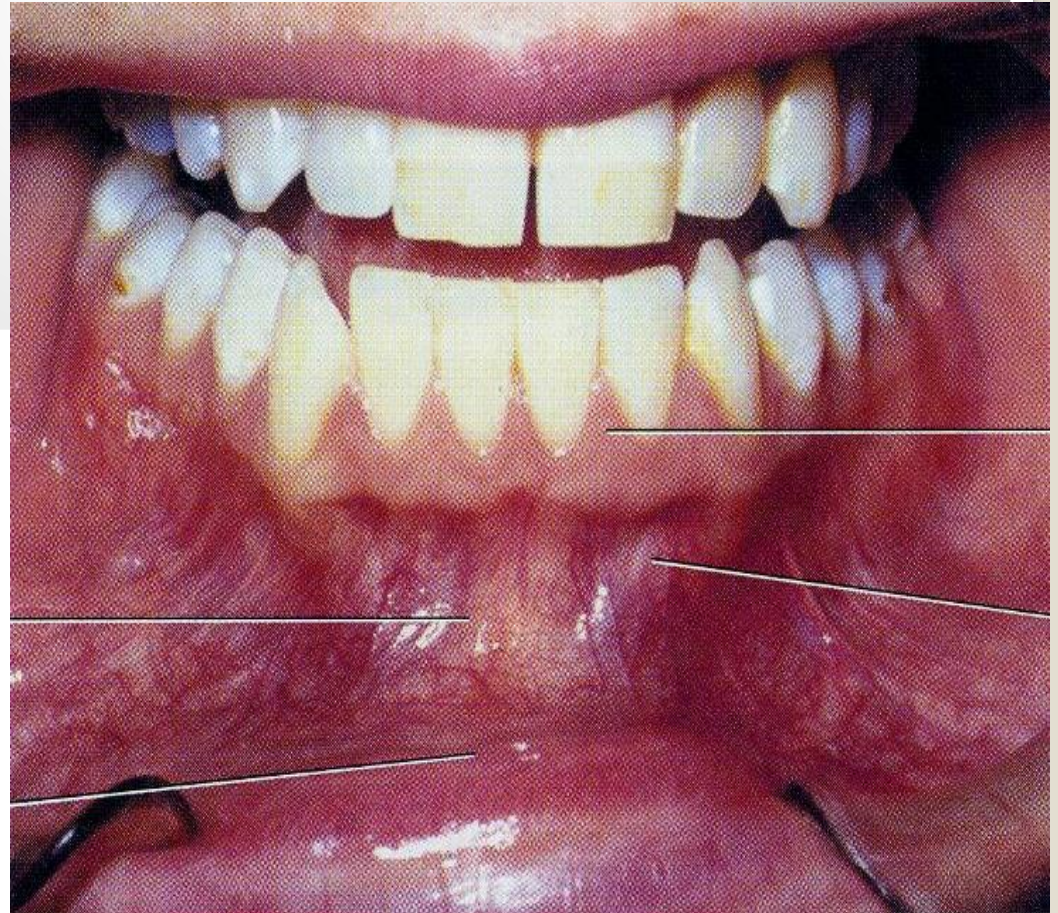


ORAL CAVITY PALATE AND TONGUE

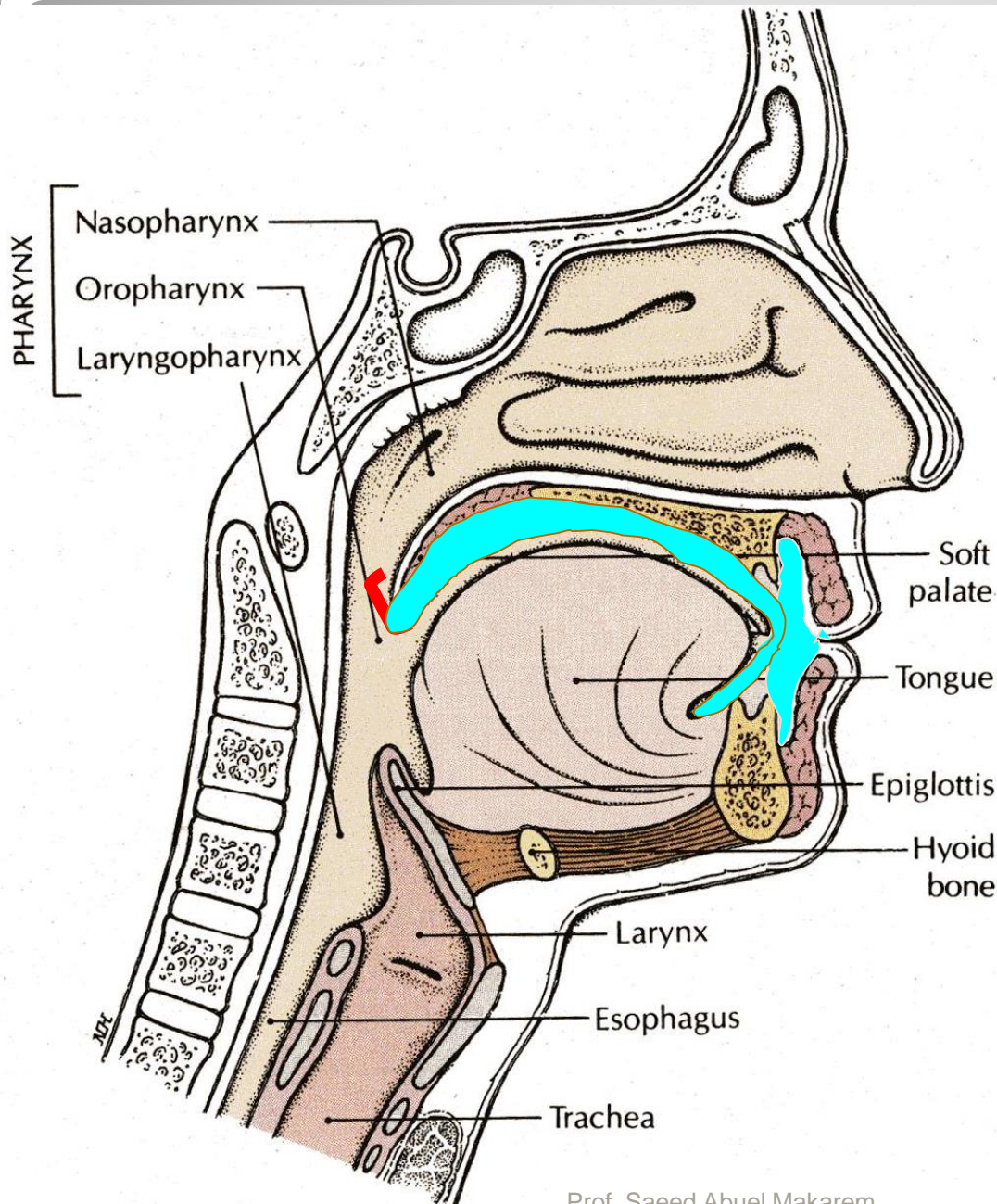
ORAL CAVITY



Prof. Saeed Abuel Makarem

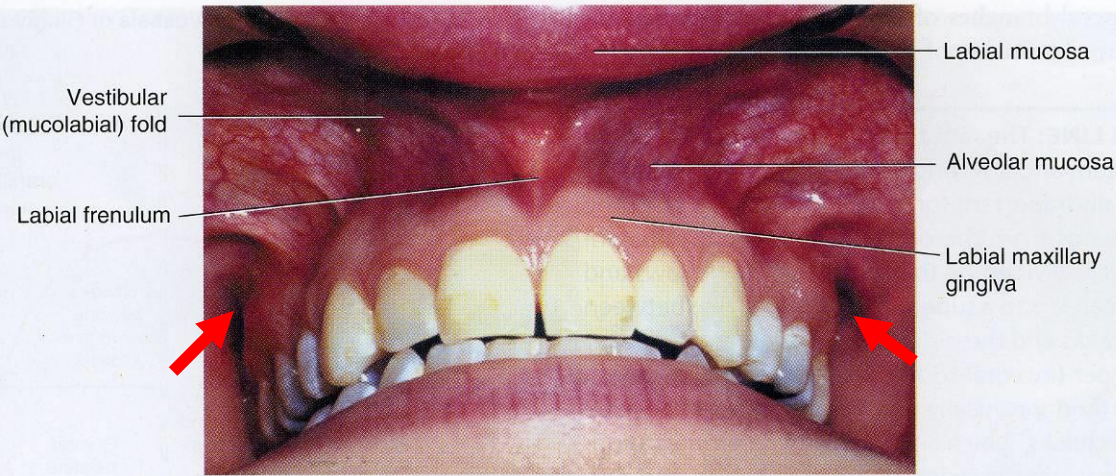
OBJECTIVES

- **By the end of the lecture you should be able to:**
- Describe the anatomy of the oral cavity, (boundaries, parts, nerve supply).
- Describe the anatomy of the palate, (parts, muscles, nerve & blood supply).
- Describe the anatomy of the tongue, (structure, muscles, motor and sensory nerve, blood supply and lymphatic drainage).

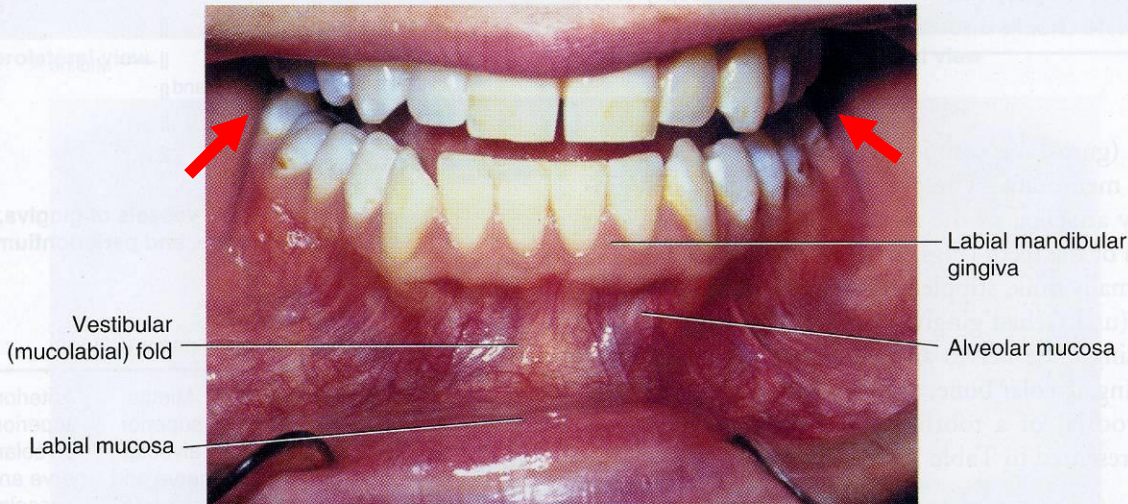


- **The mouth** extends from lips anteriorly to the oropharyngeal isthmus posteriorly (which is the junction of the mouth with the pharynx).
- It is divided into the 1- **Vestibule:**
- Which lies between gums & teeth internally and,
- Lips & cheeks externally.
- 2- **Mouth cavity proper:**
- Which lies within the alveolar arches, gums, and teeth.

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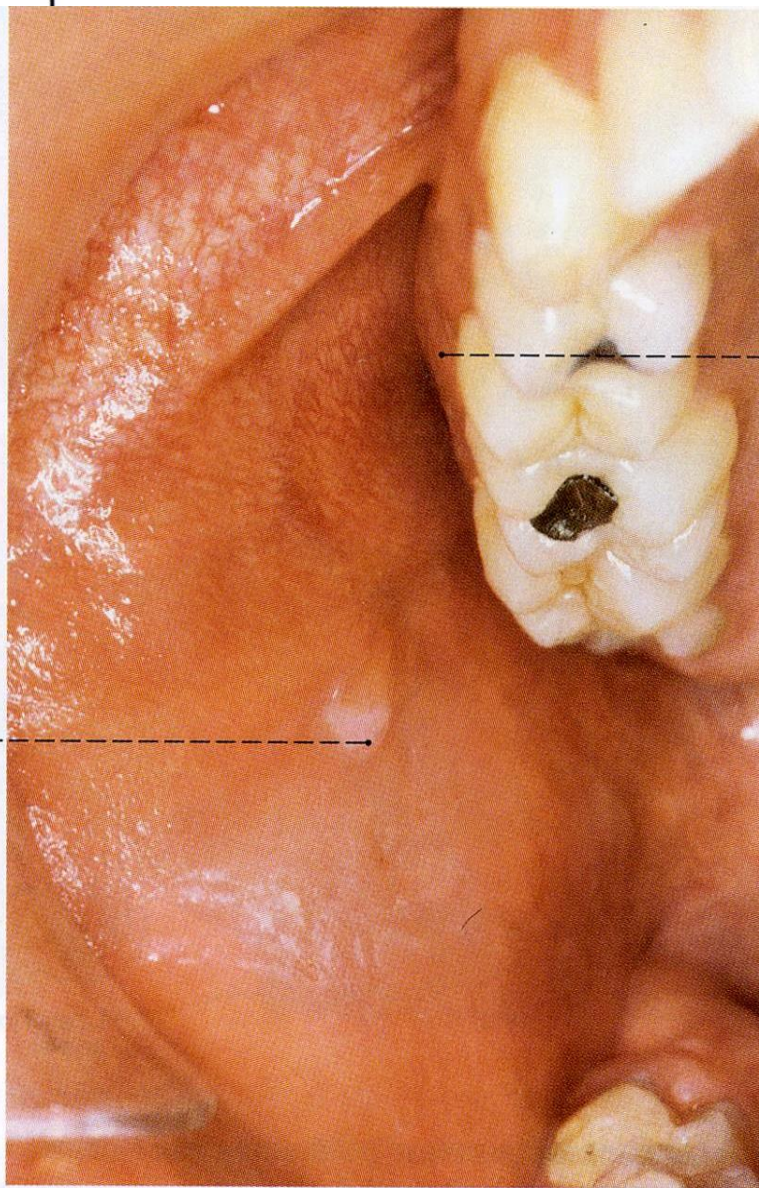


(A)



(B)

- Vestibule:
- It is a slit-like space that communicates with the exterior through the **oral fissure.**
- When the jaws are closed, it communicates with the mouth proper behind the last molar tooth.

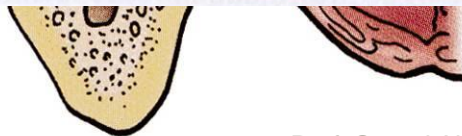


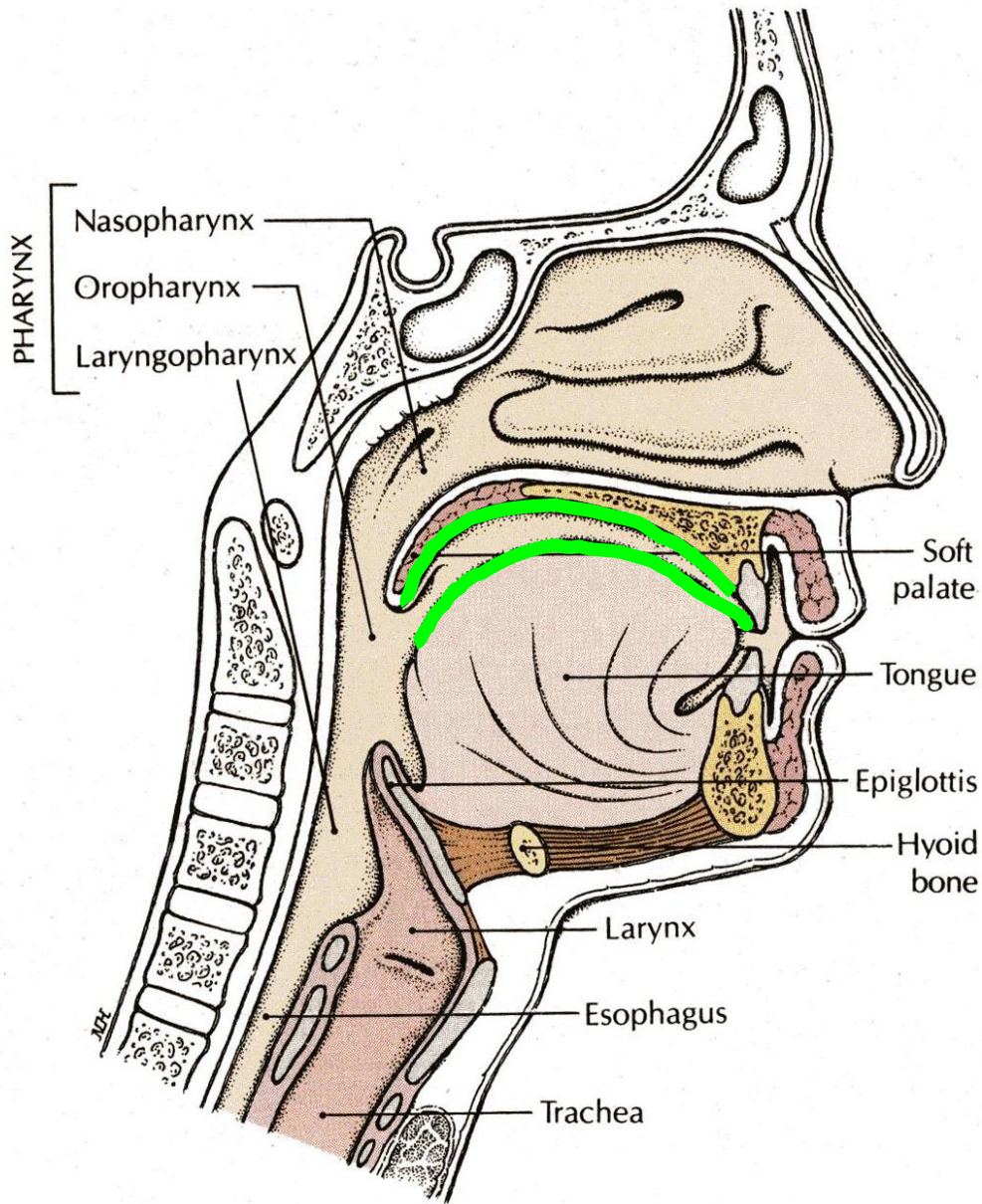
Gingiva

Parotid papilla

- The **cheek** forms the lateral wall of the vestibule and is made up of the **buccinator muscle**, which is covered by skin and lined by mucous membrane.
- Opposite the upper second molar tooth, there is a small papilla on the mucous membrane, marking the **opening of the parotid duct**.

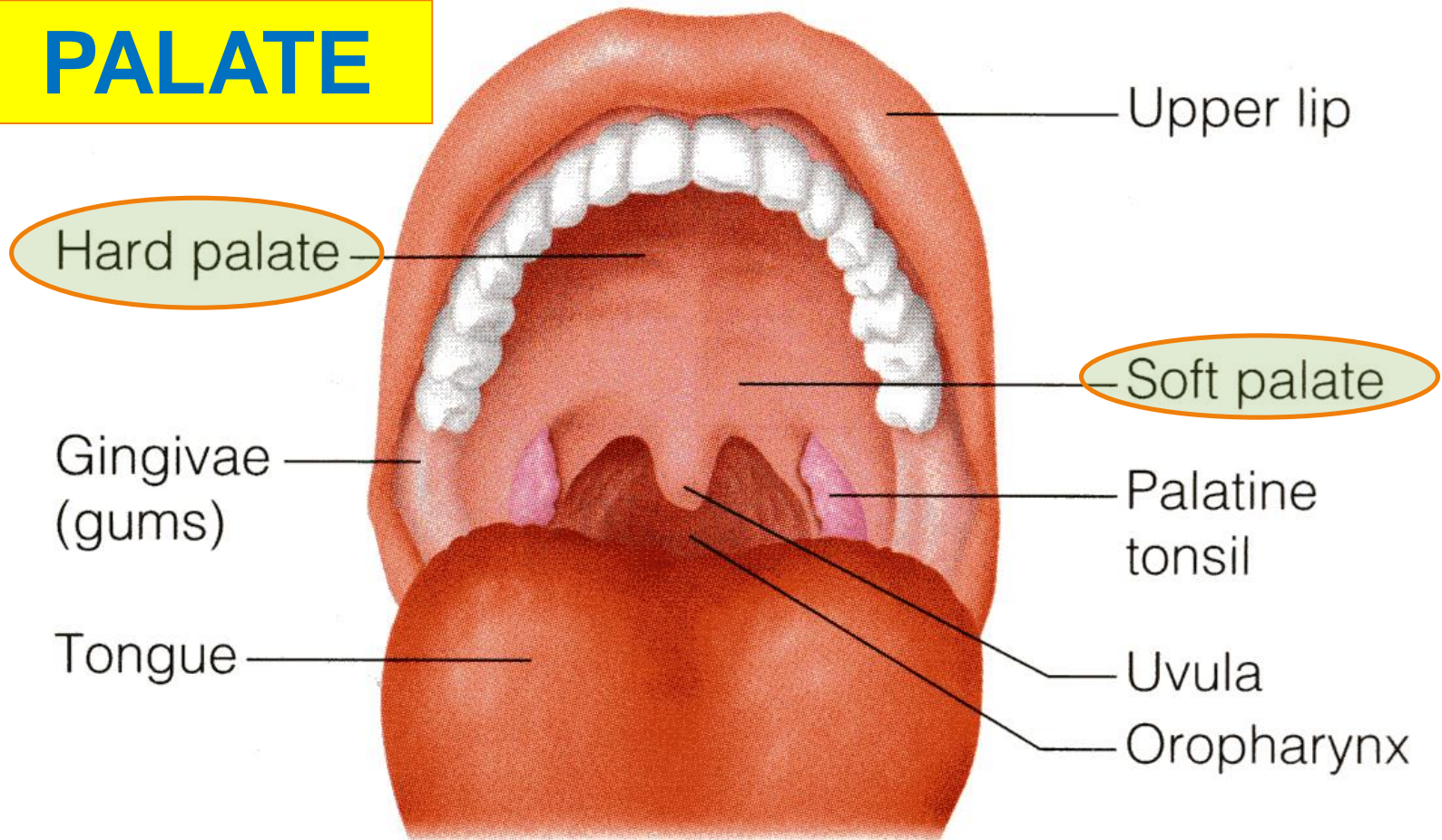
Anterior view of
coronal section



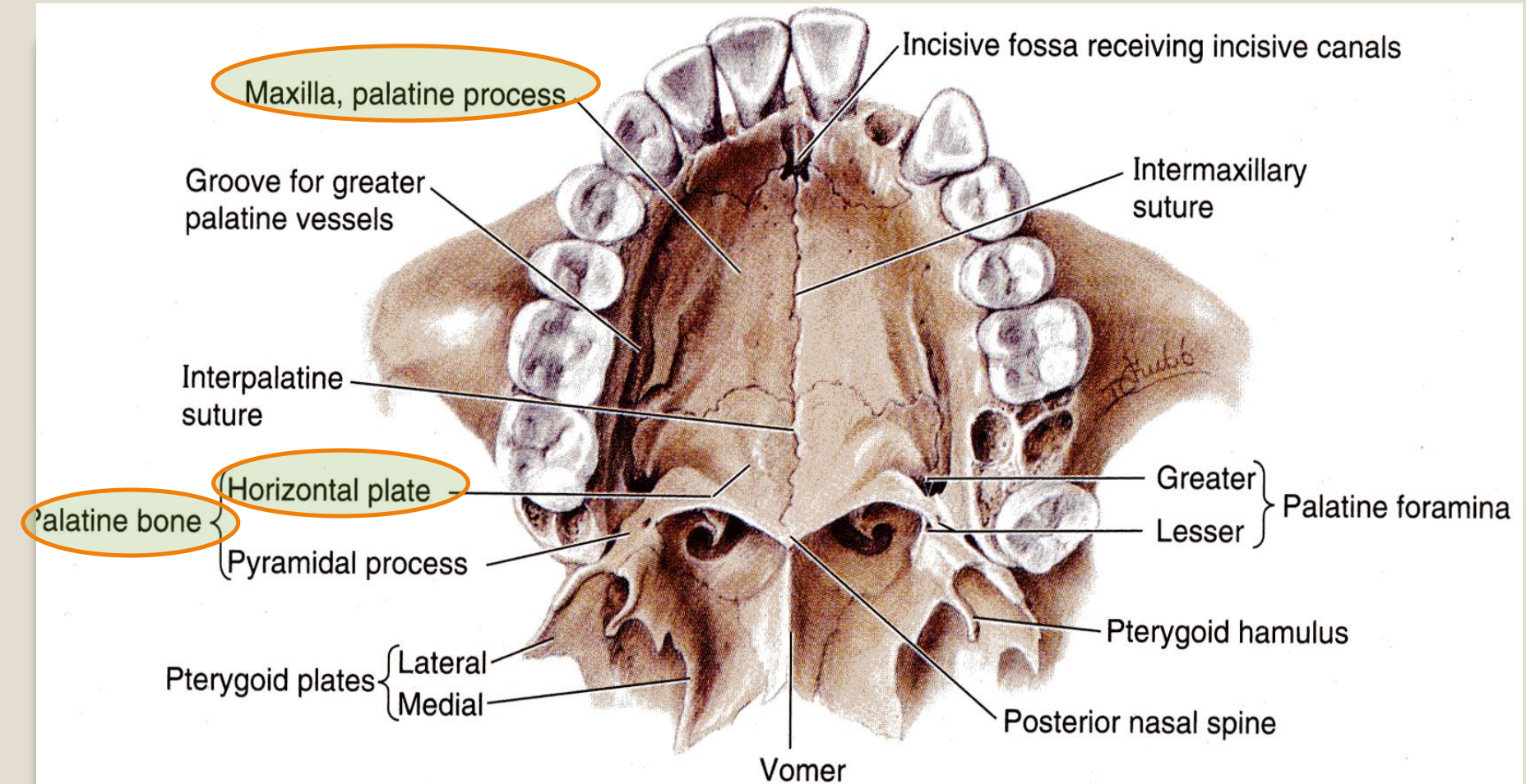


- **Mouth proper:** has a
- **Roof:** which is formed by the hard & soft palate.
- **Floor:** which is formed by the anterior 2/3 of the tongue, (**oral or palatine part of the tongue**).

PALATE



- The **palate** forms the roof of the mouth.
- It is divided into two parts:
 - **Hard or (Bony) palate** in front and
 - **Soft palate** behind.



- The hard palate is formed by **4 bones**: **2 palatine processes of the maxillae** anteriorly and the **2 horizontal plates of palatine bones** posteriorly.
- The 4 bones are separated by cruciform suture.
- It is bounded laterally by the alveolar arches, and behind it is continuous with the soft palate.
- It forms the floor of the nasal cavities.

SOFT PALATE

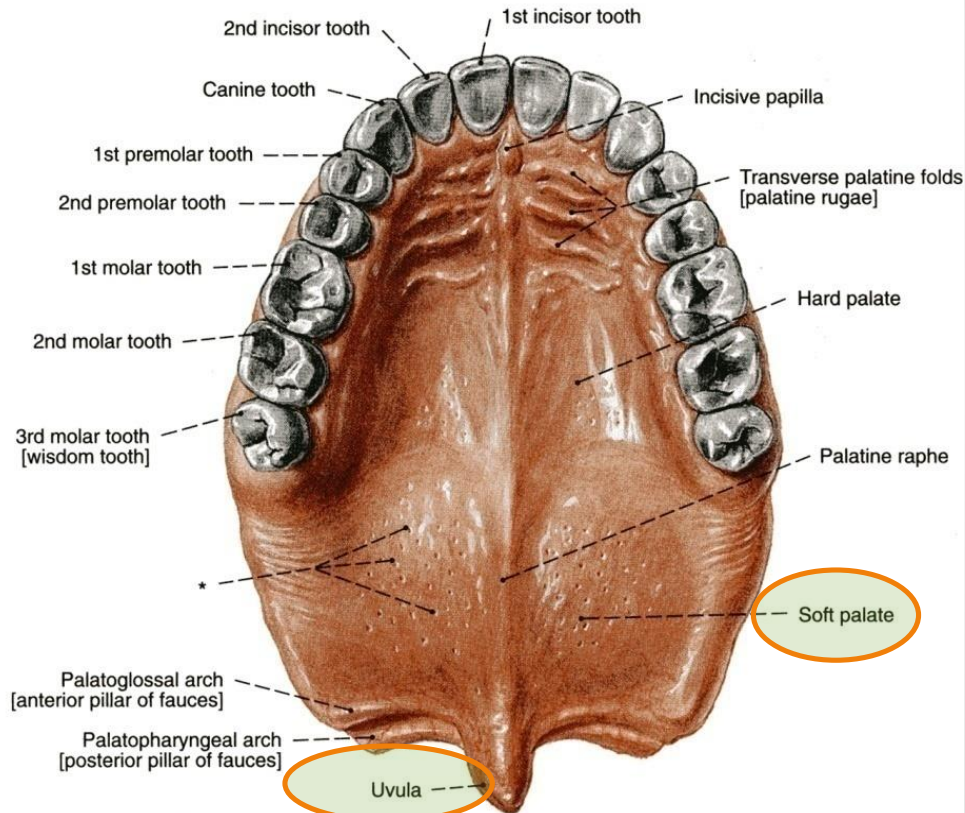
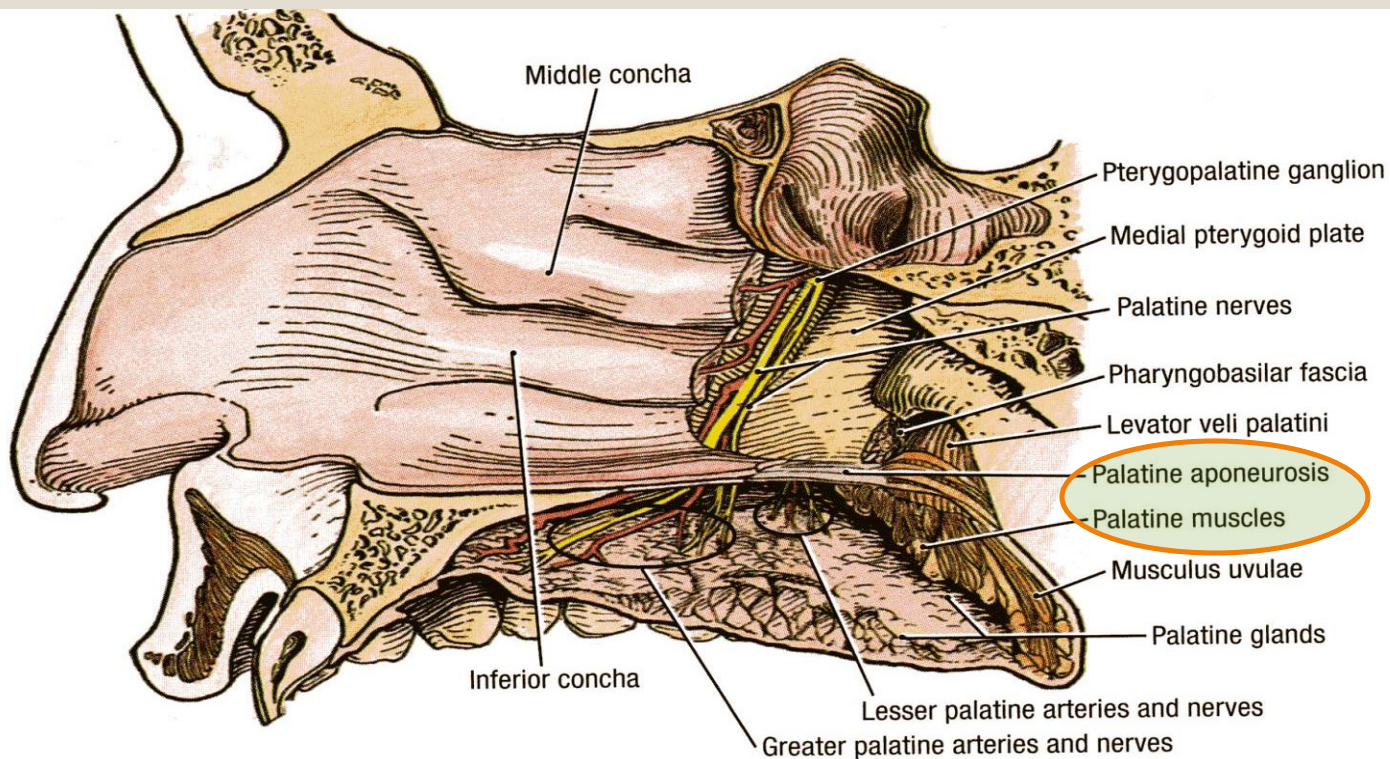


Fig. 191 Hard and soft palate; maxillary [upper] dental arcade; inferior aspect.
*Openings of palatine glands.

- Soft palate is a mobile fold of mucous membrane attached to the posterior border of the hard palate.
- In its free posterior border there is a conical projection called the **uvula**.



- **The soft palate is composed of:**

- 1- Mucous membrane,
- 2- Palatine aponeurosis,
- 3- Muscles.
- 4- Nerves and vessels.
- **Mucous membrane** covers its upper & lower surfaces.
- **The palatine aponeurosis** is a fibrous sheet attached to the posterior border of the hard palate.
- It is the expanded tendon of the **tensor palatini**.

Sensory innervation

Transverse folds of mucous membrane of palate

Openings of ducts of palatine glands

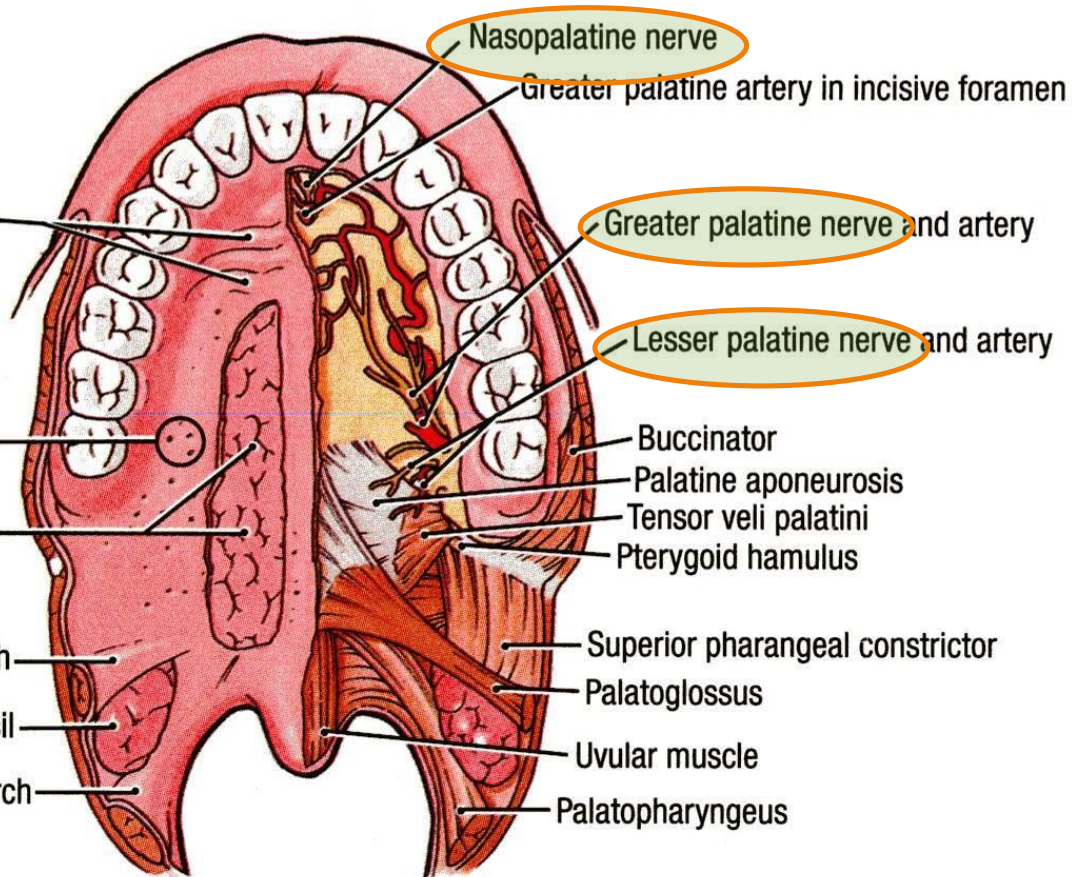
Palatine glands

Palatoglossal arch

Palatine tonsil

Palatopharyngeal arch

Inferior View



Nasopalatine nerve

Greater palatine artery in incisive foramen

Greater palatine nerve and artery

Lesser palatine nerve and artery

Buccinator

Palatine aponeurosis

Tensor veli palatini

Pterygoid hamulus

Superior pharyngeal constrictor

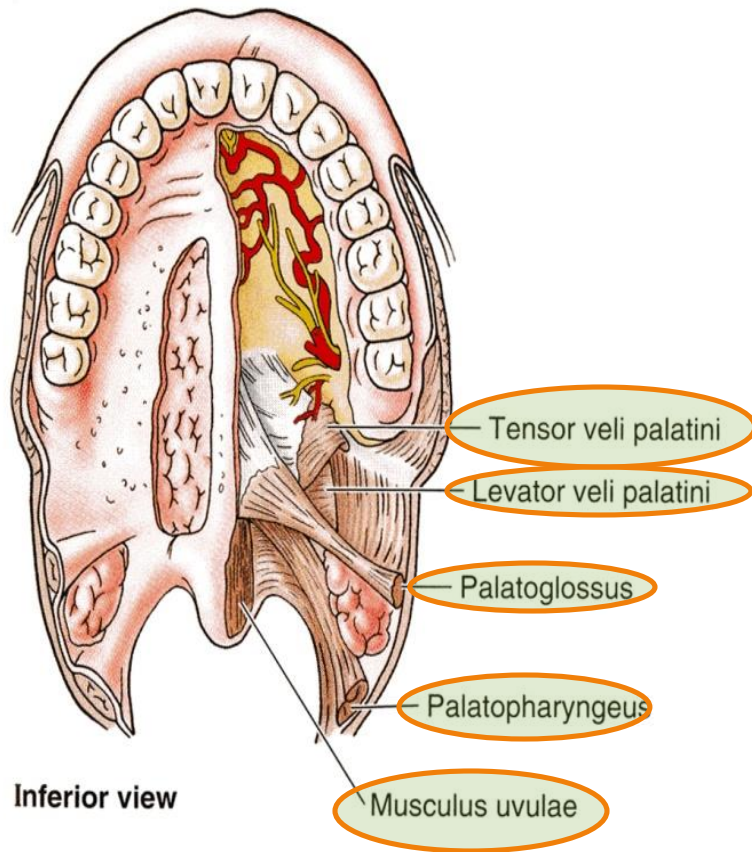
Palatoglossus

Uvular muscle

Palatopharyngeus

- The **greater** and **lesser palatine nerves** from **maxillary nerve**, enter the palate through greater and lesser palatine foramina.
- The **nasopalatine nerve**, also a branch of the maxillary nerve, enters the palate through the incisive foramen.
- The **glossopharyngeal nerve** also supplies the soft palate.

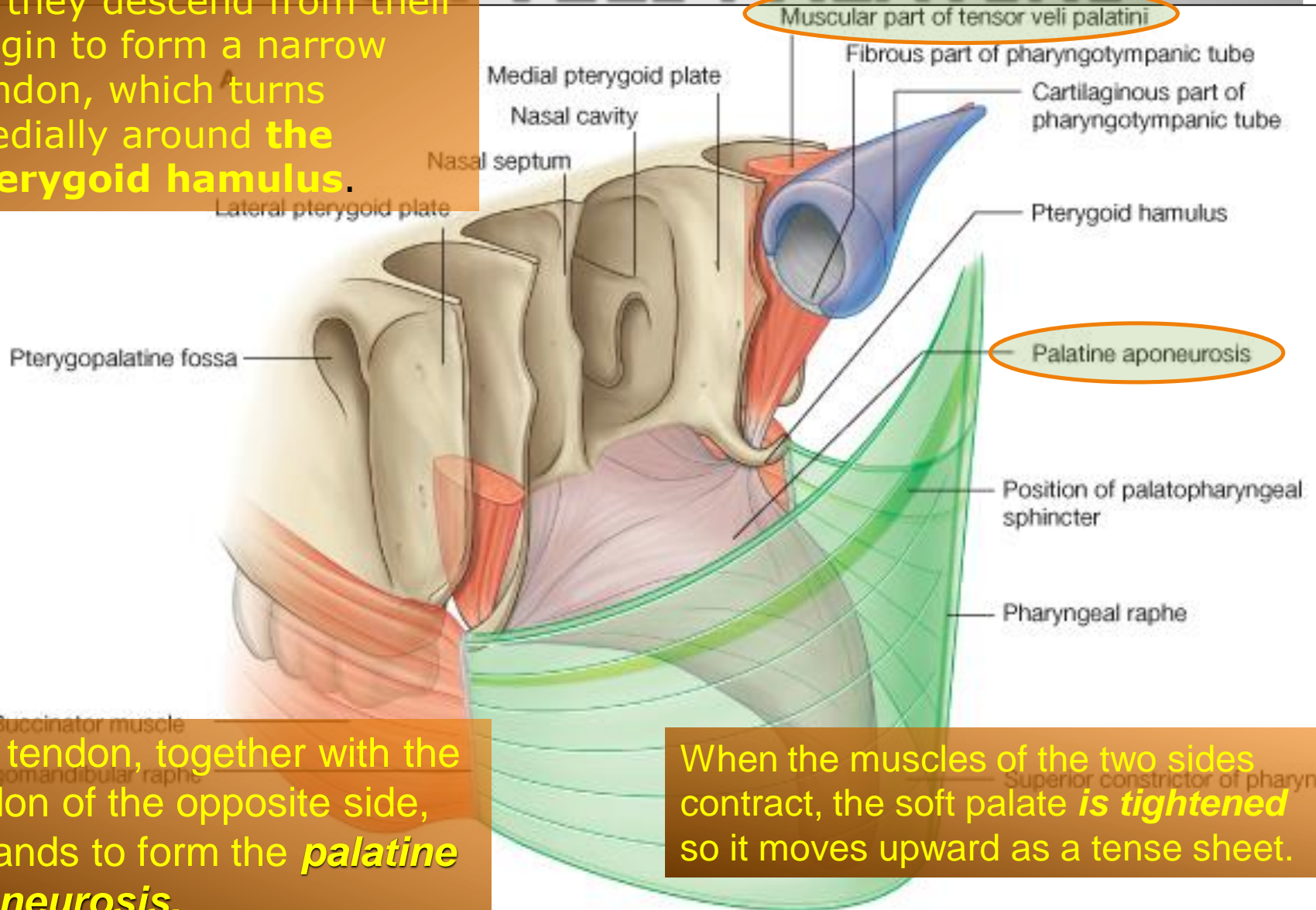
MUSCLES OF THE SOFT PALATE



- 5 pairs of muscles**
- 1-Tensor veli palatini, (or **tensor palati**).
 - 2-Levator veli palatini, (or **levator palati**).
 - 3-Palatoglossus,
 - 4-Palatopharyngeus,
 - 5-Musculus uvulae.

The muscle fibers of the **tensor palatini** converge as they descend from their origin to form a narrow tendon, which turns medially around **the pterygoid hamulus**.

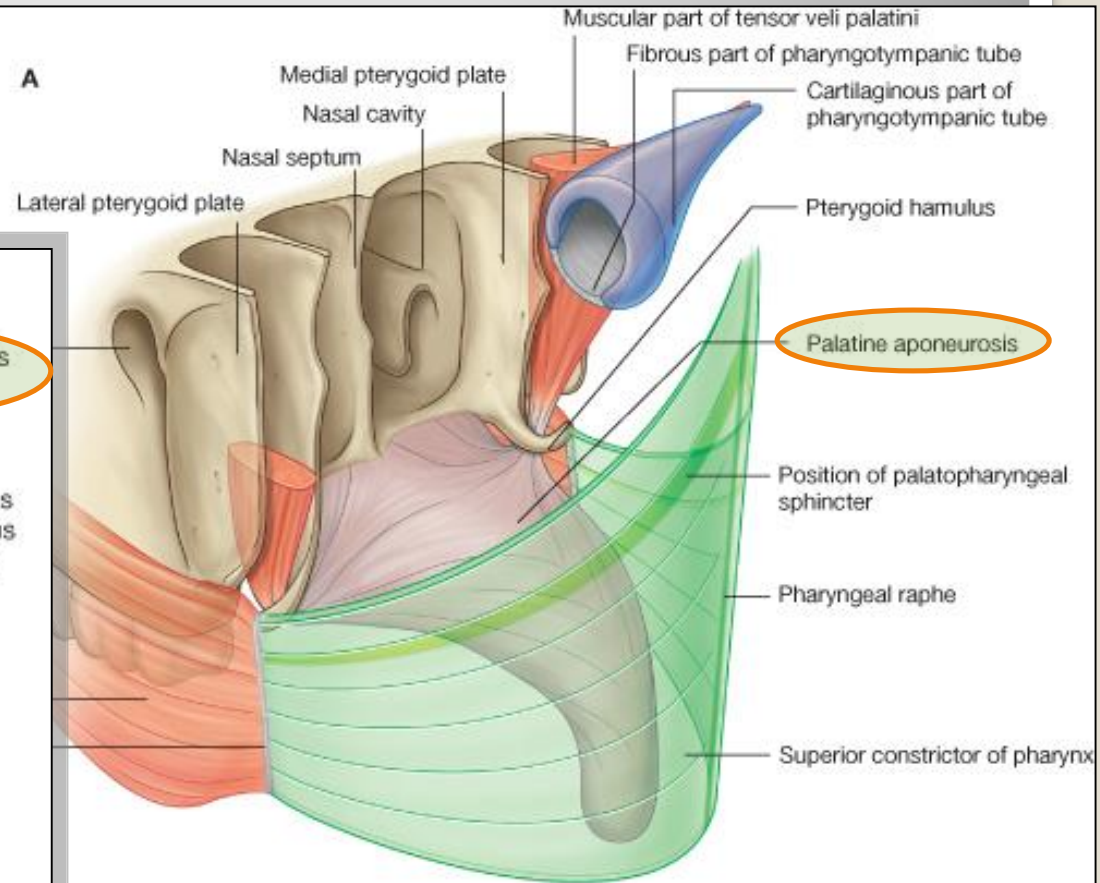
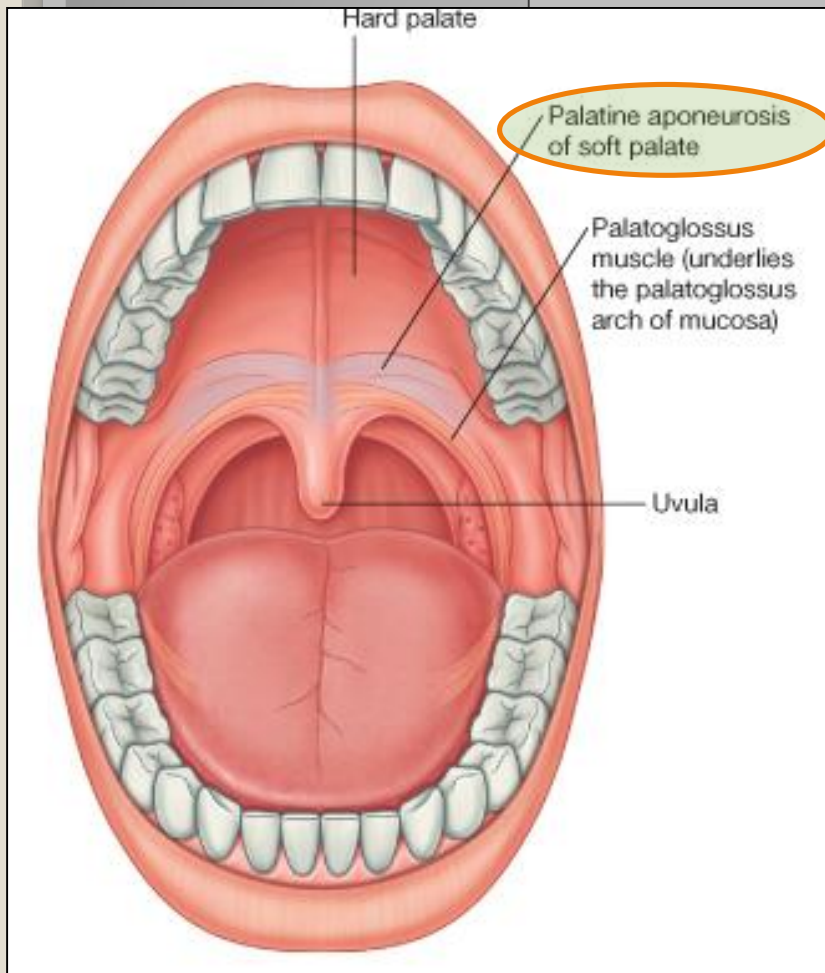
VELI PALATINI



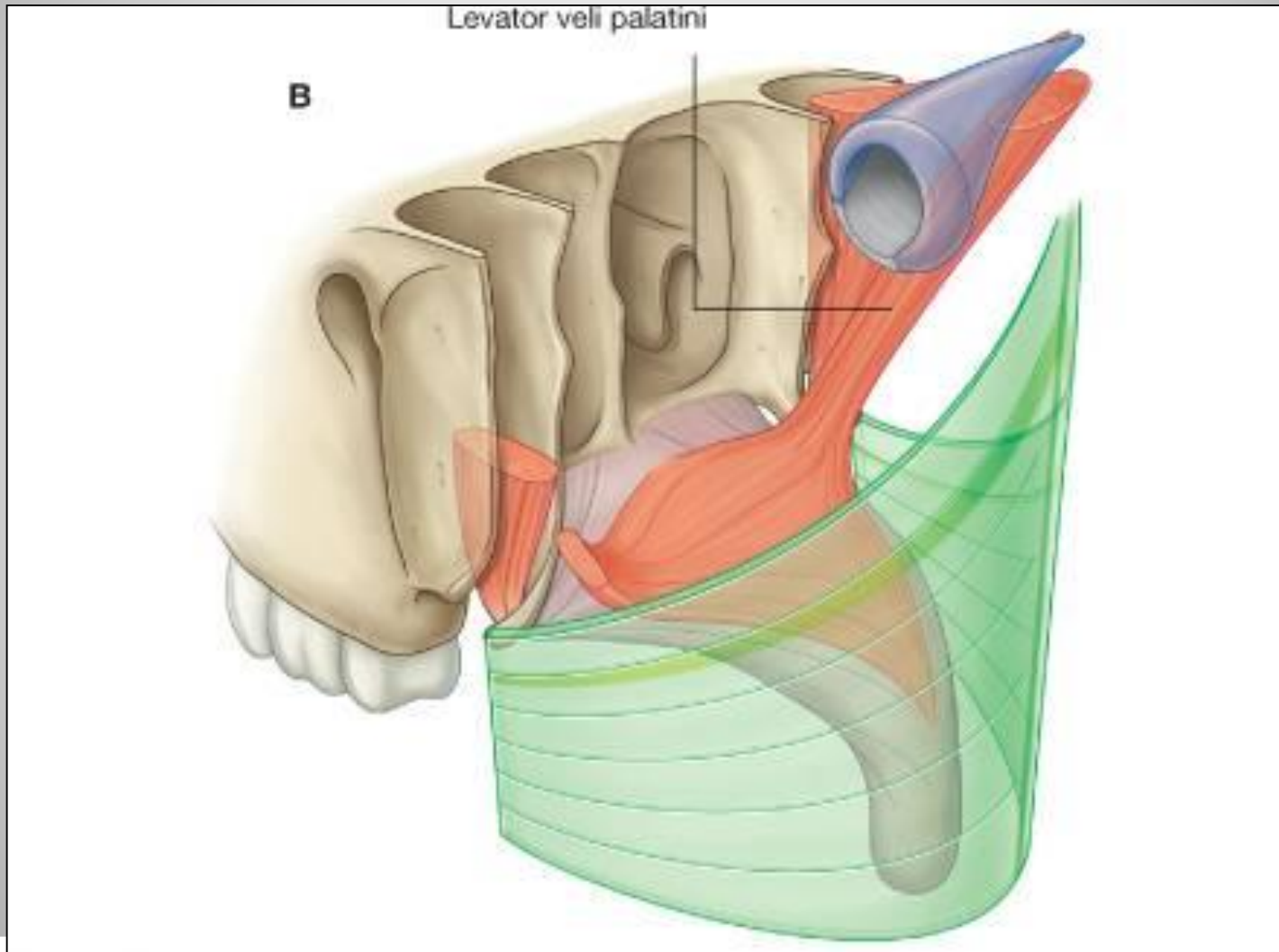
The tendon, together with the tendon of the opposite side, expands to form the **palatine aponeurosis**.

When the muscles of the two sides contract, the soft palate **is tightened** so it moves upward as a tense sheet.

PALATINE APONEUROSIS



LEVATOR VELI PALATINI



Levator veli palatini

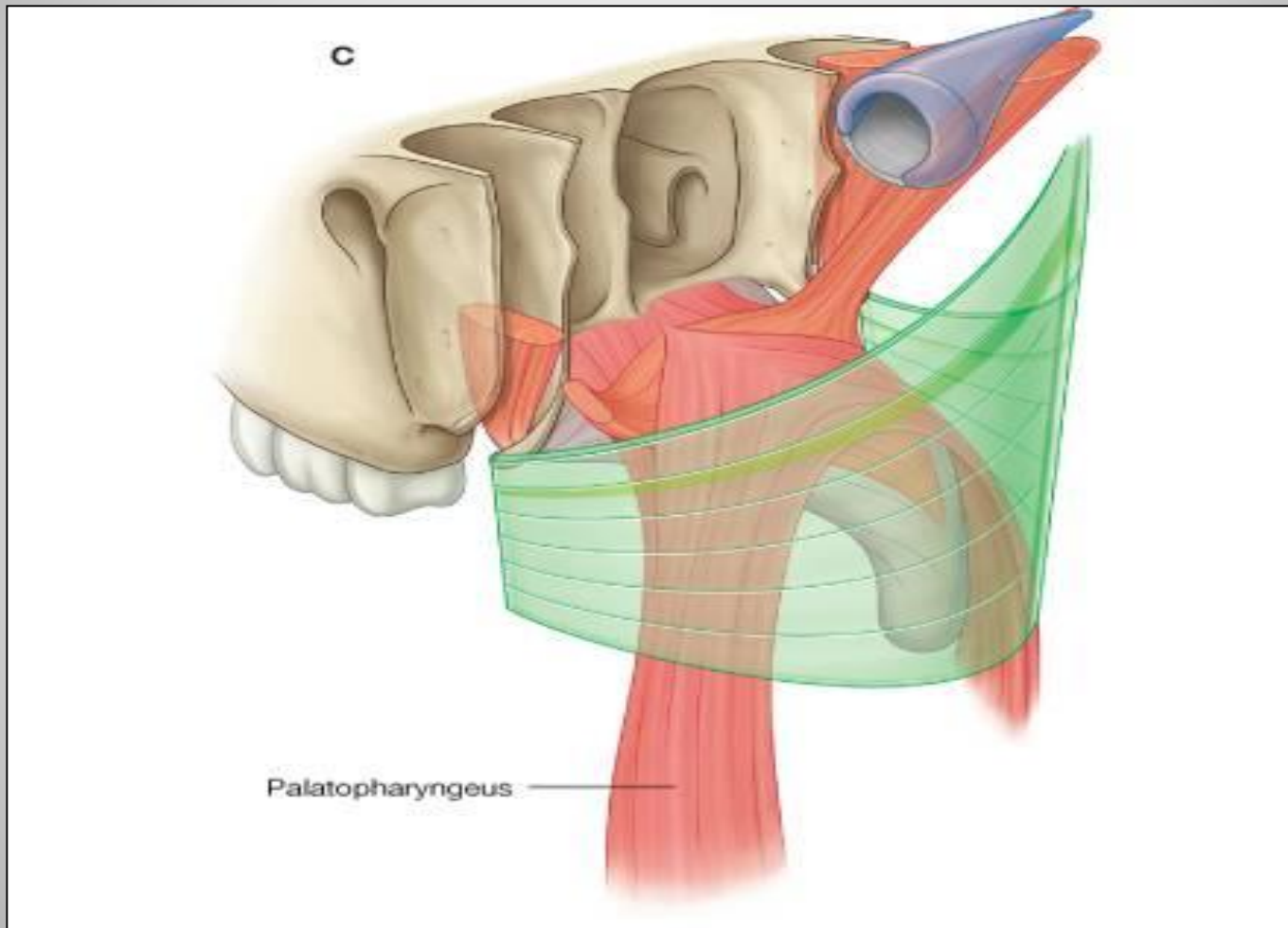
Petrous part of
temporal bone,
auditory tube

Palatine aponeurosis

Pharyngeal plexus

Raises soft palate

PALATOPHARYNGEUS



Palatopharyngeus

Palatopharyngeus

Palatine aponeurosis

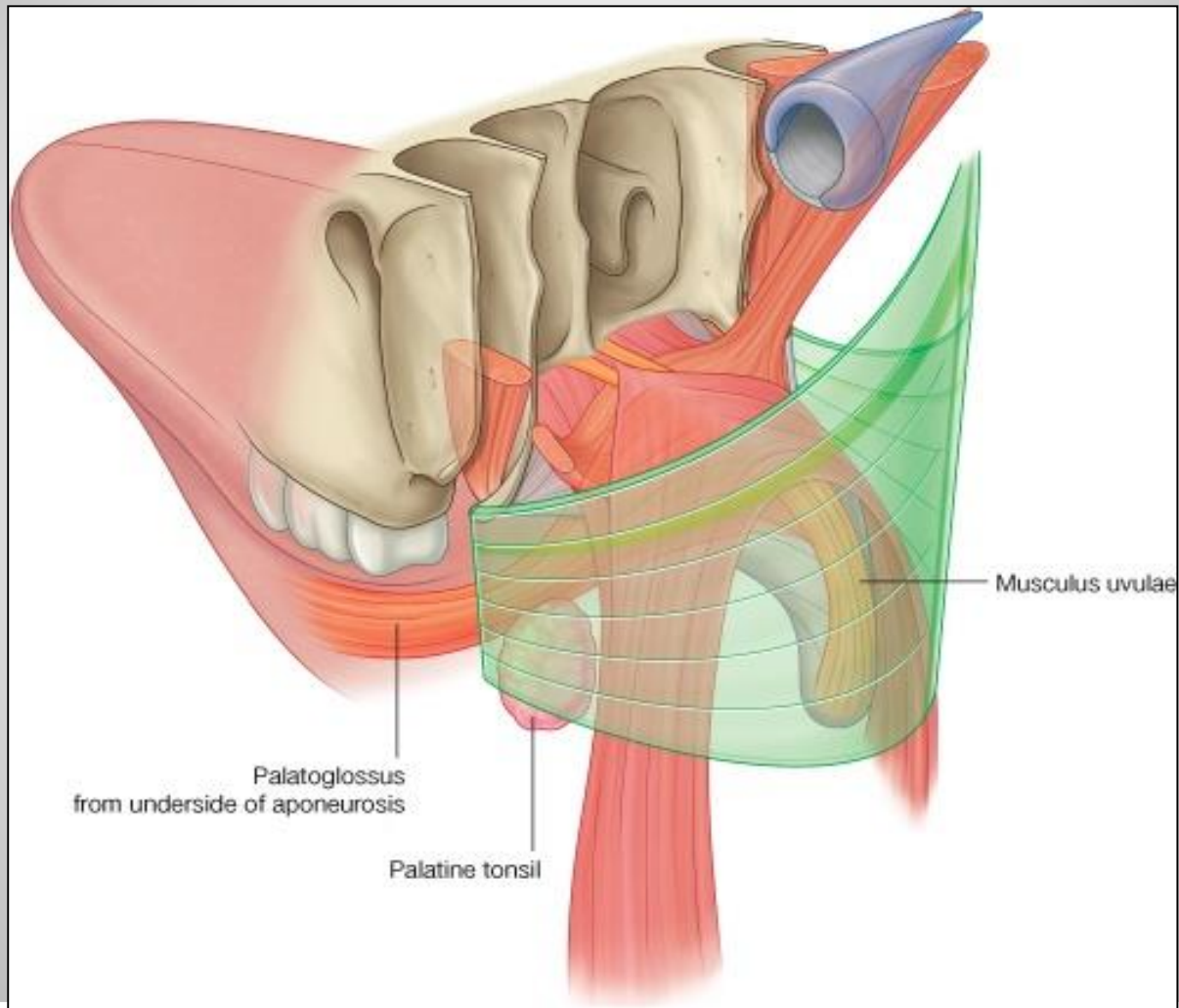
Posterior border of
thyroid cartilage

Pharyngeal plexus

Prof. Saeed Abuel Makarem

Elevates wall of pharynx,
pulls palatopharyngeal
folds medially

PALATOGLOSSUS



Palatoglossus

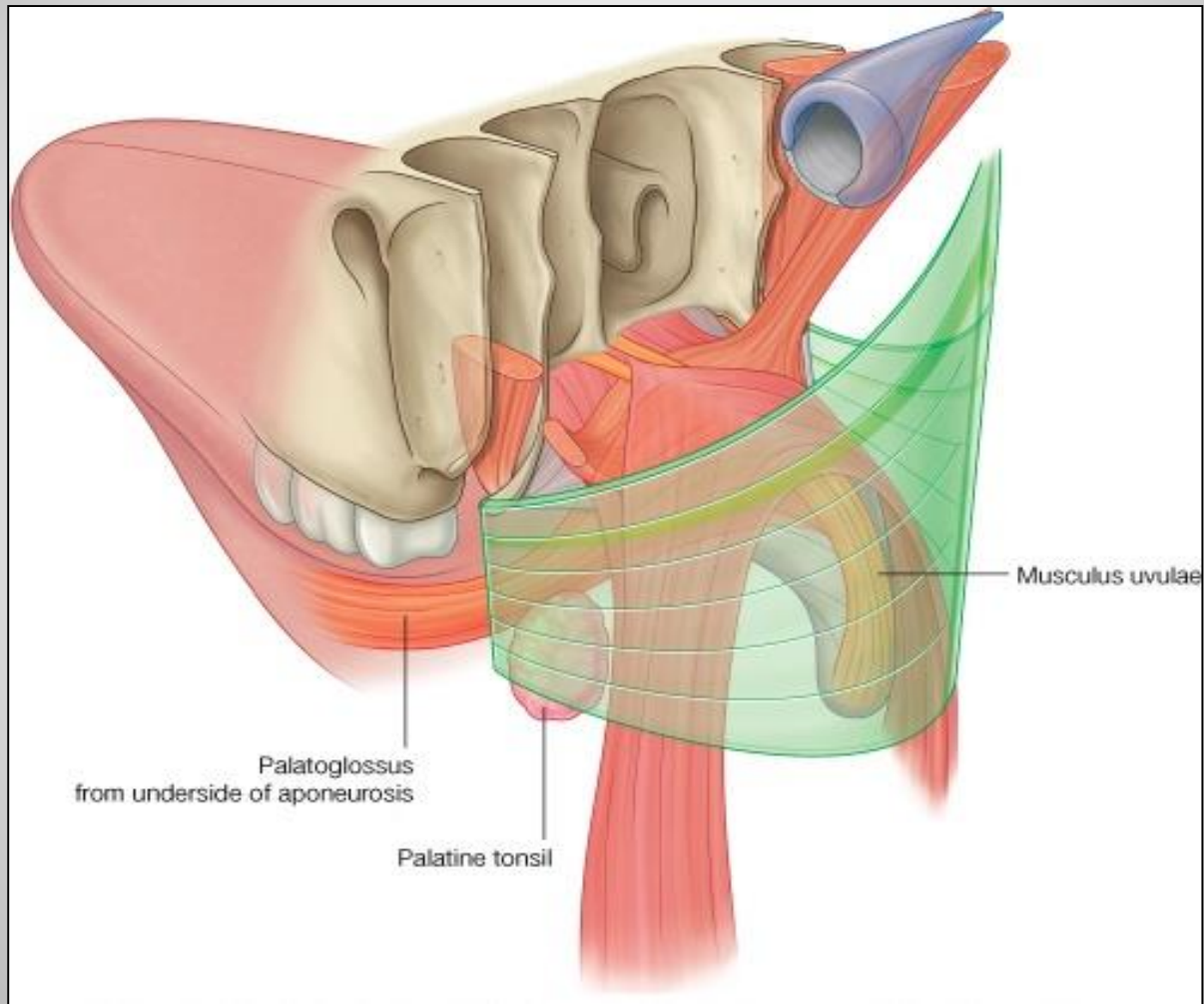
Palatine aponeurosis

Side of tongue

Pharyngeal plexus

Pulls root of tongue upward and backward, narrows oropharyngeal isthmus

MUSCULUS UVULAE



Musculus uvulae

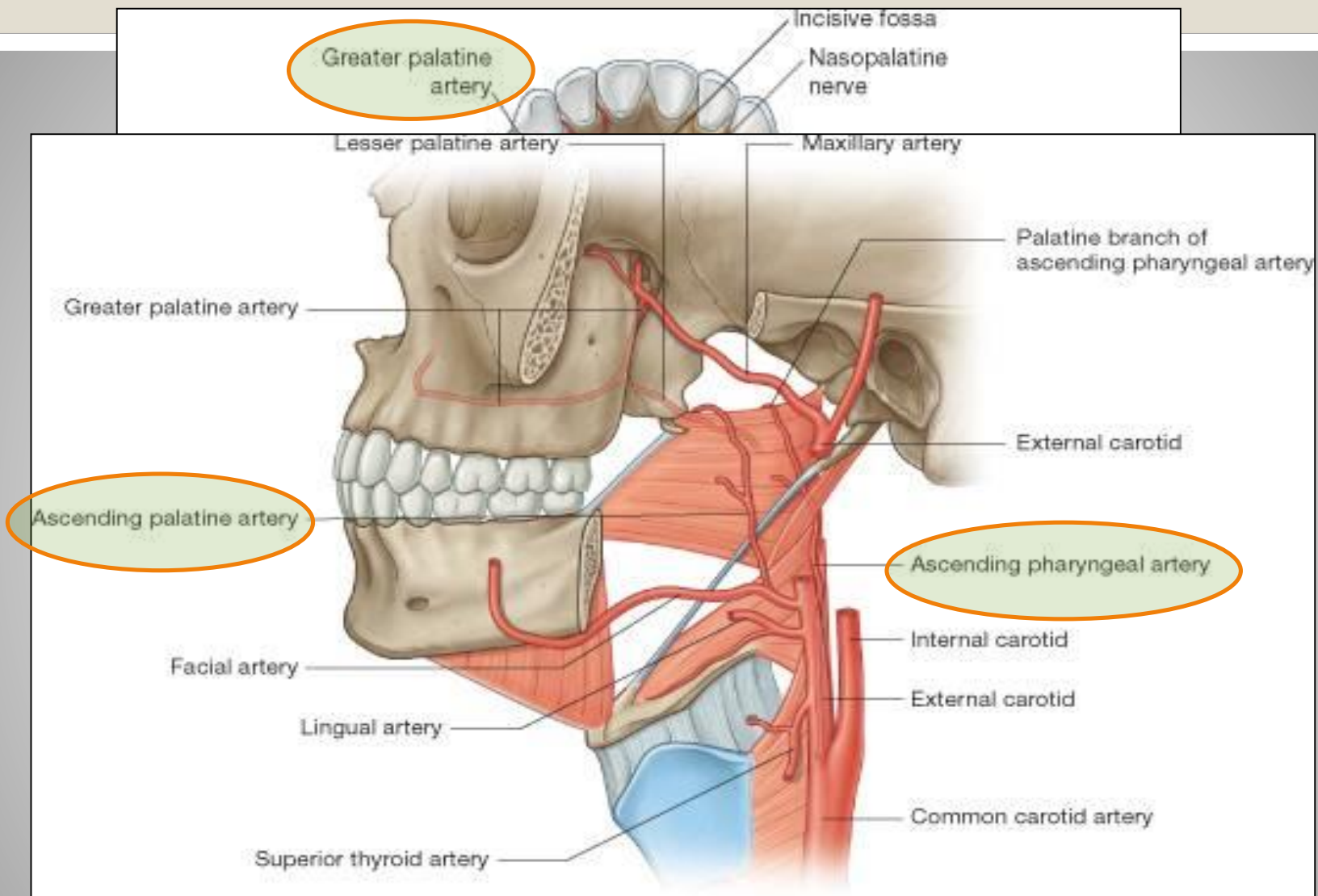
Posterior border of
hard palate

Mucous membrane of
uvula

Pharyngeal plexus

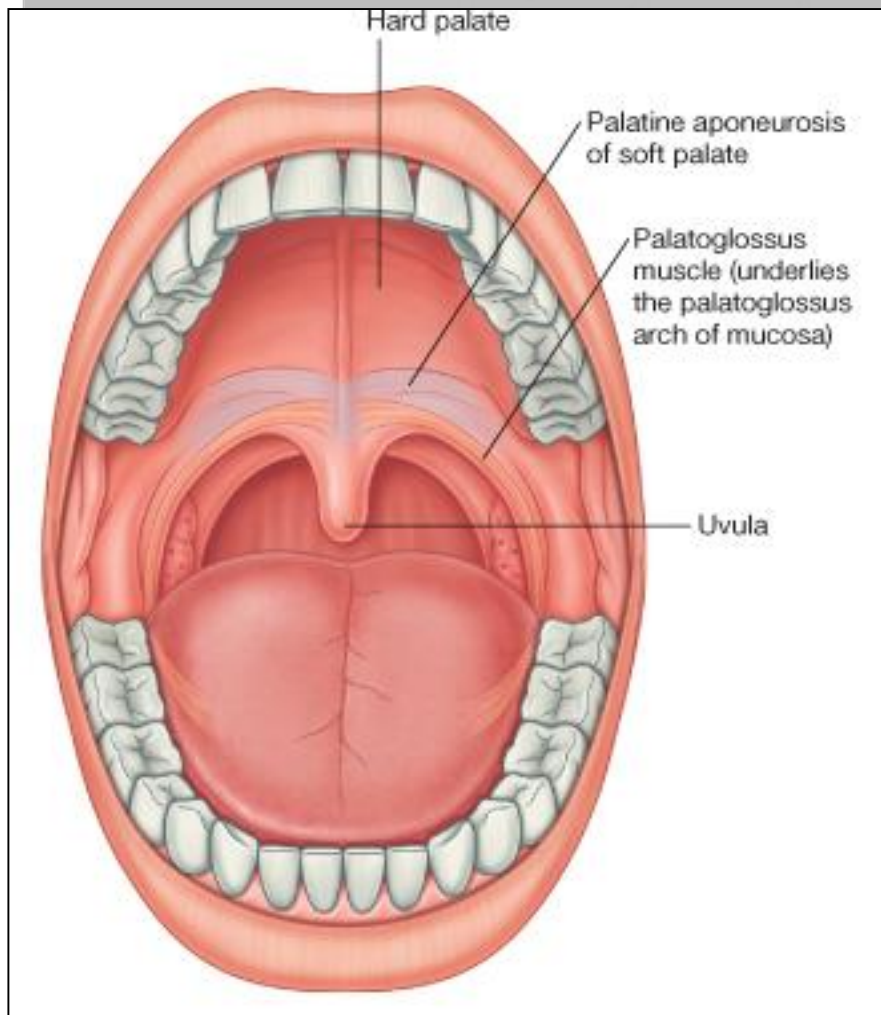
Prof. Saeed Abuel Makarem

Muscle	Origin	Insertion	Nerve Supply	Action
Tensor veli palatini	Spine of sphenoid, auditory tube	With muscle of other side, forms palatine aponeurosis	Nerve to medial pterygoid from mandibular nerve	Tenses soft palate
Levator veli palatini	Petrous part of temporal bone, auditory tube	Palatine aponeurosis	Pharyngeal plexus	Raises soft palate
Palatoglossus	Palatine aponeurosis	Side of tongue	Pharyngeal plexus	Pulls root of tongue upward and backward, narrows oropharyngeal isthmus
Palatopharyngeus	Palatine aponeurosis	Posterior border of thyroid cartilage	Pharyngeal plexus	Elevates wall of pharynx, pulls palatopharyngeal folds medially
Musculus uvulae	Posterior border of hard palate	Mucous membrane of uvula	Pharyngeal plexus	Elevates uvula



- **Greater & lesser palatine** *branches* of the maxillary artery.
- **Ascending palatine** branch of the facial artery.
- **Ascending pharyngeal** branch of the external carotid artery.

MOVEMENTS OF SOFT PALATE



- The **pharyngeal isthmus** (Communication between nasal and oral parts of the pharynx). It is closed by raising the soft palate upwards.
- Closure occurs during the production of explosive acts as in speech and straining.
- Soft palate **is raised** by the levator palatini on each side, and become tense by tensor palati.
- At the same time, the superior constrictor muscle contract and pull the posterior pharyngeal wall forward.
- The **palatopharyngeus muscles** on both sides also contract so that the palatopharyngeal arches are pulled medially, like side curtains.

TONGUE

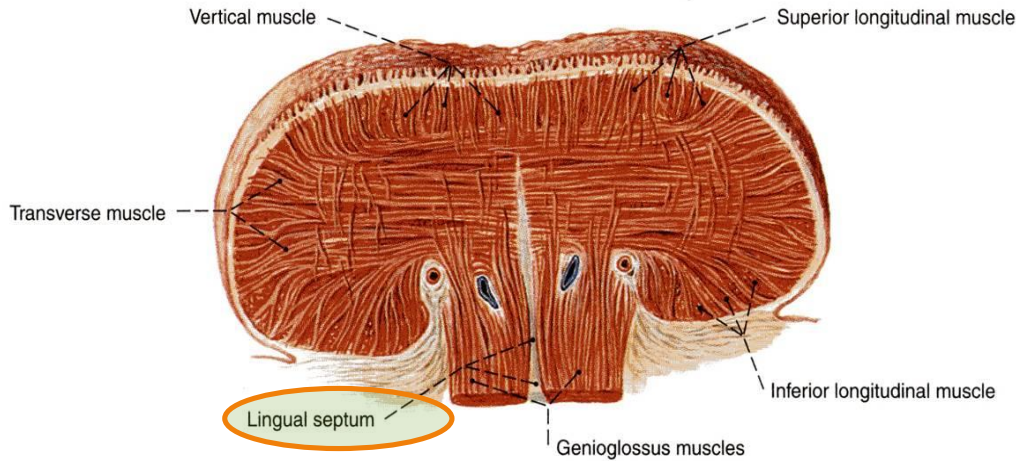
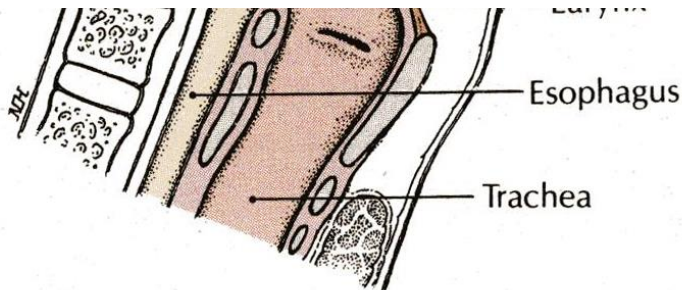


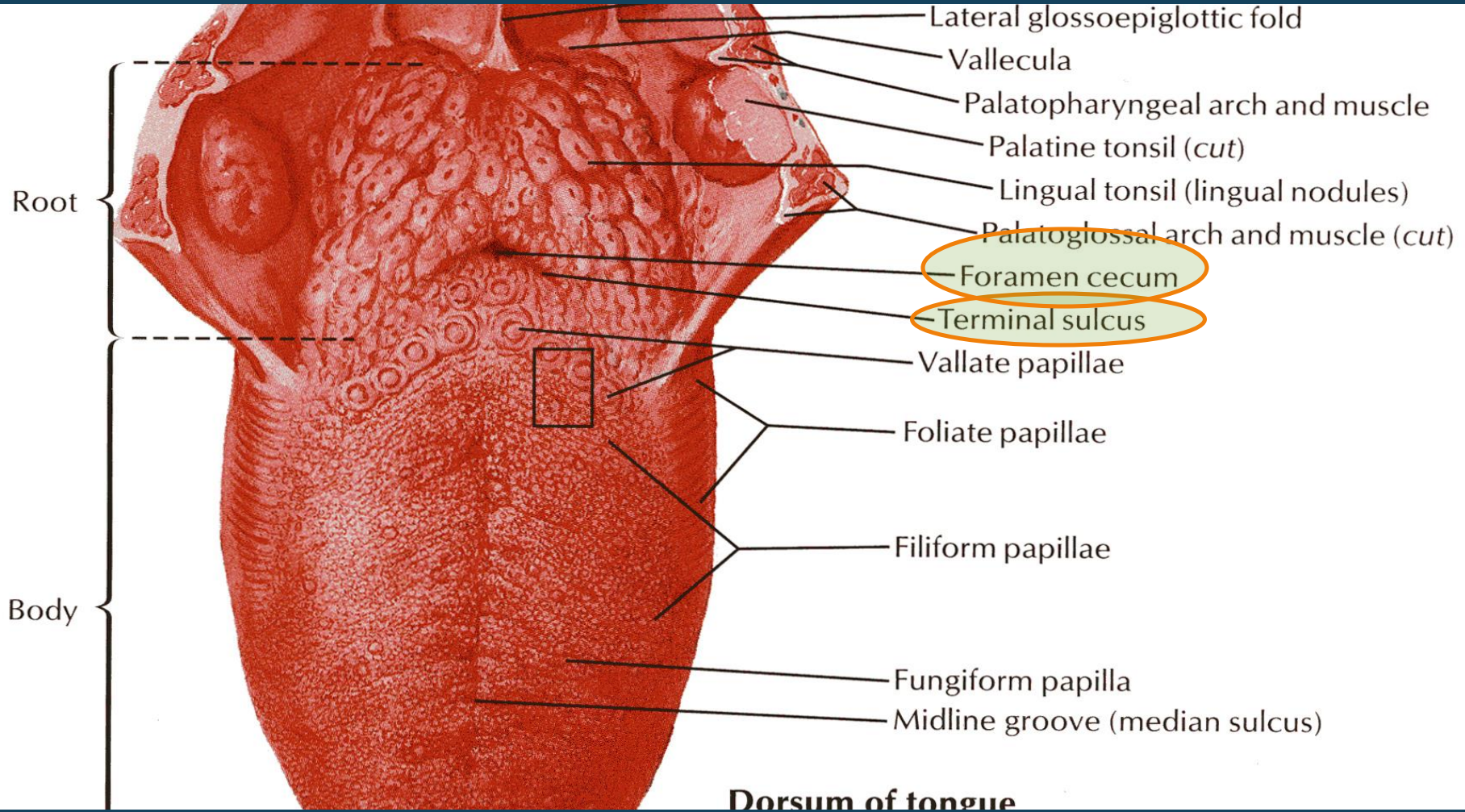
Fig. 197 Tongue; transverse section through middle part of tongue; anterior aspect.



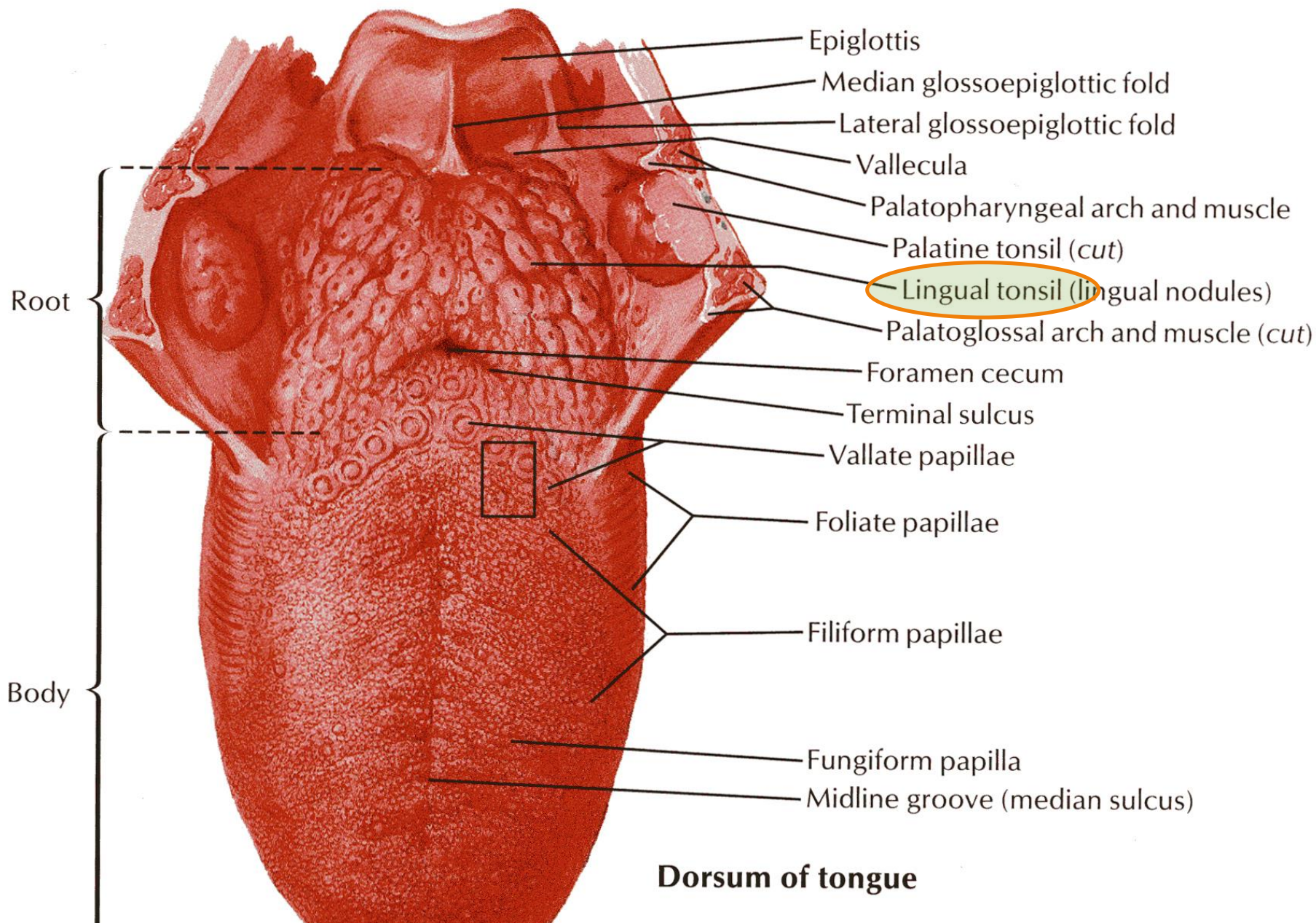
- The tongue is a mass of striated muscle covered with mucous membrane.
- Its anterior 2/3 lies in the mouth, and its posterior 1/3 lies in the pharynx.
- Muscles attach the tongue to the styloid process & soft palate above and to the mandible & the hyoid bone below.
- The tongue is divided into right & left halves by a median fibrous septum.

Mucous Membrane of the

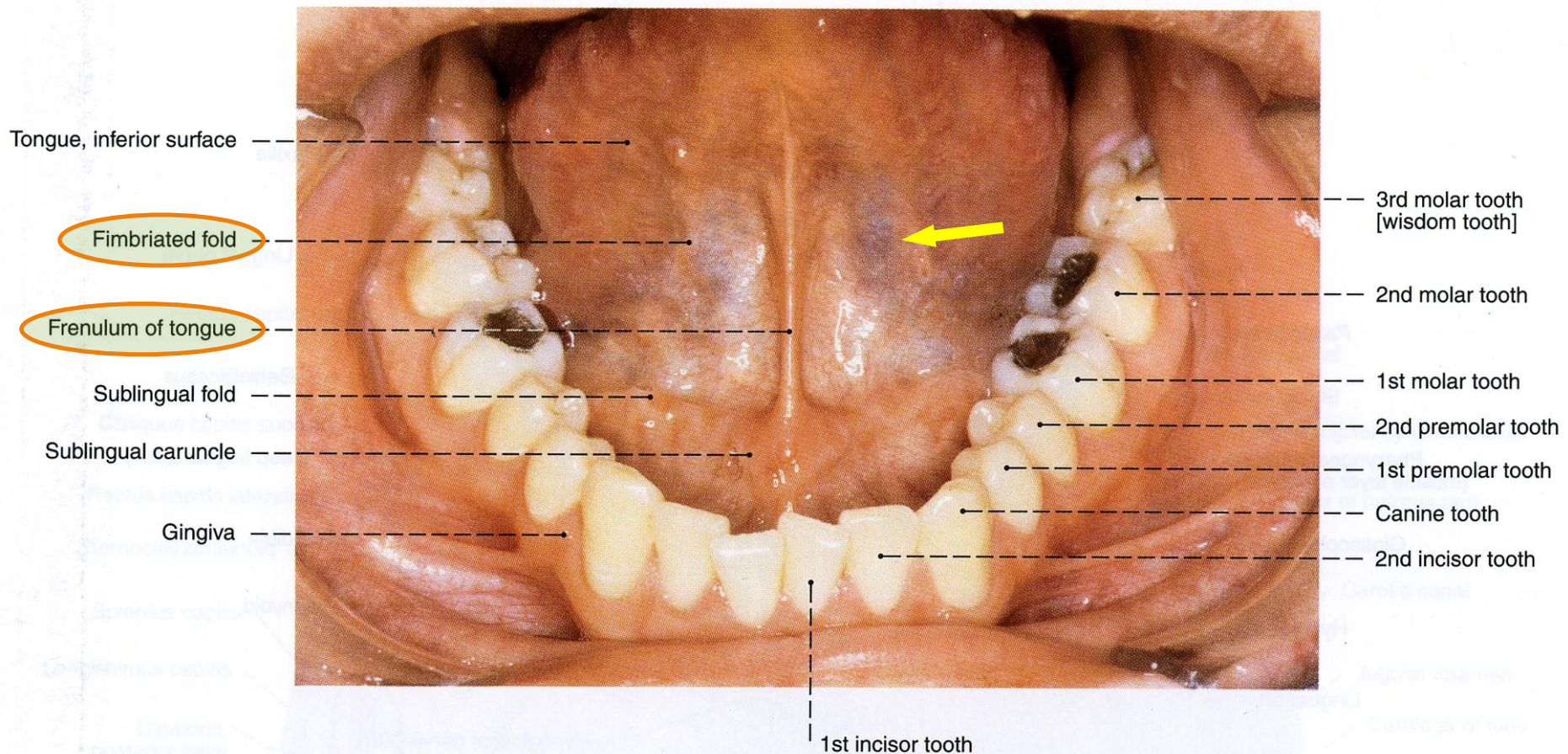
- The mucous membrane of upper surface of the tongue can be divided into anterior 2/3 or oral part and posterior 1/3 or pharyngeal part by a V-shaped sulcus. The **sulcus terminalis**.



- The apex of the sulcus projects backward and is marked by a small pit, the foramen cecum. The foramen cecum is an embryologic remnant which marks the site of the upper end of the thyroglossal duct.

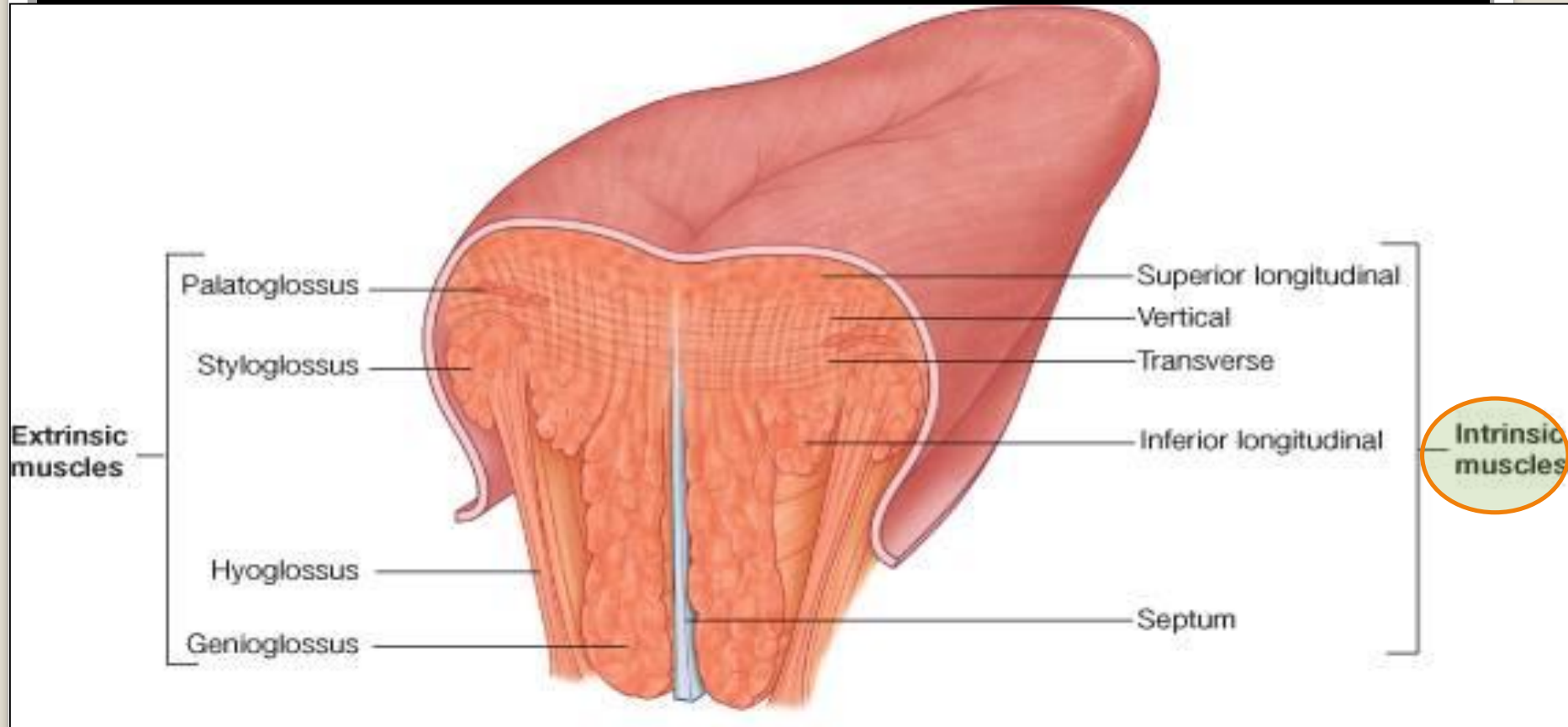


The posterior third has no papillae and only has lingual tonsil

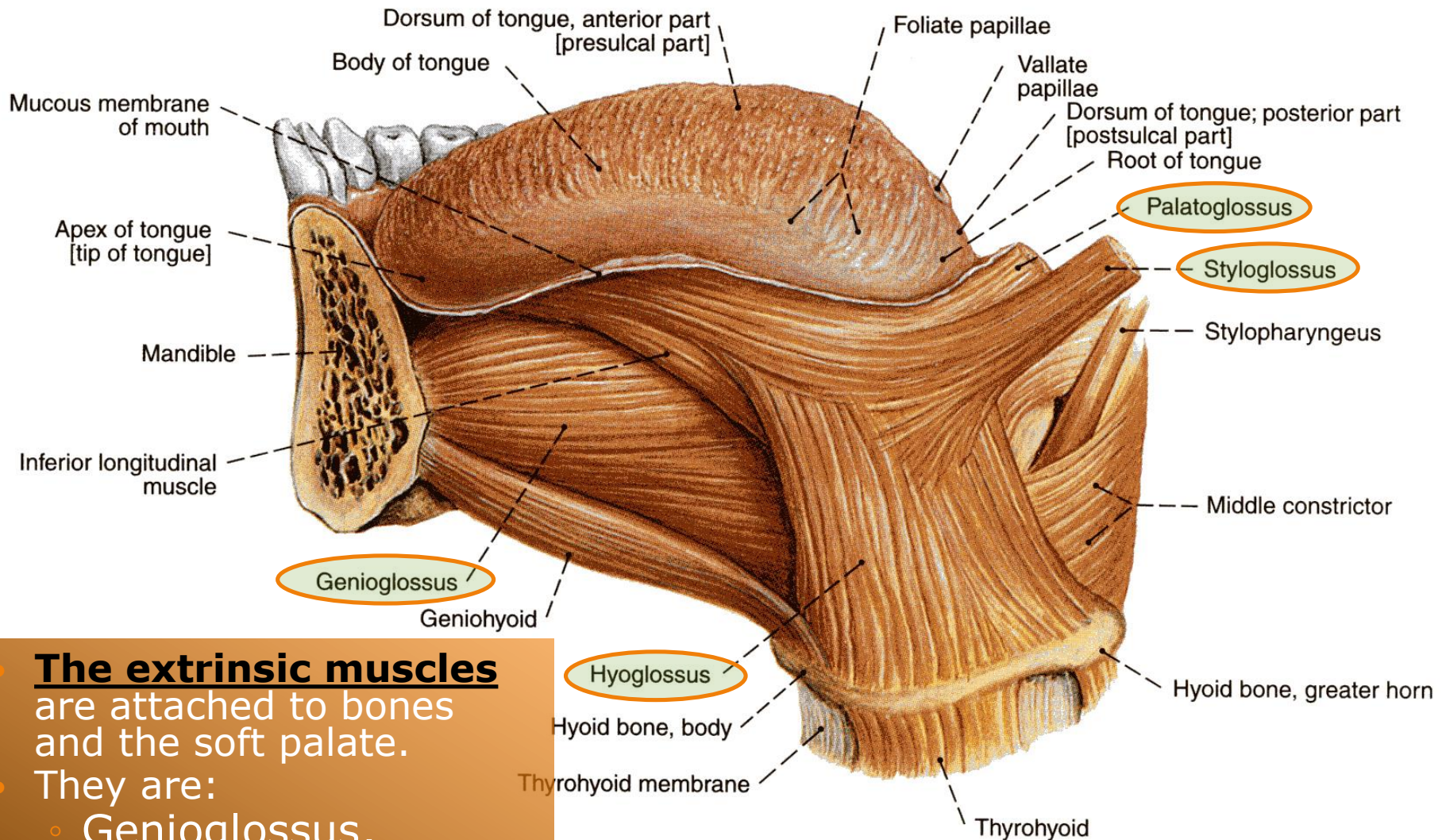


- The mucous membrane on the inferior surface of the tongue is smooth and is reflected from the tongue to the floor of the mouth.
- In the midline, the undersurface of the tongue is connected to the floor of the mouth by a fold of mucous membrane, the **frenulum of tongue**.
- On the lateral side of the frenulum, the **deep lingual vein** can be seen through the mucous membrane.

MUSCLES OF THE TONGUE

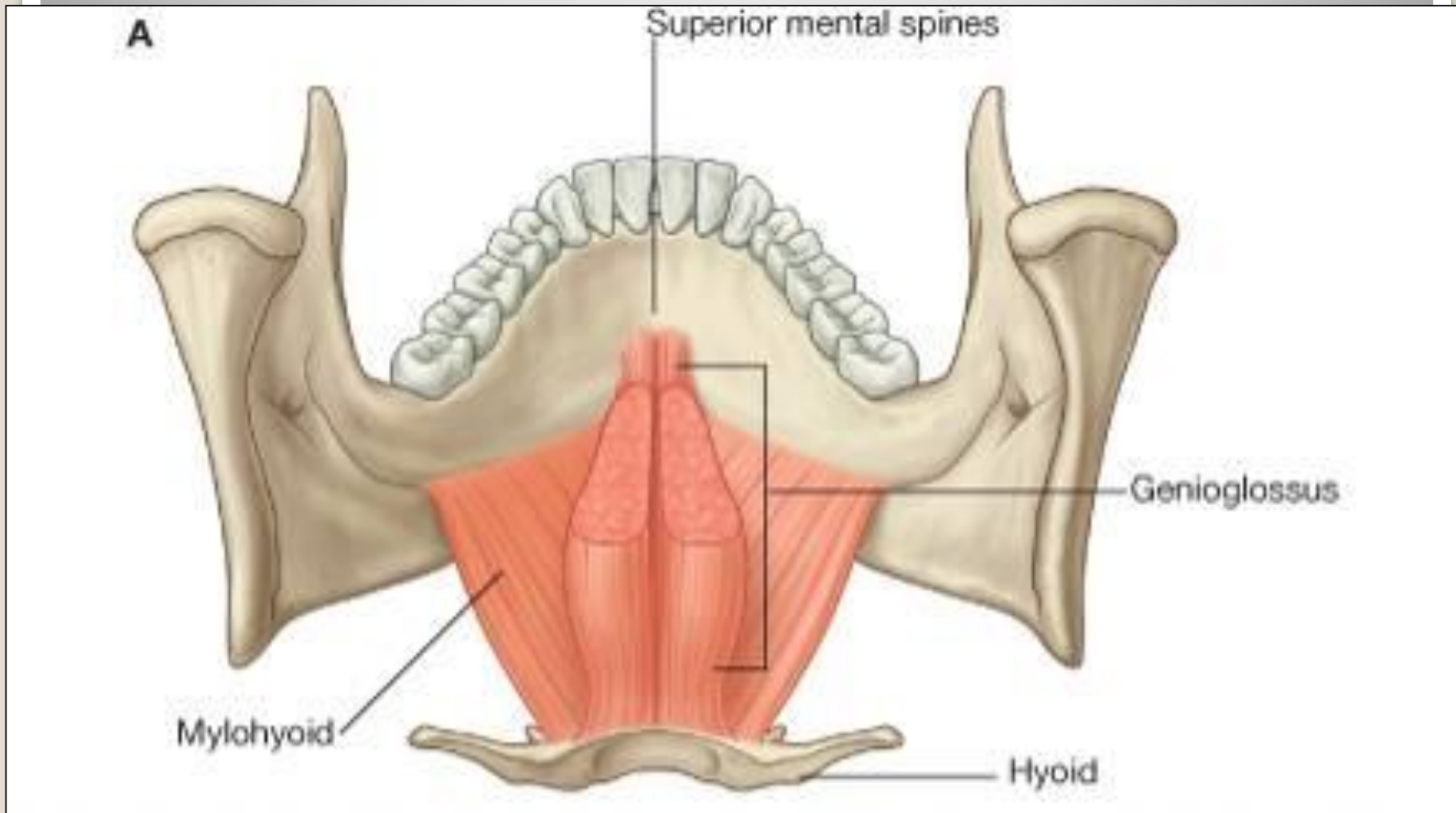


- The muscles of the tongue are divided into **two types**:
- **Intrinsic and extrinsic.**
- **Intrinsic** muscles are restricted to tongue and are not attached to bone.
- They consist of **longitudinal, transverse, and vertical fibers.**
- **Nerve supply:** Hypoglossal nerve.
- **Action:** Alter the shape of the tongue while it lies within the mouth.



- **The extrinsic muscles** are attached to bones and the soft palate.
- They are:
 - Genioglossus,
 - Hyoglossus,
 - Styloglossus, and
 - Palatoglossus.

GENIOGLOSSUS



Genioglossus

Superior genial spine of
mandible

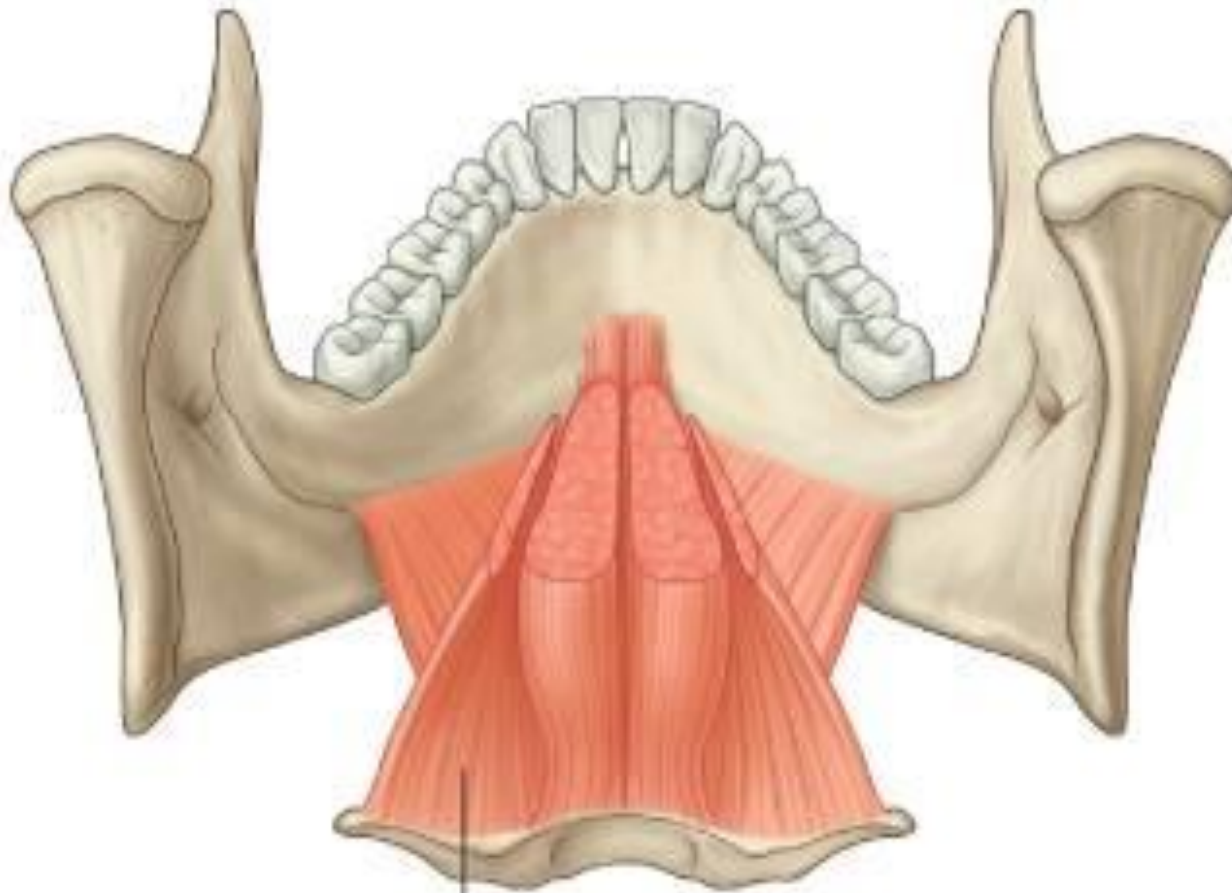
Blends with other
muscles of tongue

Hypoglossal nerve
Prof. Saeed Abuel Makarem

Protrudes apex of tongue
through mouth

HYOGLOSSUS

A



Hyoglossus muscle

Hyoglossus

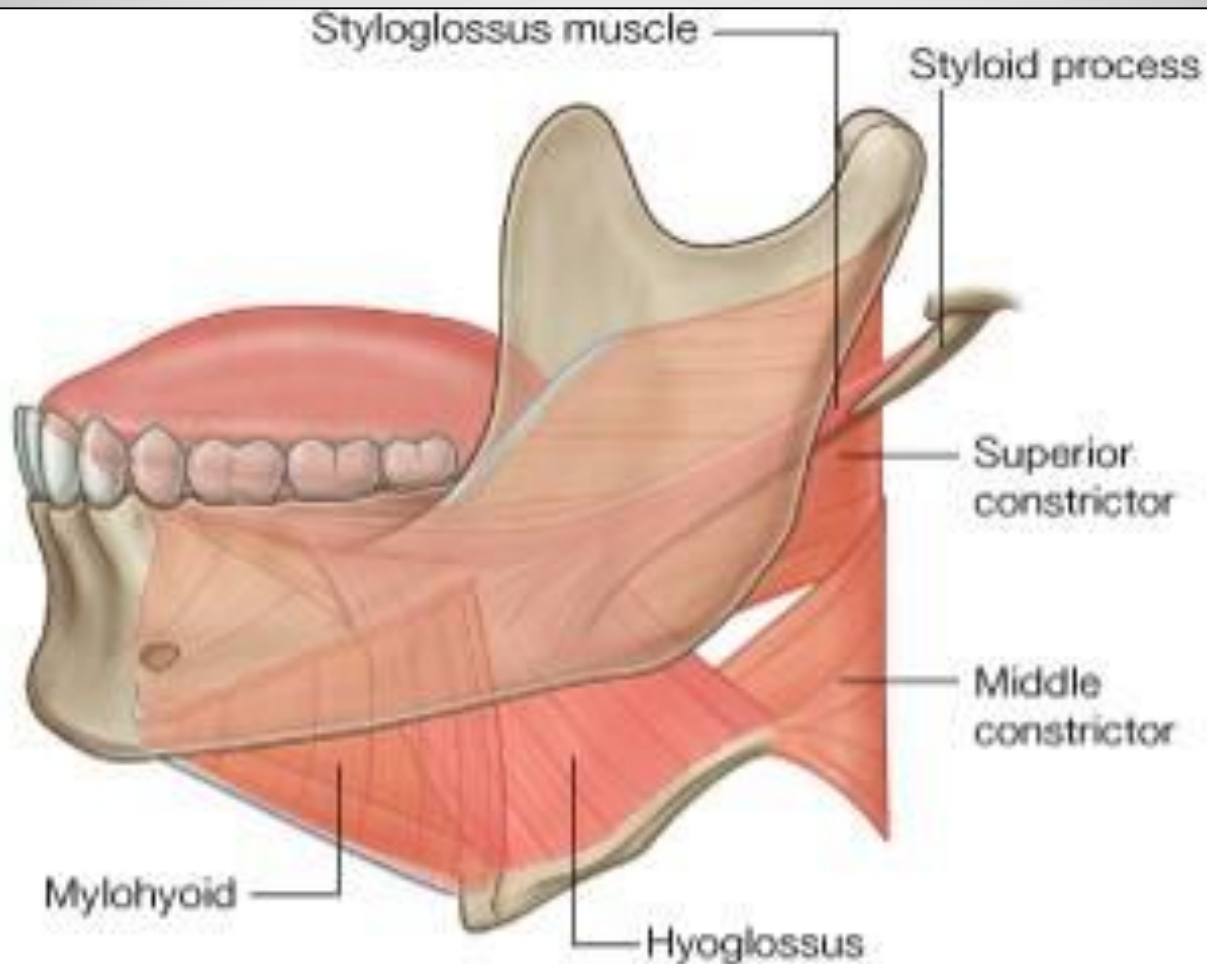
Body and greater cornu
of hyoid bone

Blends with other
muscles of tongue

Hypoglossal nerve

Depresses tongue

STYLOGLOSSUS



Styloglossus

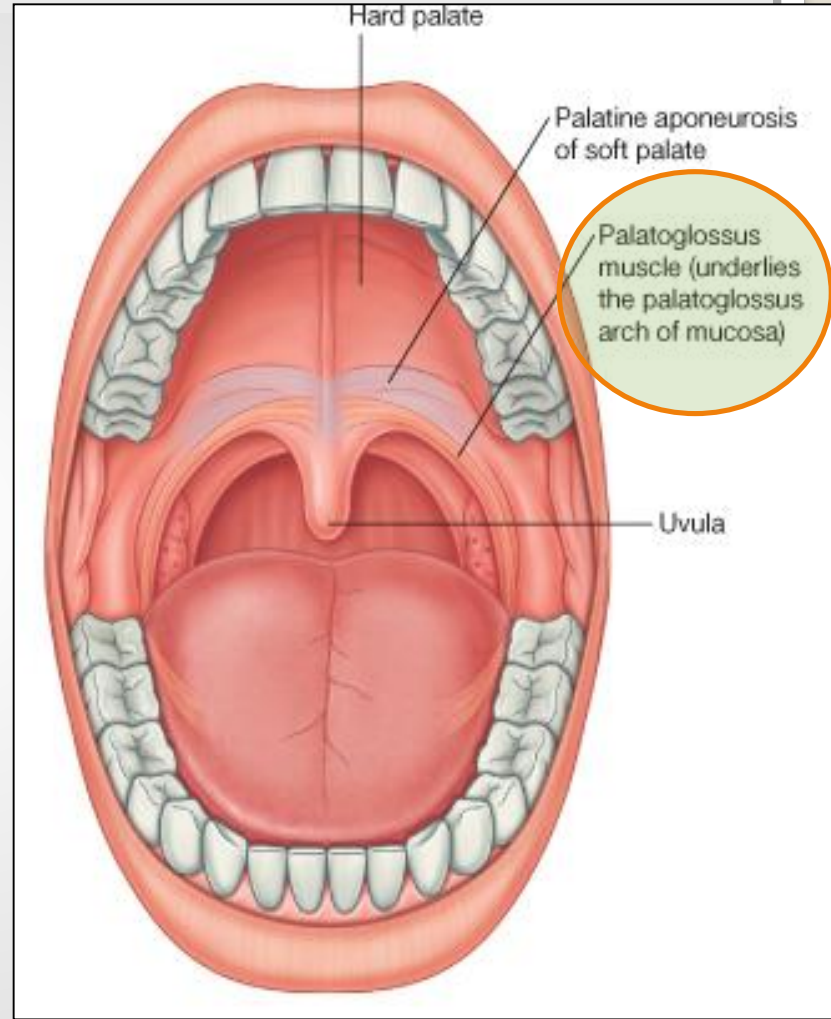
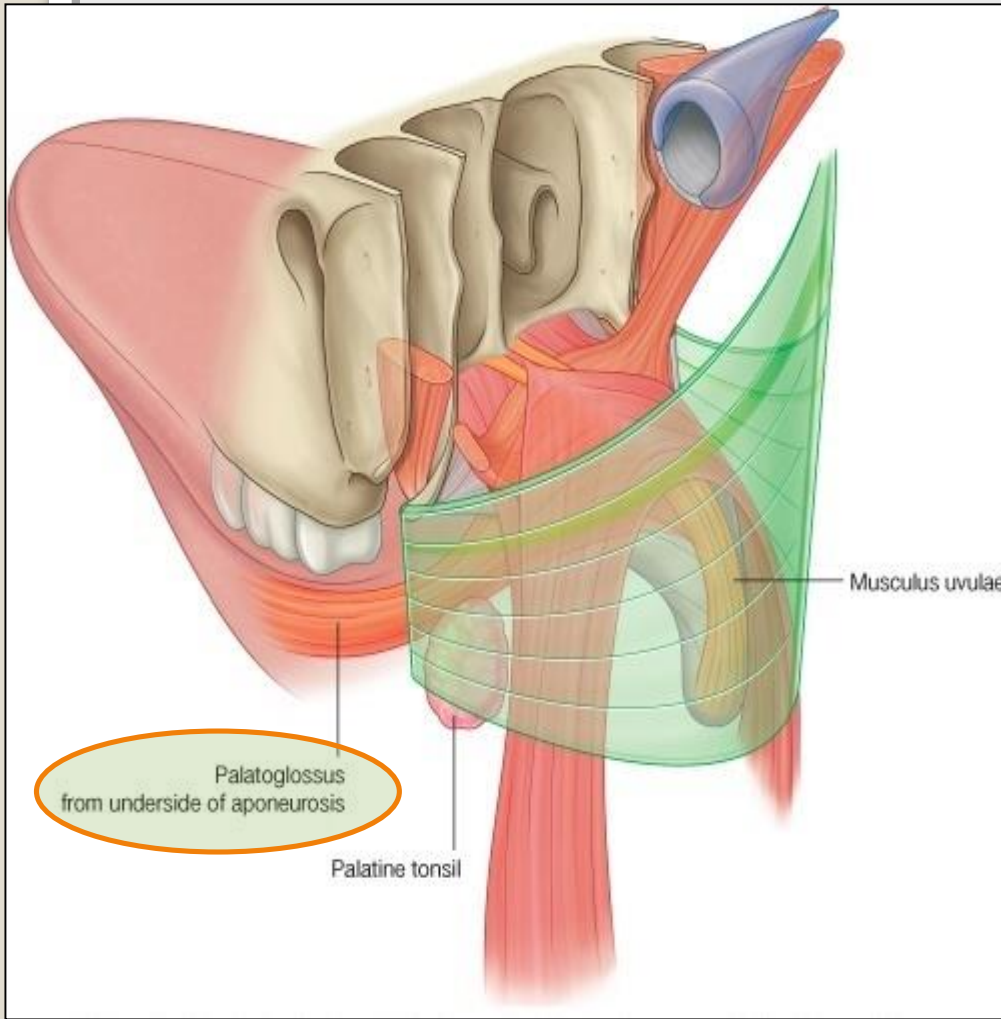
Styloid process of
temporal bone

Blends with other
muscles of tongue

Hypoglossal nerve

Draws tongue upward and
backward

PALATOGLOSSUS



Palatoglossus

Palatine aponeurosis

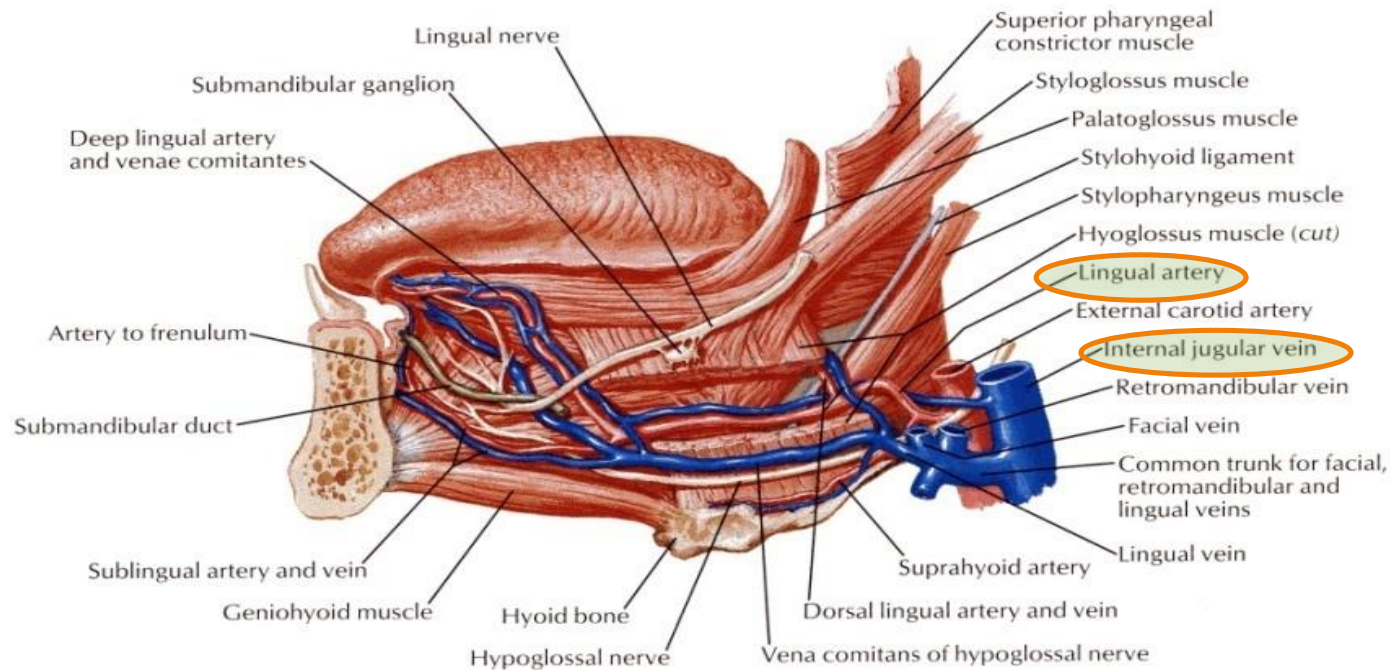
Side of tongue

Pharyngeal plexus

Pulls roots of tongue upward and backward, narrows oropharyngeal isthmus

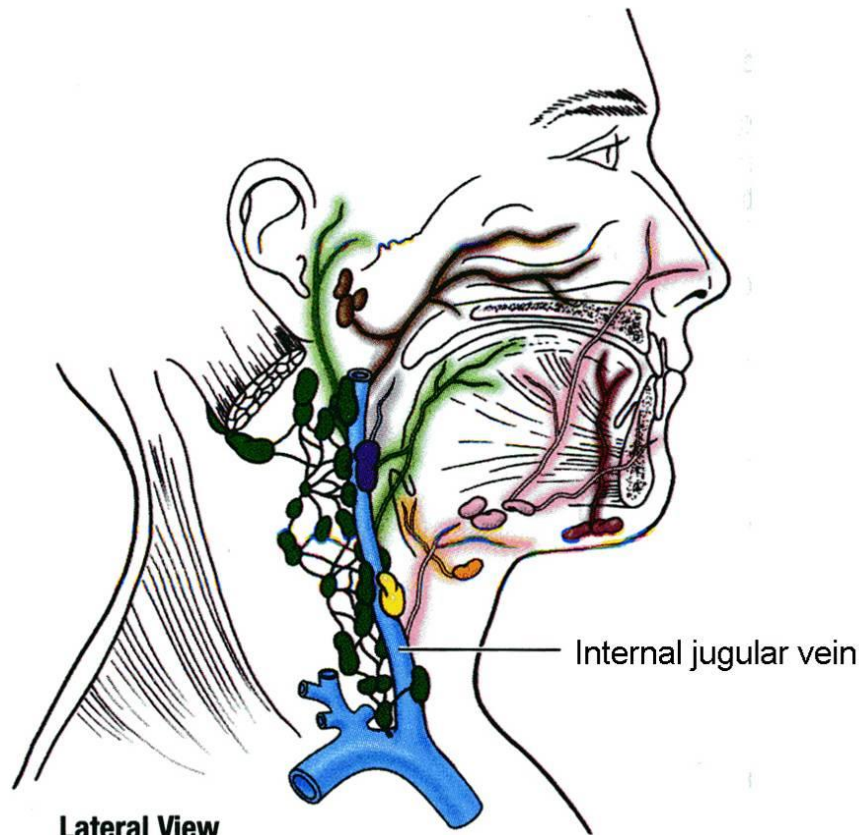
Muscle	Origin	Insertion	Nerve Supply	Action
<i>Intrinsic Muscles</i>				
Longitudinal	Median septum and submucosa	Mucous membrane	Hypoglossal nerve	Alters shape of tongue
Transverse				
Vertical				
<i>Extrinsic Muscles</i>				
Genioglossus	Superior genial spine of mandible	Blends with other muscles of tongue	Hypoglossal nerve	Protrudes apex of tongue through mouth
Hyoglossus	Body and greater cornu of hyoid bone	Blends with other muscles of tongue	Hypoglossal nerve	Depresses tongue
Styloglossus	Styloid process of temporal bone	Blends with other muscles of tongue	Hypoglossal nerve	Draws tongue upward and backward
Palatoglossus	Palatine aponeurosis	Side of tongue	Pharyngeal plexus	Pulls roots of tongue upward and backward, narrows oropharyngeal isthmus
All muscles of the tongue are supplied by hypoglossal nerve EXCEPT palatoglossus which is supplied by pharyngeal plexus				

Blood Supply



- It is supplied by:
- 1- **lingual artery**, from external carotid artery.
- 2- Tonsillar branch of the facial artery,
- 3- Ascending pharyngeal artery.
- The veins drain into the **internal jugular vein**.

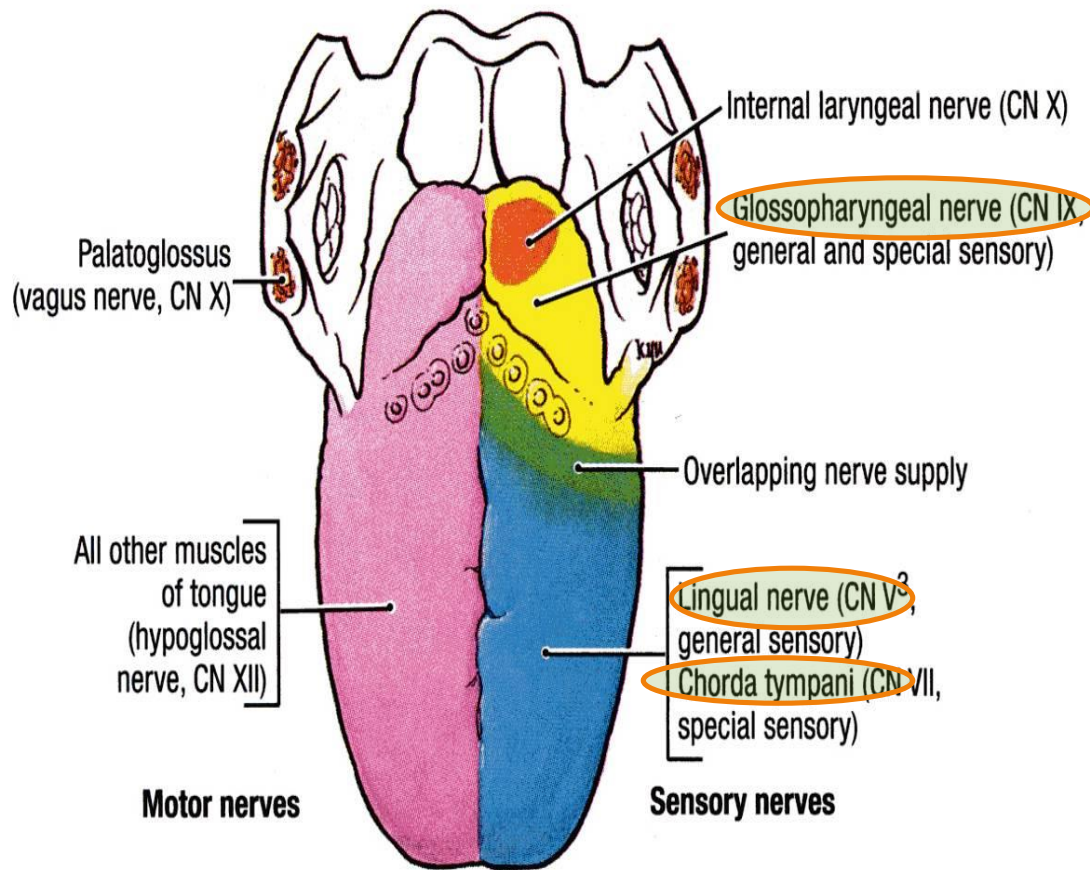
LYMPH DRAINAGE



■ Retropharyngeal	■ Submental
■ Deep cervical	■ Submandibular
■ Jugulo-omohyoid	■ Infrahyoid
■ Jugulodigastric	

- The tip of the tongue drains into **submental** lymph nodes.
- The remainder of the anterior two thirds of the tongue drains into the **submandibular** and **deep cervical** lymph nodes.
- Lymph from the posterior third of the tongue drains into the **deep cervical** lymph nodes.

SENSORY INNERVATION



- The mucous membrane of the **anterior 2/3** of the tongue are supplied by **lingual nerve** for **general sensations**.
- **Taste fibers** from the anterior 2/3 except the vallate papillae, are carried in the **chorda tympani** of the facial nerve.
- **General & taste sensation from the posterior 1/3**, including the vallate papillae, are carried by the **glossopharyngeal nerve**.

**THANK YOU
AND GOOD LUCK**