



**Anatomy Team**  
**MED 439**

Revised & Approved



**MED439**  
KING SAUD UNIVERSITY

# Oral Cavity, Palate & Tongue

GNT Block

**Color index:**

**Content**  
**Male slides**  
**Female slides**  
**Important**  
**Doctors notes**

Extra information, explanation

Don't forget to check the [Editing File](#)

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# Objectives

At the end of the lecture, students should be able to:

- Describe the anatomy of the oral cavity
  1. Boundaries
  2. Parts
  3. Nerve supply
  
- Describe the anatomy of the palate
  1. Parts
  2. Muscles
  3. Nerve & blood supply
- Describe the anatomy of the tongue
  1. Structure
  2. Muscles
  3. Motor and sensory nerve supply
  4. Blood supply & lymphatic drainage

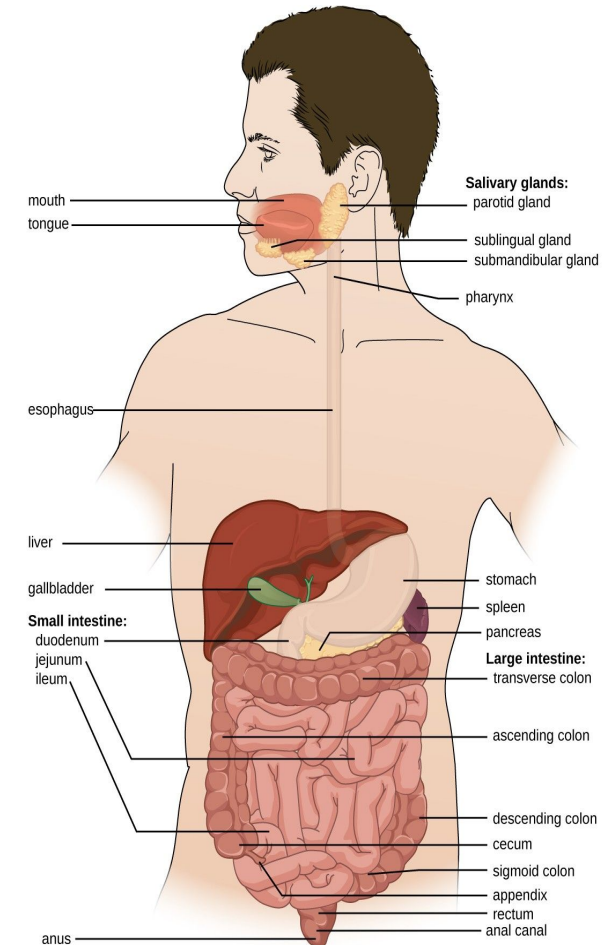
# Alimentary Canal (GIT)

Female slides only

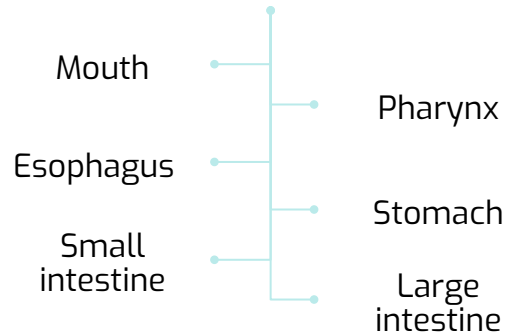
- It is a Continuous, Coiled & Hollow Muscular **tube**.
- It Winds around the ventral body cavity.
- It **Opens** at both ends

## Length:

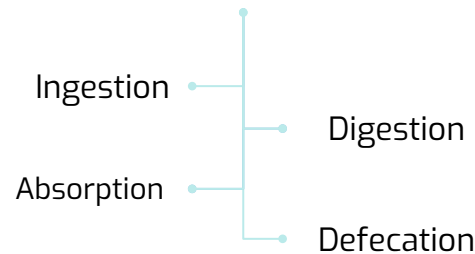
- In the **cadaver**: 9 m.
- In the **living person**: shorter because of the muscle tone.



## Parts



## Functions

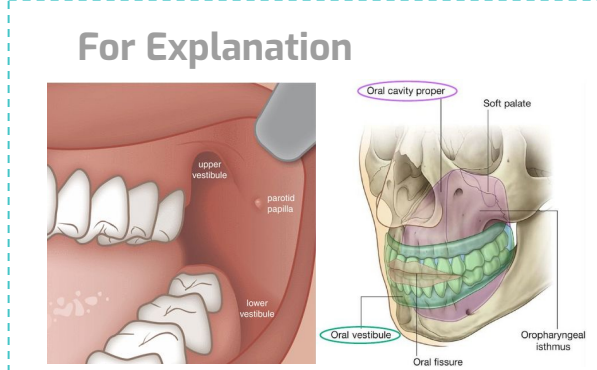
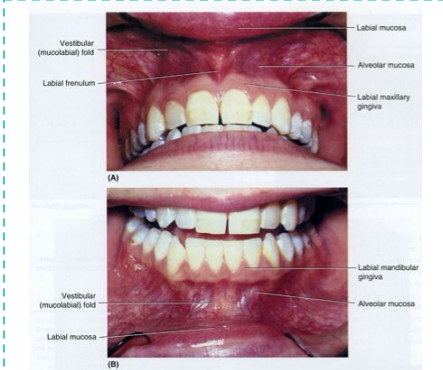
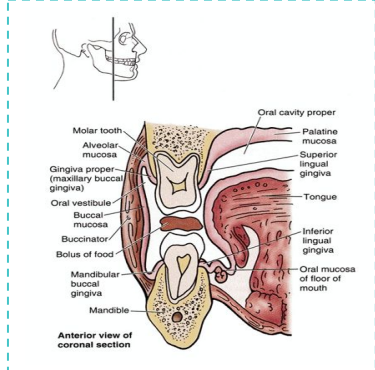
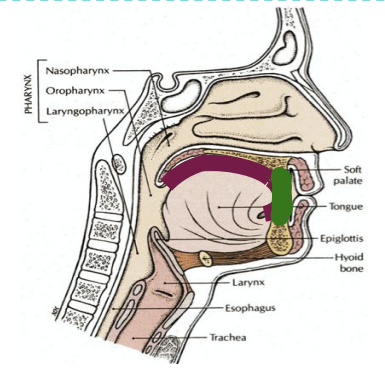


## COMPONENTS

Alimentary (Gastrointestinal) tract: performs the whole digestive functions.

Accessory organs : Assist the process of digestive break down.

Accessory organs are the liver, gallbladder, pancreas & salivary glands



The Mouth extends from lips to oropharyngeal isthmus - which is the junction of the mouth to the pharynx.  
 Oropharyngeal isthmus is bounded by: **Above:** soft palate and palatoglossal folds & **Below:** dorsum of the tongue

### Vestibule:

Which lies between gums & teeth internally and lips & cheeks externally.

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** third molar tooth.

The cheek forms the lateral wall of the vestibule and is made up of the **buccinator muscle**, which is covered by skin and is 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.

### Mouth cavity proper:

Which lies within the alveolar arches (**margin carrying teeth**), gums, and teeth.

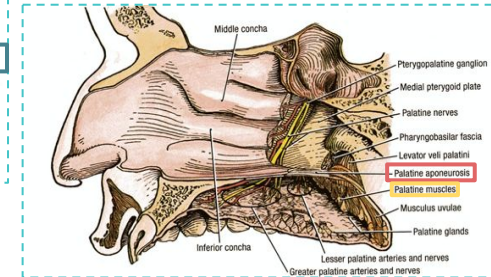
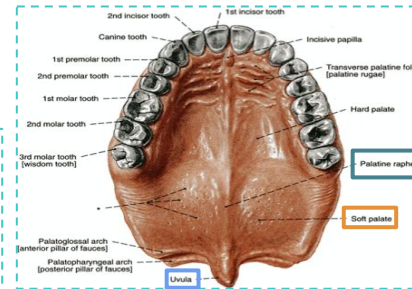
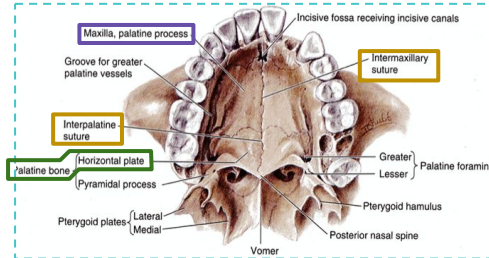
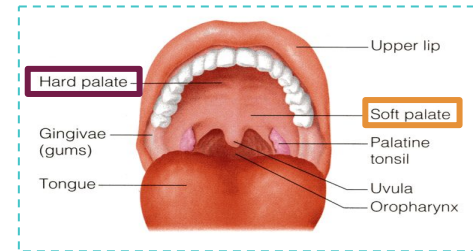
The mouth cavity proper contains:

- Roof: which is formed by the hard & soft palate.
- Floor: which is formed by the anterior 2/3 of the tongue.

### Note:

The posterior 1/3 of the tongue is considered to be part of the pharynx not the oral cavity

# Palate



The palate forms the roof of the mouth.  
Its divided into 2 parts

The **hard (Bony) palate** in front

The **soft palate** behind

The hard palate is formed by 4 bones:

- **2 palatine processes of the maxillae anteriorly**
- **2 horizontal plates of palatine bones posteriorly.**

The 4 bones are separated by **cruciform suture**.  
(intermaxillary+interpalatine)

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.

The undersurface of the hard palate is covered with **mucoperiosteum**.

It possesses a median elevated ridge (**Palatine Raphe**).

On either side of the ridge the mucous membrane shows transverse corrugations.

**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** thin band of fibrous tissue
- **3- Muscles** (5 pairs)
- 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.

# Palate

## 5 Pairs of muscles in Soft Palate

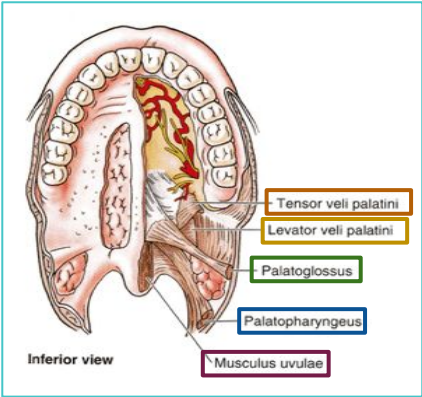
**Tensor Veli Palatini**

**Levator Veli Palatini**

**Palatoglossus**

**Palatopharyngeus**

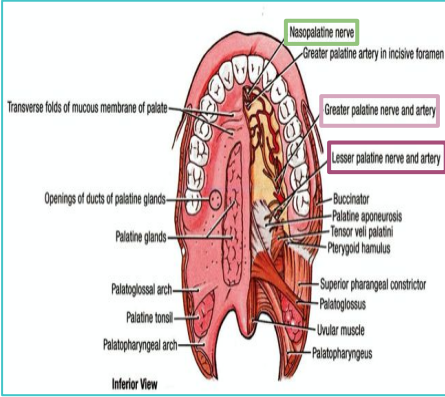
**Musculus Uvulae**



The **greater** and **lesser palatine nerves** from maxillary nerve, enter the palate through greater and lesser palatine foramina.

Lesser palatine foramina extends for the hard to the soft palate.

The **nasopalatine nerve**, also a branch of the maxillary nerve, enters the palate through the incisive foramen.



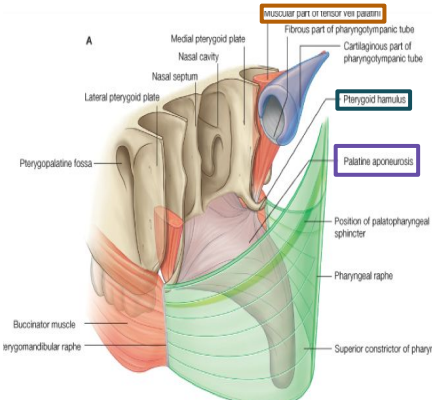
The glossopharyngeal nerve also supplies the soft palate.

The muscle fibers of the **Tensor palatini** converge as they descend from their origin to form a narrow tendon

Turns medially around the **pterygoid hamulus**

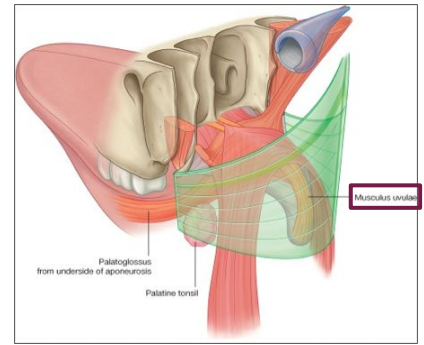
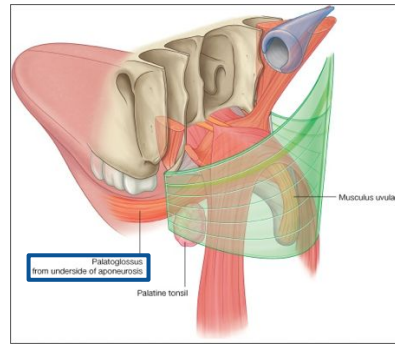
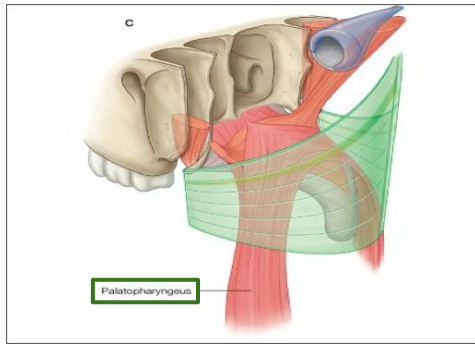
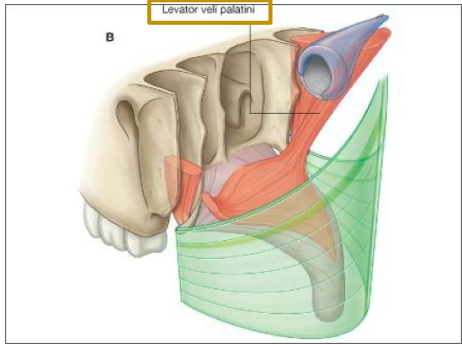
The tendon, together with the tendon of the opposite side, expands to form the **palatine aponeurosis**

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



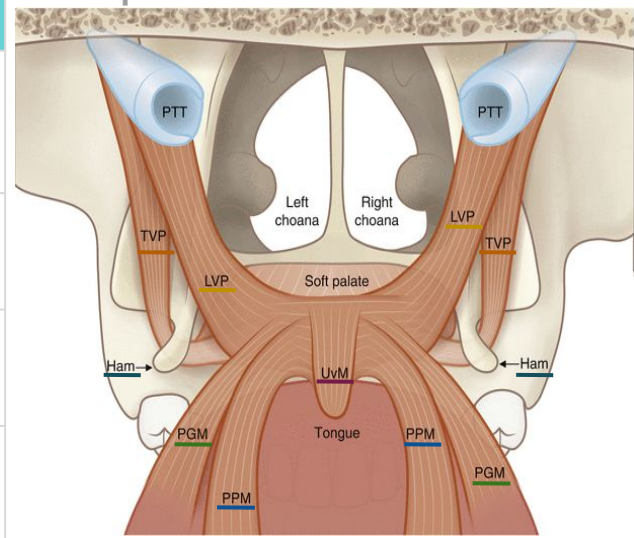


# Palate



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

## For Explanation



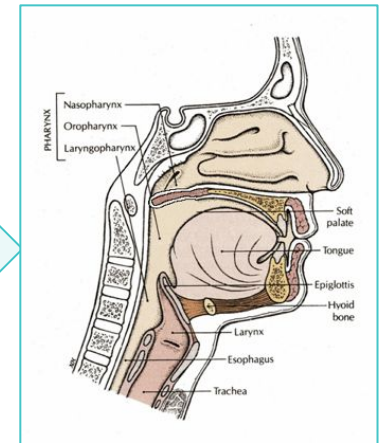
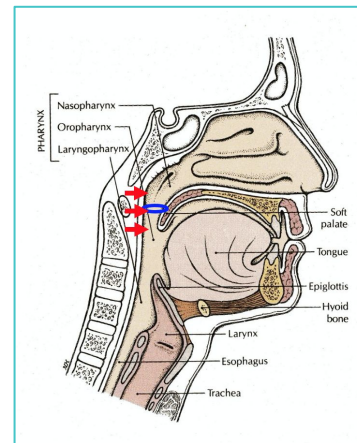
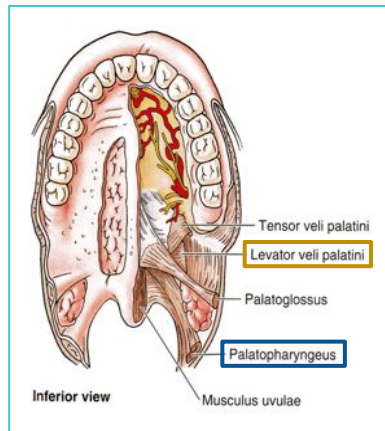
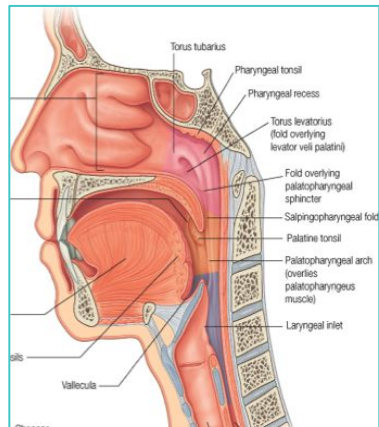
- Tensor Veli Palatini
- Levator Veli Palatini
- Palatoglossus
- Pterygoid Hamulus
- Palatopharyngeus
- Musculus Uvulae

## MOVEMENTS OF SOFT PALATE

**Pharyngeal isthmus:** It is the space between the two palatopharyngeal arches. It is closed by raising the soft palate upward. (It is the communication between nasal and oral parts of the pharynx)

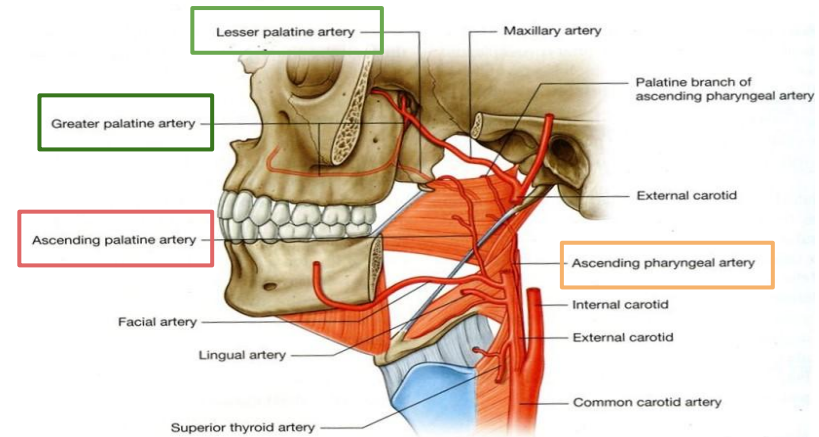
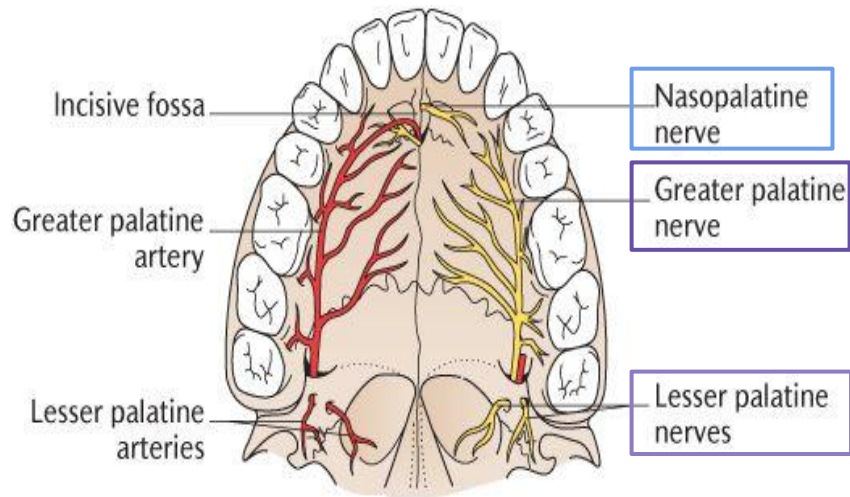
Closure occurs during the production of explosive consonants in speech and swallowing.

- 1 Soft palate is raised by the contraction of the **levator veli palatini** and **Palatopharyngeus**.
- 2 At the same time, the superior wall of the pharynx is pulled forward.
- 3 The **palatopharyngeus** muscles on both sides also contract so that the palatopharyngeal arches are pulled medially, like side curtains.
- 4 By this means the nasal part of the pharynx is closed off from its oral part.





# Soft palate: Nerve (Female slides only) and Blood supply.



## Motor

- All muscles of the palate are supplied by pharyngeal plexus **EXCEPT *Tensor Veli Palatini*** By a branch of mandibular nerve called (*nerve to medial pterygoid*).
- Motor innervation of soft palate can be tested by saying 'Ah', normally soft palate rises upward and the uvula moves backward in the middle.

## Sensory

- Glossopharyngeal nerve.
- Maxillary nerve through:
  - Greater palatine.
  - Lesser palatine.
  - Nasopalatine nerve

## Blood Supply

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

# Tongue

## Definition

-The tongue is a mass of striated muscle covered with mucous membrane.

1

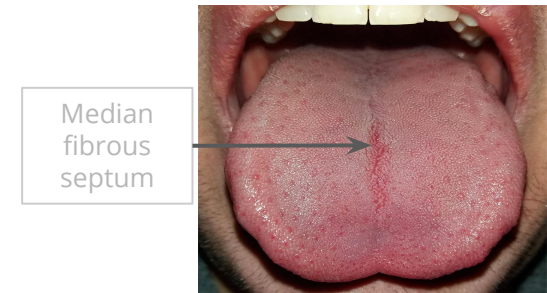
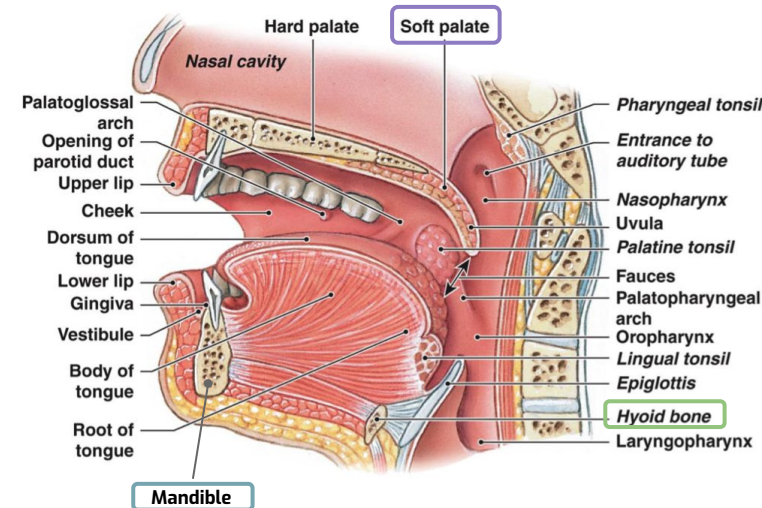
Its anterior 2/3 lies in the mouth, and its posterior 1/3 lies in the pharynx.

2

Muscles attach the tongue to:  
-the styloid process & **soft palate** above.  
-the **mandible** & the **hyoid bone** below.

3

The tongue is divided into right & left halves by a **median fibrous septum**.



# Tongue: Superior Surface

1

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

2

The apex of the sulcus projects backward and is marked by a small pit called ***foramen cecum***.

3

foramen cecum: It's an embryologic remnant which marks the site of the upper end of the thyroglossal duct.

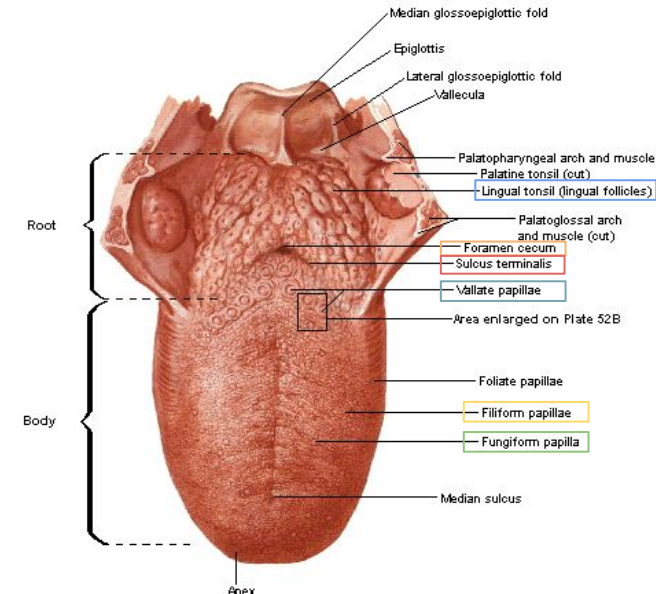
4

There are 3 types of papillae present on the upper surface of the anterior two thirds of the tongue:

- 1- **The filiform papillae.**
- 2- **The fungiform papillae.**
- 3- **The vallate papillae.**

5

The mucous membrane covering the posterior third of the tongue is **devoid** (clear) of papillae but has a nodular irregular surface caused by the presence of underlying lymph nodules, ***The lingual tonsil***.



**The posterior third has no papillae and only has lingual tonsil**

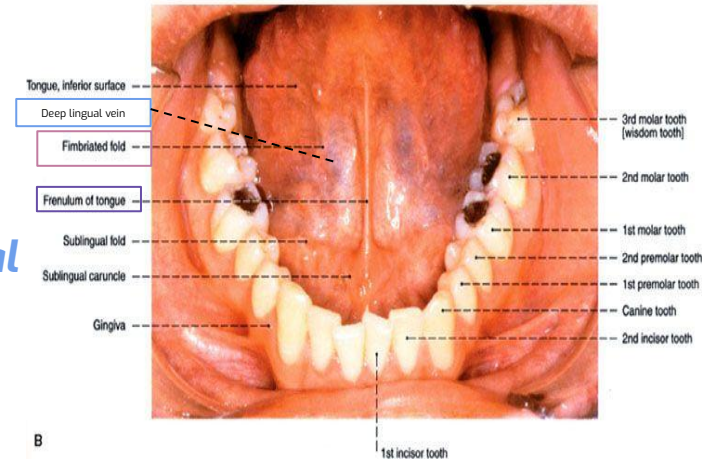
# Tongue: Inferior Surface

1 The mucous membrane on the inferior surface of the tongue is smooth and is reflected from the tongue to the floor of the mouth.

2 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 the tongue**.

3 On the lateral side of the frenulum, **the deep lingual vein** can be seen through the mucous membrane.

4 Lateral to the lingual vein, the mucous membrane forms a serrated fold called **the fimbriated fold**.



**Muscles of the tongue** are divided into two types:

1- Intrinsic muscles

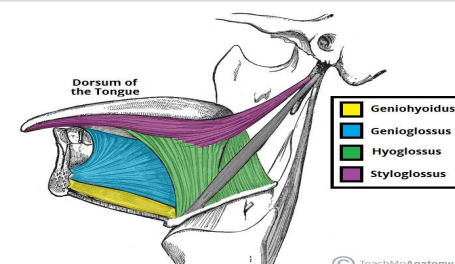
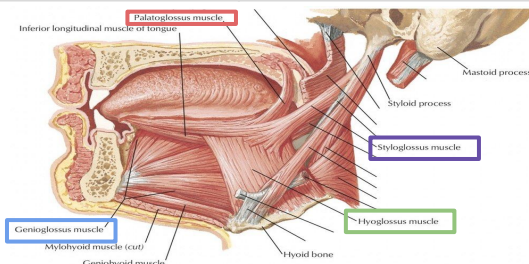
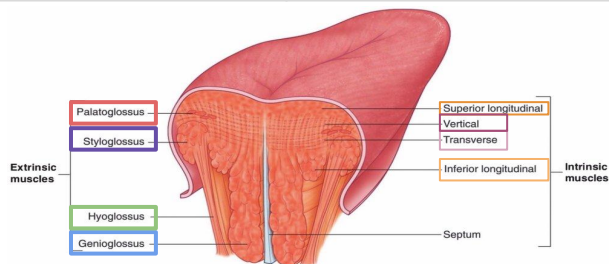
They are restricted to the tongue and are not attached to bone.

2- Extrinsic muscles

They are attached to bones and the soft palate.

# Tongue: Muscles

Muscle	Origin	Insertion	★ Nerve supply	★ Action
<b>Intrinsic muscles:</b> They are restricted to the tongue and are not attached to bone.				
1- <b>Superior</b> and <b>inferior longitudinal</b> 2- <b>Vertical</b> 3- <b>Transverse</b>	Median septum and submucosa	Mucus membrane	Hypoglossal	Alter the shape of the tongue
<b>Extrinsic muscles:</b> They are attached to bones and the soft palate.				
<b>Genioglossus</b>	Superior genial spine of mandible	Blends with other muscles of tongue	Hypoglossal nerve	Protrudes apex of tongue through mouth
<b>Hyoglossus</b>	Body and greater cornu of hyoid bone			Depresses tongue
<b>Styloglossus</b>	Styloid process of temporal bone			Draws tongue upward and backward
<b>Palatoglossus</b> <i>Muscle of the soft palate</i>	Palatine aponeurosis	Side of tongue	Pharyngeal plexus	Pulls root of tongue upward and backward, narrows oropharyngeal isthmus
<b>Chondroglossus</b>	---	---	---	---



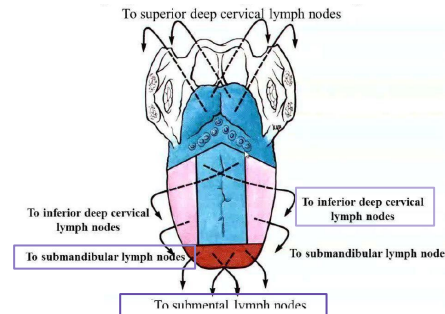
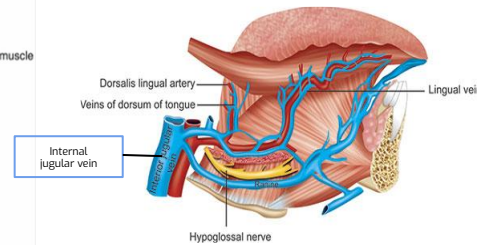
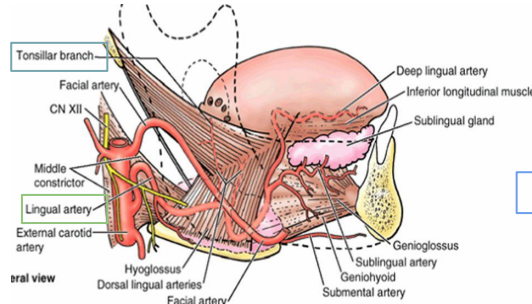
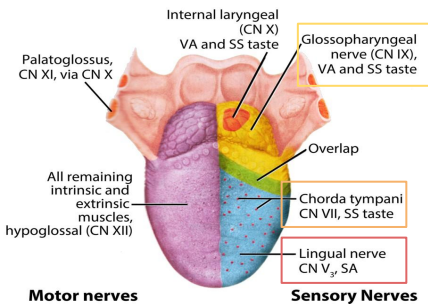
All muscles of the tongue are supplied by the hypoglossal nerve EXCEPT palatoglossus which is supplied by the pharyngeal plexus



# Tongue: Nerve and Blood supply

## Sensory innervation:

Part	General sensations from the mucous membrane:	Taste fibers:
Anterior $\frac{2}{3}$	supplied by <i>lingual nerve</i> .	carried in the <i>chorda tympani</i> of the facial nerve. (except the vallate papillae)
Posterior $\frac{1}{3}$	supplied by <i>Glossopharyngeal nerve</i> .	are carried by <i>Glossopharyngeal nerve</i> . (including the vallate papillae)



Blood supply:	Venous drainage:	★ Lymph drainage:
<ul style="list-style-type: none"> <li>Lingual artery.</li> </ul>	<ul style="list-style-type: none"> <li>The veins drain into the <b>internal jugular vein</b>.</li> </ul>	<ul style="list-style-type: none"> <li>The tip of the tongue drains into <b>submental lymph nodes</b></li> </ul>
<ul style="list-style-type: none"> <li>Tonsillar branch of the facial artery.</li> </ul>		<ul style="list-style-type: none"> <li>The remainder of the anterior <math>\frac{2}{3}</math> of the tongue drains into the <b>submandibular</b> and <b>deep cervical lymph nodes</b>.</li> </ul>
<ul style="list-style-type: none"> <li>Ascending pharyngeal artery.</li> </ul>		<ul style="list-style-type: none"> <li>The posterior <math>\frac{1}{3}</math> of the tongue drains into the <b>deep cervical lymph nodes</b>.</li> </ul>

# MCQ

Q1: The cheek forms the lateral wall of the vestibule and made of ..... Muscle

A: Tensor Veli Palatini

B: Buccinator

C: Levator Veli Palatini

D: Palatopharyngeus

Q2: The opening of parotid duct is located

A: Opposite the Lower second molar tooth

B: Opposite the upper second molar tooth

C: Opposite the lower second premolar tooth

D: Opposite the upper second premolar tooth

Q3: Which of the following muscles is supplied by the mandibular nerve

A: Tensor Veli Palatini

B: Levator Veli Palatini

C: Palatopharyngeus

D: Palatoglossus

Q4: Part of the tongue that doesn't possess papillae:

A: Anterior  $\frac{1}{3}$

B: Posterior  $\frac{2}{3}$

C: Anterior  $\frac{2}{3}$

D: Posterior  $\frac{1}{3}$

Q5: All muscles of the palate are supplied by pharyngeal plexus EXCEPT:

A: Levator veli palatini

B: Palatoglossus

C: Musculus Uvulae

D: Tensor Veli Palatini

Q6: The mucous membrane of the upper surface of the tongue can be divided by a V-shaped sulcus called

A: Sulcus terminalis

B: Foramen cecum

C: Lingual tonsil.

D: Median fibrous septum.

Answer key:

1 (B) , 2 (B) , 3 (A) , 4 (D) , 5 (D) , 6 (A)

# MCQ

**Q7: The palatine aponeurosis is a fibrous sheet attached to the Anterior border of the hard palate**

**A: True**

**B: False**

**C: -**

**D: -**

**Q8: The Mucous membrane covers the ..... surface of the soft palate**

**A: Upper**

**B: Lower**

**C: Both**

**D: Lateral**

**Q9: The nasopalatine nerve enters the palate through the**

**A: Foramen of scarpa**

**B: Greater palatine foramen**

**C: Lesser palatine foramen**

**D: Incisive foramen**

**Q10: Which one of the following nerves supplying the palatoglossus muscle?**

**A: Facial nerve**

**B: Pharyngeal plexus**

**C: Trigeminal nerve**

**D: optic nerve**

**Q11: Venous drainage of tongue:**

**A: Internal jugular vein**

**B: Superior vena cava**

**C: External carotid vein**

**D: Inferior vena cava**

**Q12: All of the following muscles are Extrinsic muscles of the tongue EXCEPT:**

**A: Styloglossus**

**B: Palatoglossus**

**C: Transverse**

**D: Hyoglossus**

Answer key:  
7(B) , 8(C) , 9(D) , 10(B), 11(A), 12(C)

# SAQ

**Q1: What are the functions of the GIT**

**Q2: The soft palate is composed of**

**Q3: Enumerate the extrinsic muscles of the tongue.**

**Q4: What arteries supply the soft palate.**

## Answers

**1: Ingestion, Absorption, Digestion, Defecation**

**2 : Mucous membrane, Palatine aponeurosis, Muscles, Nerves and vessels.**

**3 : Genioglossus, Hyoglossus, Styloglossus, Palatoglossus and Chondroglossus**

**4: 1-Greater & lesser palatine** branches of the maxillary artery.

**2-Ascending palatine** branch of the facial artery.

**3-Ascending pharyngeal** branch of the external carotid artery.

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- Abdulaziz Alsuhaime
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- Hesham Alsqabi
- Mohammed Aldehaim
- Mohamed Alquhidan
- Mubarak Alanazi
- Osama Alharbi
- Saad Aldohaim
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