

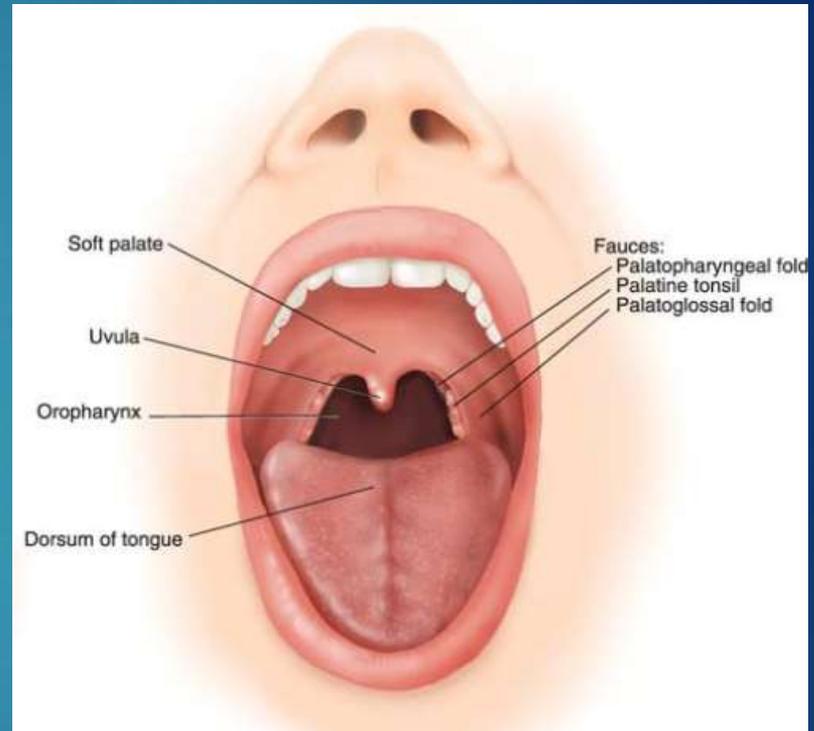


# Oral Cavity Tongue & Palate

Dr. K.S.RAMA RAJU

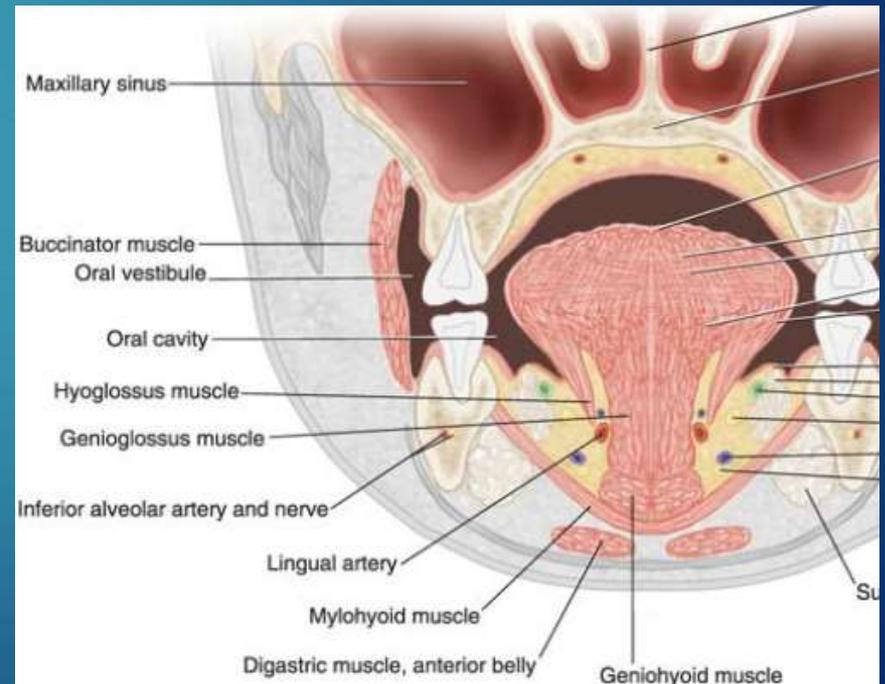
# Oral Cavity (Mouth)

- Extends from the lips to the oropharyngeal isthmus
  - ▶ The oropharyngeal isthmus:
    - ▶ Is the junction of mouth and pharynx.
    - ▶ Is bounded:
      - ▶ **Above** by the soft palate and the palatoglossal folds
      - ▶ **Below** by the dorsum of the tongue
- Subdivided into Vestibule & Oral cavity proper



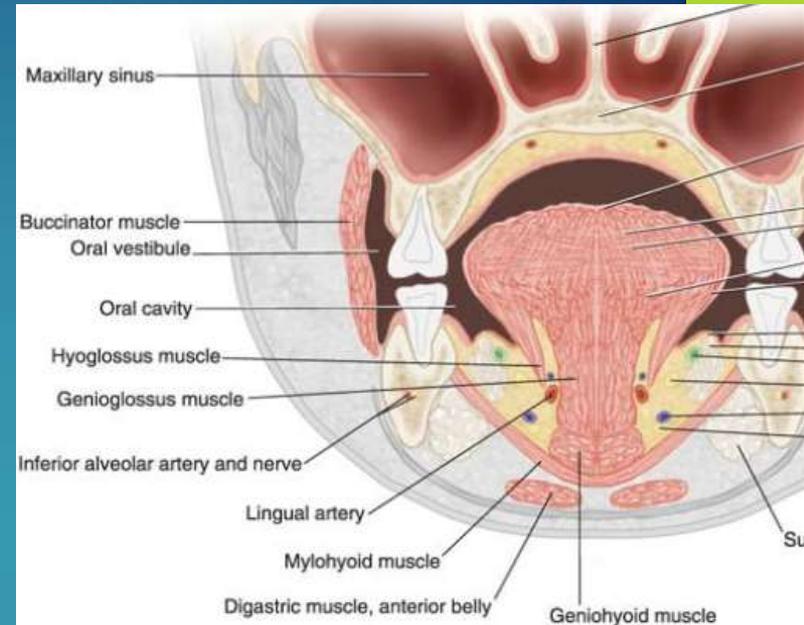
# Vestibule

- Slitlike space between the cheeks and the gums
- Communicates with the exterior through the **oral fissure**
- When the jaws are closed, communicates with the oral cavity proper **behind the 3<sup>rd</sup> molar tooth** on each side
- **Superiorly** and **inferiorly** limited by the reflection of mucous membrane from lips and cheek onto the gums



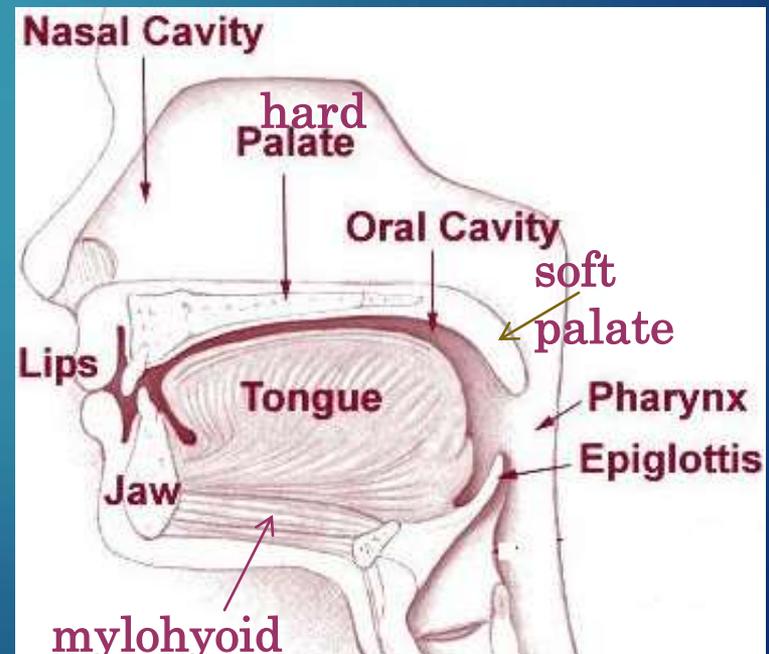
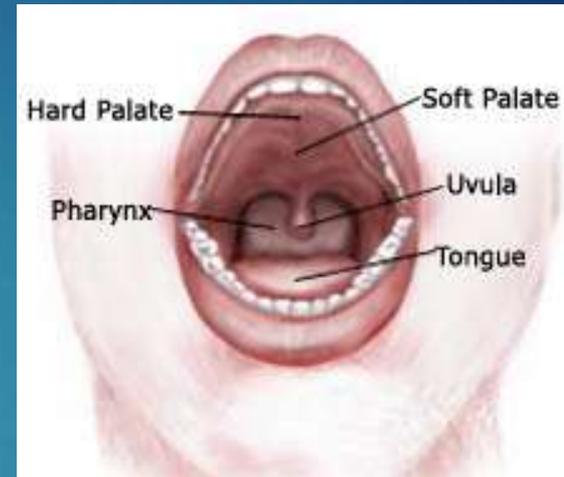
# Vestibule cont'd

- The lateral wall of the vestibule is formed by the cheek
  - ▶ The cheek is composed of Buccinator muscle, covered laterally by the skin & medially by the mucous membrane
- A small papilla on the mucosa opposite the upper 2<sup>nd</sup> molar tooth marks the opening of the duct of the parotid gland



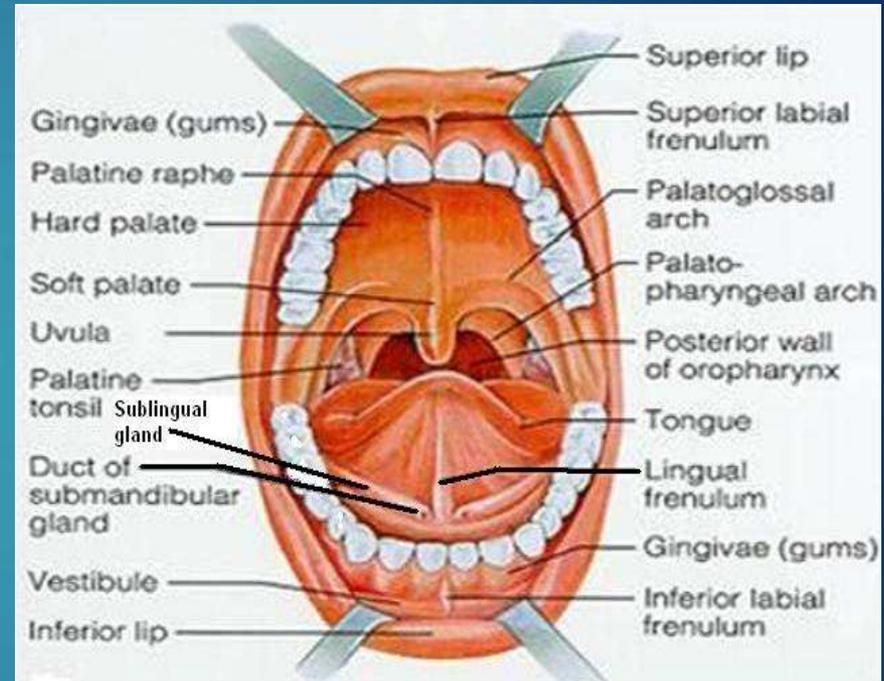
# Oral Cavity Proper

- It is the cavity within the **alveolar margins** of the maxillae and the mandible
- Its **Roof** is formed by the **hard palate anteriorly** and the **soft palate posteriorly**
- Its **Floor** is formed by the **mylohyoid muscle**. The anterior 2/3<sup>rd</sup> of the tongue lies on the floor.



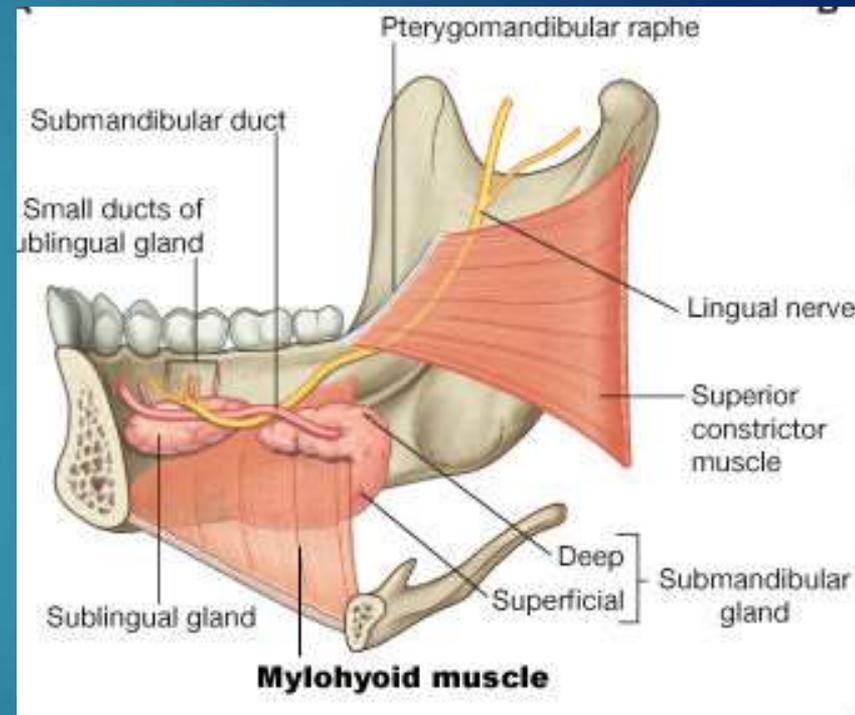
# Floor of the Mouth

- Covered with mucous membrane
- In the midline, a mucosal fold, the **frenulum**, connects the tongue to the floor of the mouth
- On each side of frenulum a small **papilla** has the opening of the duct of the **submandibular gland**
- A rounded ridge extending backward & laterally from the papilla is produced by the **sublingual gland**



# MYLOHYOID MUSCLE

- ▶ **ORIGIN:** mylohyoid line of mandible
- ▶ **INSERTION:** hyoid bone , median raphe
- ▶ **ACTIONS:**
  1. elevates floor of mouth during swallowing
  2. elevates hyoid bone
  3. depress mandible
- ▶ **NERVE SUPPLY:** mylohyoid branch of inferior alveolar nerve
- ▶ **BLOOD SUPPLY:**
  1. sublingual branch (lingual artery)
  2. mylohyoid branch (maxillary artery)
  3. submental branch (facial artery)





# Nerve Supply



## o Sensory

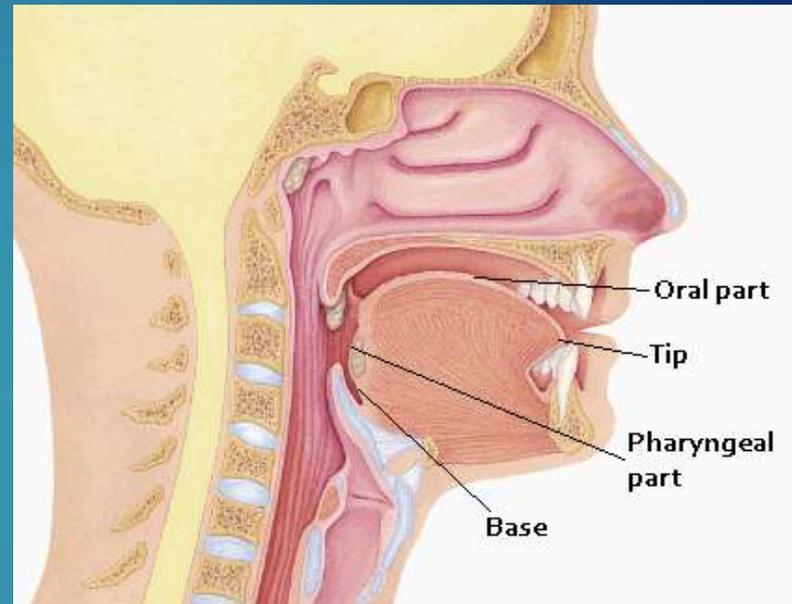
- **Roof:** by greater palatine and nasopalatine nerves (branches of **maxillary nerve**)
- **Floor:** by lingual nerve (branch of **mandibular nerve**)
- **Cheek:** by buccal nerve (branch of **mandibular nerve**)

## o Motor

- Muscle in the cheek (**buccinator**) and the lip (**orbicularis oris**) are supplied by the branches of the **facial nerve**

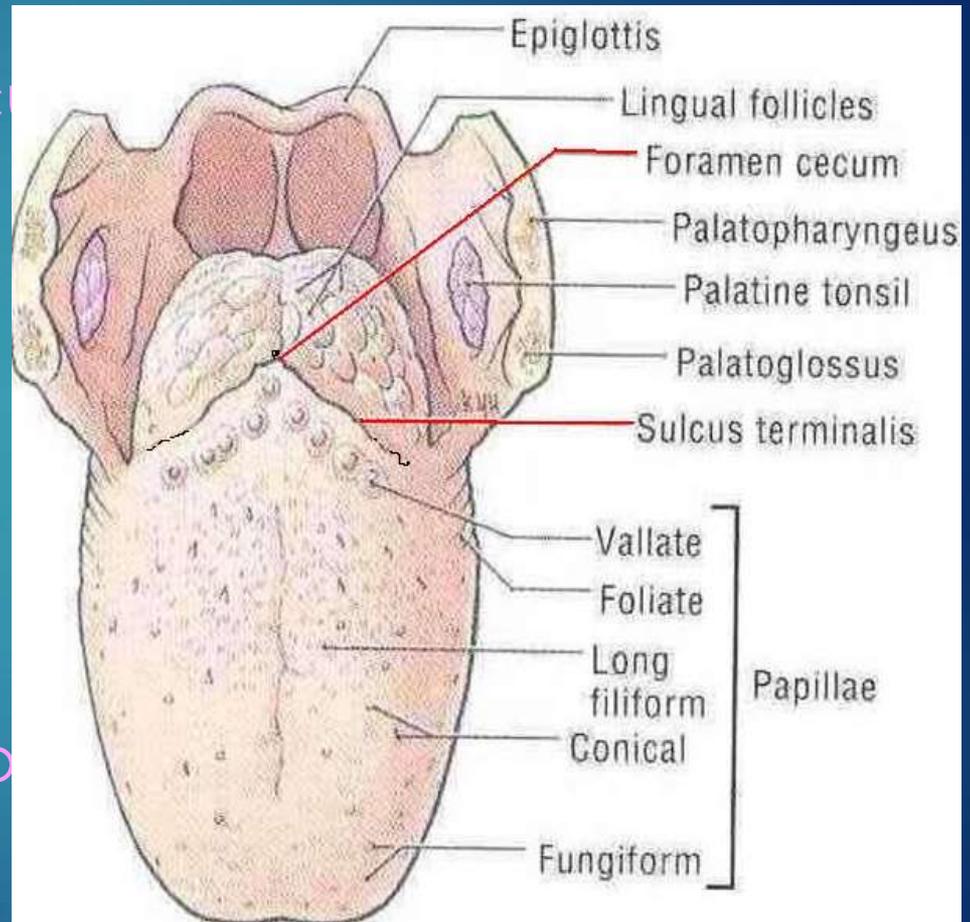
# Tongue

- Mass of **striated muscles** covered with the mucous membrane
- Divided into right and left halves by a **median septum**
- Three parts:
  - ▶ **Oral (anterior  $\frac{2}{3}$ )**
  - ▶ **Pharyngeal (posterior  $\frac{1}{3}$ )**
  - ▶ **Root (base)**
- Two surfaces:
  - ▶ **Dorsal**
  - ▶ **Ventral**



# Dorsal Surface

- Divided into anterior two third and posterior one third by a V-shaped sulcus terminalis.
- The apex of the sulcus faces backward and is marked by a pit called the foramen cecum
- Foramen cecum, an embryological remnant, marks the site of the upper end of the thyroglossal duct

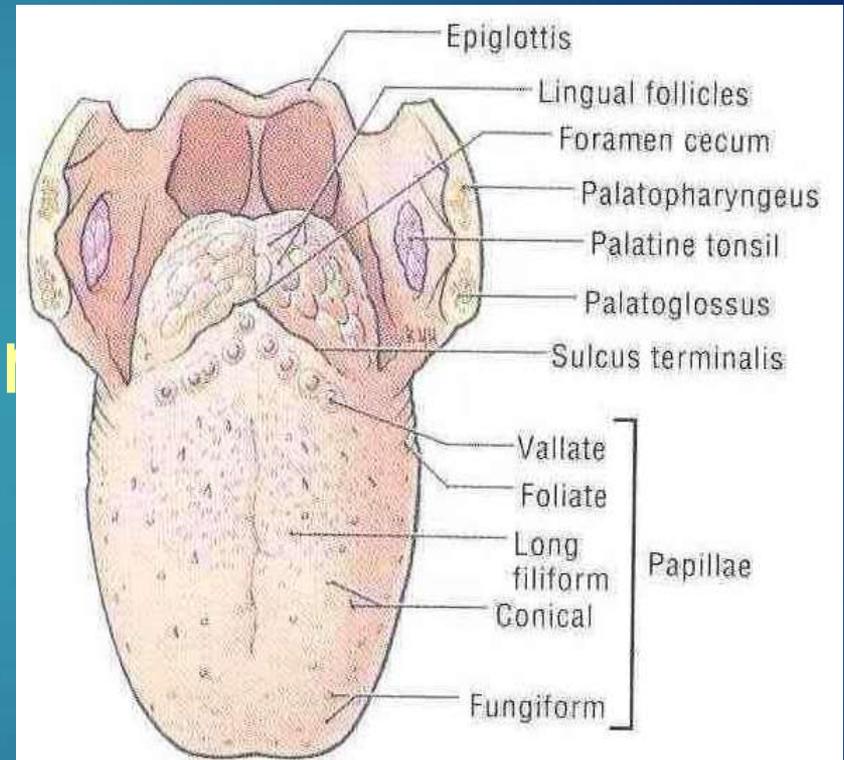


◎ Anterior two third:  
mucosa is rough, shows  
three types of papillae:

- Filiform
- Fungiform
- Vallate

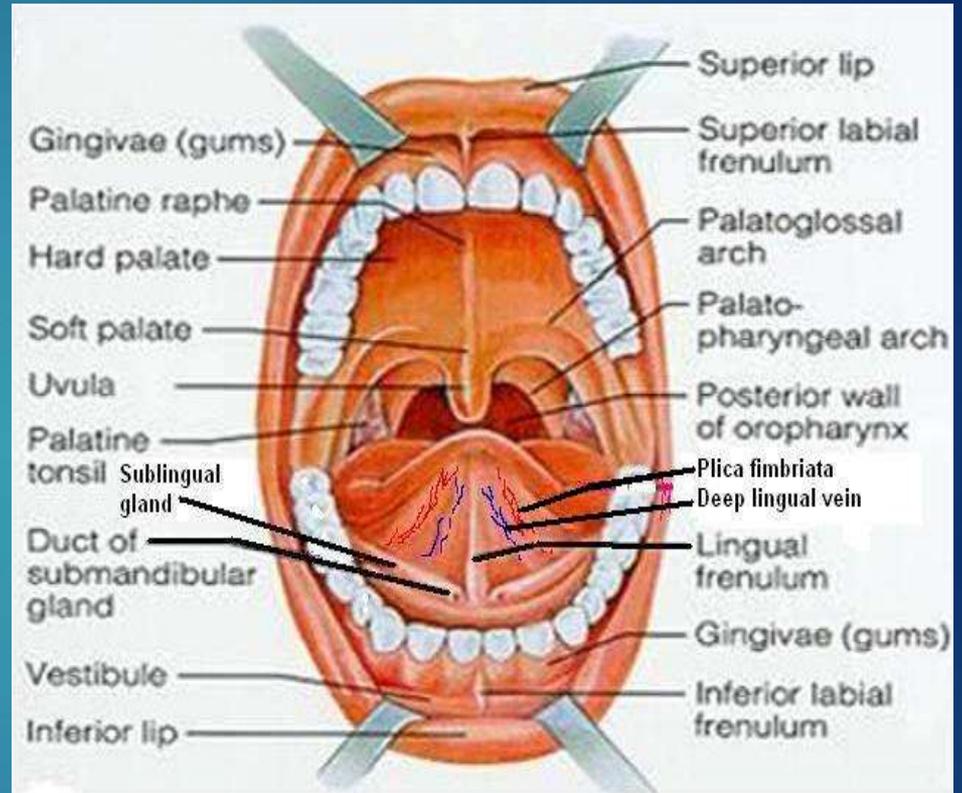
## Dorsal Surface

◎ Posterior one third: No  
papillae but shows  
nodular surface  
because of underlying  
lymphatic nodules, the  
lingual tonsils



# Ventral Surface

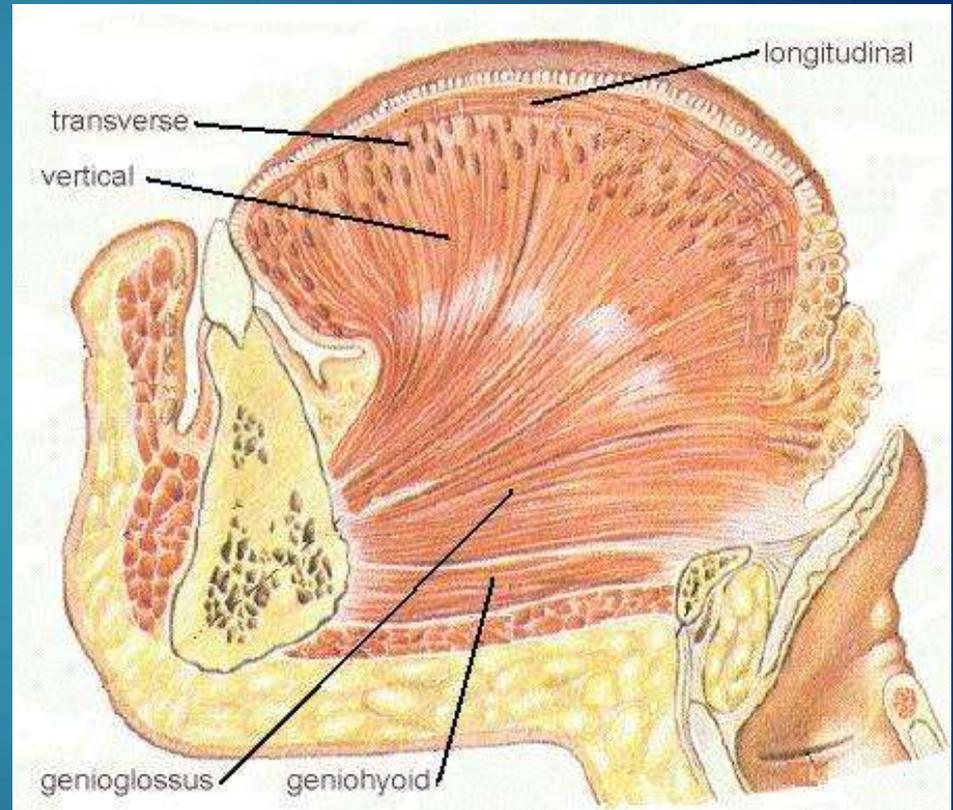
- Smooth (no papillae)
- In the midline anteriorly, a mucosal fold, **frenulum** connects the tongue with the floor of the mouth
- Lateral to frenulum, **deep lingual vein** can be seen through the mucosa
- Lateral to lingual vein, a fold of mucosa forms the **plica fimbriata**



# Muscles

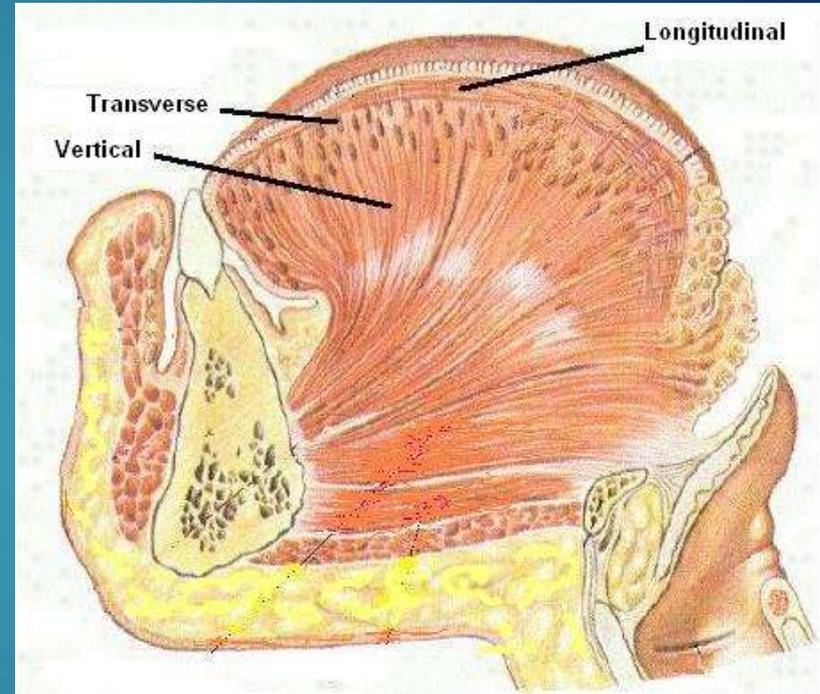
◎ The tongue is composed of two types of muscles:

- ▶ Intrinsic
- ▶ Extrinsic



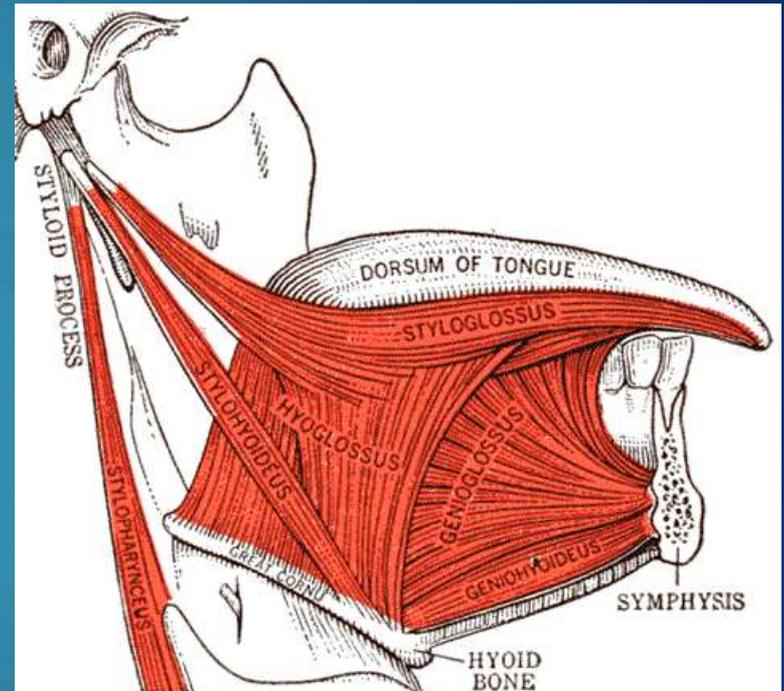
# Intrinsic Muscles

- Confined to tongue
- No bony attachment
- Consist of:
  - ▶ Longitudinal fibers
  - ▶ Transverse fibers
  - ▶ Vertical fibers
- ▶ Function: Alter the shape of the tongue



# Extrinsic Muscles

- Connect the tongue to the surrounding structures: the **soft palate** and the **bones** (mandible, hyoid bone, styloid process)
- Include:
  - ▶ Palatoglossus
  - ▶ Genioglossus
  - ▶ Hyoglossus
  - ▶ Styloglossus
- Function: Help in movements of the tongue



# Movements

## ▶ Protrusion:

- Genioglossus on both sides acting together

## ▶ Retraction:

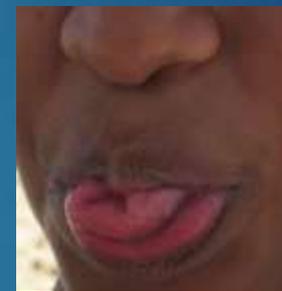
- Styloglossus and hyoglossus on both sides acting together

## ▶ Depression:

- Hyoglossus and genioglossus on both sides acting together

## ▶ Elevation:

- Styloglossus and palatoglossus on both sides acting together



# Sensory Nerve Supply

## ◎ Anterior $\frac{2}{3}$ :

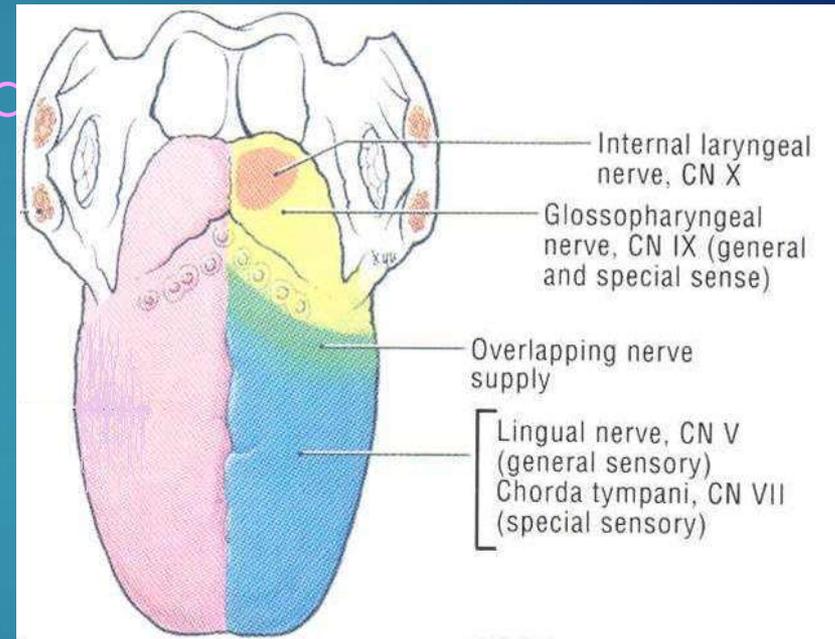
- ▶ General sensations: **Lingual nerve**
- ▶ Special sensations : **chorda tympani**

## ◎ Posterior $\frac{1}{3}$ :

- ▶ General & special sensations: **glossopharyngeal nerve**

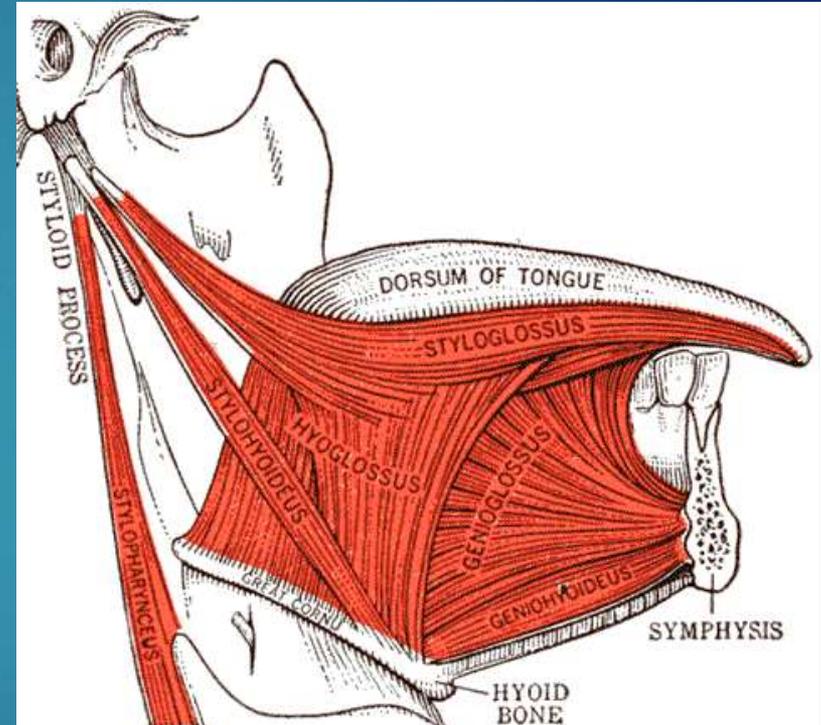
## ◎ Base:

- ▶ General & special sensations: **internal laryngeal nerve**



# Motor Nerve Supply

- Intrinsic muscles:
  - Hypoglossal nerve
- Extrinsic muscles:
  - All supplied by the hypoglossal nerve, except the palatoglossus
- The palatoglossus supplied by the pharyngeal plexus



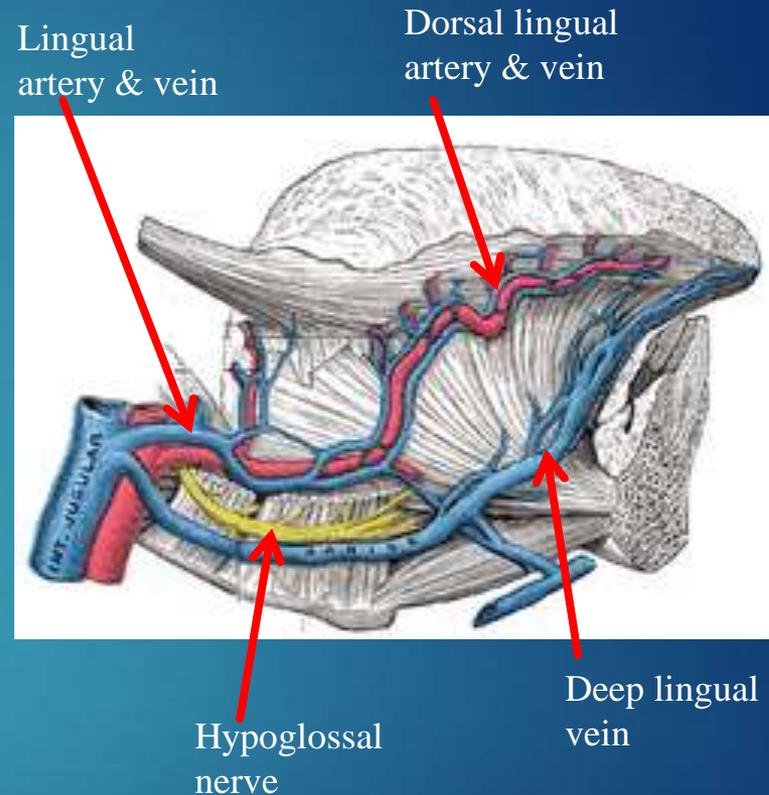
# Blood Supply

## ▶ Arteries:

- Lingual artery
- Tonsillar branch of facial artery
- Ascending pharyngeal artery

## ▶ Veins:

- Lingual vein, ultimately drains into the internal jugular vein



# Lymphatic Drainage

## ▶ Tip:

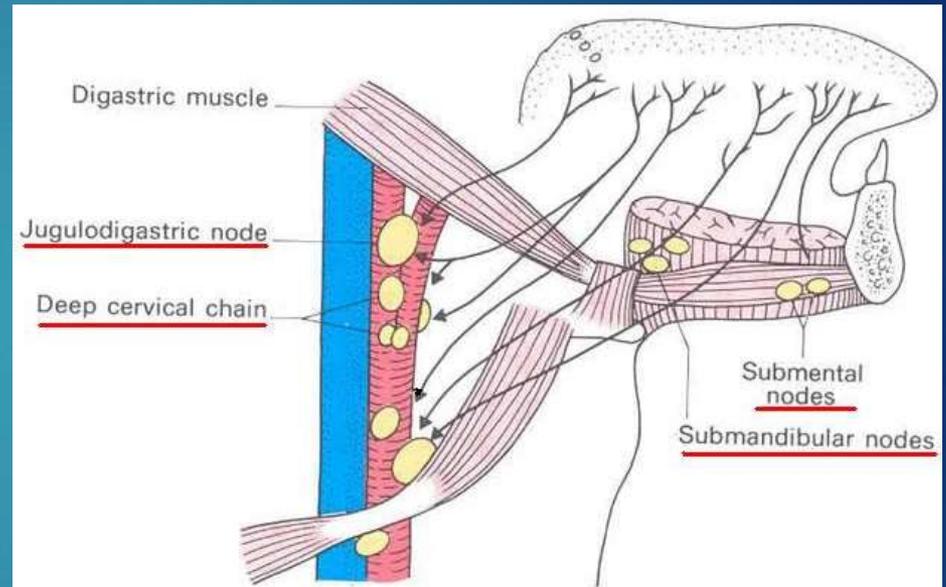
- ▶ Submental nodes bilaterally & then deep cervical nodes

## ▶ Anterior two third:

- ▶ Submandibular unilaterally & then deep cervical nodes

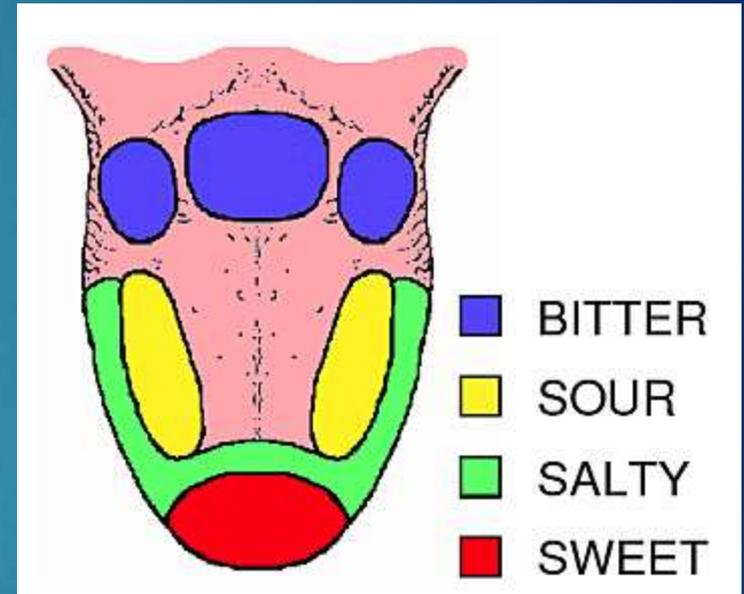
## ▶ Posterior third:

- ▶ Deep cervical nodes (jugulodigastric mainly)

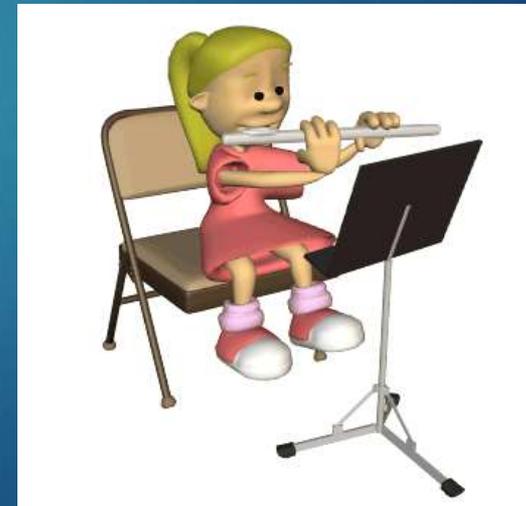


# Functions

- ▶ The tongue is the most important articulator for **speech production**. During speech, the tongue can make amazing range of movements
- ▶ The primary function of the tongue is to provide a mechanism for **taste**. Taste buds are located on different areas of the tongue, but are generally found around the edges. They are sensitive to four main tastes: **Bitter, Sour, Salty & Sweet**

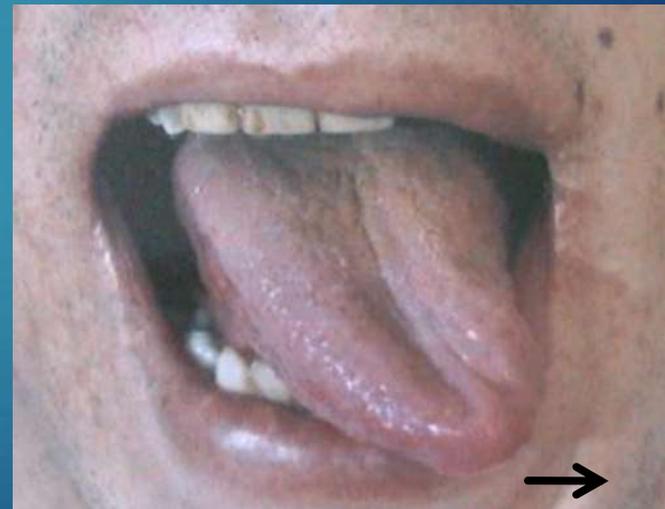
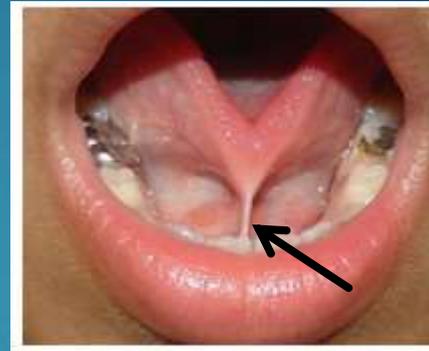


- ▶ The tongue is needed for sucking, chewing, swallowing, eating, drinking, kissing, sweeping the mouth for food debris and other particles and for making funny faces (poking the tongue out, wagging it)
- ▶ Trumpeters and horn & flute players have very well developed tongue muscles, and are able to perform rapid, controlled movements or articulations



# Clinical Notes

- Lacerations of the tongue
- Tongue-Tie (ankyloglossia) (due to large frenulum)
- Lesion of the hypoglossal nerve
  - ▶ The protruded tongue deviates toward the side of the lesion
  - ▶ Tongue is atrophied & wrinkled



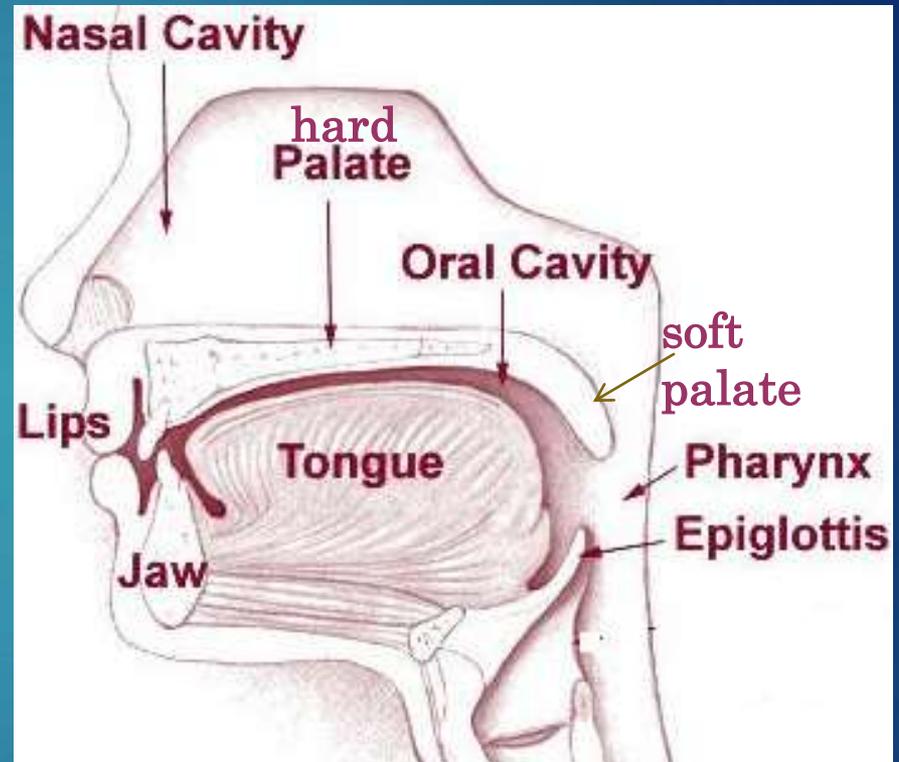
**Anger is a condition  
in which the tongue  
works faster than  
the mind.**



**‘If there is goodness in your heart,  
it will come to your tongue’.**

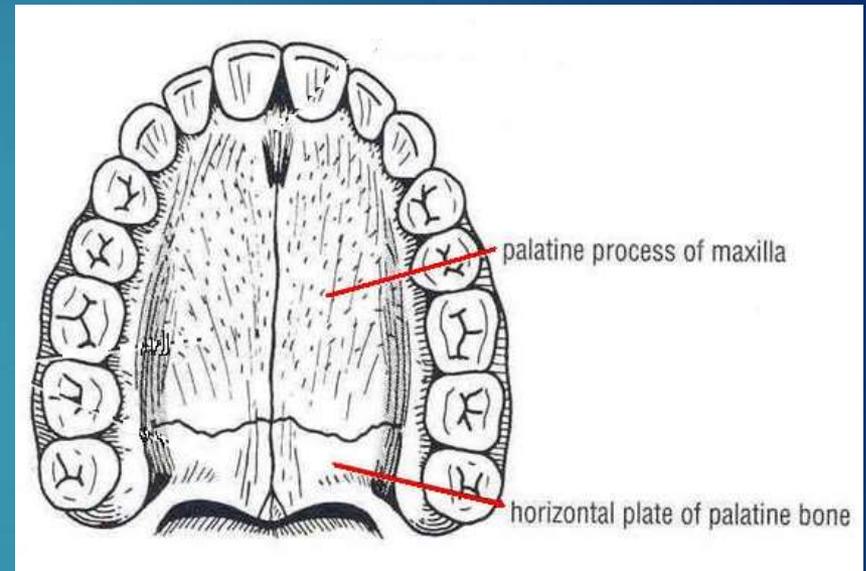
# Palate

- Lies in the roof of the oral cavity
- Has two parts:
  - ▶ Hard (bony) palate anteriorly
  - ▶ Soft (muscular) palate posteriorly



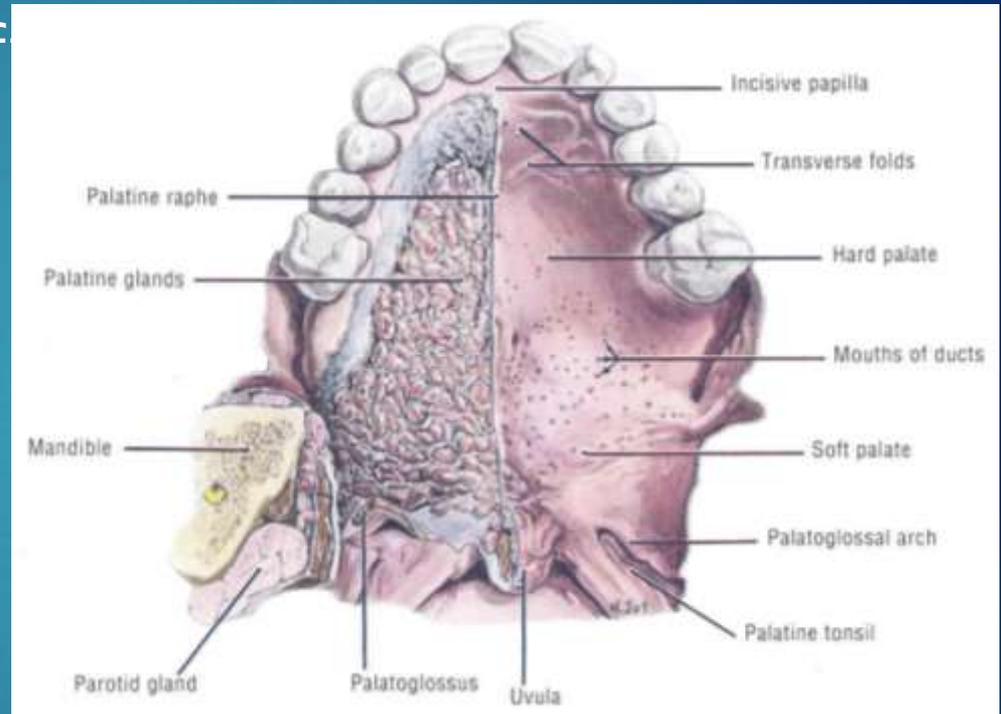
# Hard Palate

- Lies in the roof of the oral cavity
- Forms the floor of the nasal cavity
- Formed by:
  - ▶ Palatine processes of maxillae in front
  - ▶ Horizontal plates of palatine bones behind
- ▶ Bounded by alveolar arches



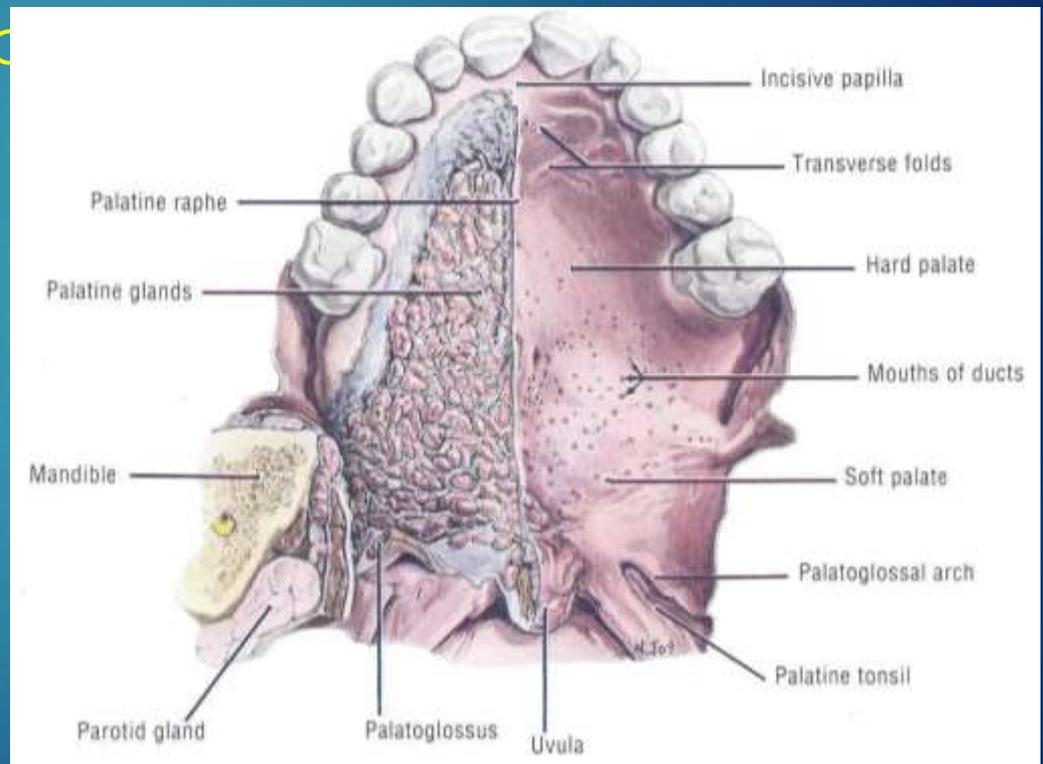
# Hard Palate

- Posteriorly, continuous with soft palate
- Its undersurface covered by **mucoperiosteum**
- Shows transverse ridges in the anterior parts



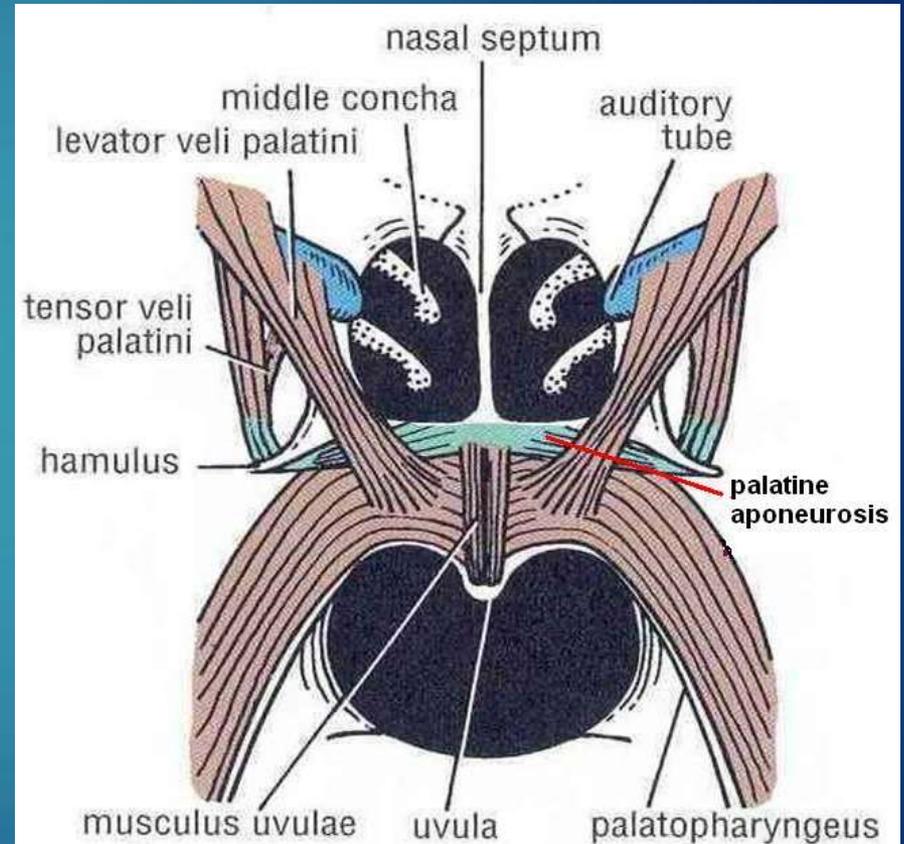
# Soft Palate

- Attached to the posterior border of the hard palate
- Covered on its upper and lower surfaces by **mucous membrane**
- Composed of:
  - ▶ Muscle fibers
  - ▶ An aponeurosis
  - ▶ Lymphoid tissue
  - ▶ Glands
  - ▶ Blood vessels
  - ▶ Nerves



# Palatine Aponeurosis

- Fibrous sheath
- Attached to posterior border of hard palate
- Is expanded tendon of **tensor veli palatini**
- Splits to enclose **musculus uvulae**
- Gives origin & insertion to palatine muscles



# Muscles

## ◎ Tensor veli palatini

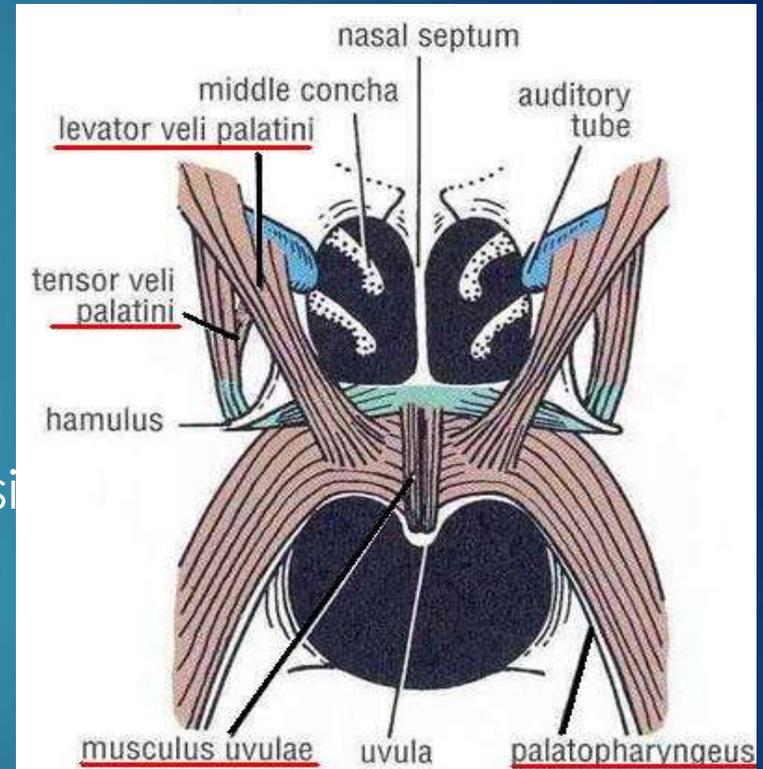
- ▶ **Origin:** spine of sphenoid; auditory tube
- ▶ **Insertion:** forms palatine aponeurosis
- ▶ **Action:** Tenses soft palate

## ▶ Levator veli palatini

- ▶ **Origin:** petrous temporal bone, auditory tube, palatine aponeurosis
- ▶ **Insertion:** palatine aponeurosis
- ▶ **Action:** Raises soft palate

## ▶ Musculus uvulae

- ▶ **Origin:** posterior border of hard palate
- ▶ **Insertion:** mucosa of uvula



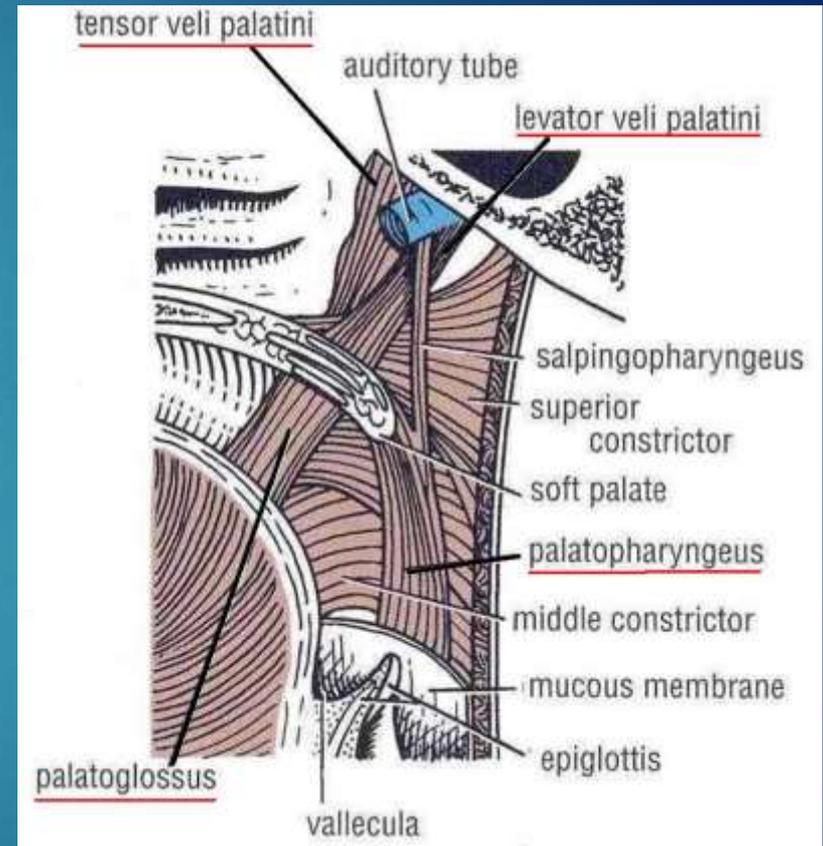
# Muscles

## ▶ Palatoglossus

- ▶ **Origin:** palatine aponeurosis
- ▶ **Insertion:** side of tongue
- ▶ **Action:** pulls root of tongue upward, narrowing oropharyngeal isthmus

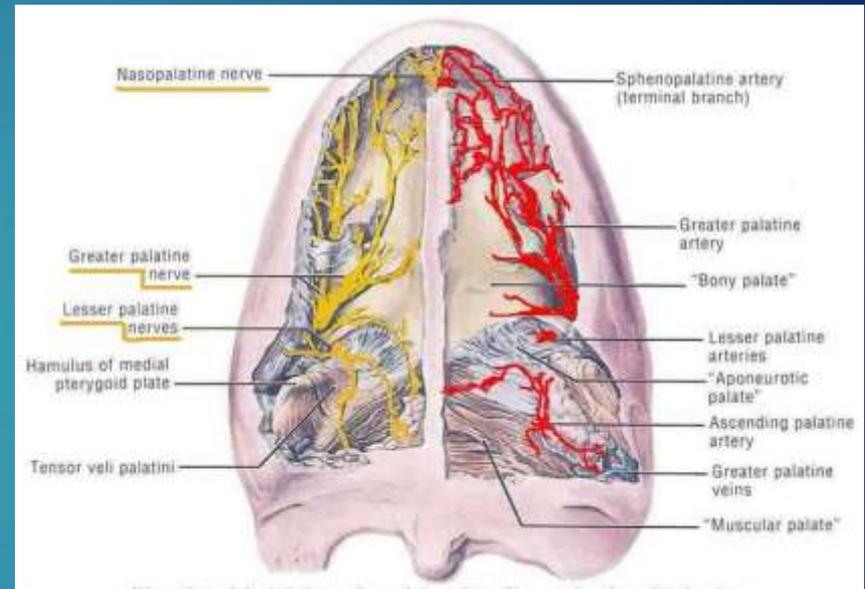
## ▶ Palatopharyngeus

- ▶ **Origin:** palatine aponeurosis
- ▶ **Insertion:** posterior border of thyroid cartilage
- ▶ **Action:** Elevates wall of the pharynx



# Sensory Nerve Supply

- ▶ Mostly by the **maxillary** nerve through its branches:
  - ▶ Greater palatine nerve
  - ▶ Lesser palatine nerve
  - ▶ Nasopalatine nerve
- ▶ **Glossopharyngeal** nerve supplies the region of the soft palate



# Motor Nerve Supply

- ▶ All the muscles, except **tensor veli palatini**, are supplied by the:
  - ▶ **Pharyngeal plexus**
- ▶ **Tensor veli palatini** supplied by the:
  - ▶ **Nerve to medial pterygoid**, a branch of the mandibular division of the **trigeminal nerve**

# Blood Supply

- ▶ Branches of the maxillary artery

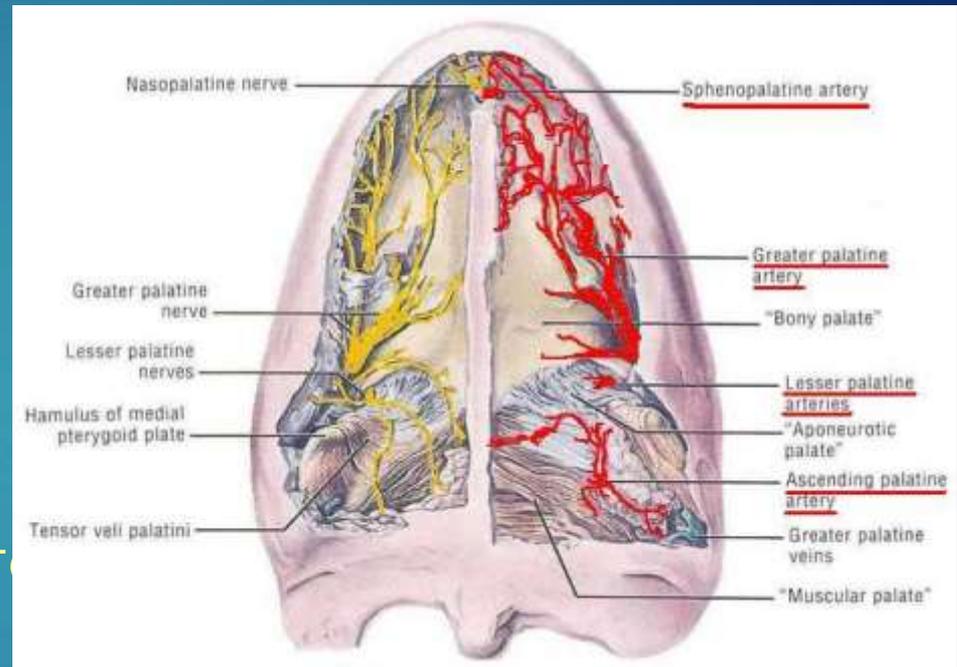
- ▶ Greater palatine

- ▶ Lesser palatine

- ▶ Sphenopalatine

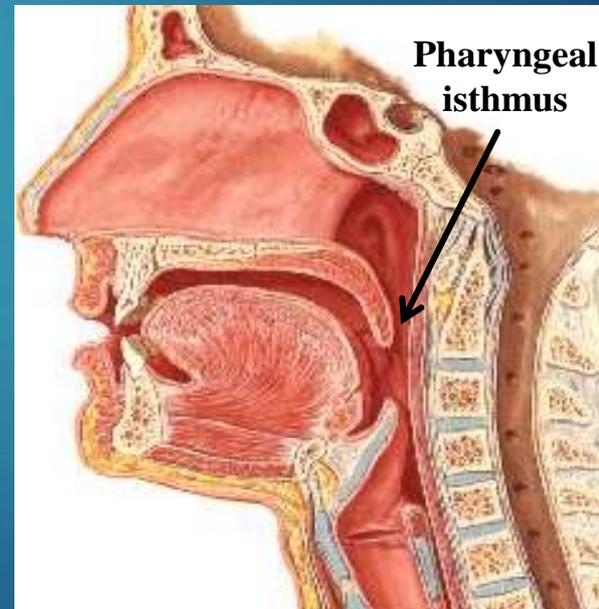
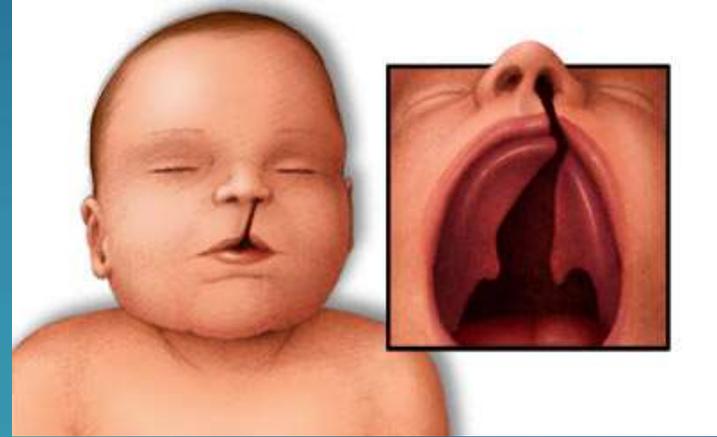
- ▶ Ascending palatine, branch of the facial artery

- ▶ Ascending pharyngeal, branch of the external carotid artery



# Clinical Notes

- ▶ Cleft palate:
  - ▶ Unilateral
  - ▶ Bilateral
  - ▶ Median
- ▶ Paralysis of the soft palate
  - ▶ The **pharyngeal isthmus** can not be closed during swallowing and speech





LOVE NATURE

