ANATOMY

بسم الله الرحمن الرحيم

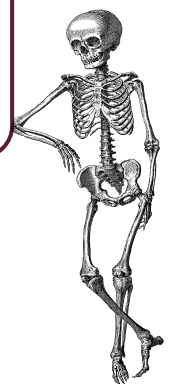
MID | Lab 1

Mouth & Pharynx

﴿ وَإِن تَتَوَلَّوْا يَسْتَبْدِلْ قَوْمًا غَيْرَكُمْ ثُمَّ لَا يَكُونُوا أَمْثَالَكُم ﴾

اللهم استعملنا ولا تستبدلنا

Written by: Waleed Darawad



فريق دوبامين العلمي - THE SCIENTIFIC TEAM OF DOPAMINE -
APPROVED
0500251

قريبًا إن شاء الله

Before we start

- Pictures that are from the doctor's file are gonna be left with no border
- Text that is already written in lab file is gonna be in **normal black**
- Pictures that I add are gonna be framed just like this pic:
- Text that is in the checklist or not mentioned not in the lab file, but we should know is gonna be written in this maroon format

This video is recorded video for Dr. Almuhtasib explaining parts of this lab. Its old, yet beneficial if you like his way of explanation

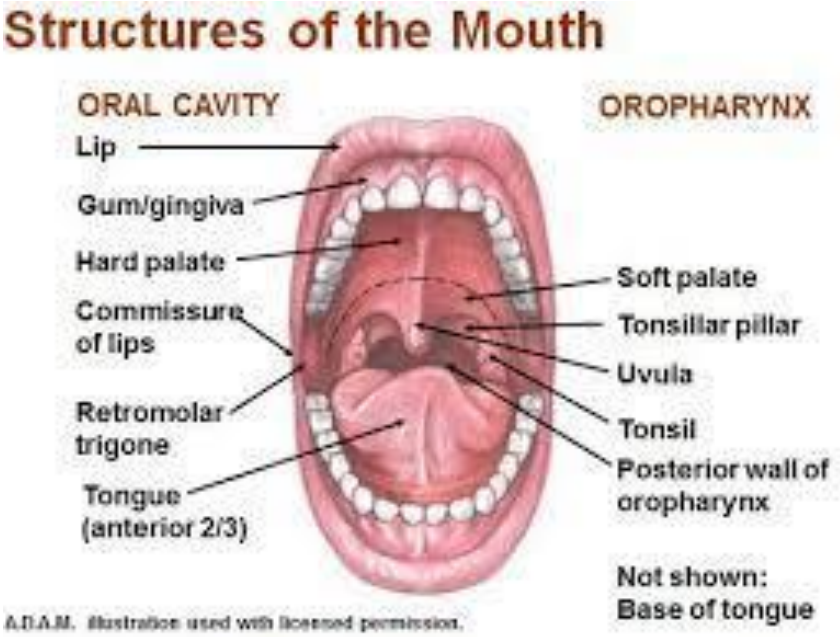
There will be some photos with links to videos explaining some things in the file
Mostly they're gonna be the thumbnail itself

Yes, click on this doc

اضغط على الصورة لتسمعها وانت بتدرس

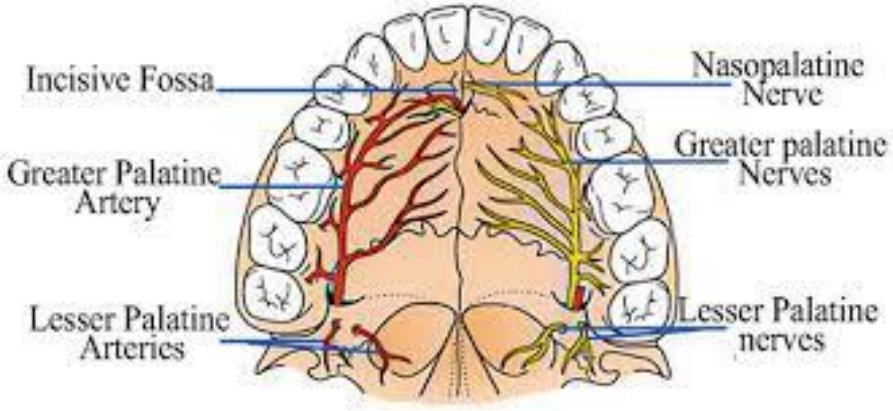
Oral Cavity

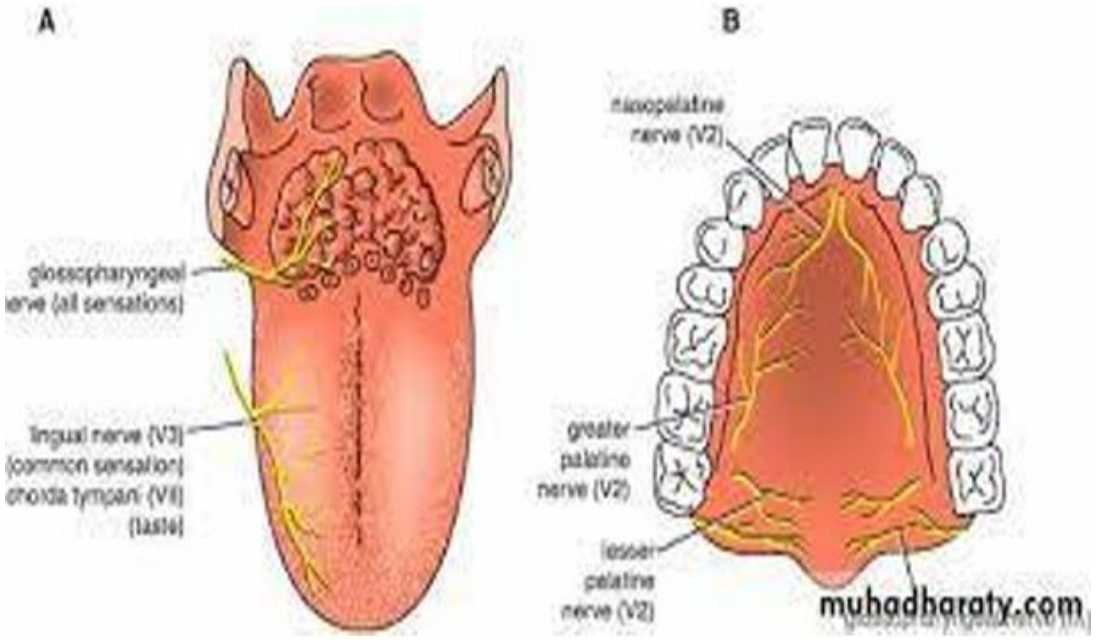
- Borders:
  - **Anteriorly**: Oral Fissure
  - **Posteriorly**: oropharyngeal isthmus
  - **Laterally** from the sides: cheeks
  - **Roof**: Hard & soft palates
  - **Floor**: Tongue, salivary glands, mylohyoid muscle

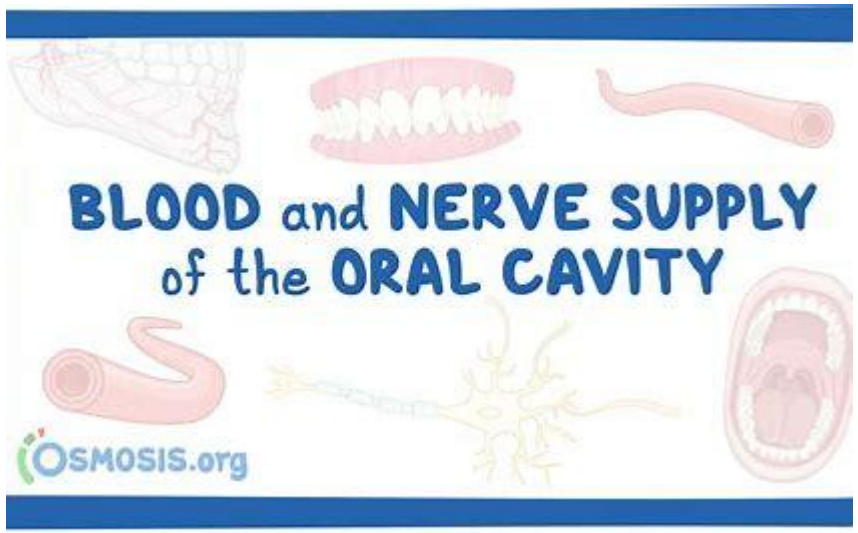


You must know the structures in the picture (most of them are gonna be discussed in detail later)

Blood and nerve supply of the mouth

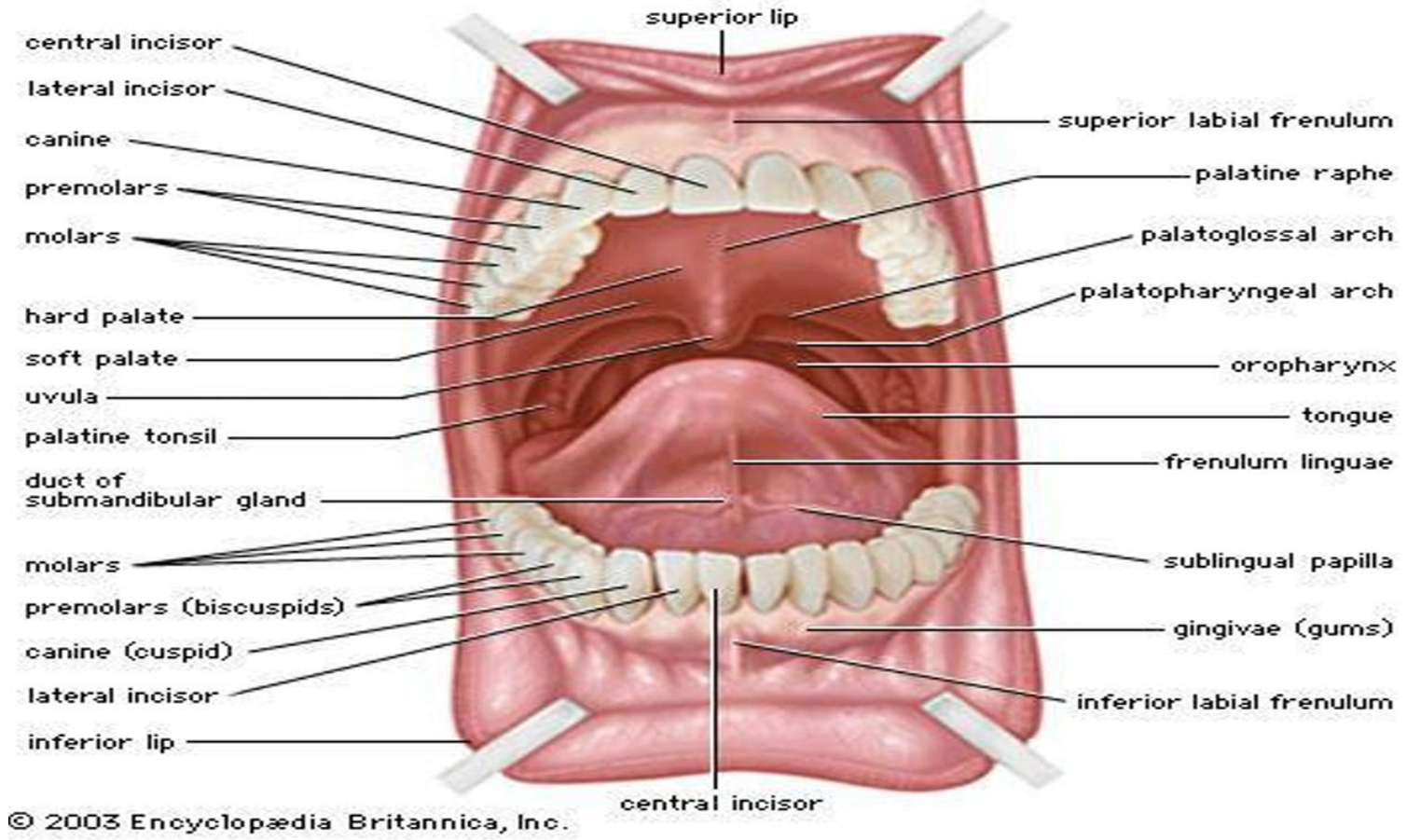






I don't know what blood vessels or nerves do we need to know exactly, but those pics are what the doctor put on his slides
Anyways, this pic to the left would take you to a great fast video about them

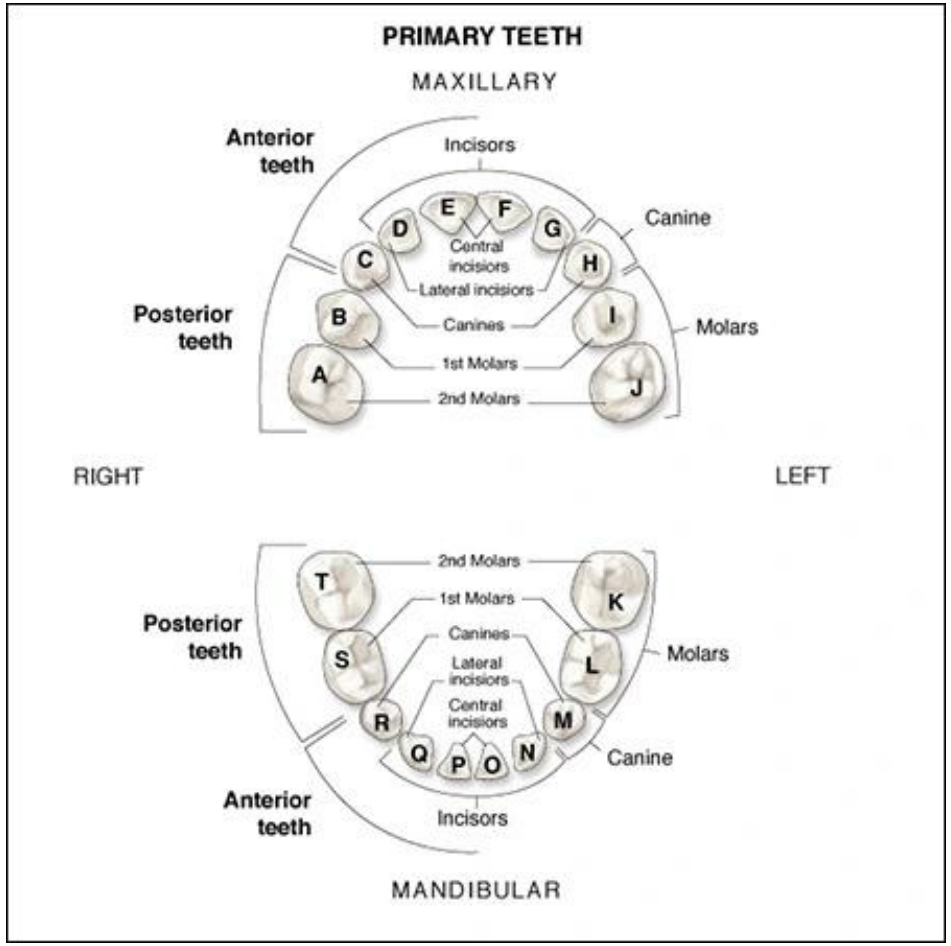
I’m Gonna explain it in detail :)



Teeth

Deciduous Teeth (اللبنية):

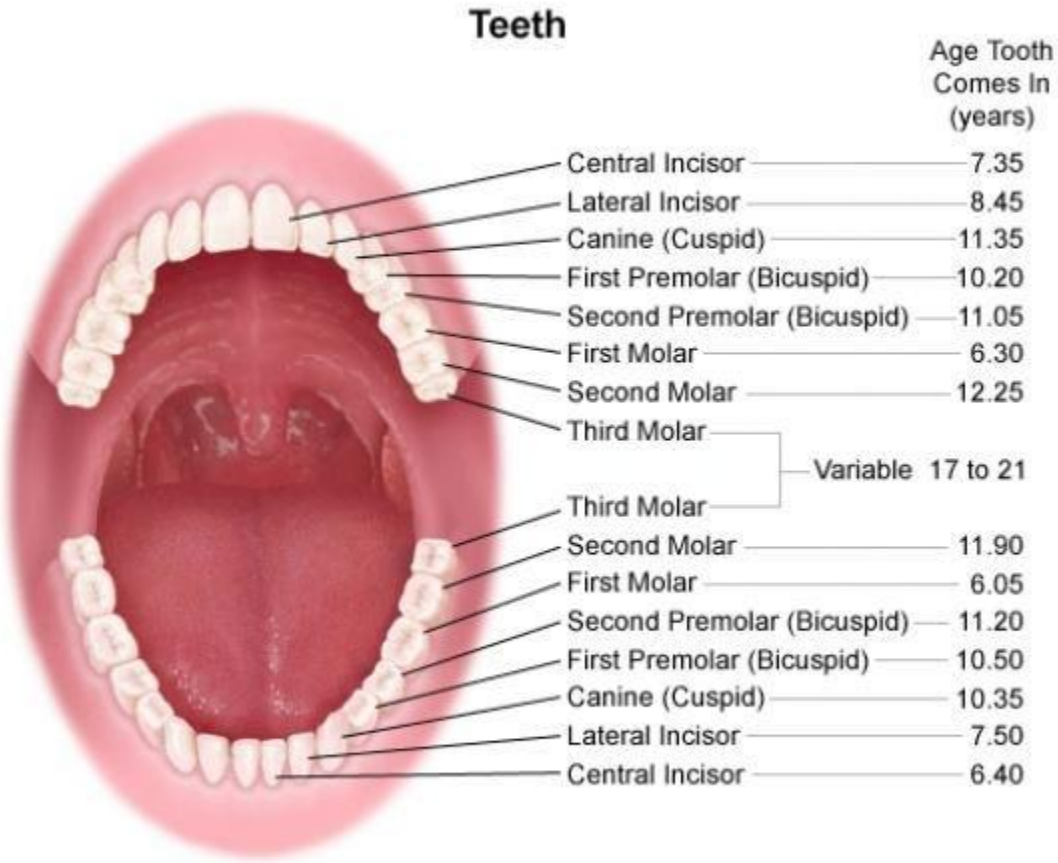
- There are 20 deciduous teeth: four incisors (قواطع), two canines (أنياب), and four molars (طواحين) in each jaw
- They begin to erupt about 6 months after birth and have all erupted by the end of 2 years.
- The teeth of the lower jaw usually appear before those of the upper jaw



Teeth

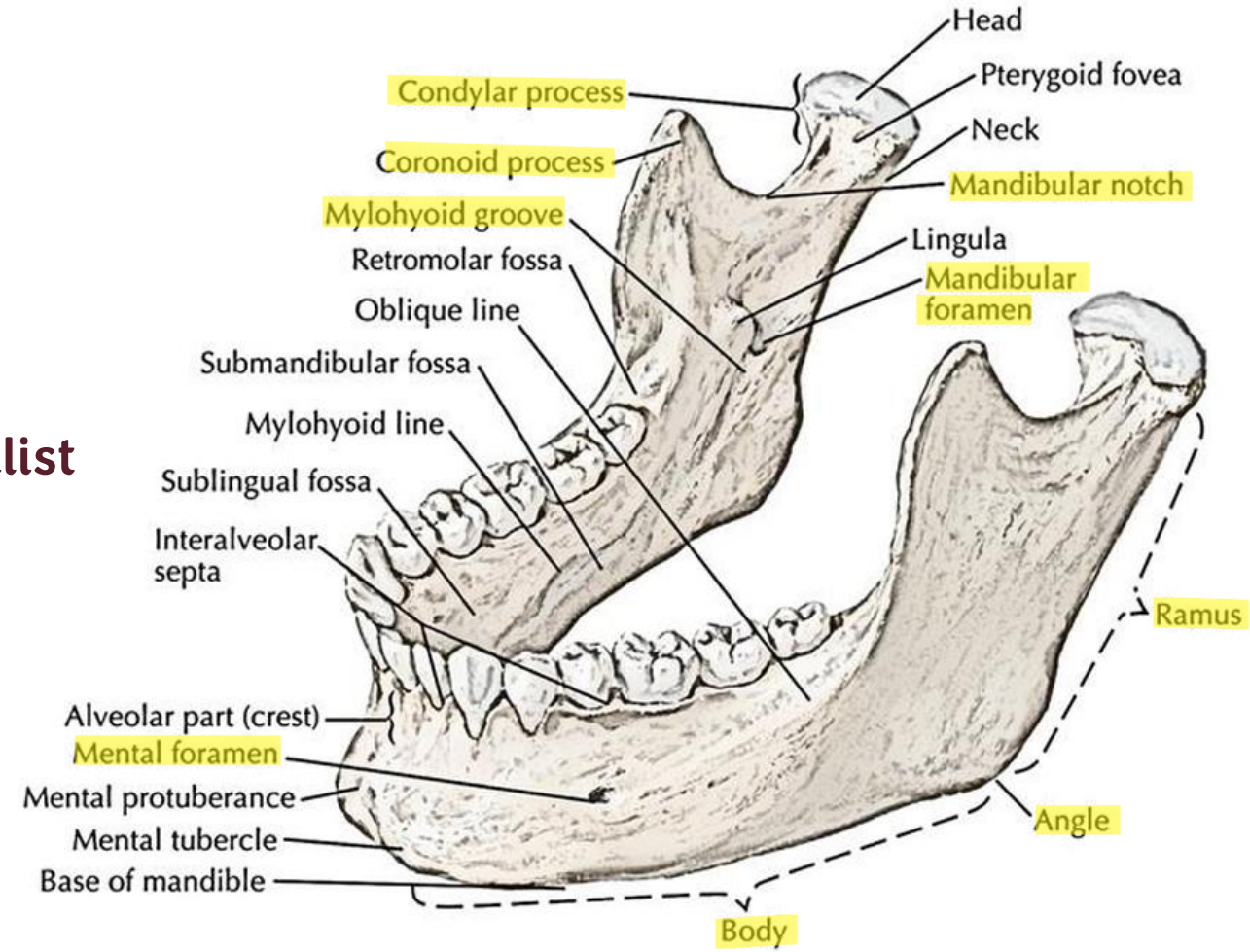
Permanent Teeth:

- 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 mandible

You already know it, just revise it quickly
Highlights are things mentioned in the checklist



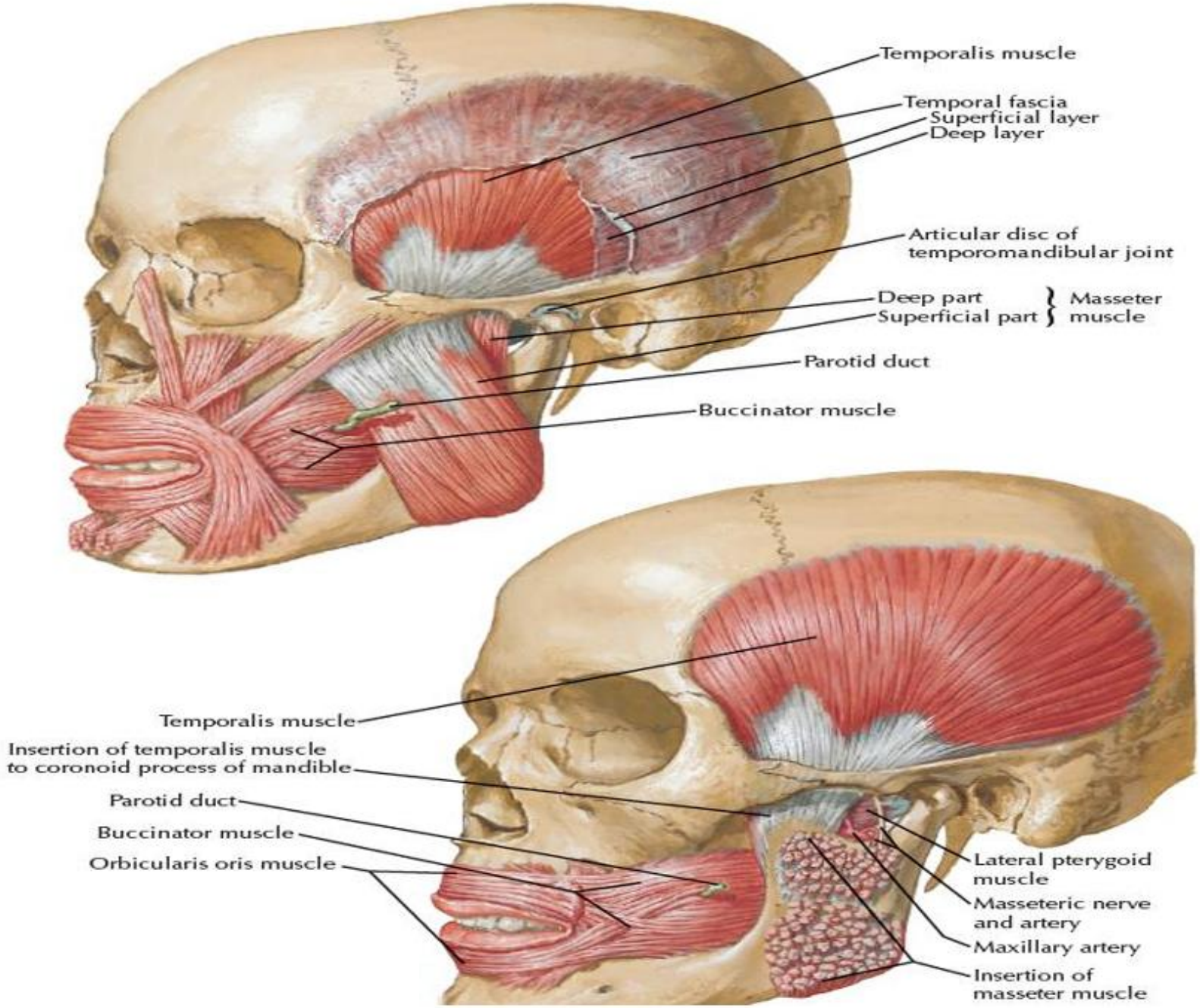
Relations to the mandible

Nerves:

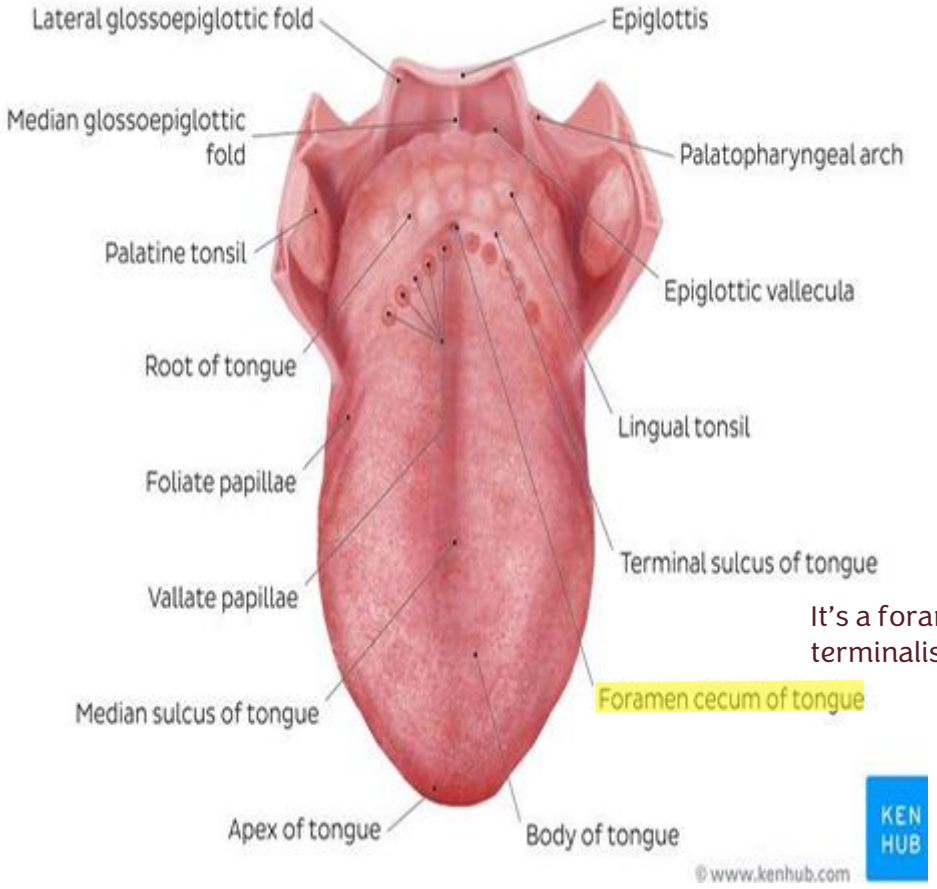
Nerve	Location / Relation to Mandible	Function
Inferior alveolar nerve (branch of CN V3)	Enters **mandibular foramen** on the medial surface of ramus	Sensory to lower teeth and chin
Mental nerve (terminal branch of inferior alveolar nerve)	Exits **mental foramen** on the body	Sensory to chin and lower lip
Lingual nerve	Runs **medial** to mandible, near third molar	Sensory to anterior 2/3 of tongue
Mylohyoid nerve	Branch of inferior alveolar before it enters foramen; runs in **mylohyoid groove**	Motor to mylohyoid & anterior belly of digastric
Auriculotemporal nerve	Passes **posterior** to mandible, near condylar neck	Sensory to TMJ, auricle, scalp

Vessels:

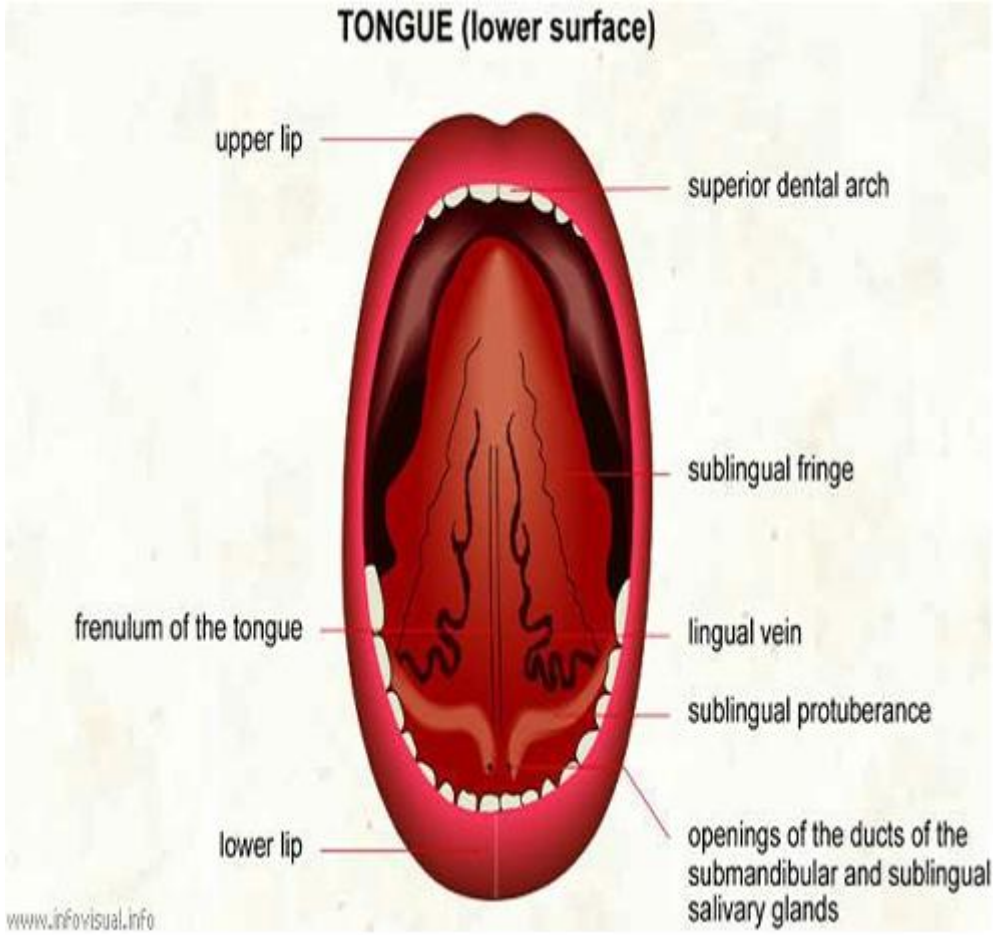
Vessel	Location / Relation to Mandible	Function
Inferior alveolar artery (branch of maxillary artery)	Enters **mandibular foramen** with the nerve	Supplies lower teeth
Mental artery	Exits **mental foramen** with mental nerve	Supplies chin and lower lip
Facial artery	Curves over **inferior border of mandible (anterior to masseter)**	Supplies face
Submental artery (branch of facial artery)	Runs along **inferior surface of mandible**, near mylohyoid	Supplies chin and floor of mouth
Retromandibular vein	Runs **posterior to ramus** in the parotid gland	Drains face into external jugular


Temporalis muscle
Temporal fascia
Superficial layer
Deep layer
Articular disc of temporomandibular joint
Deep part
Superficial part
Masseter muscle
Parotid duct
Buccinator muscle
Temporalis muscle
Insertion of temporalis muscle to coronoid process of mandible
Parotid duct
Buccinator muscle
Orbicularis oris muscle
Lateral pterygoid muscle
Masseteric nerve and artery
Maxillary artery
Insertion of masseter muscle

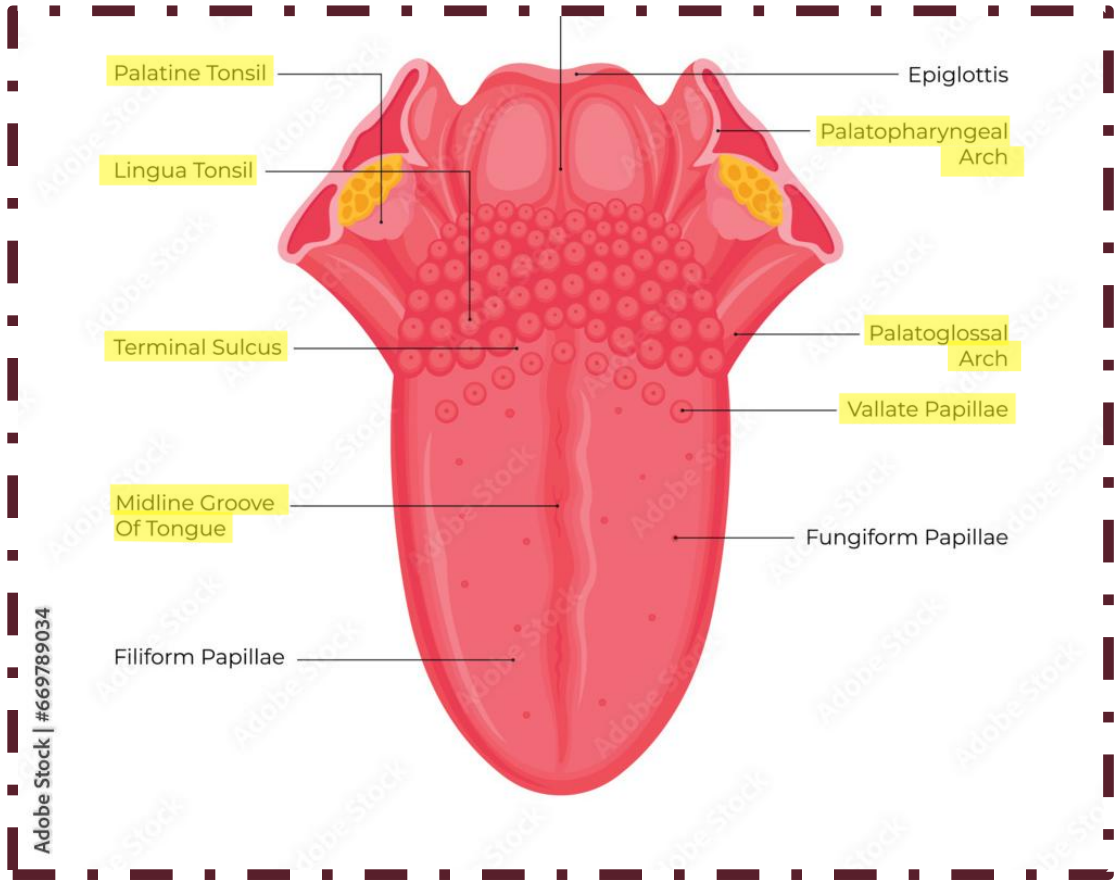
The tongue



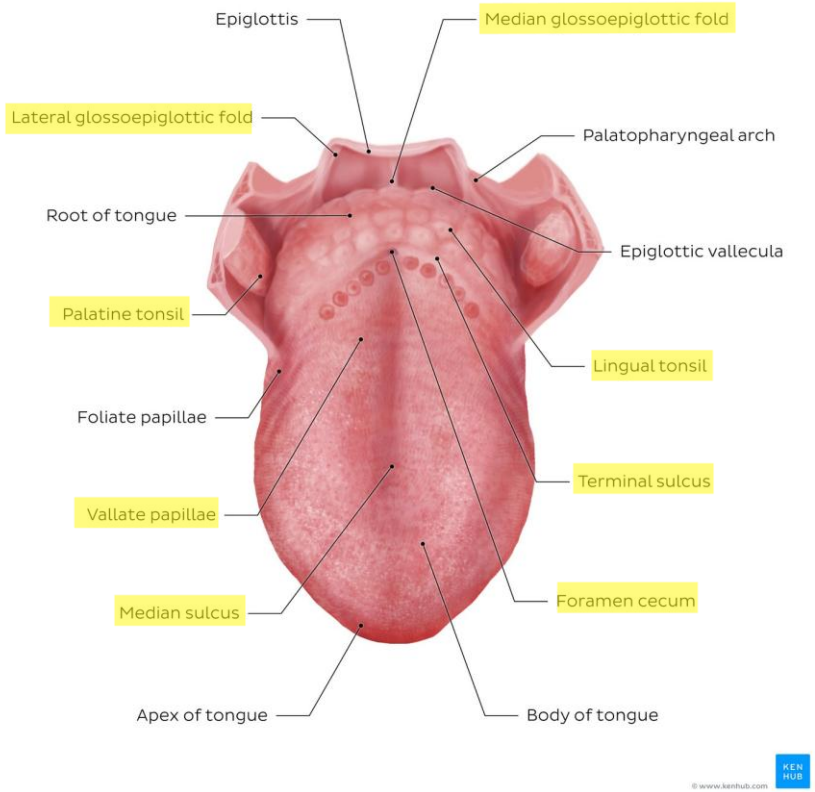
It's a foramen on the terminalis sulcus



The tongue

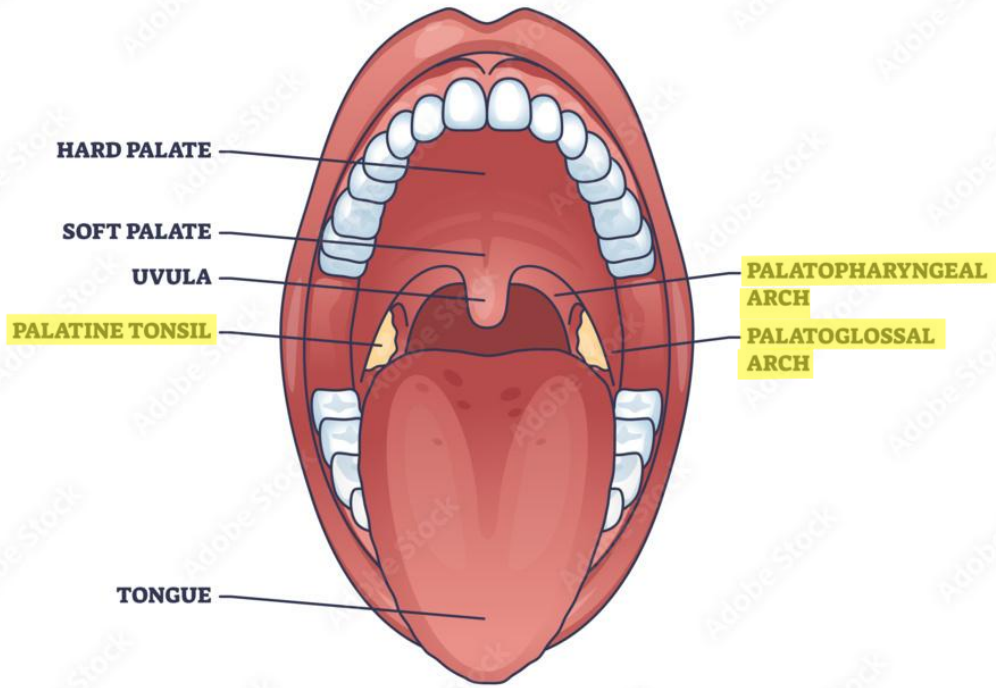


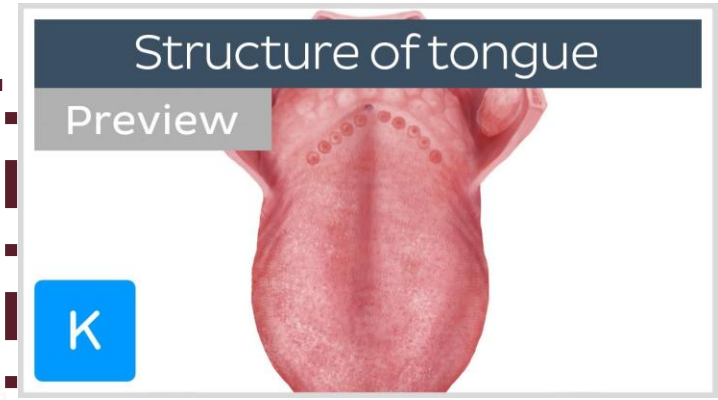
Midline groove is also called Median Sulcus



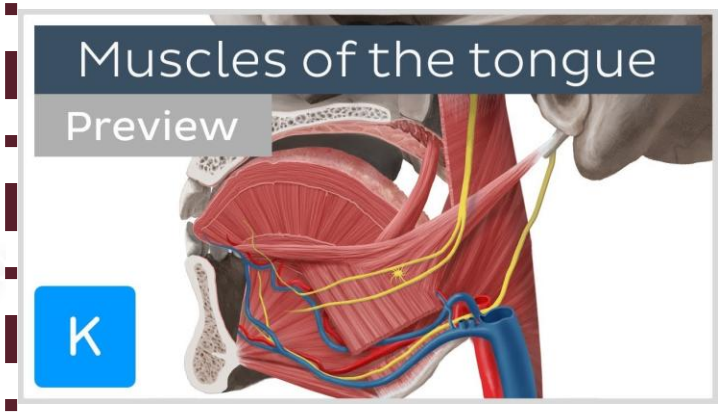
Vallate papilla are also called Circumvallate papilla

The tongue

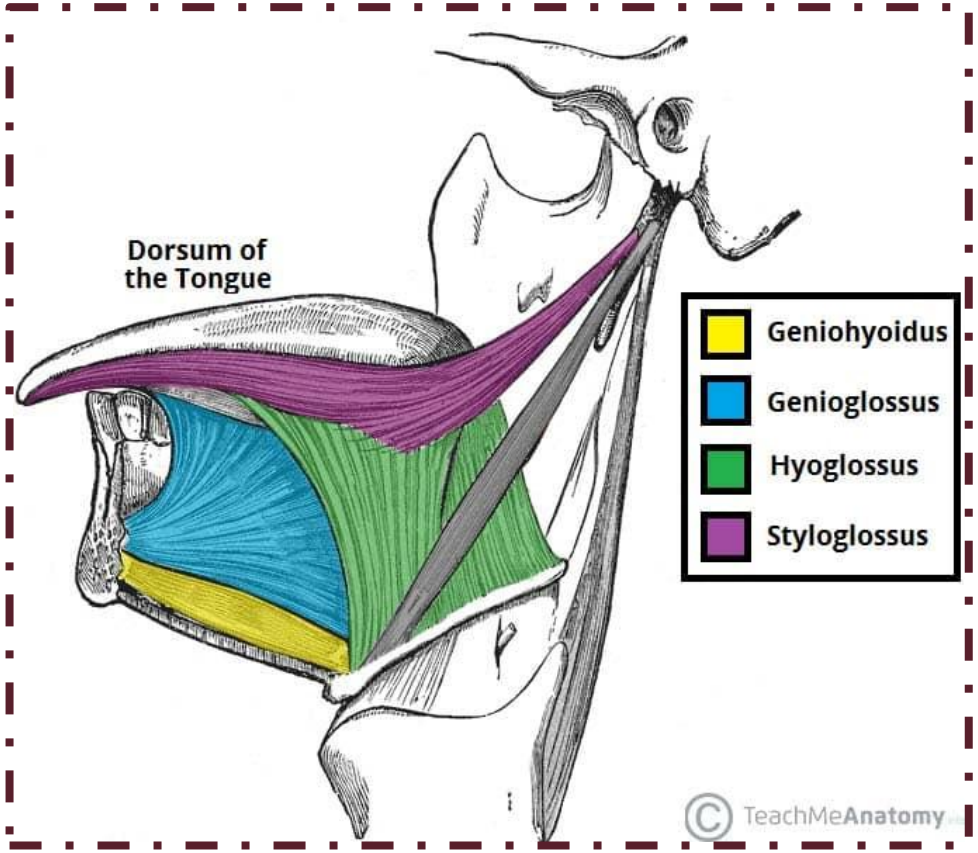




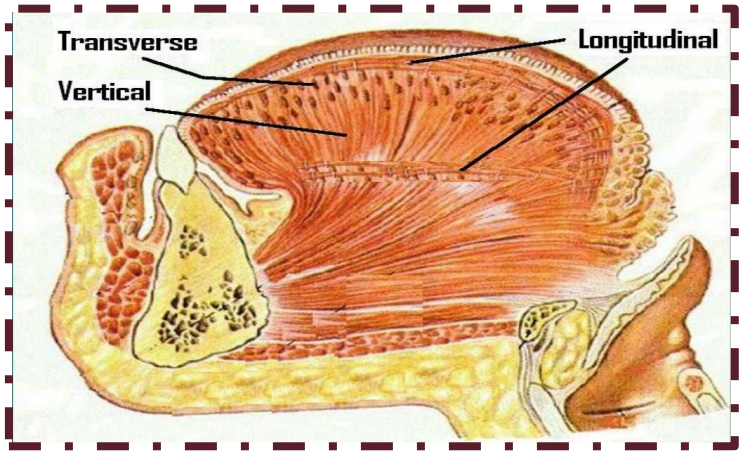
Click on them to watch them

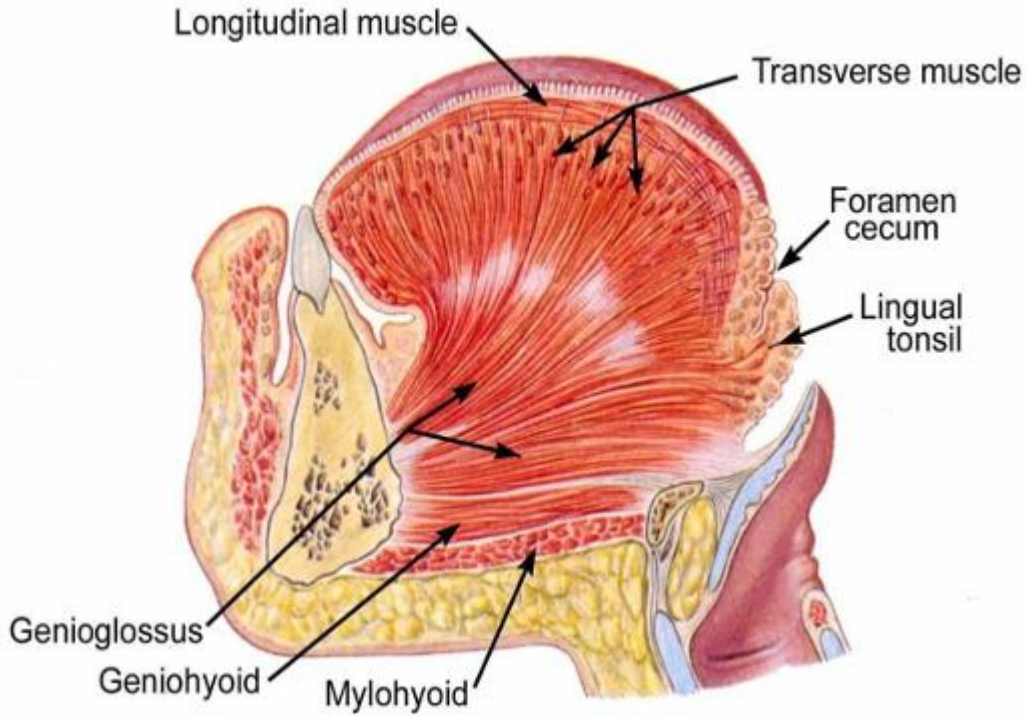


Muscles of the tongue



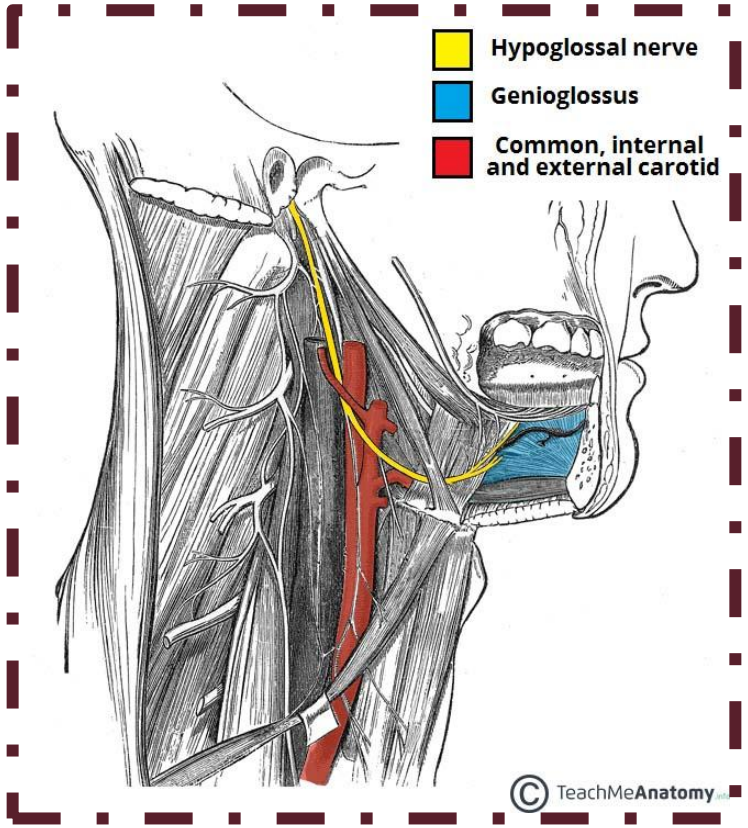
Those are the extrinsic muscles





Those are the intrinsic muscles

Hypoglossal nerve



The tongue – some theory

The differences between anterior 2/3 and posterior 1/3 of the tongue

Feature	Anterior 2/3 (Oral part)	Posterior 1/3 (Pharyngeal part)
1. Embryological Origin	**First pharyngeal arch** (lateral lingual swellings)	**Third pharyngeal arch** (copula/ hypobranchial eminence)
2. Innervation – General sensation – Taste	**Lingual nerve** (CN V3) **Chorda tympani** (CN VII)	**Glossopharyngeal nerve** (CN IX) for both
3. Lymphatic Drainage	**Submandibular & submental lymph nodes**	**Deep cervical lymph nodes** (especially jugulodigastric)
4. Taste Buds	**Fungiform & foliate papillae** (with taste buds)	**Circumvallate papillae** (though located anterior, are innervated by CN IX) + **lingual tonsils**
5. Blood Supply	**Deep lingual artery** (branch of lingual artery)	**Dorsal lingual branches** (of lingual artery)

The differences between nerve supply of tongue muscles

Sensory Nerve Supply:

Region	General Sensation	Taste
Anterior 2/3	Lingual nerve (CN V3)	Chorda tympani (CN VII)
Posterior 1/3	Glossopharyngeal nerve (CN IX)	Glossopharyngeal nerve (CN IX)
Epiglottis & very posterior tongue	Vagus nerve (CN X)	Vagus nerve (CN X)

All muscles are motor-innervated by the hypoglossal nerve, except the palatoglossus muscle, by vagus nerve (CN X) via pharyngeal plexus

The tongue – some theory

Questions written in the checklist:

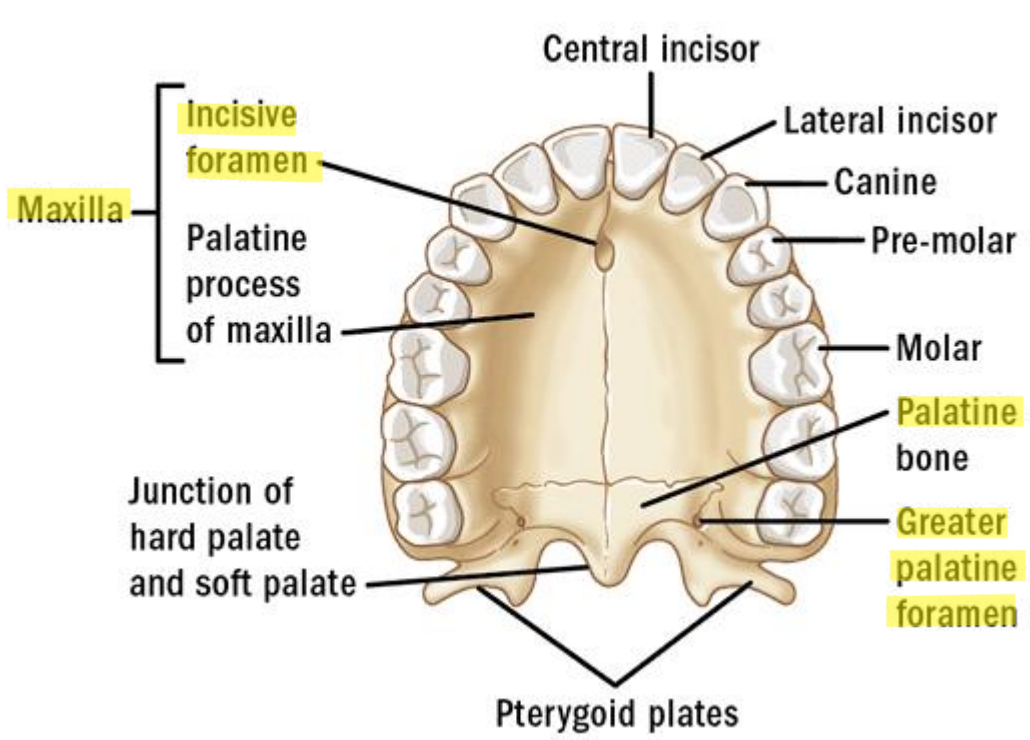
1. Identify the structures that pass between hyoglossus & mylohyoid muscles?

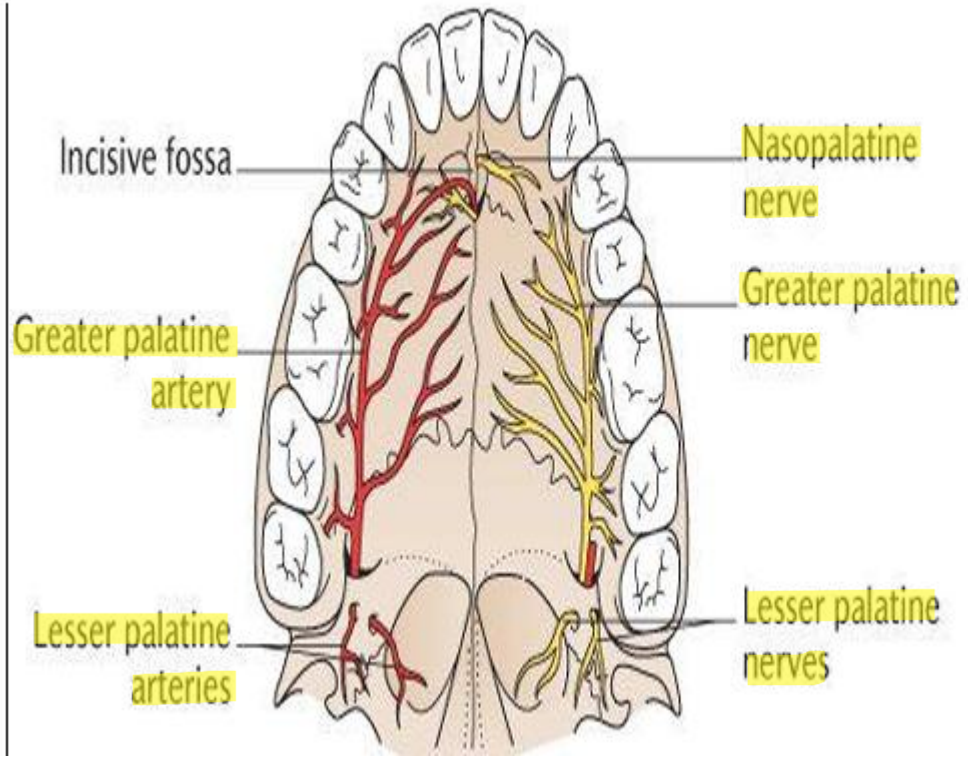
1. Submandibular duct
2. Lingual nerve
3. Hypoglossal nerve
4. Submandibular ganglion

2. Injury in the right hypoglossal nerve?

Deviation to the right

Hard Palate

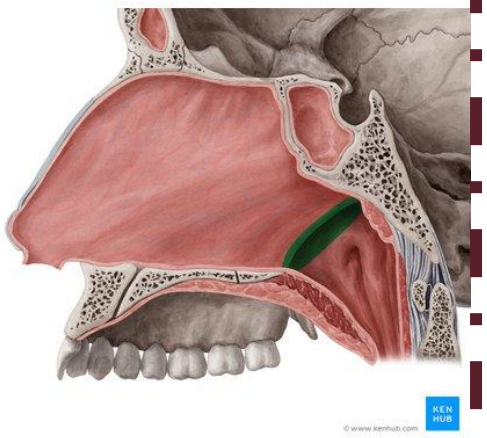




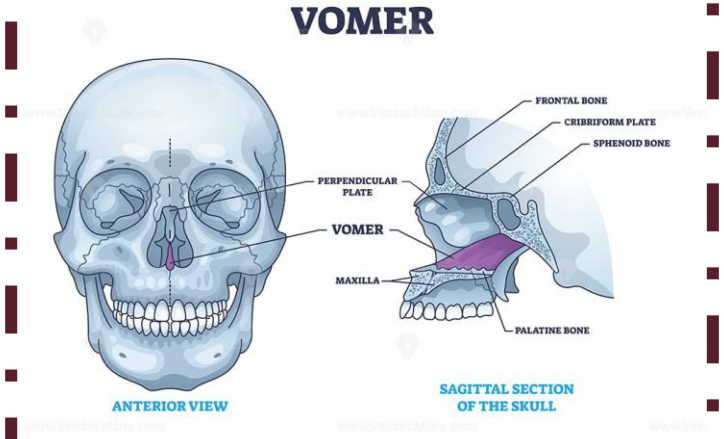
You must identify what passes through each foramen

- Incisive foramen: Nasopalatine nerve
- Greater palatine foramen: Greater palatine nerve & artery
- Lesser palatine foramen: Lesser palatine nerve & artery

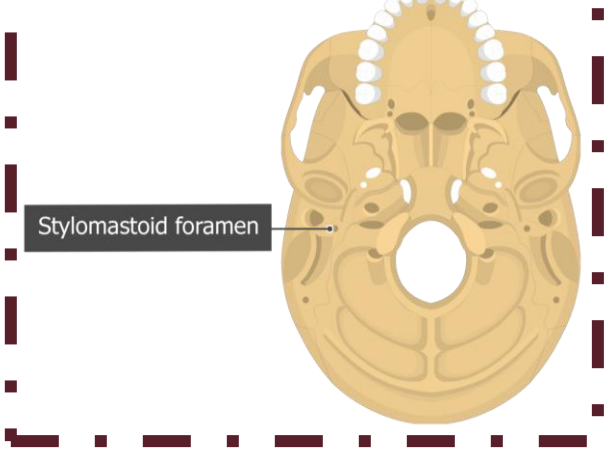
Things to notice from the base of the skull



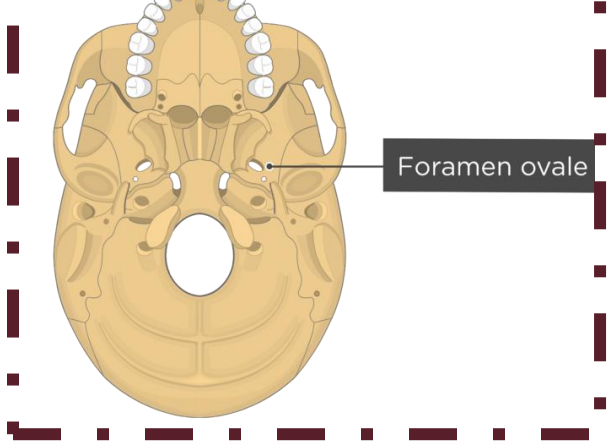
Choana: oval-shaped openings that lie between the nasal cavity and the nasopharynx.



Vomer: a bone in the midline of the nasal cavity

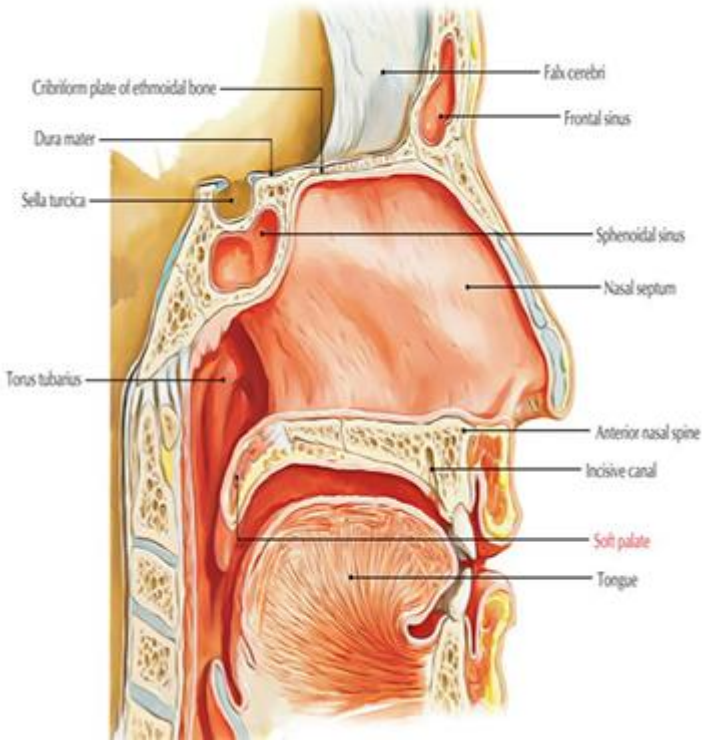


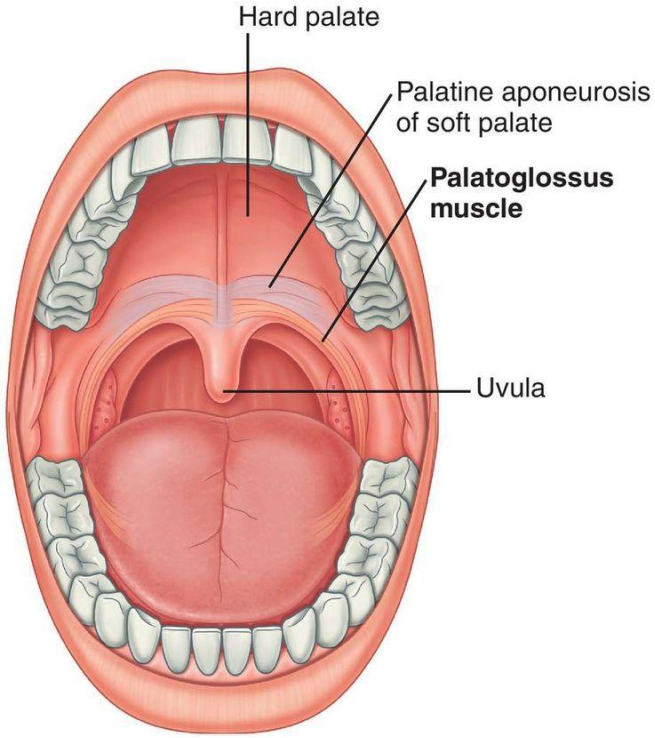
Stylomastoid foramen: facial nerve and stylomastoid artery pass through

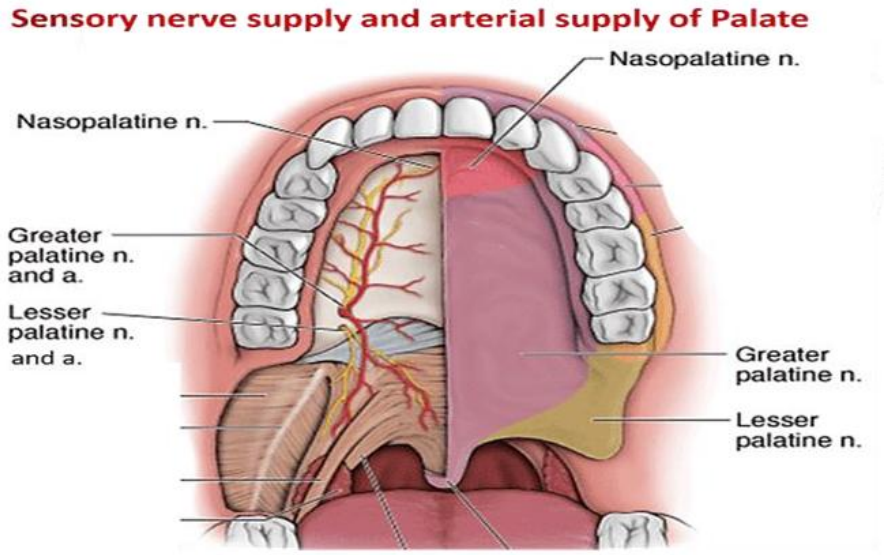


Foramen ovale: Mandibular nerve, lesser petrosal nerve, emissary veins and accessory meningeal artery pass through

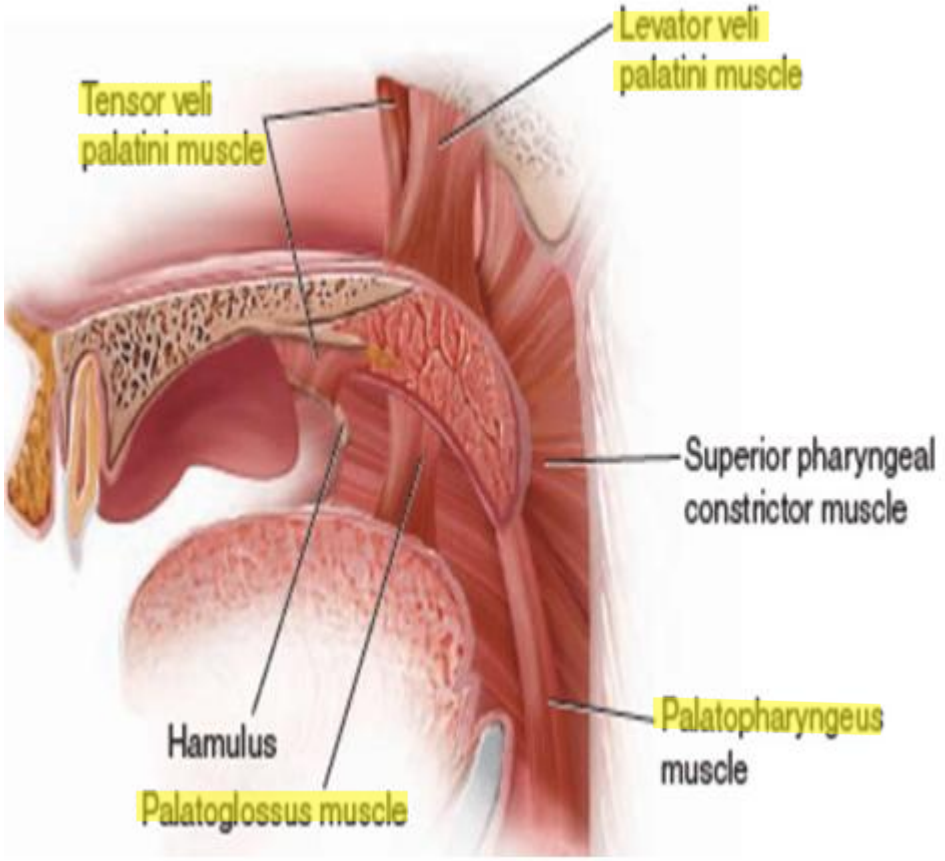
Soft Palate

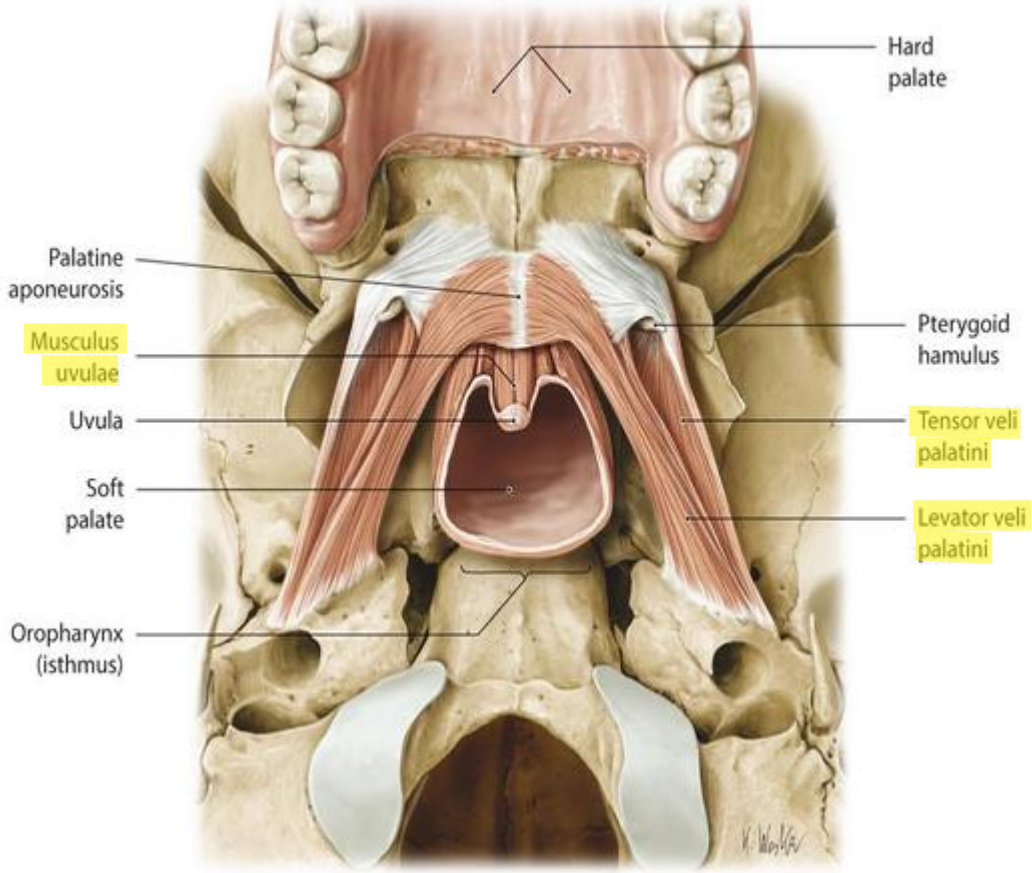

Cribriform plate of ethmoidal bone
Dura mater
Sella turcica
Torus tubarius
Falx cerebri
Frontal sinus
Sphenoidal sinus
Nasal septum
Anterior nasal spine
Incisive canal
Soft palate
Tongue


Hard palate
Palatine aponeurosis of soft palate
Palatoglossus muscle
Uvula

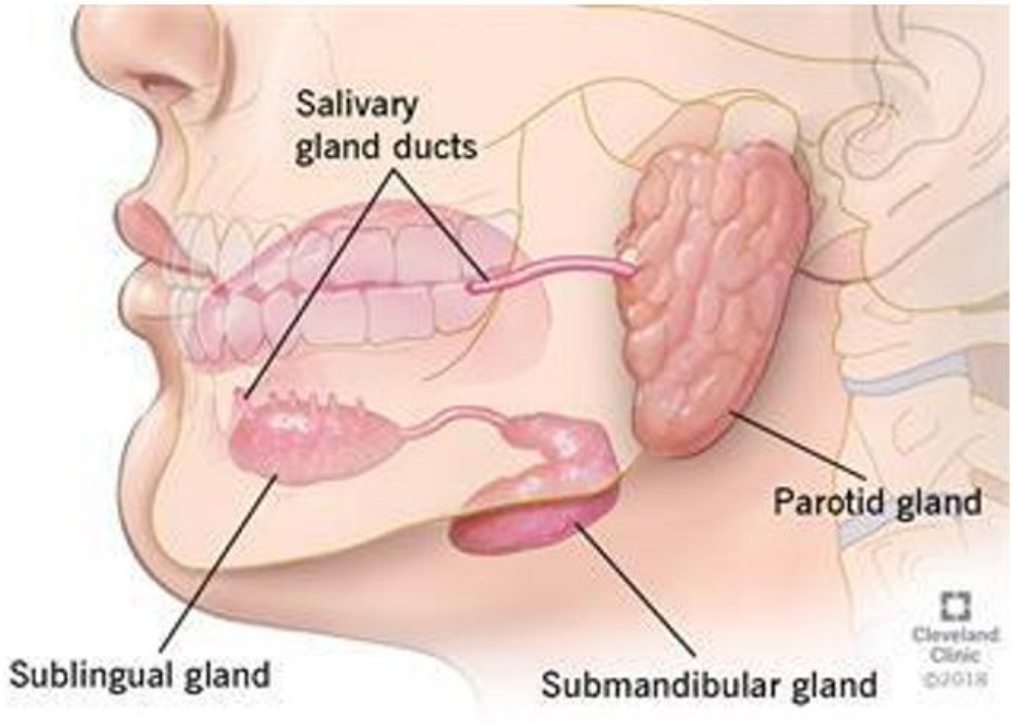

Sensory nerve supply and arterial supply of Palate
Nasopalatine n.
Nasopalatine n.
Greater palatine n. and a.
Lesser palatine n. and a.
Greater palatine n.
Lesser palatine n.

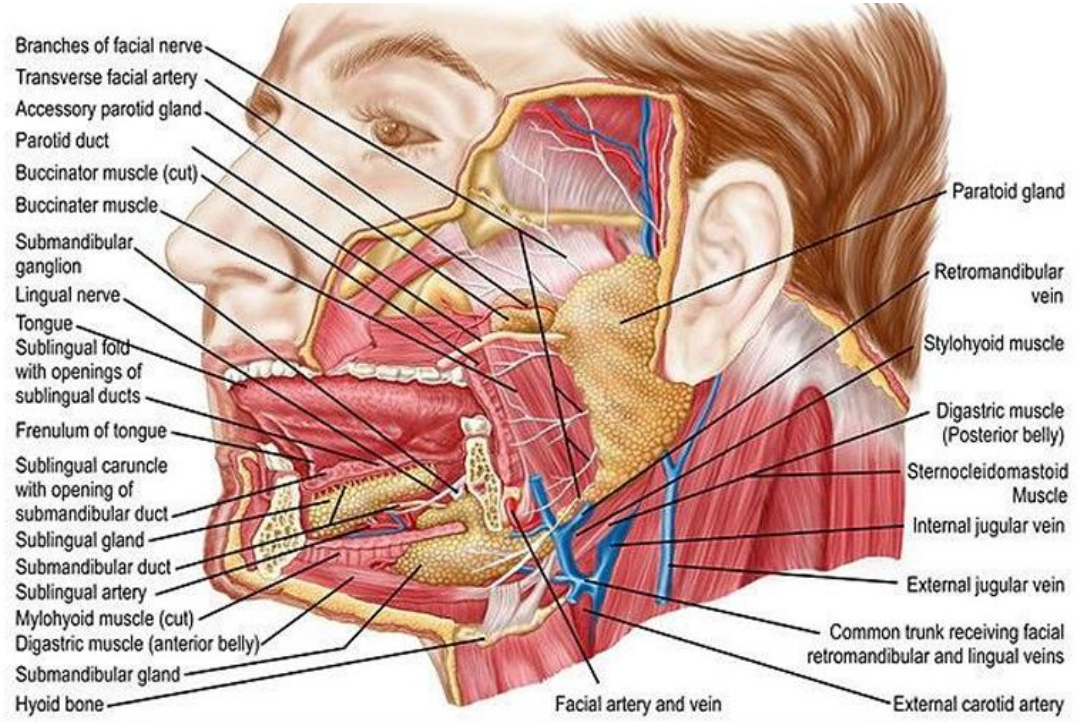
Soft Palate


Levator veli palatini muscle
Tensor veli palatini muscle
Superior pharyngeal constrictor muscle
Palatopharyngeus muscle
Hamulus
Palatoglossus muscle

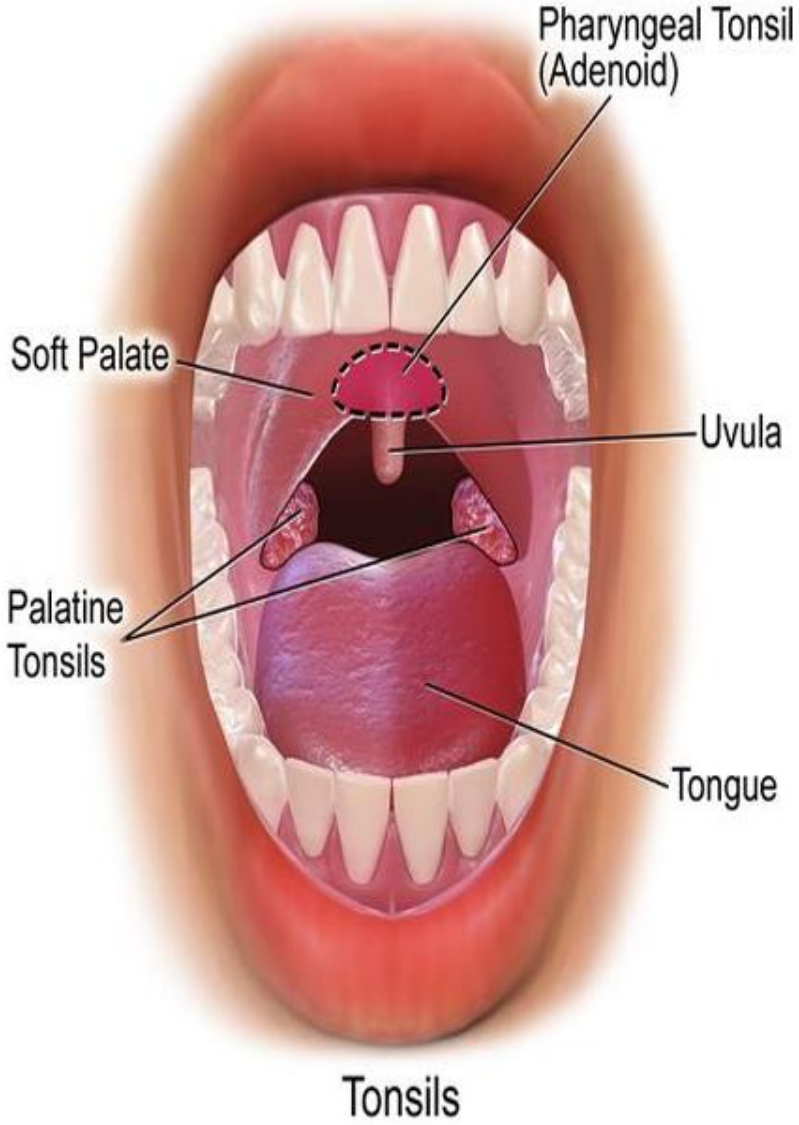

Hard palate
Palatine aponeurosis
Musculus uvulae
Uvula
Soft palate
Oropharynx (isthmus)
Pterygoid hamulus
Tensor veli palatini
Levator veli palatini

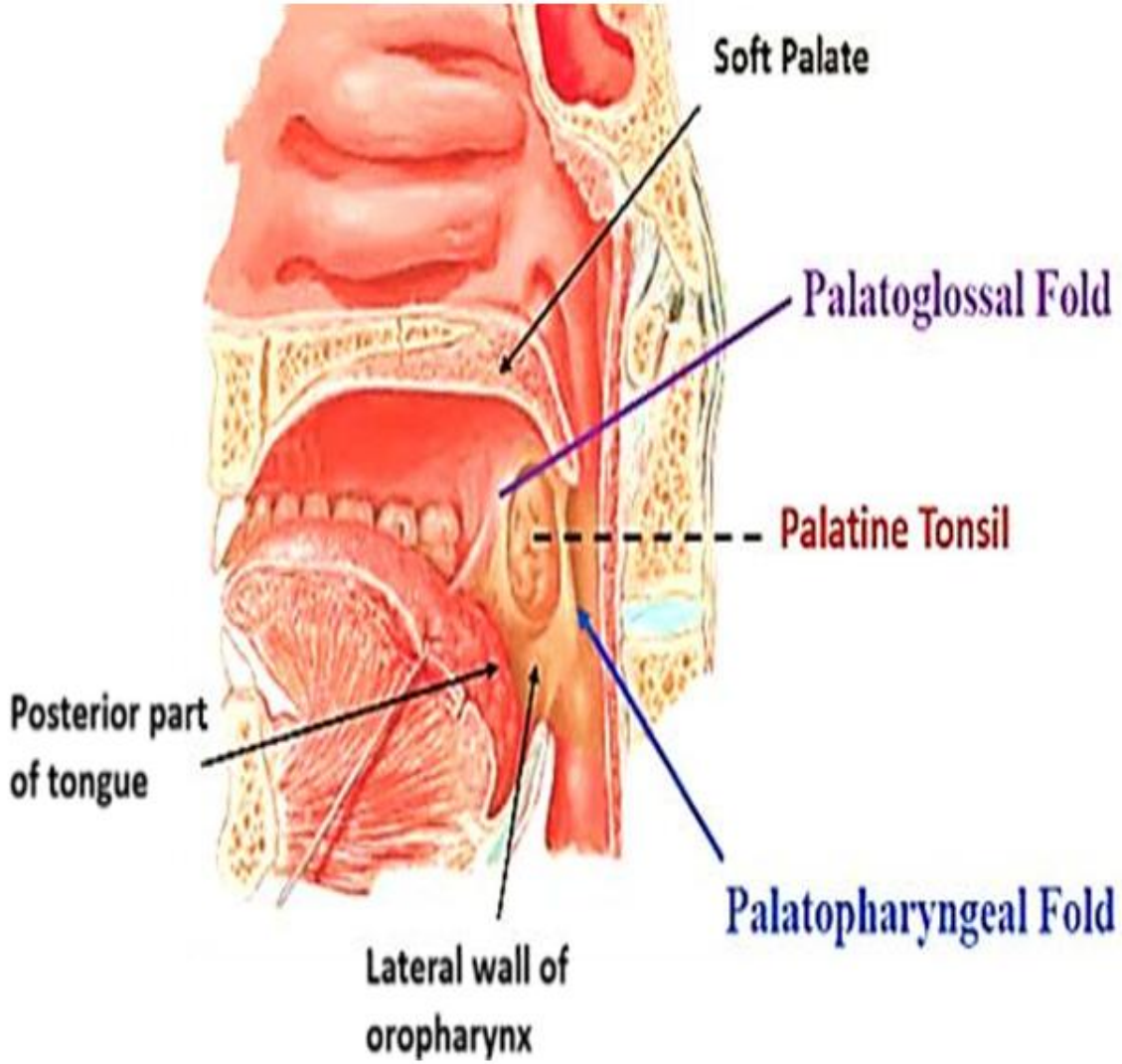
Salivary Glands





Palatine tonsils

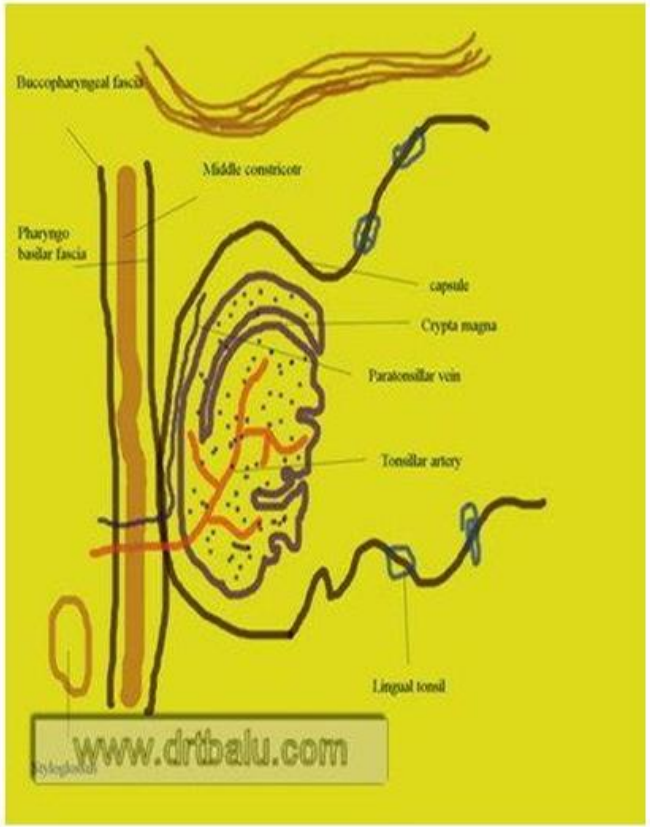




Palatine tonsils

Venous drainage :

occurs through the Para tonsillar vein, and the vessels also pass through to the pharyngeal plexus or facial vein after piercing the superior constrictor.

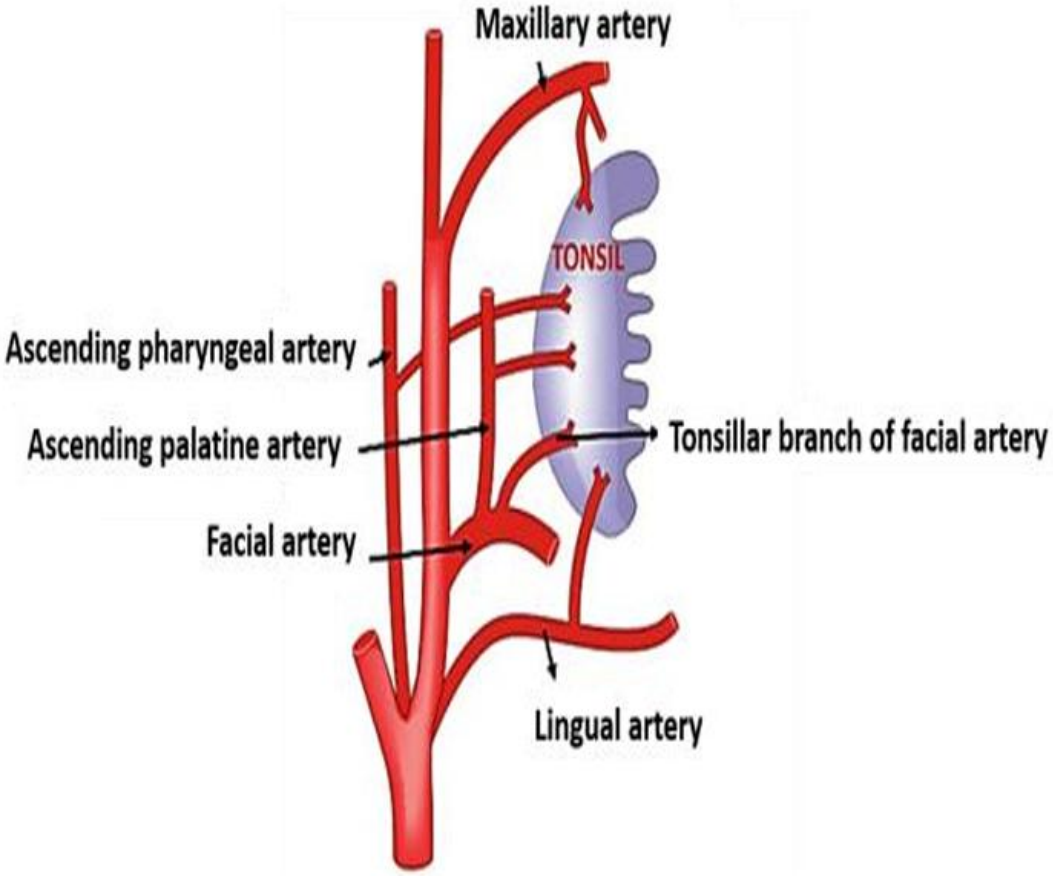


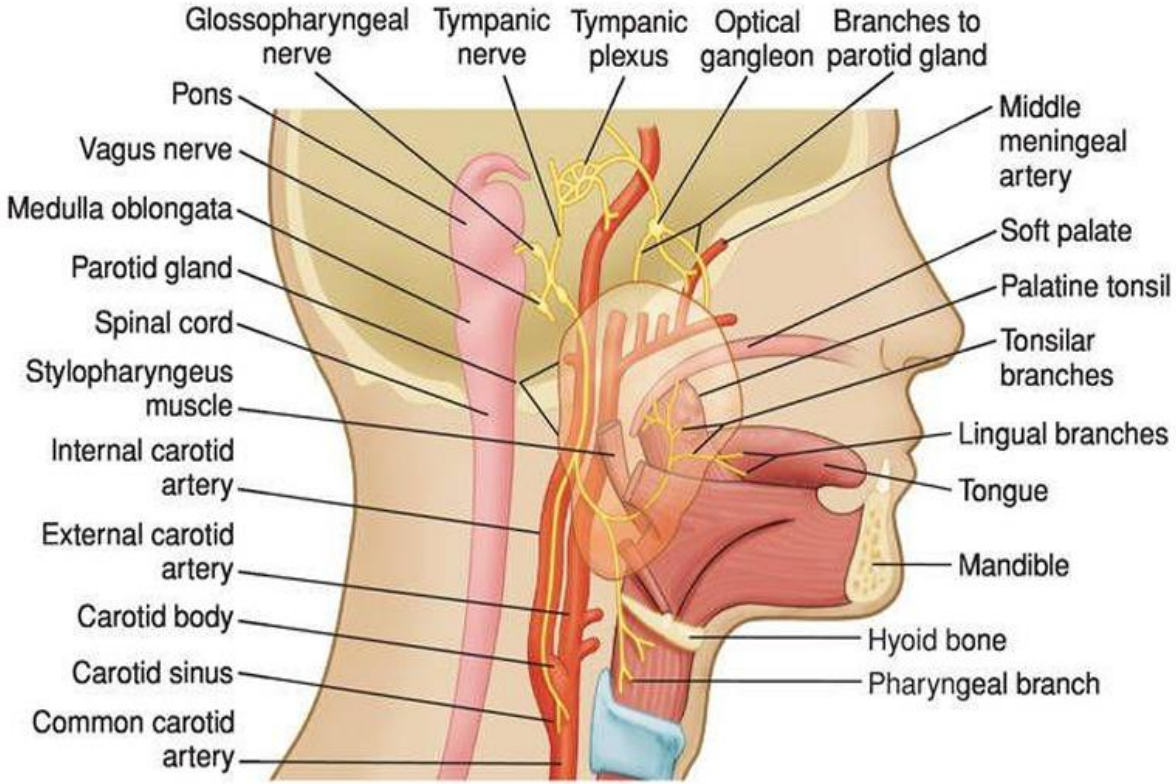
Nerve supply :

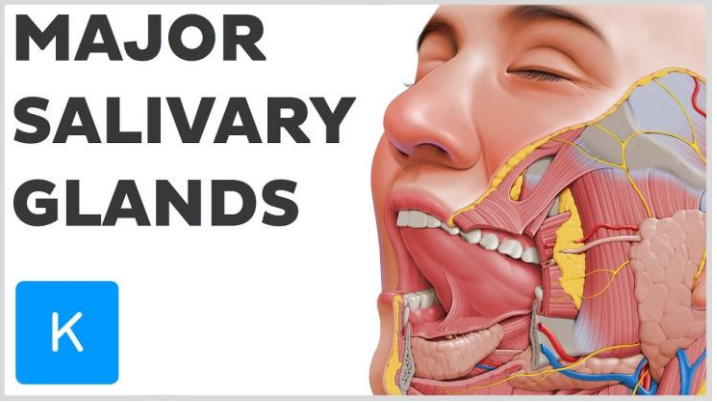
to the tonsil is from the glossopharyngeal nerve.

Tonsillar tumors or infections may result in ear pain due to referred pain conducted by cranial nerve IX: Glossopharyngeal nerve.

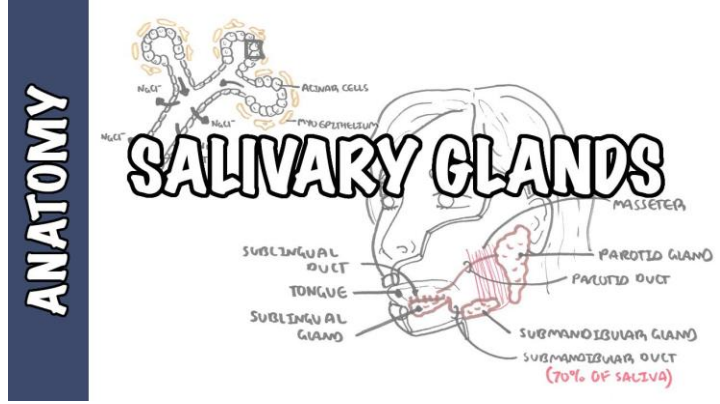
Palatine tonsils

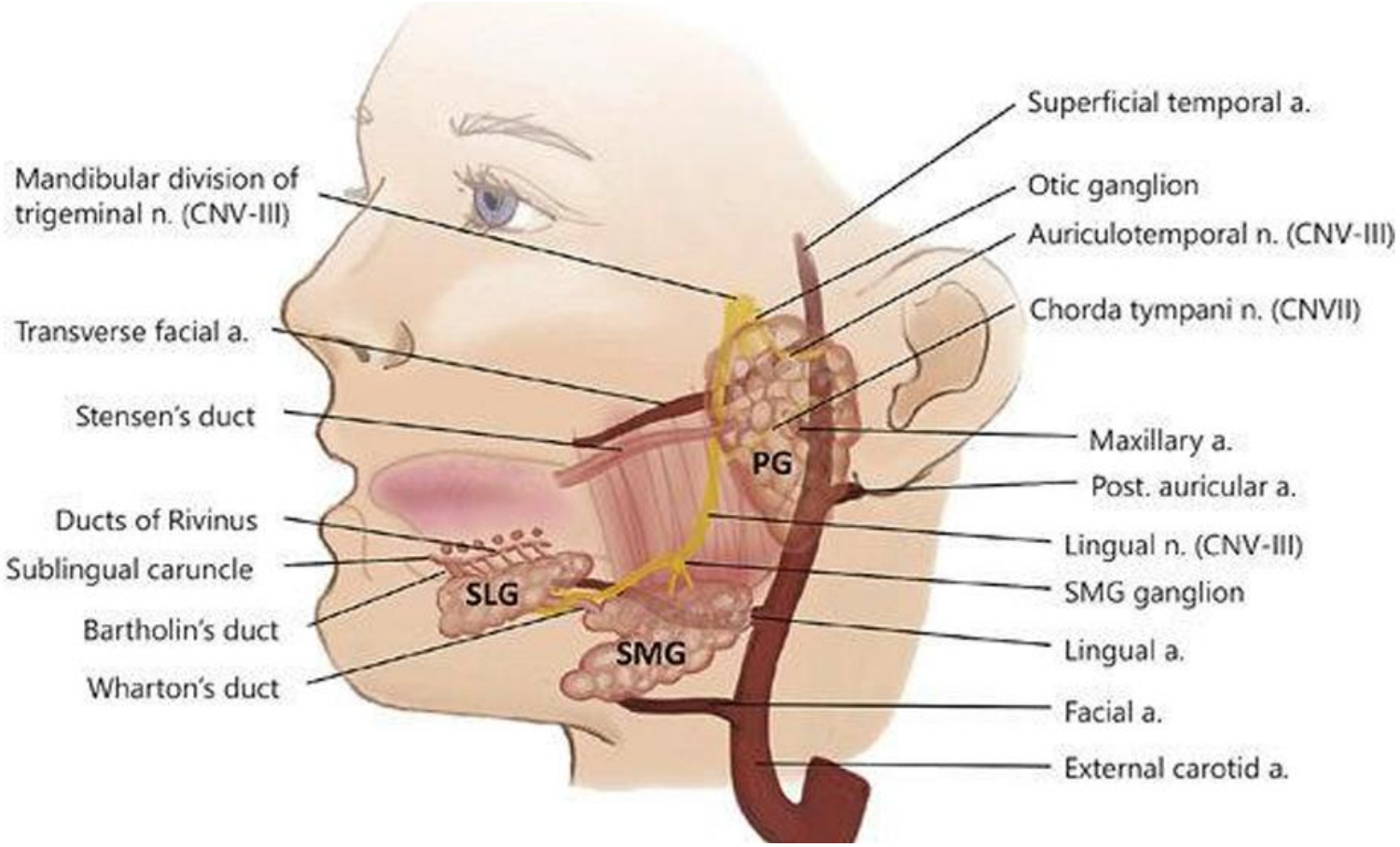




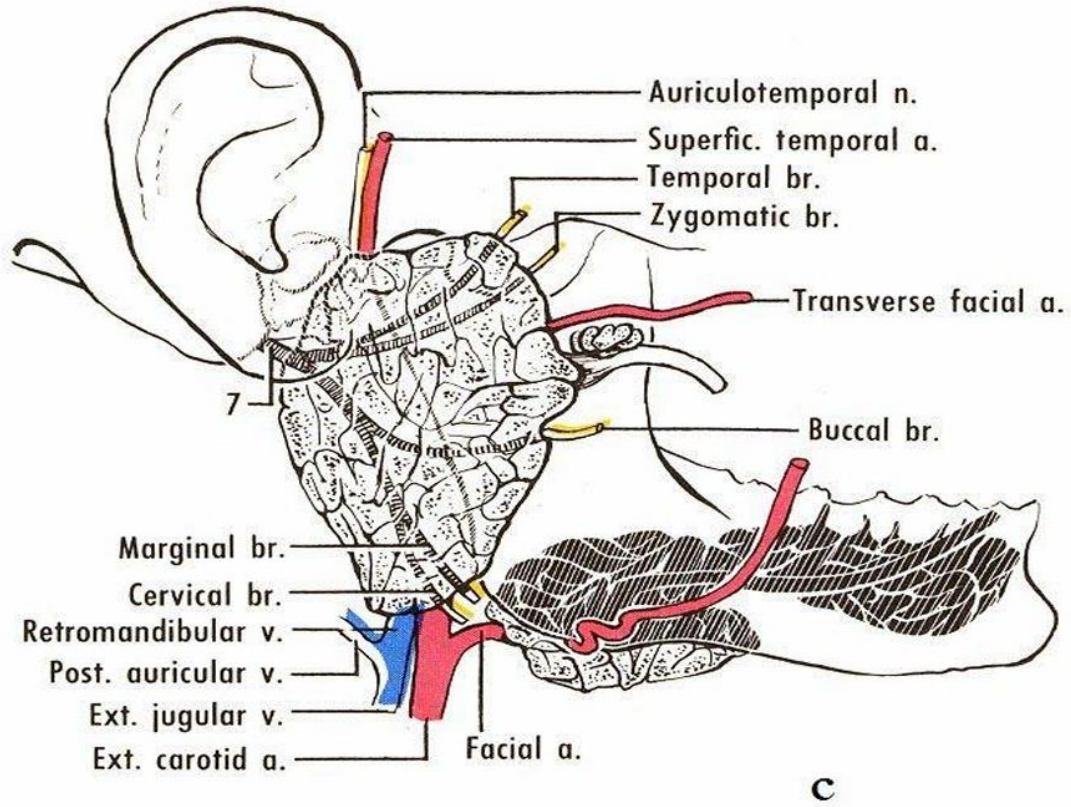


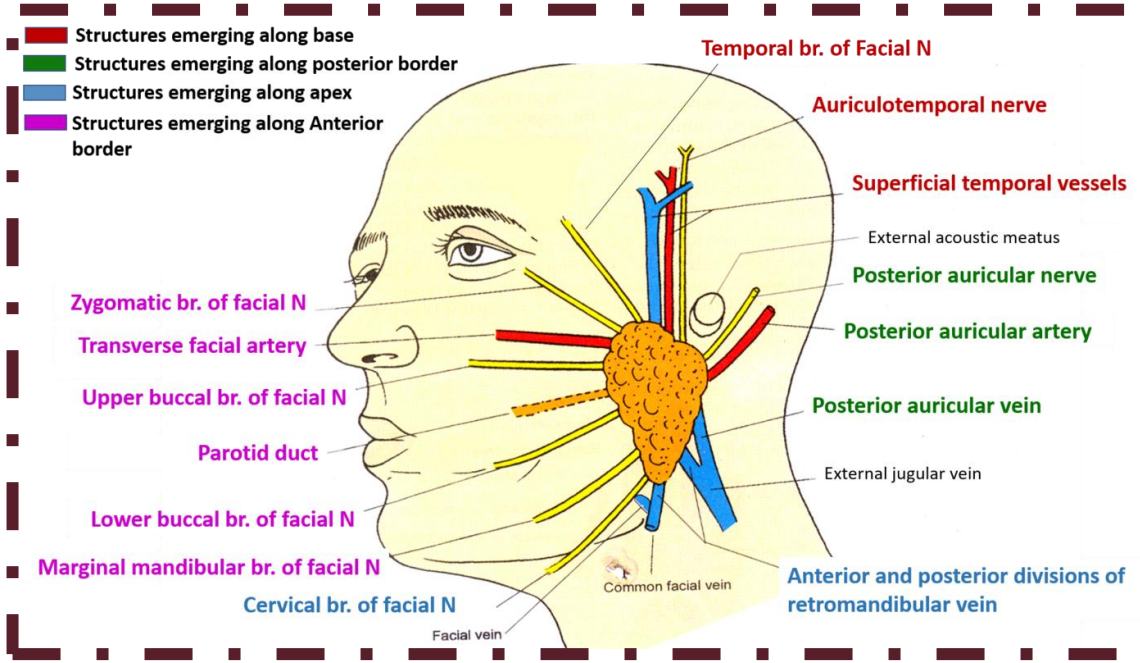
Salivary Glands





Salivary Glands – Parotid

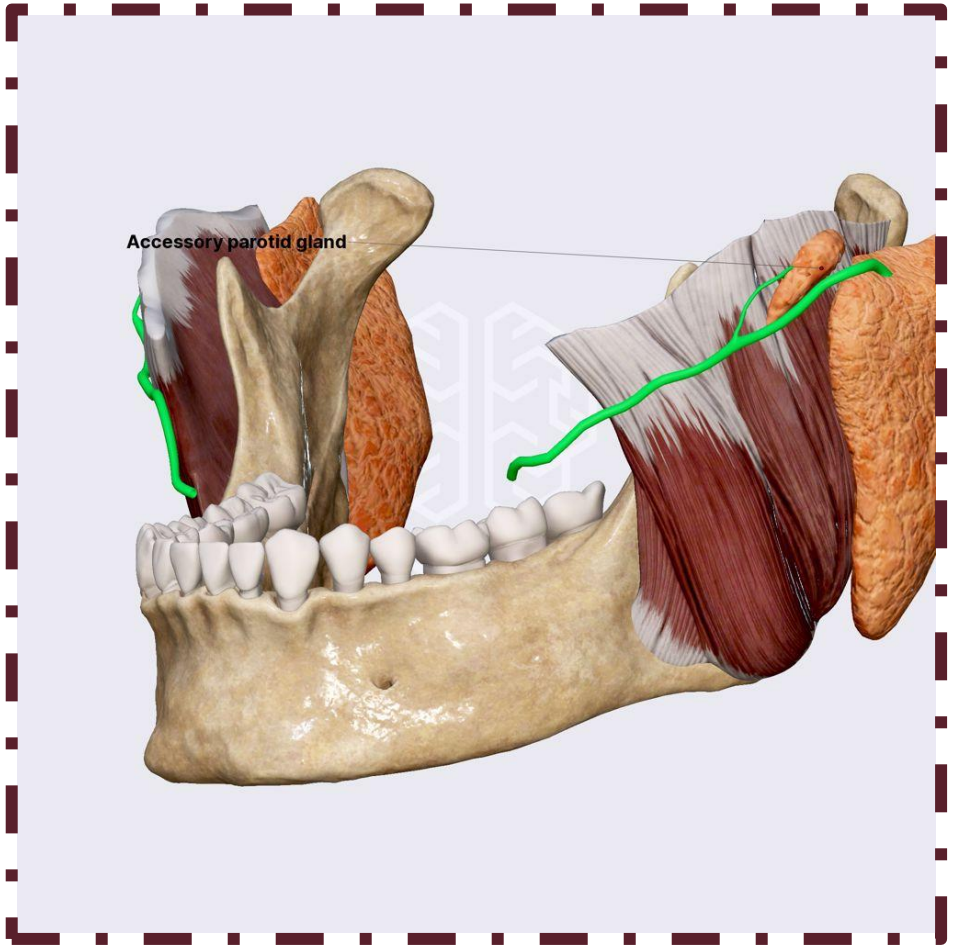




You must know the relations of all the glands

You must know the contents of the parotid gland

Salivary Glands – Parotid



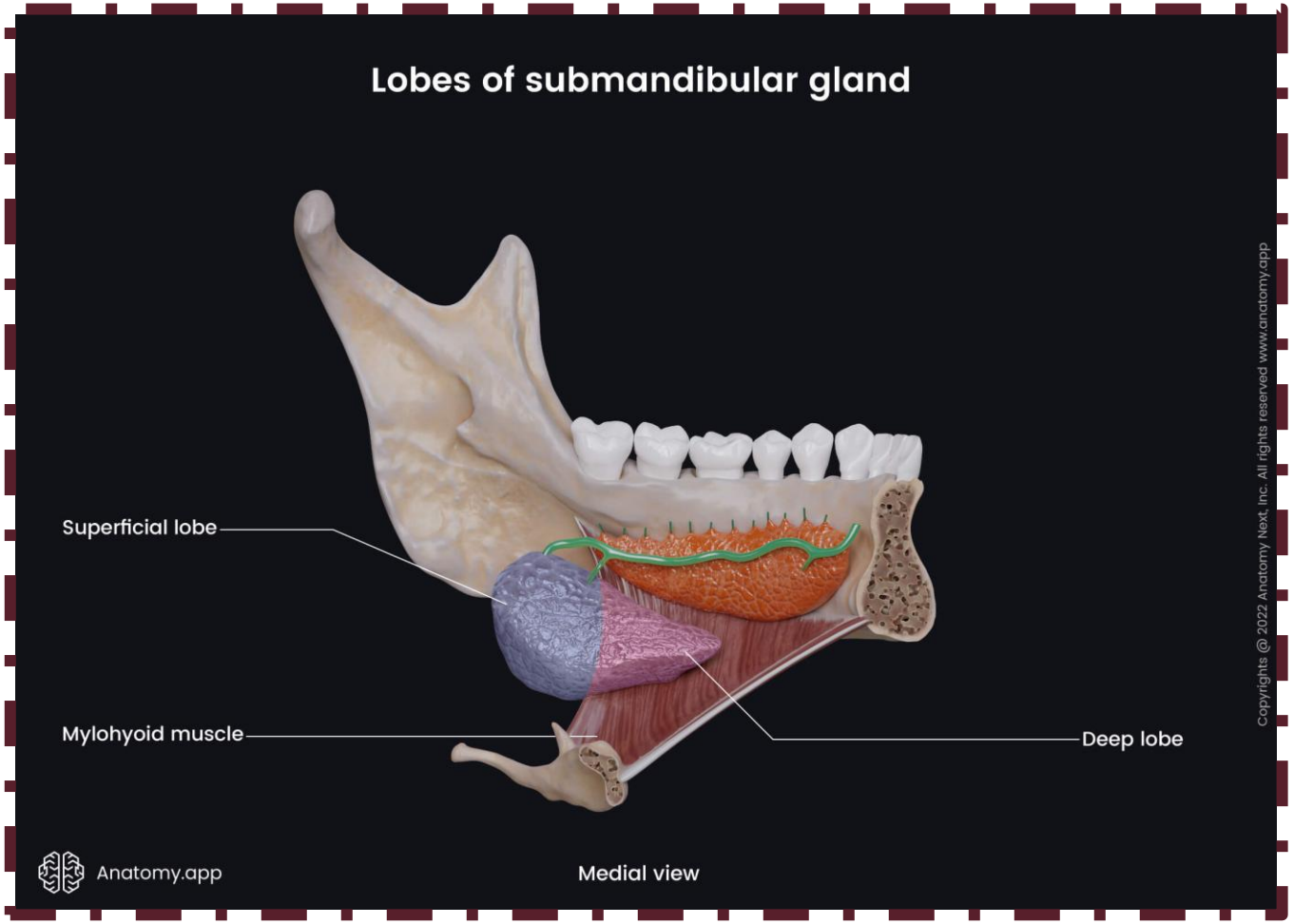
This is the parotid duct, it originates from the anterior border of the parotid gland and runs horizontally over masseter muscles, pierces buccinator muscle and opens opposite to the 2nd molar tooth

Salivary Glands – Parotid innervation

Type	Nerve	Function
Parasympathetic (secretomotor)	**Glossopharyngeal nerve (CN IX) → via otic ganglion → auriculotemporal nerve (branch of V3)**	Stimulates **saliva secretion**
Sympathetic	From **superior cervical ganglion** via **external carotid plexus**	Reduces secretion, vasoconstriction
Sensory	**Auriculotemporal nerve** (branch of CN V3)	General sensation from the gland

Salivary Glands – Submandibular

Look how its divided into two lobes, superficial and deep, by the mylohyoid muscle



Salivary Glands – Submandibular

Relations and innervation

Type	Nerve	Function
Parasympathetic (secretomotor)	**Facial nerve (CN VII)** → via **chorda tympani** → joins **lingual nerve (CN V3)** → **submandibular ganglion**	Stimulates **saliva secretion**
Sympathetic	From **superior cervical ganglion** via **facial artery plexus**	Reduces secretion, vasoconstriction
Sensory	**Lingual nerve** (branch of CN V3)	General sensation from the gland

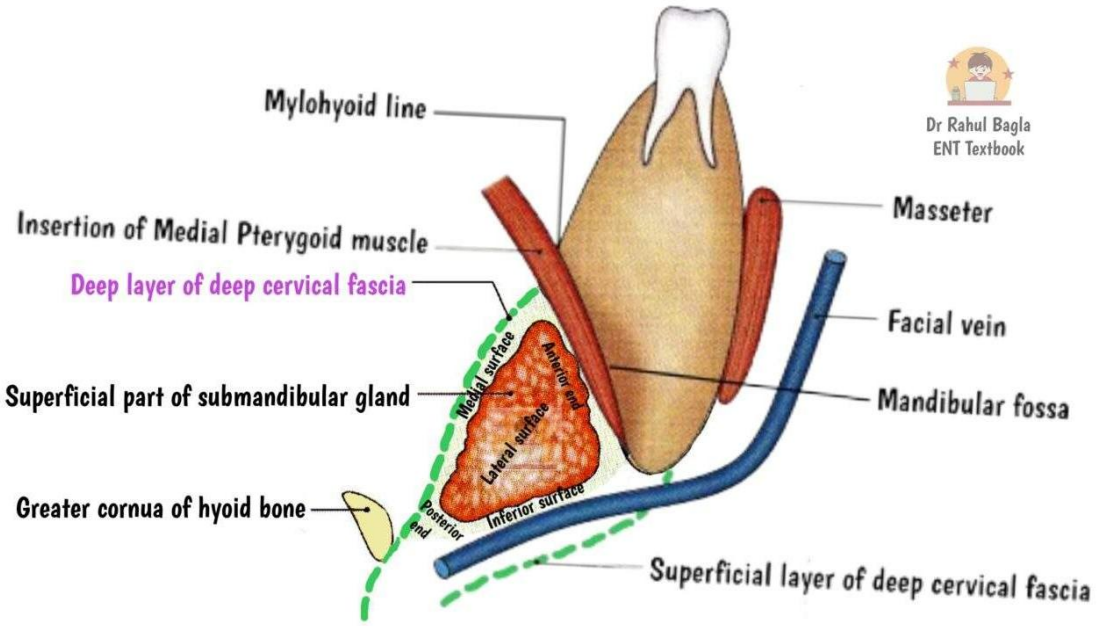


Diagram: Showing relations of submandibular gland

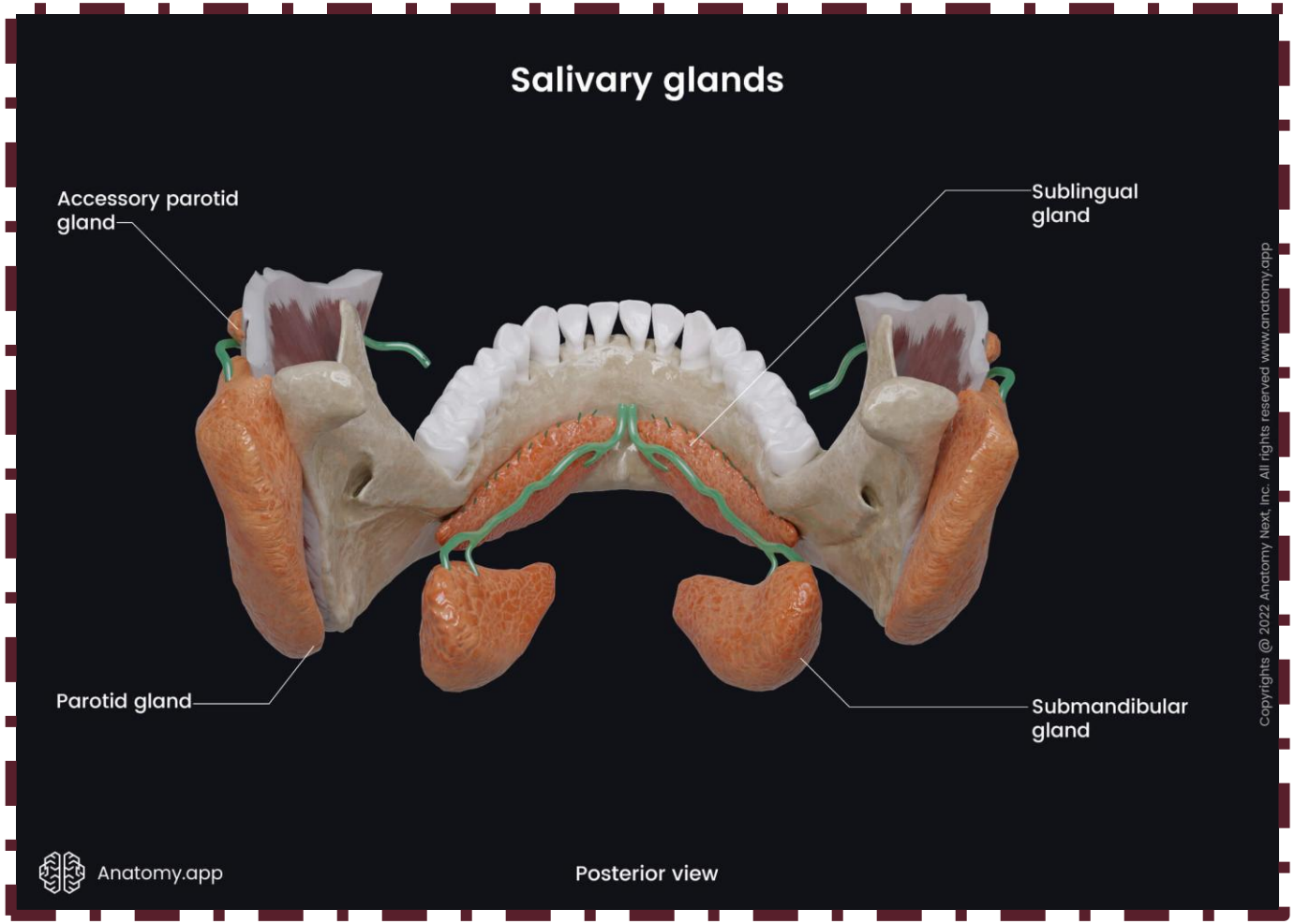
Salivary Glands – Sublingual

Look how its located under the tongue

Salivary Glands – Sublingual

Relations and innervation

IMPORTANT!
Notice how sublingual gland has two types of ducts, the first is the major one which opens to the submandibular duct. The second type is minor ducts, that open under the tongue



Salivary Glands – Sublingual

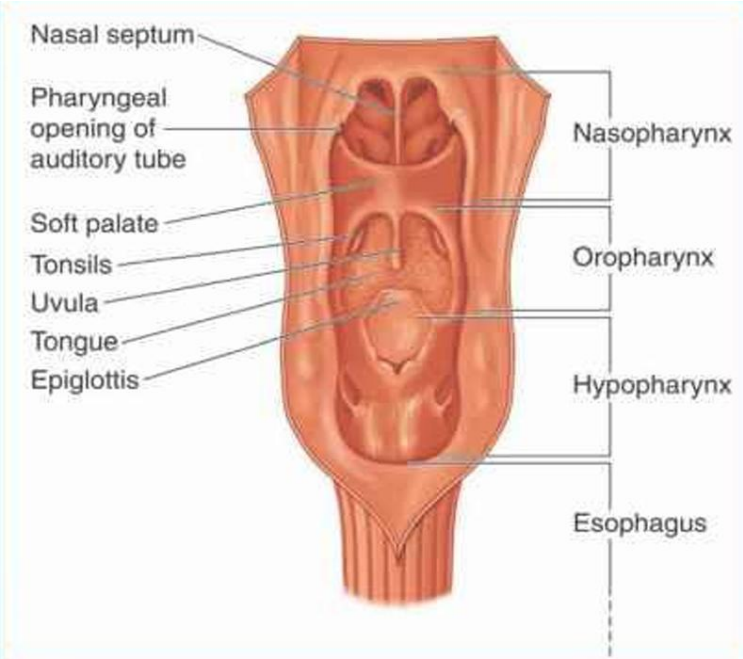
Relations and innervation

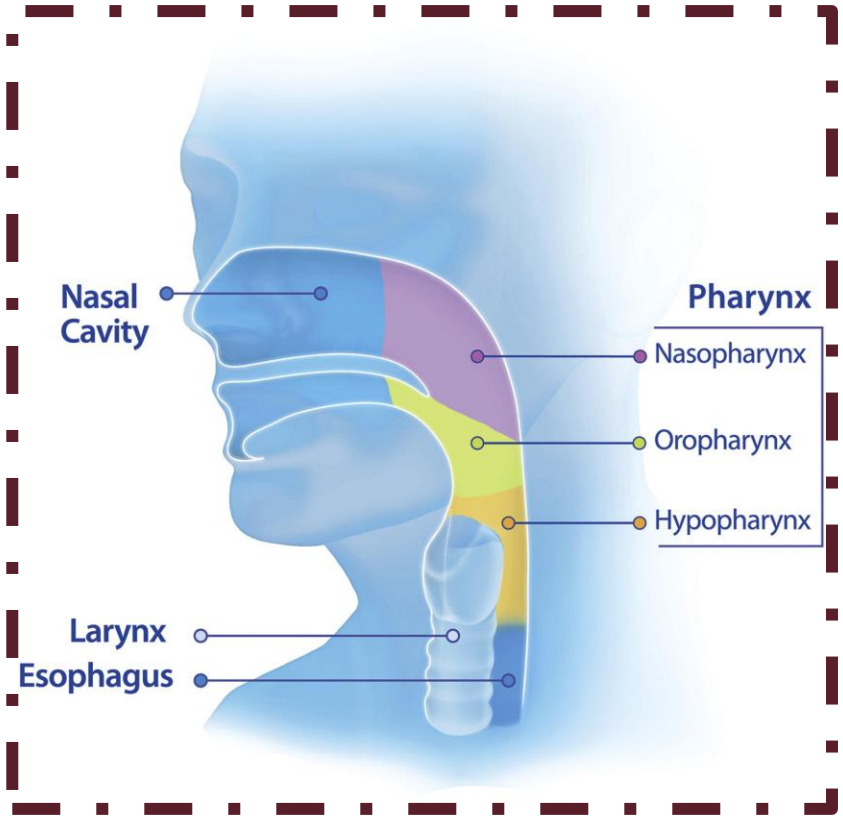
Type	Nerve	Function
Parasympathetic (secretomotor)	**Facial nerve (CN VII)** → via **chorda tympani** → joins **lingual nerve (CN V3)** → synapses in **submandibular ganglion**	Stimulates **saliva secretion**
Sympathetic	From **superior cervical ganglion** via **periarterial plexus** (on facial/lingual artery)	Inhibits secretion, vasoconstriction
Sensory	**Lingual nerve** (branch of CN V3)	General sensation from the gland

Pharynx

Pharynx begins at the base of the skull, and it is divided into 3 parts:

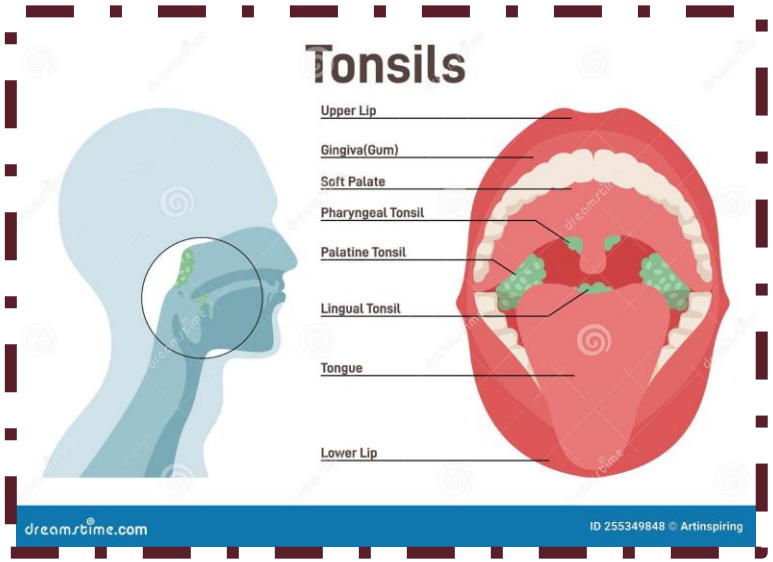
1. **Nasopharynx**
2. **Oropharynx**
3. **Laryngopharynx/Hypopharynx**



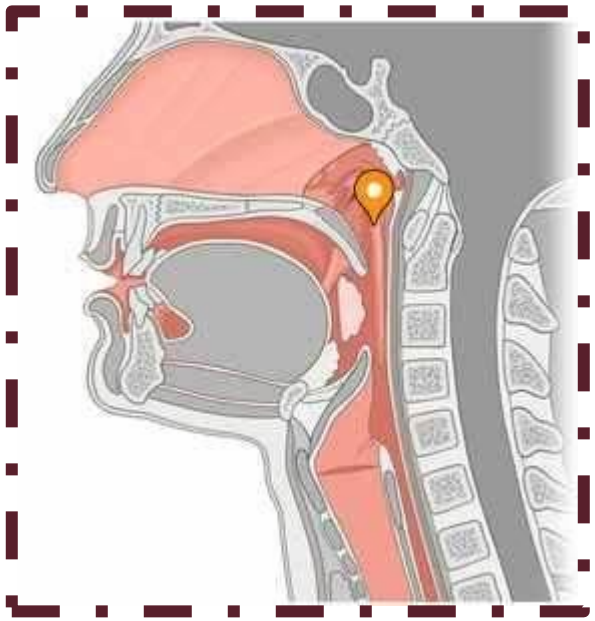


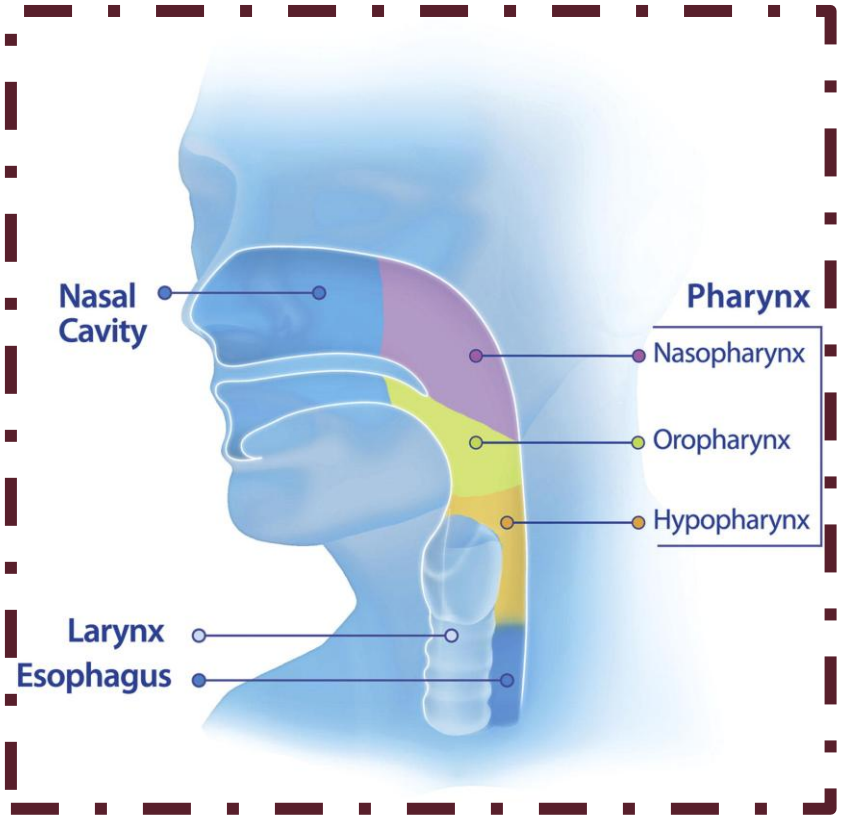
Nasopharynx

It lies above the soft palate and behind the nasal cavity. It contains **pharyngeal tonsils** and **salpinopharyngeal fold**



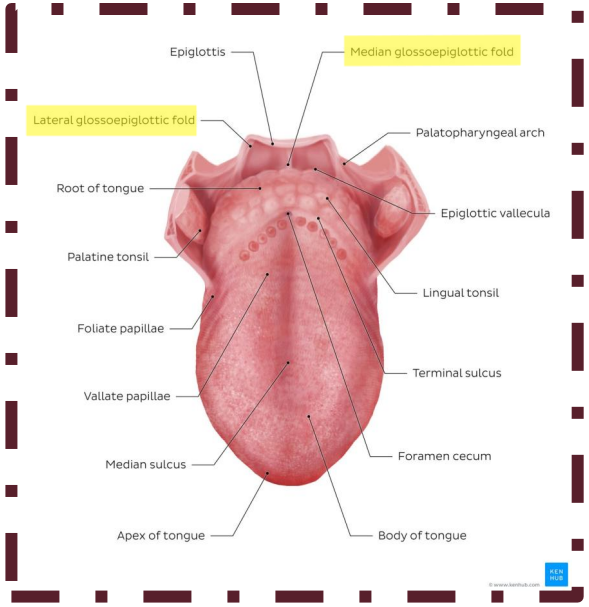
salpinopharyngeal fold

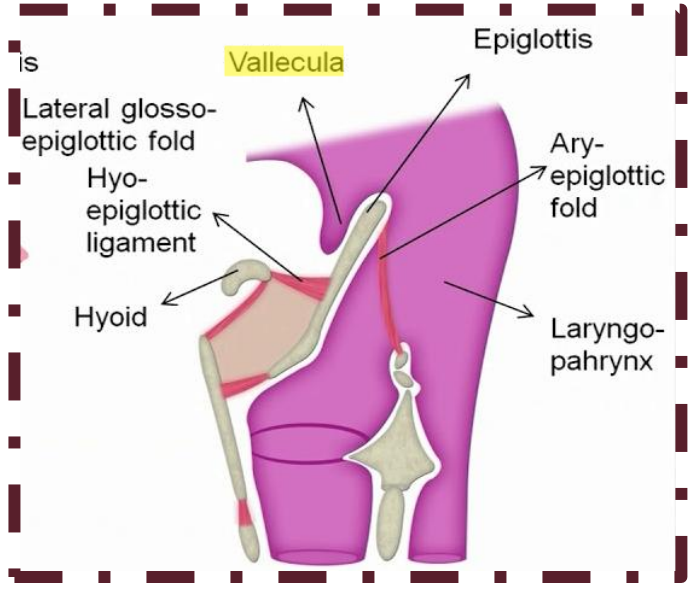


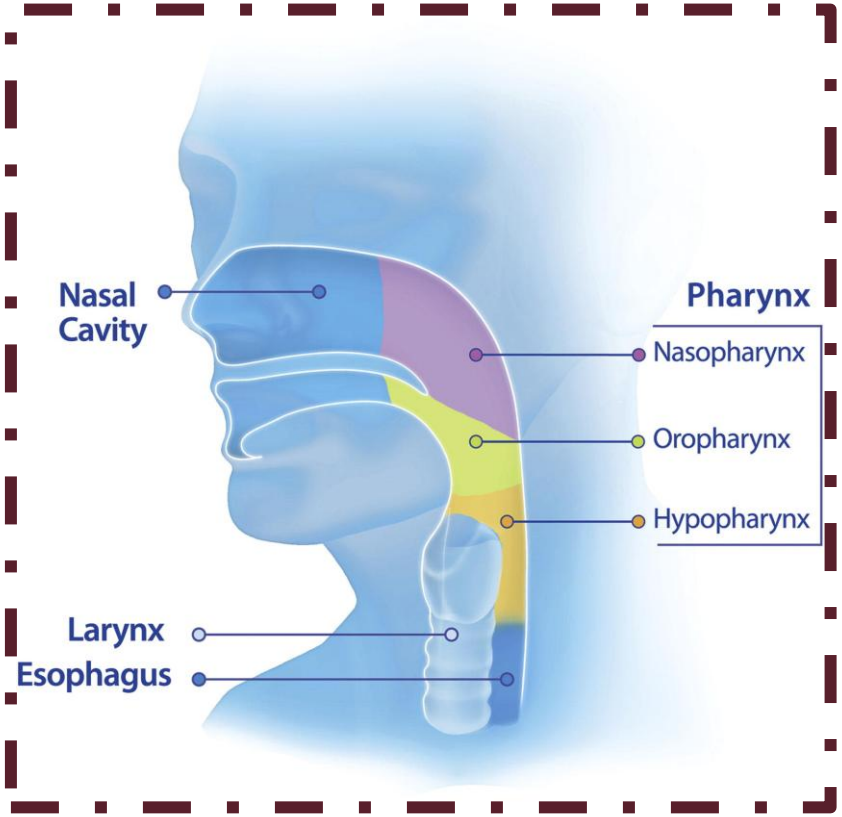


Oropharynx

It lies behind the oral cavity. The floor is formed by the posterior 1/3 of the tongue and the interval between the tongue and the epiglottis. It contains **vallecula** & **medial and lateral glossoepiglottic folds**





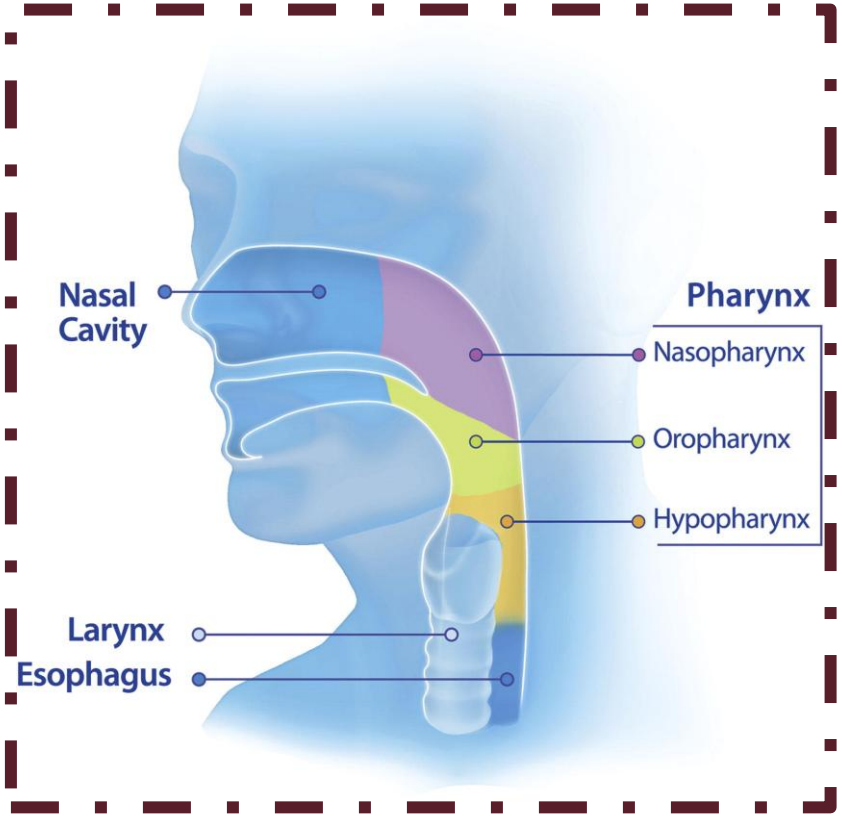


Vallecula is **depression** or **space** located at the base of the tongue, just in front of the **epiglottis**

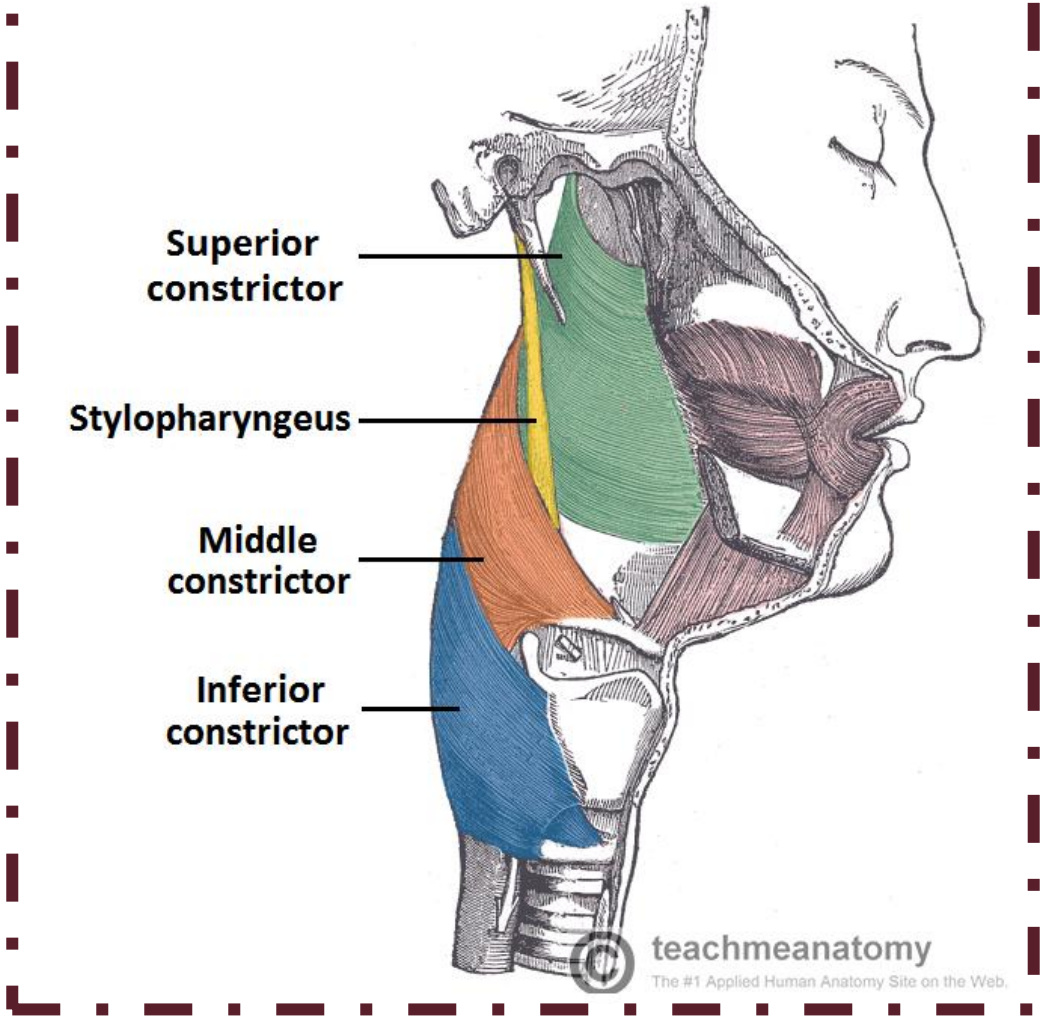
Laryngopharynx

It lies behind the opening of the larynx. It contains piriform fossa

Piriform fossa is a depression antero-lateral to laryngopharynx, foreign bodies like fish bones lodge to it

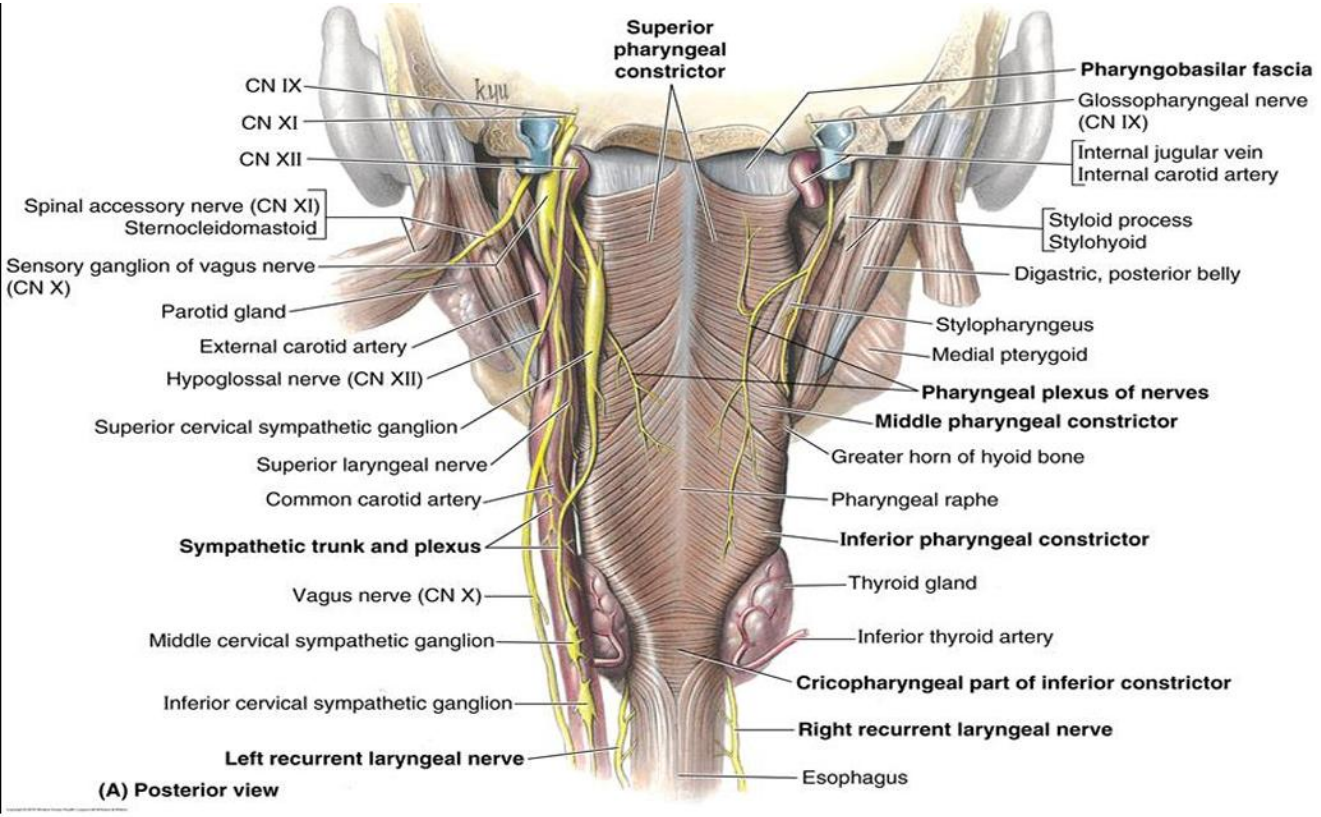


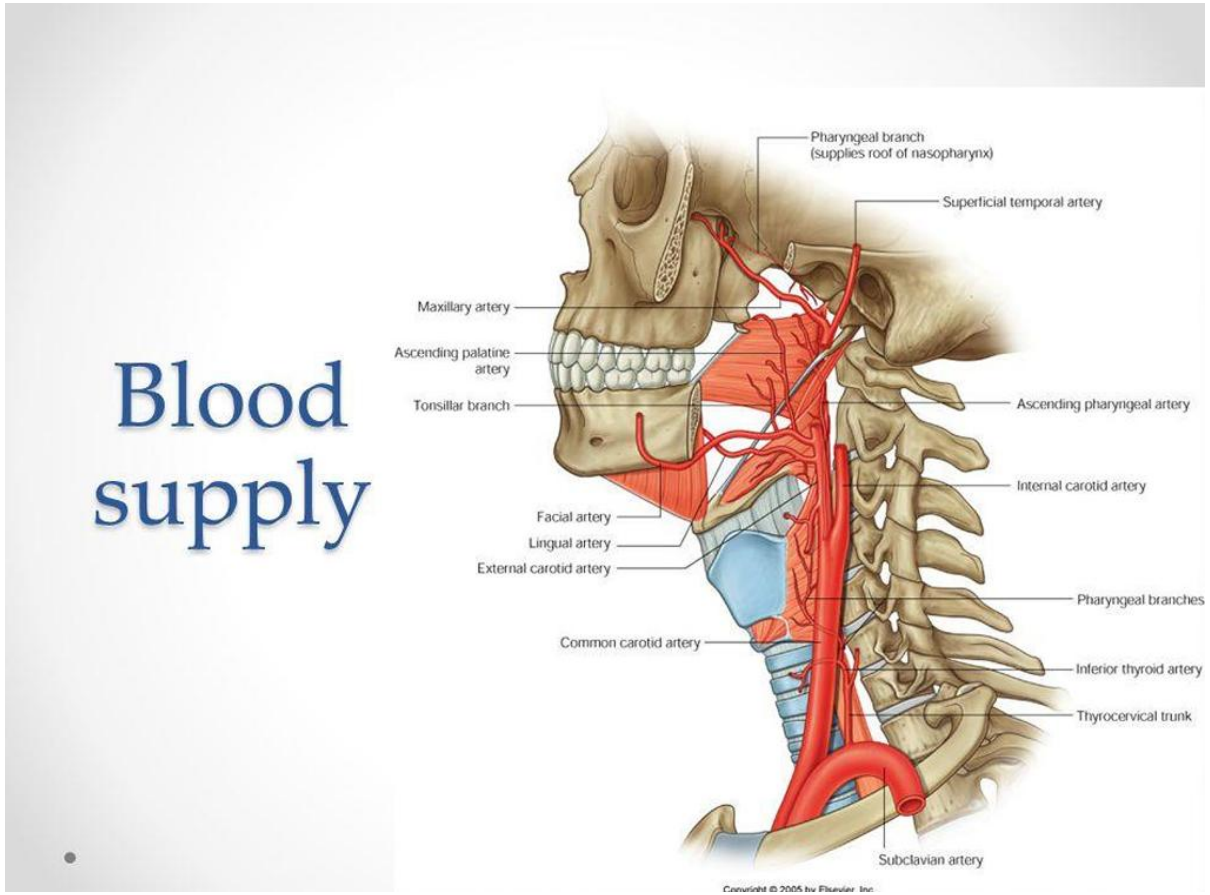
Muscles of the pharynx



Click on it to watch it

Blood and nerve supply





For any feedback, scan the code or click on it.

Corrections from previous versions:

Versions	Slide # and Place of Error	Before Correction	After Correction
V0 → V1			
V1 → V2			