

Salivary glands

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بِسْمِ اللّٰهِ الرَّحْمٰنِ الرَّحِيْمِ

Dentistry Program

Anatomy department

Ibn Sina National College
for Medical Studies

Accredited by NCAAA



كلية ابن سينا الأهلية للعلوم الطبية
مقدمة من
المركز الوطني للتقويم والاعتماد الأكاديمي



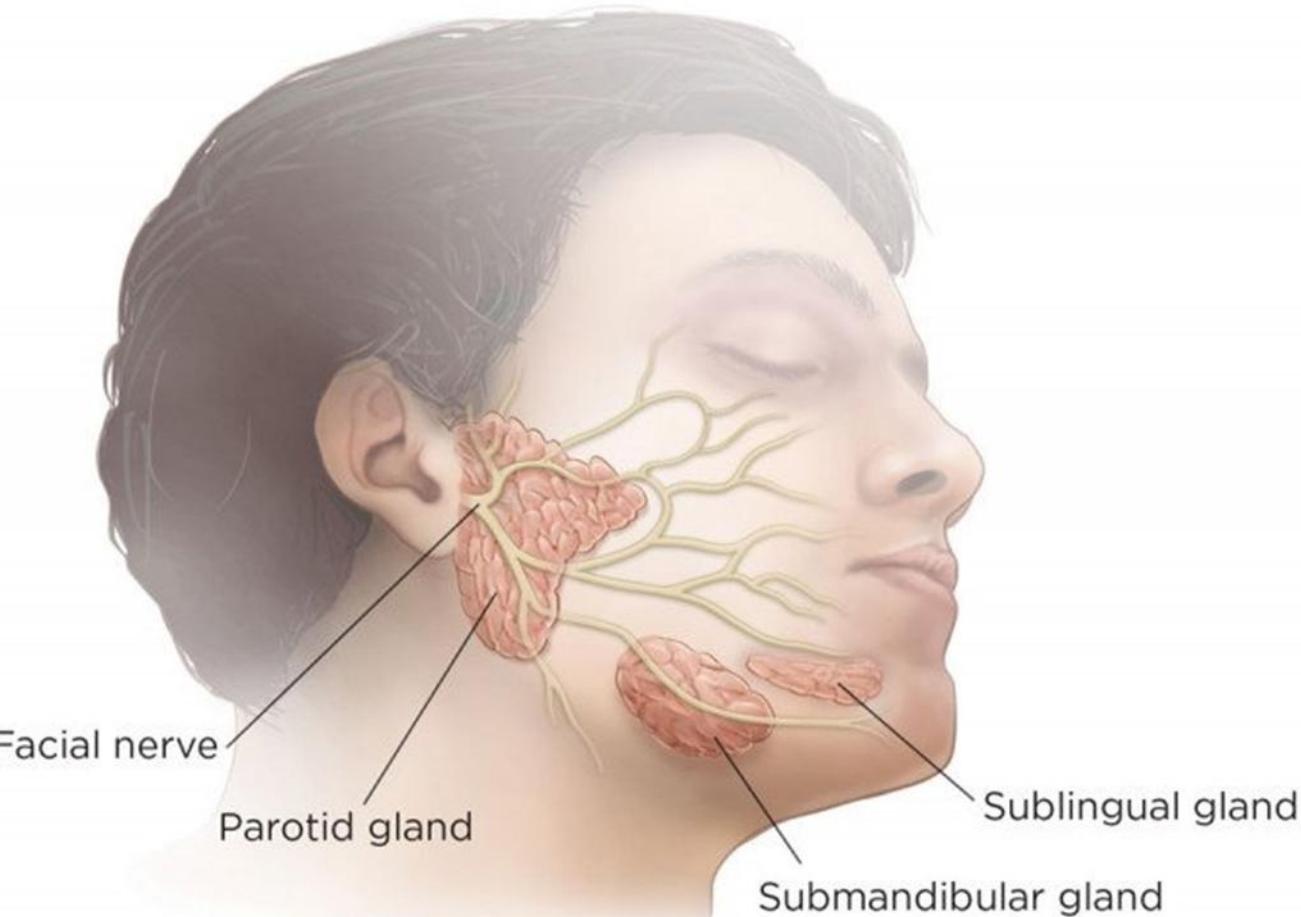
ILOs

By the end of this session, you should be able to:

- ❖ Classify and discuss major and minor salivary glands
- ❖ Describe the clinical anatomy of salivary glands
- ❖ Compare and differentiate the three pairs of major salivary glands

Salivary glands

- ▶ Salivary glands are exocrine glands, that produce saliva into the oral cavity by salivary ducts.
- ▶ Major salivary glands are Parotid, submandibular & sublingual
- ▶ Minor salivary glands.

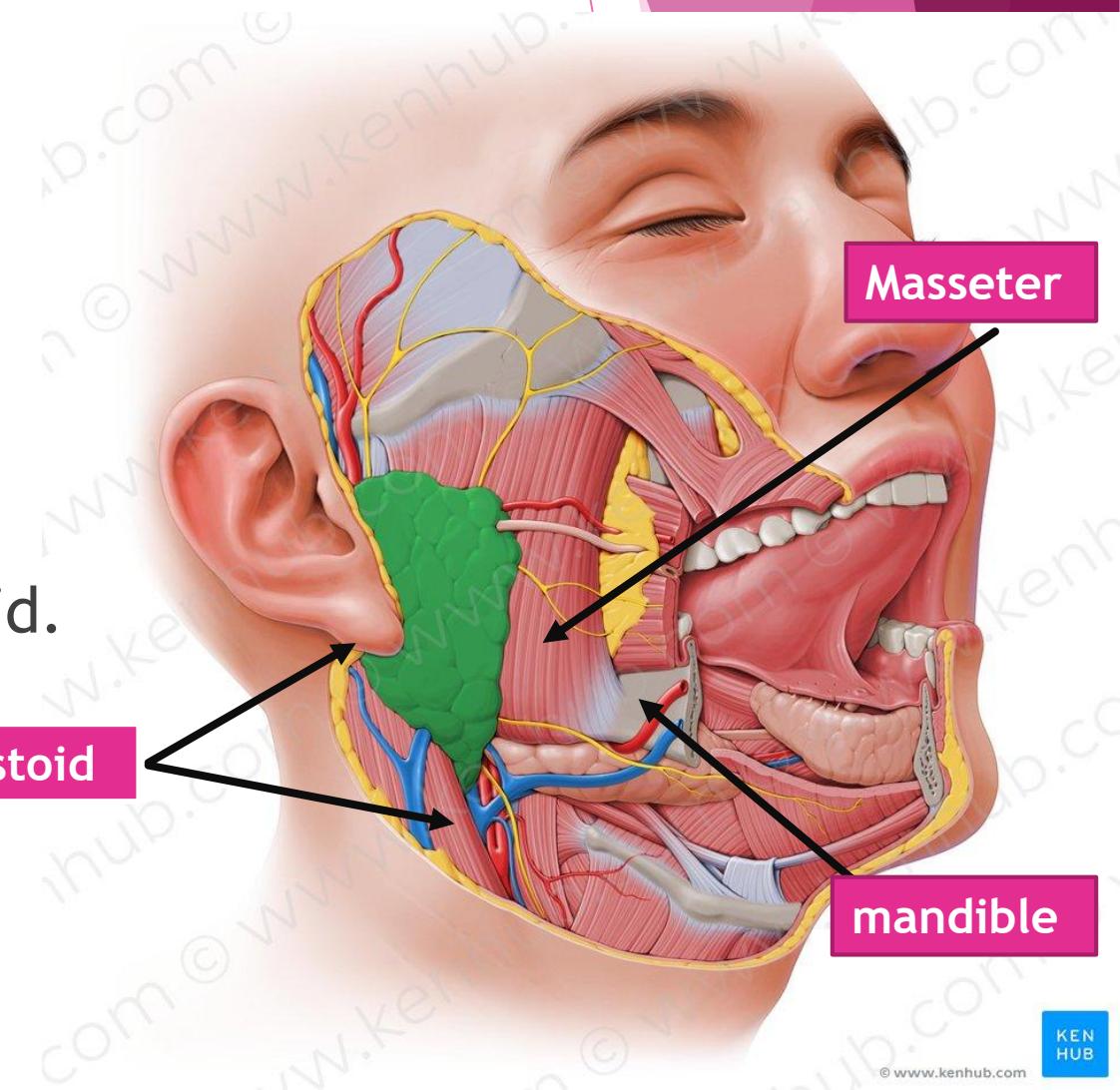


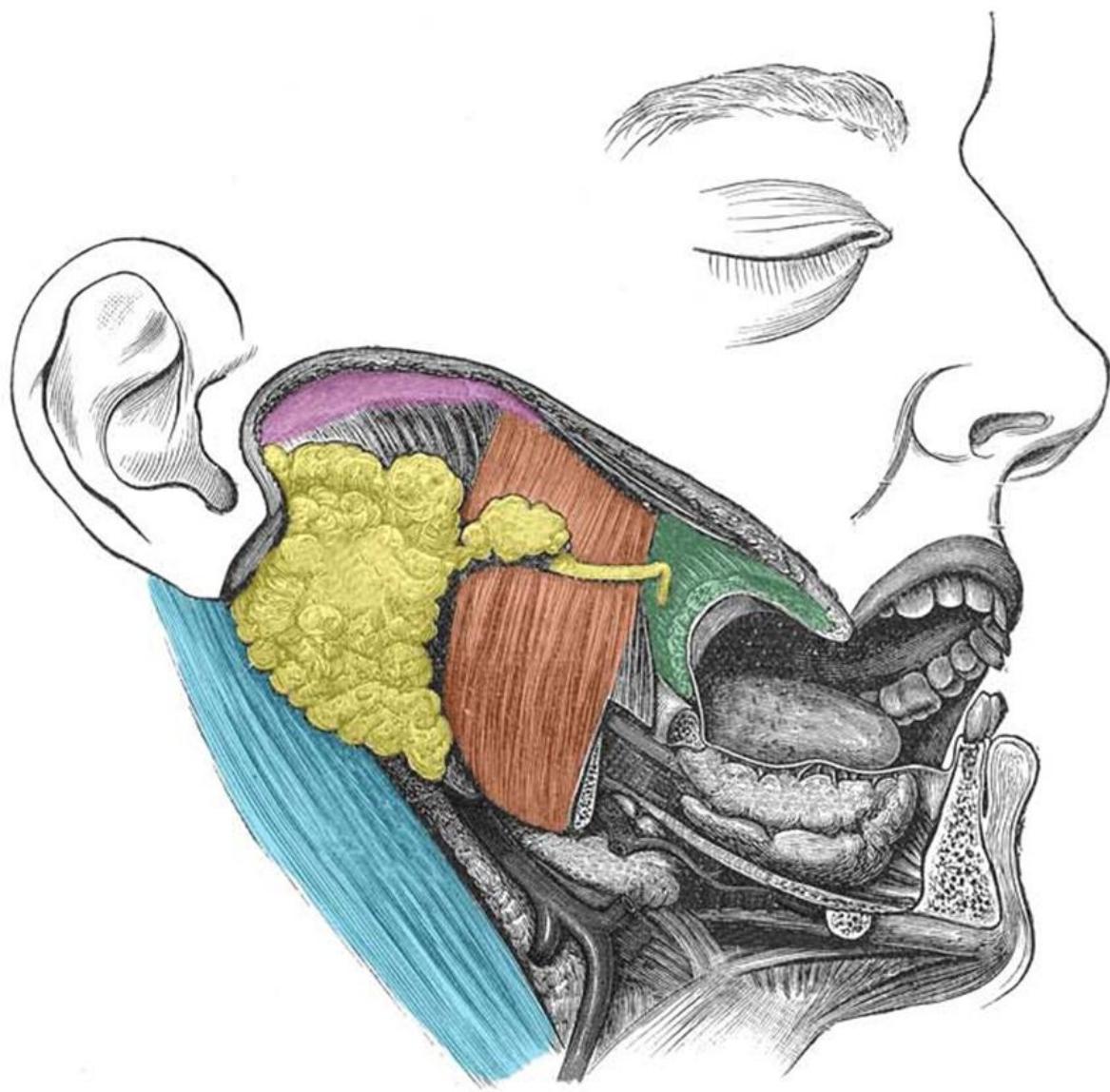
Parotid gland

Site:

- ▶ Above it: external auditory meatus.
- ▶ Below: Extends below the angle of the mandible.
- ▶ Anteriorly: overlaps part of masseter.
- ▶ Posteriorly: overlaps part of sternomastoid.

Ear and sternomastoid





- █ **Parotid gland and duct**
- █ **Zygomatic arch** (superior border)
- █ **Sternocleidomastoid** (posterior border)
- █ **Masseter** (anterior border)
- █ **Buccinator**



teachmeanatomy

Parotid Gland

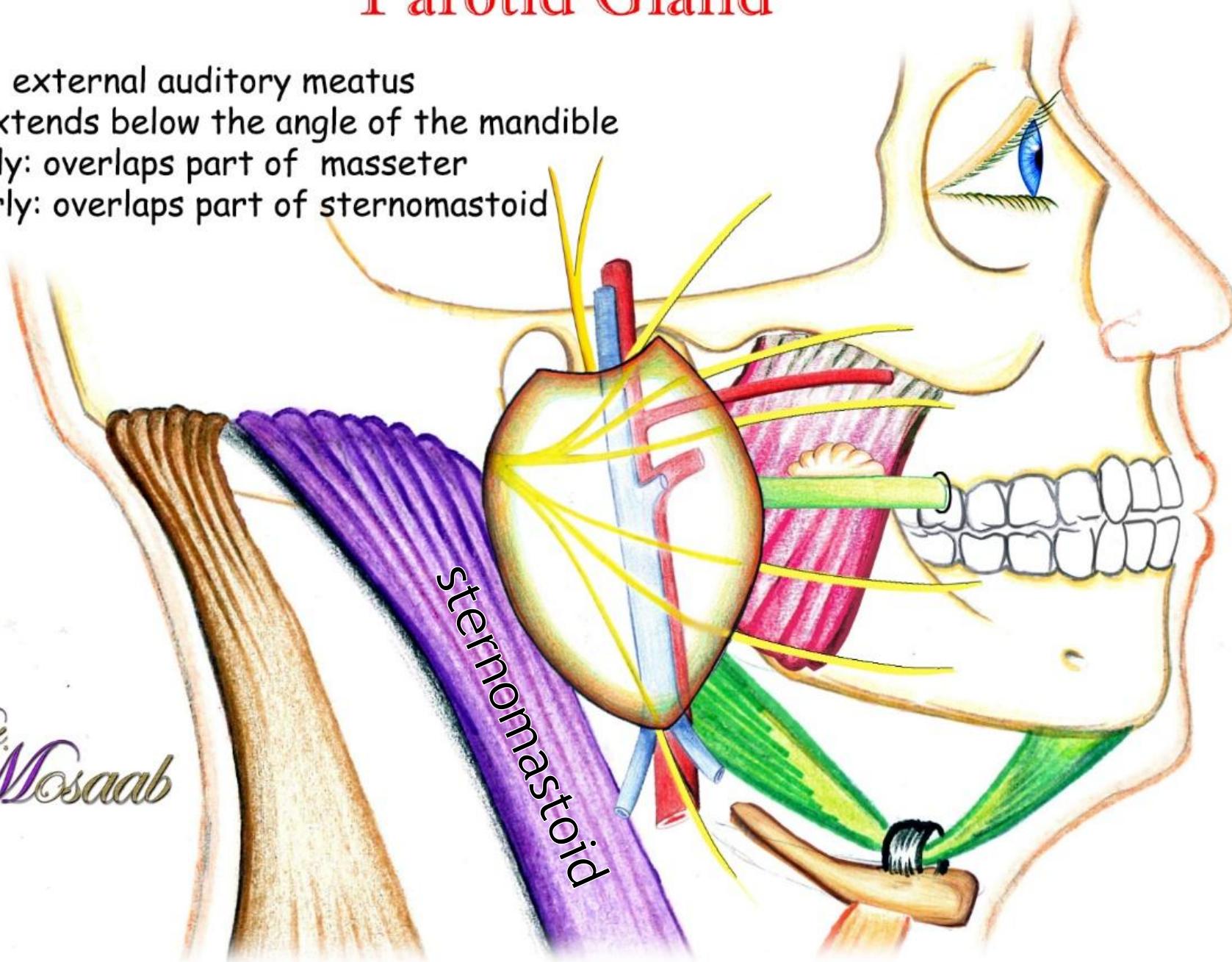
Site:

Above it: external auditory meatus

Below: Extends below the angle of the mandible

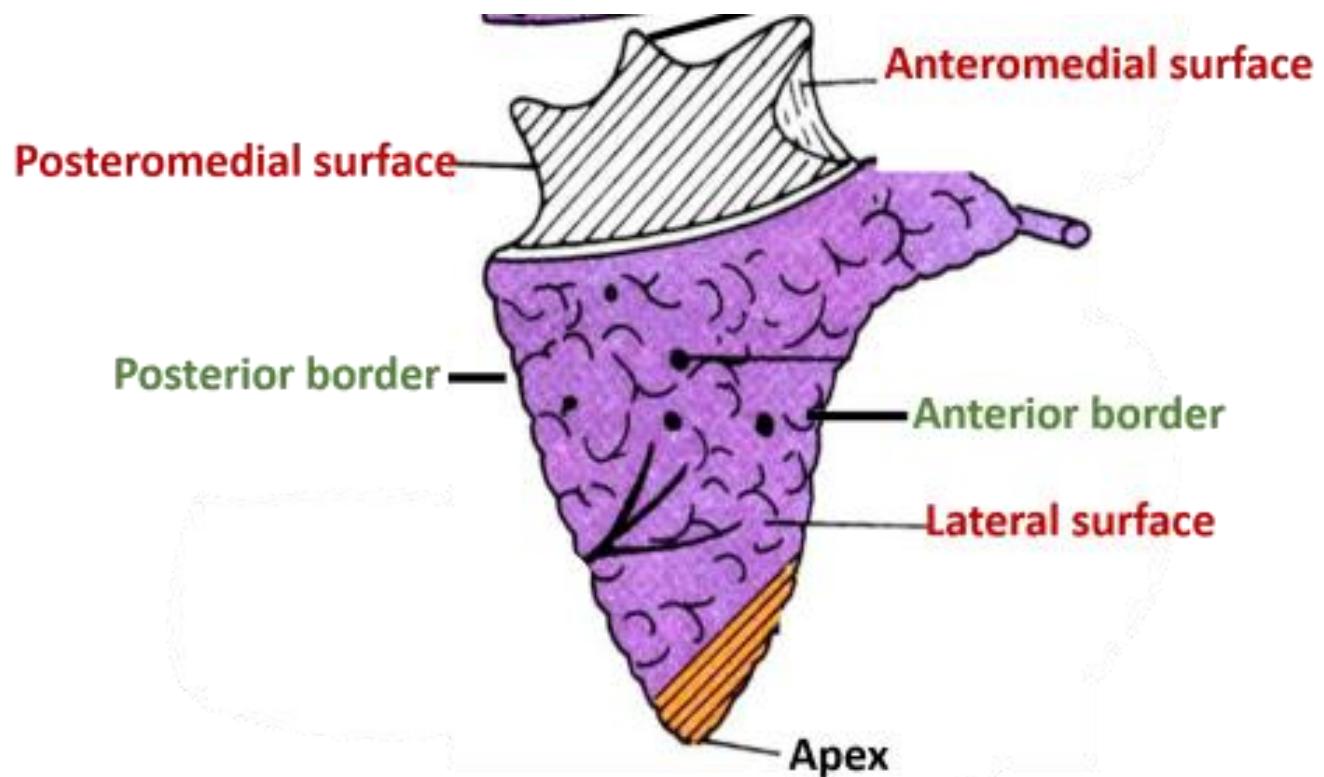
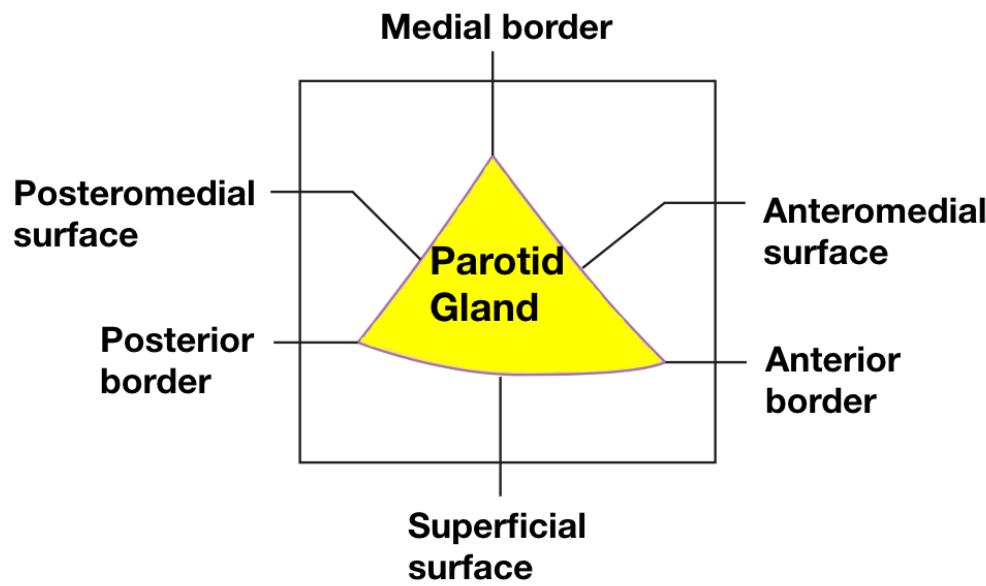
Anteriorly: overlaps part of masseter

Posteriorly: overlaps part of sternomastoid



Parotid gland

- ▶ It has **three surfaces**: superficial (lateral), anteromedial and posteromedial.
- ▶ It has **2 borders**: anterior and posterior.

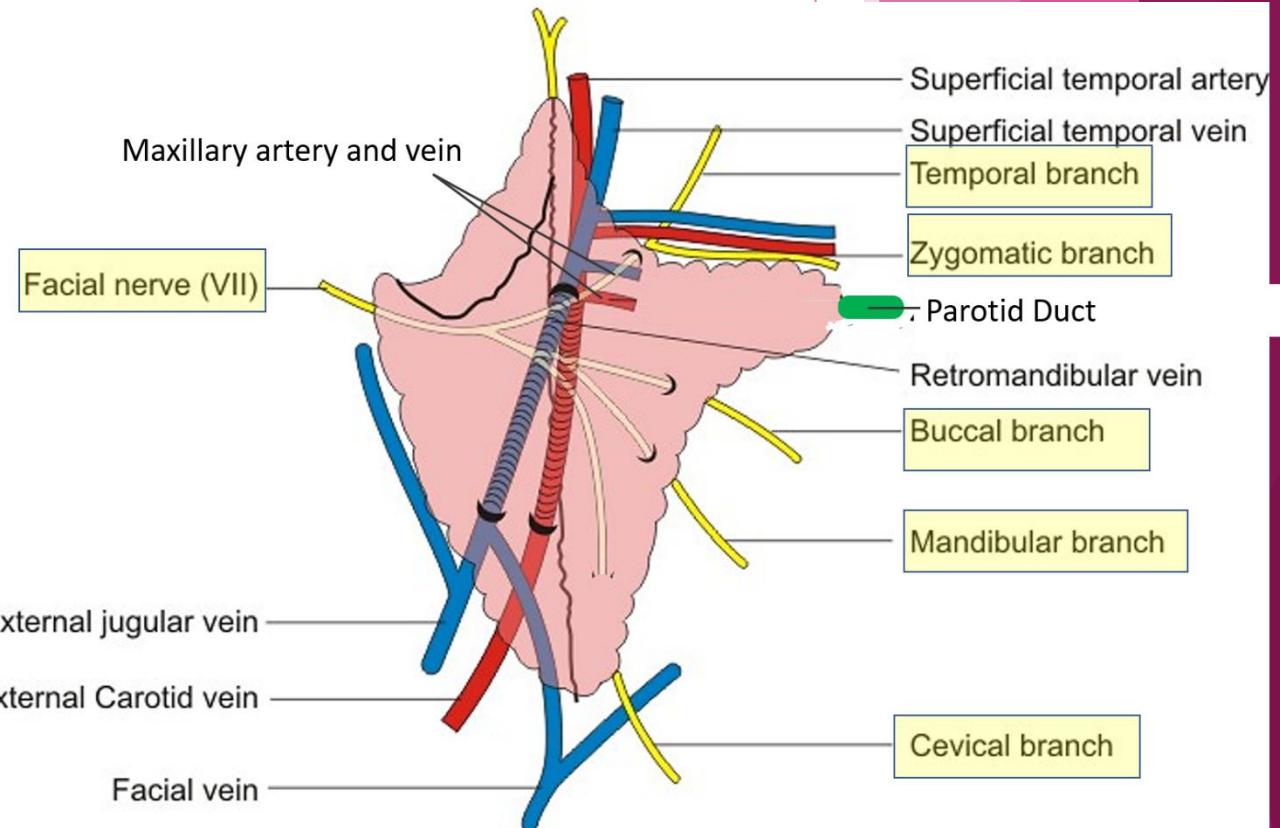


structures pass inside the parotid gland:

1. Facial nerve (cranial nerve VII).

2. external carotid artery (ECA).

3. retromandibular vein .

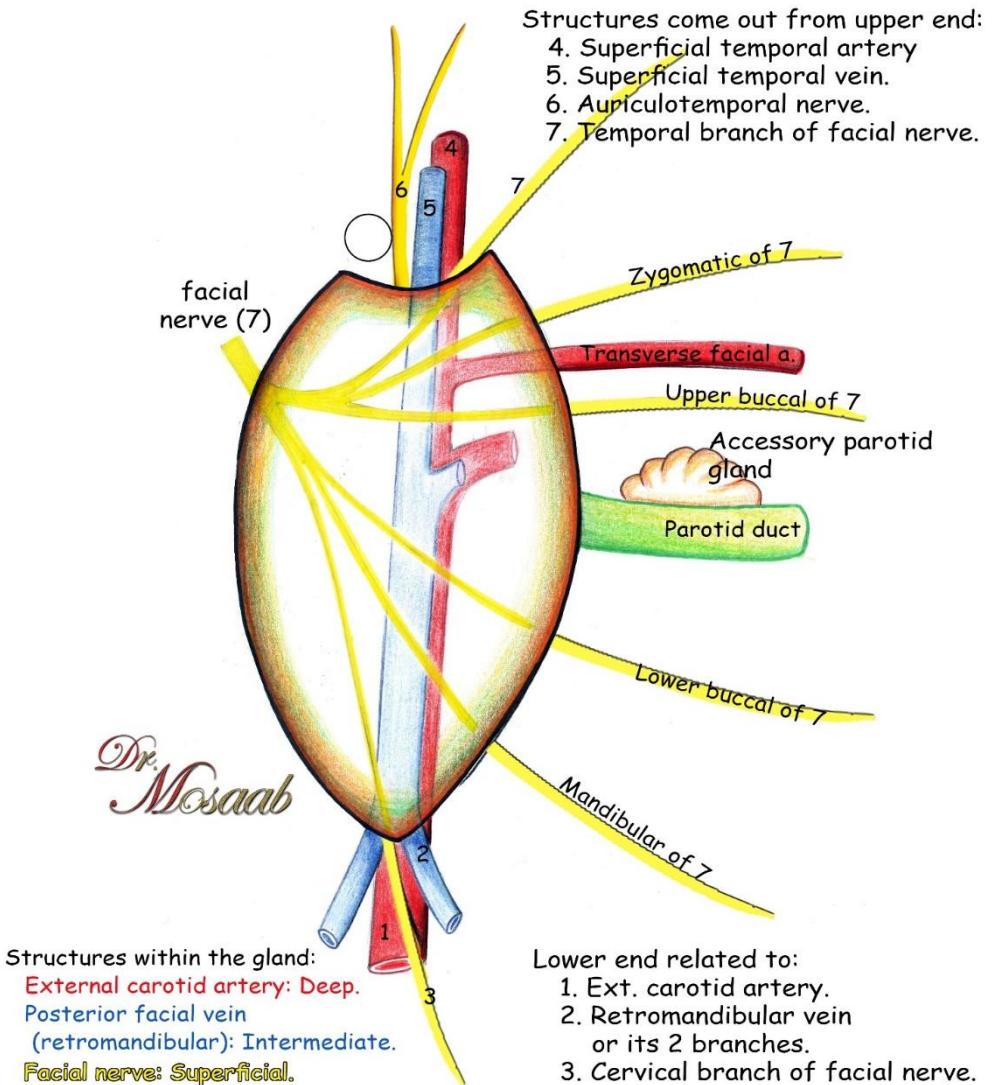


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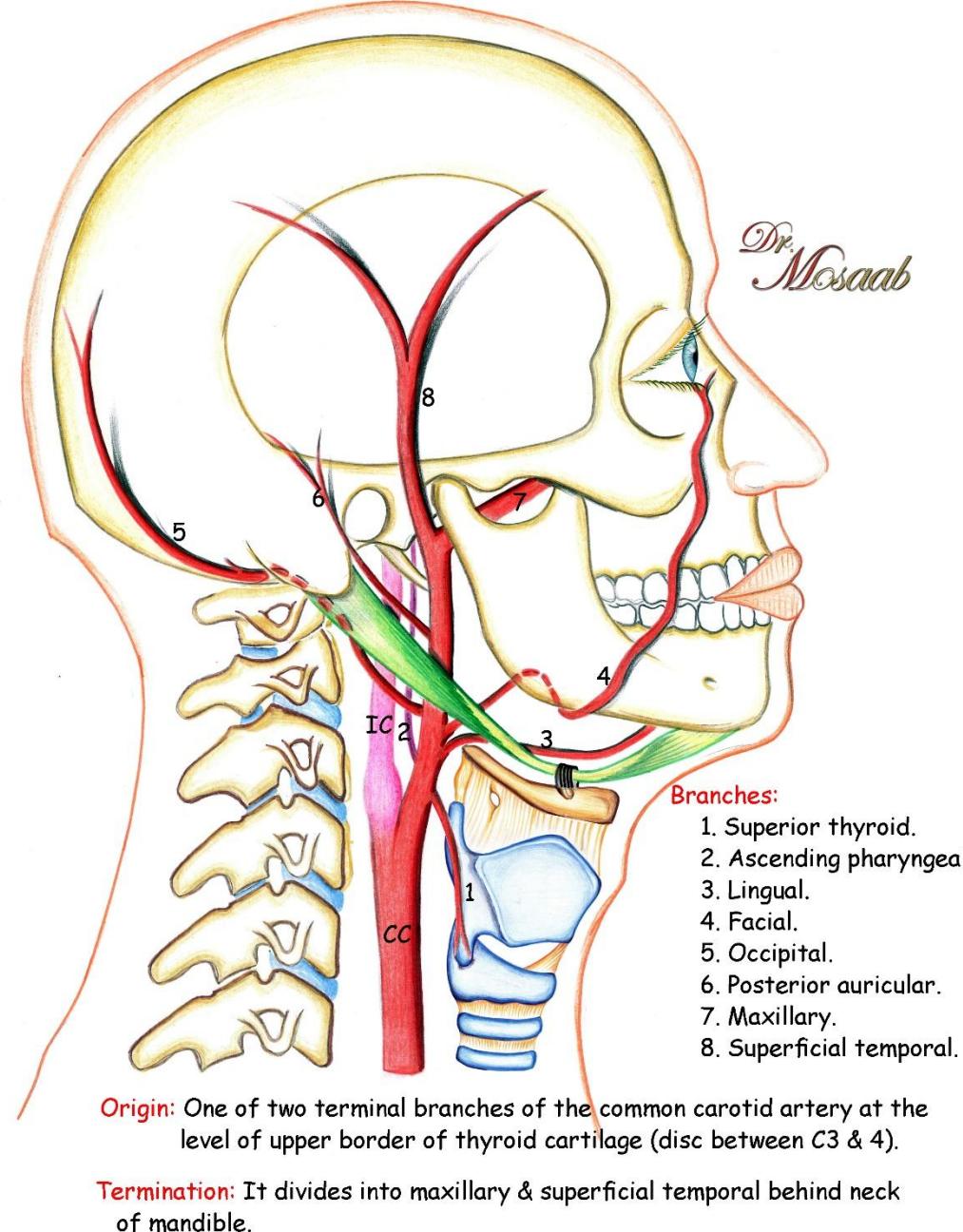


External carotid artery

3.External carotid artery:

enters the gland from the lower end and divides into 2 terminal branches:

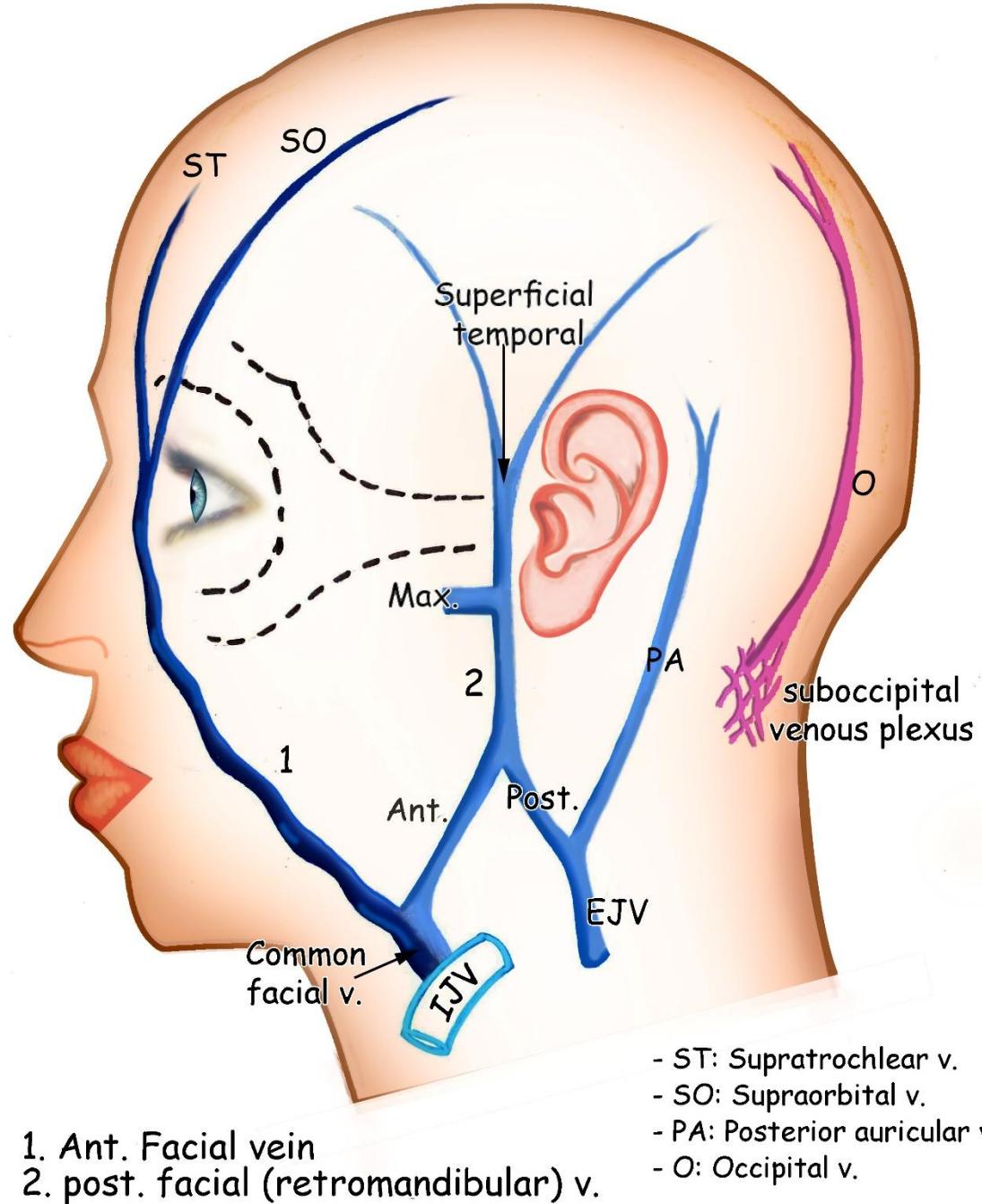
- A. **Superficial temporal artery:**
leaves the upper end of gland
- B. **Maxillary artery:** which
leaves the gland from its
anteromedial surface



2. Retromandibular vein:

is formed within the gland by union of superficial temporal & maxillary veins

- It leaves lower end of the gland. It divides into anterior & posterior divisions



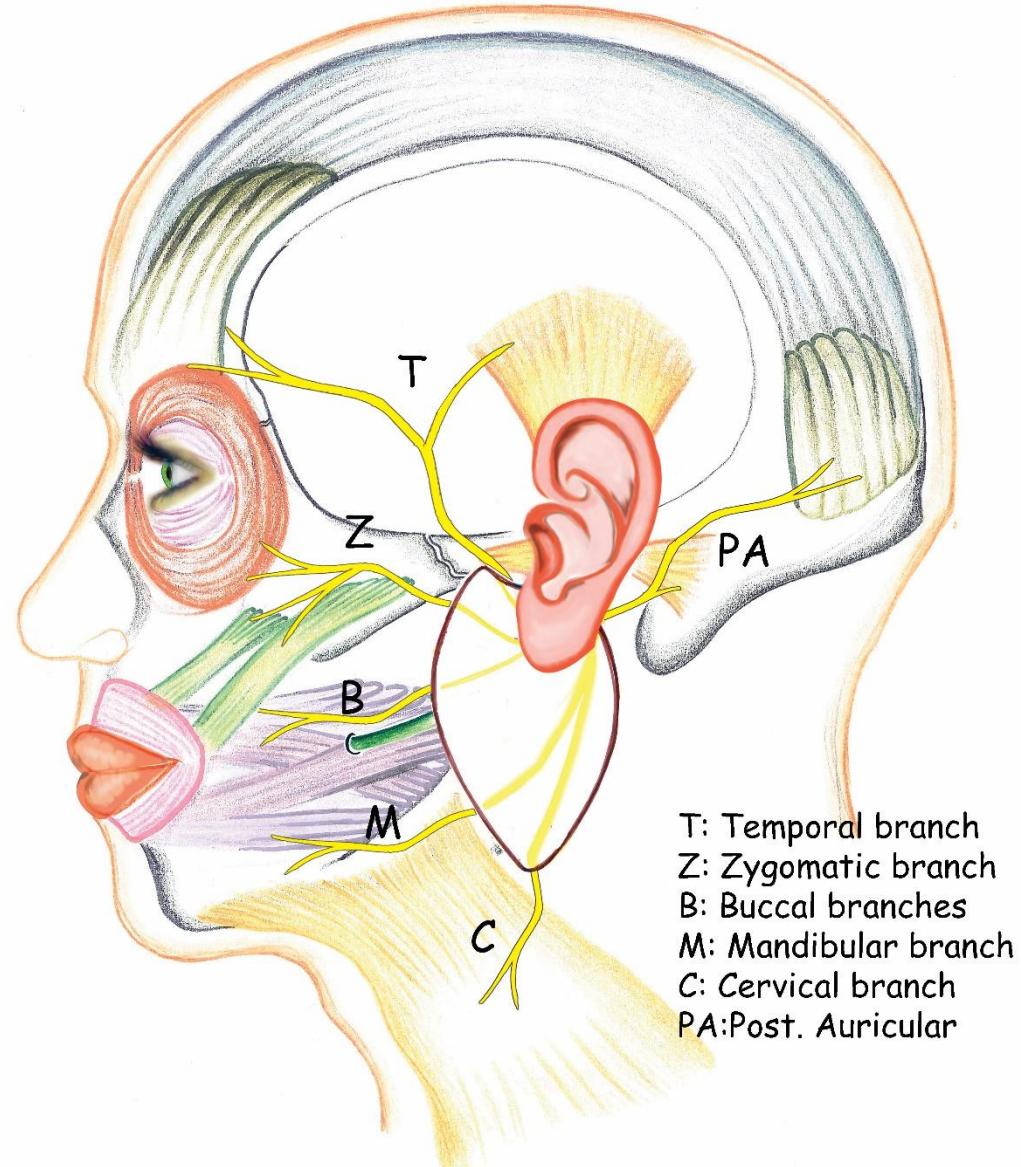
Motor nerves of the face

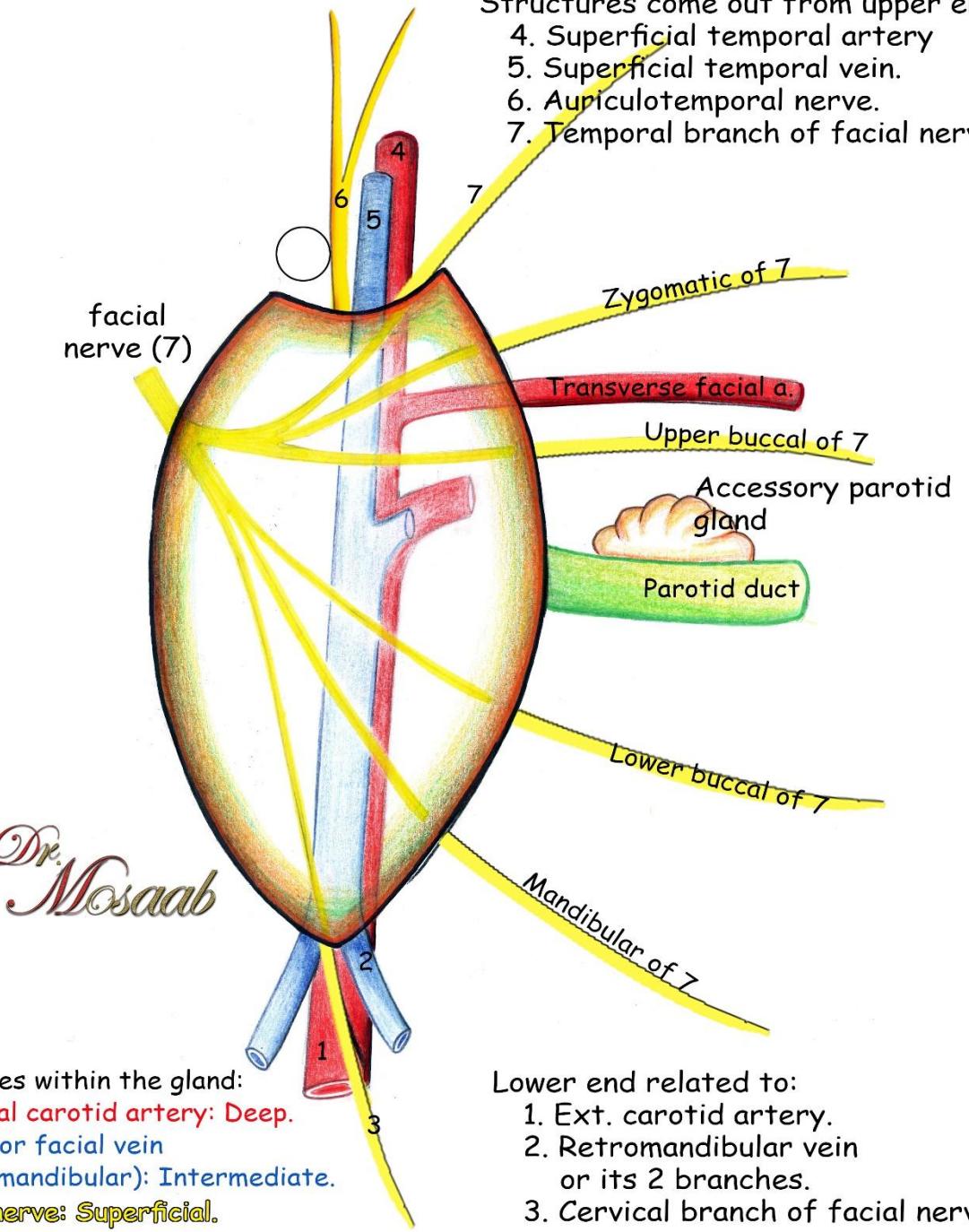
Facial nerve

Facial nerve: enters the gland at its posteromedial surface and divides into 5 terminal branches.

- **Branches:**

1. temporal
2. zygomatic
3. buccal
4. mandibular
5. and cervical





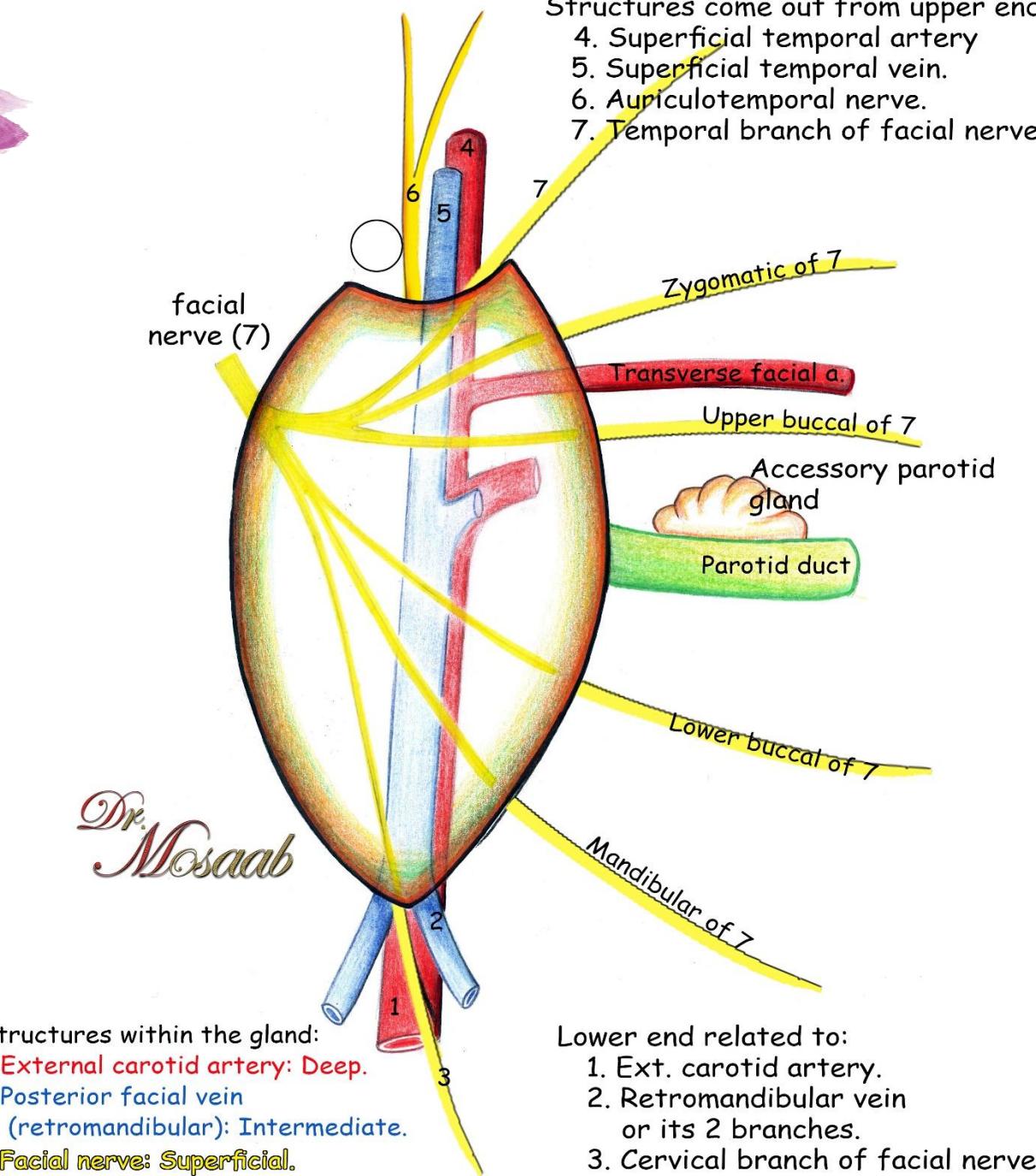
Ends:

Lower end: Structures come out from it

1. Ext. carotid artery.
2. Retromandibular vein or its 2 branches.
3. Cervical branch of facial nerve.

Upper end: Structures come out from it:

4. Superficial temporal artery.
5. Superficial temporal vein
6. Auriculotemporal nerve.
7. Temporal branch of facial nerve.



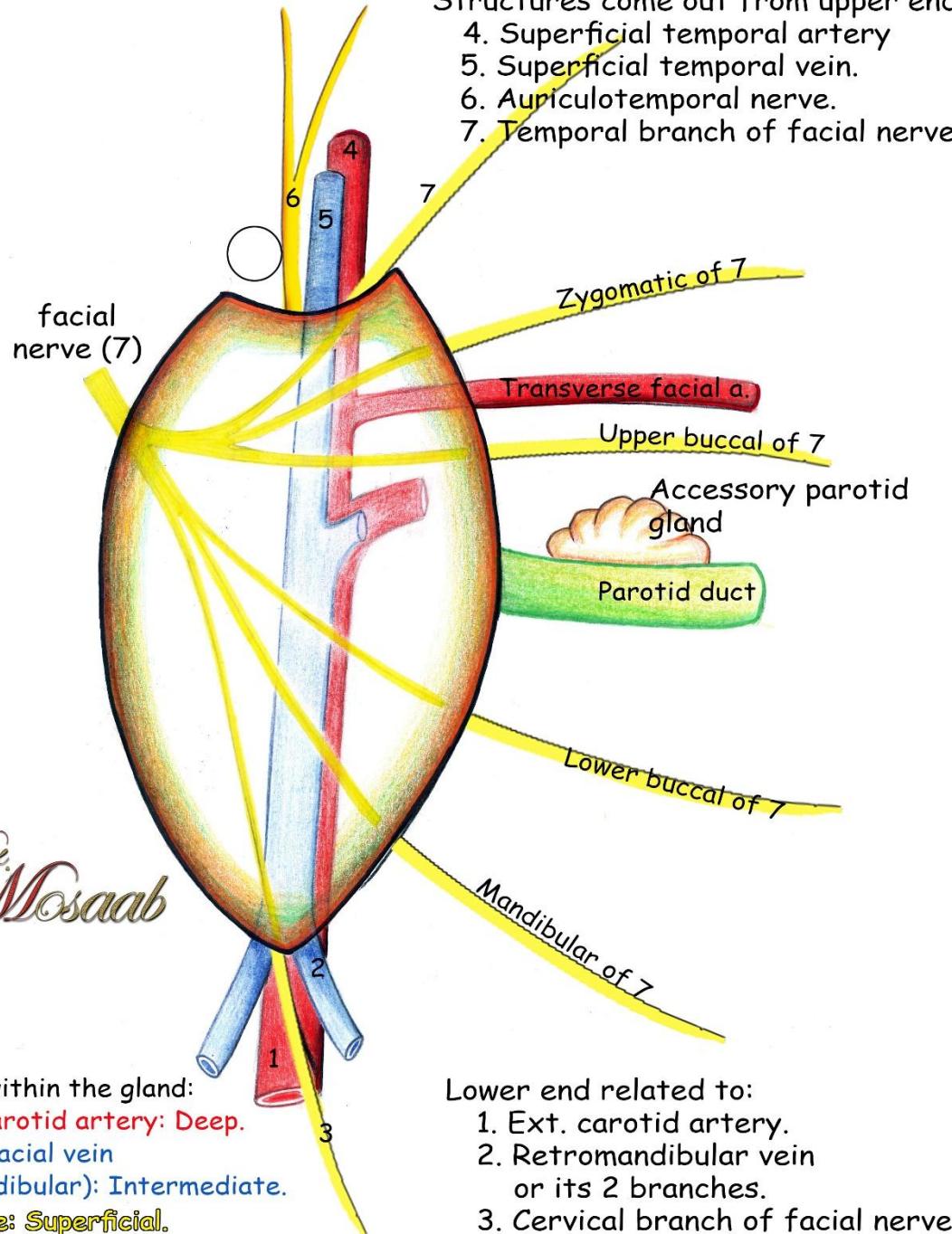
Borders:

Anterior border: overlaps the masseter ms.

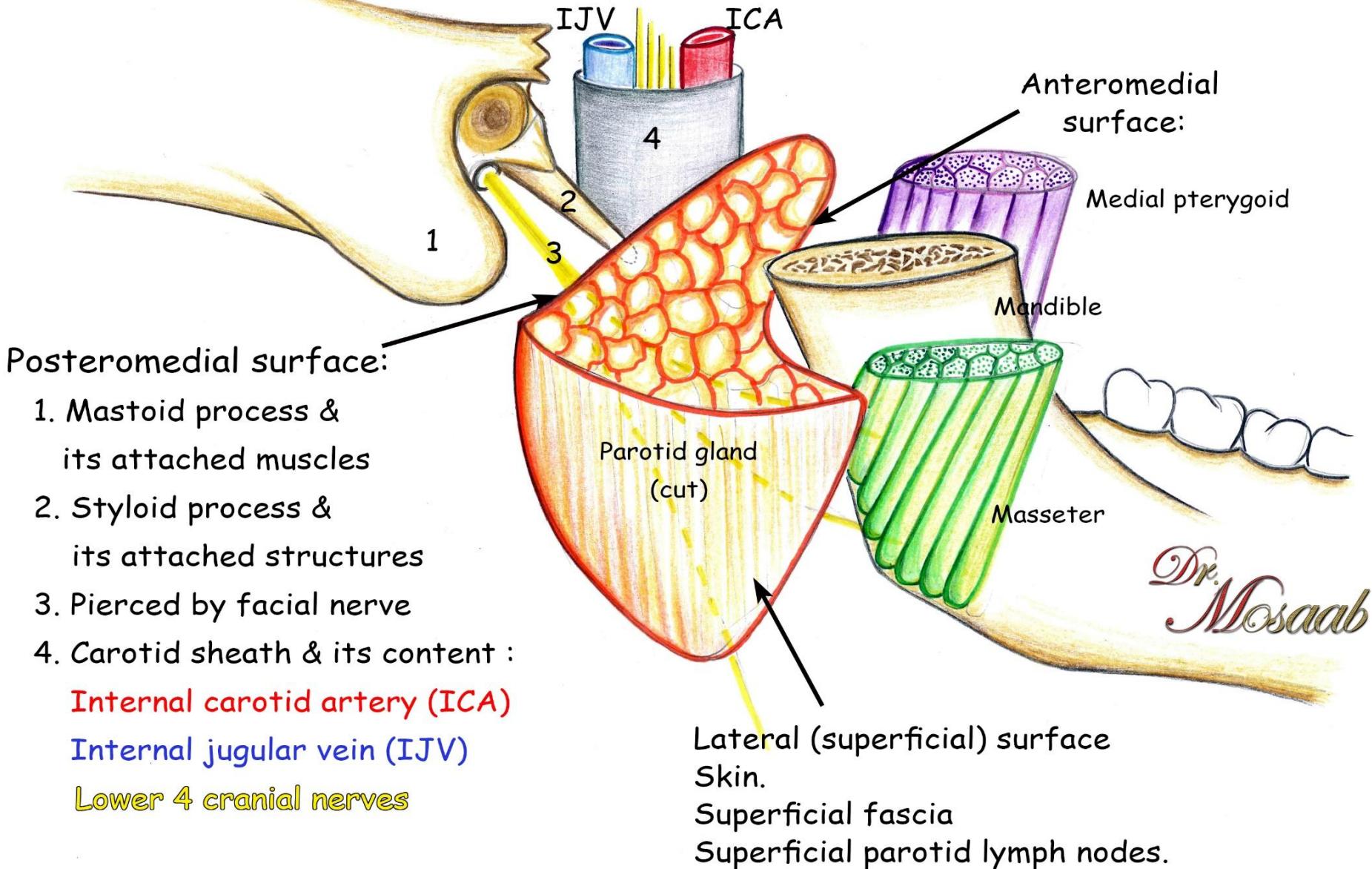
Structures come out from it:

- Parotid duct.
- Transverse facial artery.
- 3 branches of the facial nerve:
 - Zygomatic.
 - Buccal.
 - Mandibular.

Posterior border: overlaps part the sternomastoid.



Surfaces:



Surfaces:

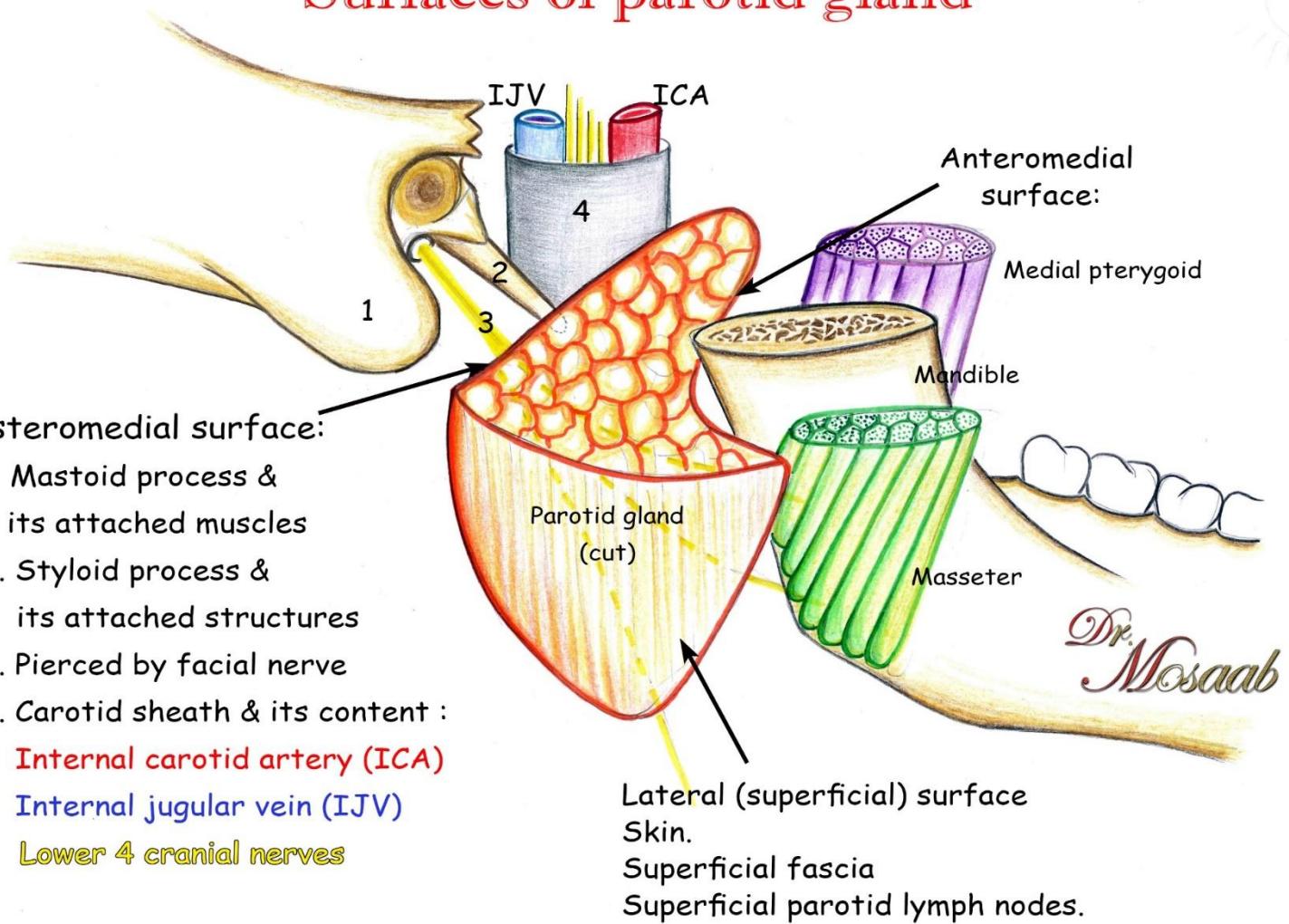
Superficial relations:

1. Skin,
2. Superficial fascia
3. Superficial Parotid lymph nodes

Anteromedial relations:

1. Masseter
2. Mandible
3. Medial pterygoid

Surfaces of parotid gland

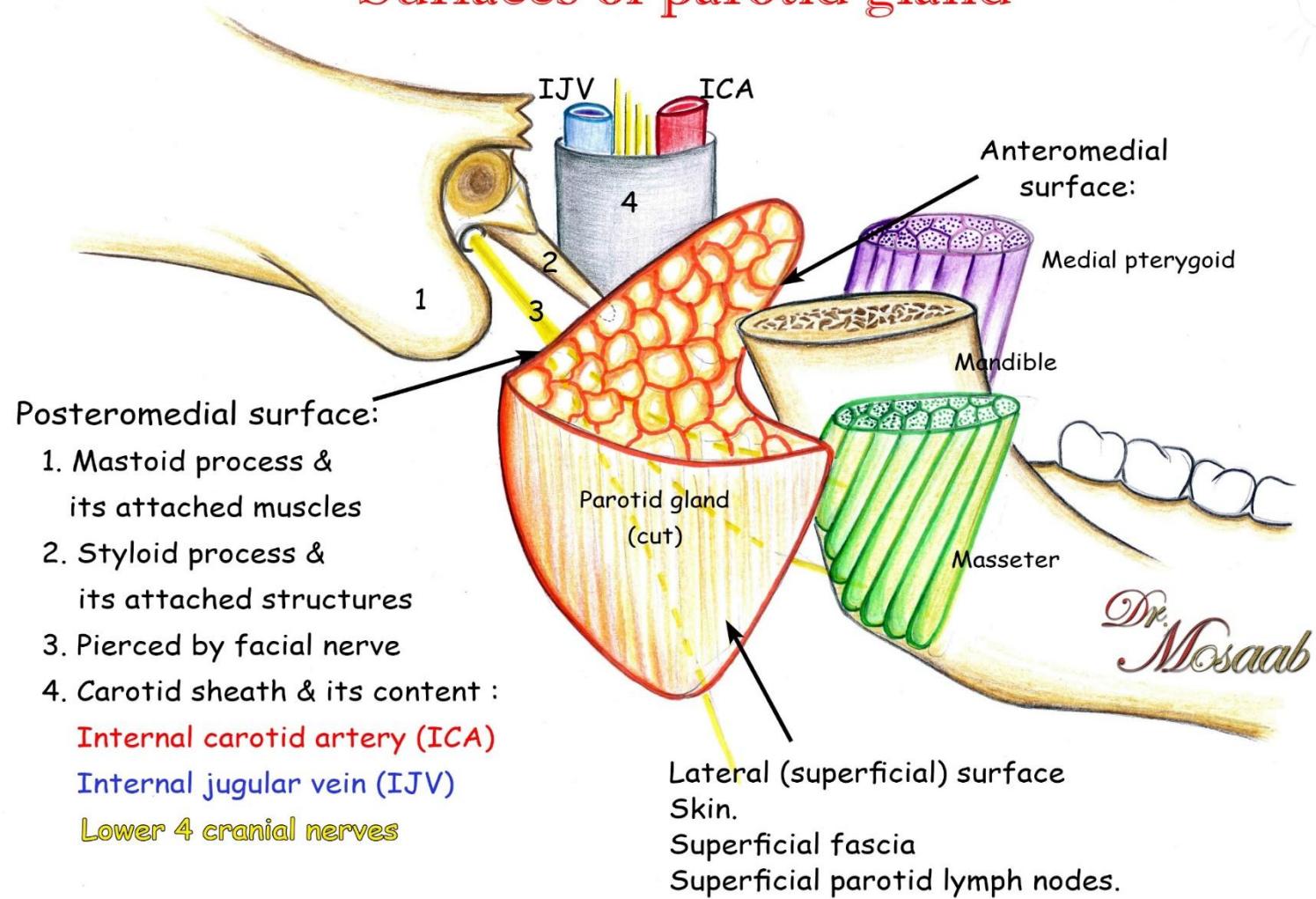


Surfaces:

Posteromedial relations:

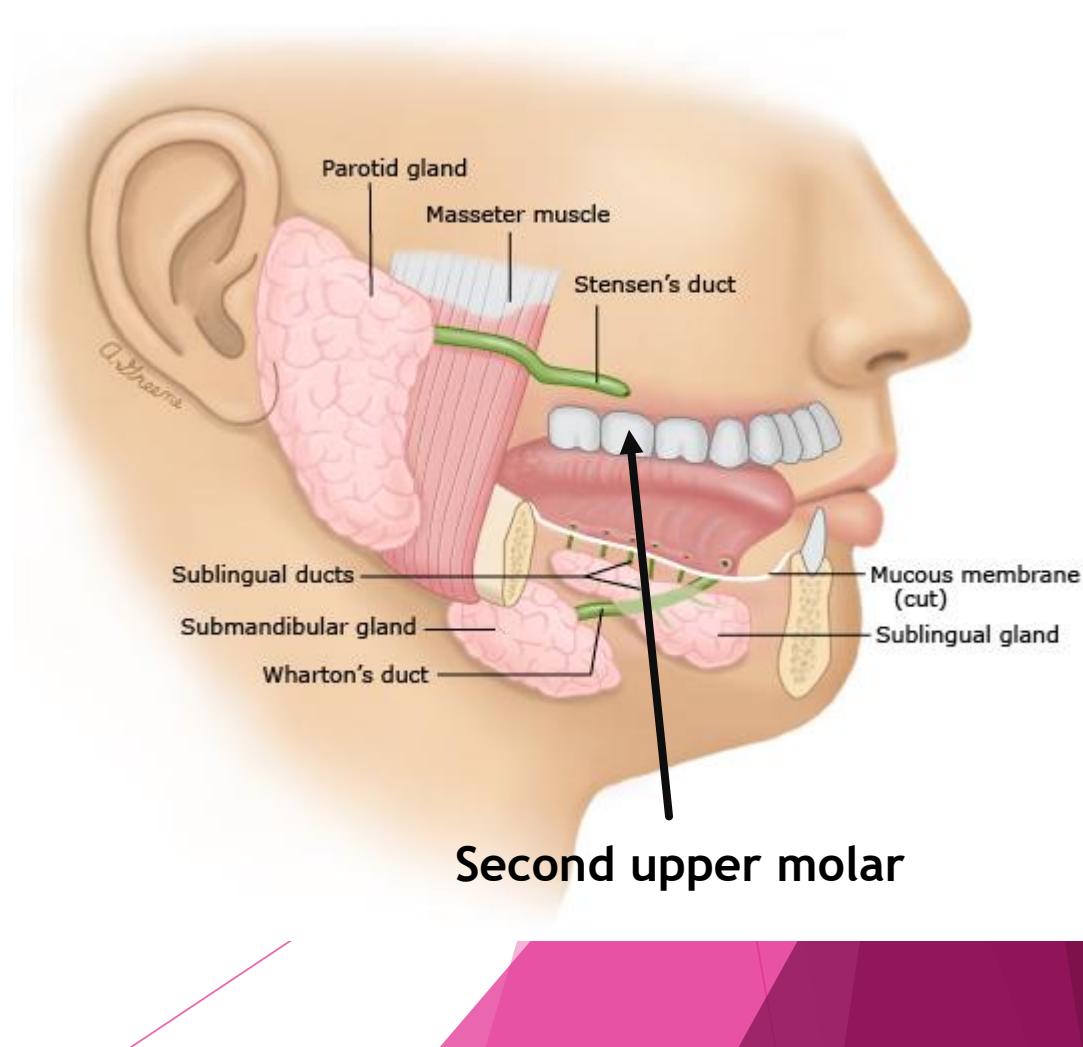
1. mastoid process & attached muscles
2. styloid process & its attached structures
3. Facial nerve enters gland from its postero-medial surface.
4. carotid sheath & its contents

Surfaces of parotid gland



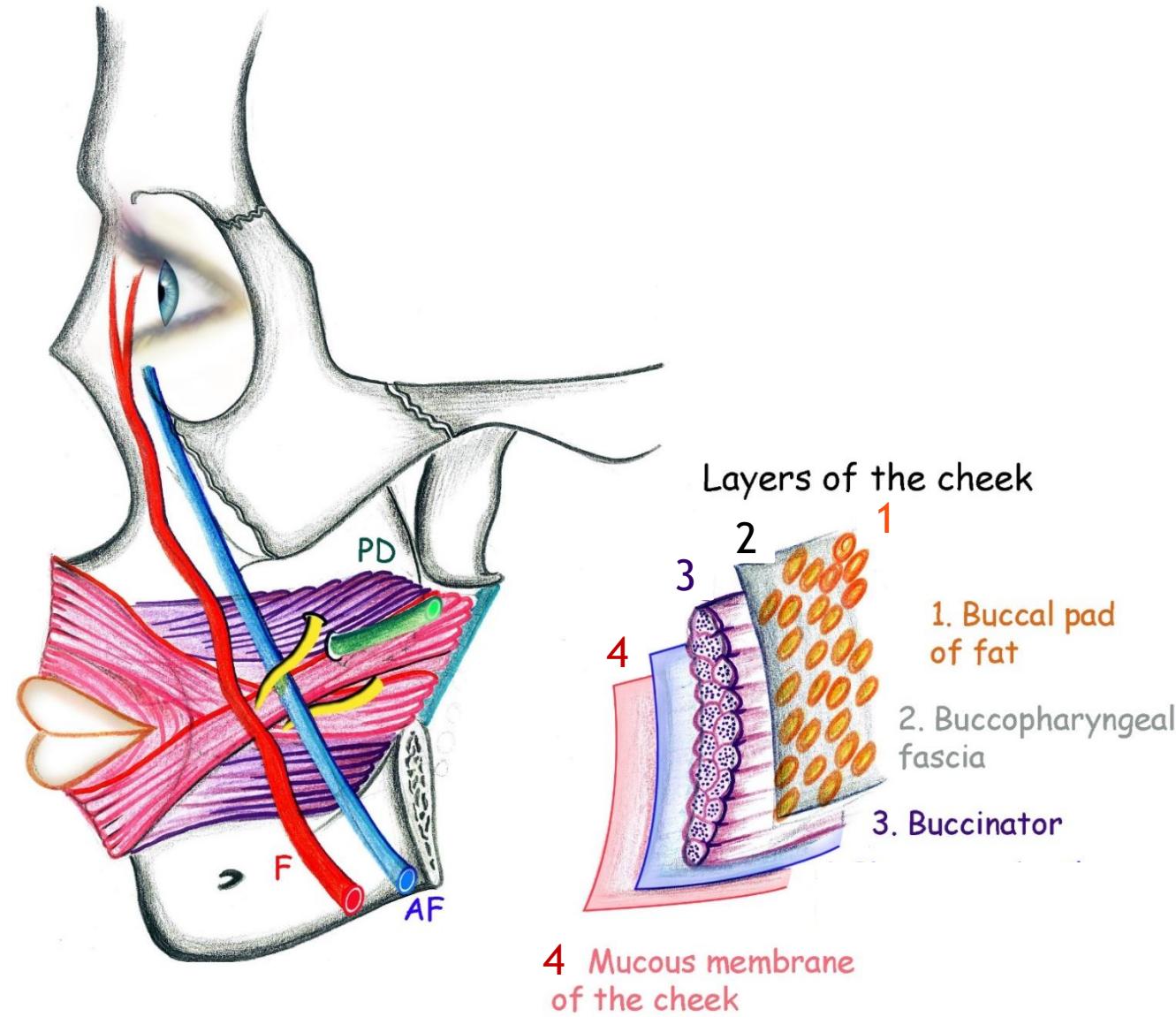
Parotid gland duct

- ▶ Passes forwards across the masseter below the zygomatic arch.
- ▶ Curves medially to pierce:
 1. Buccal pad of fat.
 2. Buccopharyngeal fascia.
 3. Buccinator muscle.
 4. Mucous membrane of the cheek.
- ▶ Opens into the vestibule of mouth opposite upper second molar tooth.



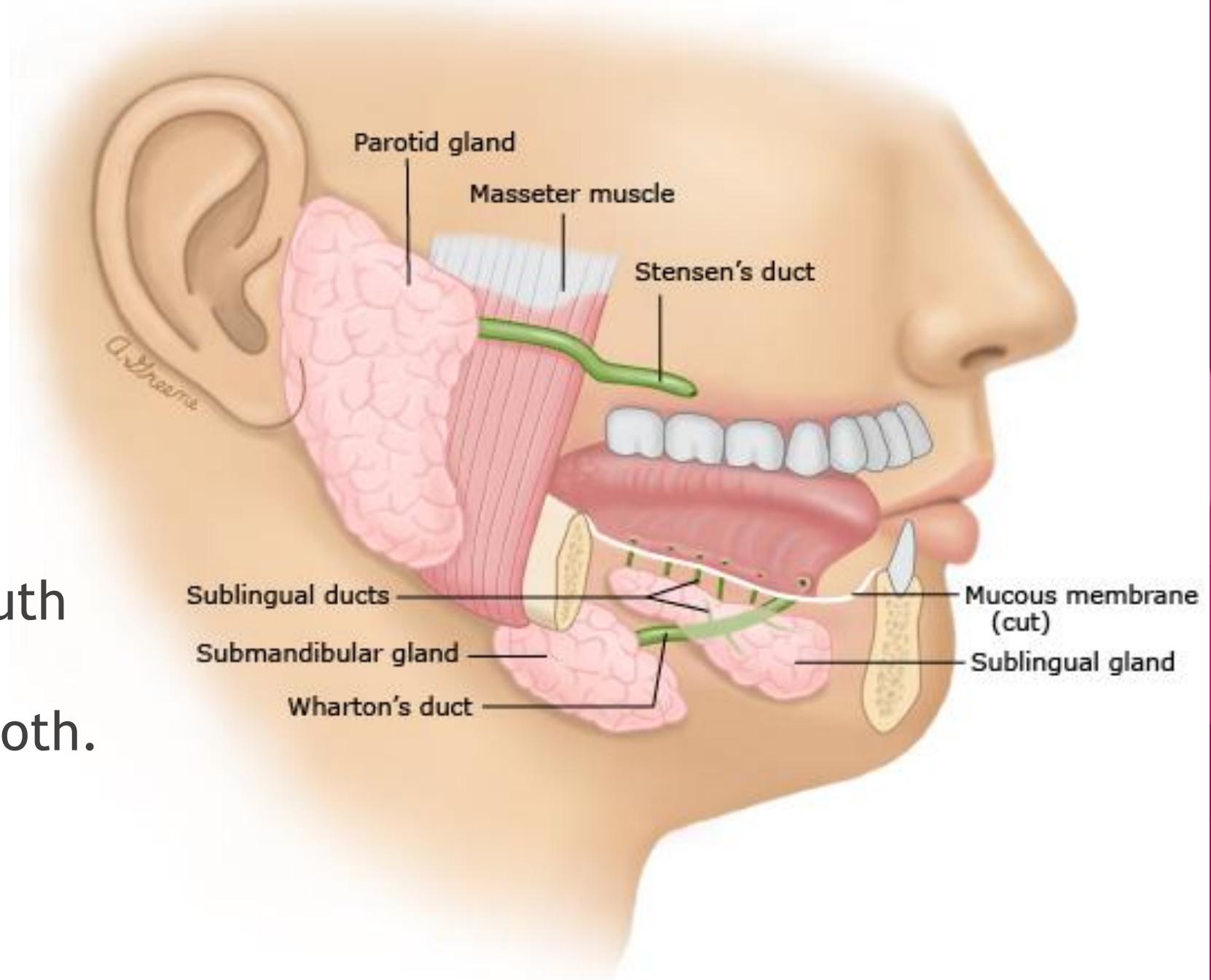
Parotid (STENSEN'S) duct

- ▶ Passes forwards across the masseter below the zygomatic arch.
- ▶ Curves medially to pierce:
 1. Buccal pad of fat.
 2. Buccopharyngeal fascia.
 3. Buccinator muscle.
 4. Buccal mucosa

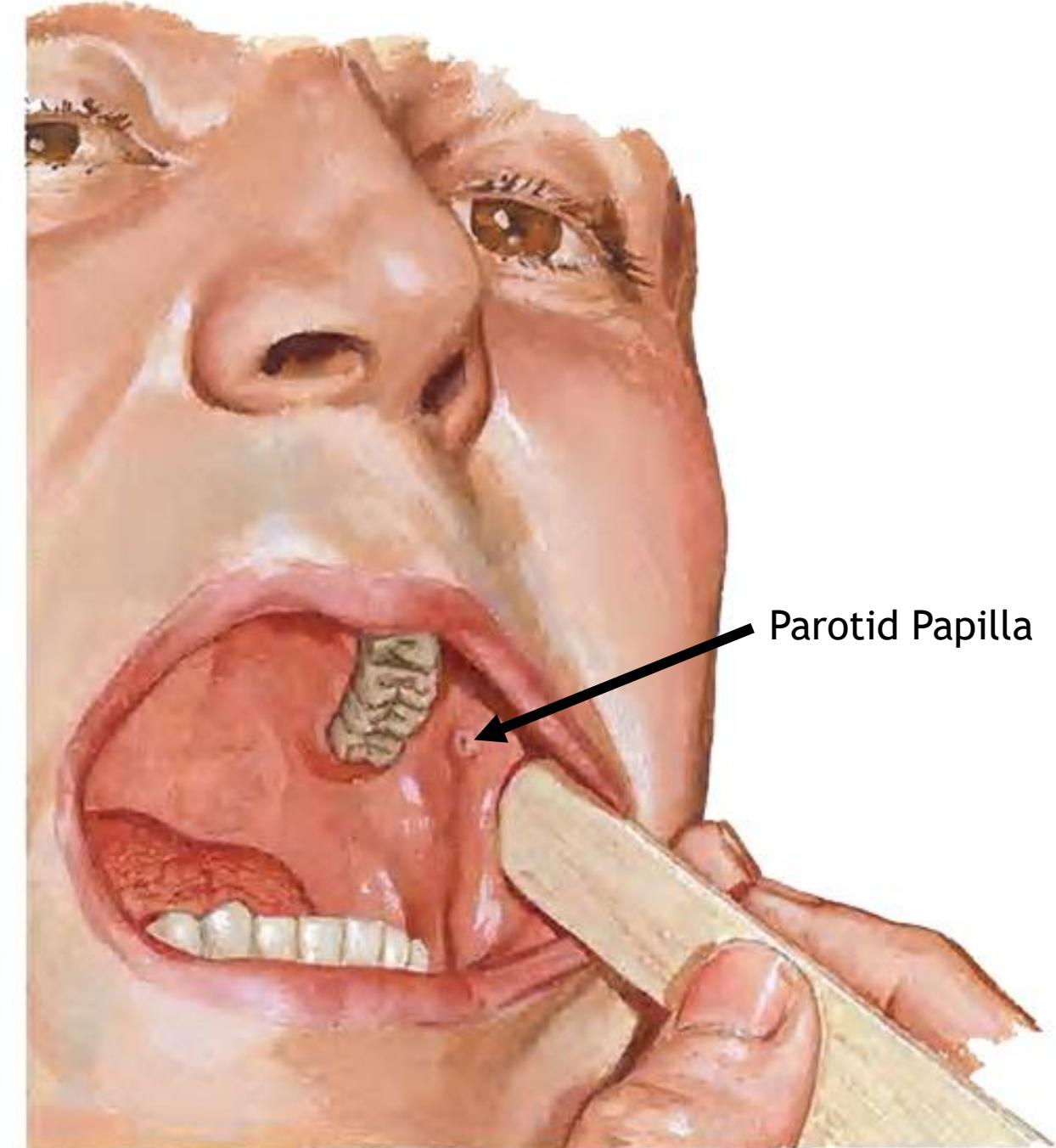
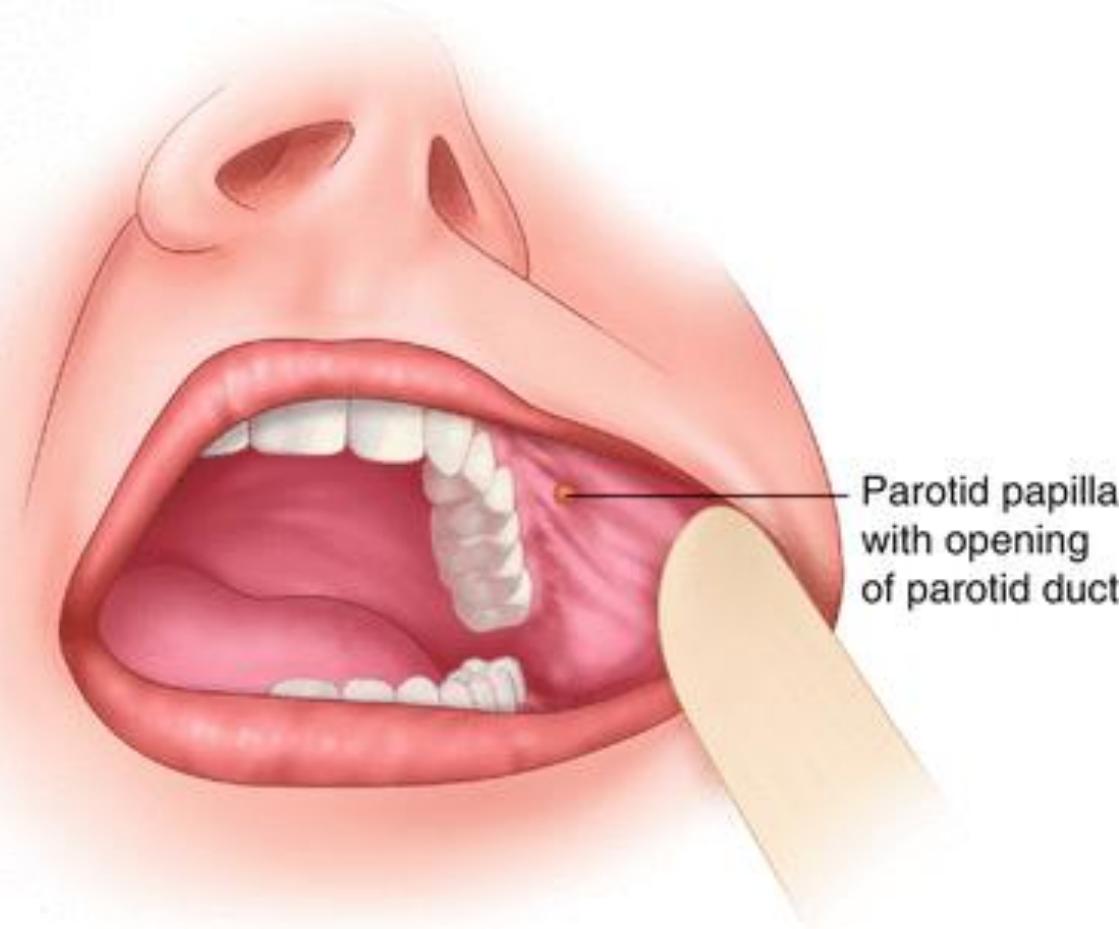


Termination

- ▶ Opens into the vestibule of mouth opposite upper second molar tooth.

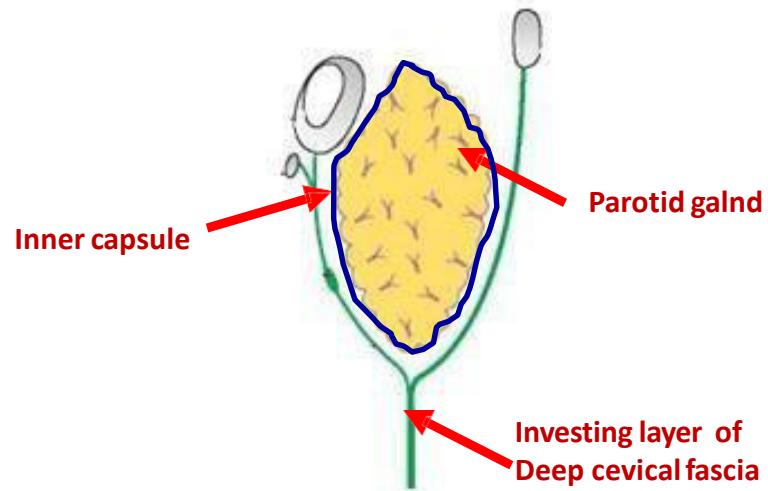
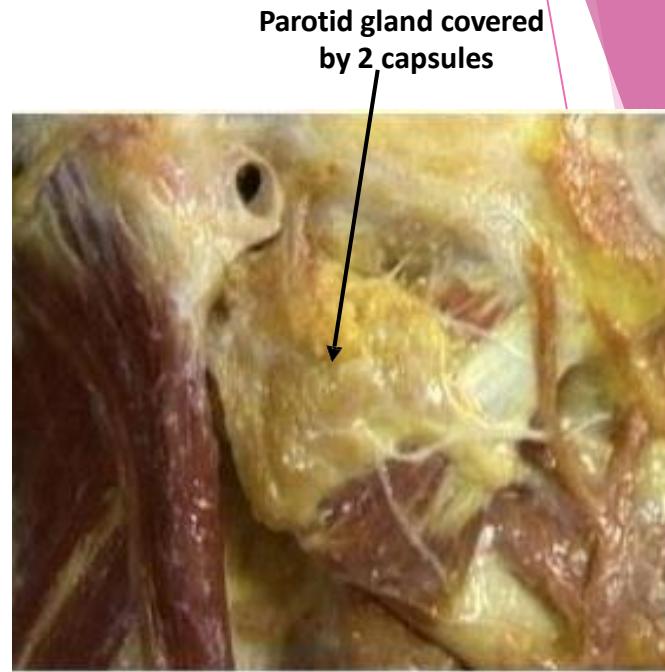


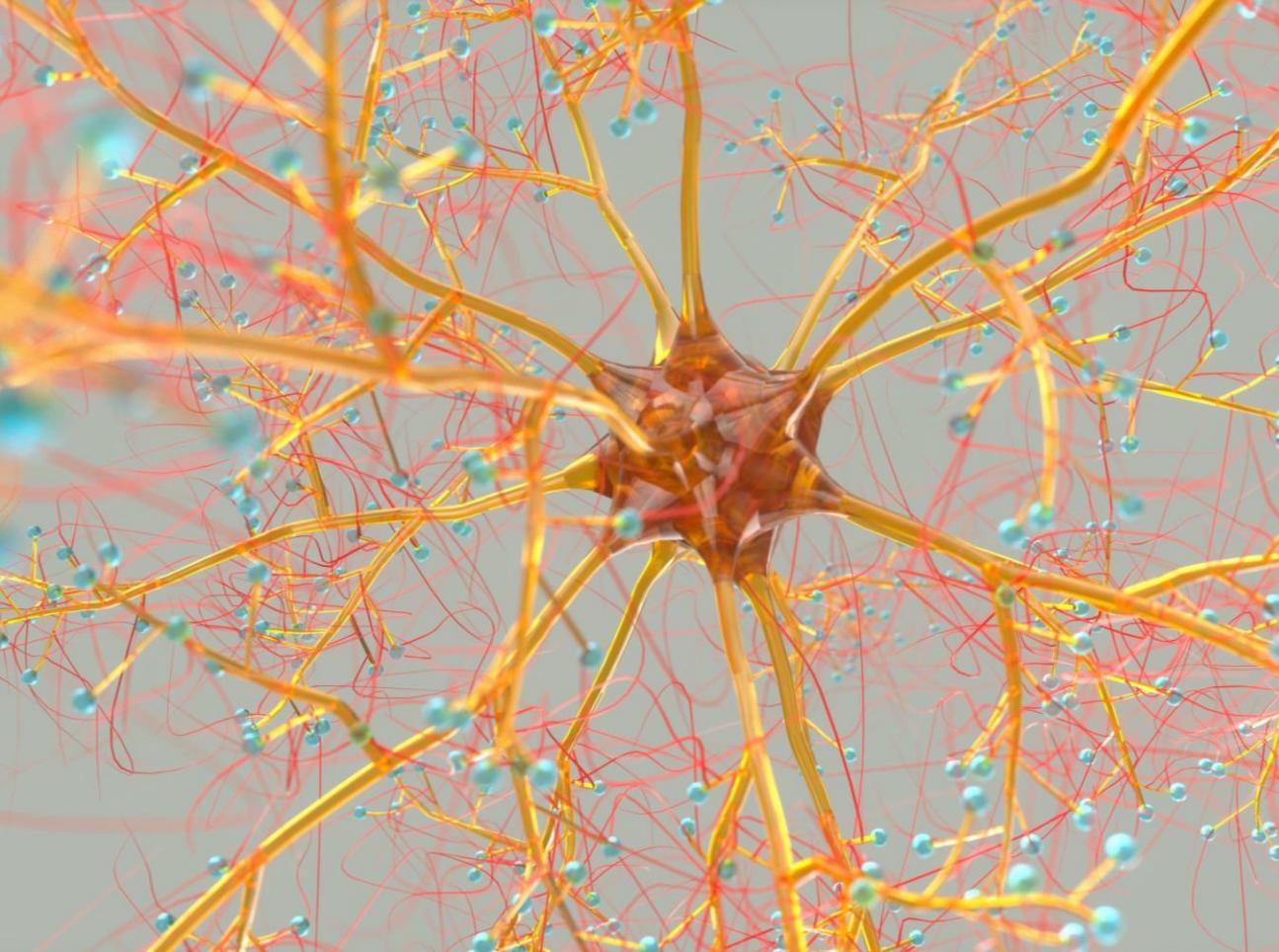
- ▶ Opens into the vestibule of mouth opposite upper second molar tooth.



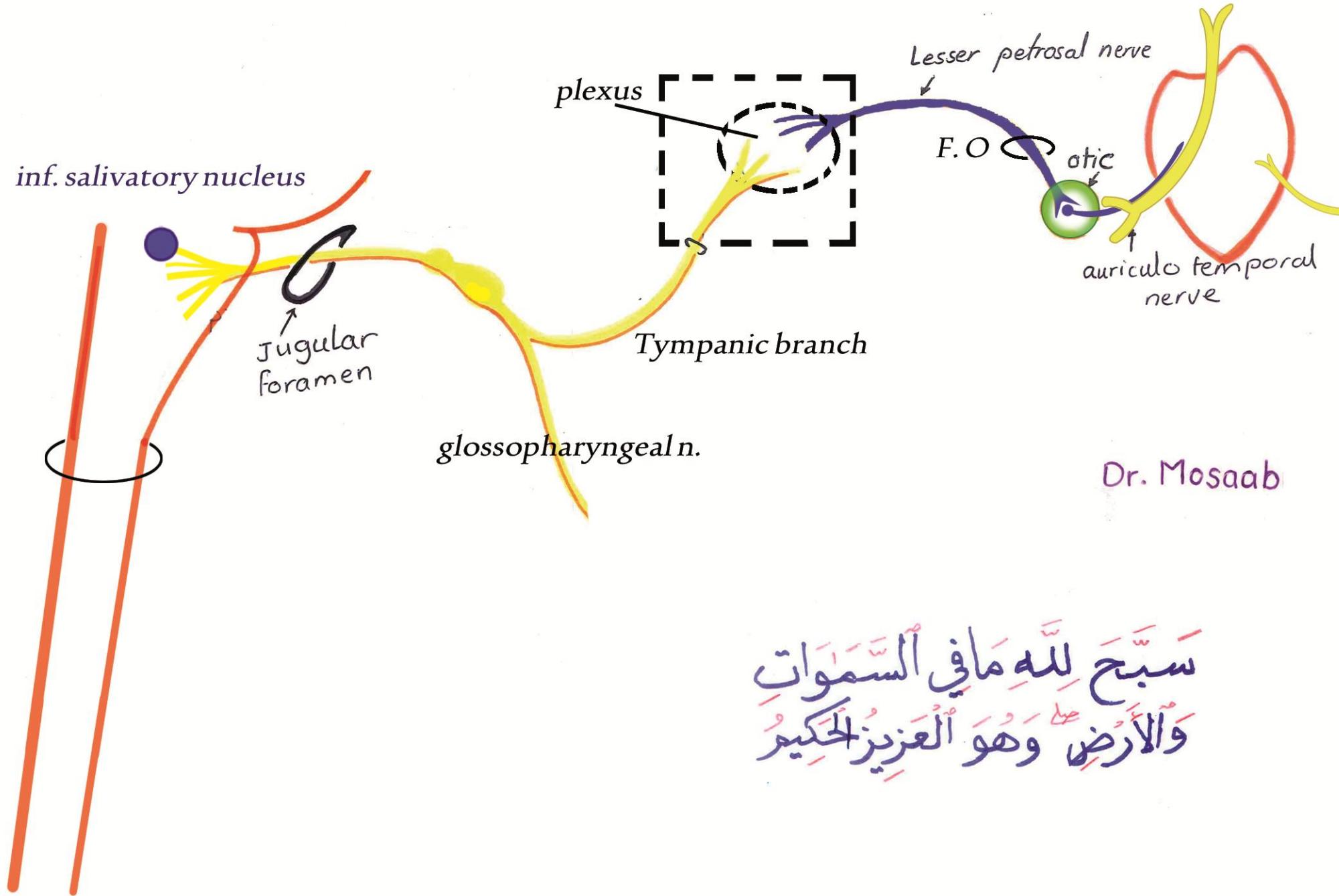
CAPSULES OF PAROTID GLAND

- It is enclosed in two capsules:
 1. **An inner (true) capsule:** of connective tissue
 2. **An outer (false) capsule:** derived from the investing layer of the deep cervical fascia

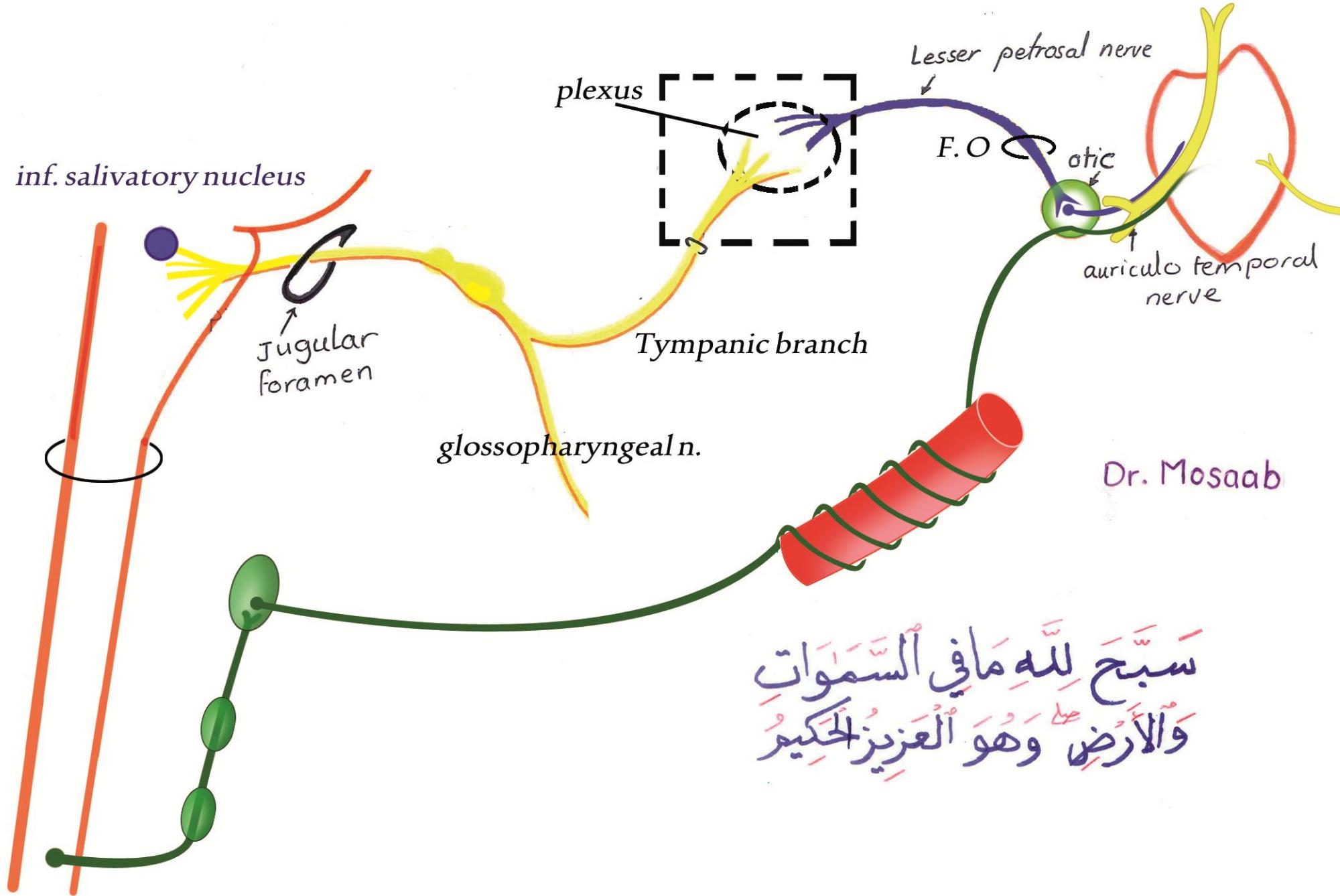


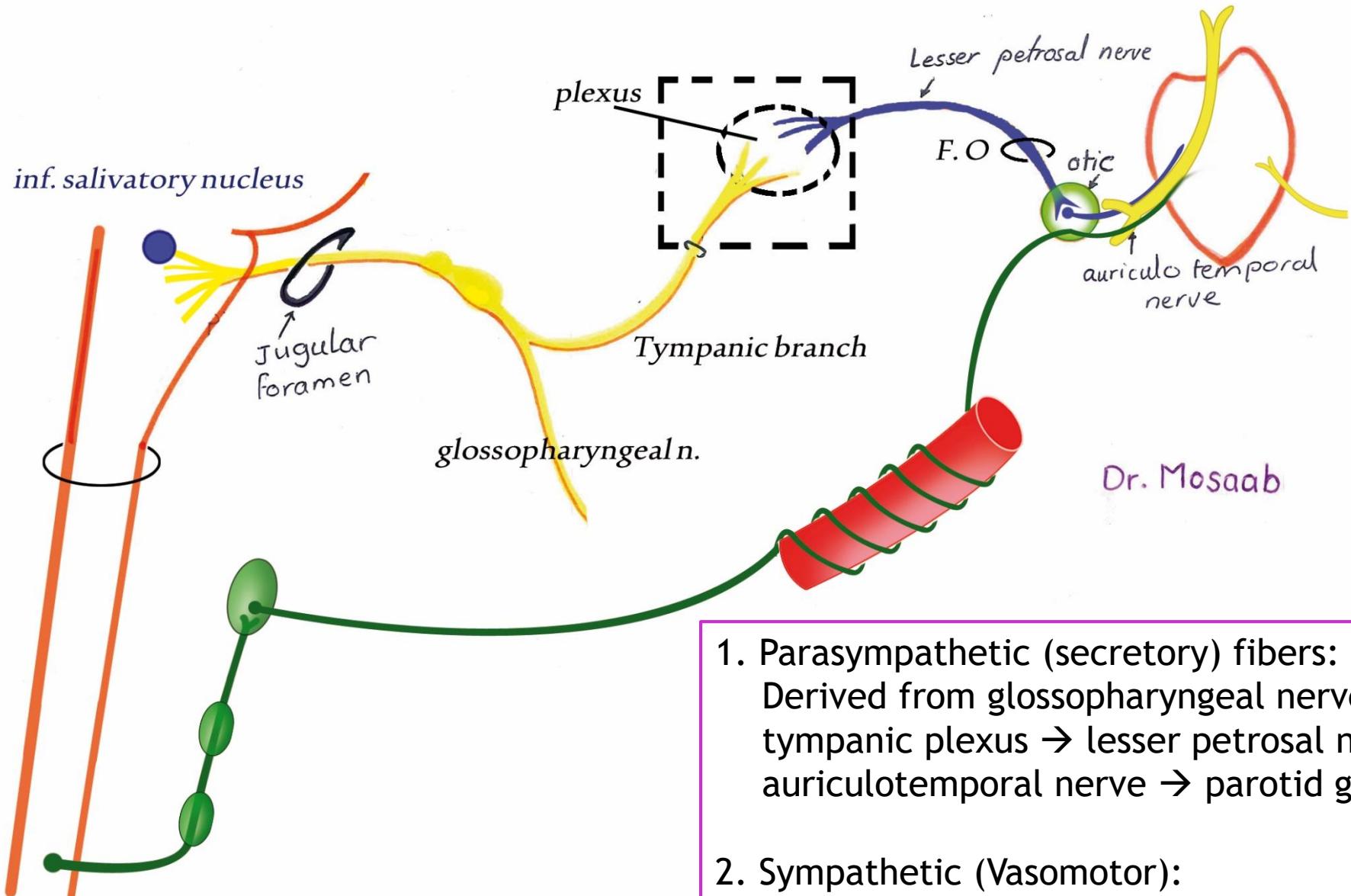


Nerve supply:



سَبِّحْ لِلَّهِ مَا فِي السَّمَاوَاتِ
وَالْأَرْضِ وَهُوَ الْعَزِيزُ الْحَكِيمُ





1. Parasympathetic (secretory) fibers:
Derived from glossopharyngeal nerve → tympanic branch → tympanic plexus → lesser petrosal nerve → otic ganglion → auriculotemporal nerve → parotid gland.
2. Sympathetic (Vasomotor):
From the plexus around the external carotid artery.
3. Sensory:
To the gland: auriculotemporal nerve.
To the capsule: great auricular nerve.

Submandibular region

► Contents:

- ❖ Submandibular and sublingual salivary glands

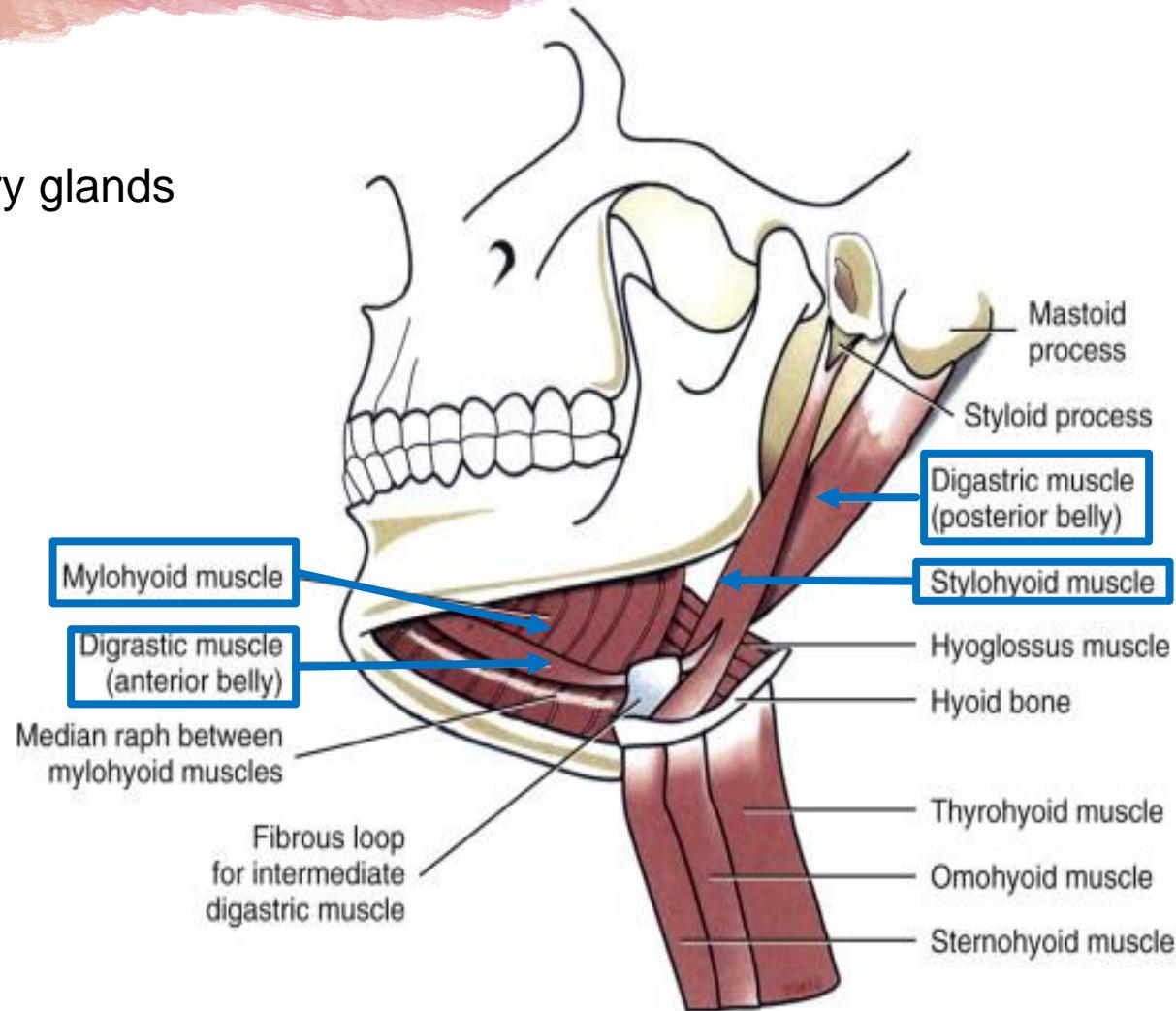
Muscles:

A. Suprathyroid muscles:

1. Digastric muscle
2. Stylohyoid
3. Mylohyoid
4. Geniohyoid

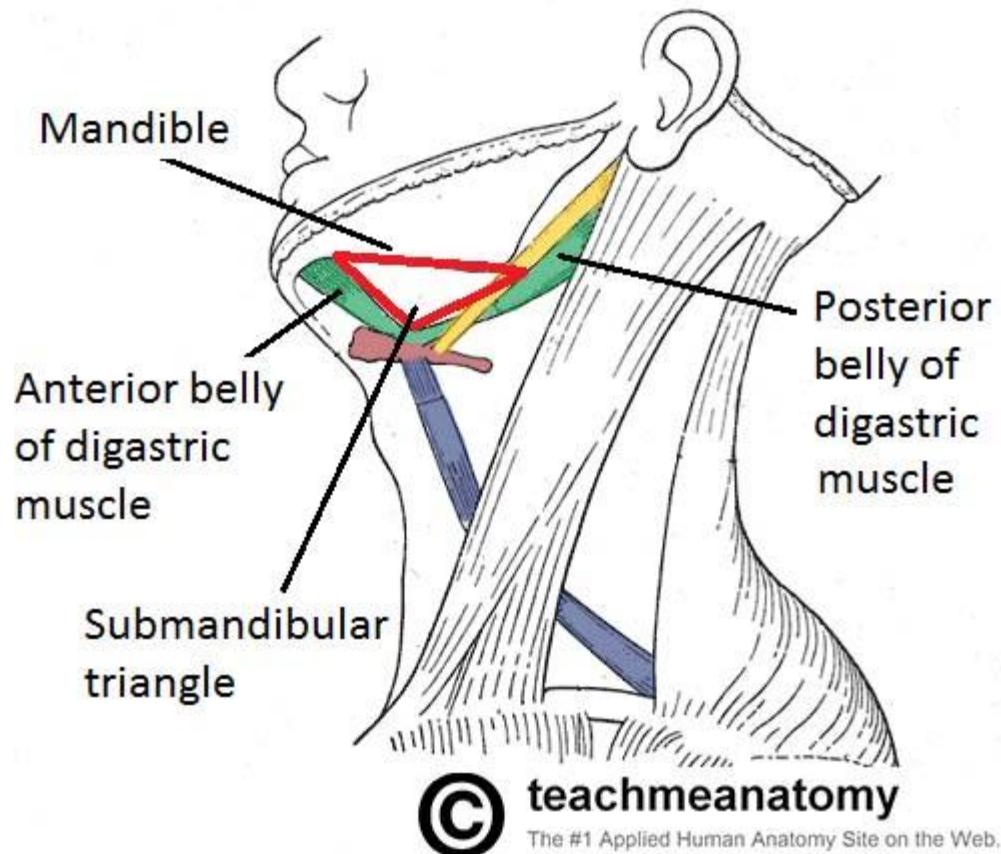
Extrinsic muscles of tongue:

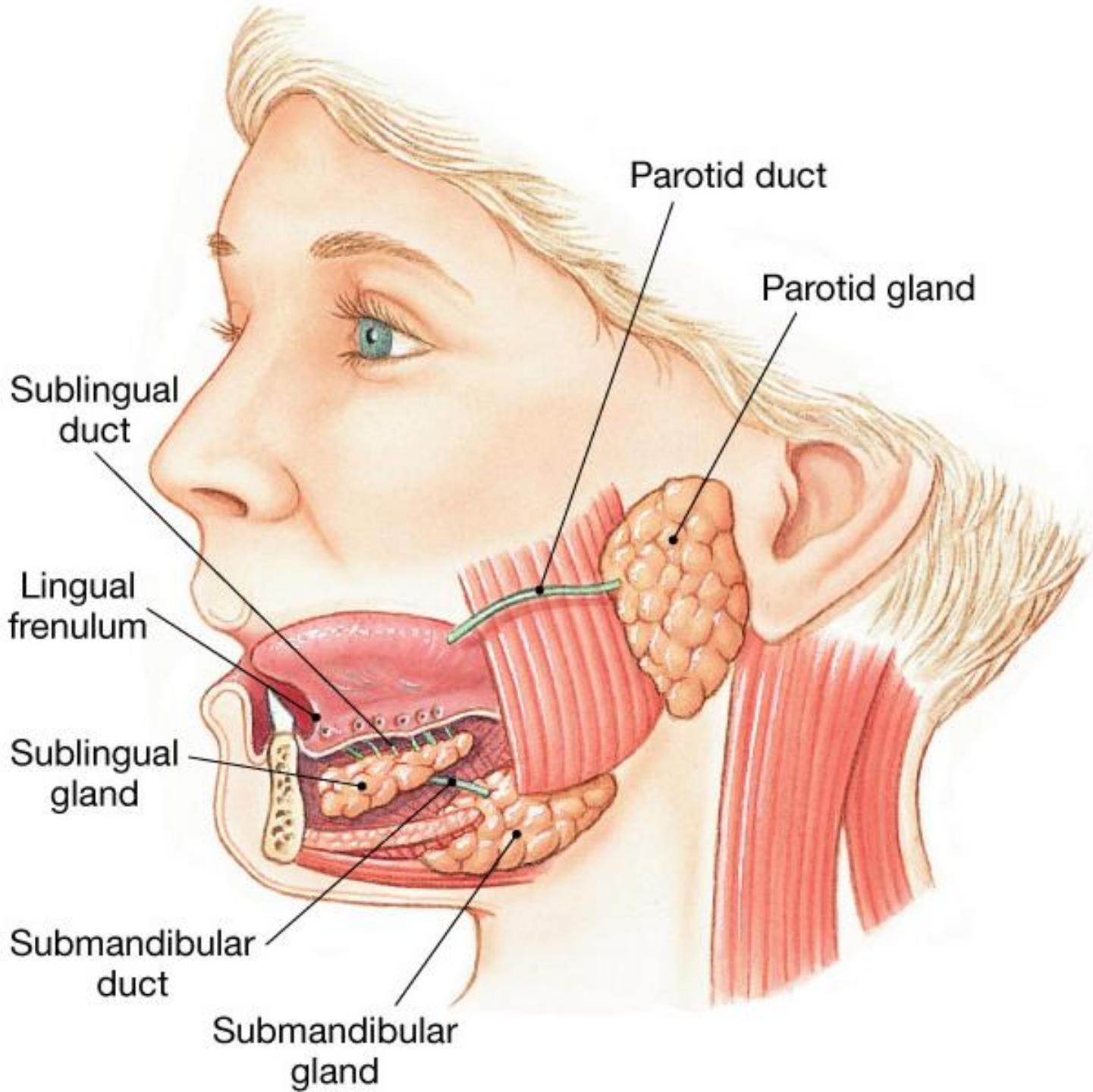
1. Styloglossus
2. Hyoglossus
3. Genioglossus
4. Palatoglossus.



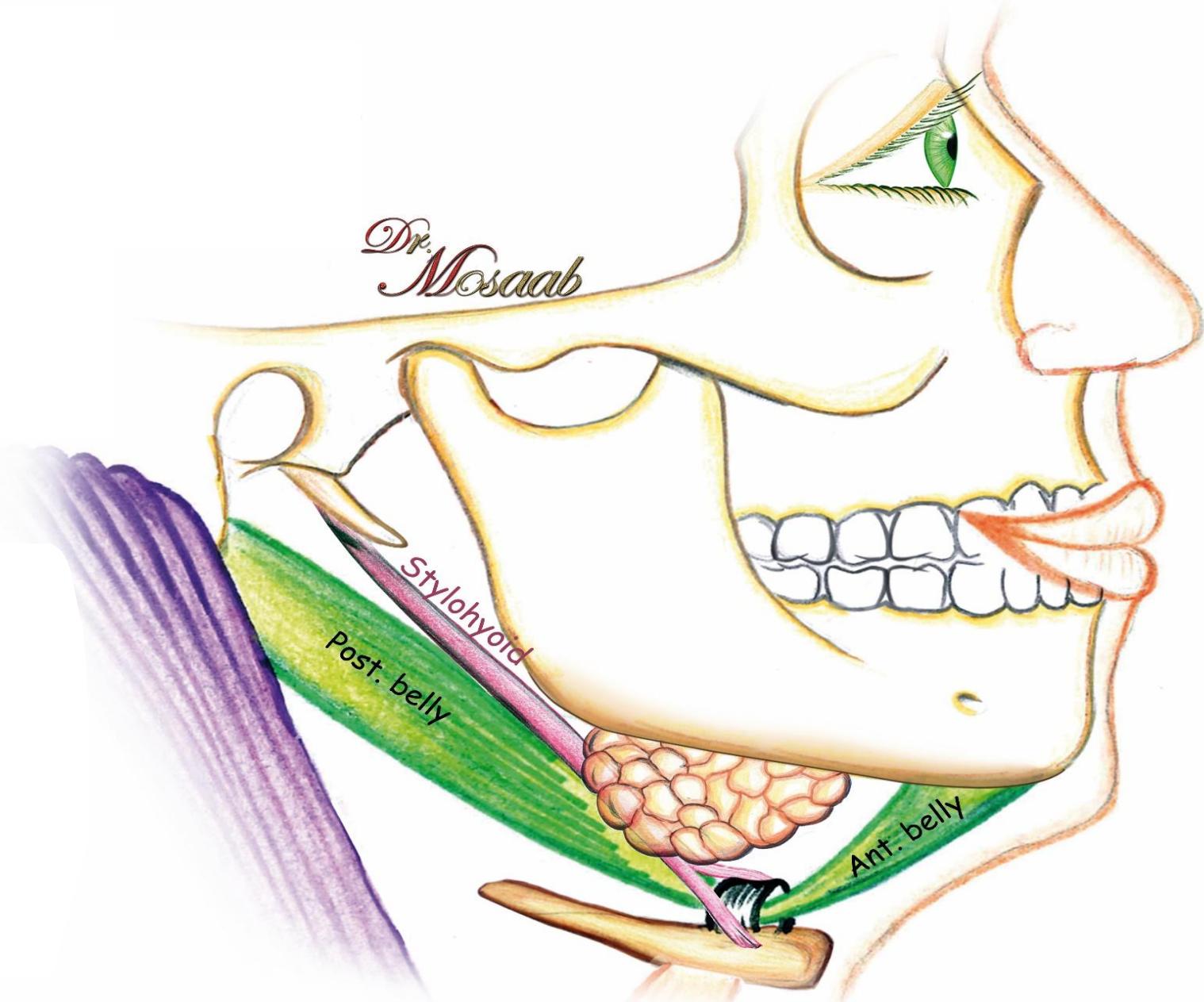
Submandibular gland

- ▶ The submandibular gland is located within the **submandibular triangle**.
- ▶ It has 2 capsules:
 - **True capsule** : condensation of fibrous tissue.
 - **False capsule**: a layer of investing layer of deep fascia

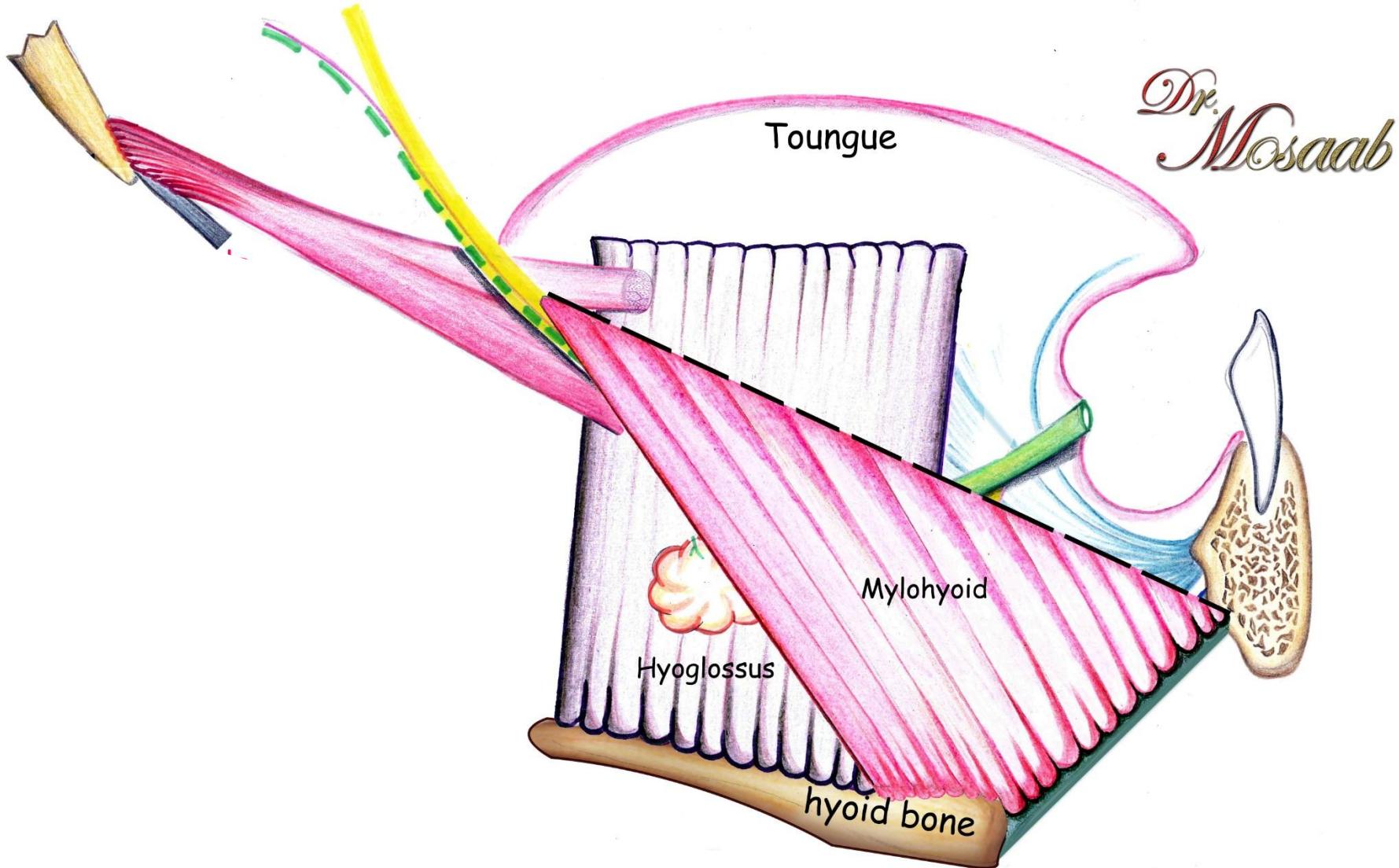




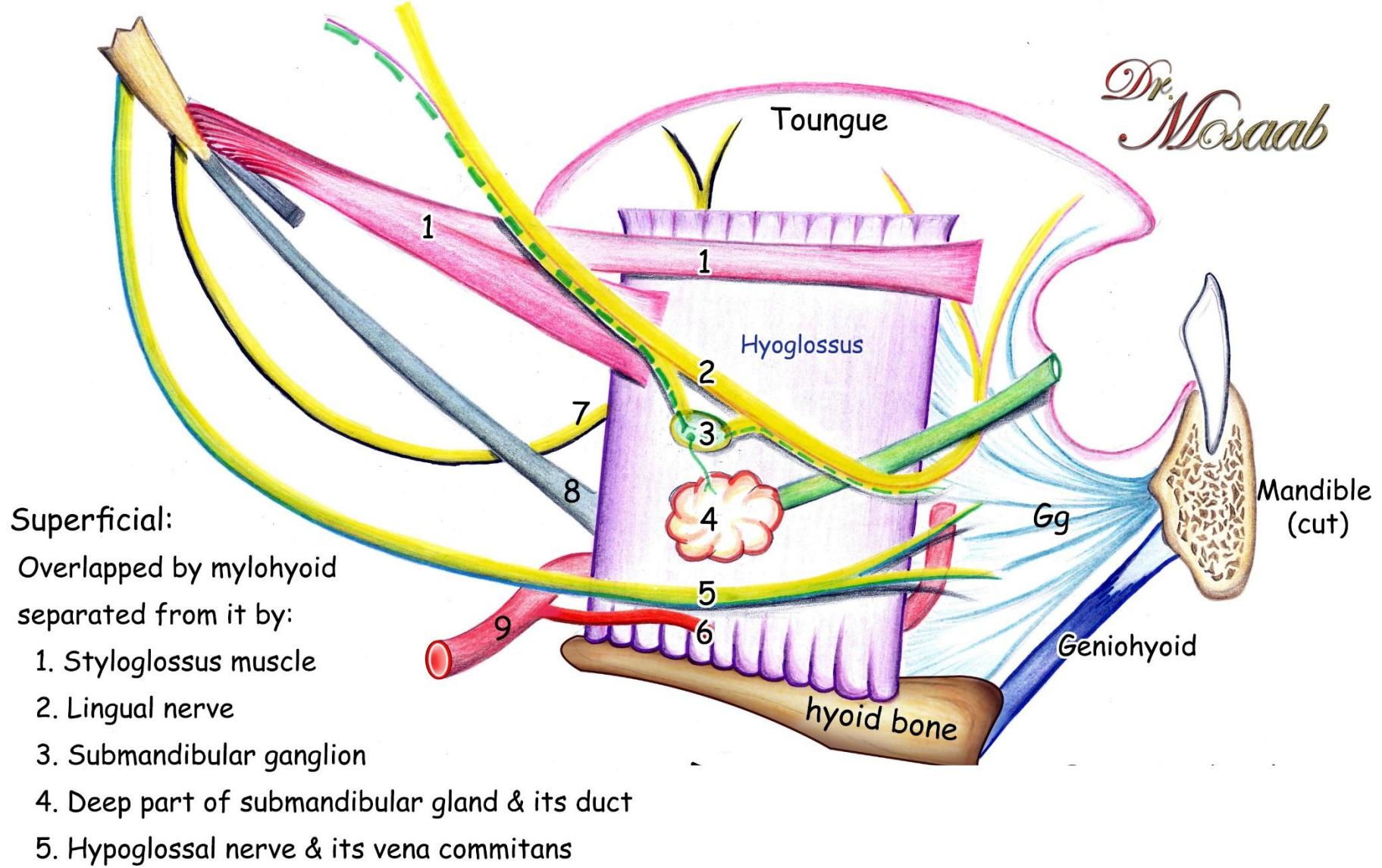
Digastric & Stylohyoid muscles



Mylohyoid & hyoglossus muscle



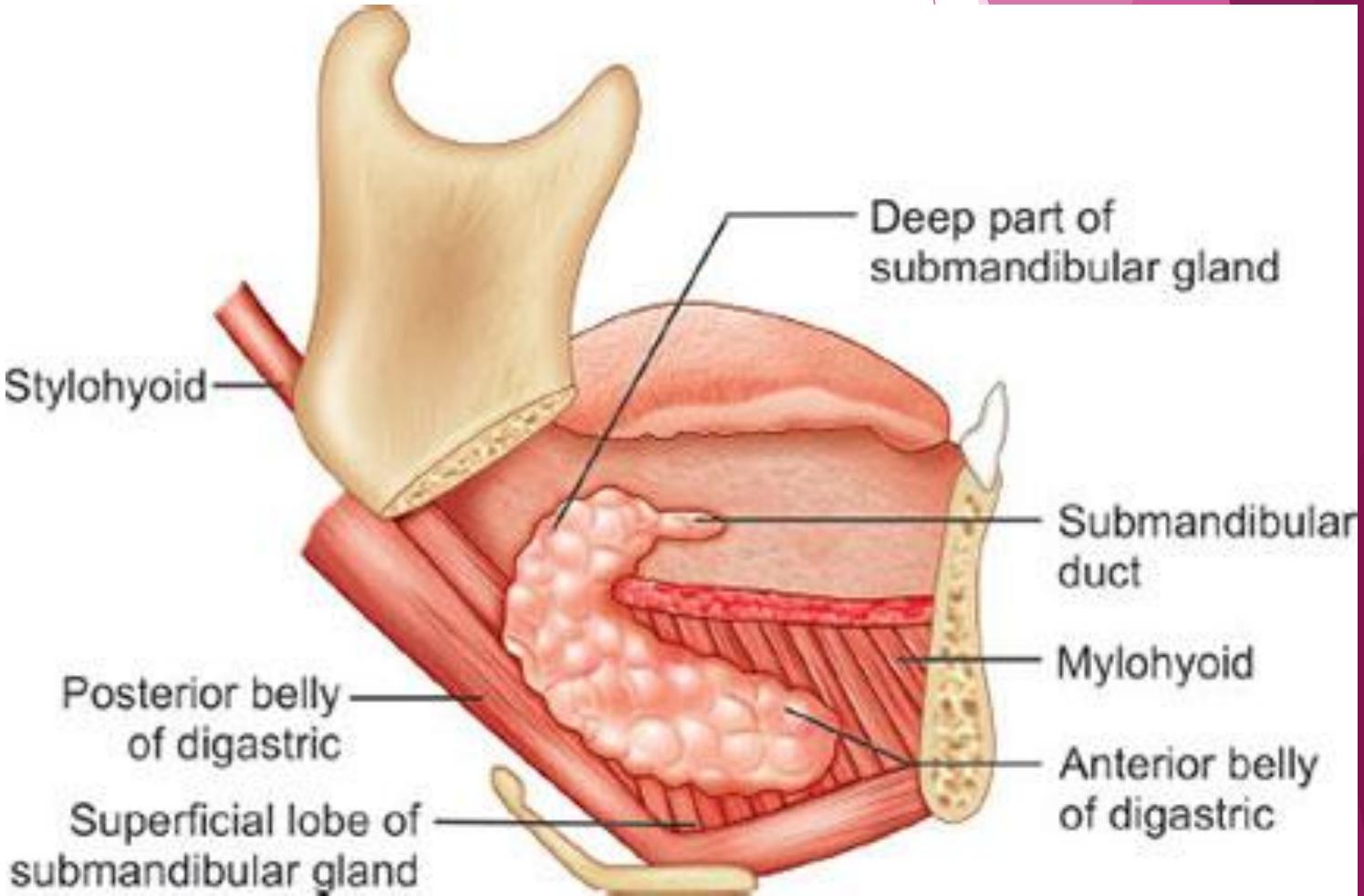
Relations of hyoglossus muscle



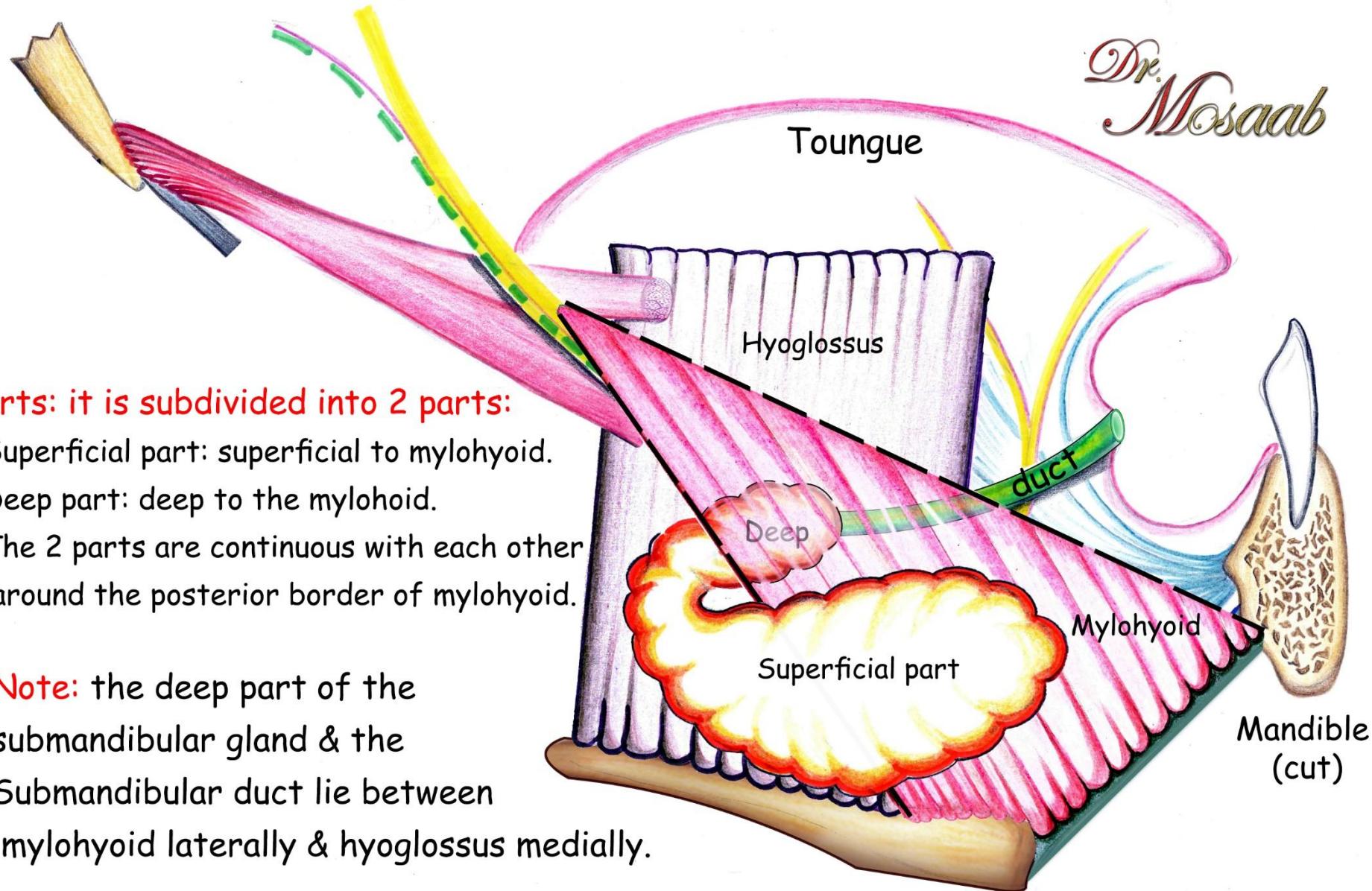
Submandibular gland

► Formed of two parts:

- ❖ **Superficial Part:** lies superficial to mylohyoid.
- ❖ **Deep Part:** lies deep to mylohyoid (between mylohyoid & hyoglossus)



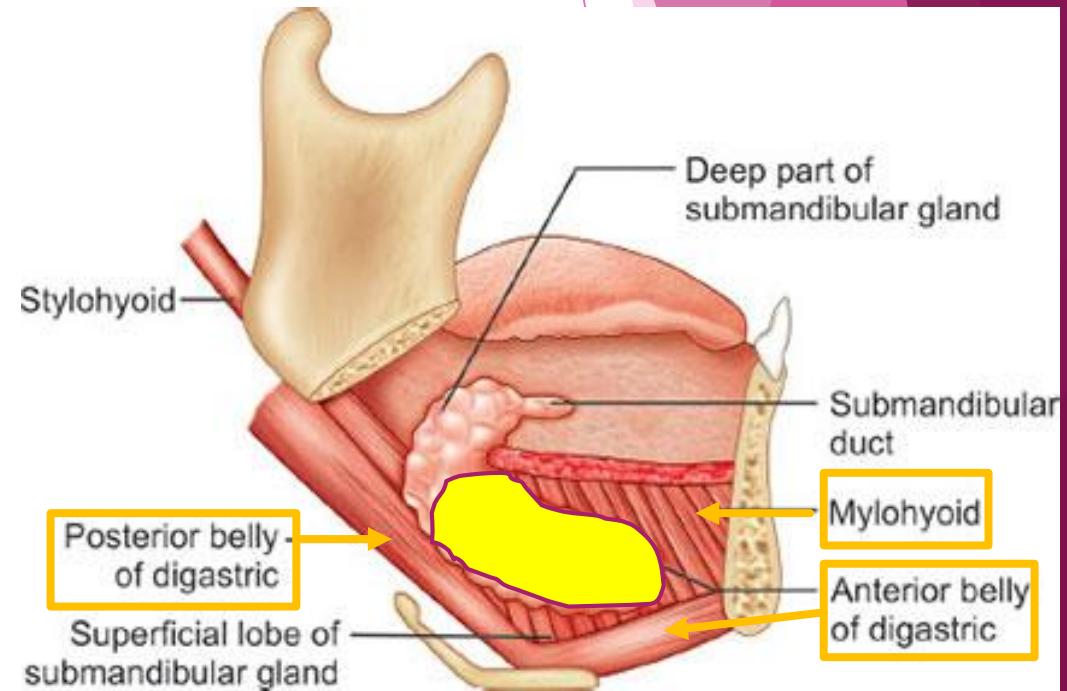
Submandibular salivary gland



Submandibular gland Relations

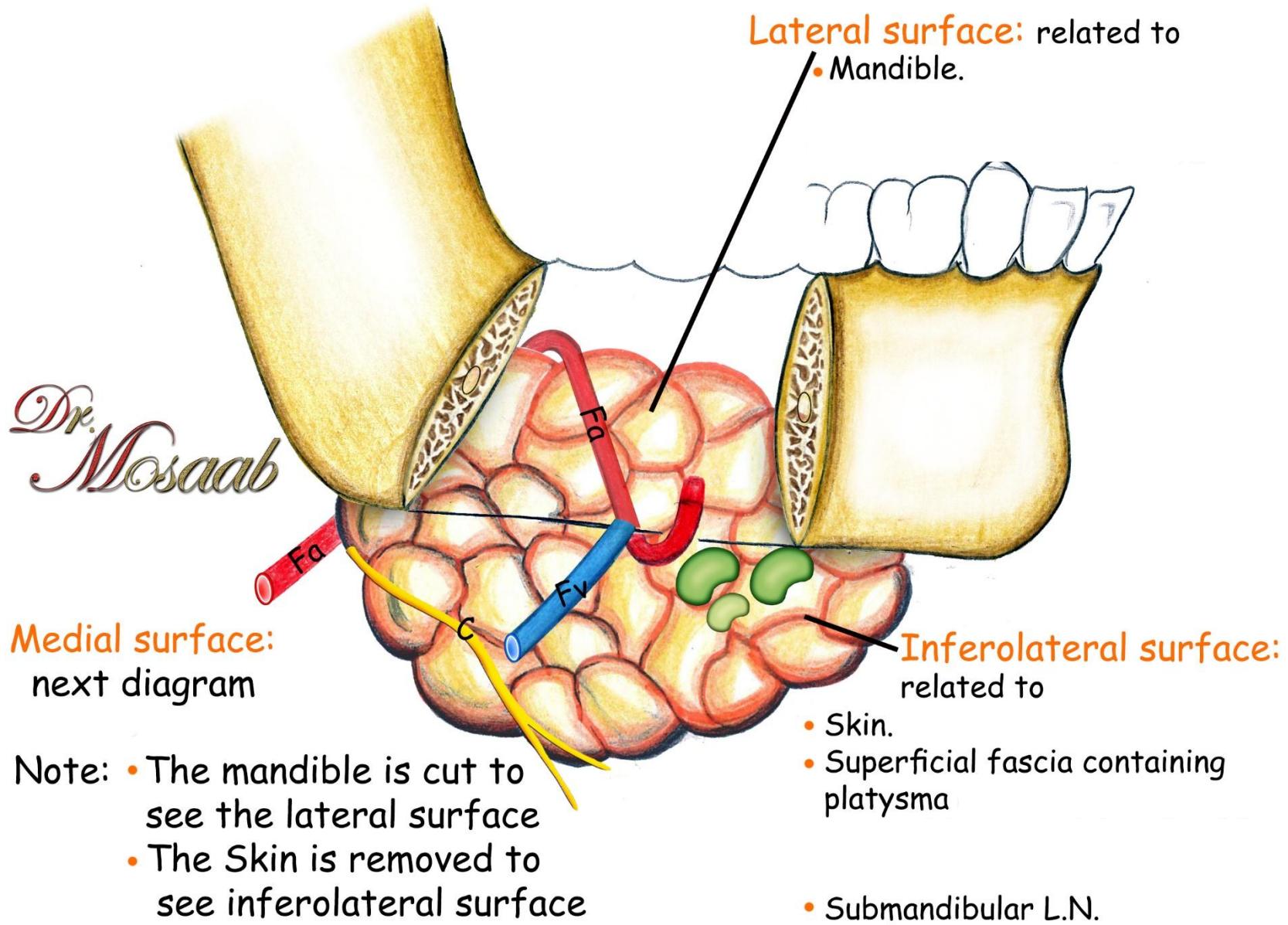
Superficial part

- ❖ **Medially (deep):** mylohyoid
- ❖ **Laterally:** it lies in contact with submandibular fossa of the mandible.
- ❖ **Inferolaterally (superficial):**
 - skin
 - superficial fascia & platysma
 - submandibular lymph nodes

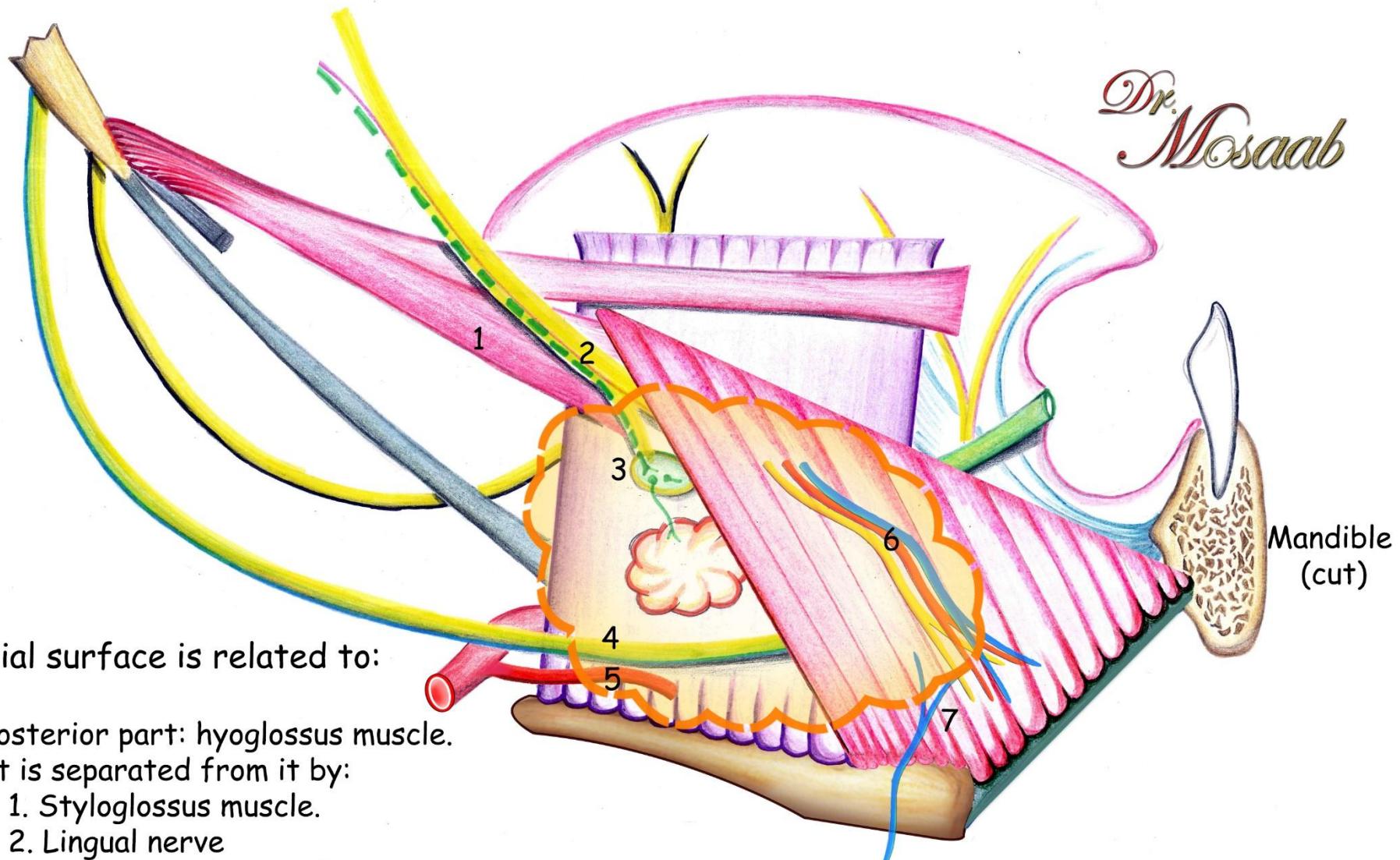


Surfaces of submandibular gland

3 surfaces



Medial surface of the submandibular gland



Medial surface is related to:

Posterior part: hyoglossus muscle.

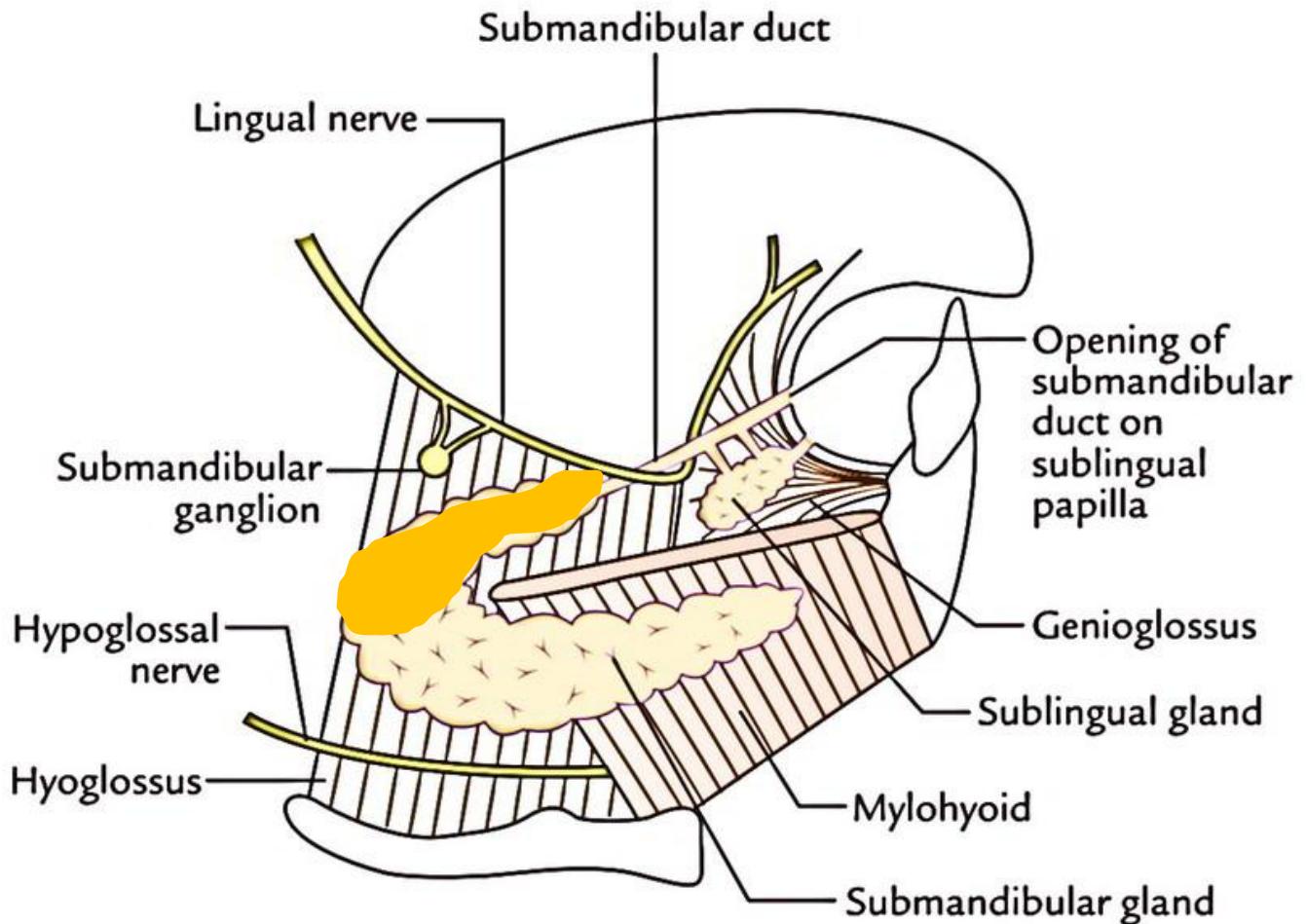
It is separated from it by:

1. Styloglossus muscle.
2. Lingual nerve
3. Submandibular ganglion.
4. Hypoglossal nerve & its vena comitans

Submandibular gland Relations

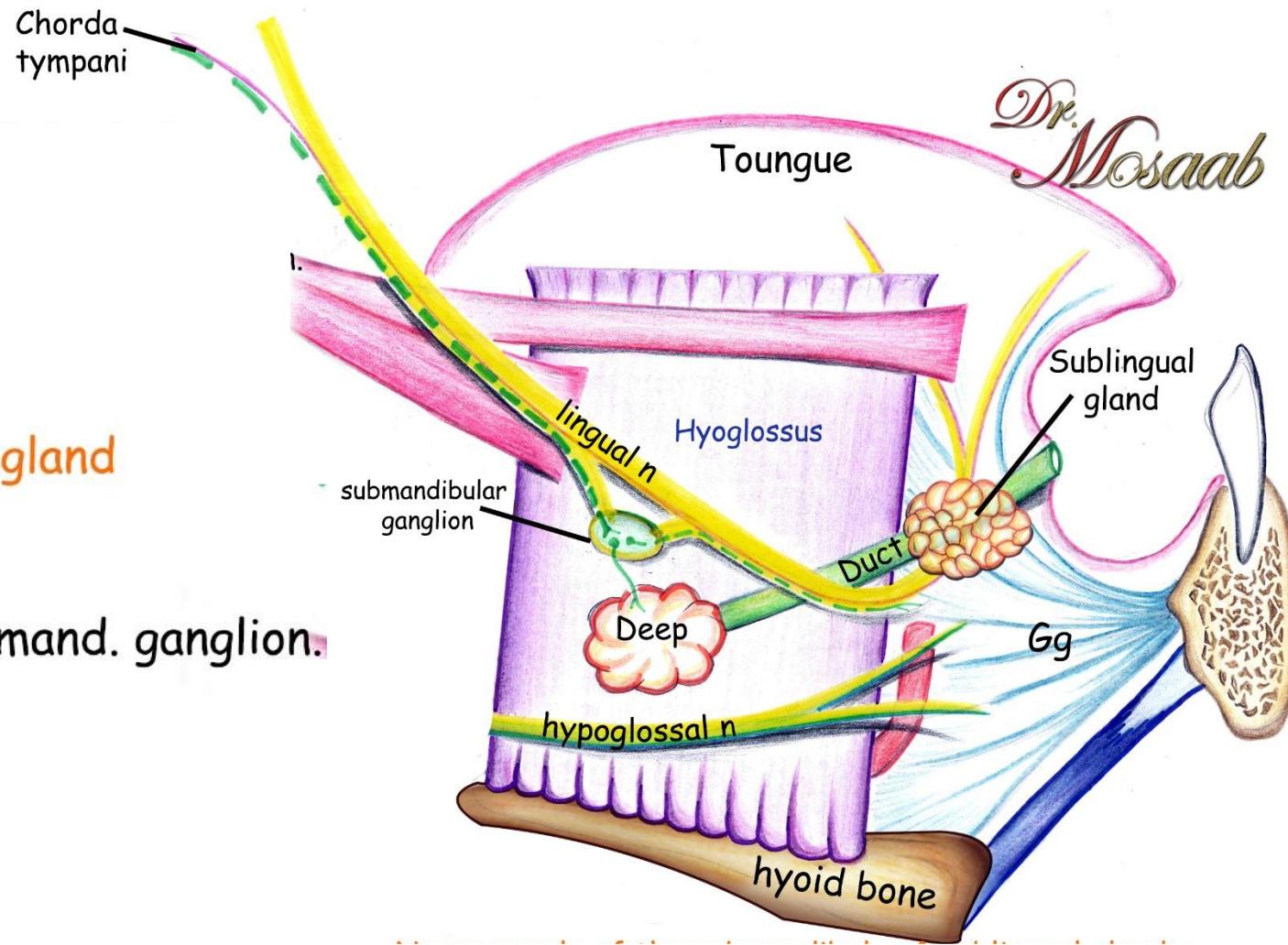
Deep part

- ❖ **Laterally (superficial):** mylohyoid.
- ❖ **Medially (deep):** hyoglossus.
- ❖ **Superiorly:** lingual nerve & submandibular ganglion.
- ❖ **Inferiorly:** hypoglossal nerve.



Deep part of submandibular gland

- Laterally: mylohyoid.
- Medially: hyoglossus.
- Superiorly: lingual n. & submand. ganglion.
- Inferiorly: hypoglossal n.



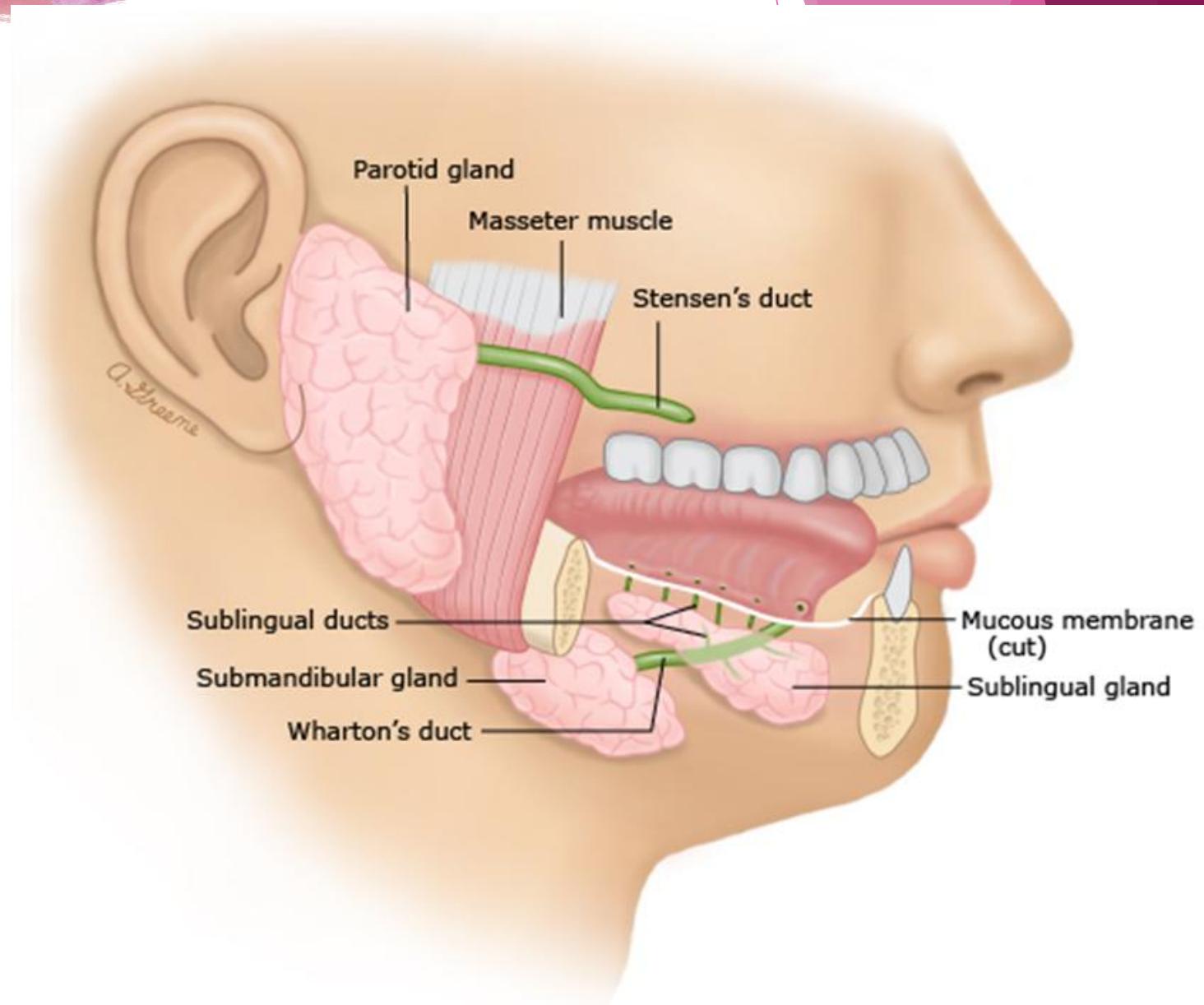
Submandibular duct (5 =cm)

Submandibular gland duct

(Wharton's duct) :

It opens into floor of mouth ,

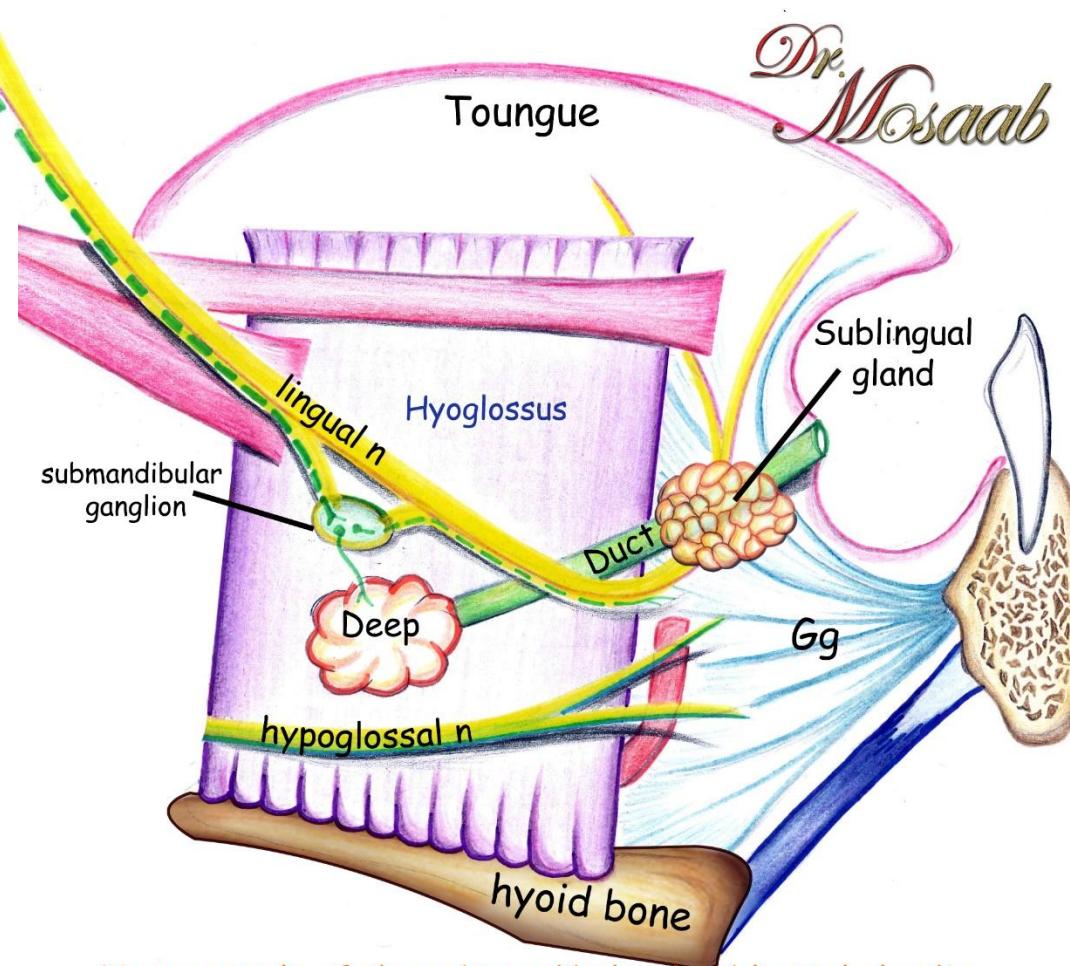
**at the side of the frenulum of
the tongue (sublingual papilla)**

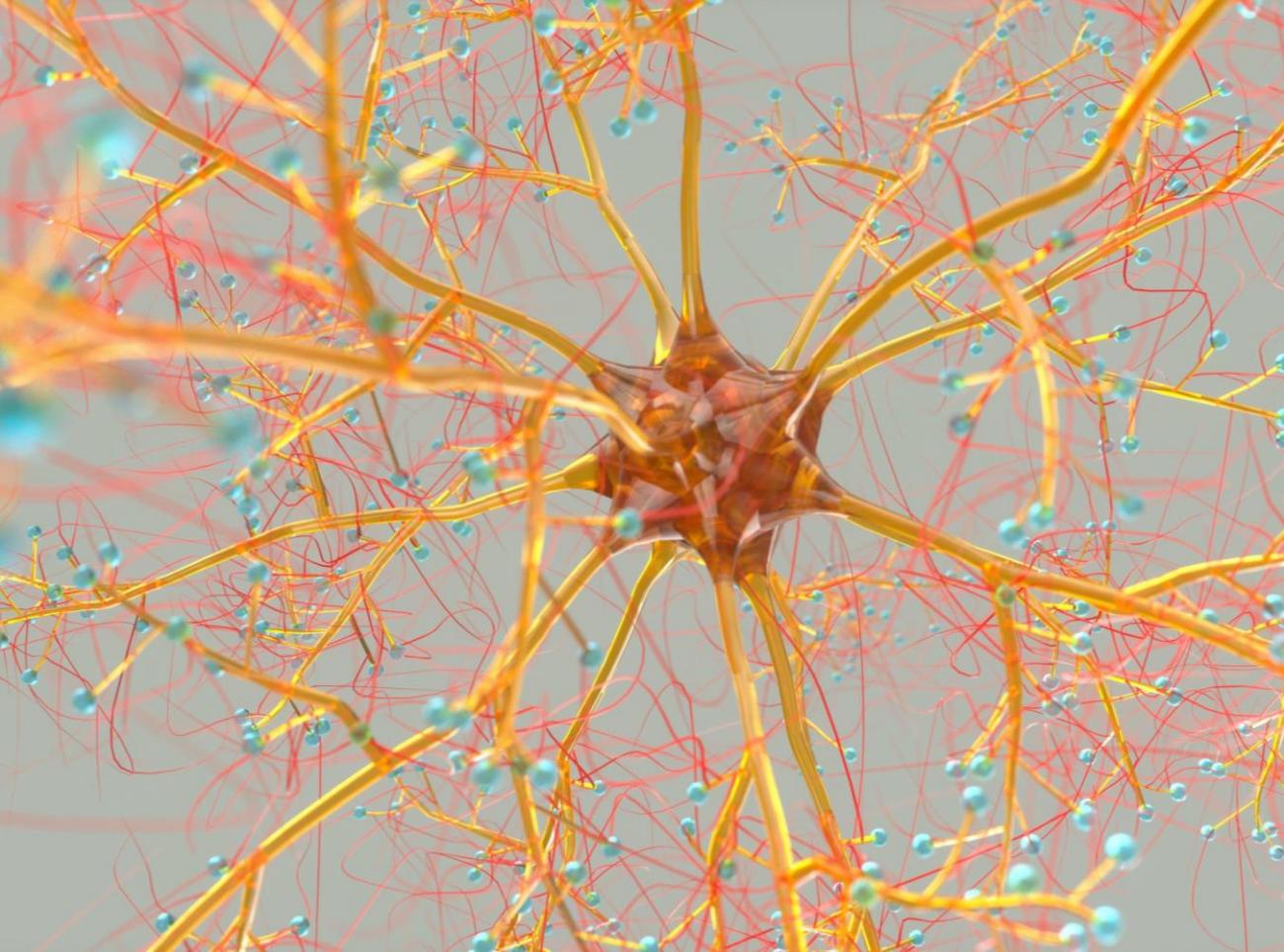


Chorda
tympani

Submandibular duct

- It emerges from anterior end of the deep part of the gland.
- It runs between hypoglossus medially & mylohyoid laterally.
- Then, between genioglossus (Gg) medially & sublingual gland laterally.
- The lingual n. hooks around the duct
- It opens on the sublingual papilla.



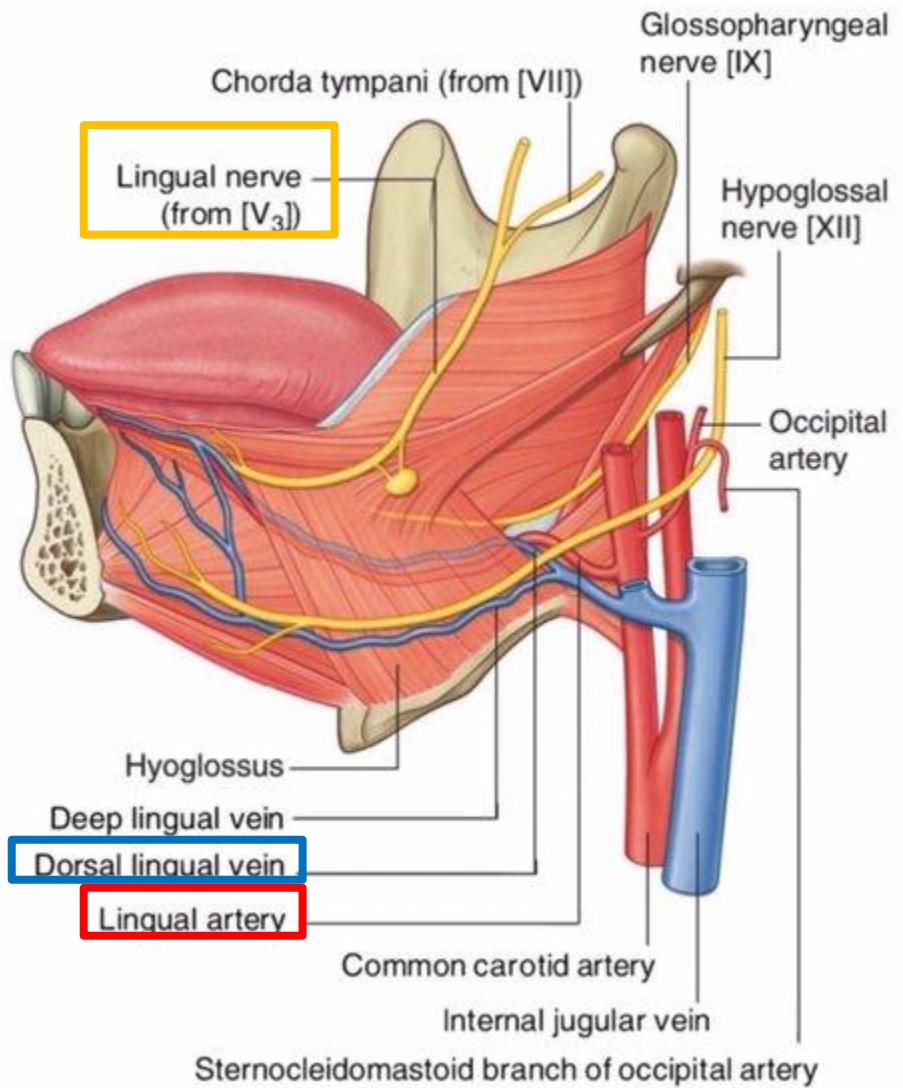


Nerve supply of Submandibular and Sublingual glands:

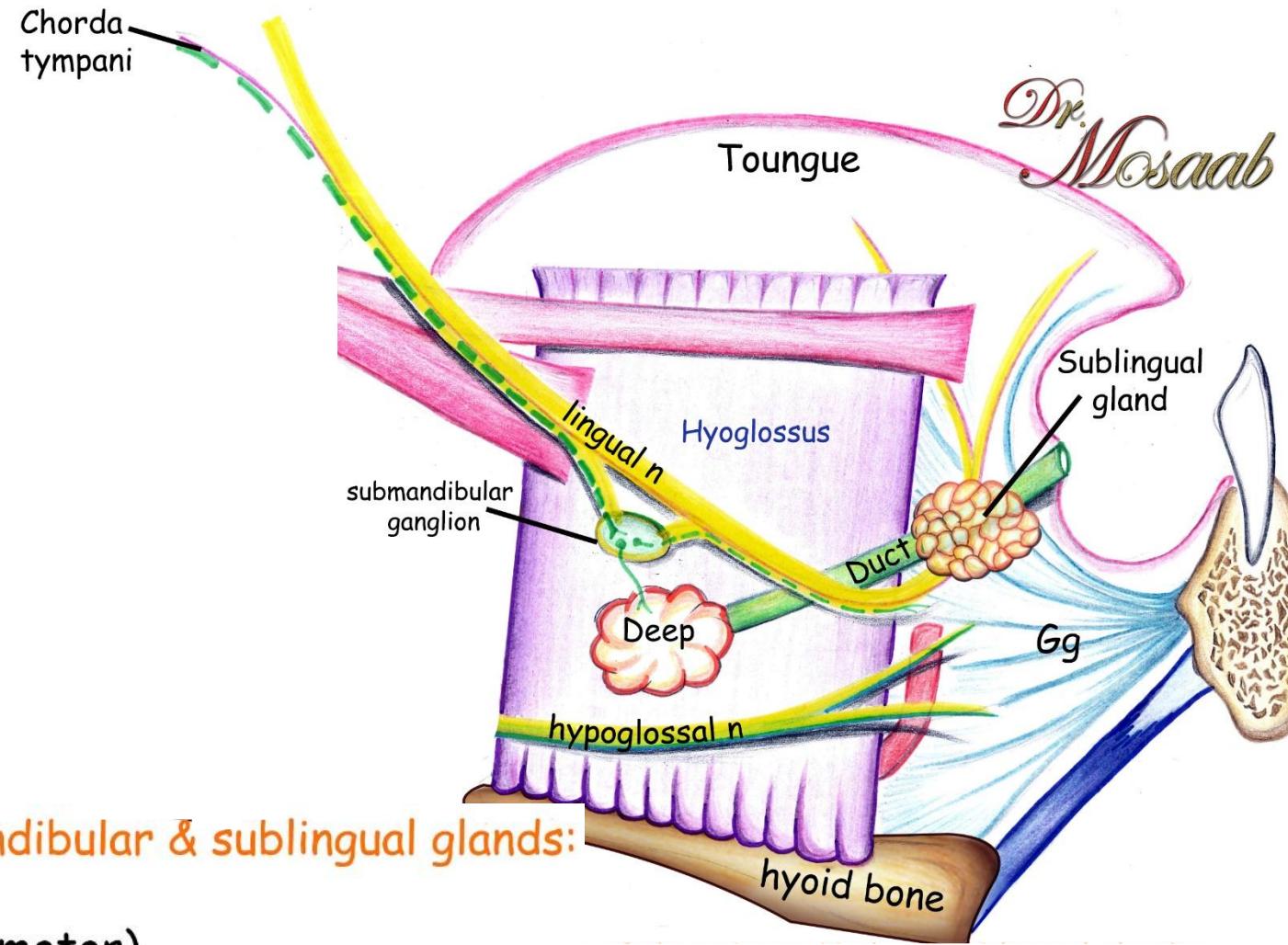
Submandibular gland

Nerve supply :

1. **Parasympathetic:** secretomotor fibers from **superior salivary nucleus of 7 th C.N. (facial nerve)** via lingual nerve into gland.
2. **Sympathetic fibers:** from **plexus** of nerves around facial artery.
3. **Sensory:** **lingual nerve**



Nerve supply of the submandibular & sublingual glands

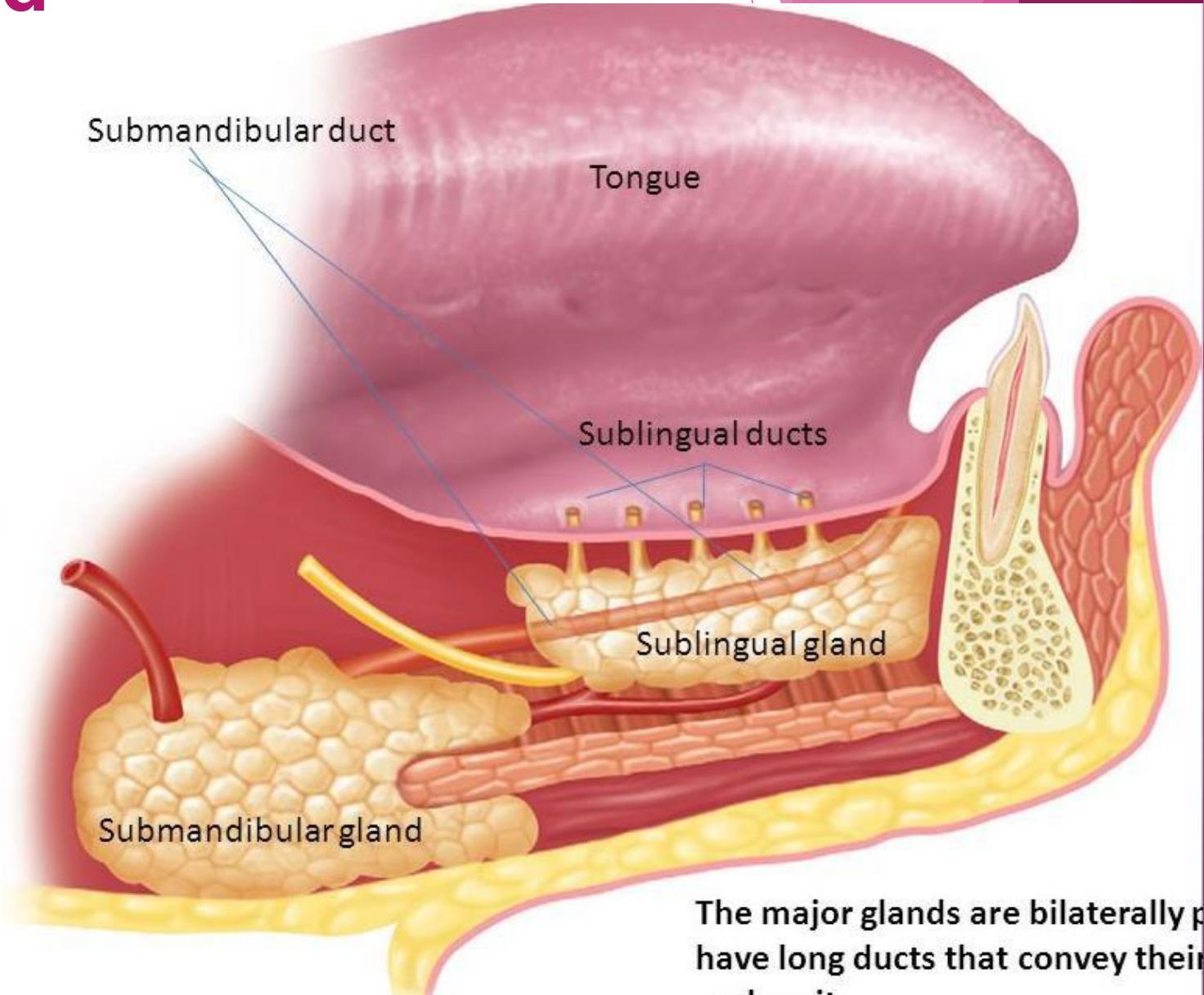


Nerve supply of the submandibular & sublingual glands:

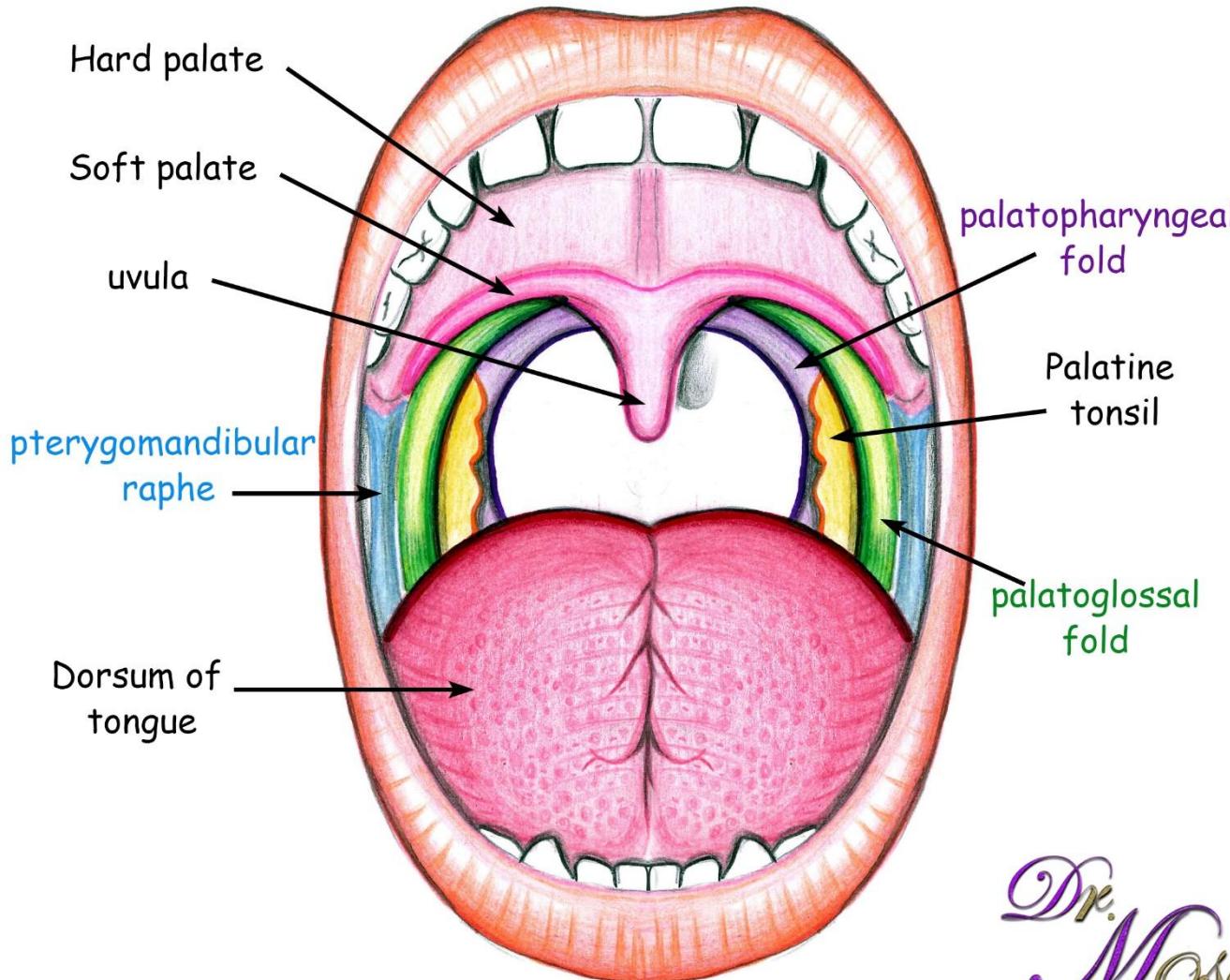
- Sensory: lingual nerve.
- Parasympathetic (secretomotor)
Chorda tympani of facial n. through lingual nerve.
- Sympathetic (vasomotor)
Superior cervical ganglion through sympathetic plexus around facial artery.

Sublingual Gland

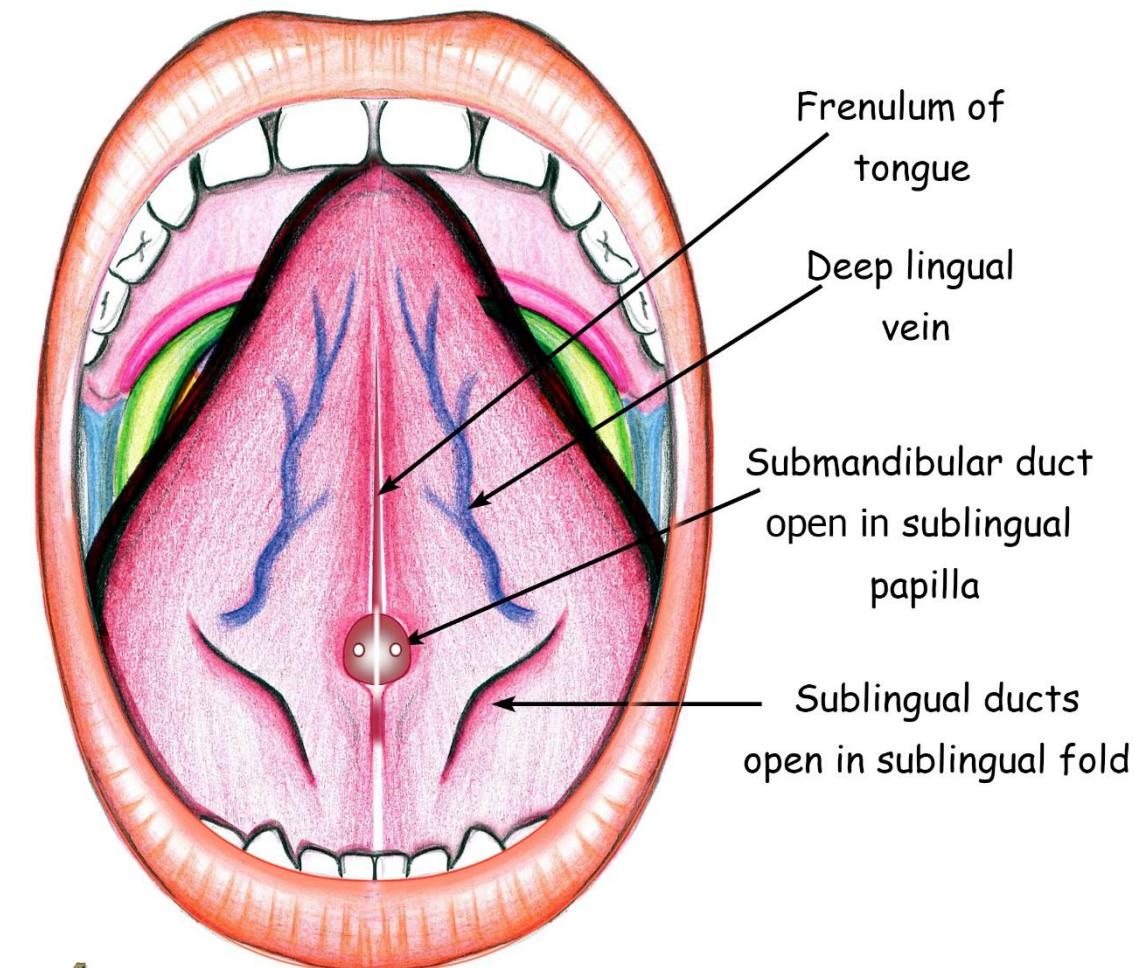
- ▶ The smallest of the three main salivary glands.
- ▶ It lies below the mucous membrane of the floor of mouth, within sublingual fold, close to the midline.
- ▶ **Sublingual Ducts** : The sublingual ducts are 8 to 20 in number. Most open into floor of mouth.



Palatine tonsil



Ventral surface of tongue



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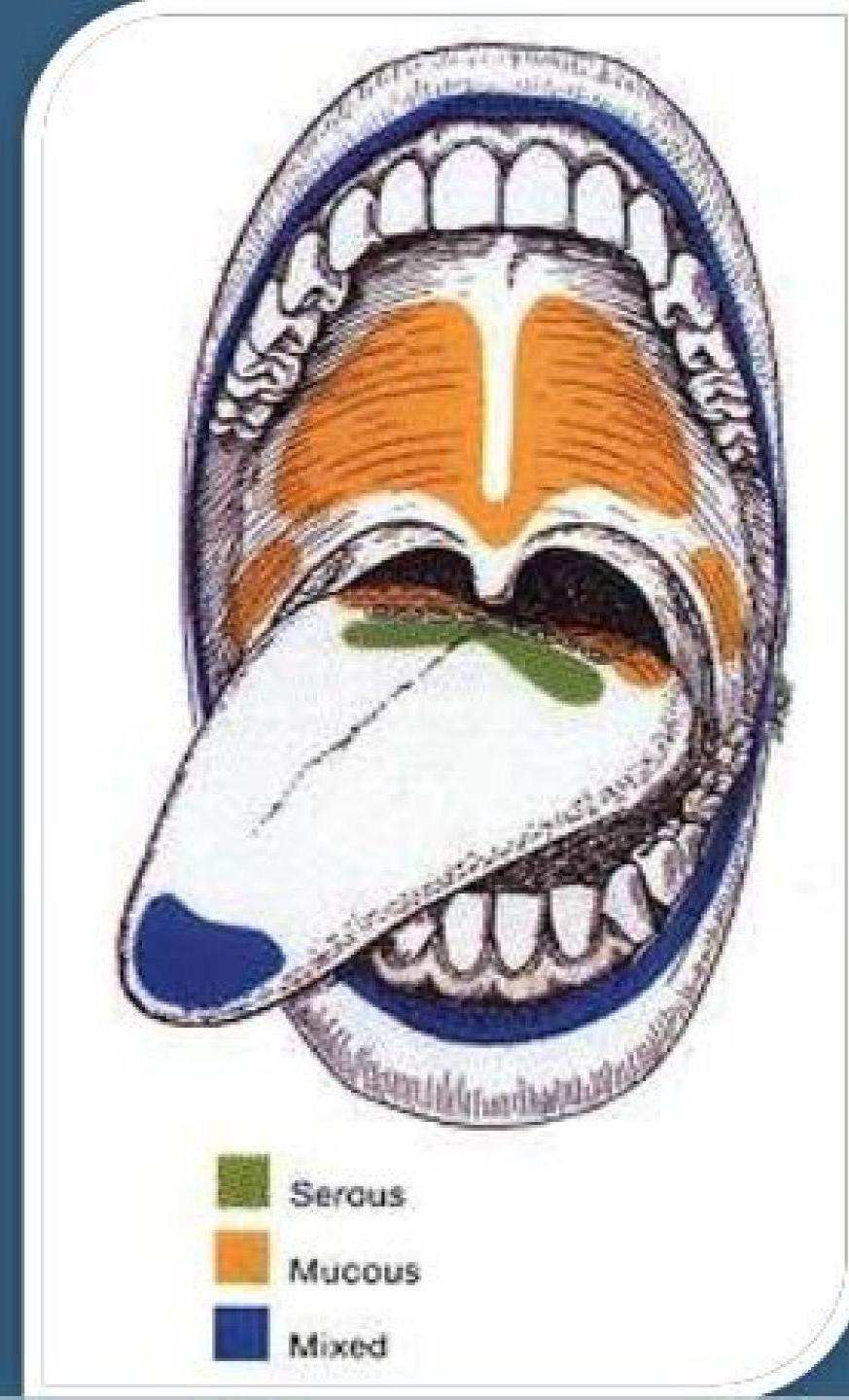
Feature	Major Salivary Glands	Minor Salivary Glands
Examples	Parotid, Submandibular, Sublingual	Labial, Buccal, Palatal, Lingual
Size	Large	Small, microscopic
Number	Only 3 pairs (6 total)	Numerous (hundreds)
Capsule	Encapsulated	Unencapsulated
Location	Outside oral mucosa, with ducts opening into the oral cavity	Scattered throughout oral mucosa and submucosa
Duct system	Each gland has a distinct, long duct	Each has a short, small duct opening directly into oral cavity
Secretion volume	Produce bulk of saliva (about 90%)	Produce a small portion of saliva (about 10%)
Function	Maintain oral moisture, initiate digestion, buffer and protect oral cavity	Provide continuous lubrication and protection of oral mucosa

MINOR SALIVARY GLANDS

- The mucosa of the oral cavity contains approximately **450 minor** salivary glands.
- They are distributed in the **mucosa of the lips, cheeks, palate, floor of the mouth** and **retromolar area**.
- These minor salivary glands **also appear** in other areas of the **upper aerodigestive** tract including the **oropharynx, larynx** and **trachea** as well as the **sinuses**.
- They contribute to **10%** of the total salivary volume.

Anatomy:

- **Minor salivary Glands**
- Labial (lips) – mixed
- Buccal (cheeks) – mixed
- Palatine - mucous
- Lingual:
 1. Anterior – mixed
 2. Middle – serous
 3. Posterior – mucous.



Anatomical Structure	Clinical Relevance
Parotid gland	<ul style="list-style-type: none"> • Parotidectomy is difficult due to the facial nerve branches running through the gland → risk of facial paralysis if damaged. • Site of pleomorphic adenoma (most common benign tumor). • Infections: Site for mumps (viral parotitis).
Parotid duct (Stensen's duct)	<ul style="list-style-type: none"> • Opens opposite the maxillary 2nd molar tooth. • Can be blocked by sialolithiasis (salivary stones) → painful swelling during meals.
Submandibular gland	<ul style="list-style-type: none"> • Surgical relevance: Close relation to lingual nerve & hypoglossal nerve → risk of injury during gland excision.
Submandibular duct (Wharton's duct)	<ul style="list-style-type: none"> • Common site for submandibular stones (Wharton's duct stones) ??.
Minor salivary glands (labial, palatal, buccal, lingual.)	<ul style="list-style-type: none"> • Common site of mucocele (small mucous cyst).
Capsule & fascia around glands	<ul style="list-style-type: none"> • In parotid infections, tight capsule causes severe pain & swelling.

Thank you

