



Oral Cavity, Palate And Tongue

Gastrointestinal block-Anatomy-Lecture 2

Editing file



Objectives

 **At the end of the lecture, students 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).

Color guide :

Only in boys slides in **Green**

Only in girls slides in **Purple**
important in **Red**

Notes in **Grey**



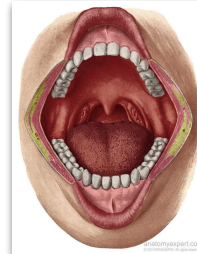
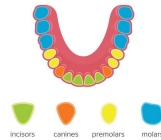
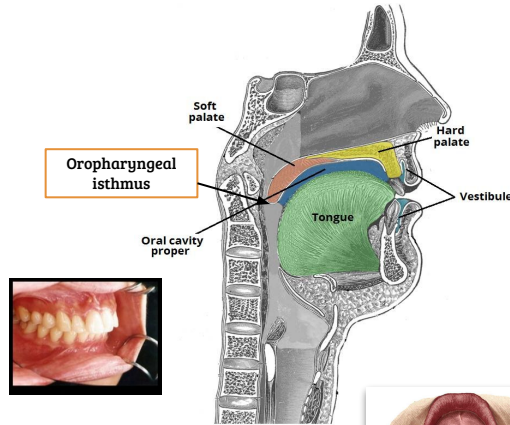
Oral Cavity

- The mouth extends from lips to **oropharyngeal isthmus** (the junction between mouth & the pharynx).
- Is bounded: Above by the soft palate and the palatoglossal folds, Below by the dorsum of the tongue.

it divided into

Vestibule:

- It lies between gums & teeth **internally** and, Lips & cheeks **externally**.
- 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**.
- 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**.



Mouth cavity proper:

- Which lies within the alveolar arches, gums, and teeth
- 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

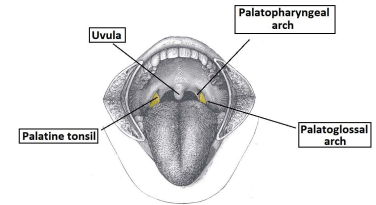
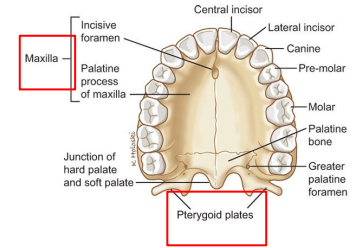
It forms the roof of the mouth and divided into two parts:

The Hard (Bony) palate in front.

- is formed by (4 bones) separated by **cruciform suture**:
 - 2 Palatine processes of the **maxillae anteriorly**
 - 2 Horizontal **plates of palatine bones posteriorly**
- It is Bounded Laterally by the alveolar arches of the maxilla.
- The under surface of the hard palate is covered with **mucoperiosteum**. It possesses a **median elevated ridge**. On either side of the ridge the mucous membrane shows **transverse corrugations**
- The hard palate forms the floor of the nasal cavities.

The Soft palate behind.

- it is a mobile fold **formed of a bag** of mucous membrane **filled with striated muscles**.
- It is attached to the posterior border of the hard palate.
- Its free posterior border is a conical projection called the **uvula**.



Composed of

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

Sensory Innervation

1. Maxillary nerve through:
 - **Greater and Lesser palatine nerve from maxillary nerve** enter the palate through greater and lesser palatine foramina. (also the vessels)
 - **Nasopalatine nerve is a branch of the maxillary nerve** enters the palate through the incisive foramen. (also the vessels).
2. **Glossopharyngeal nerve**.

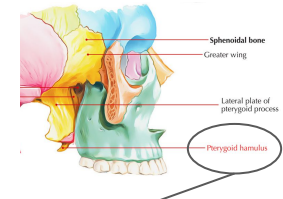
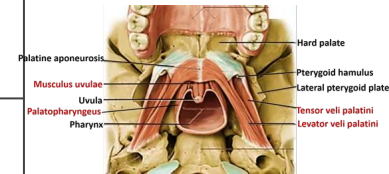
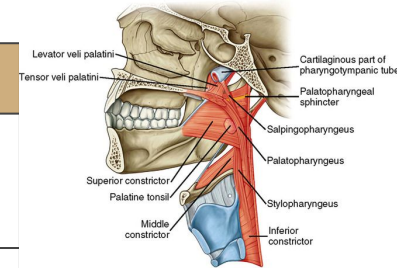
Blood supply

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



Palate: Muscle of the soft palate

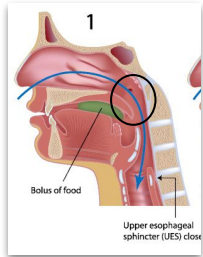
Muscle (Pair)	Origin*	Insertion*	Nerve supply	Action
Tensor veli palatini	Spine of sphenoid, auditory tube	With muscle of other side, forms palatine aponeurosis	Nerve to medial pterygoid from mandibular n.	When muscles contract: tightened and Tenses the soft palate
Levator veli palatini	Petrous part of temporal bone, auditory tube	Palatine aponeurosis	Pharyngeal plexus Formed by branches from <ul style="list-style-type: none"> glossopharyngeal nerve vagus nerve cranial part of accessory nerve superior cervical ganglion sympathetic fibers 	Raises soft palate
Palato-glossus	Palatine aponeurosis	Side of tongue		Pulls root of tongue upward and backward, narrows oropharyngeal isthmus
Palato-pharyngeus	Palatine aponeurosis	Posterior border of thyroid cartilage		Elevates wall of pharynx, pulls palato-pharyngeal folds medially
Musculus uvulae	Posterior border of hard palate	Mucous membrane of uvula		Elevates uvula (can be tested by saying 'Ah', normally uvula moves backward in the middle line, if it deviated to a side. that indicates a lesion in the nerve supply in the opposite side)



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**.

*Males' doctor said origin and insertion are not important

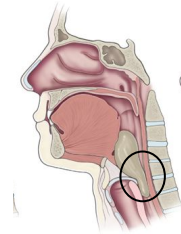
Palate : Movement of the soft palate



1

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

Soft palate is raised by the contraction of the levator veli palatini and Palatopharyngeus.
become tenes by Tensor veli palatini



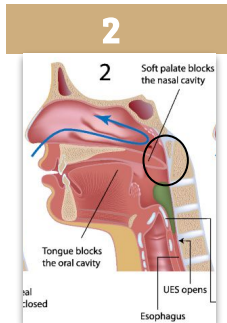
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The palatopharyngeus muscles on both sides also contract so that the palatopharyngeal arches are pulled medially, like side curtains.

By this means the nasal part of the pharynx is closed off from its oral part

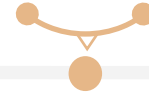


Pharyngeal isthmus: (It is the communicating between nasal and oral parts of the pharynx) It is closed by raising the soft palate upward.

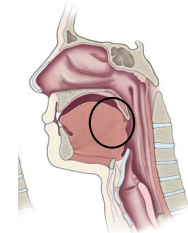


2

At the same time, the posterior (superior) wall of the pharynx is pulled forward by **superior constrictor muscle**



4



Tongue:

1

is a mass of striated muscle covered with mucous membrane.

2

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

3

Muscles attach the tongue to :

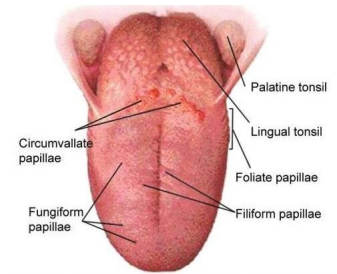
- styloid process & soft palate **above**
- mandible & the hyoid bone **below**

4

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

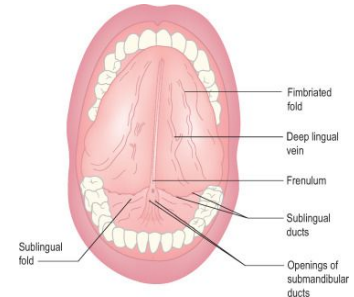
Upper surface

- Can be divided by The **sulcus terminalis** V-shaped sulcus. into
 - Anterior 2/3 or oral part and Posterior 1/3 or pharyngeal part
- The apex of the sulcus projects backward and is marked by a small pit, the **foramen cecum**. It's an embryologic remnant which marks the site of the upper end of the **thyroglossal duct**
- Three types of papillae are present on the upper surface of the anterior two thirds of the tongue:
 - filiform papillae
 - fungiform papillae
 - vallate papillae.
- The mucous membrane covering the posterior third of the tongue is devoid 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.**



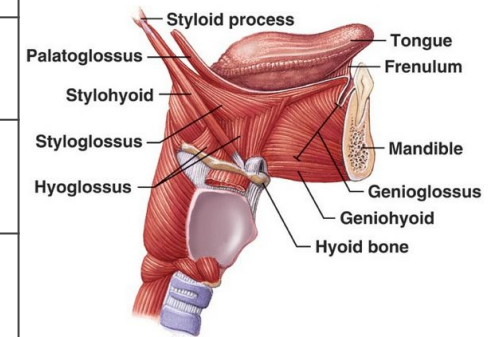
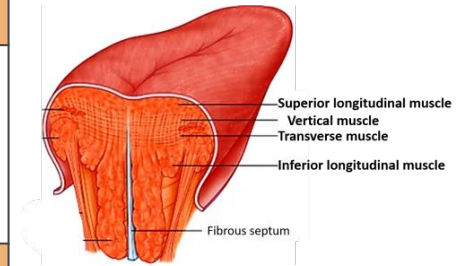
Inferior surface

- 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**. (Tongue-tie is a condition where tongue movement is restricted due to a short frenulum, baby may have difficulties breastfeeding and speaking.)
- On the lateral side of the frenulum, the **deep lingual vein** can be seen through the mucous membrane.
- Lateral to the lingual vein, the mucous membrane forms a serrated fold called the **fimbriated fold**.



Tongue: Muscles

Muscle (Pair)	Origin*	Insertion*	Nerve supply	Action
Intrinsic Muscles: are not attached to bone				
<ul style="list-style-type: none"> • Superior & inferior Longitudinal • Transverse • Vertical 	Median septum and submucosa	Mucous membrane	Hypoglossal nerve	Alter the shape of the tongue while it lies within the mouth.
Extrinsic Muscles: are attached to bones and soft palate				
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			Depresses tongue
Styloglossus	Styloid process of temporal bone			Draws tongue upward and backward
Palato-glossus	Palatine aponeurosis	Side of tongue	Pharyngeal plexus	Pulls root of tongue upward and backward, narrows oropharyngeal isthmus



*Males' doctor said origin and insertion are not important

Tongue Supply :

Blood supply

Venous drainage

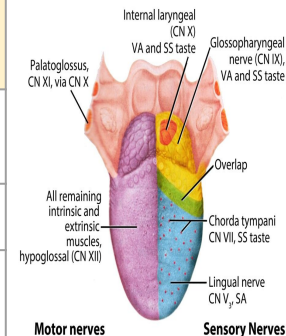
- It is supplied by:
 1. lingual artery, from external carotid artery. **its branch: Deep lingual artery, sublingual artery and dorsal lingual arteries**
 2. Tonsillar branch of the facial artery,
 3. Ascending pharyngeal artery.
- The veins drain into the internal jugular vein

Lymphatic drainage

- The tip of the tongue drain into submental lymph nodes
- The remainder of the anterior 2/3 drain into
 - submandibular lymph nodes
 - deep cervical lymph nodes.
- Posterior 1/3 drain into deep cervical lymph nodes.

Sensory Innervation

Part	General Sensation (from mucous membrane)	Taste Sensation (from taste buds)
Anterior 2/3	Lingual nerve. (branch of the 5th CN)	Chorda Tympani of the (Facial) nerve. EXCEPT the vallate papillae
Posterior 1/3	Glossopharyngeal nerve.	Glossopharyngeal nerve. (including the vallate papillae)
Roots of the tongue and epiglottis	Vagus nerve	Vagus nerve



QUIZ



Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8
D	C	C	D	A	C	A	A

Q1: Which of the following muscles is NOT innervated by the hypoglossal nerve?

- A. genioglossus
- B. hyoglossus
- C. styloglossus
- D. palatoglossus

Q2: Which one of the following is not part of Pharyngeal plexus :

- A. glossopharyngeal nerve
- B. vagus nerve
- C. Abducent nerve
- D. superior cervical ganglion

Q3: Which of these is correct

- A. 7th CN carries only, taste sensation from the Anterior half of the tongue
- B. 9th CN carries only, taste sensation from the posterior third of the tongue.
- C. 5th CN carries only general sensation from the anterior two-thirds of the tongue
- D. 9th CN carries general & taste sensation from the posterior half of the tongue

Q4: which muscle of these forms the palatine aponeurosis

- A. Tensor tympani
- B. Levator veli palatini
- C. Palato-pharyngeus
- D. Tensor palatini

Q5: The tip of the tongue drain into.....lymph nodes

- A. submental
- B. submandibular
- C. deep cervical lymph
- D. neck

Q6: Opening of the parotid duct located in

- A. Opposite the lower second molar tooth
- B. Opposite the upper last molar tooth
- C. Opposite the upper second molar tooth
- D. There is no opening :(

Q7: Nasopalatine nerves enters the palate through

- A. incisive foramen
- B. cecum foramen
- C. greater palatine foramen
- D. lesser palatine foramen

Q8: vallate papillae is innervated by

- A. glossopharyngeal nerve
- B. vagus nerve
- C. Lingual nerve branch of the 5th CN
- D. Facial nerve

Members board



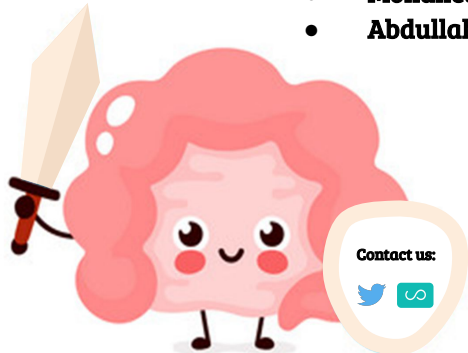
Team leaders



Abdulrahman Shadid

Boys team:

- **Mohammed Al-huqbani**
- **Salman Alagla**
- **Ziyad Al-jofan**
- **Ali Aldawood**
- **Khalid Nagshabandi**
- **Sameh nuser**
- **Abdullah Basamh**
- **Alwaleed Alsaleh**
- **Mohaned Makkawi**
- **Abdullah Alghamdi**



• **Ateen Almutairi**

Girls team :

- **Ajeed Al Rashoud**
- **Taif Alotaibi**
- **Noura Al Turki**
- **Amirah Al-Zahrani**
- **Alhanouf Al-haluli**
- **Sara Al-Abdulkarem**
- **Renad Al Haqbani**
- **Nouf Al Humaidhi**
- **Jude Al Khalifah**
- **Nouf Al Hussaini**
- **Danah Al Halees**
- **Rema Al Mutawa**
- **Maha Al Nahdi**
- **Razan Al zohaifi**
- **Ghalia Alnufaei**