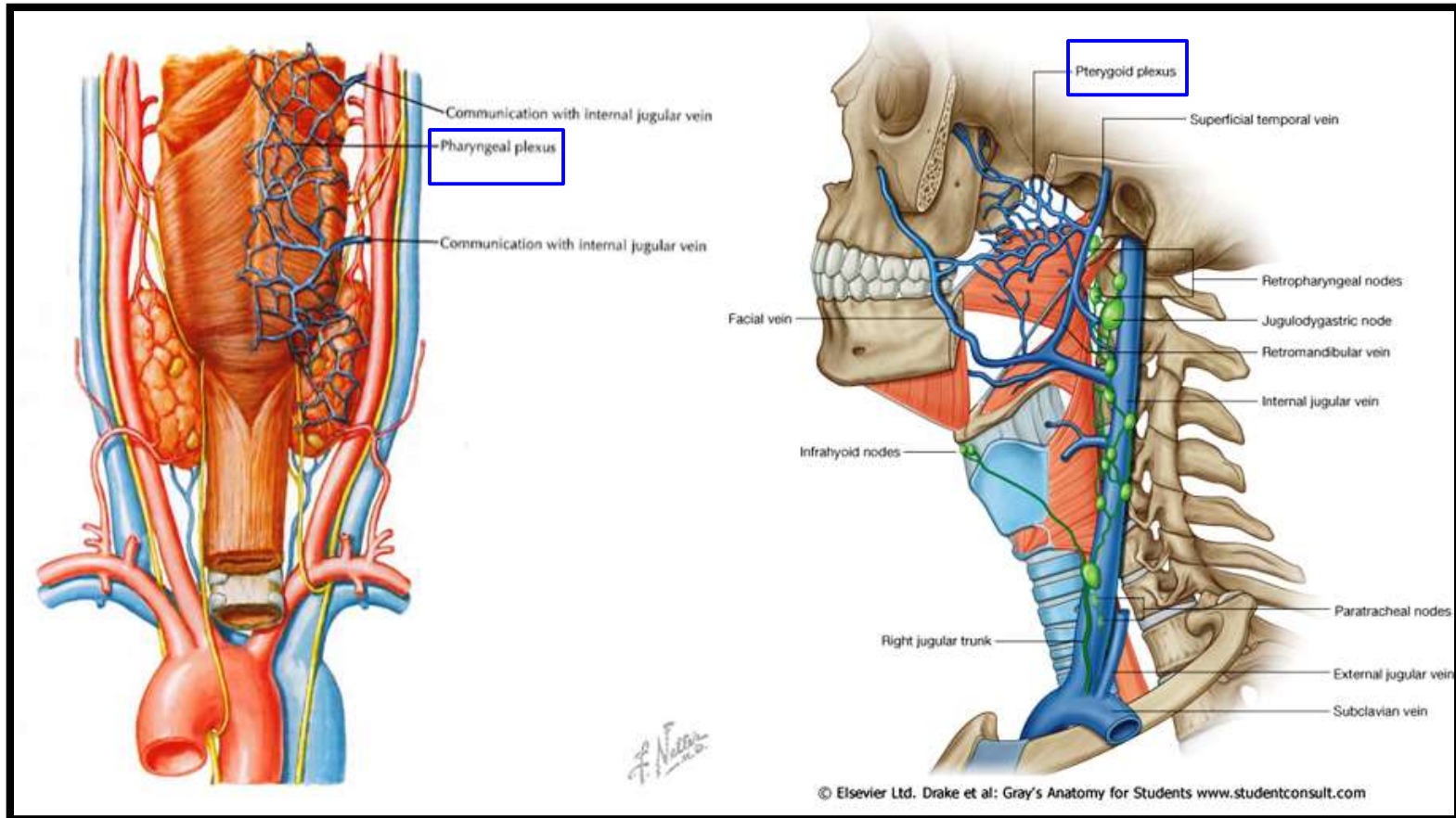
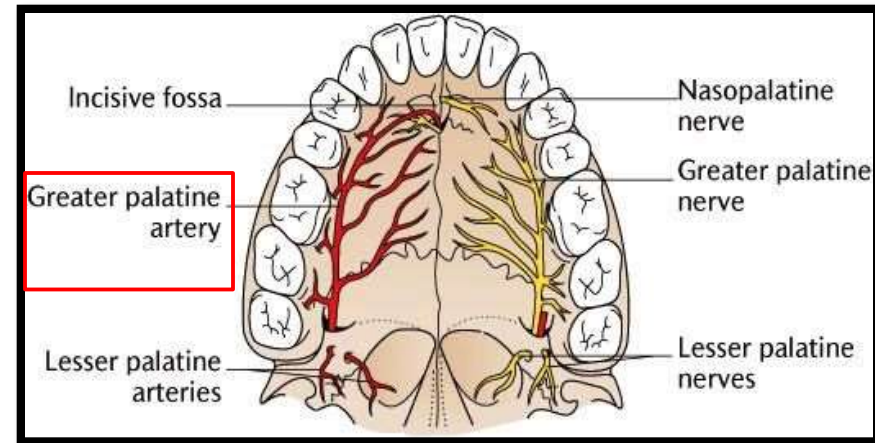


# Arterial Supply

- Greater palatine arteries.

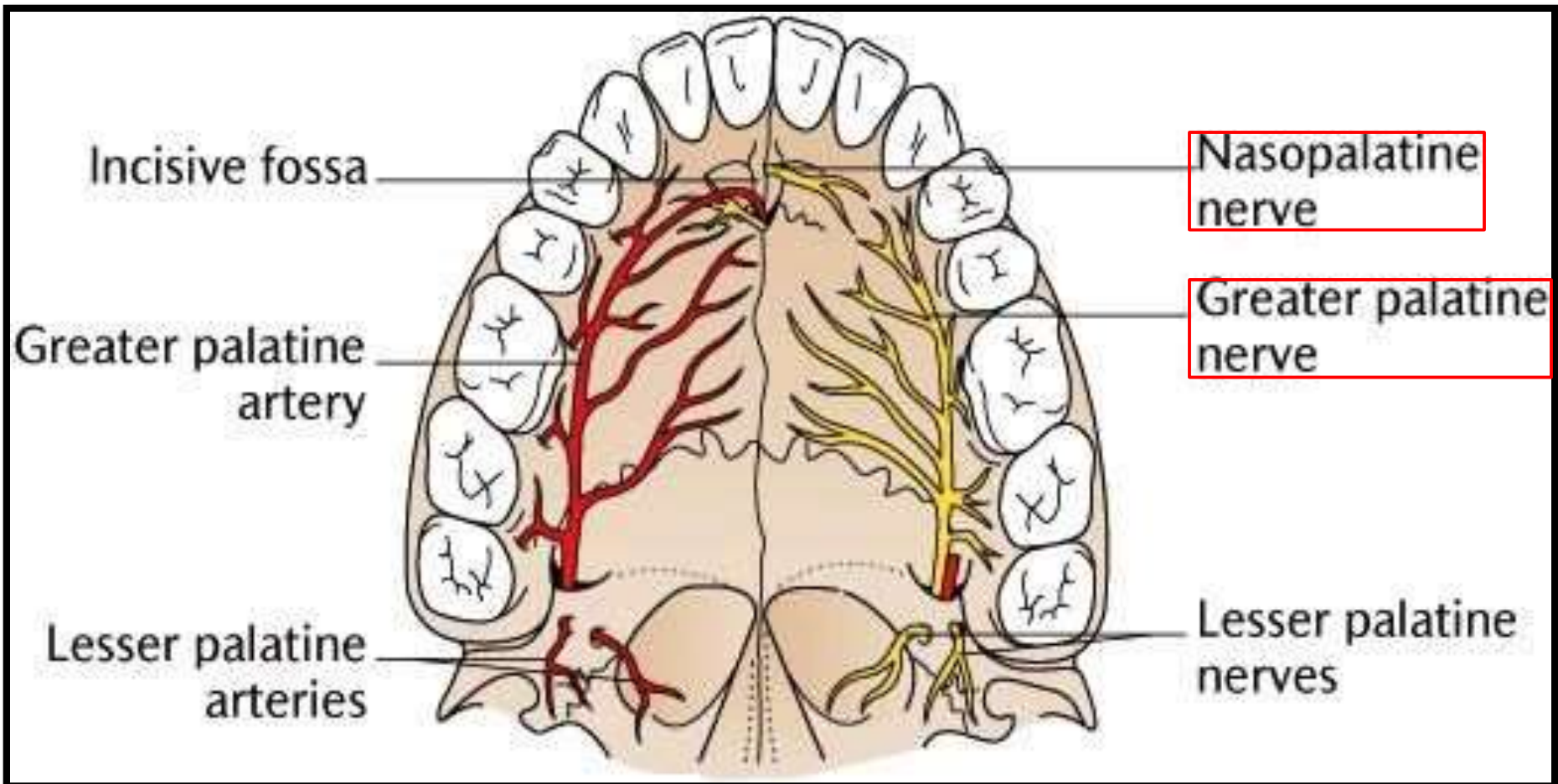
## Venous drainage-

- Pterygoid venous plexus.
- Pharyngeal venous plexus.



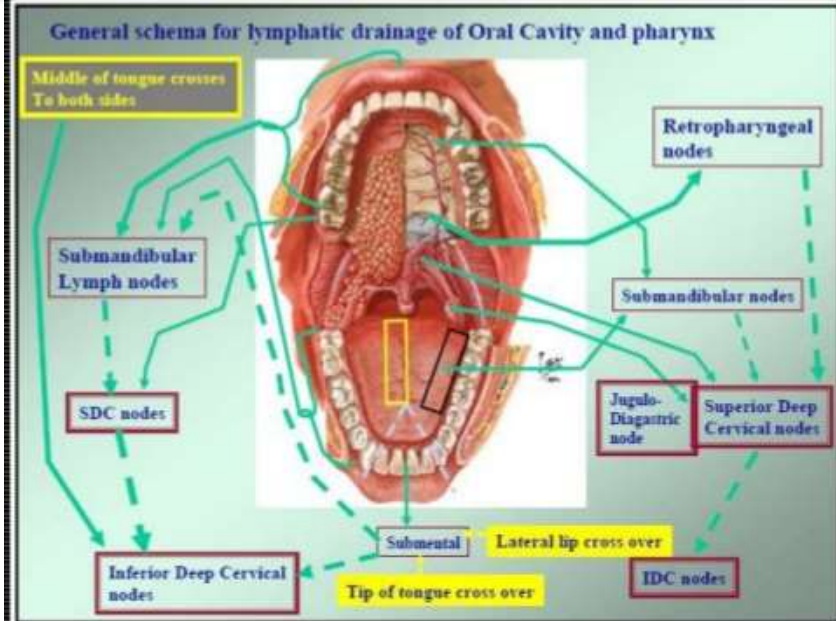
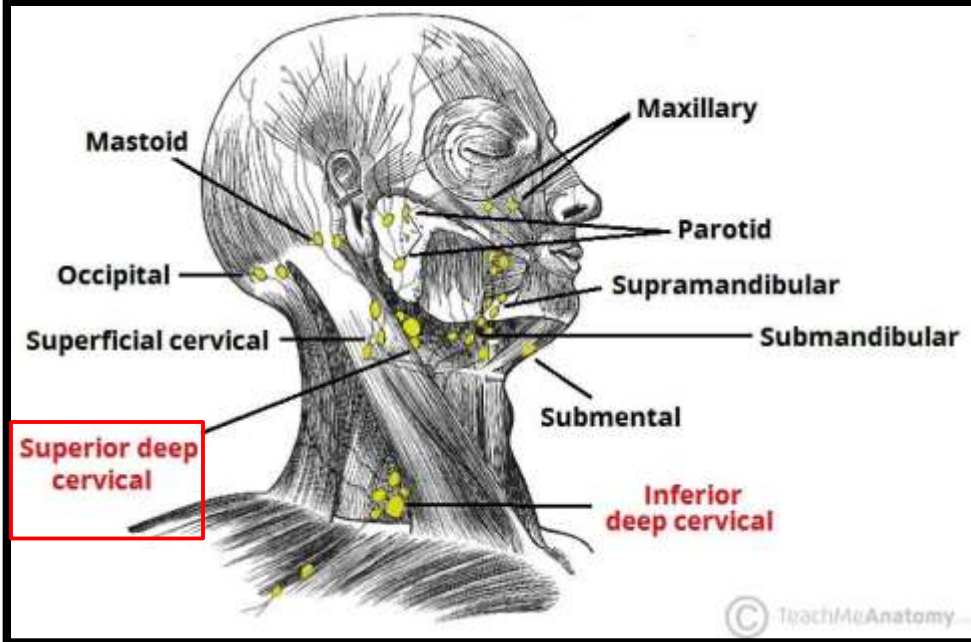
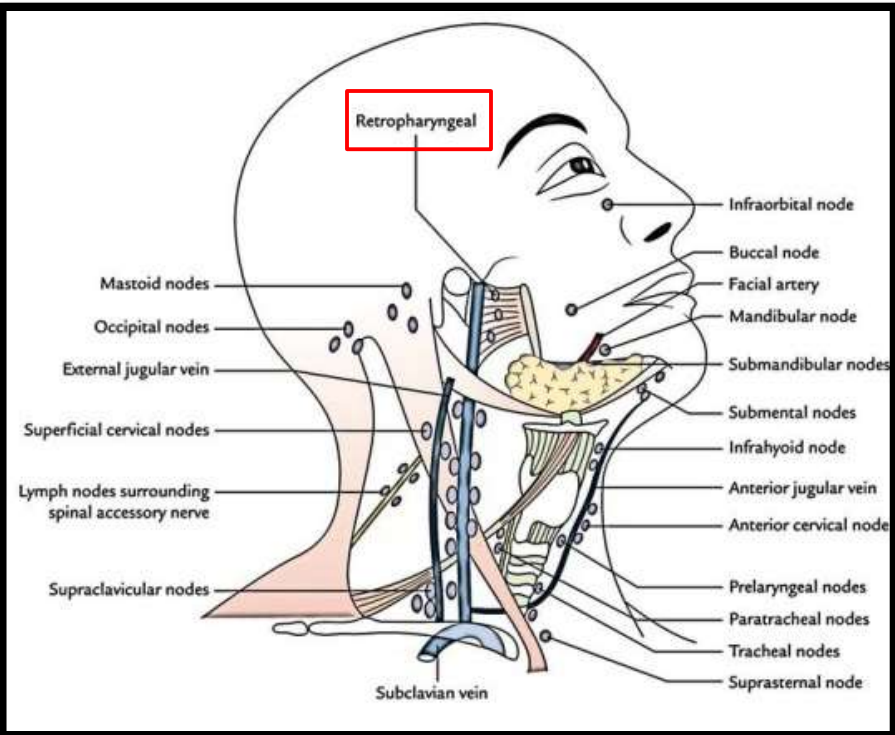
# Nerve Supply

- Greater palatine nerves.
- Nasopalatine nerves.



# Lymphatic Drainage

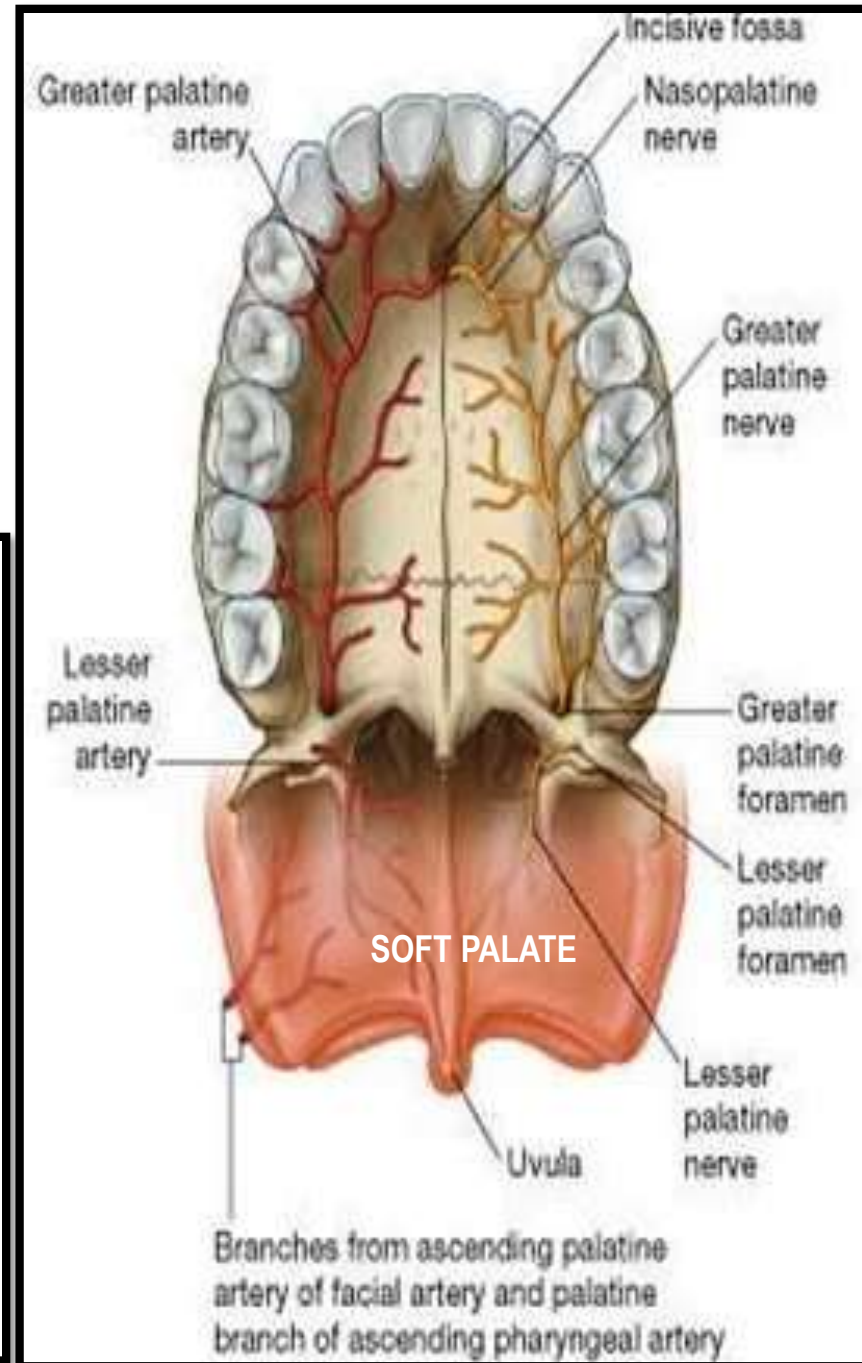
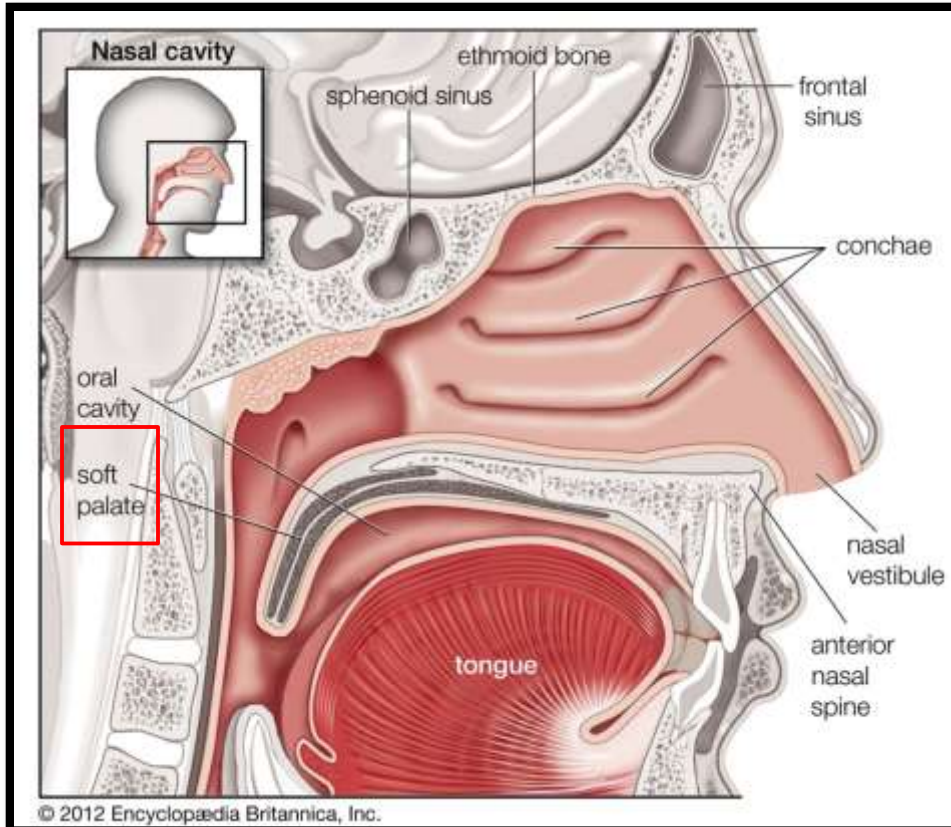
- Upper deep cervical lymph nodes.
- Retropharyngeal lymph nodes.



**Soft Palate**

# Introduction

- A mobile muscular flap hanging down from the posterior border of hard palate into the pharyngeal cavity.
- It separates the nasopharynx from oropharynx, when abuts on the Passavant's ridge.





# External Features

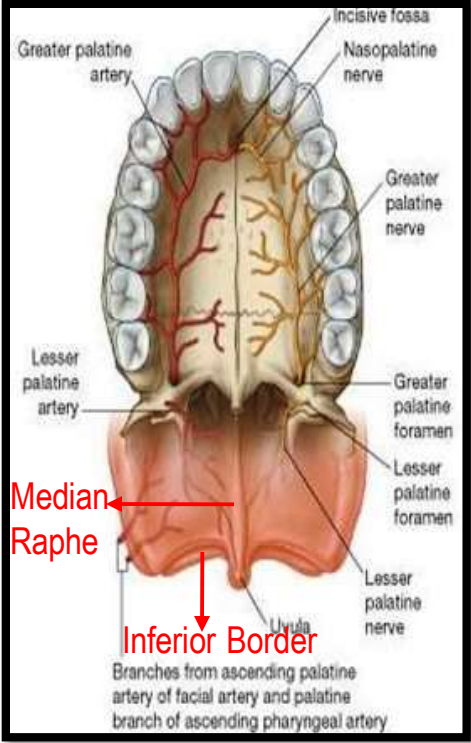
- 2 surfaces
- 2 borders

## Surfaces-

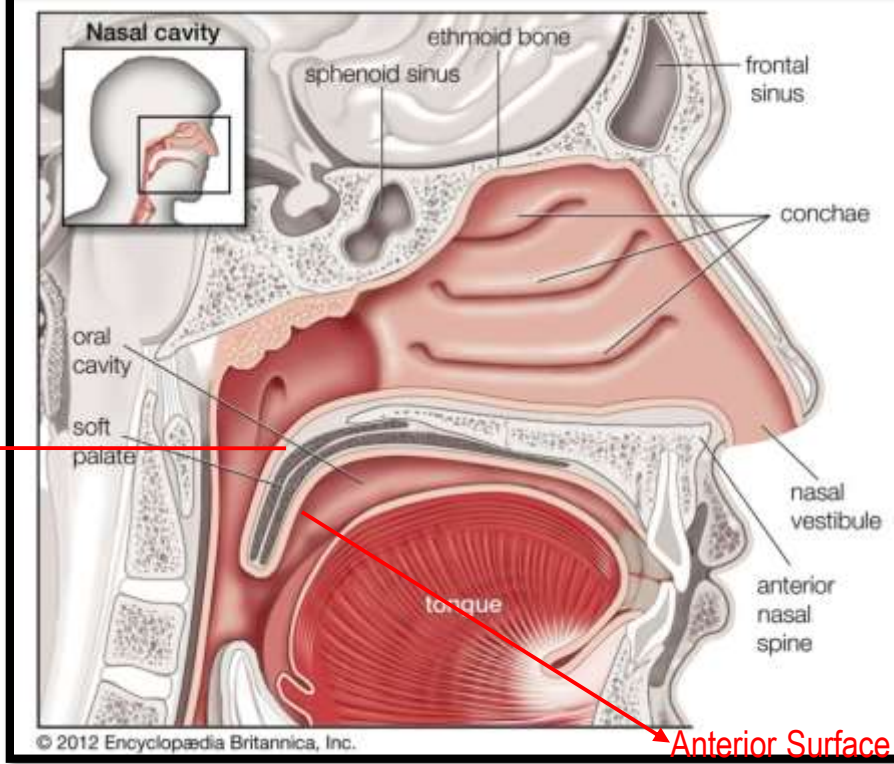
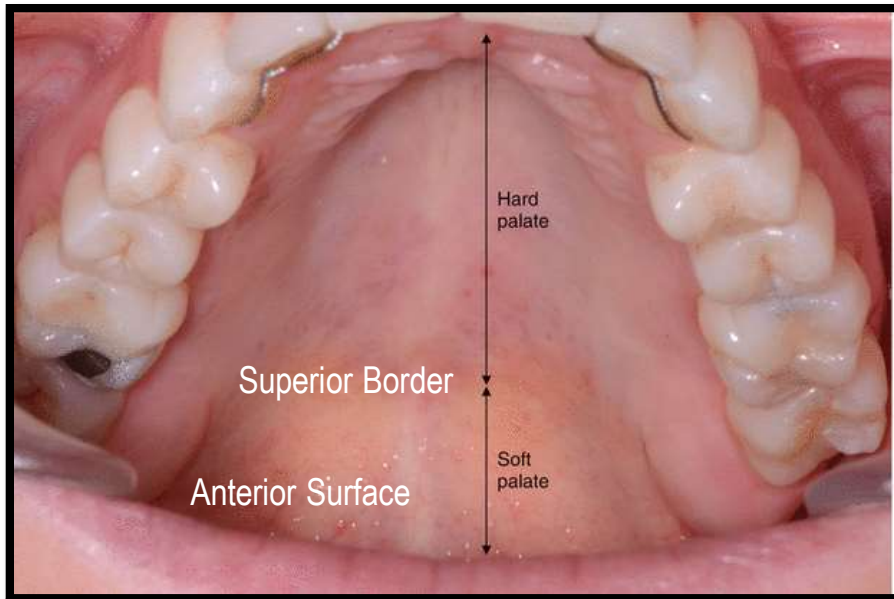
- Anterior (Oral)
- Posterior

## Borders-

- Superior
- Inferior



Median Raphe  
Inferior Border



Posterior Surface

Anterior Surface

## Anterior (Oral) Surface-

- Concave.
- Has a median raphe.

## Posterior (Oral) Surface-

- Convex.

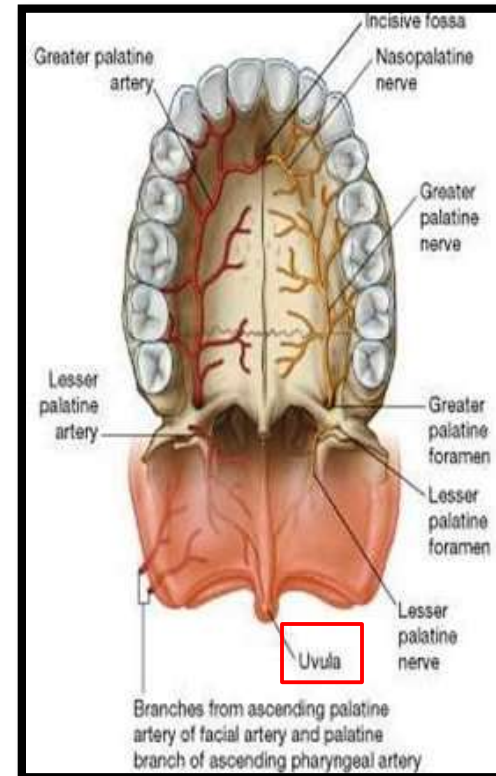
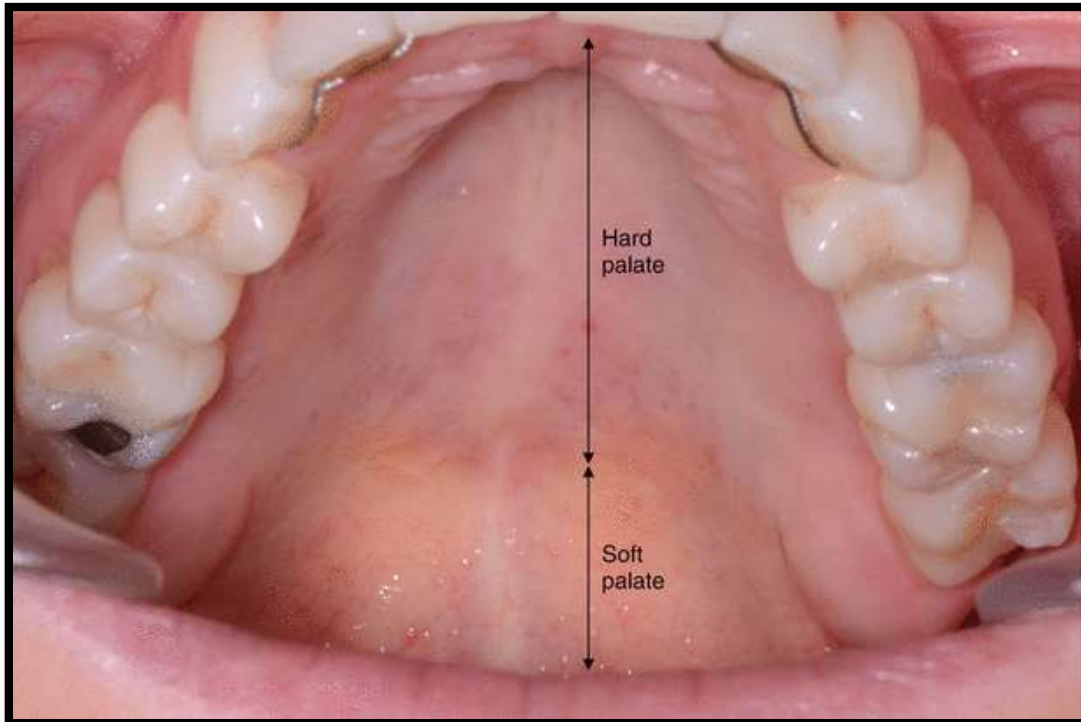
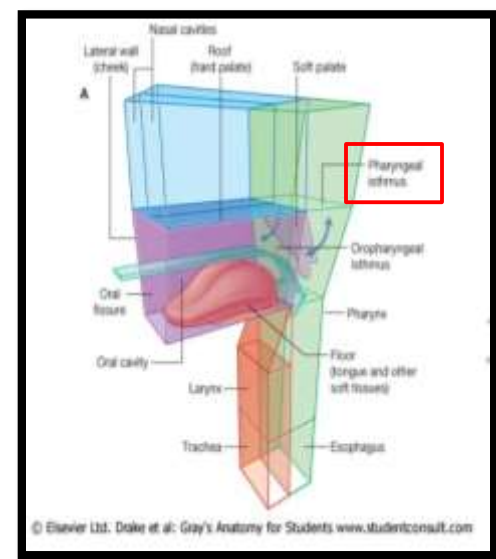
# Borders

## Superior Border-

- Attached to posterior border of hard palate.

## Inferior Border-

- Free.
- Forms the anterior boundary of pharyngeal isthmus.
- A small, conical, tongue- like projection hanging down from its middle is called **uvula**.



# Uvula

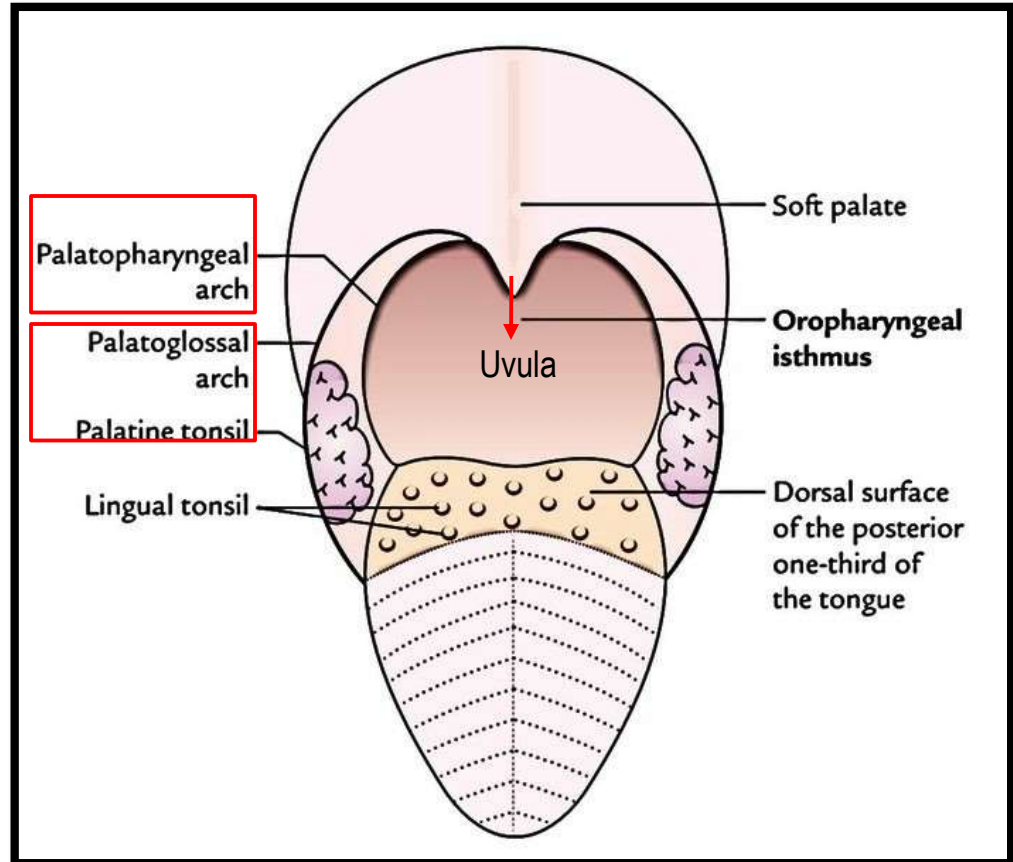
- ❖ On each side from the base of uvula, 2 curved folds of mucous membrane extend laterally and downwards:
- Anterior fold (Palatoglossal fold).
- Posterior fold ( Palatopharyngeal fold).

## Anterior fold (Palatoglossal fold)-

- Merges inferiorly with the side of the tongue ( at the junction of anterior 2/3<sup>rd</sup> and posterior 1/3<sup>rd</sup> ).
- It contains **palatoglossus** muscle.
- It forms the lateral boundary of oropharyngeal isthmus and anterior boundary of tonsillar fossa.

## Posterior fold ( Palatopharyngeal fold)-

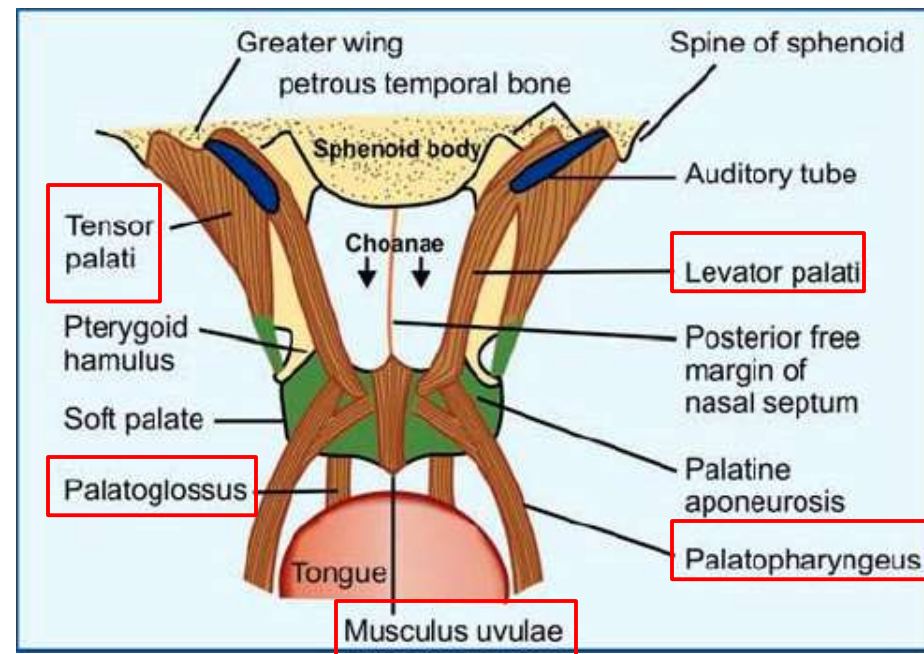
- Merges inferiorly with the lateral wall of pharynx.
- It contains **palatopharyngeus** muscle.
- It forms the posterior boundary of tonsillar fossa.



# Muscles

❖ 5 pairs of muscles:

- Tensor palati (Tensor Veli Palatini).
  - Levator palati (Levator Veli Palatini).
  - Palatoglossus.
  - Palatopharyngeus
  - Musculus uvulae.
- All muscles are extrinsic **except** **Musculus uvulae**, which are intrinsic.



# Tensor Palati

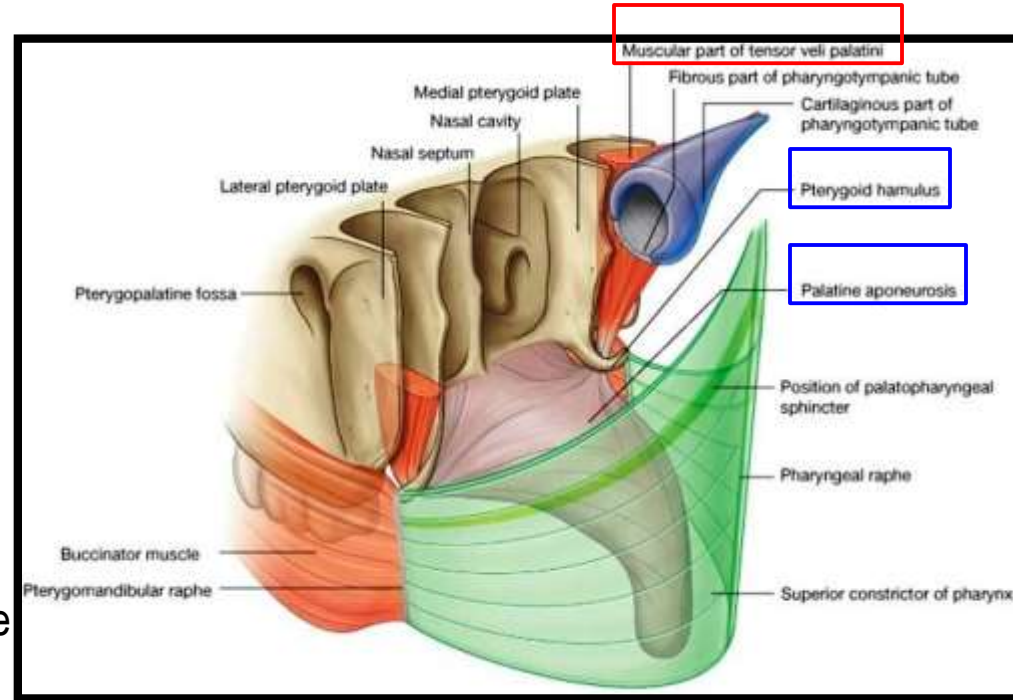
- It is a thin **triangular** muscle.

## Origin-

- **Lateral** aspect of cartilaginous part of auditory tube.
- Adjoining part of greater wing of sphenoid including its spine.

## Insertion-

- Muscle descends, converges to form a tendon.
  - The tendon hooks round the pterygoid hamulus and then expands to form the palatine aponeurosis.
- ❖ **Palatine aponeurosis** attaches to:
- Posterior border of hard palate.
  - Inferior surface of hard palate behind the palatine crest.



## Actions-

- Tightens the soft palate.
- Helps in opening the auditory tube.

# Levator Palati

- A **cylindrical** muscle lying deep to Tensor palati.

## Origin-

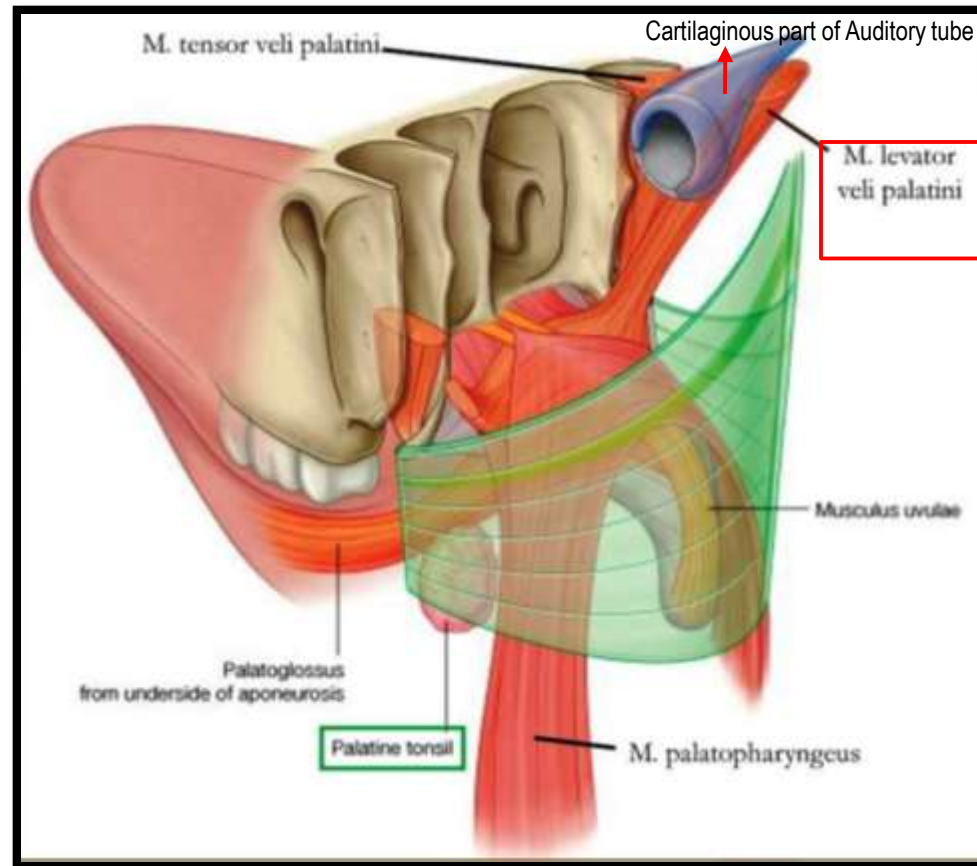
- **Medial** aspect of cartilaginous part of auditory tube.
- Adjoining part of petrous part of temporal bone ( inferior surface of its apex anterior to carotid canal).

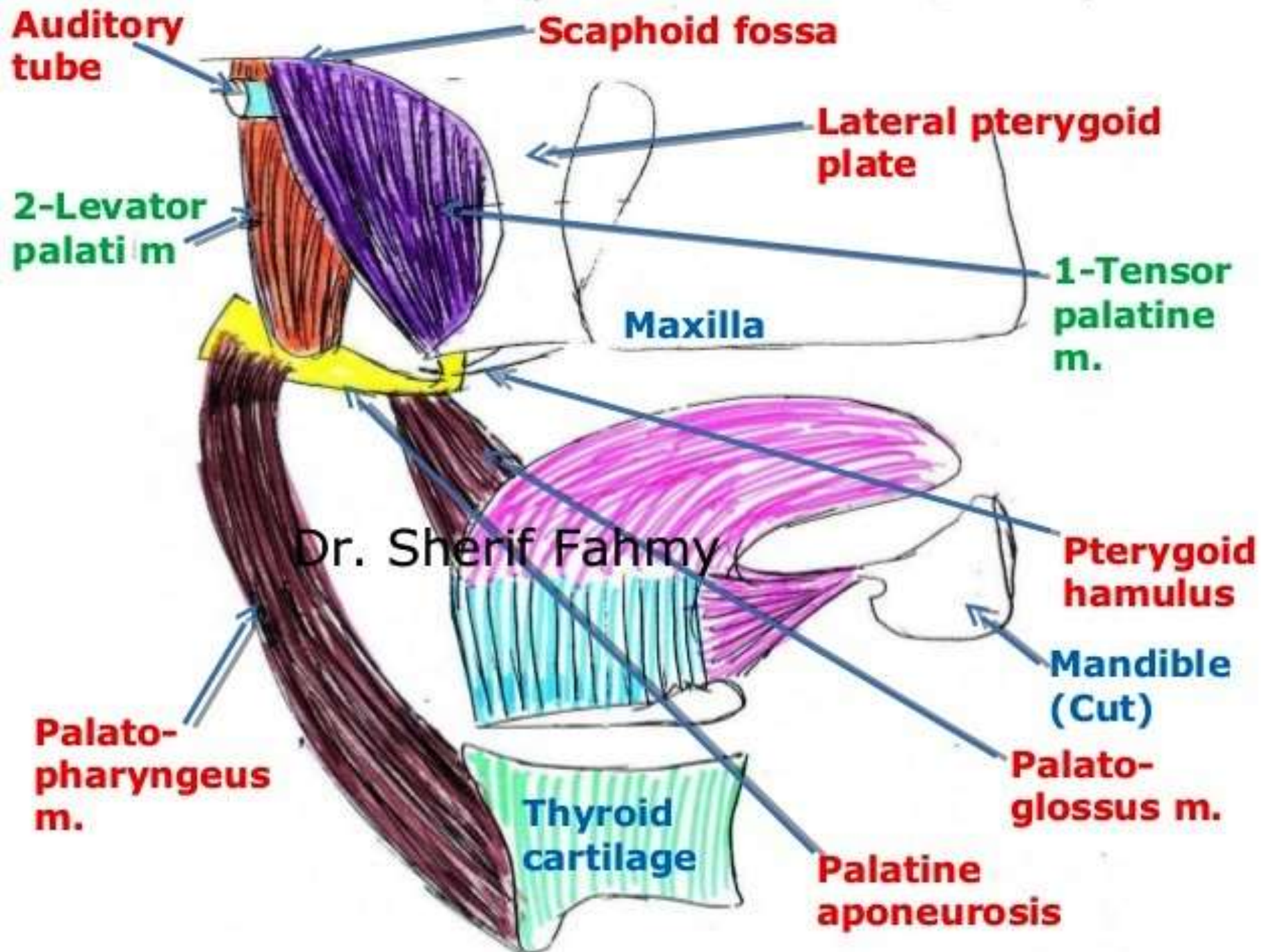
## Insertion-

- Muscle runs downwards and medially and spreads out to be inserted on **the upper surface of palatine aponeurosis**.

## Actions-

- Elevates the soft palate to close the pharyngeal isthmus.
- Helps in opening the auditory tube.





# Musculus Uvulae

- A longitudinal muscle strip.
- One on either side of median plane within the palatine aponeurosis.

## Origin-

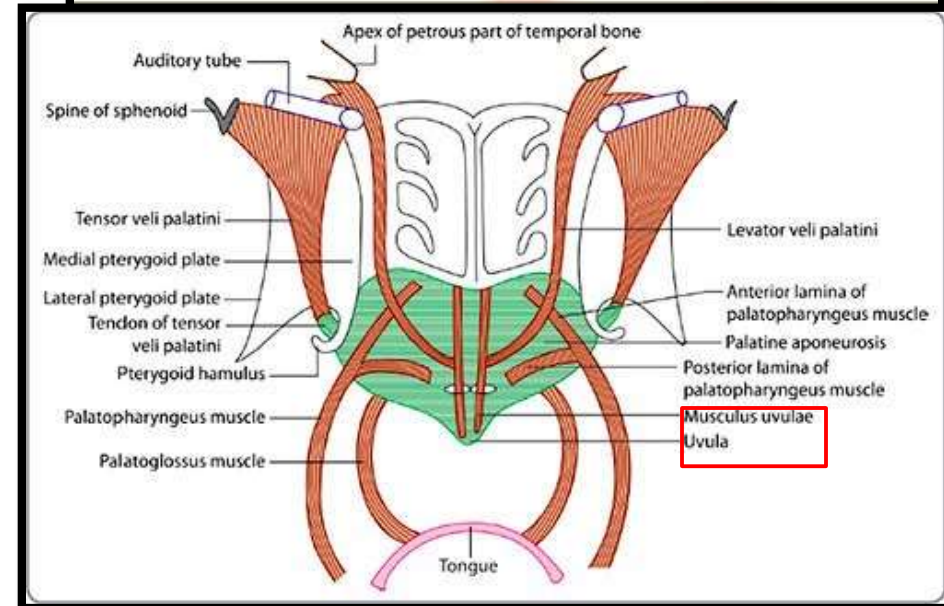
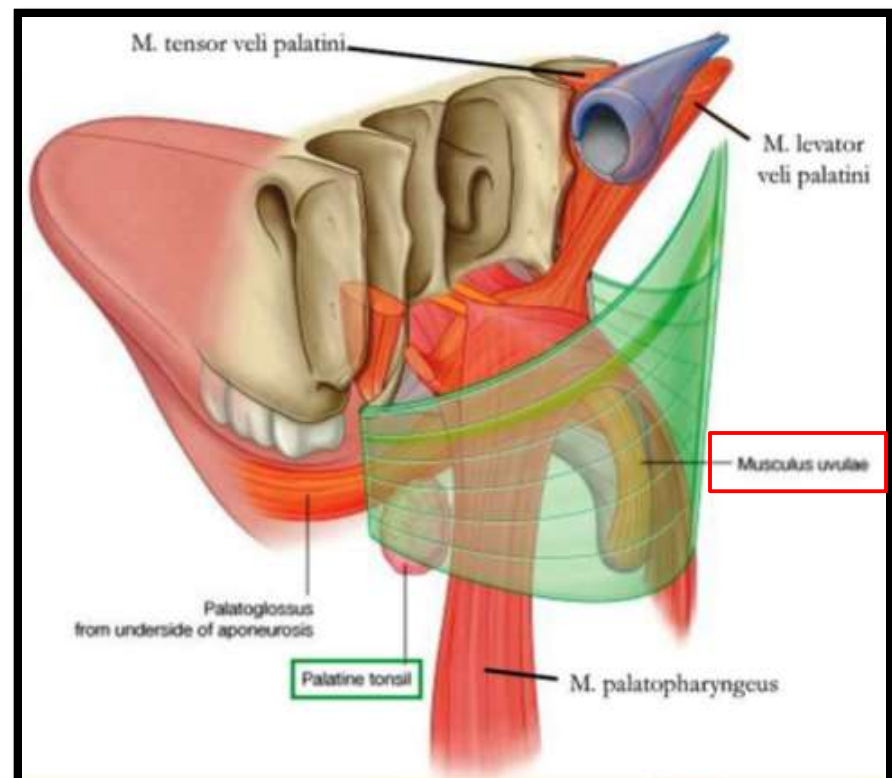
- Posterior nasal spine.
- Palatine aponeurosis.

## Insertion-

- Mucous membrane of uvula.

## Actions-

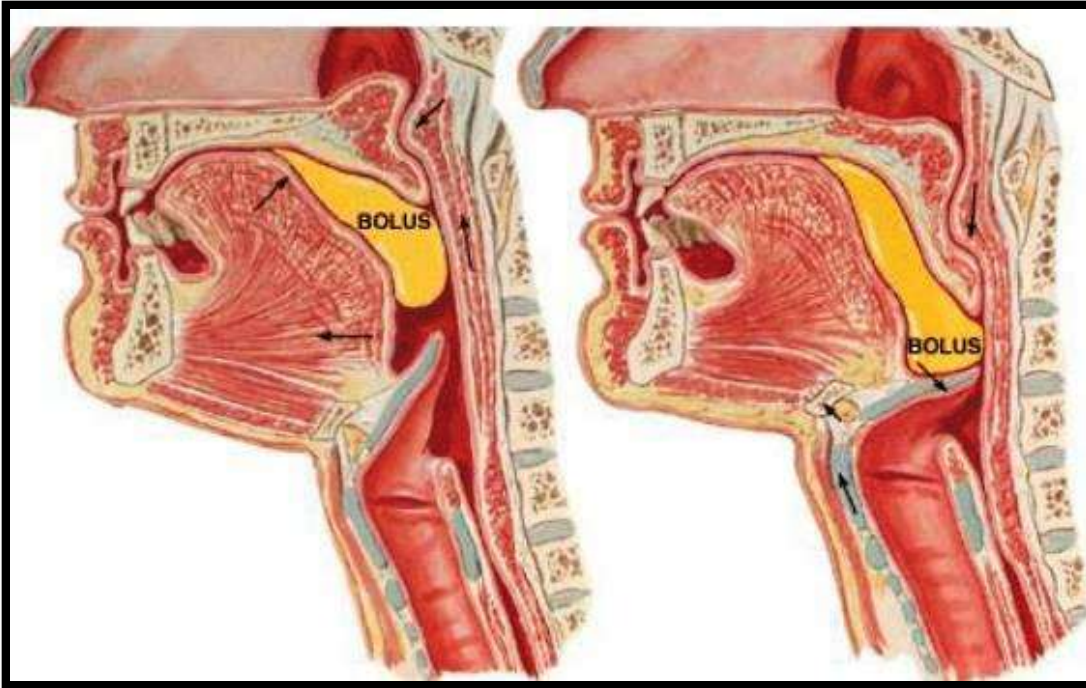
- Pulls the uvula forwards to its own side.





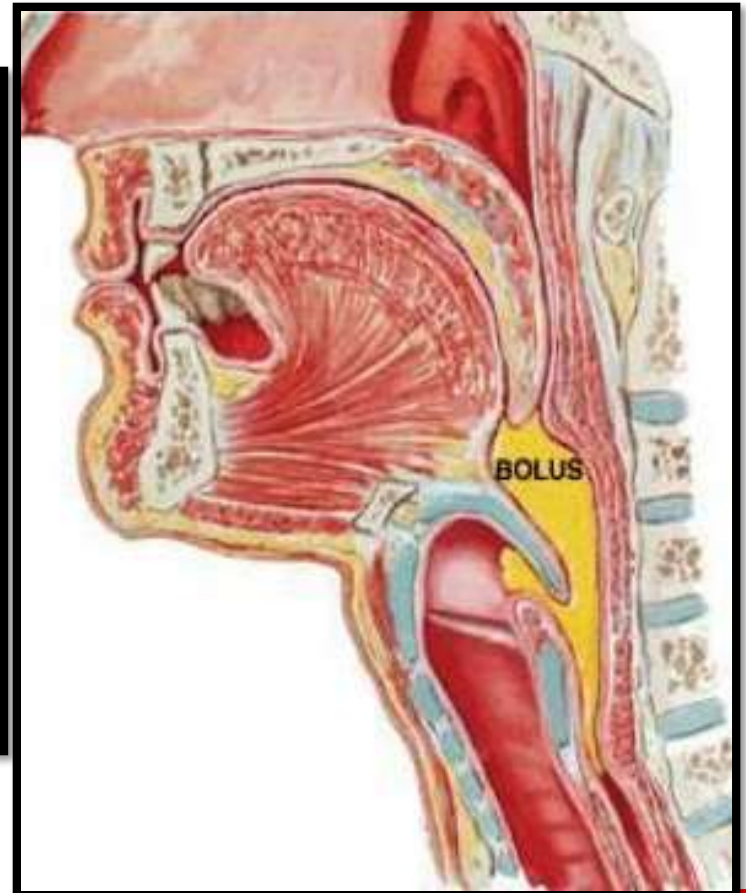
# Functions of Soft Palate

- During **swallowing**, **closes** the **pharyngeal isthmus** to separate the oropharynx from nasopharynx, thereby prevents the entry of food into the nasopharynx and nasal cavities, and **closes** the **oropharyngeal isthmus** to prevent the regurgitation of food contents into the oral cavity.



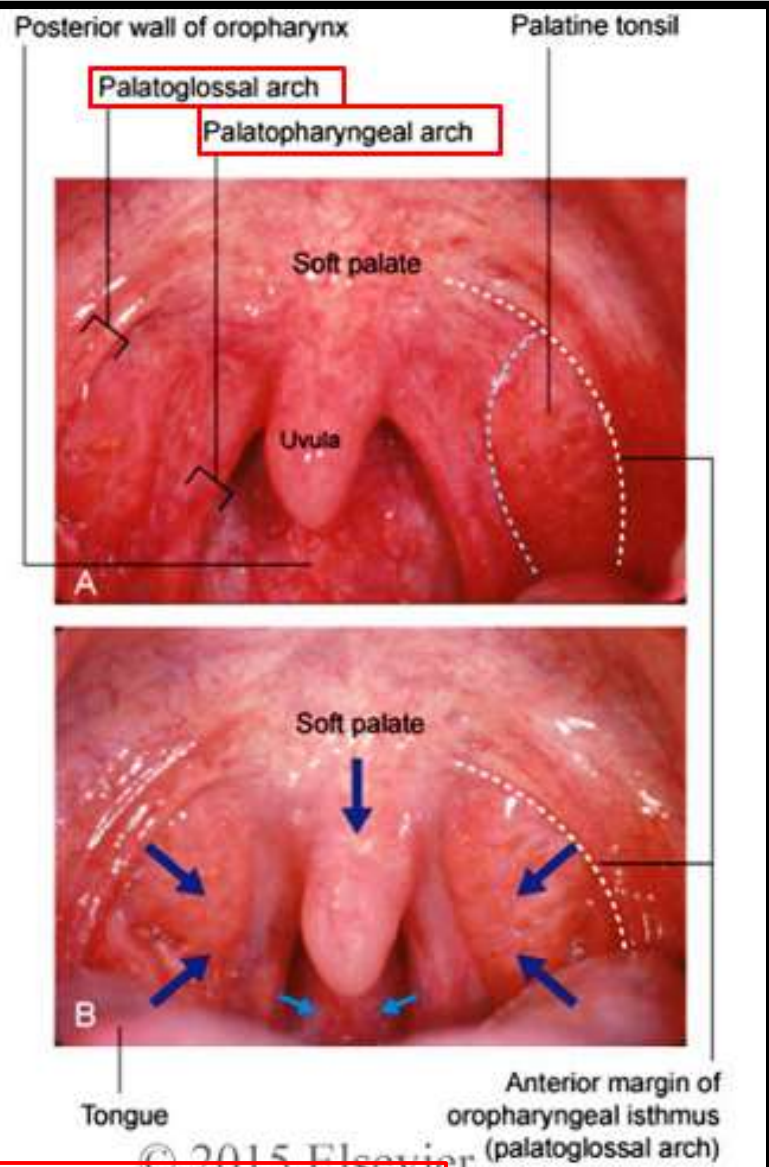
## Closure of Pharyngeal isthmus

[Soft palate is raised up (**Levator Palati**) and makes contact with the posterior pharyngeal wall (contraction of **Palatopharyngeus**)]



## Closure of Oropharyngeal isthmus

[Soft palate is pulled down, approximated the tongue and pressed against it]



**Closure of oropharyngeal isthmus**

- Medial and downward movement of palatoglossal arches
- Medial and downward movement of palatopharyngeal arches
- Upward movement of tongue
- Downward and forward movement of soft palate

# Functions of Soft Palate contd...

- During **chewing**, **closes** the **oropharyngeal isthmus** to isolate the oral cavity from oropharynx so that breathing is not affected.
- Helps to modify the quality of voice by varying the degree of closure of pharyngeal isthmus.
- During **sneezing**, prevents the damage of nasal mucosa, by appropriately dividing and directing the blast of air through both nasal and oral cavities.
- During **coughing**, prevents the entry of sputum into the nasal cavities by directing it into oral cavity.

# Arterial Supply

## ❖ Maxillary artery-

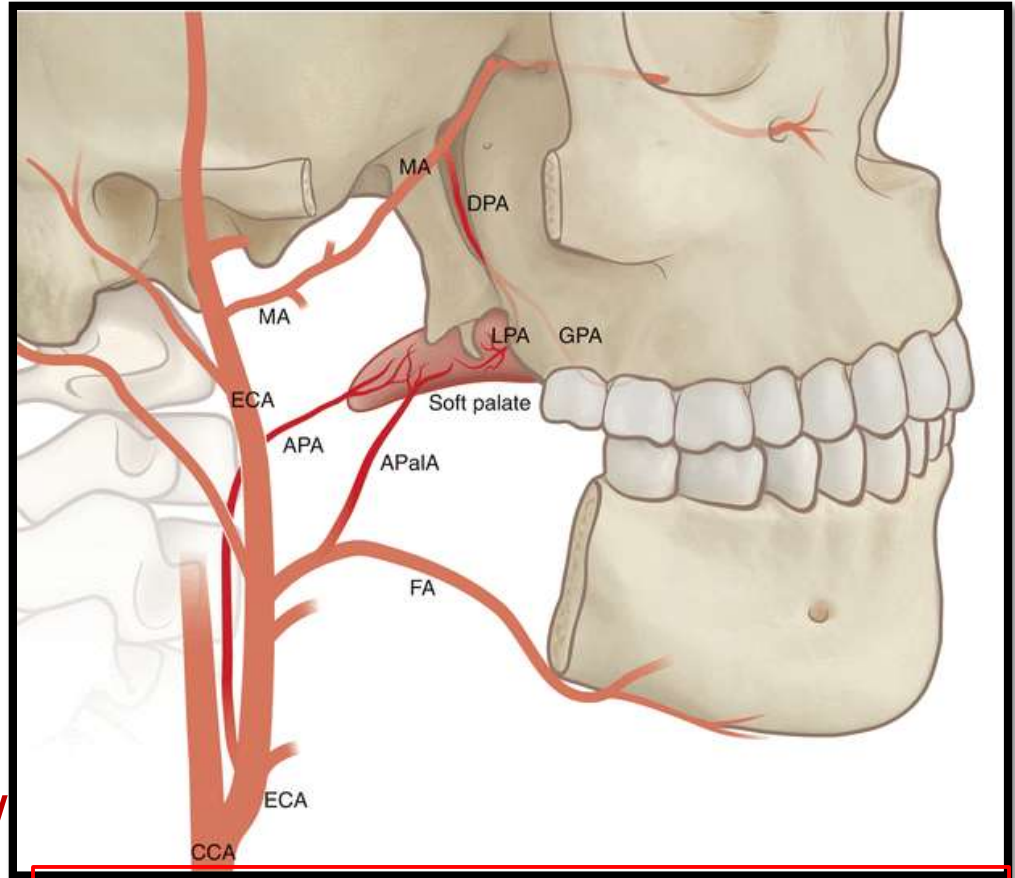
- Lesser palatine branches.

## ❖ Facial artery-

- Ascending palatine branch.

## ❖ Ascending pharyngeal artery

- Palatine branches.



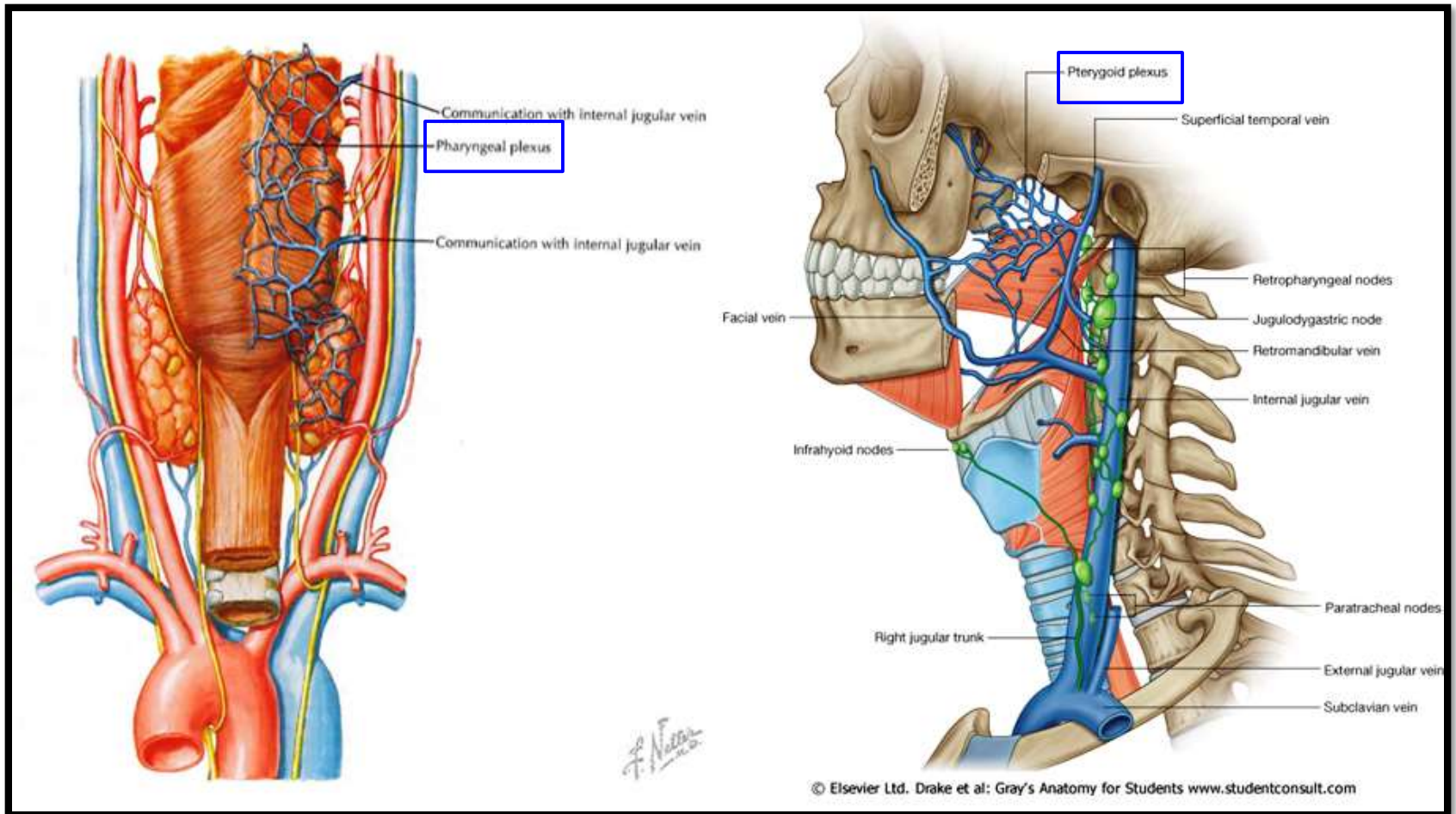
**MA-** Maxillary Artery, **LPA-** Lesser Palatine Arteries, **FA-** Facial Artery, **APalA-** Ascending Palatine Artery, **APA-** Ascending Pharyngeal Artery

**CCA-** Common Carotid Artery, **ECA-** External Carotid Artery, **DPA-** Descending Palatine Artery, **GPA-** Greater Palatine Artery

# Venous Drainage

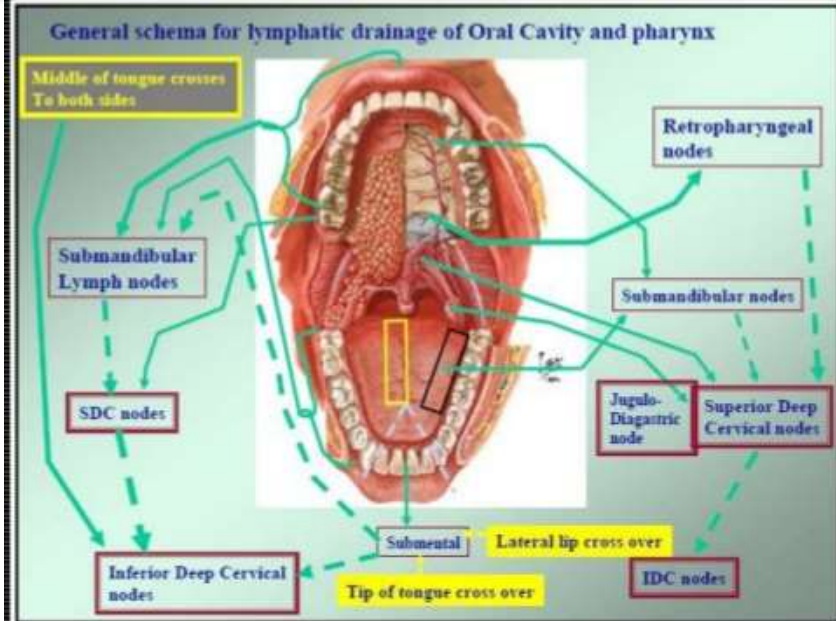
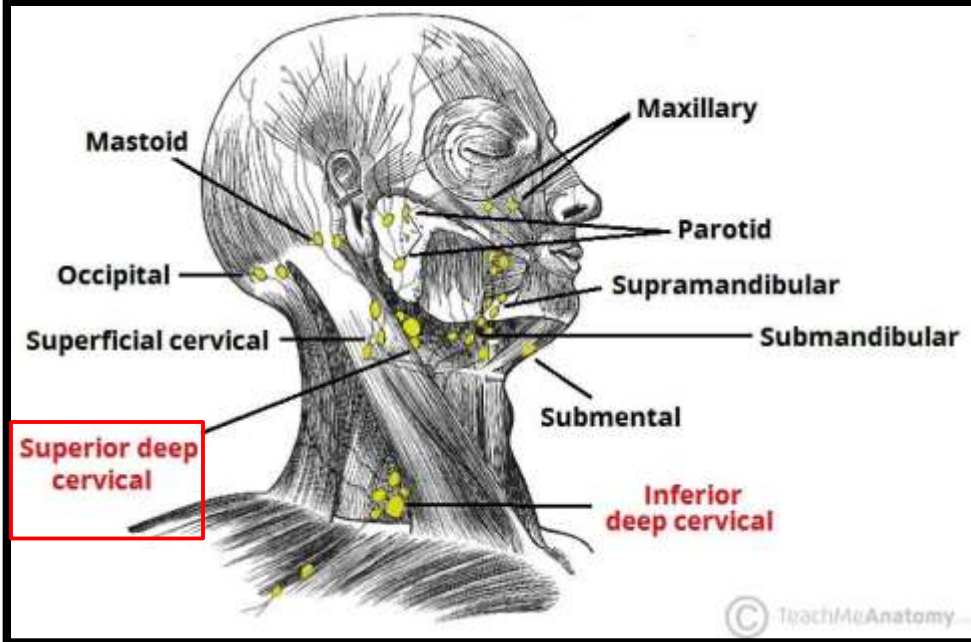
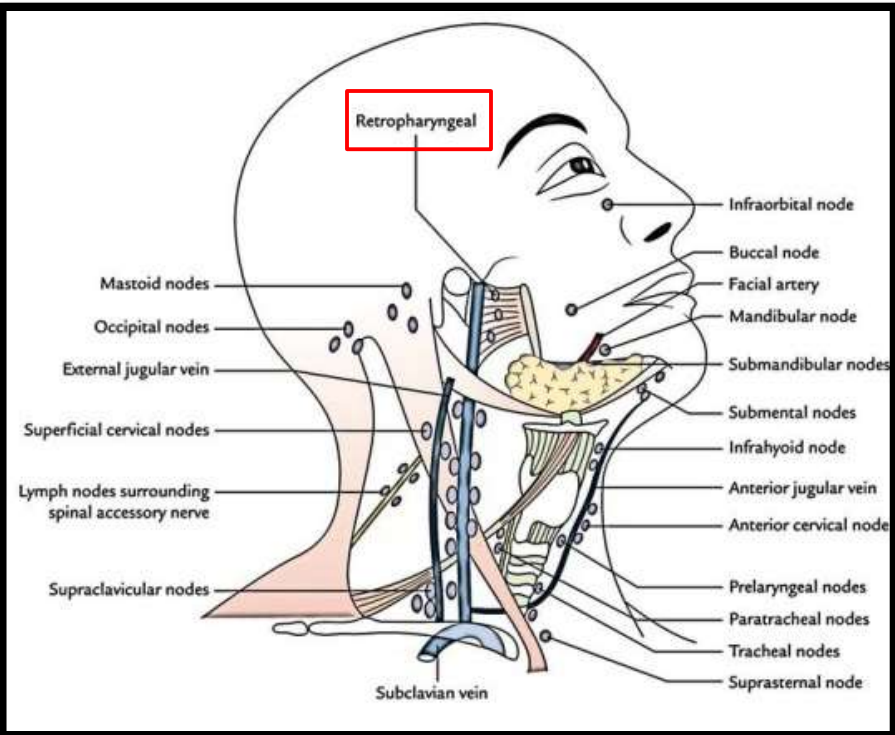
Intro:

- Pharyngeal venous plexus.
- Pterygoid venous plexus.



# Lymphatic Drainage

- Retropharyngeal lymph nodes.
- Upper deep cervical lymph nodes.



# Nerve Supply

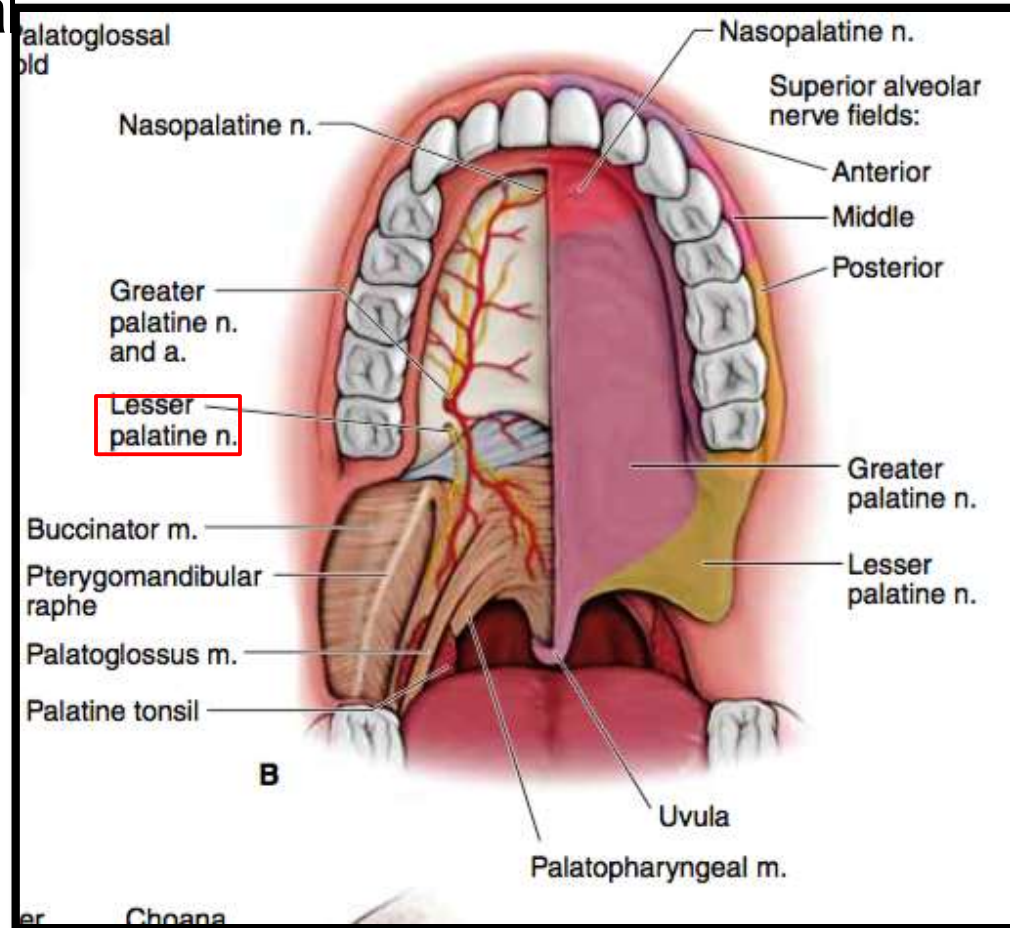
## Motor supply-

- All muscles are supplied by cranial root of Accessory nerve via pharyngeal plexus **except** Tensor palati.
- Tensor palati is supplied by nerve to Medial Pterygoid.

## Sensory supply-

### General Sensory-

- By Lesser palatine nerves.
- Glossopharyngeal nerve.



# Applied Aspects

## Gag Reflex-

- It is a protective reflex, in response to stimulation of mucous membrane of oropharynx.
- Characterized by reflex contraction of pharyngeal and palatal muscles.

## Afferent limb-

Glossopharyngeal nerve.

## Efferent limb-

- Vagus nerve.





