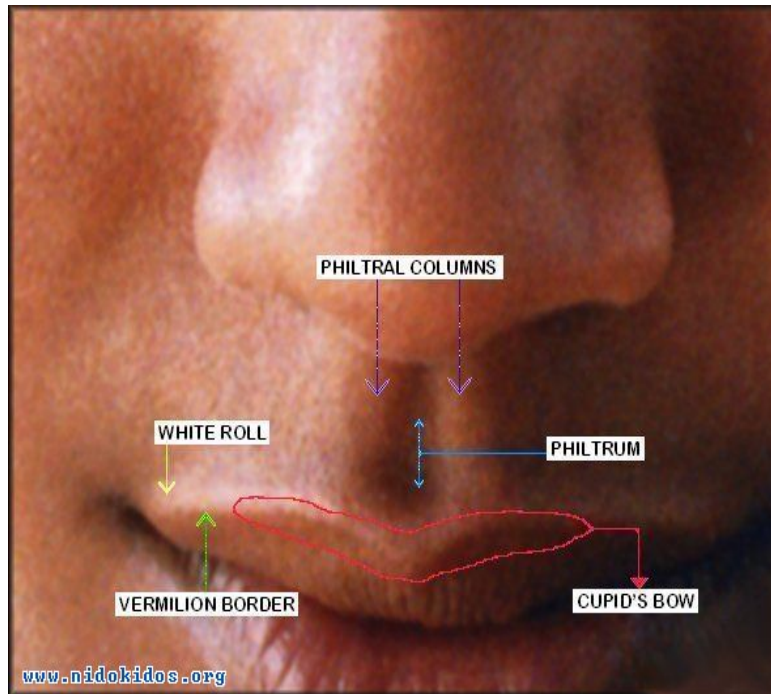


The Digestive System in the Head and Neck 1

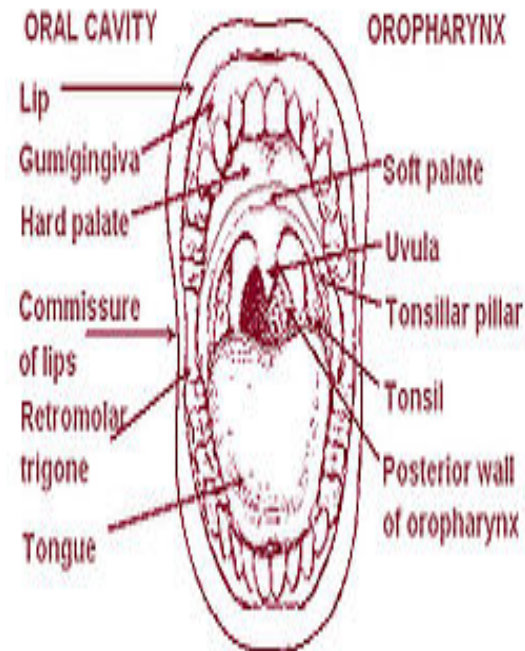
The Mouth

- The Lips
- The lips are two fleshy folds that surround the oral orifice
- They are covered on the outside by skin and are lined on the inside by mucous membrane
- the substance of the lips is made up by the orbicularis oris muscle and the muscles that radiate from the lips into the face
- Also included are the labial blood vessels and nerves, connective tissue, and many small salivary glands.
- The philtrum is the shallow vertical groove seen in the midline on the outer surface of the upper lip. Median folds of mucous membrane—the labial frenulae—connect the inner surface of the lips to the gums.



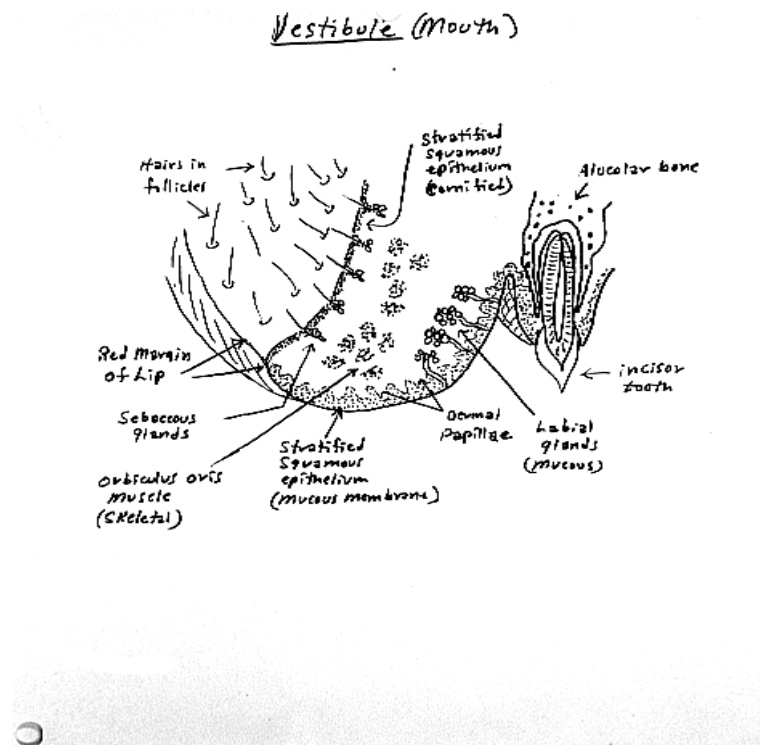
The Mouth Cavity

- The mouth extends from the lips to the pharynx
- The entrance into the pharynx, the oropharyngeal isthmus, is formed on each side by the palatoglossal fold
- The mouth is divided into the vestibule and the mouth cavity proper.



Vestibule

- The vestibule lies between the lips and the cheeks externally and the gums and the teeth internally
- This slitlike space communicates with the exterior through the oral fissure between the lips
- when the jaws are closed, it communicates with the mouth proper behind the third molar tooth on each side.
- The vestibule is limited above and below by the reflection of the mucous membrane from the lips and cheeks to the gums.
- The lateral wall of the vestibule is formed by the cheek, which is made up by the buccinator muscle and is lined with mucous membrane.
- The tone of the buccinator muscle and that of the muscles of the lips keeps the walls of the vestibule in contact with one another
- The duct of the parotid salivary gland opens on a small papilla into the vestibule opposite the upper second molar tooth



Mouth Proper

The mouth proper has a roof and a floor.

The roof of the mouth is formed by the hard palate in front and the soft palate behind

The floor is formed largely by the anterior two thirds of the tongue and by the reflection of the mucous membrane from the sides of the tongue to the gum of the mandible

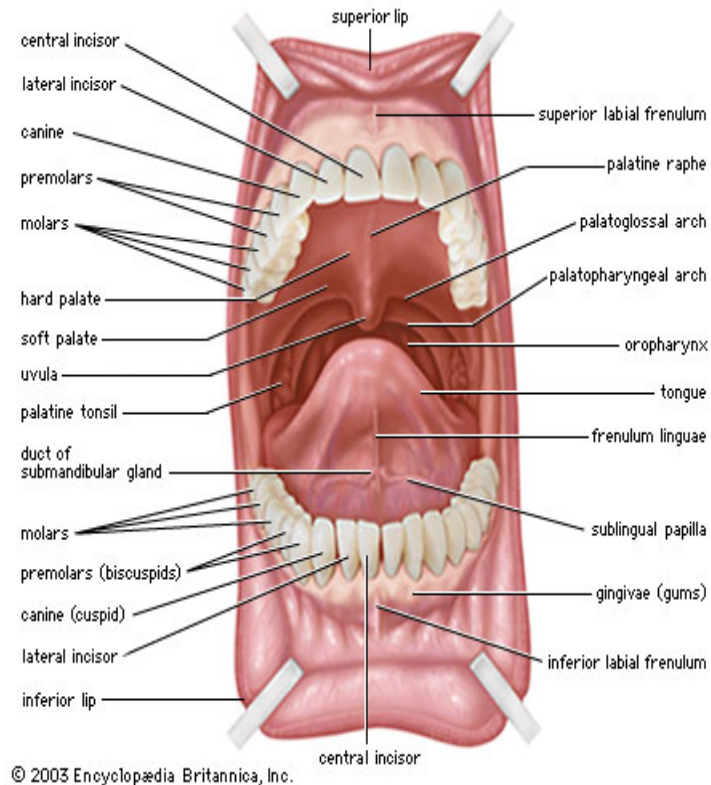
fold of mucous membrane called the frenulum of the tongue connects the undersurface of the tongue in the midline to the floor of the mouth

Lateral to the frenulum, the mucous membrane forms a fringed fold, the plica fimbriata

The submandibular duct of the submandibular gland opens onto the floor of the mouth on the summit of a small papilla on either side of the frenulum of the tongue

The sublingual gland projects up into the mouth, producing a low fold of mucous membrane, the sublingual fold

Numerous ducts of the gland open on the summit of



Mucous Membrane of the Mouth

- In the vestibule the mucous membrane is tethered to the buccinator muscle by elastic fibers in the submucosa
- prevent redundant folds of mucous membrane from being bitten between the teeth when the jaws are closed
- The mucous membrane of the gingiva, or gum, is strongly attached to the alveolar periosteum.

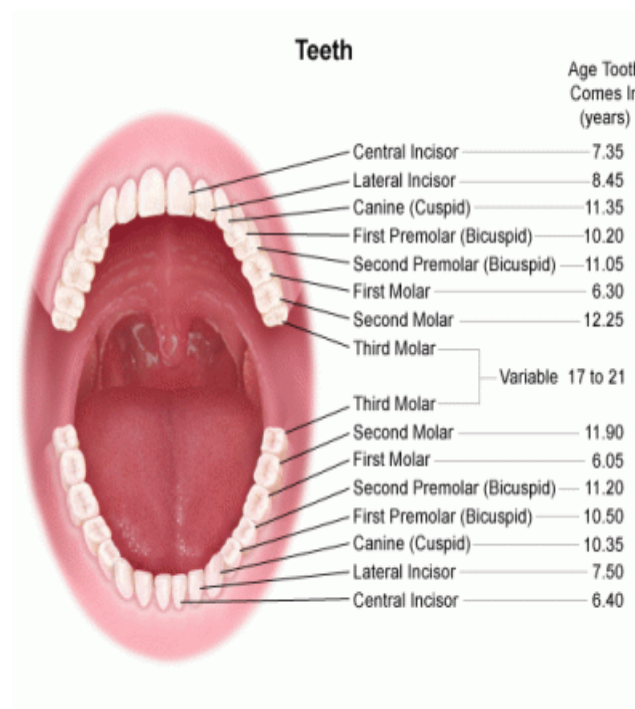
Sensory Innervation of the Mouth

- Roof: The greater palatine and nasopalatine nerves from the maxillary division of the trigeminal nerve
- Floor: The lingual nerve (common sensation), a branch of the mandibular division of the trigeminal nerve.
- The taste fibers travel in the chorda tympani nerve, a branch of the facial nerve.
- Cheek: The buccal nerve, a branch of the mandibular division of the trigeminal nerve (the buccinator muscle is innervated by the buccal branch of the facial nerve)

The Teeth

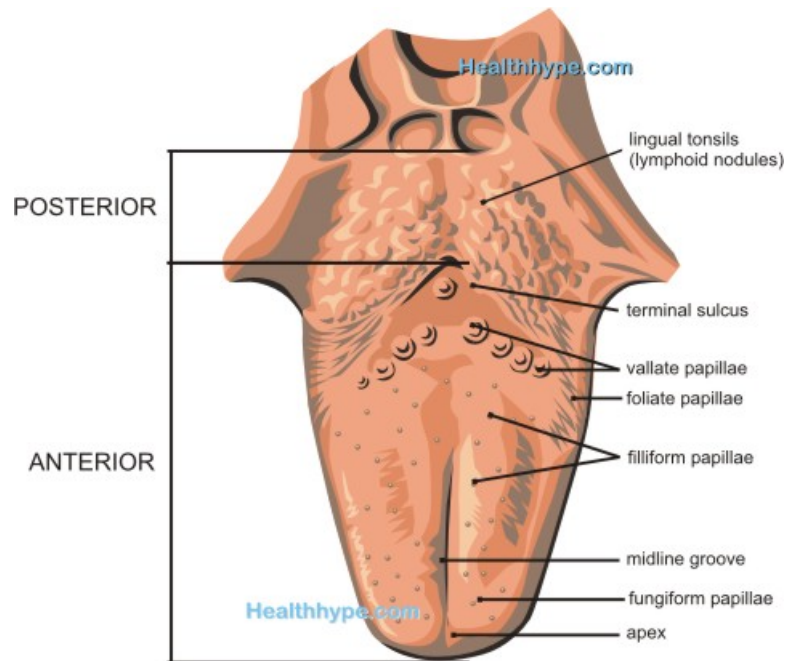
- The **gingivae (gums)** are specialized regions of the oral mucosa that surround the teeth and cover adjacent regions of the alveolar bone.
- Deciduous Teeth
- There are 20 deciduous teeth: four incisors, two canines, and four molars in each jaw
- They begin to erupt about 6 months after birth and have all erupted by the end of 2 years.
- The teeth of the lower jaw usually appear before those of the upper jaw.

- Permanent Teeth
- There are 32 permanent teeth: four incisors, two canines, four premolars, and six molars in each jaw
- They begin to erupt at 6 years of age
- The last tooth to erupt is the third molar, which may happen between the ages of 17 and 30
- The teeth of the lower jaw appear before those of the upper jaw.



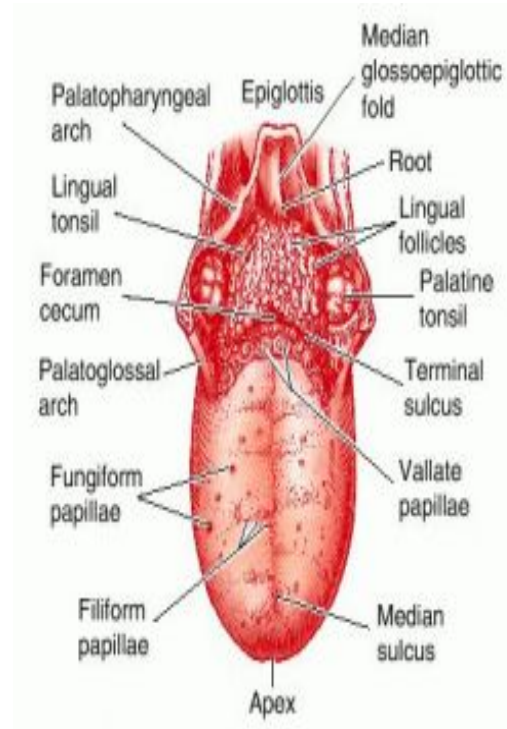
The Tongue

- The tongue is a mass of striated muscle covered with mucous membrane
- The muscles attach the tongue to the styloid process and the soft palate above and to the mandible and the hyoid bone below
- The tongue is divided into right and left halves by a median fibrous septum.

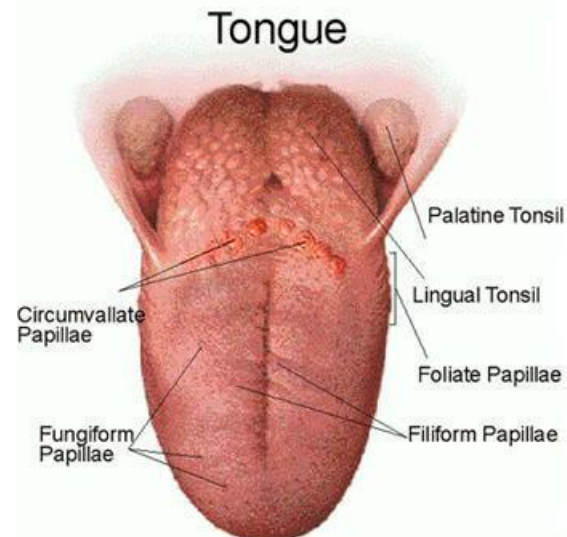


Mucous Membrane of the Tongue

- The mucous membrane of the upper surface of the tongue can be divided into anterior and posterior parts 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 apex of the sulcus projects backward and is marked by a small pit, the foramen cecum
- the foramen cecum is an embryologic remnant and marks the site of the upper end of the thyroglossal duct

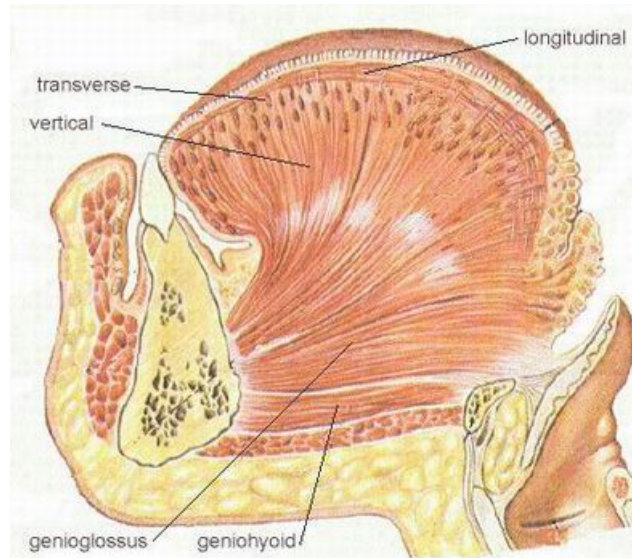


- Three types of papillae are present on the upper surface of the anterior two thirds of the tongue: the filiform papillae, the fungiform papillae, and the vallate papillae.
- The mucous membrane covering the posterior third of the tongue is devoid of papillae but has an irregular surface caused by the presence of underlying lymph nodules, the lingual tonsil.
- The mucous membrane on the inferior surface of the tongue is reflected from the tongue to the floor of the mouth
- In the midline anteriorly, the undersurface of the tongue is connected to the floor of the mouth by a fold of mucous membrane, the frenulum of the tongue
- 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 fringed fold called the plica fimbriata



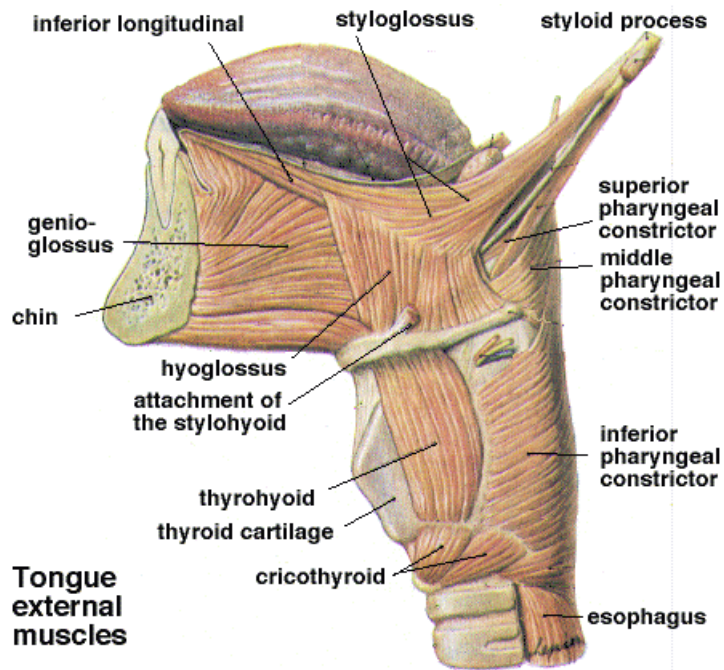
Muscles of the Tongue

- The muscles of the tongue are divided into two types: intrinsic and extrinsic
- Intrinsic Muscles
- These muscles are confined to the 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



Extrinsic Muscles

- These muscles are attached to bones and the soft palate
- They are the genioglossus (Superior genial spine of mandible), Protrudes apex of tongue through mouth
- the hyoglossus (Body and greater cornu of hyoid bone), Depresses tongue
- the styloglossus (Styloid process of temporal bone), Draws tongue upward and backward
- and the palatoglossus (Palatine aponeurosis), Pulls roots of tongue upward and backward, narrows oropharyngeal isthmus
- Insertion : Blends with each other, the palatoglossus inserts at Side of tongue
- Nerve supply: Hypoglossal nerve



Movements of the Tongue

- Protrusion: The genioglossus muscles on both sides acting together
- Retraction: Styloglossus and hyoglossus muscles on both sides acting together
- Depression: Hyoglossus muscles on both sides acting together
- Retraction and elevation of the posterior third: Styloglossus and palatoglossus muscles on both sides acting together
- Shape changes: Intrinsic muscles

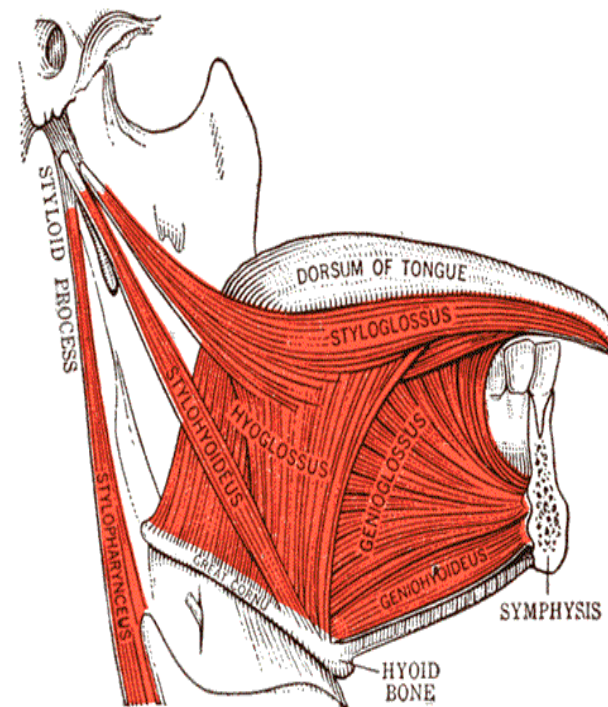
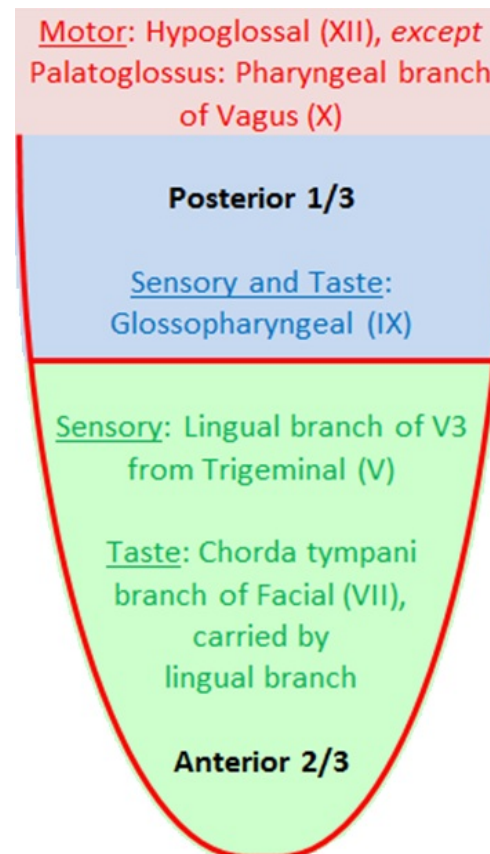


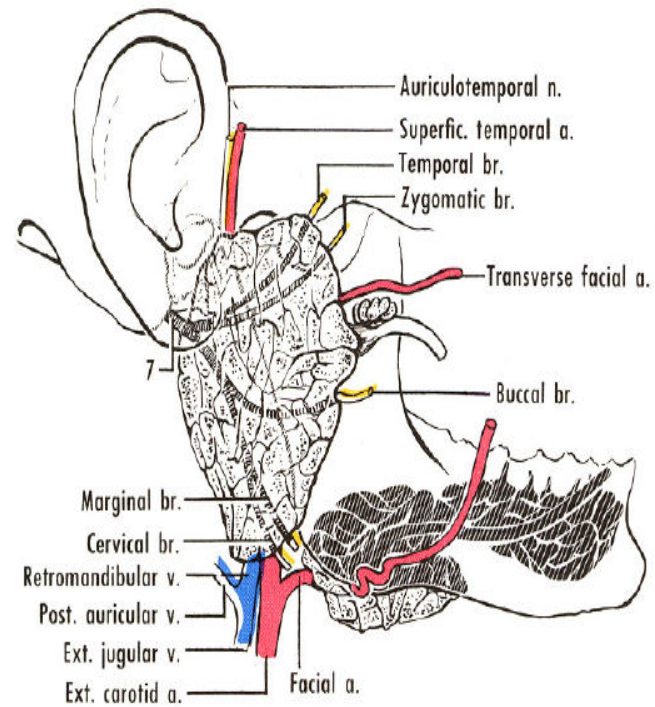
FIG. 89. SOME OF THE MUSCLES OF THE TONGUE. Viewed from the right side.

- Sensory Innervation
- Anterior two thirds: Lingual nerve branch of mandibular division of trigeminal nerve (general sensation) and chorda tympani branch of the facial nerve (taste)
- Posterior third: Glossopharyngeal nerve (general sensation and taste)
- Blood Supply
- The lingual artery, the tonsillar branch of the facial artery, and the ascending pharyngeal artery supply the tongue
- The veins drain into the internal jugular vein.
- Lymph Drainage
- Tip: Submental lymph nodes
- Sides of the anterior two thirds: Submandibular and deep cervical lymph nodes
- Posterior third: Deep cervical lymph nodes



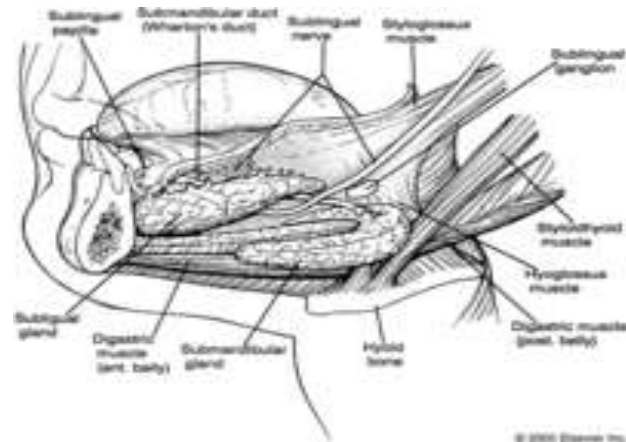
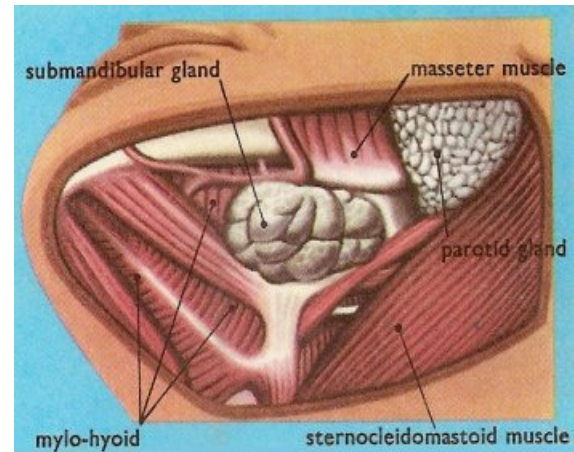
The Salivary Glands

- Parotid Gland
- The parotid gland is the largest salivary gland and is composed mostly of serous acini
- lies in a deep hollow below the external auditory meatus, behind the ramus of the mandible and in front of the sternocleidomastoid muscle
- The facial nerve divides the gland into superficial and deep lobes
- The parotid duct emerges from the anterior border of the gland and passes forward over the lateral surface of the masseter.
- It enters the vestibule of the mouth upon a small papilla opposite the upper second molar tooth
- Parasympathetic secretomotor supply arises from the glossopharyngeal nerve
- The nerves reach the gland via the tympanic branch, the lesser petrosal nerve, the otic ganglion, and the auriculotemporal nerve.



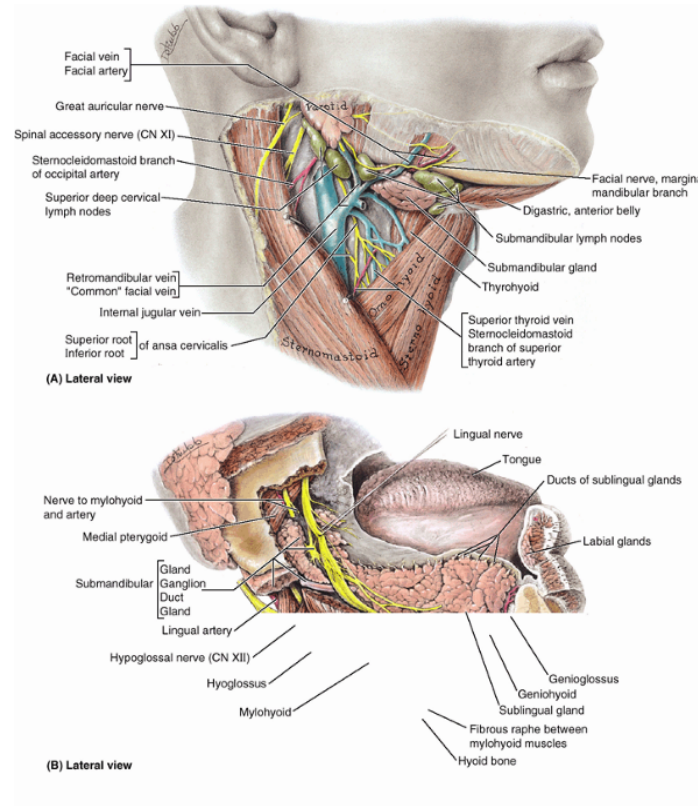
Submandibular Gland

- The submandibular gland consists of a mixture of serous and mucous acini
- It lies beneath the lower border of the body of the mandible
- divided into superficial and deep parts by the mylohyoid muscle
- The deep part of the gland lies beneath the mucous membrane of the mouth on the side of the tongue.
- The submandibular duct emerges from the anterior end of the deep part of the gland and runs forward beneath the mucous membrane of the mouth.
- It opens into the mouth on a small papilla, which is situated at the side of the frenulum of the tongue
- Parasympathetic secretomotor supply is from the facial nerve via the chorda tympani, and the submandibular ganglion
- The postganglionic fibers pass directly to the gland.



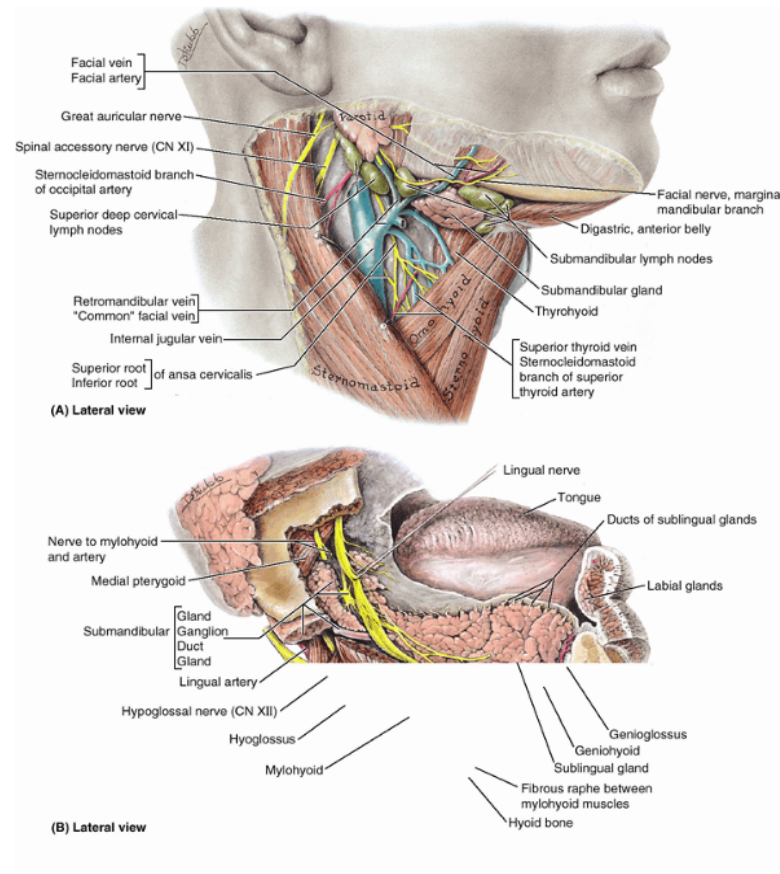
Anatomical relations

- Parotid
- Lies in the parotid bed that is formed by:
 - the sternocleidomastoid muscle behind;
 - the ramus of mandible in front;
 - superiorly, the base of the trench is formed by the external acoustic meatus and the posterior aspect of the zygomatic arch.
- The parotid duct passes anteriorly across the external surface of the masseter muscle and then turns medially to penetrate the buccinator muscle of the cheek and open into the oral cavity adjacent to the crown of the second upper molar tooth
- The parotid gland encloses the external carotid artery, the retromandibular vein, and the origin of the extracranial part of the facial nerve [VII].



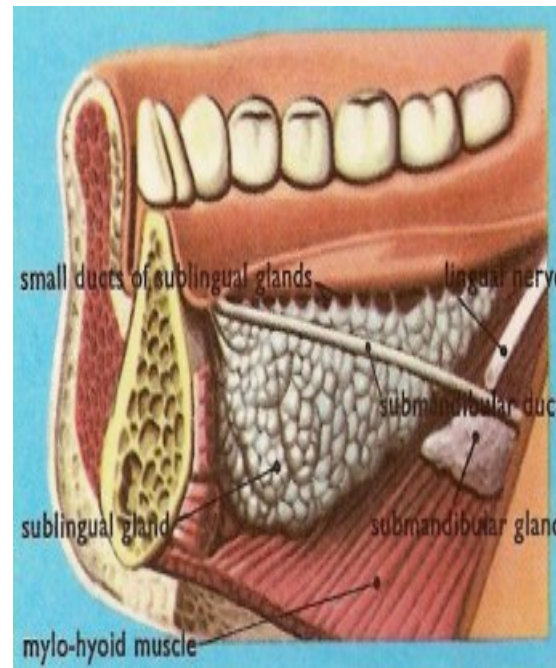
Submandibular gland

- the larger arm of the hook is directed forward in the horizontal plane below the mylohyoid muscle and is therefore outside the boundaries of the oral cavity-this larger superficial part of the gland is directly against a shallow impression on the medial side of the mandible (submandibular fossa) inferior to the mylohyoid line;
- the smaller arm of the hook (or deep part) of the gland loops around the posterior margin of the mylohyoid muscle to enter and lie within the floor of the oral cavity where it is lateral to the root of the tongue on the lateral surface of the hyoglossus muscle.
- The lingual nerve loops under the submandibular duct, crossing first the lateral side and then the medial side of the duct, as the nerve descends anteromedially through the floor of the oral cavity and then ascends into the tongue.

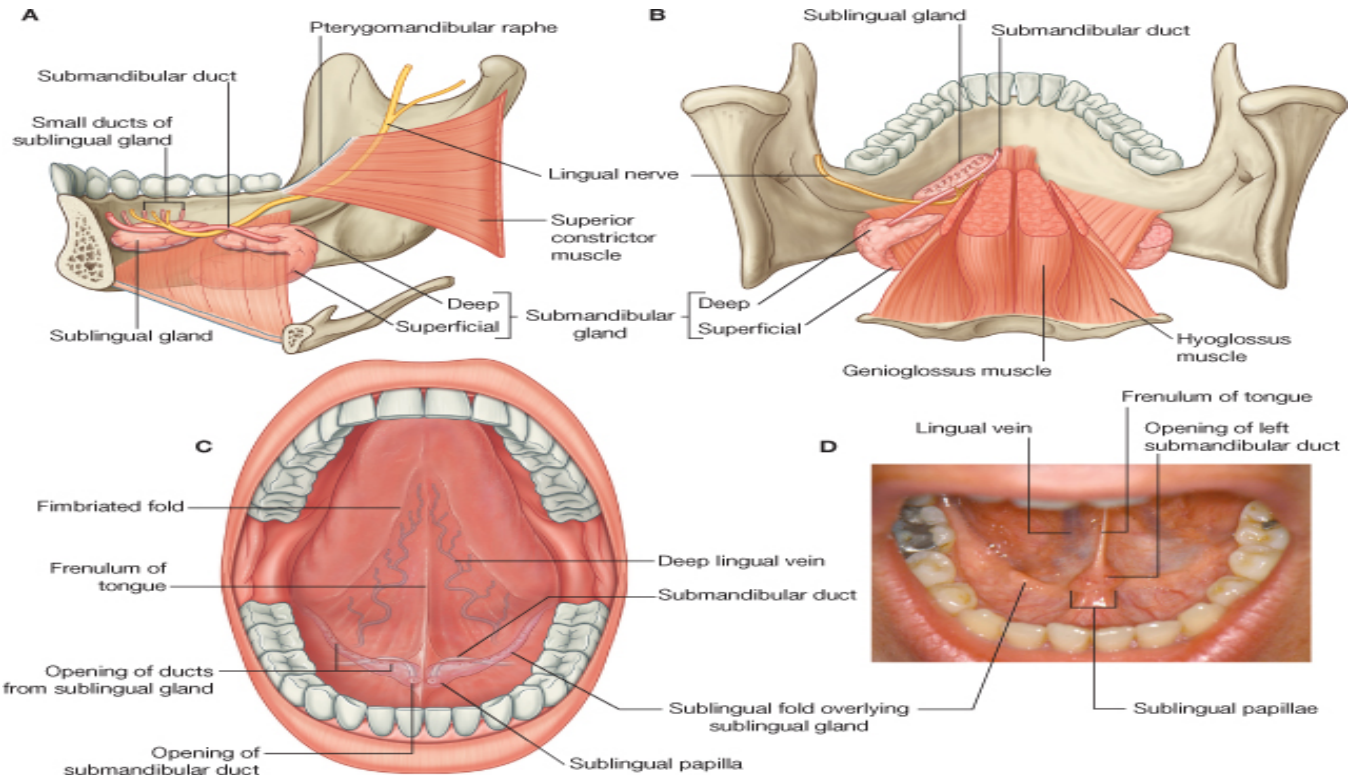


Sublingual Gland

- The sublingual gland lies beneath the mucous membrane (sublingual fold) of the floor of the mouth, close to the frenulum of the tongue
- It has both serous and mucous acini, with the latter predominating.
- The sublingual ducts (8 to 20 in number) open into the mouth on the summit of the sublingual fold
- Parasympathetic secretomotor supply is from the facial nerve via the chorda tympani, and the submandibular ganglion. Postganglionic fibers pass directly to the gland.



Sublingual and submandibular gland



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