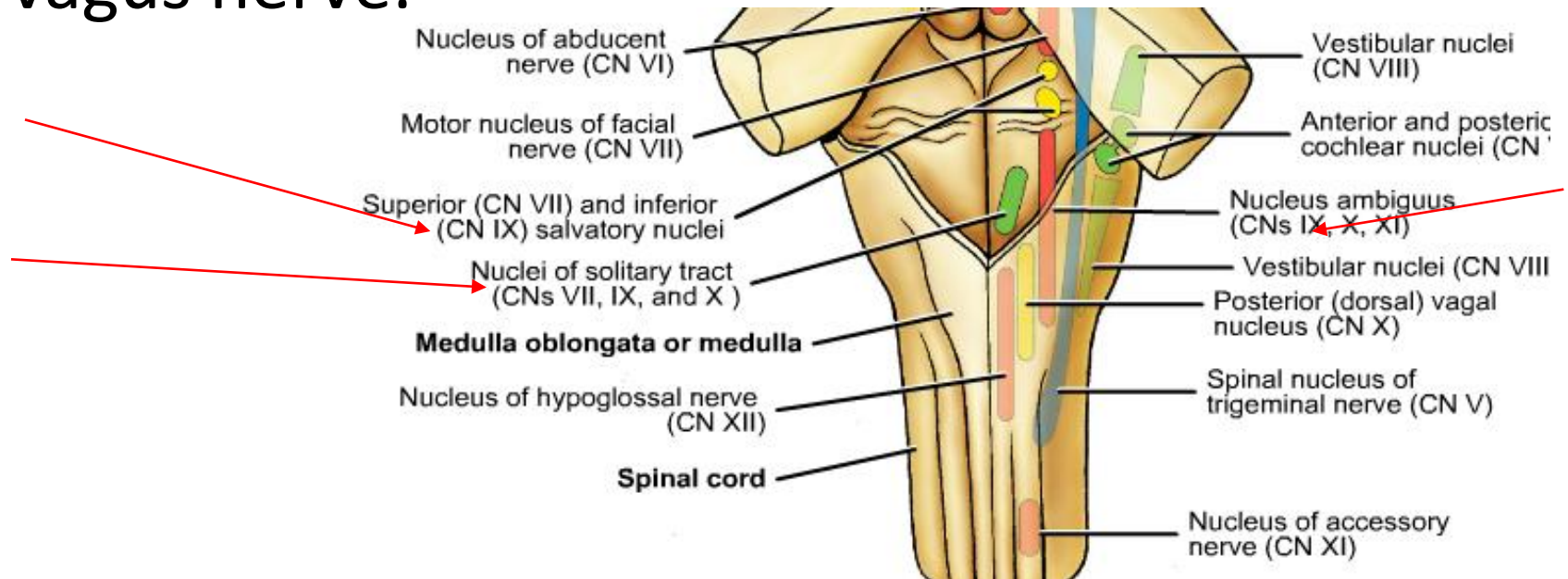
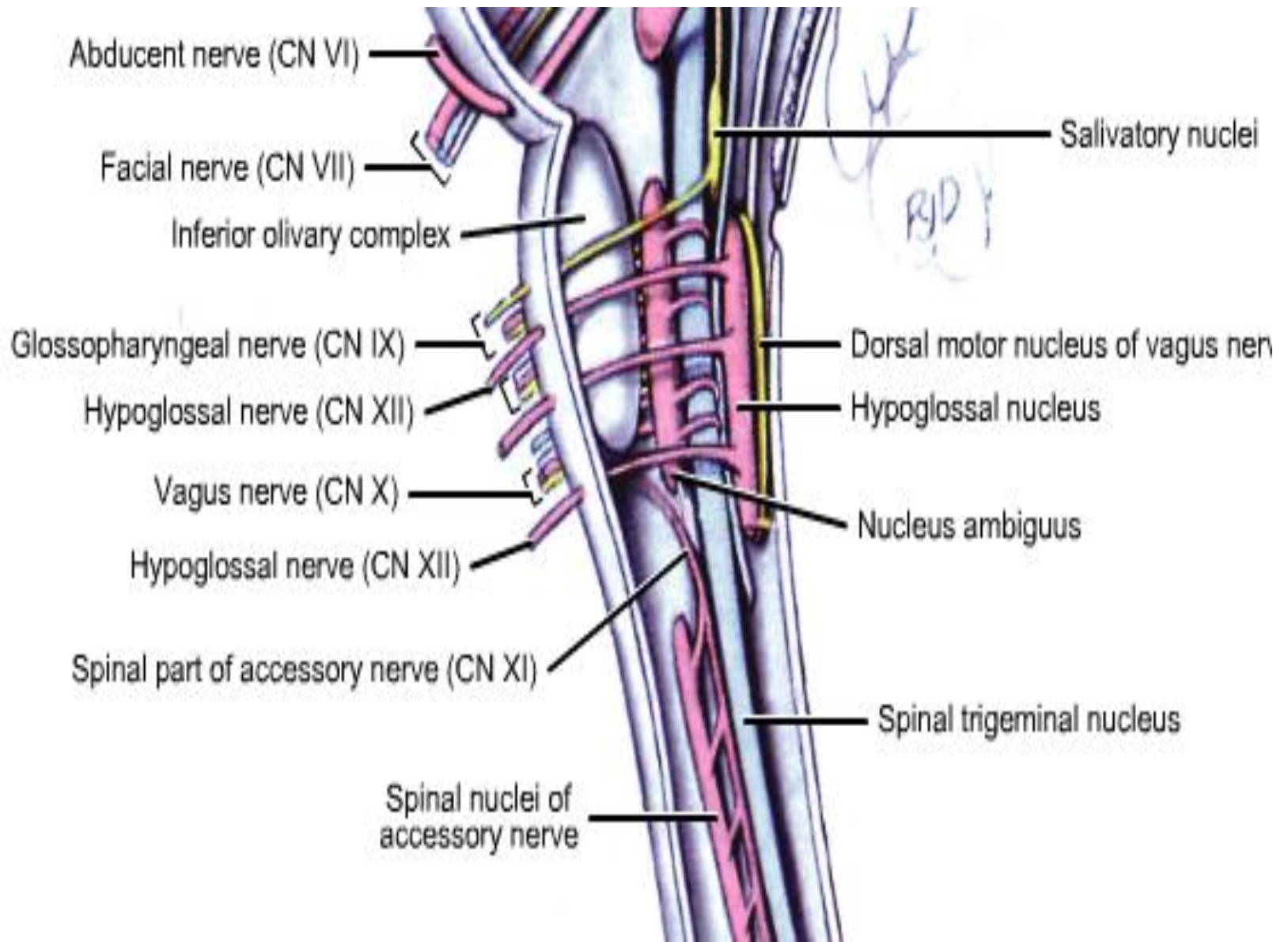


# The glossopharyngeal nerve

By talib jawad

- It emerges as three or four rootlets from the rostral part of the medulla oblongata in a groove between the olive and the inferior cerebellar peduncle above the rootlets of the vagus nerve.





- both motor and sensory,
- motor : *stylopharyngeus m*,
- parasympathetic secretomotor : -**parotid gland**
- Sensory: tympanic cavity, Eustachian tube, fauces, tonsils, nasopharynx, uvula, inferior surface of the soft palate and posterior (postsulcal) third of the tongue; and **gustatory nerve** for this part of the tongue.

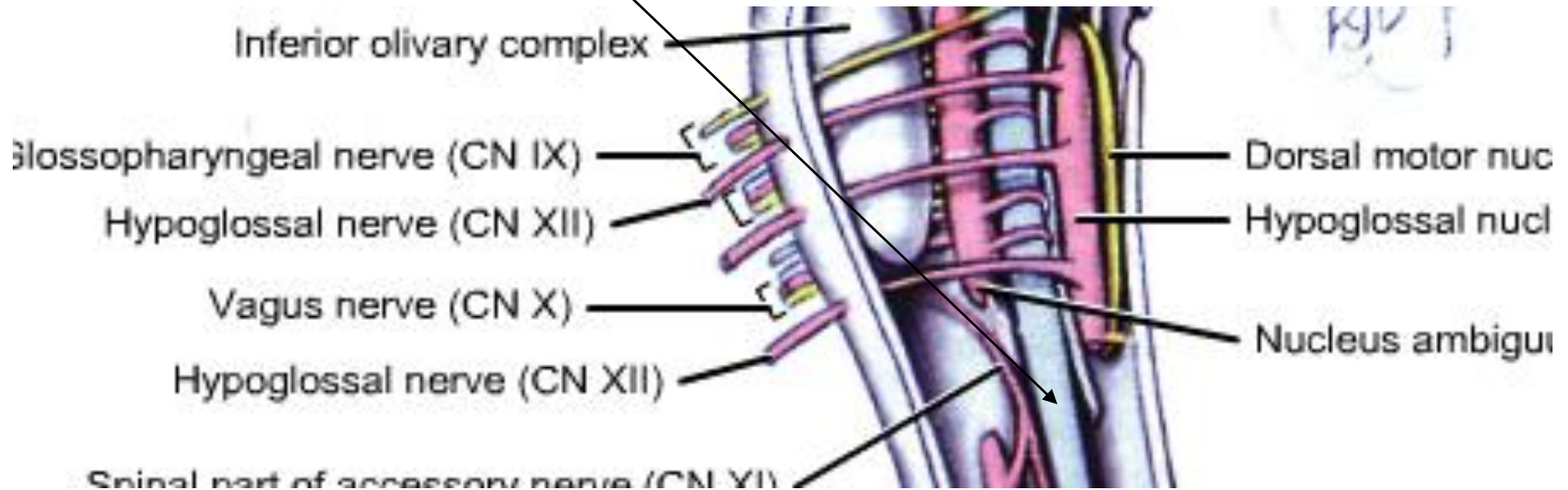
# Sensory Nuclei

- *unipolar neurons in the superior and inferior glossopharyngeal ganglia;*
- *fibres concerned with taste end in the rostral part of the **nucleus tractus solitarius***

- Afferents from the *carotid body and sinus project to the middle* third of the nucleus tractus solitarius although some terminate on large neurons of the paramedian reticular formation of the medulla .

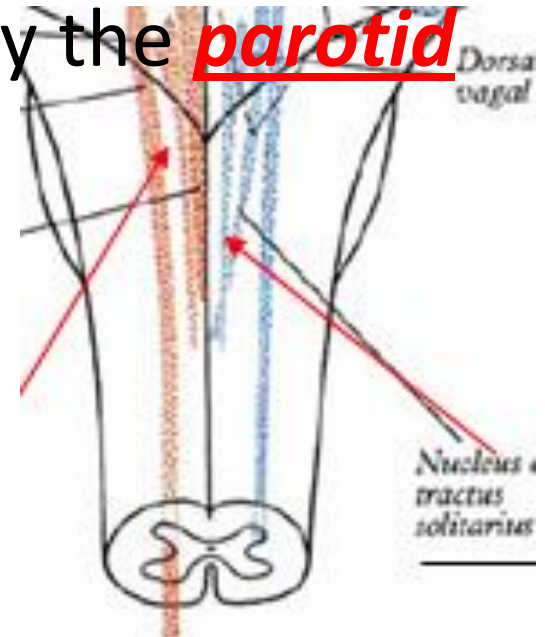
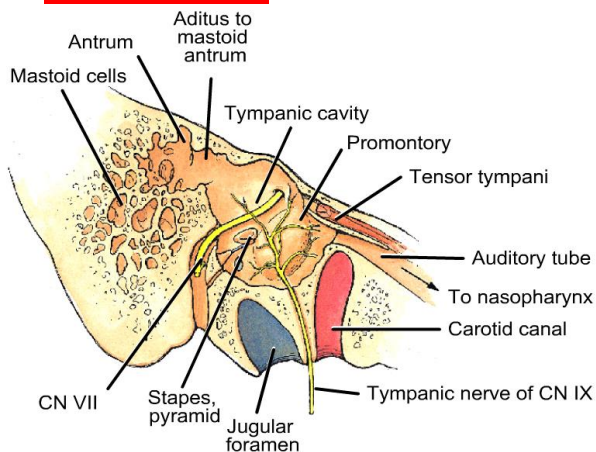
# Motor Nucleus

- The rostral part of the nucleus ambiguus, it is situated deep in the reticular formation medial to the spinal tract and nucleus of the ***trigeminal*** nerve



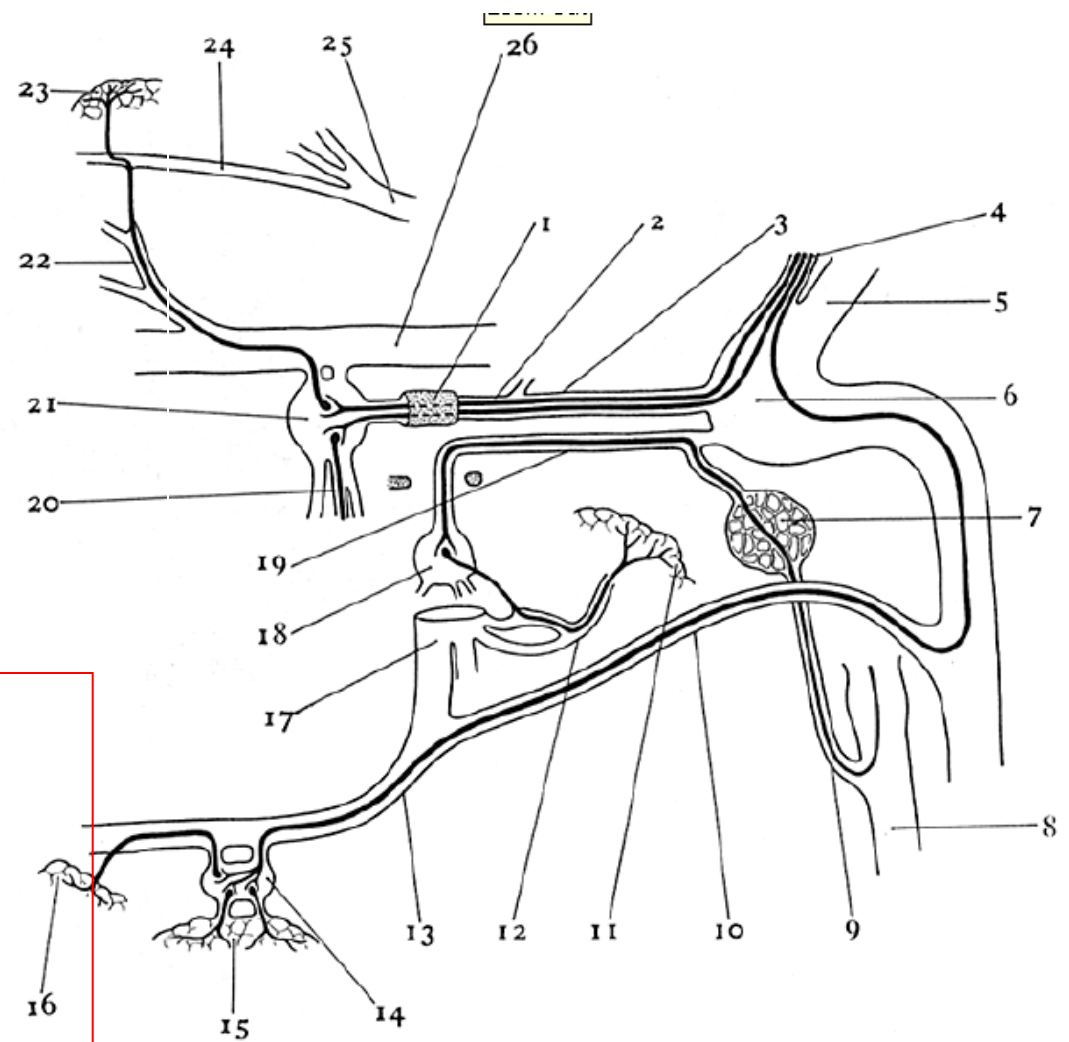
- The glossopharyngeal portion of the nucleus ambiguus lies level with, but ventrolateral to, the rostral tip of the main column
- It supplies the stylopharyngeus.

- **Parasympathetic fibres** join the motor fibres from the inferior **salivatory nucleus**, travel via the **tympanic** branch to the **tympanic plexus** to the **lesser petrosal nerve** and **otic ganglion**, where they relay; **postganglionic fibres** join the **auriculotemporal nerve** to supply the **parotid gland**.

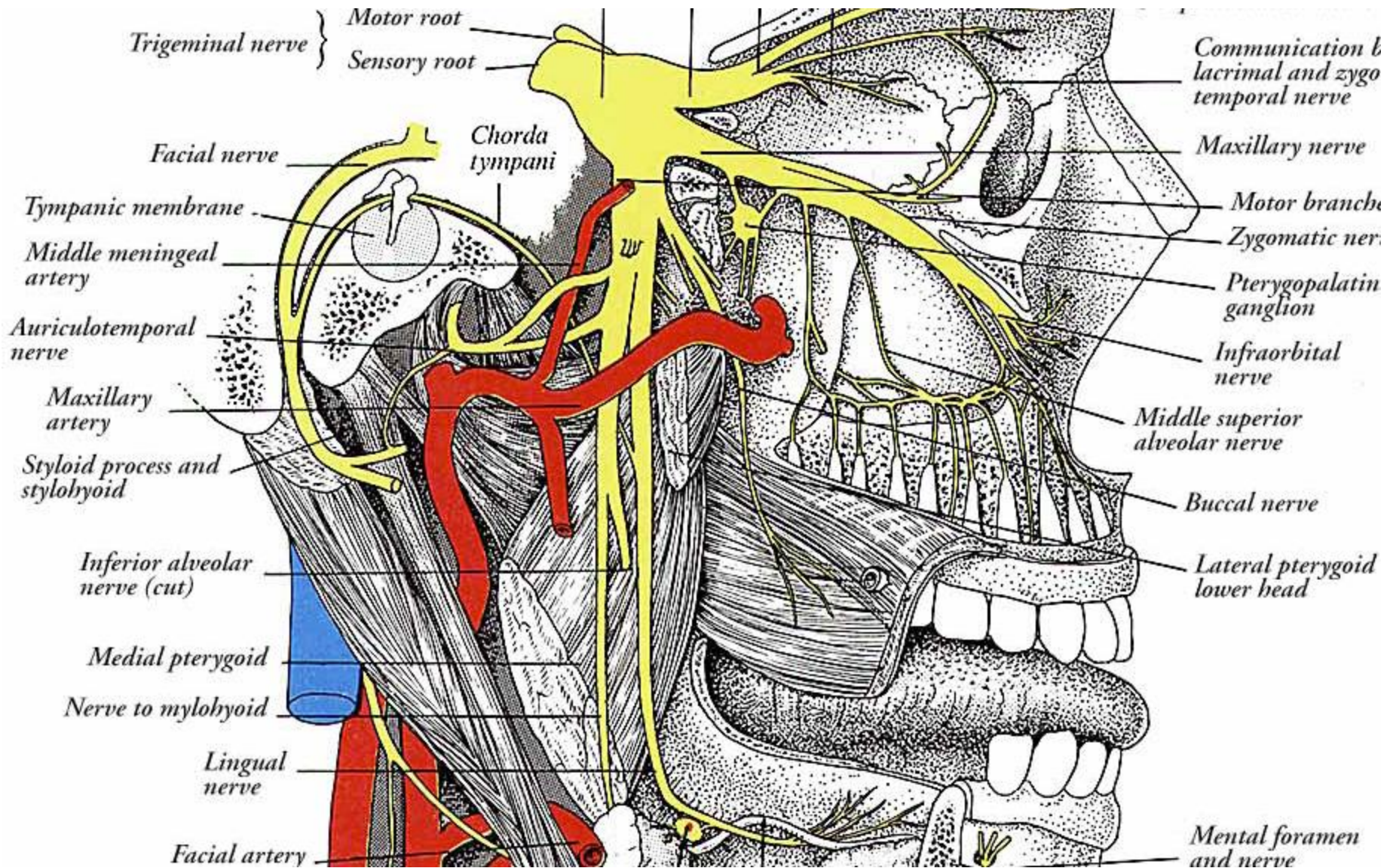


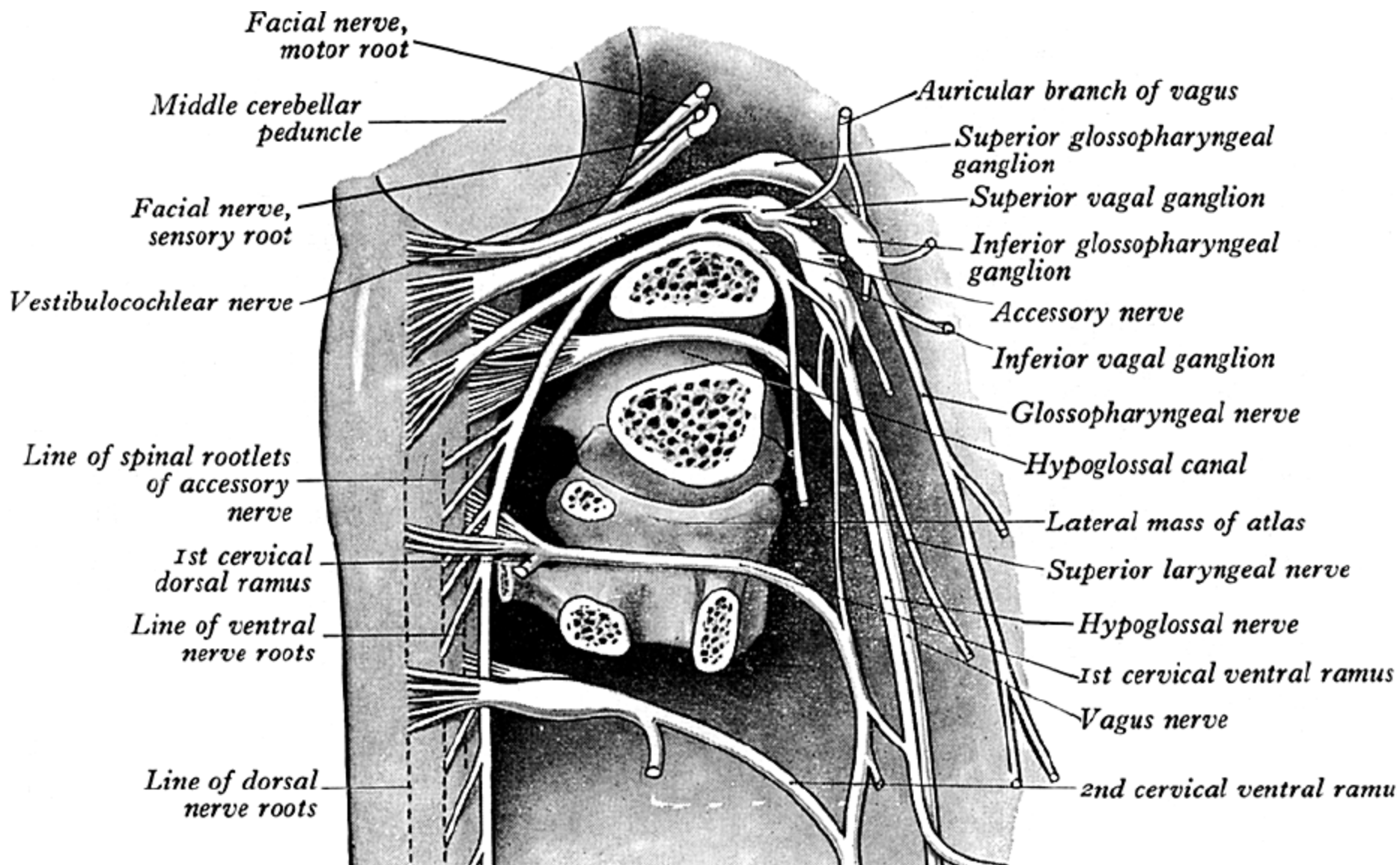


- 7. Tympanic plexus.
- 8. Glossopharyngeal nerve.
- 9. Tympanic nerve.
- 10. Chorda tympani nerve.
- 11. Parotid gland.
- 12. Auriculotemporal nerve.
- 13. Lingual nerve.
- 14. Submandibular ganglion.
- 15. Submandibular salivary gland.
- 16. Sublingual salivary gland.

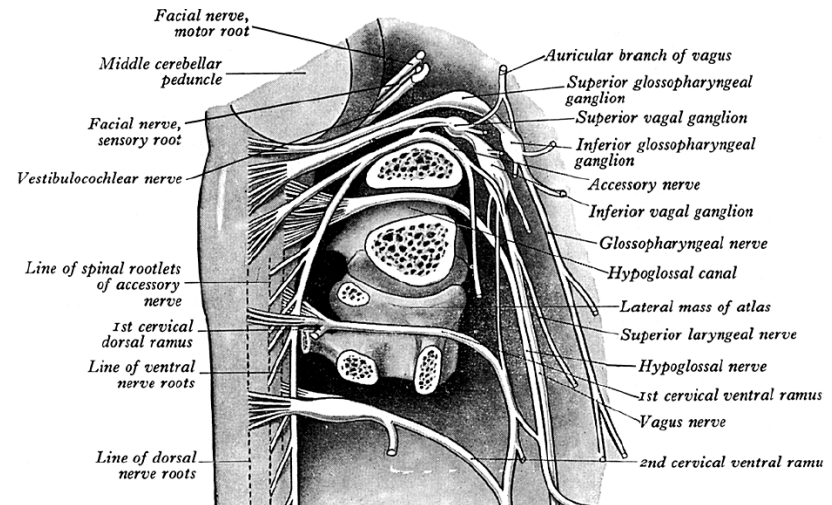


- 17. Mandibular nerve.
- 18. Otic ganglion.
- 19. Lesser petrosal nerve
- 20. Palatine nerves.
- 21. Pterygopalatine ganglion.
- 22. Zygomaticotemporal nerve.
- 23. Lacrimal gland.
- 24. Lacrimal nerve.
- 25. Ophthalmic nerve.
- 26. Maxillary nerve.

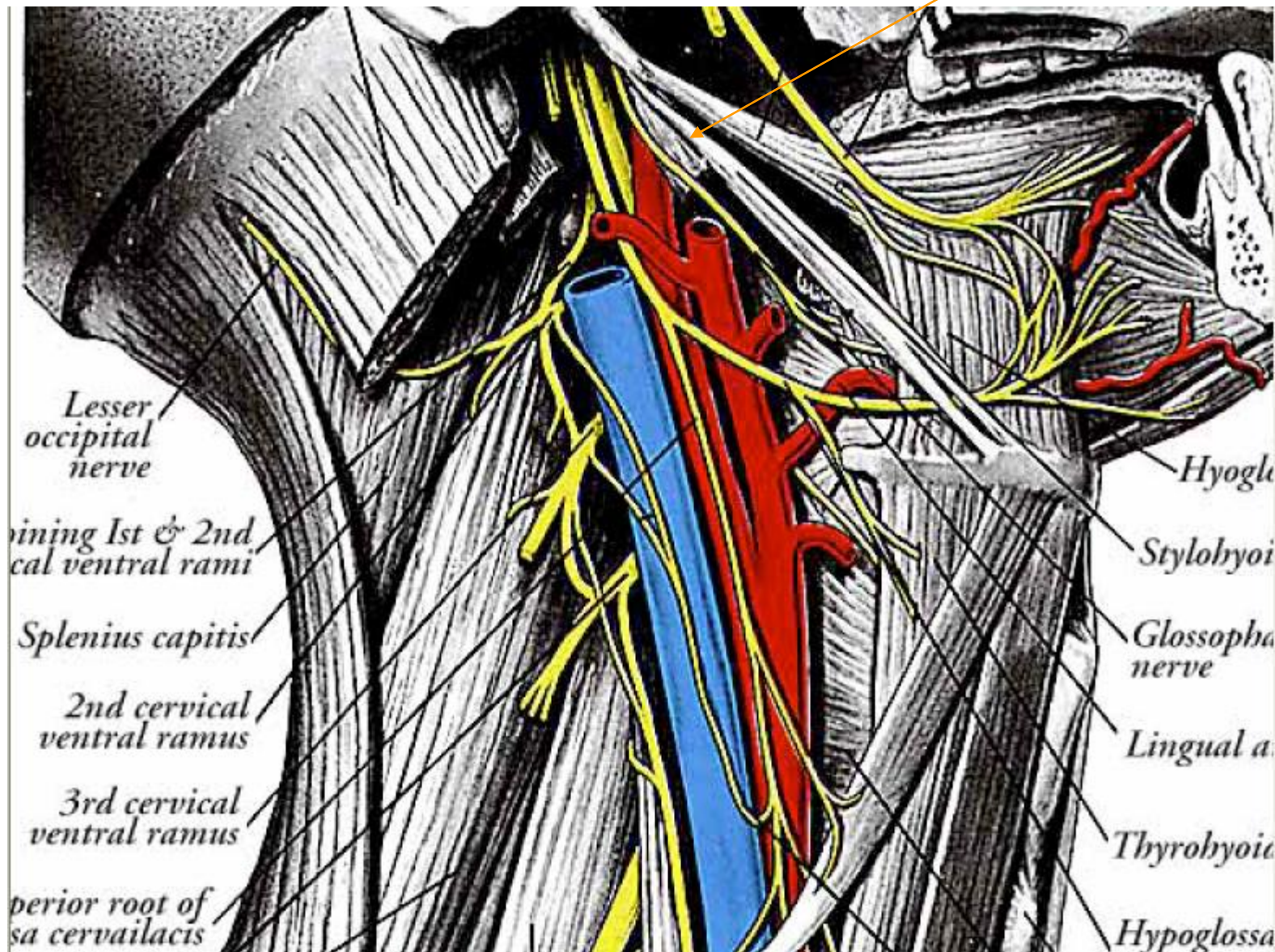




- From the medulla oblongata the glossopharyngeal nerve passes anterolaterally to the inferior surface of the petrous temporal bone leaving the skull through the anteromedial part of the jugular foramen, anterior to the accessory nerves, in a separate dural sheath



- the nerve passes forwards between the internal jugular vein and internal carotid artery ,descends anterior to the latter, ***deep to the styloid process and its attached muscles, to reach the posterior border of the stylopharyngeus.***



Lesser occipital nerve

Joining 1st & 2nd cervical ventral rami

Splenius capitis

2nd cervical ventral ramus

3rd cervical ventral ramus

Superior root of axillary nerve

Hyoglossus

Stylohyoid

Glossopharyngeal nerve

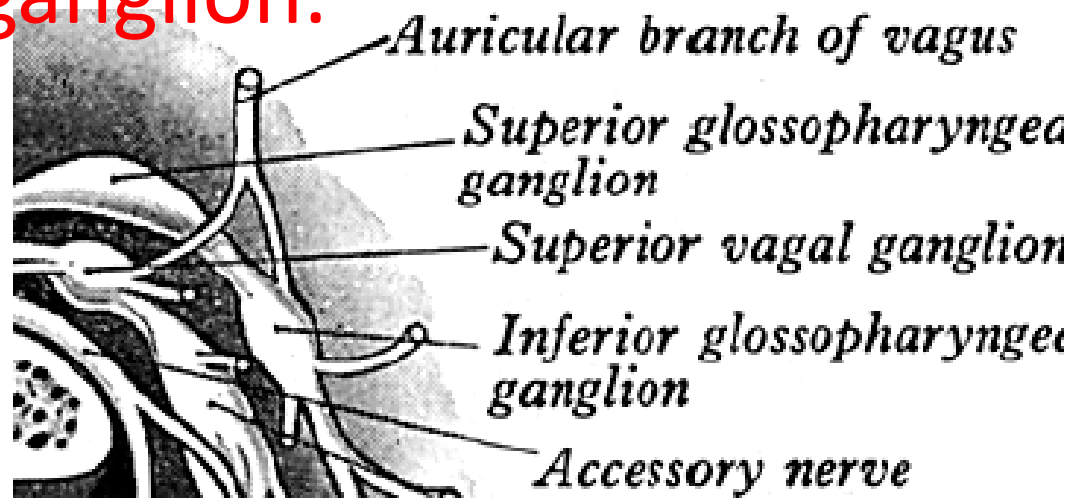
Lingual artery

Thyrohyoid

Hypoglossus

- It curves forwards on the stylopharyngeus and either pierces the lower fibres of the ***superior pharyngeal constrictor or passes*** between it and the ***middle constrictor***
- Distribution: ***tonsil, the mucosae of the pharynx and post sulcal part of the tongue, the vallate papillae, and oral mucous glands.***

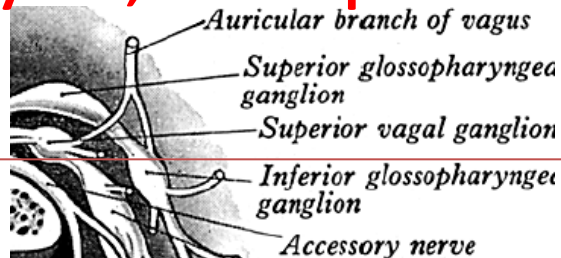
- *Two **ganglia** are situated on the nerve as it traverses the jugular foramen*
- **Superior Ganglion**
- *This is in the upper part of the groove occupied by the nerve in the jugular foramen. It is small, has no branches and is usually regarded as a detached part of the inferior ganglion.*





# Inferior Ganglion

- This is larger and lies in a notch in the lower border of the petrous temporal bone , convey gustatory and tactile signals from the mucosa of the tongue (posterior third including the sulcus terminalis and vallate papillae)
- general sensation only from the oropharynx, soft palate and fauces.



# communication

- **sympathetic trunk**, vagus and facial nerves.
- **vagus**, one to its auricular branch and the other to superior ganglion of the vagus.
- to the **facial** n. arises from the inferior ganglion, perforating the posterior belly of the digastric to join the facial nerve near the stylomastoid foramen.

# Branches of Distribution

- Tympanic Nerve to ( tympanic plexus), of the tympanic cavity,
- auditory tube and mastoid air cells and a branch to the lesser petrosal nerve

## Carotid Branch

- just below the jugular foramen and descends to the carotid sinus and to the carotid body. (from chemoreceptors in the carotid body and from the baroreceptors lying in the carotid sinus wall).

# Lesser Petrosal Nerve

- This contains *parotid secretomotor* fibres. It enters a canal inferior to that for the tensor tympani, receives a connecting branch from the facial ganglion and reaches the anterior surface of the petrous bone through a small opening lateral to the hiatus for the greater petrosal nerve, passing thence via the foramen ovale or the canaliculus innominatus to join the *otic ganglion*.

# Pharyngeal Branches

- **pharyngeal plexus** :
- glossopharyngeal nerve supplies sensory fibres to the pharyngeal mucosa.
- Muscular Branch: This supplies the *stylopharyngeus. other constrictor supplied by spinal accessory*

# Tonsillar Branches

- These form a plexus with branches of the middle and posterior palatine nerves around the tonsil; from this, filaments supply the tonsil, soft palate and fauces.

# Lingual Branches

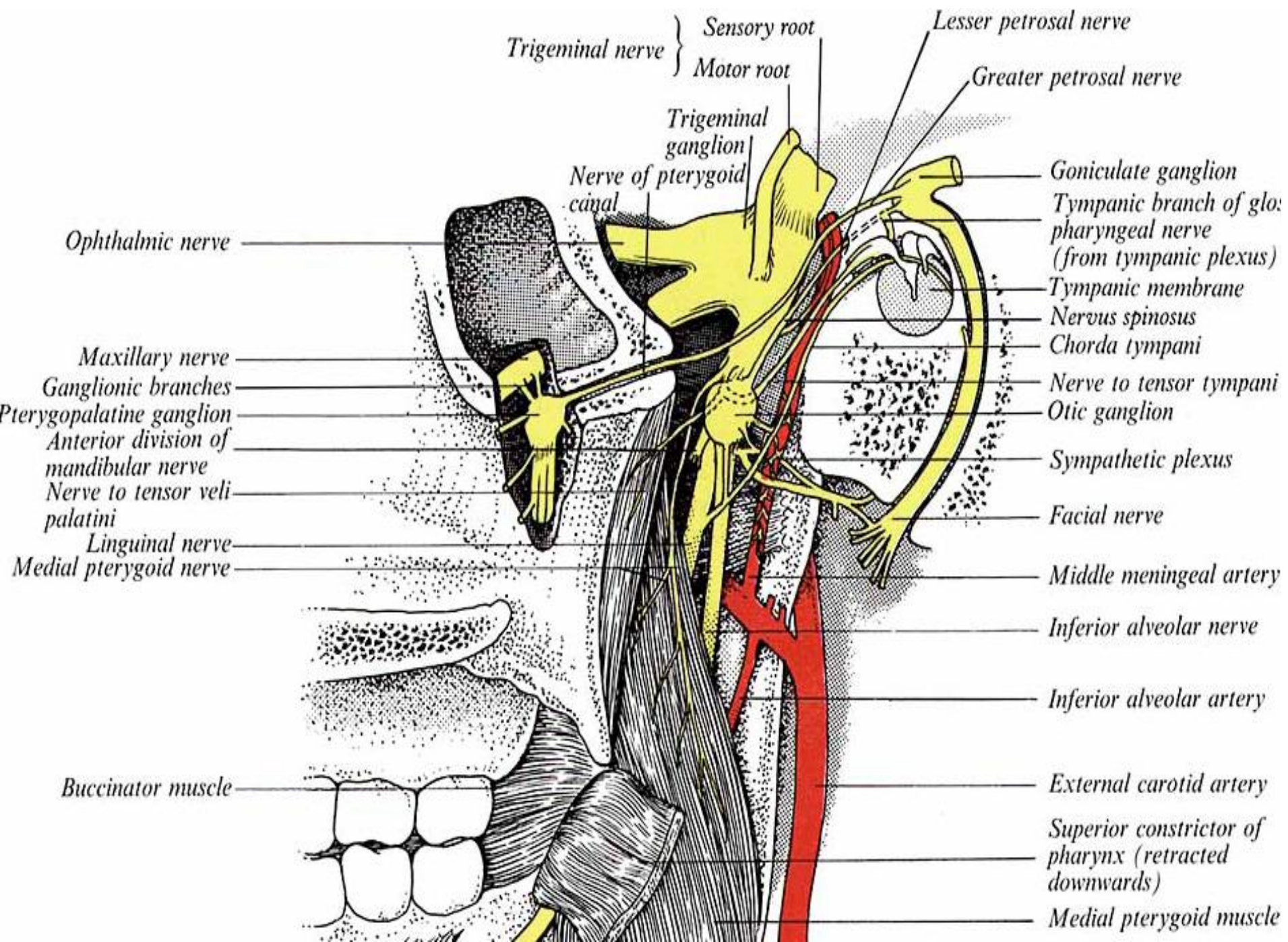
- **Vallate** papillae
- Mucosa near the sulcus terminalis
- Mucosa of the posterior part of the tongue,
- **Communication:** lingual nerve. It is the nerve of special sense (gustation) and general sensibility to the posterior lingual region.



# Otic Ganglion

- small, oval, flat *reddish-grey* ganglion: below the foramen ovale. related topographically to the mandibular nerve, but functionally connected with the *glossopharyngeal*. Lateral to it is the mandibular nerve near its junction with the trigeminal motor root,

- *the ganglion usually surrounding the origin of the nerve to the medial pterygoid*; medial is the tensor veli palatini, separating the ganglion from the cartilaginous auditory tube; posterior is the middle meningeal artery.
- parasympathetic root of the otic ganglion is the **lesser petrosal nerve**,
- A twig connects the ganglion to the chorda tympani



# Lesions of the Glossopharyngeal Nerve

- Transient or sustained hypertension, reflecting involvement of the carotid branch
- Loss of sensation over the ipsilateral soft palate, fauces, pharynx and posterior third of the tongue.
- Taste is also lost over the ipsilateral post sulcal portion although this is difficult to assess clinically and requires galvanic stimulation.
- The palatal and pharyngeal (gag) reflexes are reduced or absent and salivary secretion from the parotid gland may also be reduced.
- Weakness of stylopharyngeus cannot be tested individually. Glossopharyngeal neuralgia consists of episodic brief but severe pain, often precipitated by swallowing, and experienced in the throat, behind the angle of the jaw and within the ear.

