

Submandibular Region

★ It is the **region between** the mandible and hyoid bone.

★ **Contents:**

I. Muscles: Suprahyoid muscles, extrinsic muscles of tongue except palato-glossus and styloid muscles except stylopharyngeus.

II. Nerves: Lingual, hypoglossal and nerve to mylohyoid.

III. Blood vessels: Lingual and facial blood vessels.

IV. Glands: Submandibular and sublingual salivary glands.

V. Ligaments: Stylohyoid ligament.

VI. Ganglion: Submandibular ganglion.

Suprahyoid muscles

I) Digastric muscle:

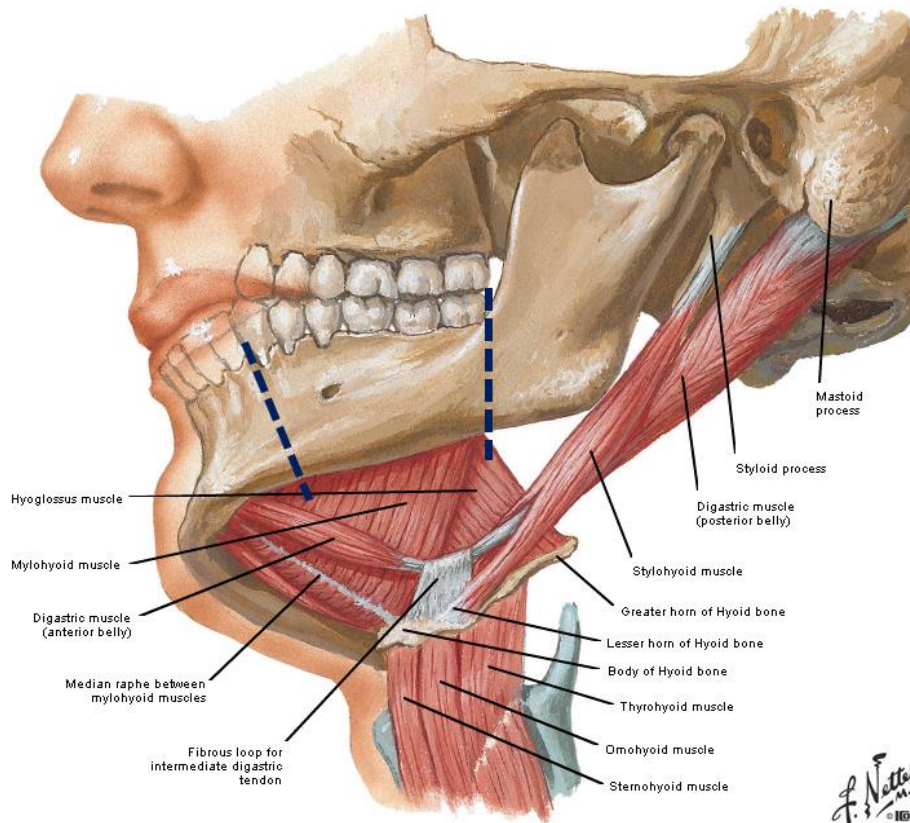
- It consists of 2 bellies connected together by an intermediate tendon which is attached to hyoid bone by a strong fibrous loop.
- **Origin:**
 - **Anterior belly:** from digastric fossa of mandible.
 - **Posterior belly:** from digastric fossa (mastoid notch) on the medial surface of mastoid process.
- **Insertion:** Into intermediate tendon.
- **Nerve supply:**
 - **Anterior belly:** Nerve to mylohyoid (from inferior alveolar nerve which is branch from mandibular nerve which is the nerve of 1st pharyngeal arch).
 - **Posterior belly:** Facial nerve (nerve of 2nd pharyngeal arch)

- **Action:**

a- Depression of the mandible, when the **hyoid bone is fixed**.

b- Elevation of hyoid bone in swallowing, when the **mandible is fixed**.

Floor of Mouth - Musculature
Lateral, Slightly Inferior View



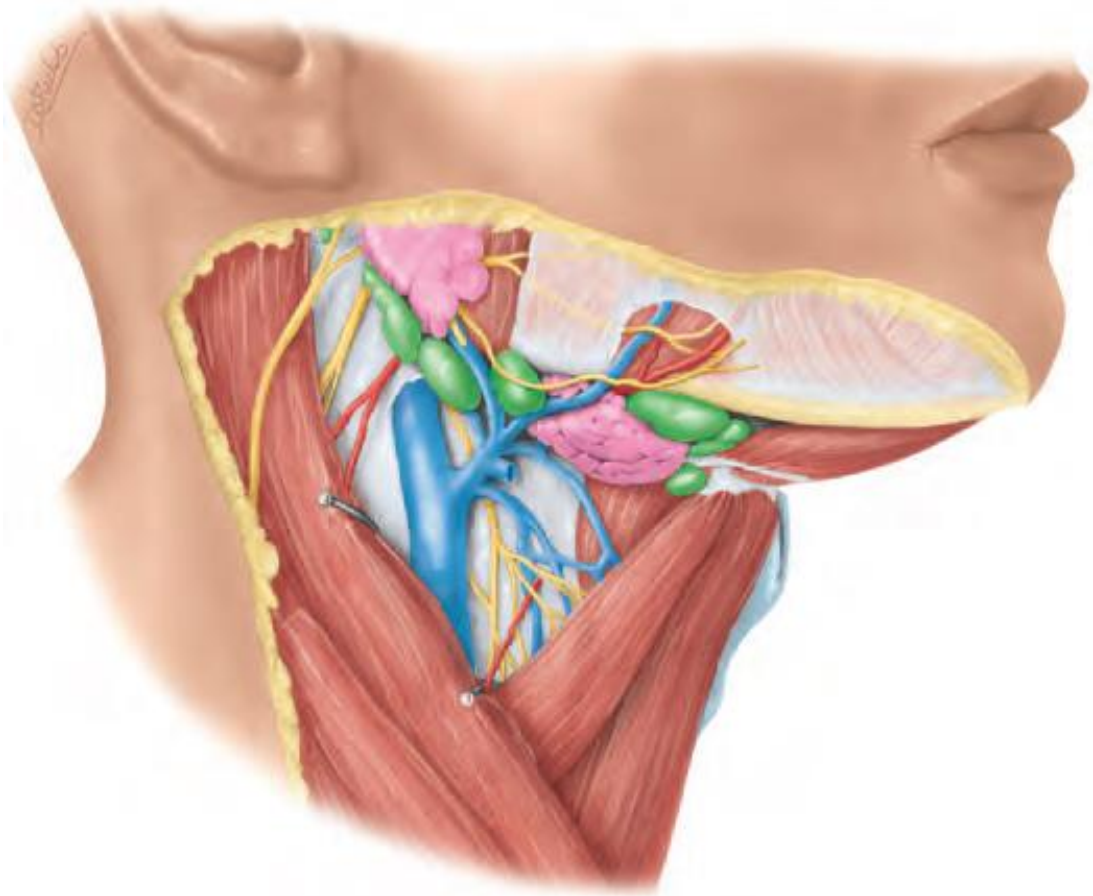
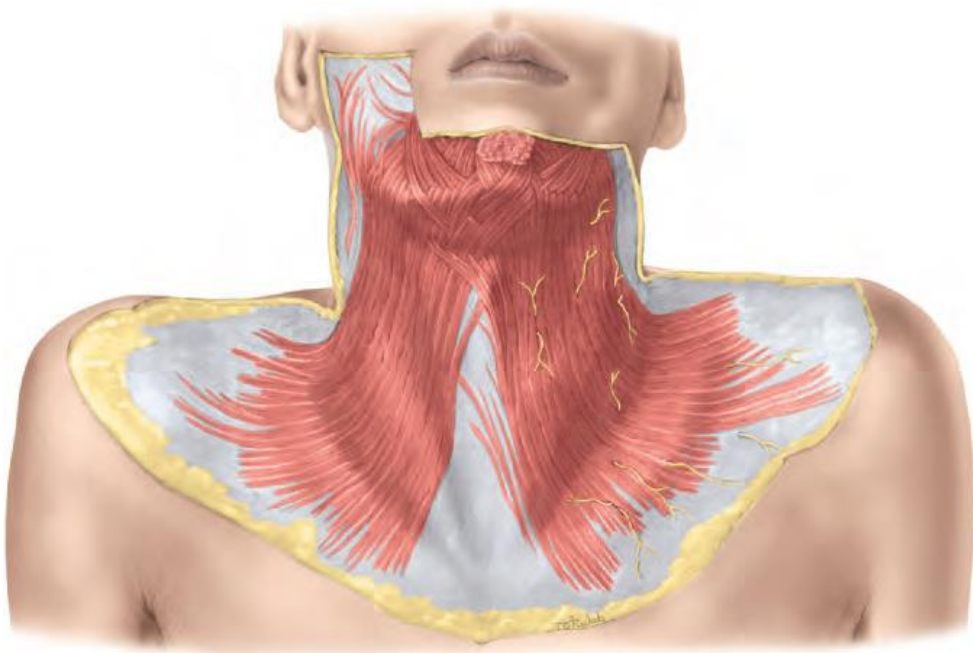
- **Relations:**

A) Relations of anterior belly:

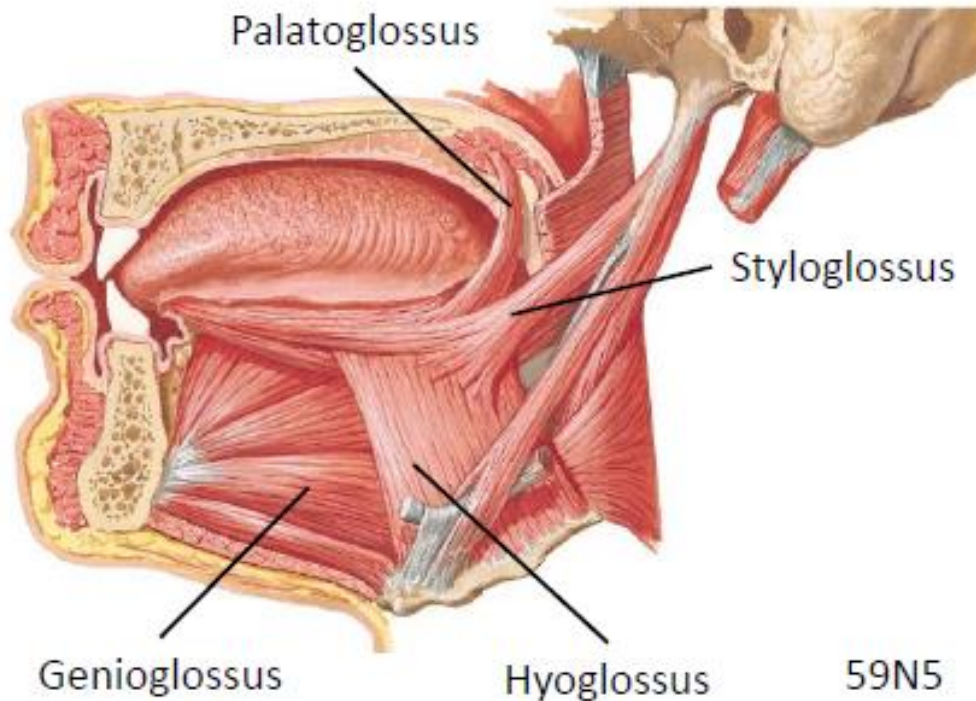
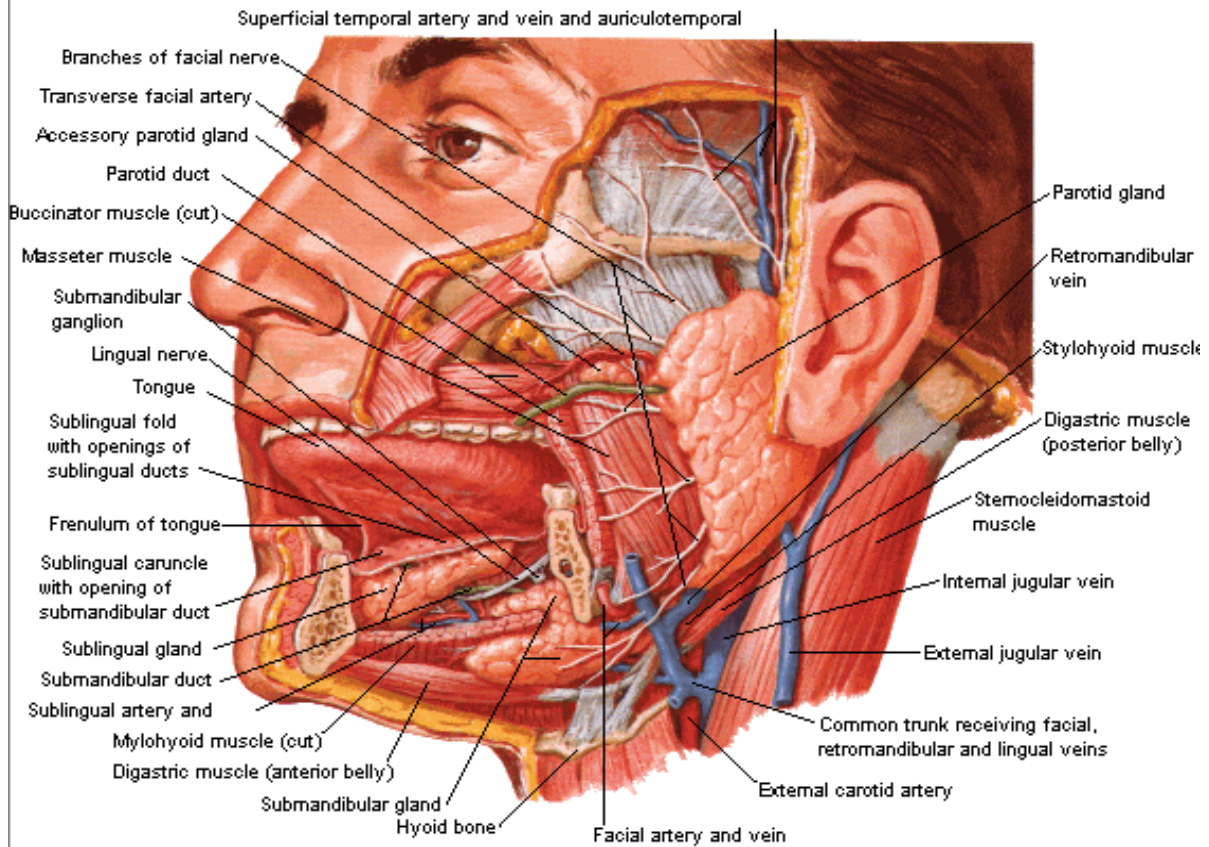
- **Superficial relations:** Skin, superficial fascia, platysma, deep fascia & anterior end of submandibular salivary gland.
- **Deep relations:** Mylohyoid muscle.

B) Relations of posterior belly:

- **Superficial relations:**
 - 1) 1 vein & 1 group of lymph nodes :** Anterior facial vein and submandibular lymph nodes.



Salivary Glands



2) 2 bones and 3 muscles attached to them:

- Mastoid process and sternomastoid.
- Angle of mandible and masseter & medial pterygoid

3) 2 glands: Lower end of parotid gland and posterior end submandibular gland.

▪ **Deep relations:**

1) 1 muscle: Hyoglossus

2) 1 group of LNs: Upper deep cervical LNs along IJV.

3) 2 small arteries: Facial artery, occipital artery

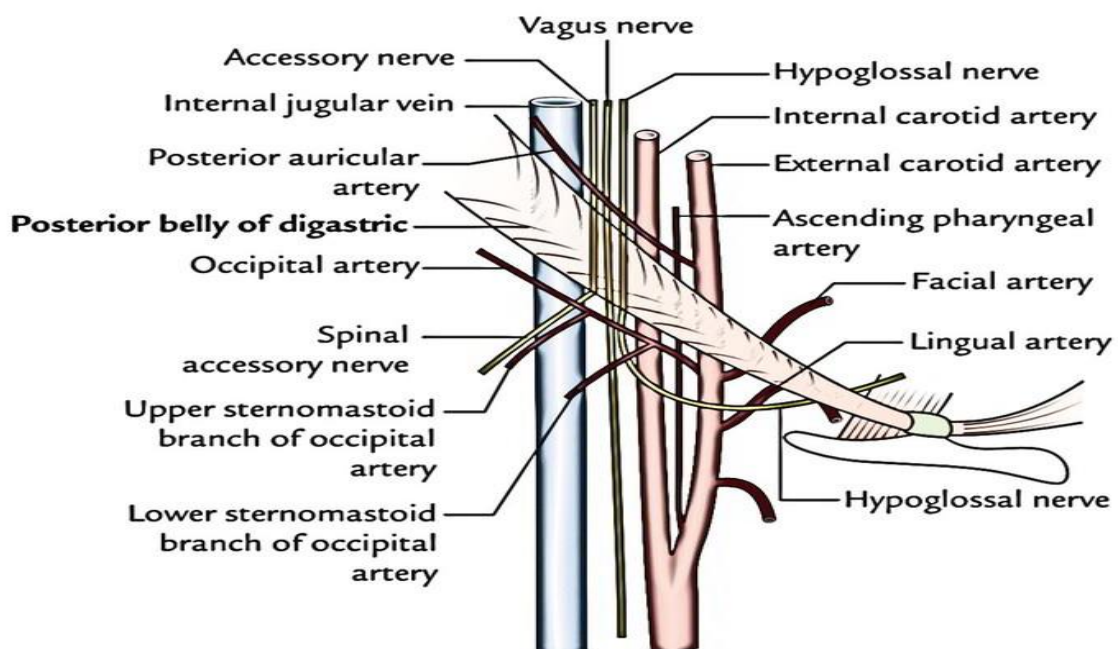
4) 3 large blood vessels:

- ICA medial to IJV in the carotid sheath.
- ECA anteromedial to ICA outside the carotid sheath.

5) Last 3 cranial nerves pass between ICA & IJV in the carotid sheath.

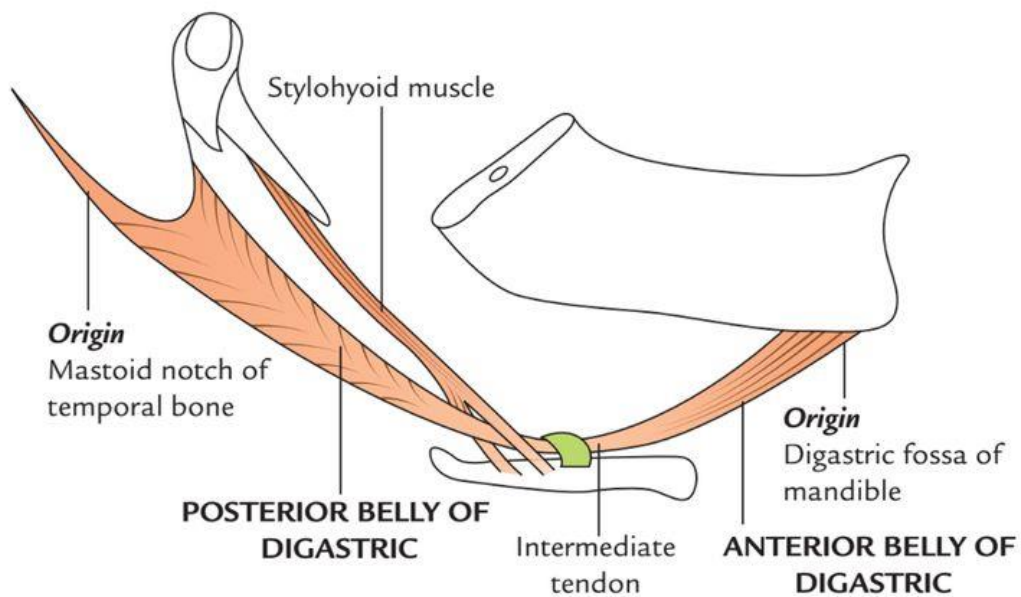
C) Relations of upper border: stylohyoid muscle & posterior auricular artery.

D) Relations of lower border: occipital artery which passes backwards and to hypoglossal nerve which passes forwards.



II) Stylohyoid:

- **Origin:** Posterior surface of styloid process near the base
- **Insertion:** by 2 slips into the junction of the body of hyoid bone with its greater horn.
- **Nerve supply:** Facial nerve.
- **Action:** Elevation of hyoid bone during swallowing.

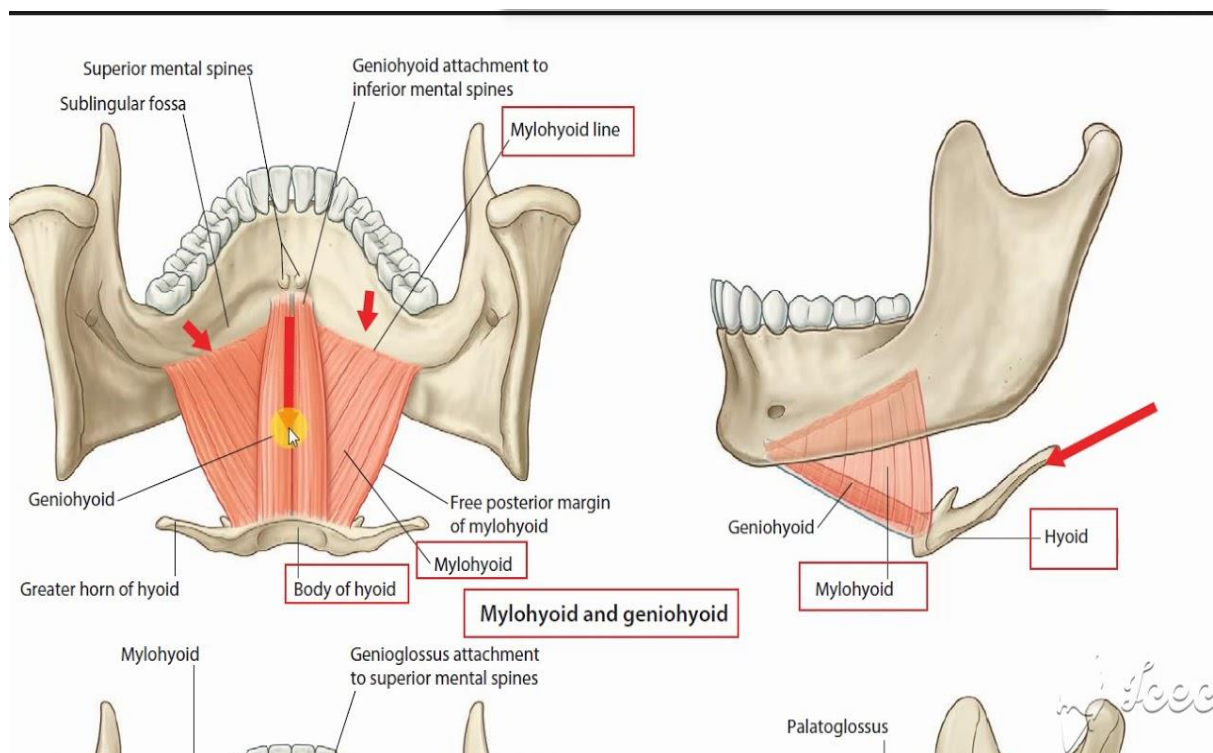


Stylohyoid muscle



III) Mylohyoid muscle:

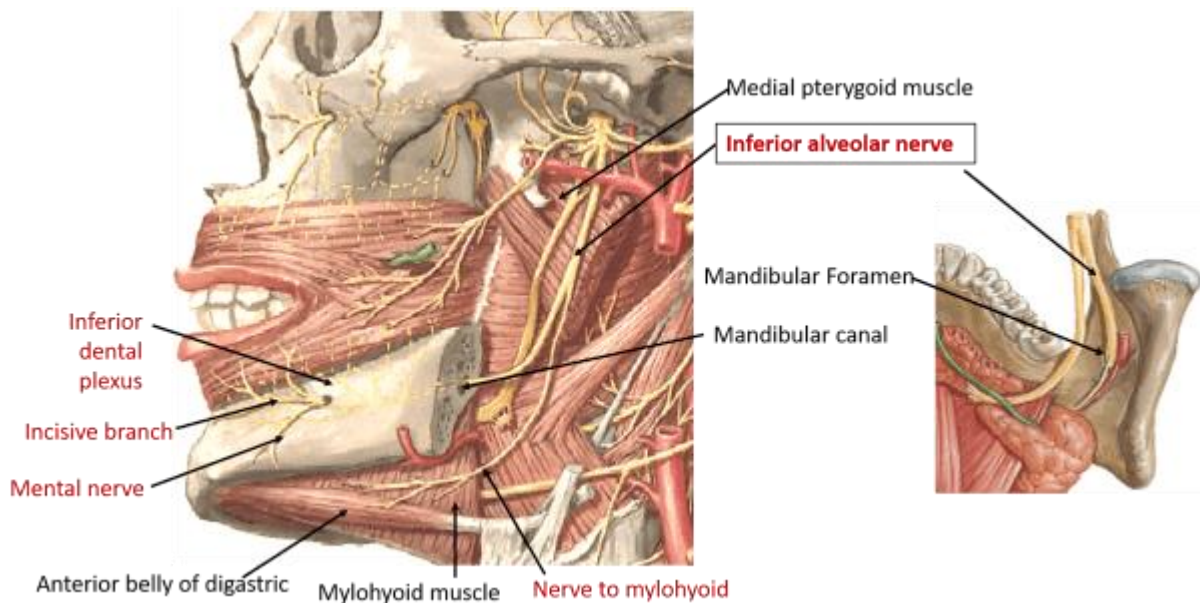
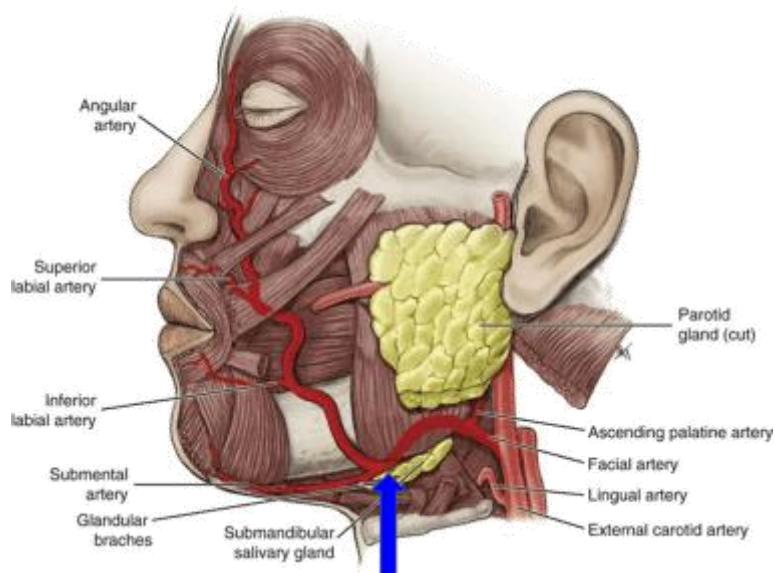
- It forms the main part of the floor of the mouth, so it is called "diaphragma oris".
- **Origin:** mylohyoid line of the mandible.
- **Insertion:**
 - a- Anterior and middle fibers inserted into the mylohyoid raphe.
 - b- Posterior fibers inserted into body of hyoid bone.
- **Nerve supply:** nerve to mylohyoid from inferior alveolar nerve (mandibular nerve).
- **Action:**
 - a- Elevation of hyoid bone and floor of mouth **during swallowing**.
 - b- Depression of mandible when **hyoid bone is fixed**.



- **Relations:**

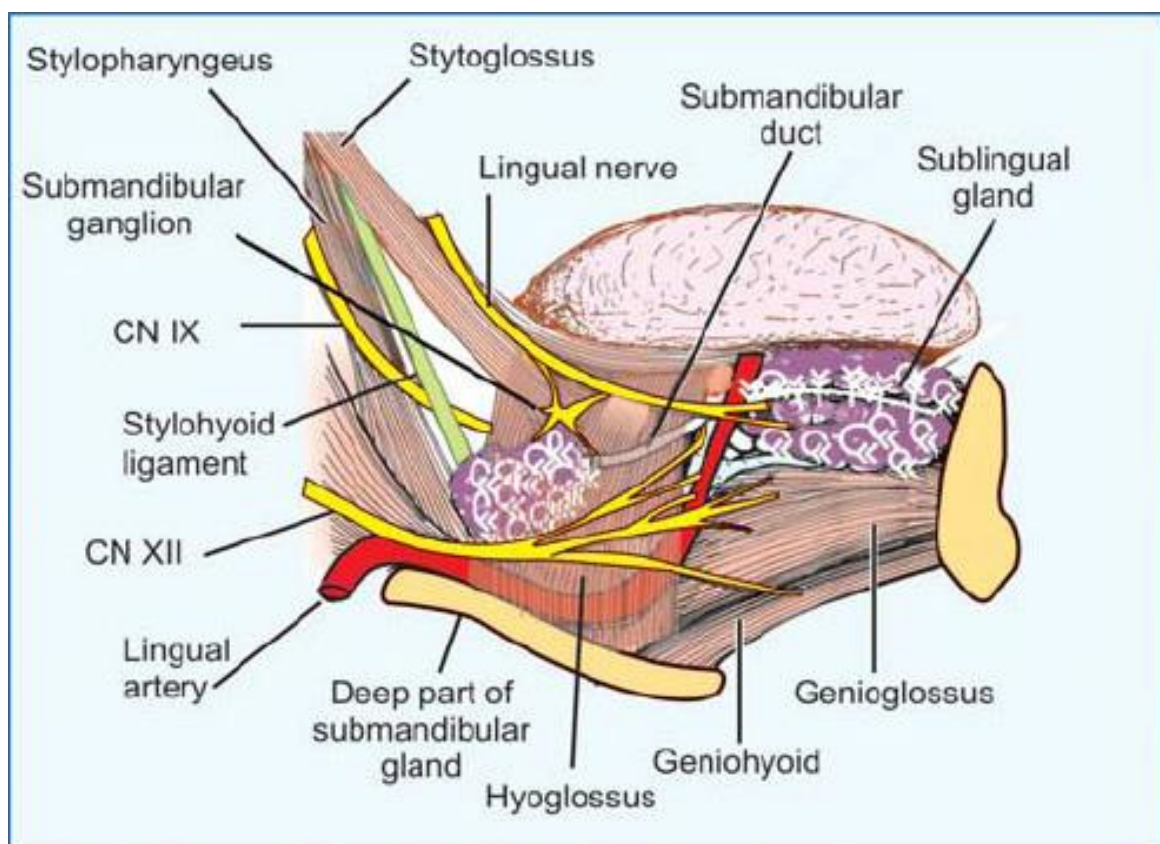
- 1) Superficial relations:**

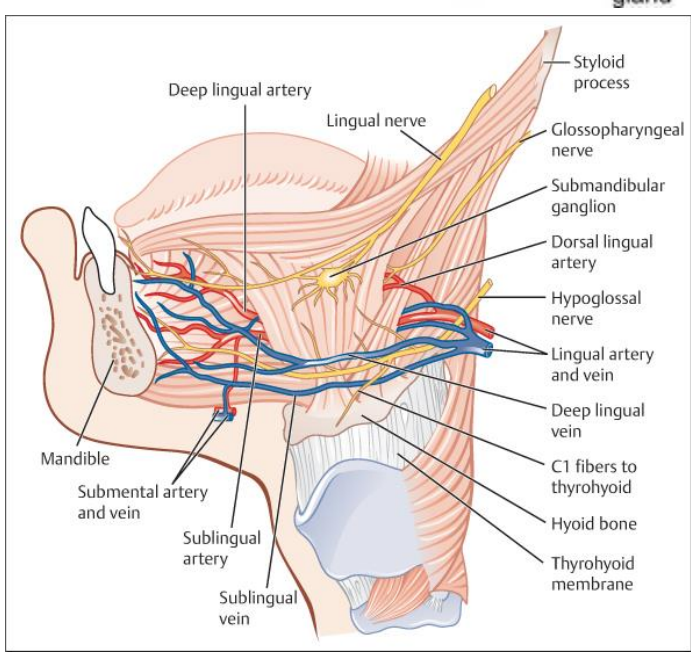
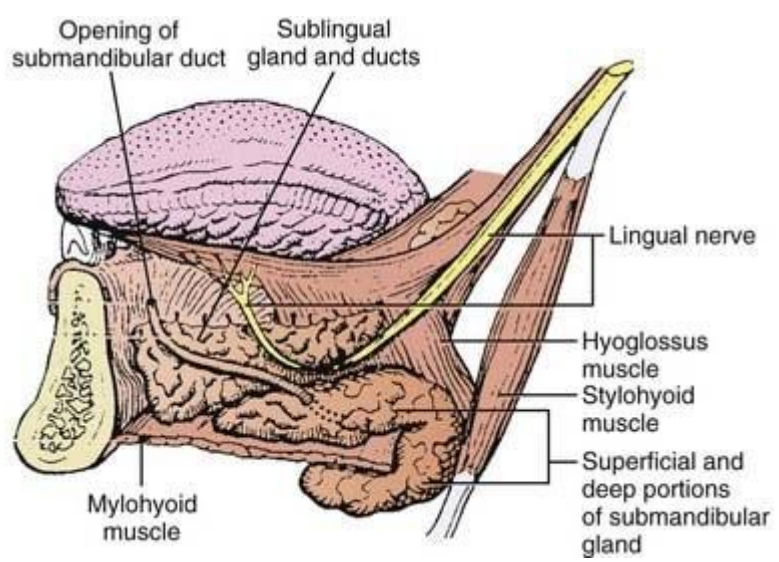
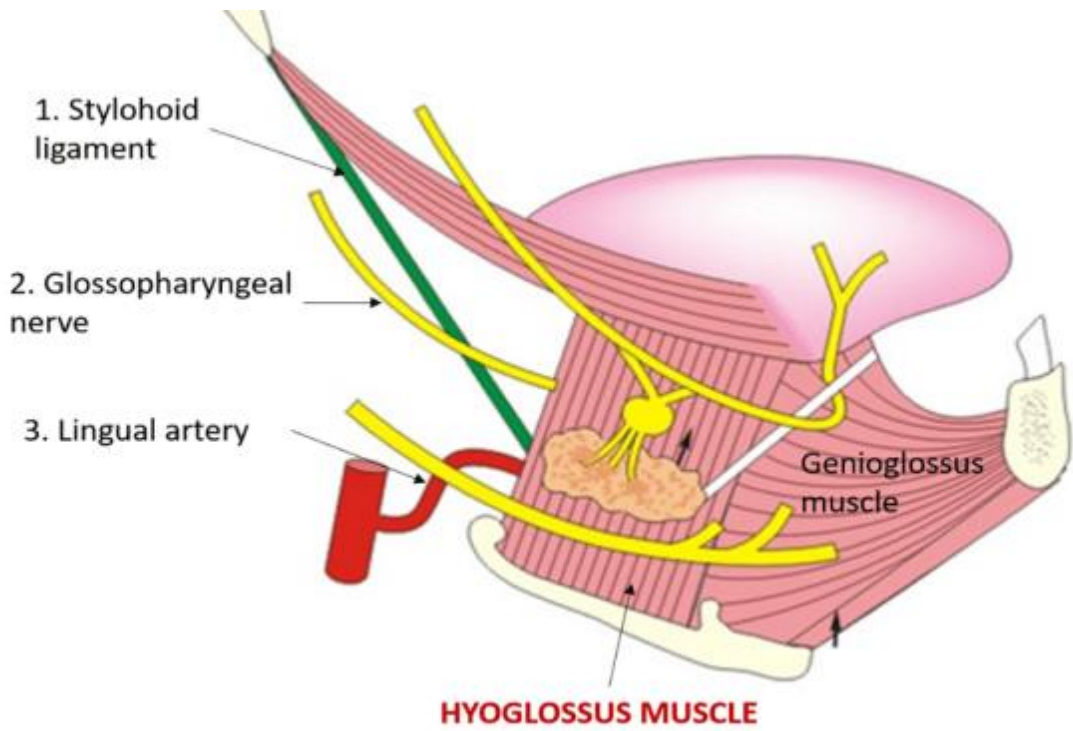
- Skin, fascia containing platysma and deep fascia.
 - Anterior belly of digastric muscle.
 - Superficial part of submandibular gland.
 - Facial artery and its submental branch.
 - Nerve to mylohyoid & mylohyoid vessels.
 - Submental lymph nodes.



2) Deep relations:

- **Hyoglossus** muscle.
- Structures **anterior to hyoglossus**: Geniohyoid, genioglossus, sublingual gland with its vessels and 3rd part of lingual artery
- Structures **lateral to hyoglossus**: Styloglossus muscle, lingual nerve and submandibular ganglion suspended to it, deep part of submandibular gland and its duct, hypoglossal nerve, deep vein of tongue and suprahyoid artery.

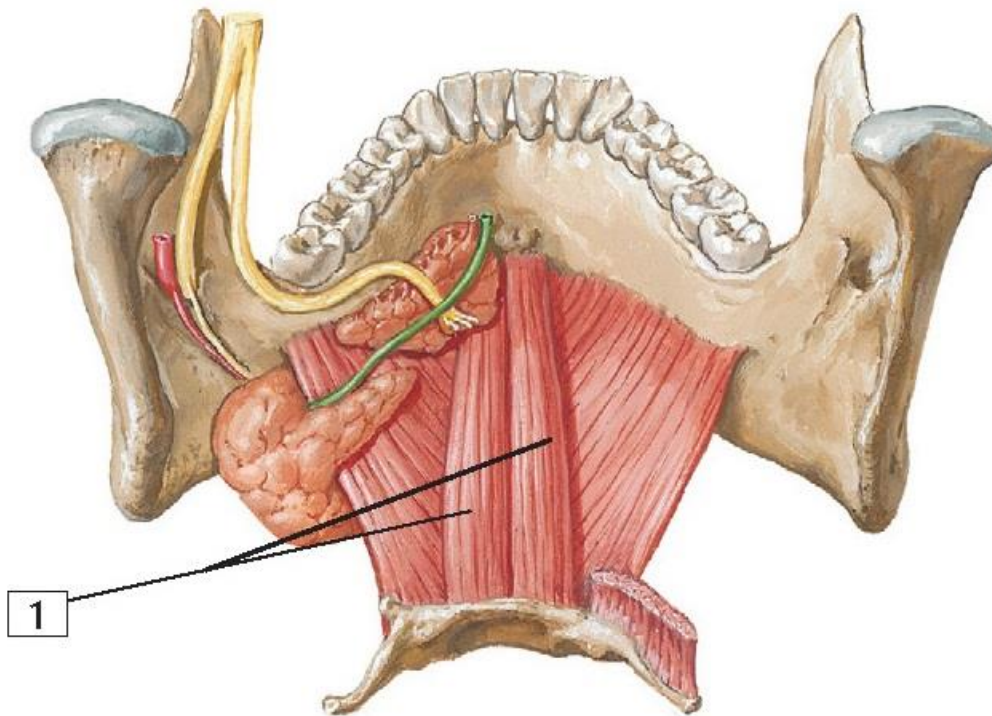




3) Mylohyoid muscle has free **posterior** border around which the deep part of submandibular gland is **continuous** with the superficial part of the gland.

IV) Geniohyoid muscle:

- **Origin:** Lower genial tubercle of mandible
- **Insertion:** Anterior surface of the body of hyoid bone
- **Nerve supply:** C1 through hypoglossal nerve.
- **Action:** elevation of hyoid bone



Styloid Apparatus

★ It consists of styloid process & structures attached to it.

★ **3 Muscles** attached to styloid process:

	Origin	Insertion	Nerve supply	Action
Stylo-glossus	Tip of styloid process	Whole side of the tongue	Hypoglossal nerve	Retraction of the tongue
Stylo-hyoid	Posterior surface of styloid process near the base	By 2 slips into Junction of greater horn & body of hyoid bone .	Facial nerve	Elevation of hyoid bone in swallowing
Stylo-pharyngeus	Medial surface of base of styloid process	Posterior border of thyroid cartilage	Glossopharyngeal nerve	Elevation of thyroid cartilage and shortening of pharynx in swallowing

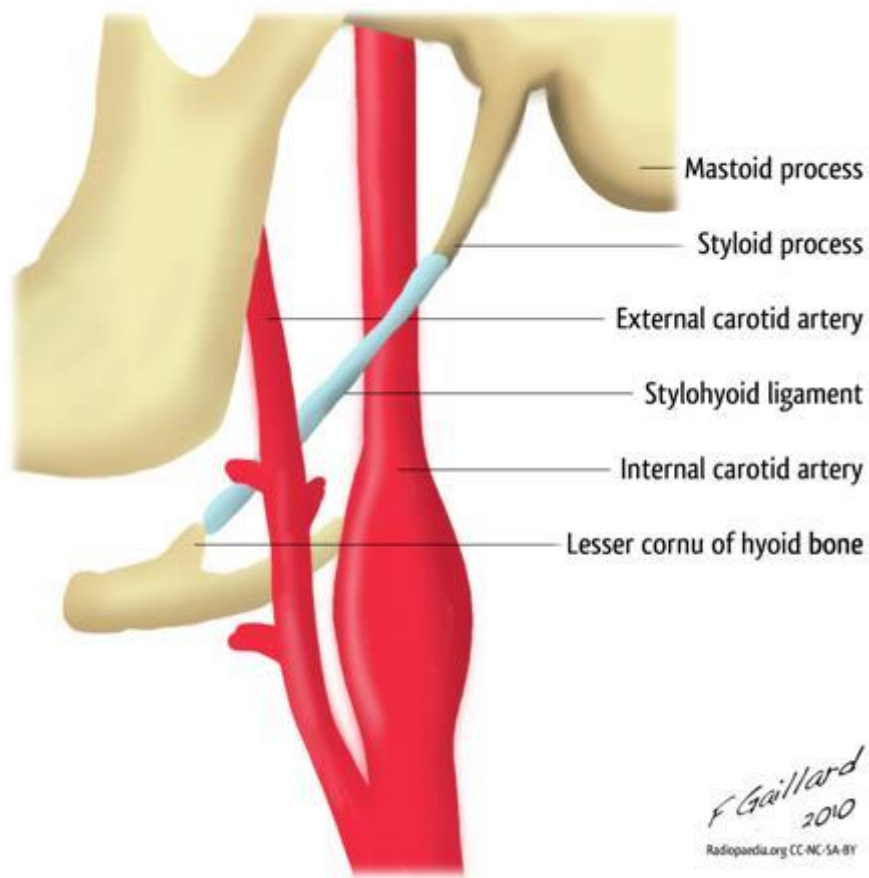
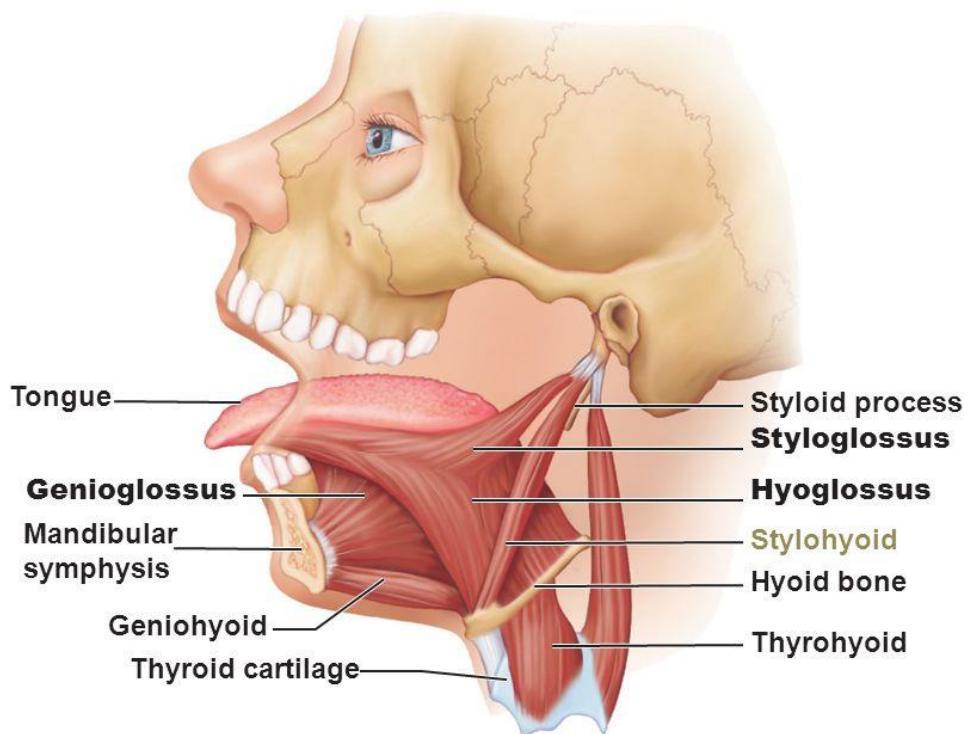
★ **2 Ligaments attached to styloid:**

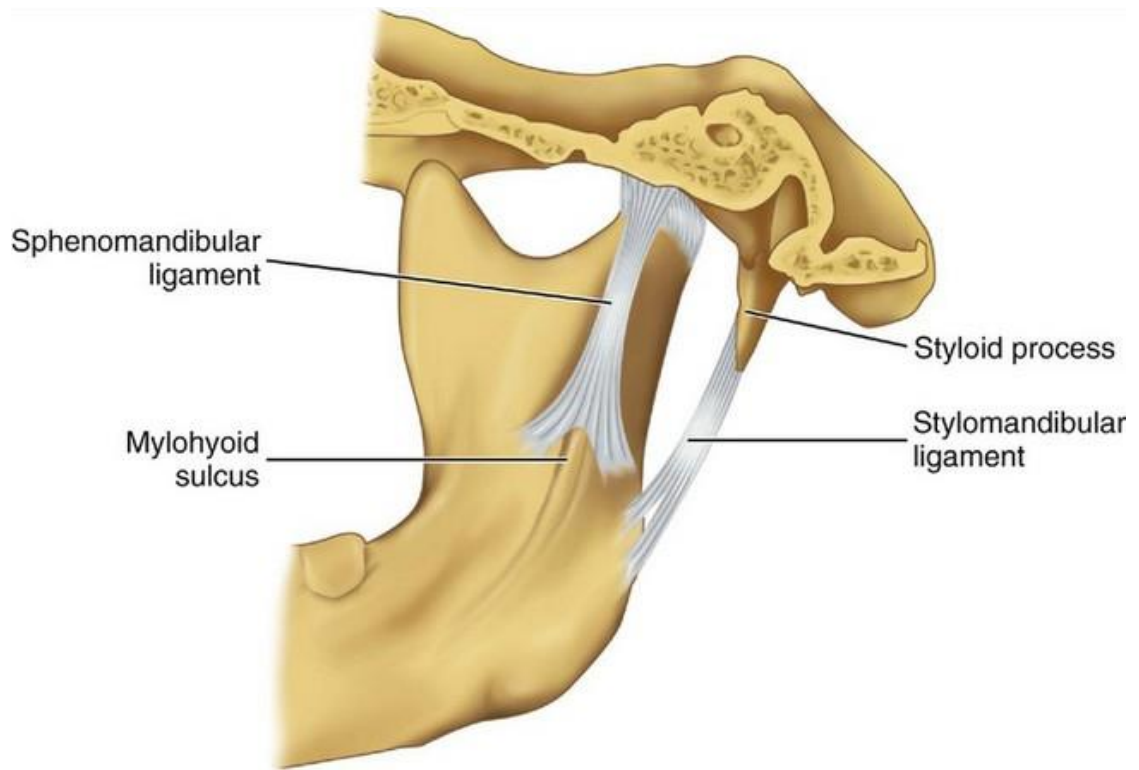
1. **Stylohyoid ligament:**

- It extends from the tip of the styloid process to the lesser horn of hyoid bone passing between internal and external carotids.
- It passes deep to hyoglossus.

2. **Stylomandibular ligament:**

- It extends from the tip and adjacent anterior surface of styloid process to the angle and posterior border of mandible.
- It is a thickened band of the general investing fascia of the neck. It separates 2 salivary glands; parotid and submandibular.





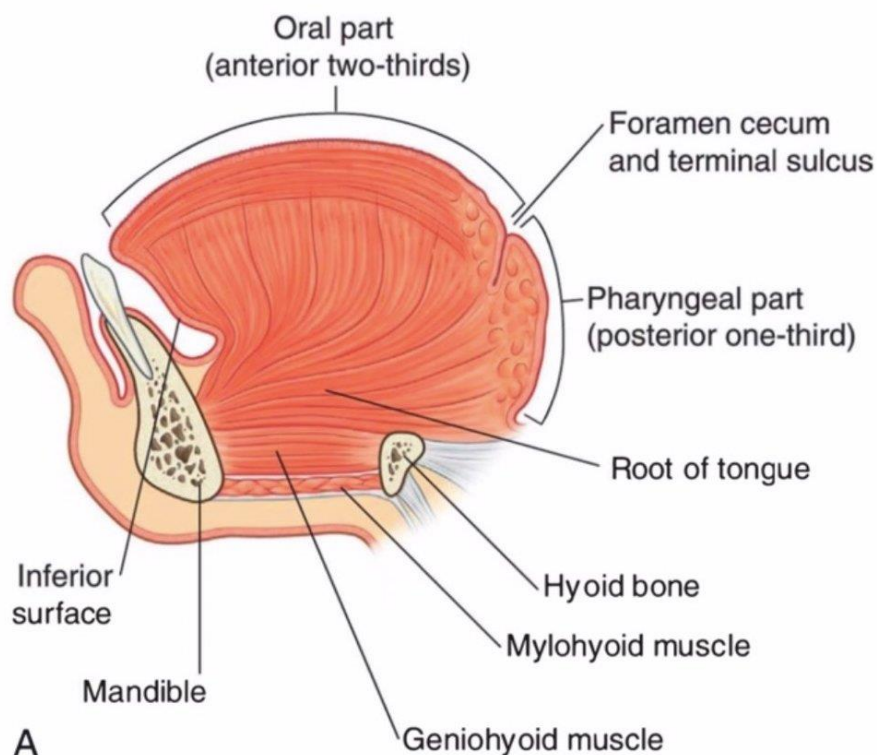
Extrinsic Muscles of the Tongue

I) Styloglossus: See styloid apparatus.

II) Palatoglossus: See soft palate.

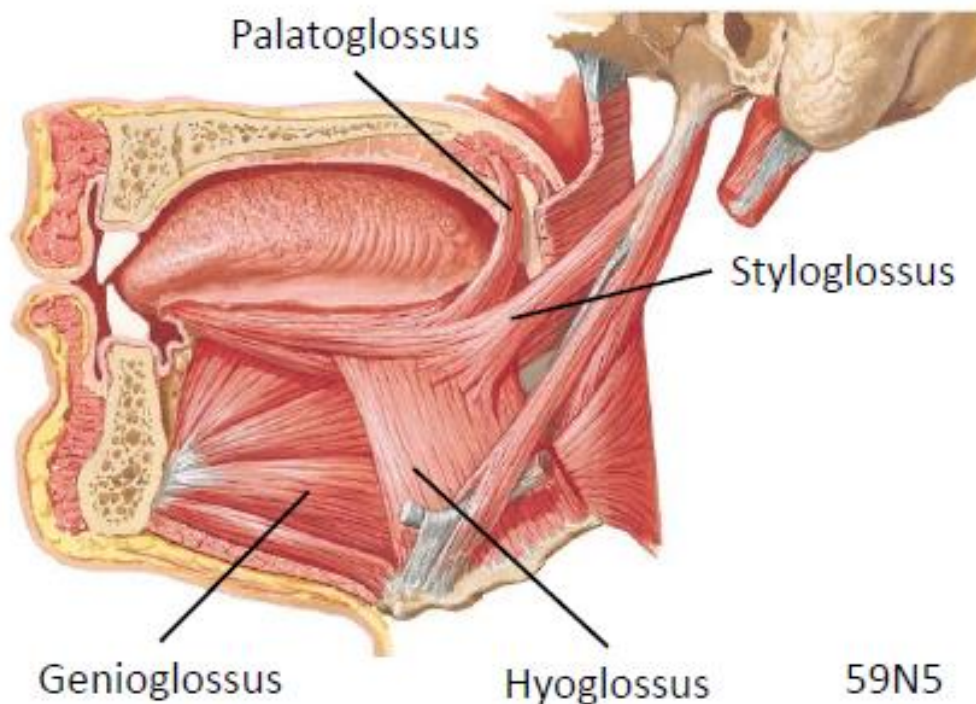
III) Genioglossus:

- **Origin:** Upper genial tubercle of mandible.
- **Insertion:**
 - a- **Upper and middle fibers** are inserted into the whole length of the inferior surface of the tongue.
 - b- **Lower fibers** are inserted into the upper border of the body of hyoid bone.
- **Nerve supply:** Hypoglossal nerve (12th cranial nerve).
- **Action:**
 - 1-**One muscle:** Protrudes the tongue to the opposite side.
 - 2-**Both muscles:** Protrude the tongue forwards and depress the central part of tongue. They also prevent the tongue from falling backwards during sleep as this may obstruct the air pathway.



IV) Hyoglossus:

- It is partly deep to mylohyoid and partly posterior to it, in the floor of digastric and carotid triangles.
- **Origin:** Greater horn of hyoid bone.
- **Insertion:** Posterior 1/2 of the side of the tongue deep to styloglossus muscle.
- **Nerve supply:** Hypoglossal nerve (12th cranial nerve).
- **Action:** Depression of the posterior 1/2 of the tongue against the floor of the mouth in sucking.



• **Relations:**

- **Superficial (lateral) relations: (from above downwards)**
 - Styloglossus muscle
 - Lingual nerve with the submandibular ganglion suspended from it.
 - Deep part and duct of submandibular gland
 - Hypoglossal nerve accompanied by deep vein of the tongue.
 - **Just above hyoid bone:** Stylohyoid muscle, intermediate tendon & posterior belly of digastric muscle and suprahyoid artery.

- **Deep (medial) relations:**
 - 2nd part of lingual artery with its 2 dorsal lingual branches.
 - Stylohyoid ligament.
 - Glossopharyngeal nerve.
 - Genioglossus & middle constrictor muscle of pharynx

- **Anterior relations:**
 - Geniohyoid muscle
 - Genioglossus muscle
 - 3rd part of lingual artery
 - **Lingual nerve** hooks around **submandibular duct** deep to **sublingual gland**.

- **Posterior relations:**
 - 1st part of lingual artery
 - Middle constrictor muscle of pharynx
 - Glossopharyngeal nerve
 - Stylohyoid ligament and stylopharyngeus muscle

