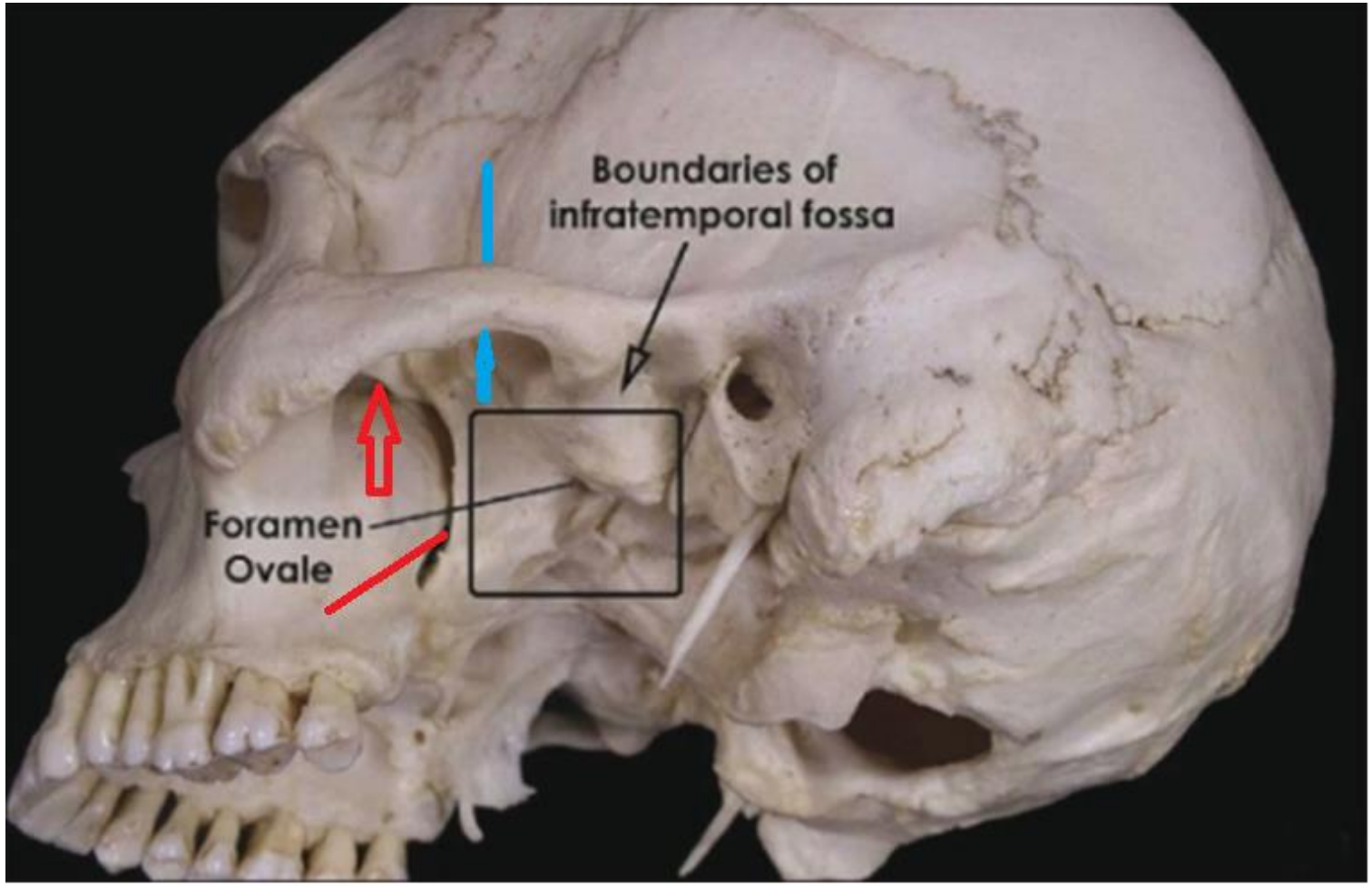
Infra temporal fossa

Boundaries

Boundaries

- Anteriorly= posterior surface of body of maxilla
- Posteriorly= styloid process, carotid sheath
- Medially= lateral pterygoid plate
- Laterally= ramus of mandible
- Roof= infra temporal surface of the greater wing of sphenoid
- Inferiorly= the fossa is continuous with the tissue spaces of the neck

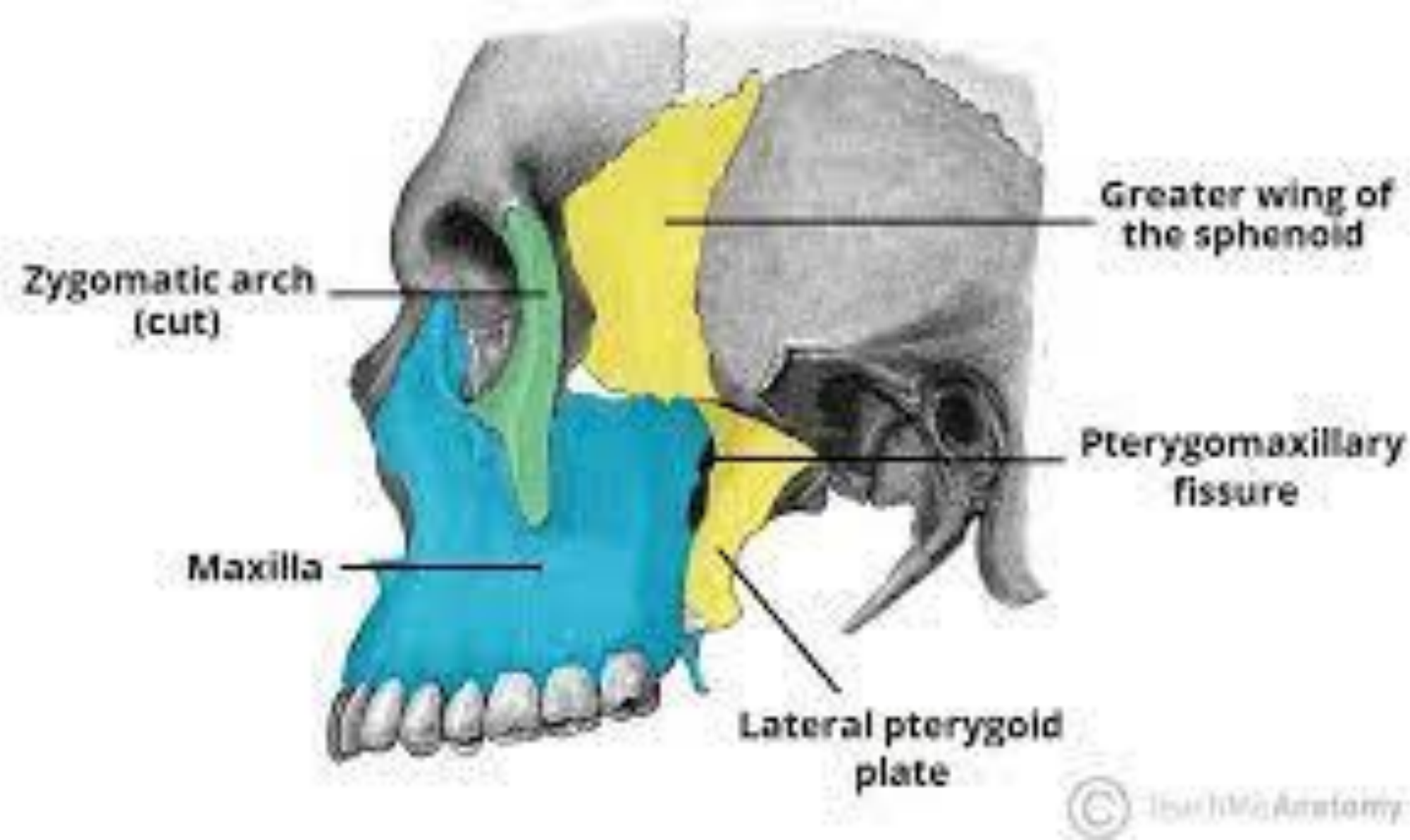
Communications




#16

Communications

- With the orbit through the inferior orbital fissure
- With the pterygopalatine fossa through the pterygomaxillary fissure
- With temporal fossa above deep to the zygomatic arch
- With middle cranial fossa through foramen ovale and spinosum

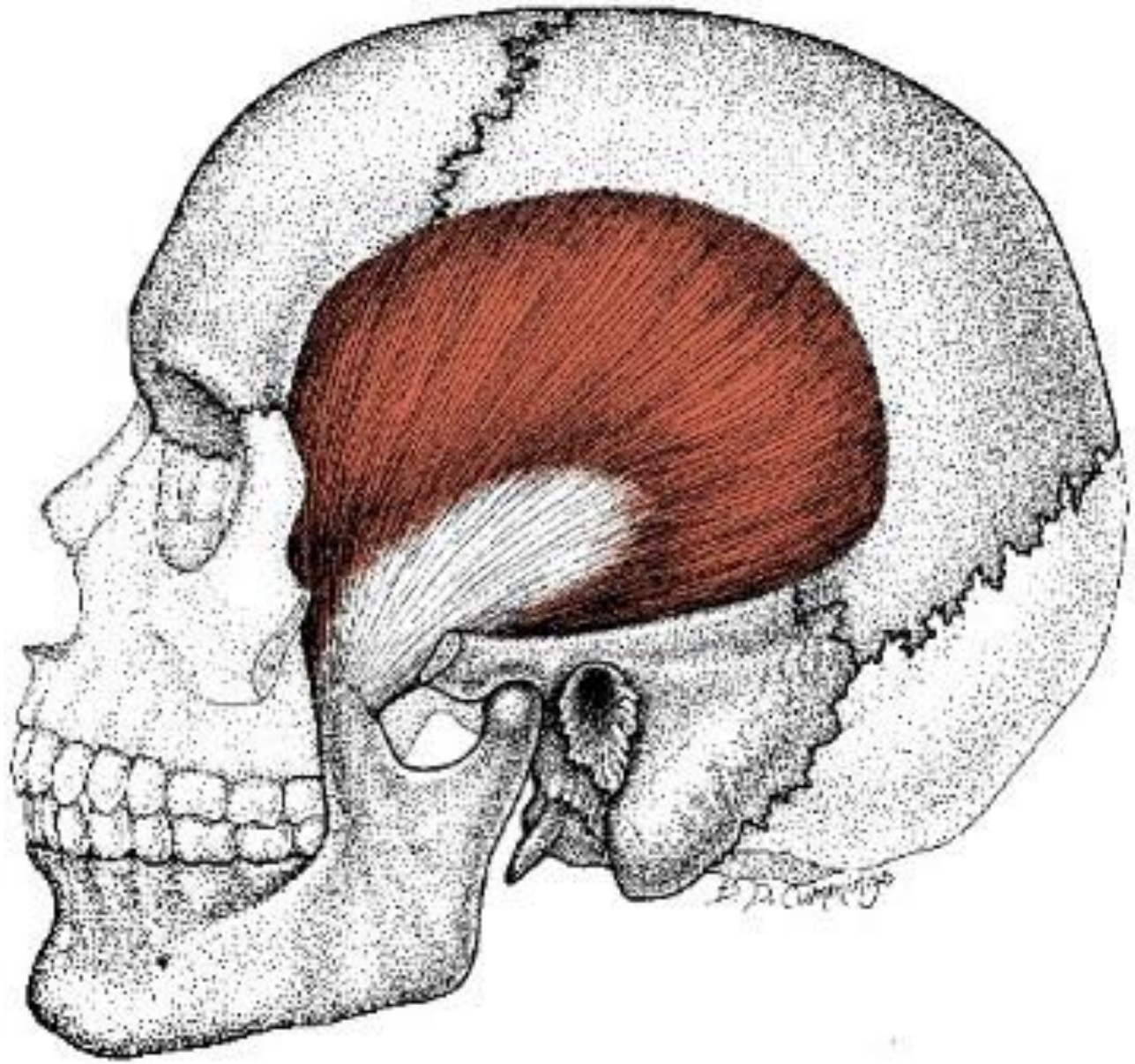

Greater wing of the sphenoid
Zygomatic arch (cut)
Pterygomaxillary fissure
Maxilla
Lateral pterygoid plate

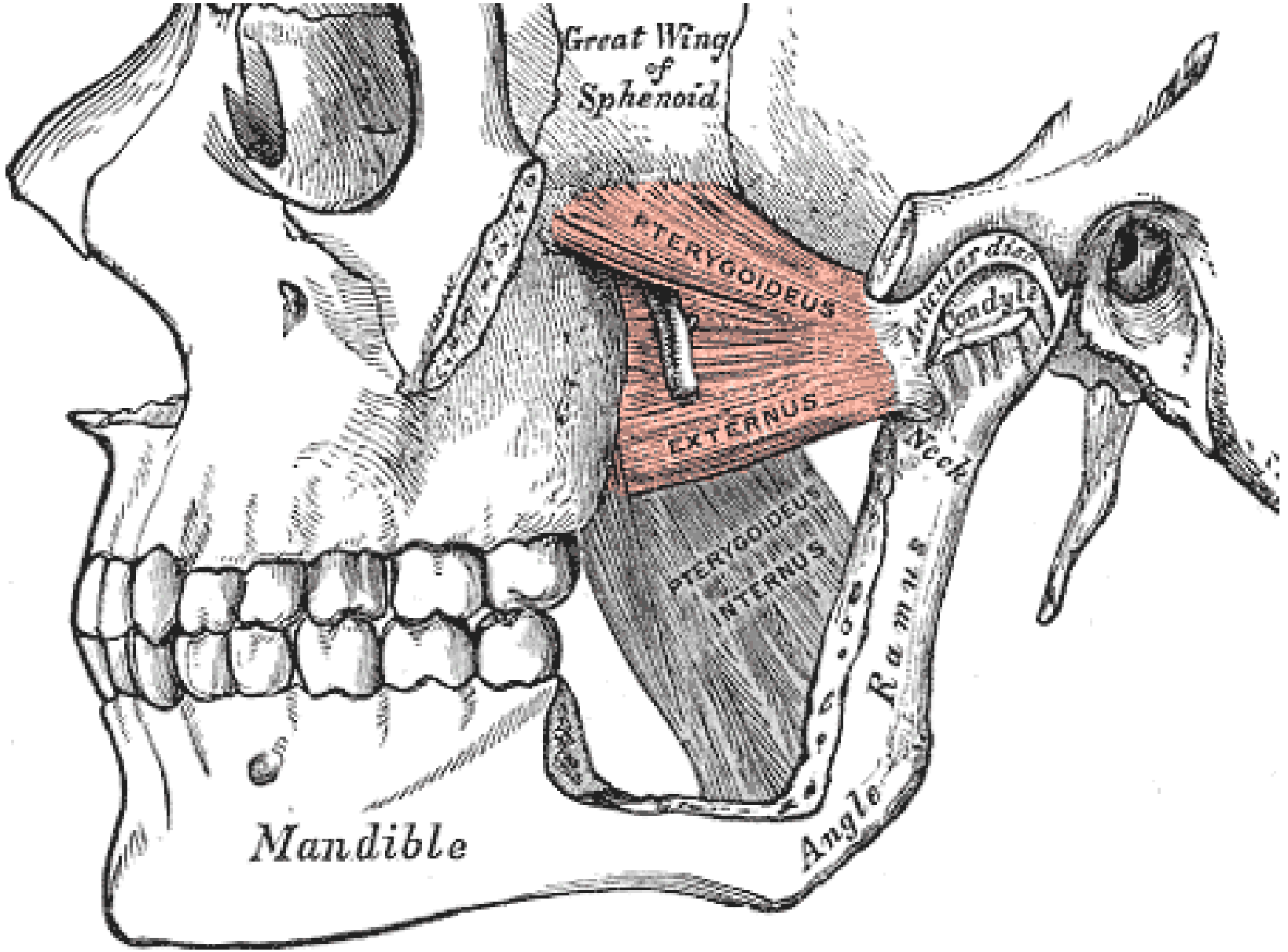
Contents

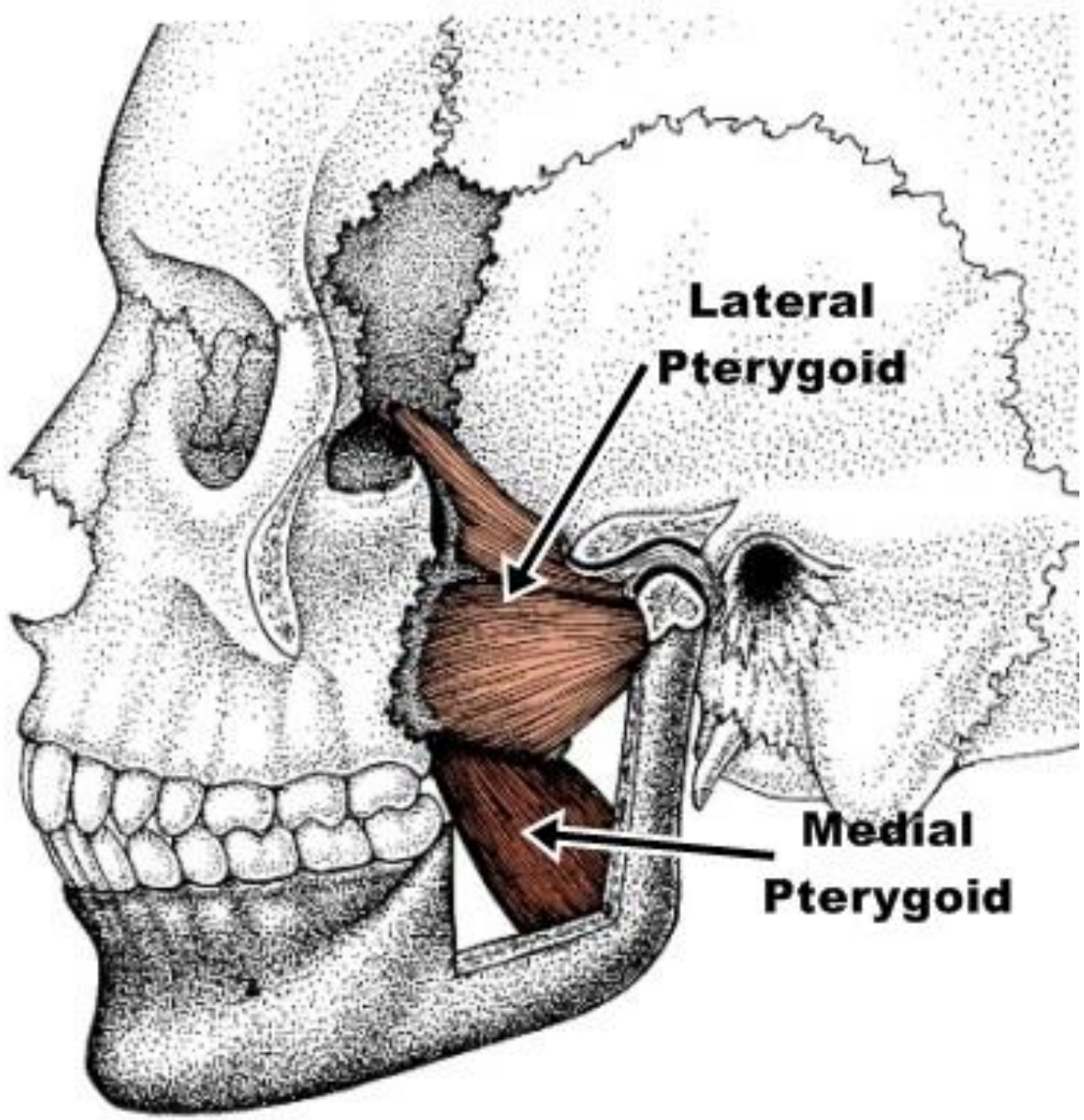
- Muscles
- Nervous structures
- Blood vessels

Muscles

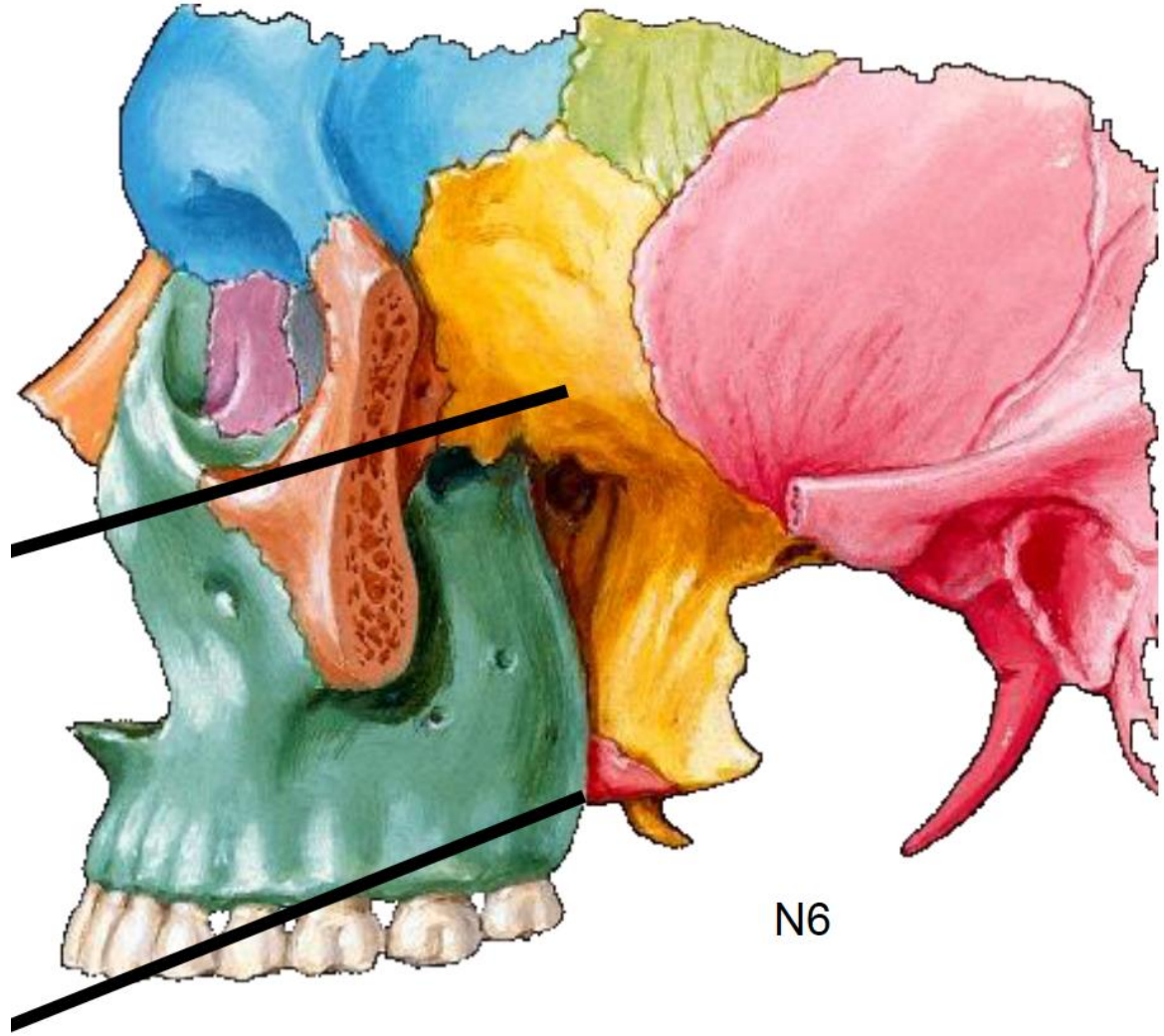
- Lateral pterygoid muscle
- Medial Pterygoid musle
- Temporalis (insertion)




Great Wing of Sphenoid
PTERYGOIDEUS EXTERNUS
PTERYGOIDEUS INTERNUS
Articular disc
Condyle
Neck
Ramus
Angle
Mandible


Lateral
Pterygoid
Medial
Pterygoid

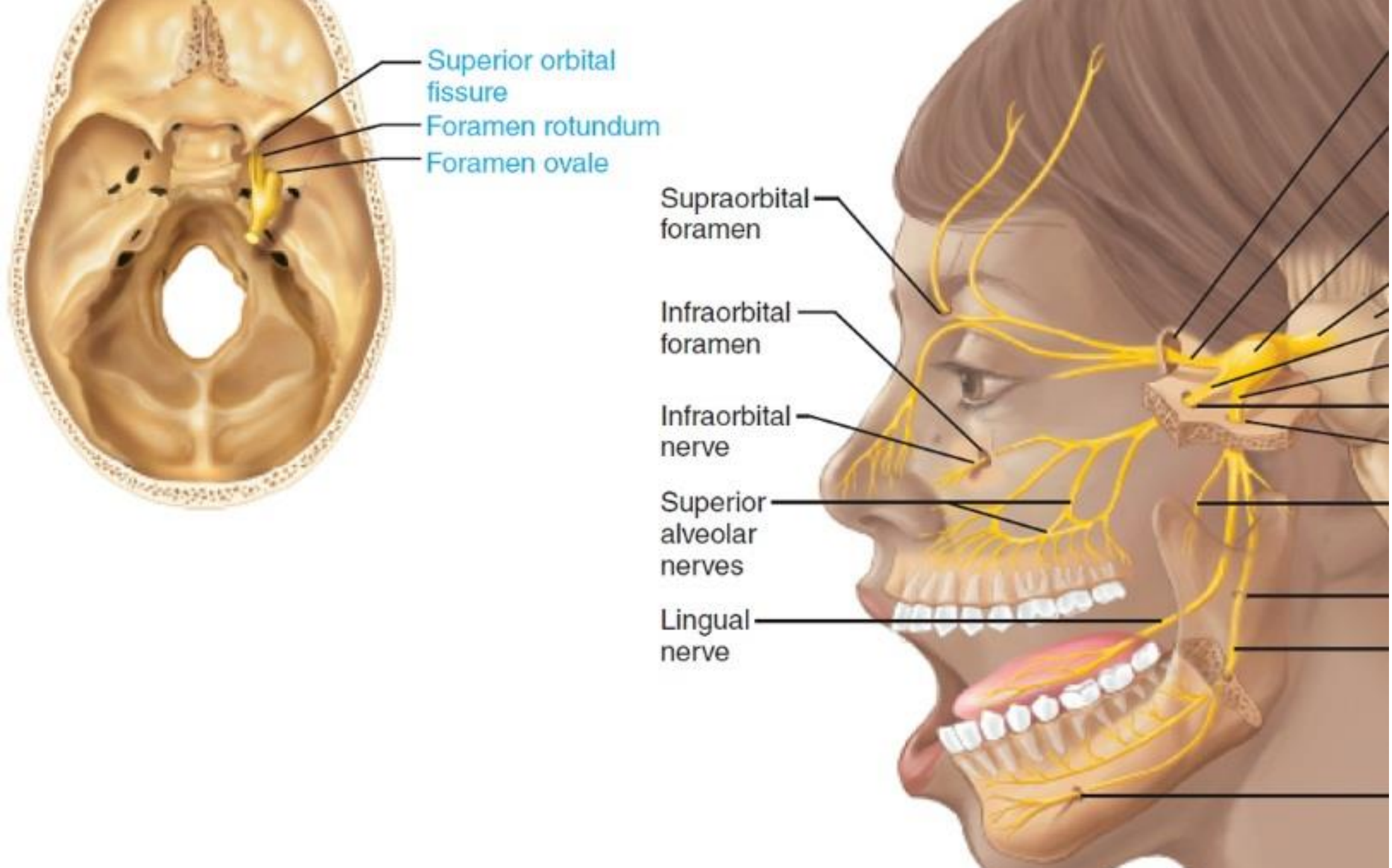
id



N6

Nervous structures

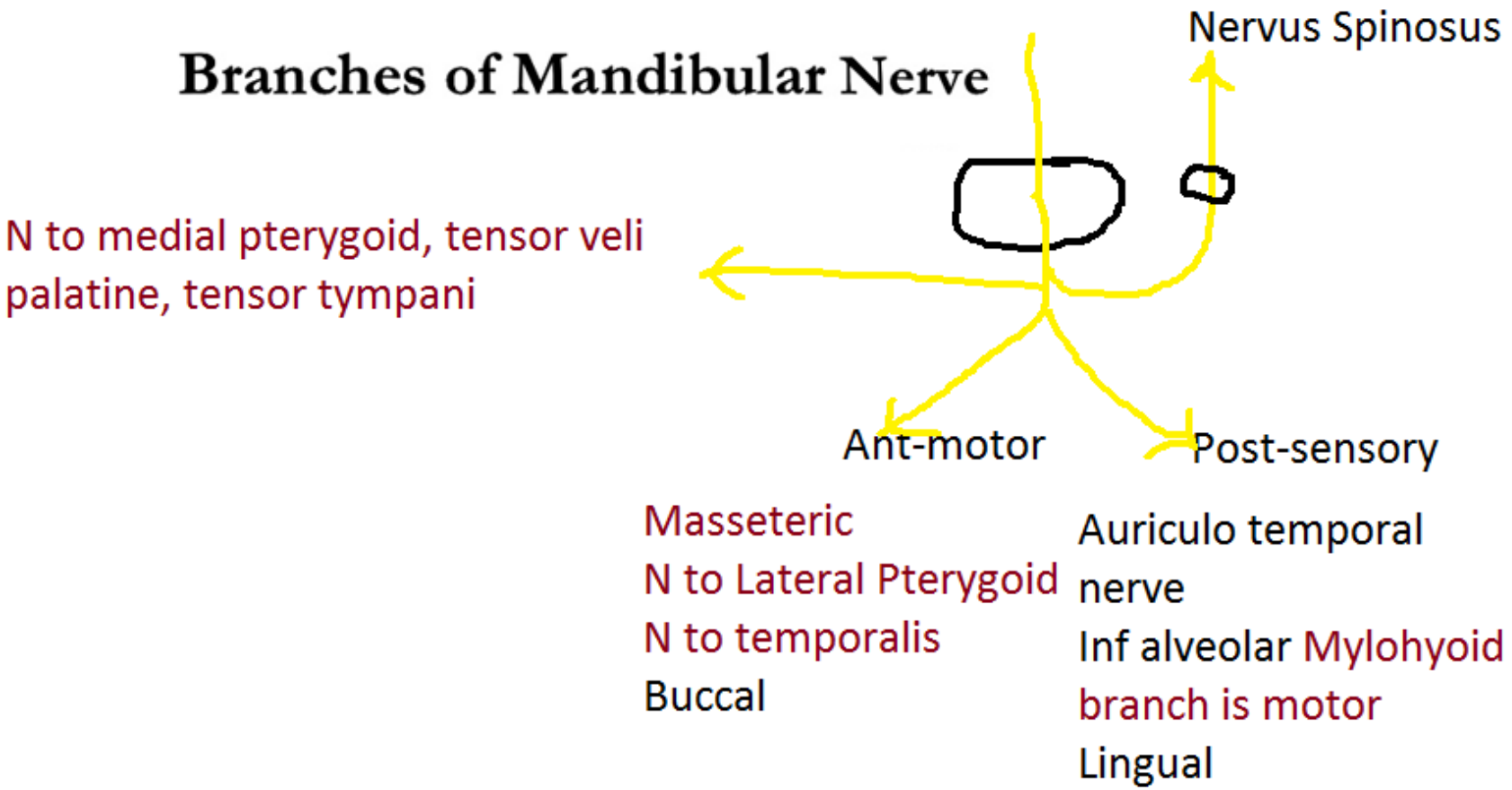
- Mandibular nerve and its branches
- Chorda tympani nerve
- Otic ganglion


Superior orbital fissure
Foramen rotundum
Foramen ovale
Supraorbital foramen
Infraorbital foramen
Infraorbital nerve
Superior alveolar nerves
Lingual nerve

Mandibular nerve

- Mixed nerve; large sensory and small motor root
- Both roots emerge through foramen ovale and unite to form the trunk of the mandibular nerve in the infra temporal fossa
- Medial to the trunk lies the tensor palati muscle with the otic ganglion in between
- After a short course, the trunk divides into an anterior and posterior division

Am…Ps P-ail


Branches of Mandibular Nerve
Nervus Spinosus
N to medial pterygoid, tensor veli palatine, tensor tympani
Ant-motor
Post-sensory
Masseteric
N to Lateral Pterygoid
N to temporalis
Buccal
Auriculo temporal nerve
Inf alveolar Mylohyoid branch is motor
Lingual

Branches from the trunk of mandibular nerve

- Meningeal branch or nervus spinosus-enters the middle cranial fossa through the foramen spinosum and supplies the dura mater of this region

- Nerve to medial pterygoid-Supplies medial pterygoid, tensor palate and tensor tympani

Branches from the anterior division of mandibular nerve.....Am

3 motor and 1 sensory

Motor

- **Masseteric nerve**;passes through the mandibular notch to supply the masseter
- **Deep temporal** nerves; ususally 2 in number
- **Nerve to lateral pterygoid**

Sensory

- **Buccal nerve**; Emerges between the 2 heads of lateral pterygoid muscle. Is sensory to the skin and mucosa related to buccinator muscle

Branches from the posterior division of mandibular nerve.....Ps.....PAIL

3 sensor branches and 1 motor branch of a sensory nerve

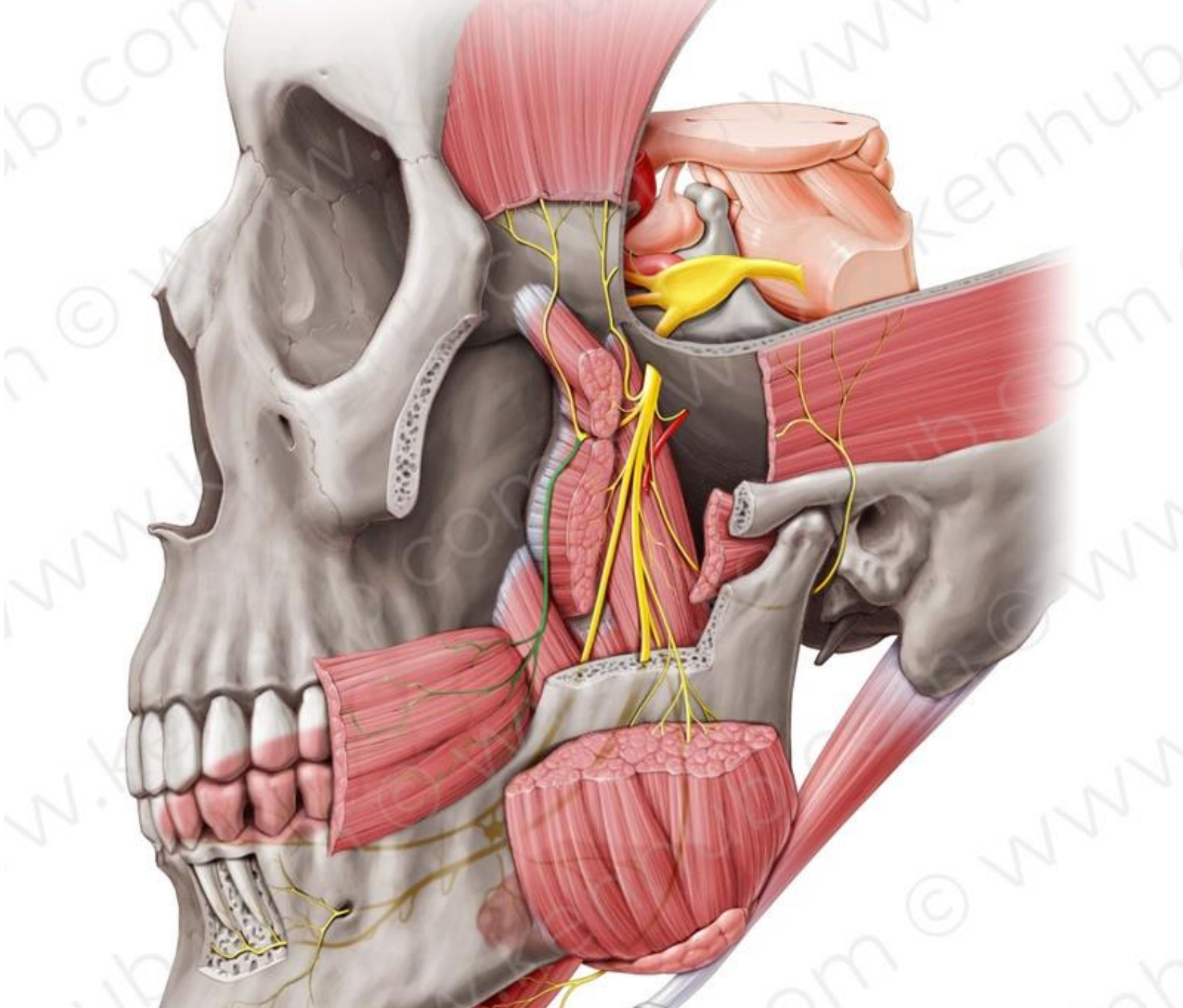
<u>Sensory</u>

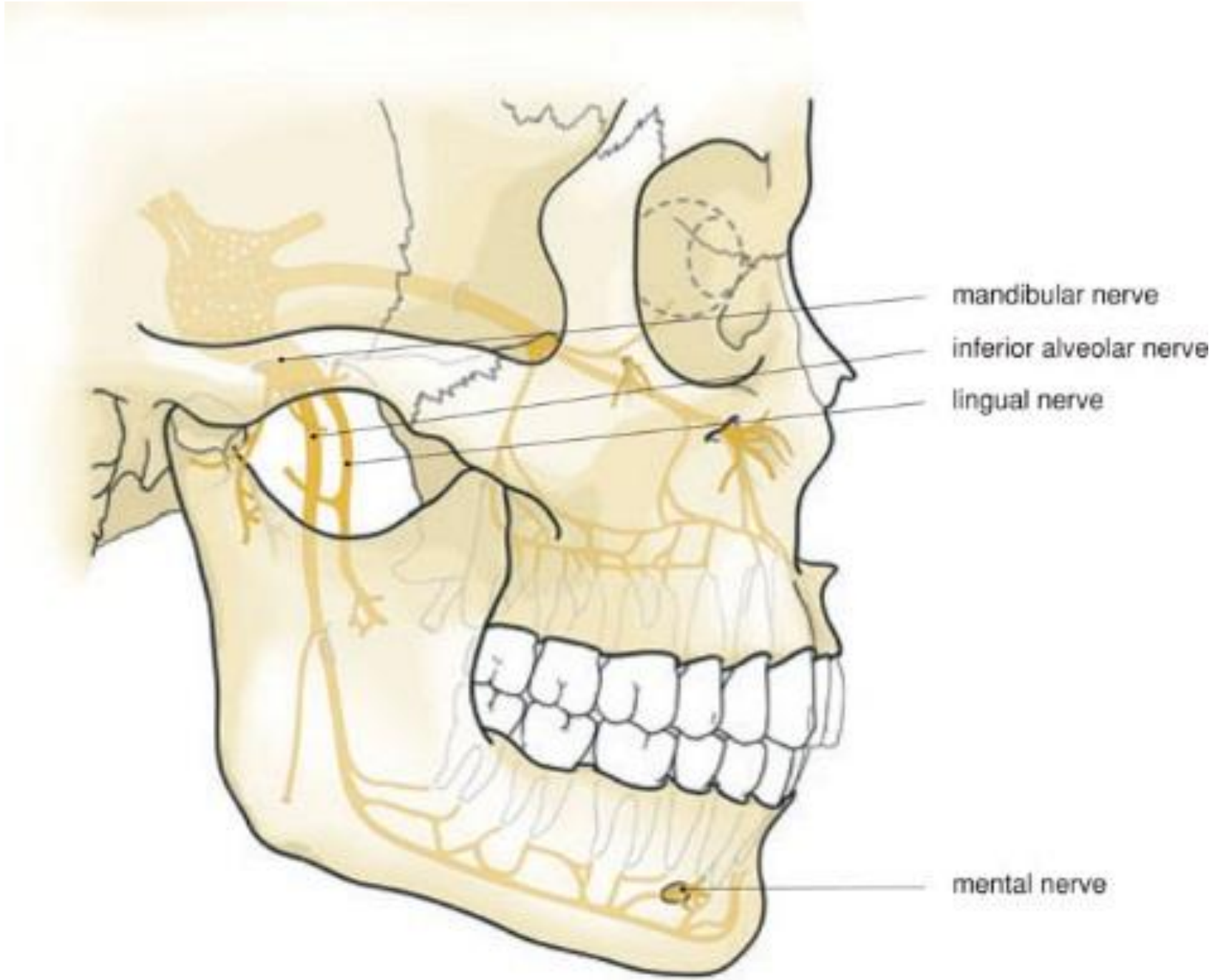
- Auriculotemporal nerve; arises by **2 roots** that **encircle middle meningeal artery**. These unite to form single nerve. Runs **laterally deep to lateral pterygoid**. Curves around **neck of mandible**. Divides into auricular and temporal branches. It also receives **post ganglionic secretomotor fibers from the otic ganglion** which it conveys to the parotid gland.

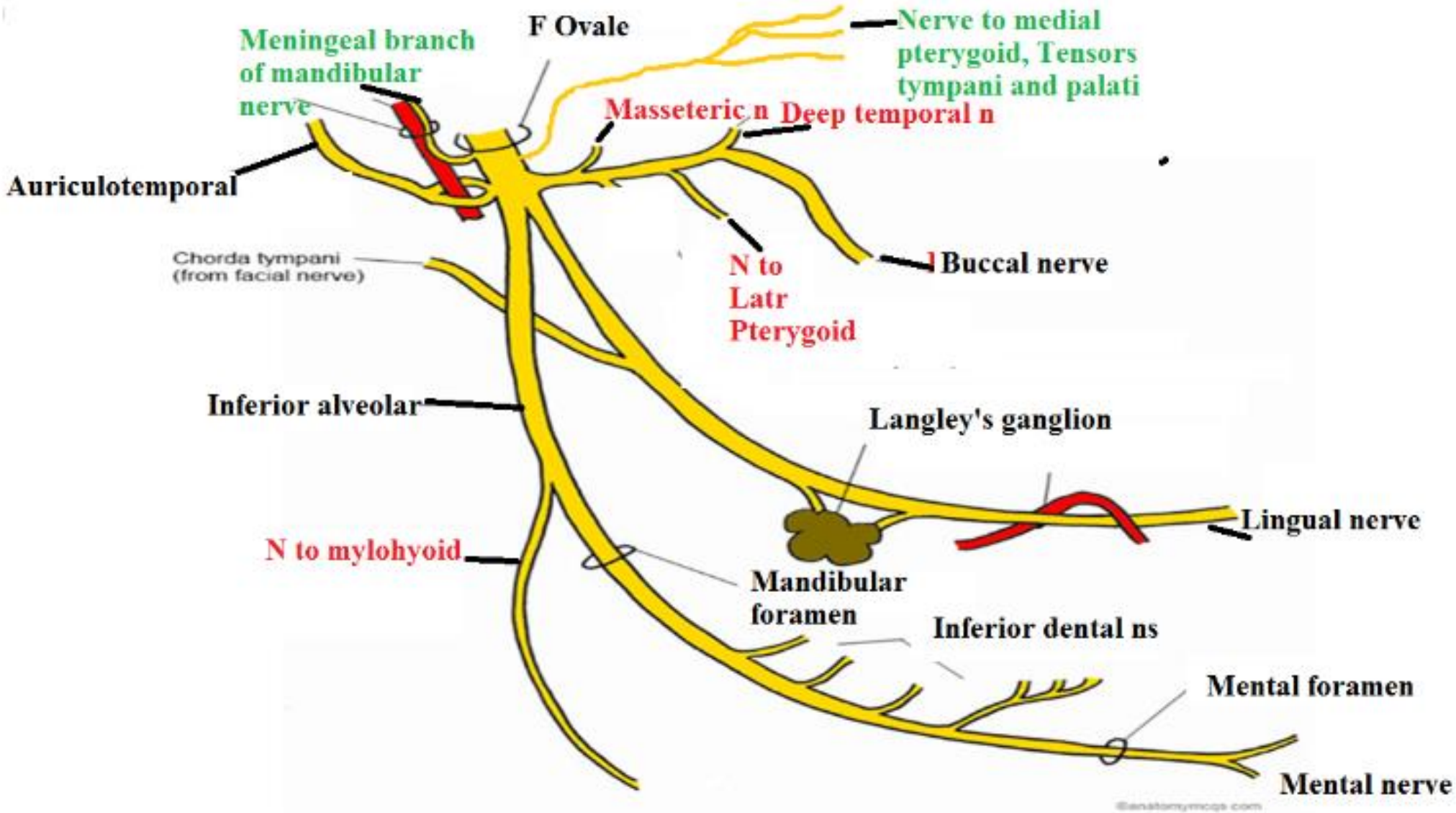
- Inferior alveolar nerve: **mixed** neve. It passes out from lower border of the lateral pterygoid muscle. Enters the **mandibular foramen** and canal as a pure sensory nerve. In the canal it supplies the teeth and adjoining gum. It finally divides into **incisive and mental** branches. Mental nerve emerges from the mental foramen to supply the skin of the chin and the lower lip.
- Lingual nerve: Runs in front of the inferior alveolar nerve. It **receives the chorda tympani** nerve. It is related to the mandible medial to the 3rd molar. Is **sensory to the anterior 2/3rd** of the tongue

Motor

Mylohyoid branch of the inferior alveolar nerve is given off before the nerve enters the mandibular canal. The nerve runs in the mylohyoid groove of the mandible and supplies the mylohyoid muscle and the anterior belly of digastric muscle

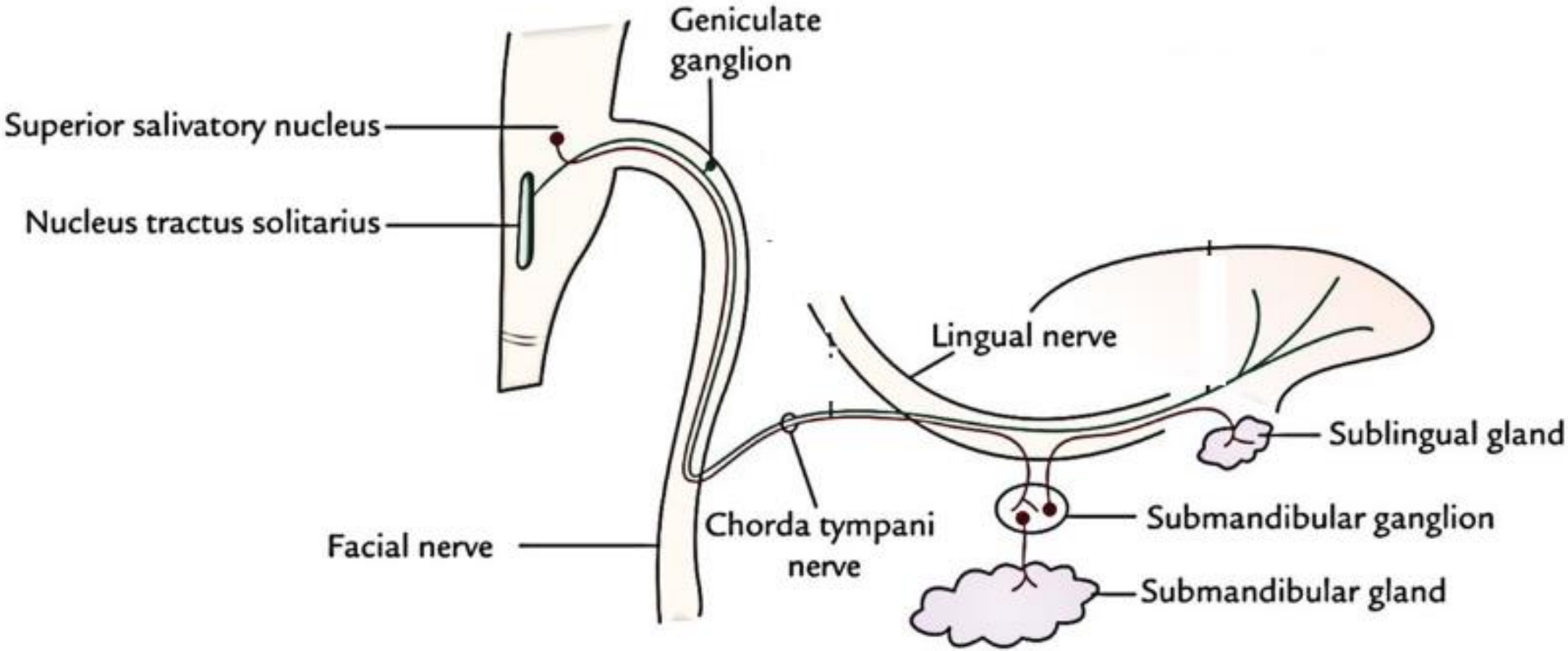



mandibular nerve
inferior alveolar nerve
lingual nerve
mental nerve


Meningeal branch of mandibular nerve
F Ovale
Nerve to medial pterygoid, Tensors tympani and palati
Masseteric n
Deep temporal n
Auriculotemporal
Chorda tympani (from facial nerve)
N to Latr Pterygoid
Buccal nerve
Inferior alveolar
Langley's ganglion
Lingual nerve
N to mylohyoid
Mandibular foramen
Inferior dental ns
Mental foramen
Mental nerve

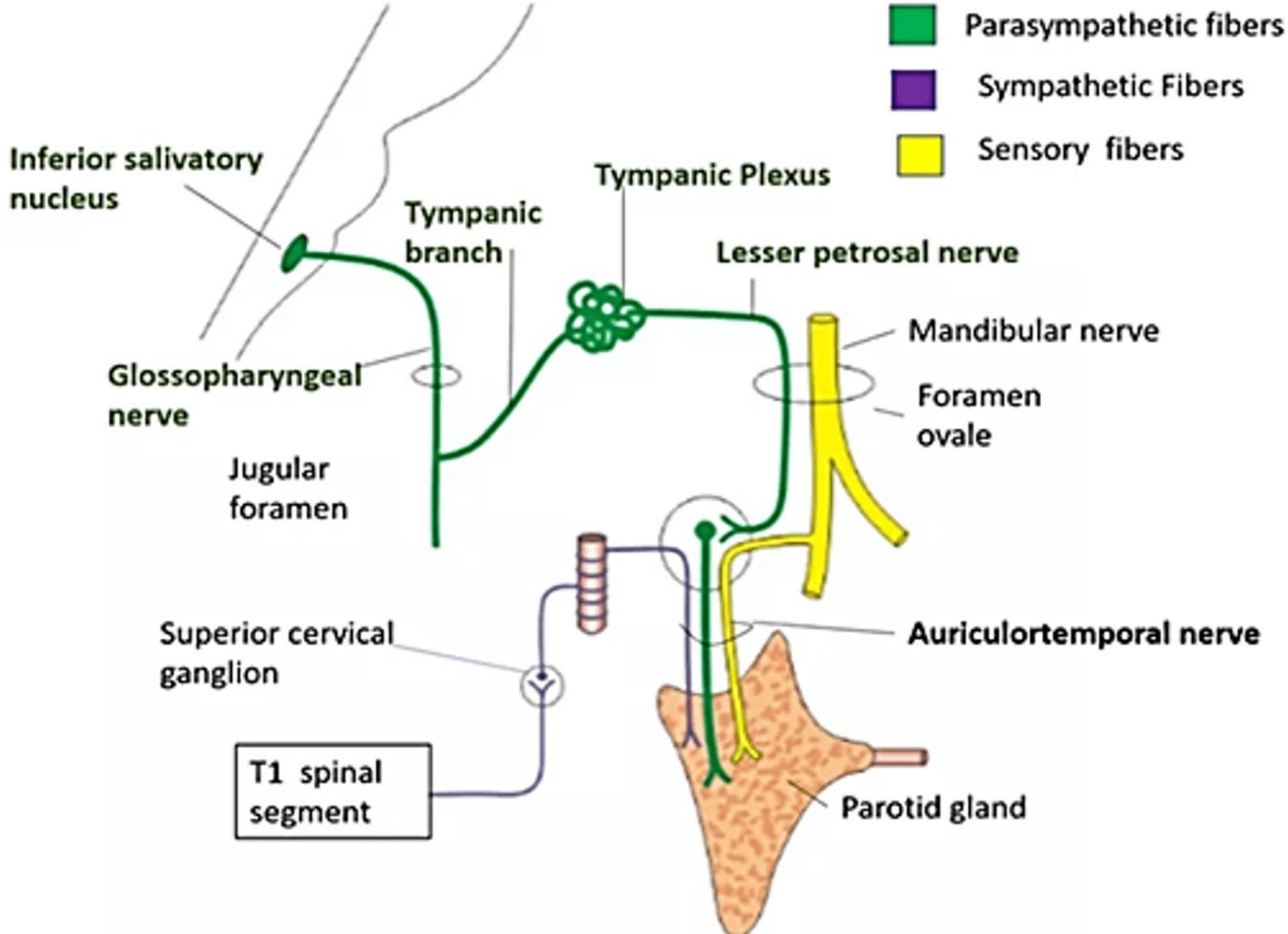
Chorda Tympani nerve

- Branch of facial nerve; given off 6mm above stylomandibular foramen
- Carries preganglionic secretomotor fibers from the superior salivary nucleus to the sub mandibular and sublingual salivary glands
- Also carries taste sensations from the anterior 2/3rd of the tongue to the nucleus of tractus solitarius in the brain stem
- In the infra temporal fossa it unites with the lingual nerve


Geniculate ganglion
Superior salivatory nucleus
Nucleus tractus solitarius
Lingual nerve
Sublingual gland
Submandibular ganglion
Chorda tympani nerve
Facial nerve
Submandibular gland

Otic ganglion

- Parasympathetic ganglion
- Oval
- 2-3mm
- Lies below foramen ovale


Parasympathetic fibers
Sympathetic Fibers
Sensory fibers
Inferior salivatory nucleus
Tympanic branch
Tympanic Plexus
Lesser petrosal nerve
Mandibular nerve
Foramen ovale
Glossopharyngeal nerve
Jugular foramen
Superior cervical ganglion
Auriculortemporal nerve
T1 spinal segment
Parotid gland

Otic ganglion …contd

Parasympathetic (secretomotor) root of the otic ganglion- is from the lesser petrosal nerve (branch of the tympanic plexus in the middle ear) which carries preganglionic fibers from the inferior salivary nucleus. The post ganglionic fibers join the auriculotemporal nerve to supply the parotid gland

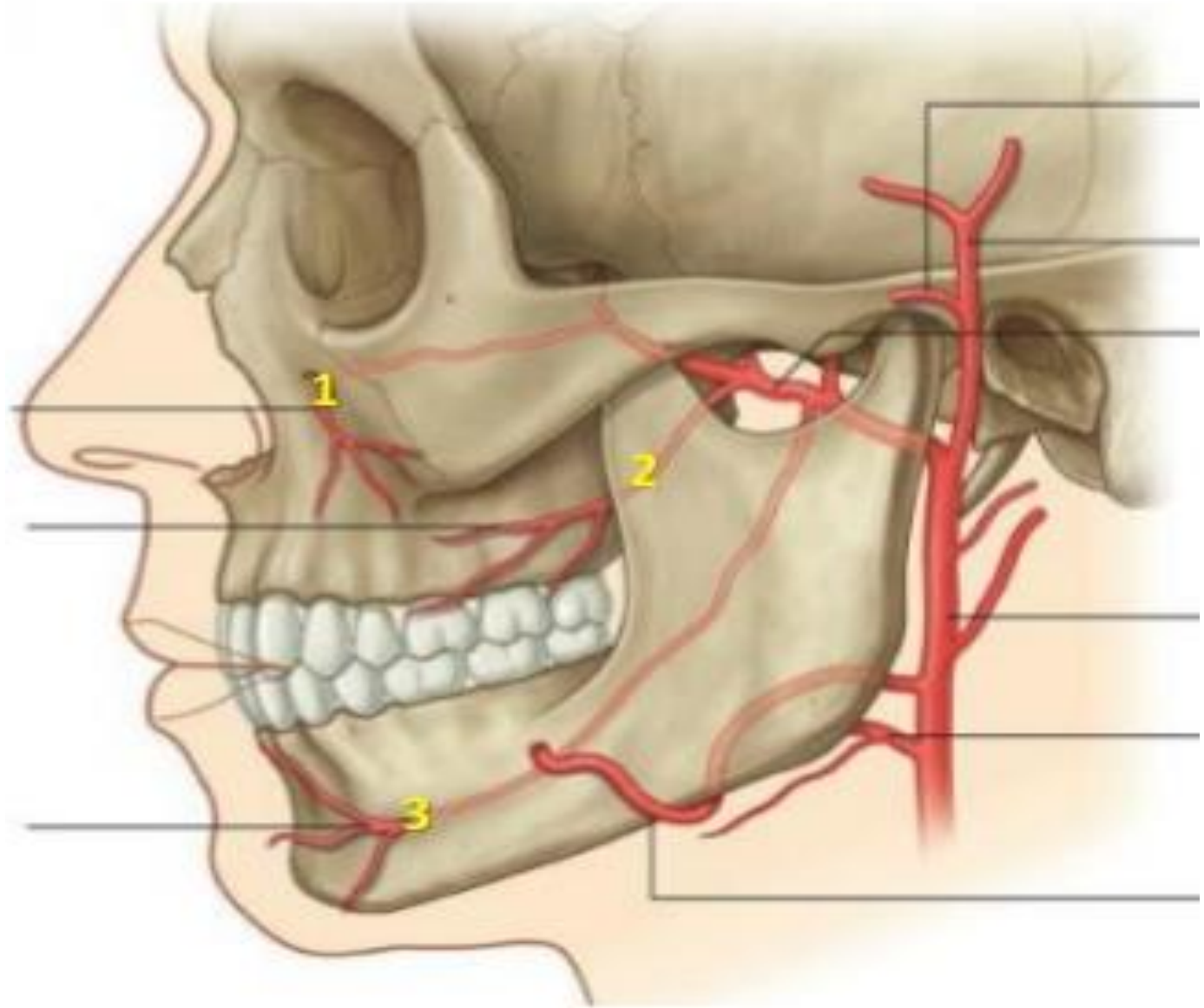
Sympathetic root is from the superior cervical ganglion. These travel along with the middle meningeal artery and join the auriculotemporal nerve to supply vasomotor fibers to the parotid gland

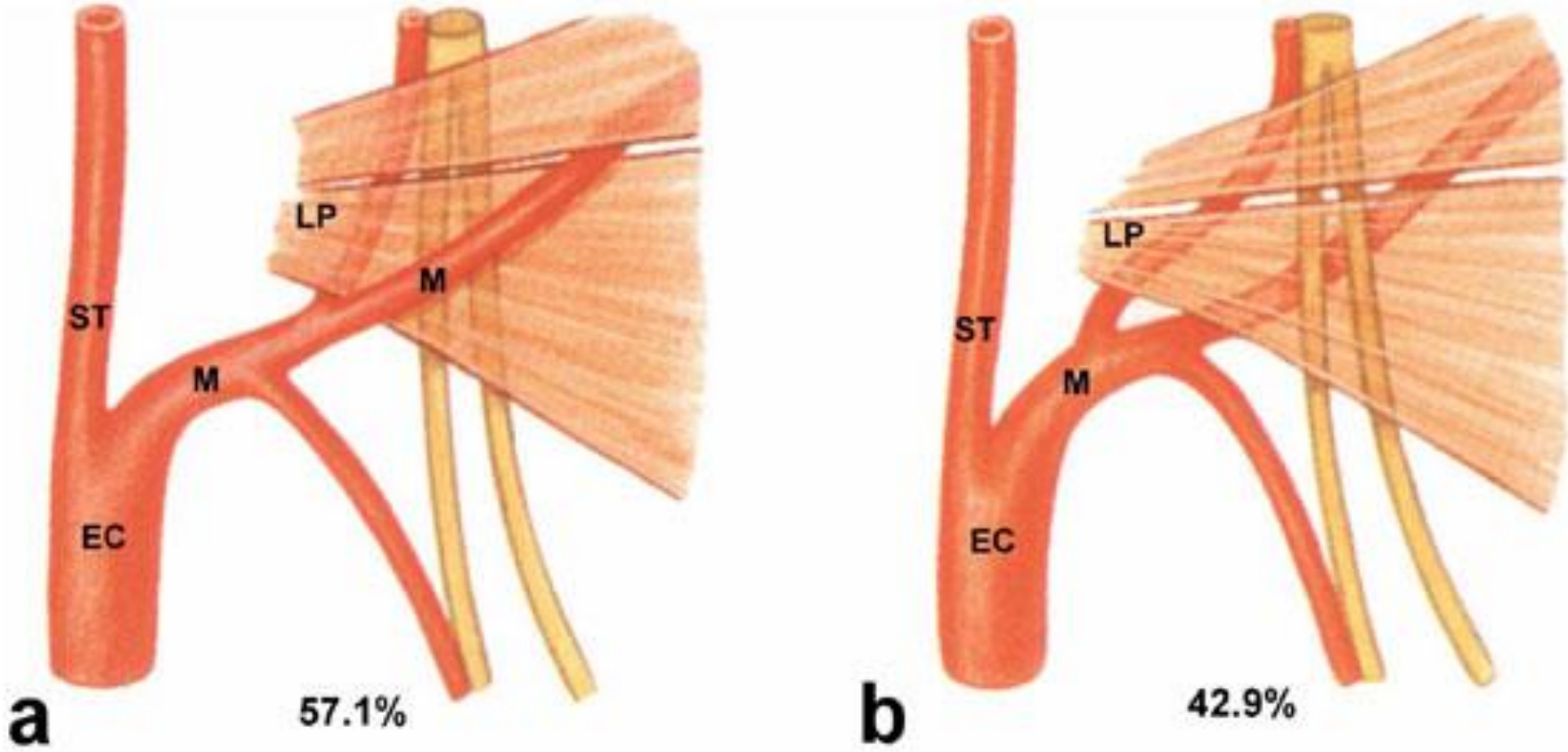
Vascular structures

- Maxillary artery
- Pterygoid venous plexus

Maxillary artery

- Large terminal branch of external carotid artery
- Arises behind the neck of the mandible within the substance of parotid gland


1
2
3

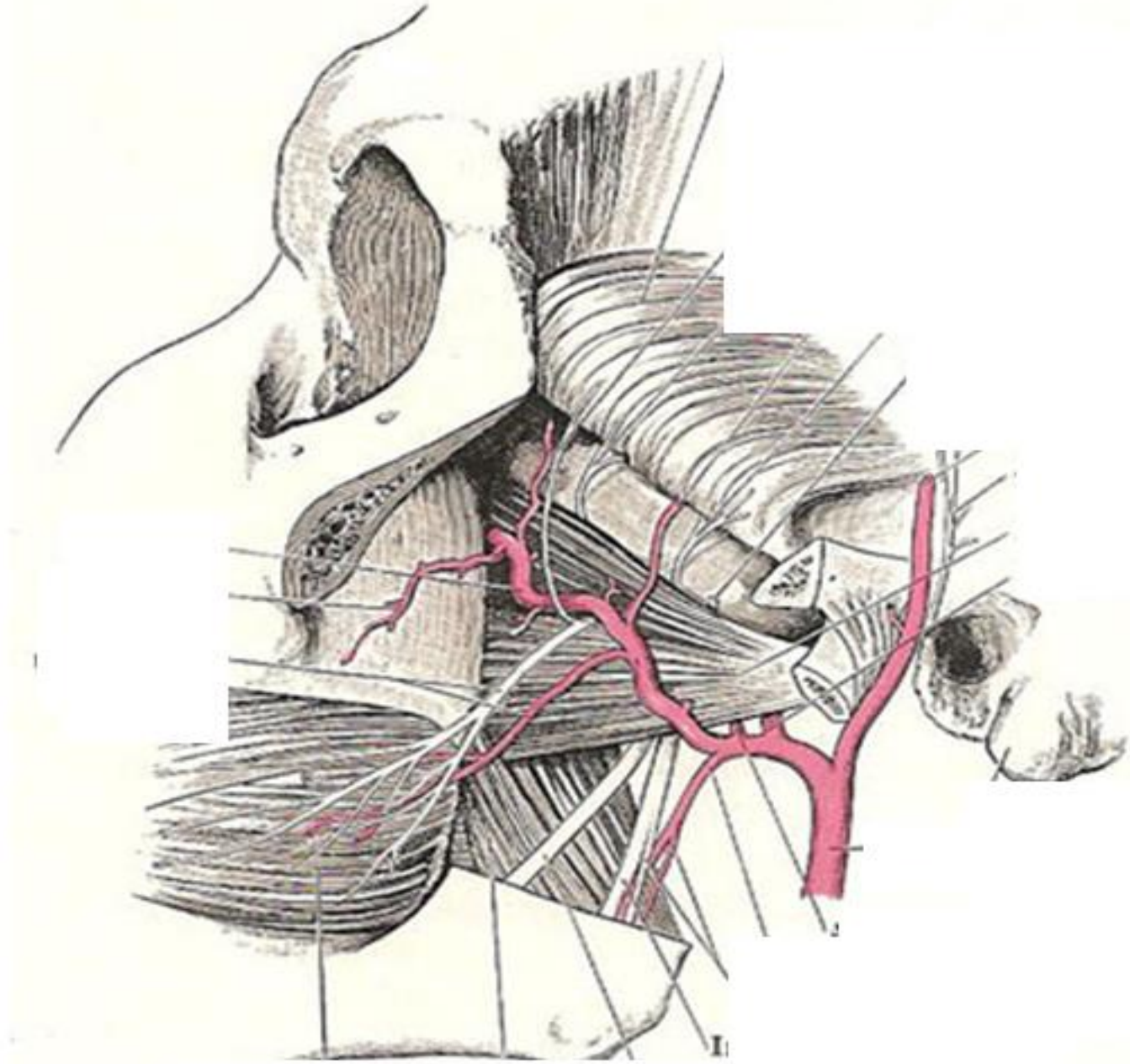

LP
M
ST
M
EC
a
57.1%
LP
ST
M
EC
b
42.9%

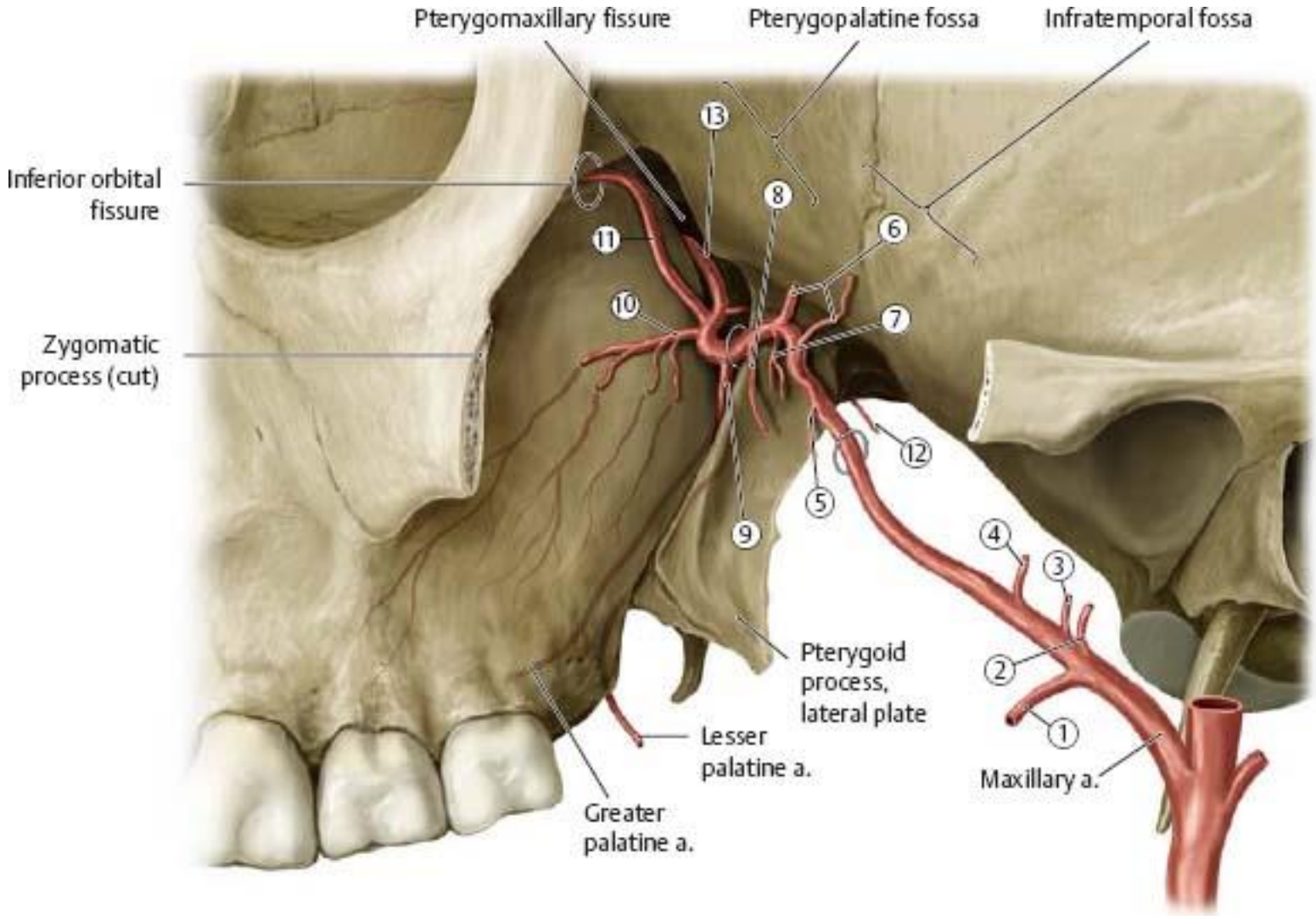
Course of artery is divided into 3 parts:

Mandibular part-passes round the neck of mandible to the lower border of the lateral pterygoid muscl

Pterygoid part-passes upward and forward superficial or deep to lower head of the lateral pterygoid muscle

Pterygopalatine part-artery enters the pterygopalatine fossa, lies in front of the pterygopalatine ganglion and gives its terminal branches. It continues into the nasal cavity through the spheno palatine foramen as the sphenopalatine artery

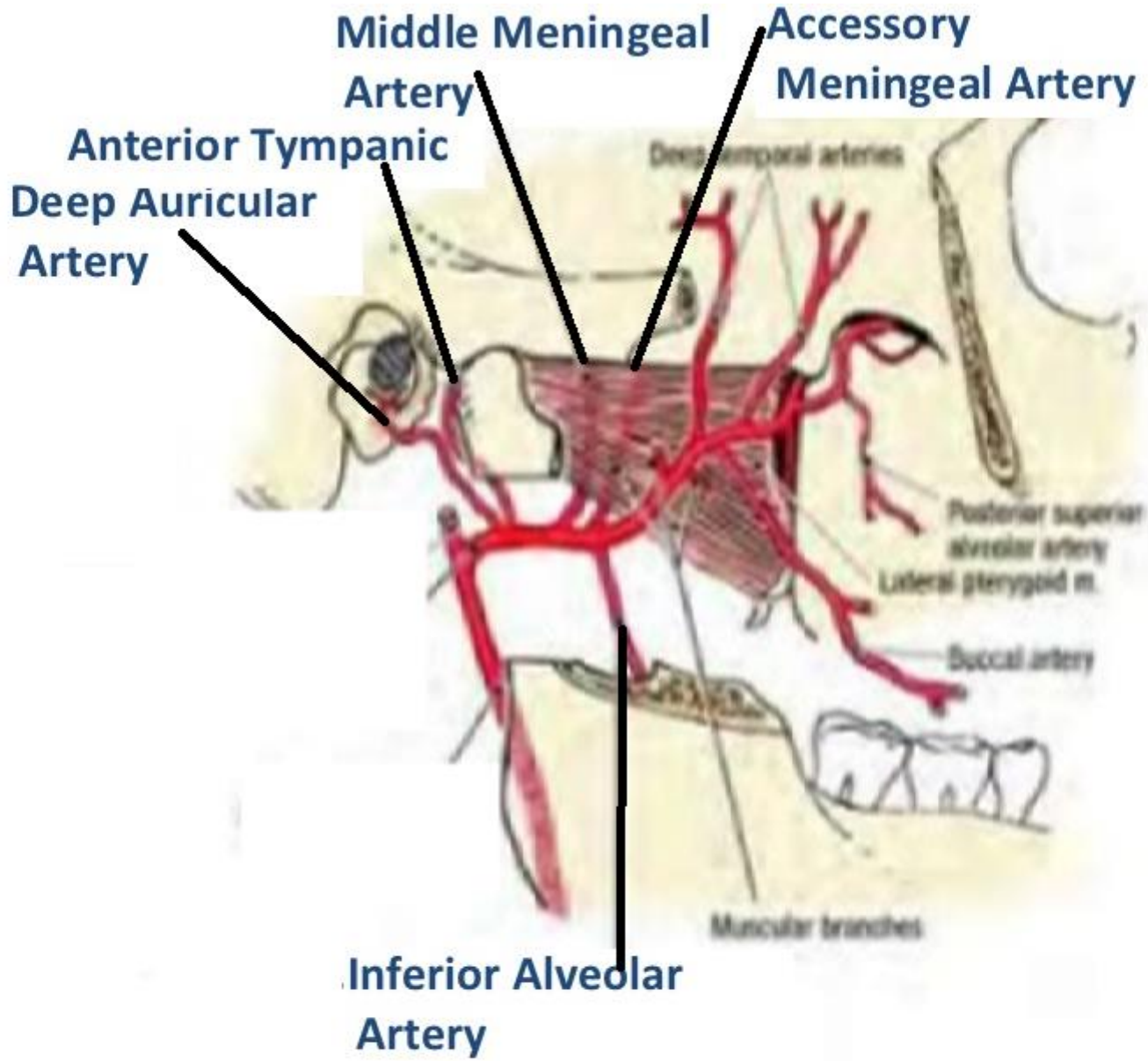



Pterygomaxillary fissure
Pterygopalatine fossa
Infratemporal fossa
Inferior orbital fissure
Zygomatic process (cut)
13
8
6
11
10
7
12
5
9
4
3
2
1
Pterygoid process, lateral plate
Lesser palatine a.
Greater palatine a.
Maxillary a.

BRANCHES OF MAXILLARY ARTERY

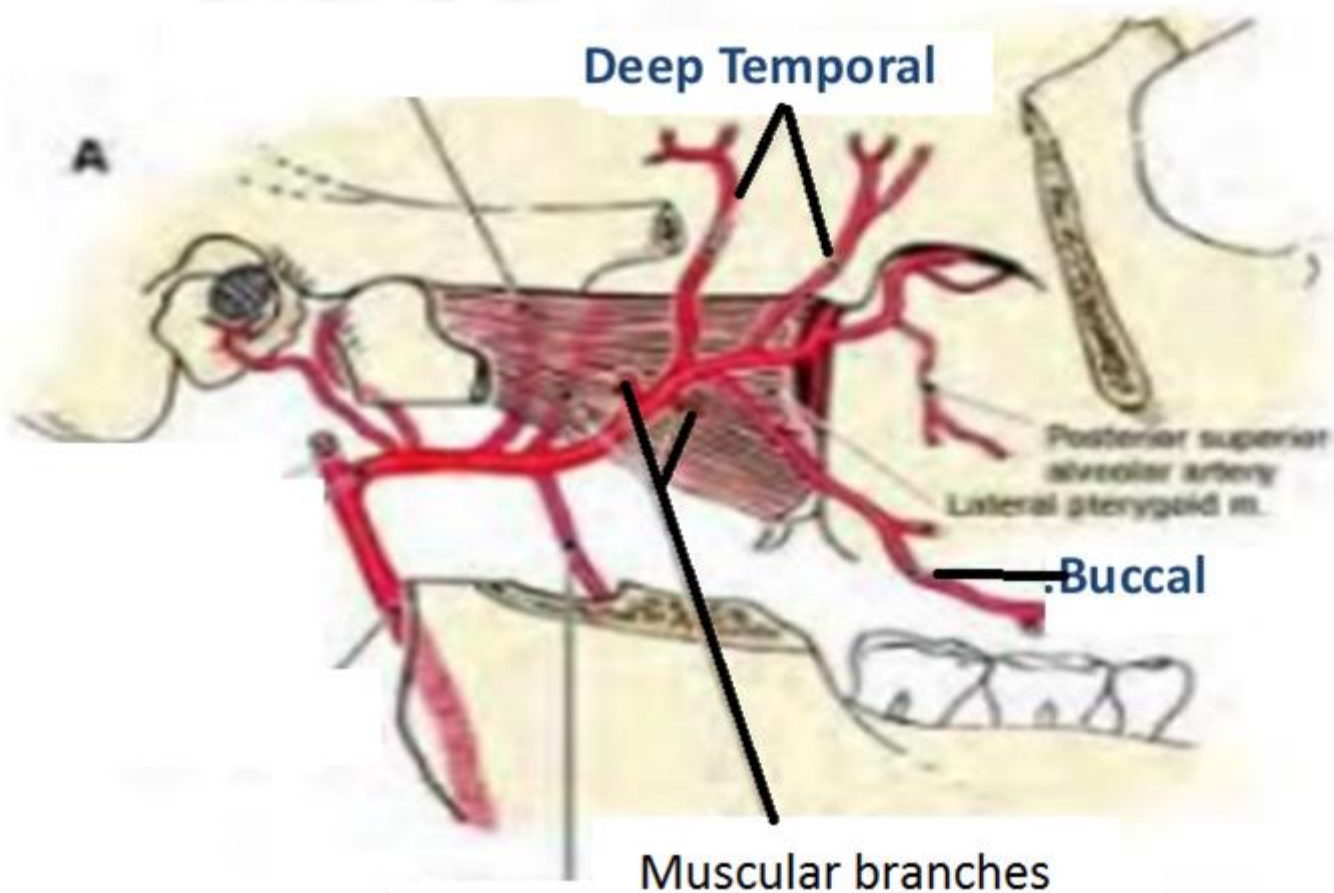
A.FIRST PART:-

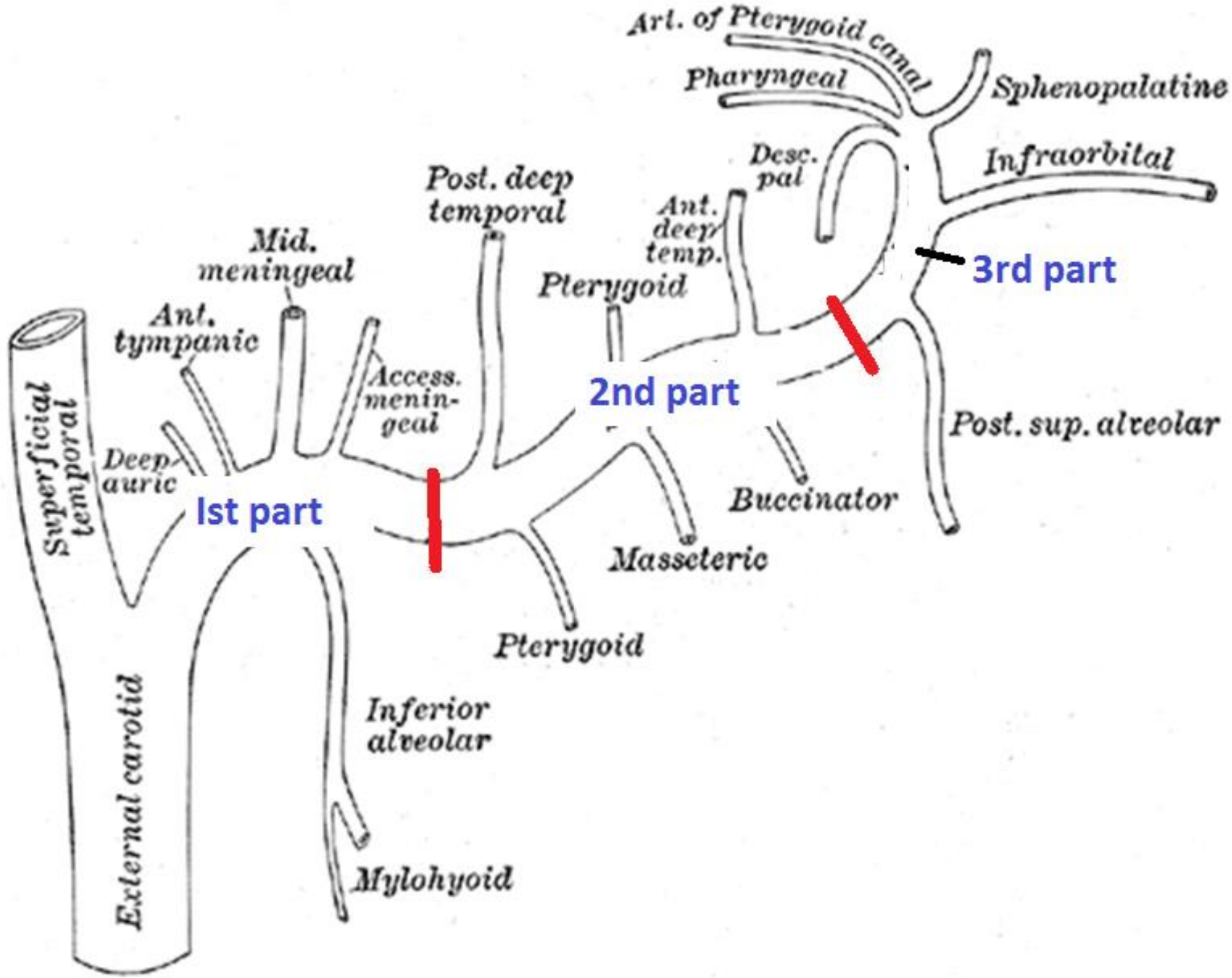
1. Deep Auricular Artery
2. Anterior Tympanic
3. Middle Meningeal Artery
4. Accessory Meningeal Artery
5. Inferior Alveolar Artery

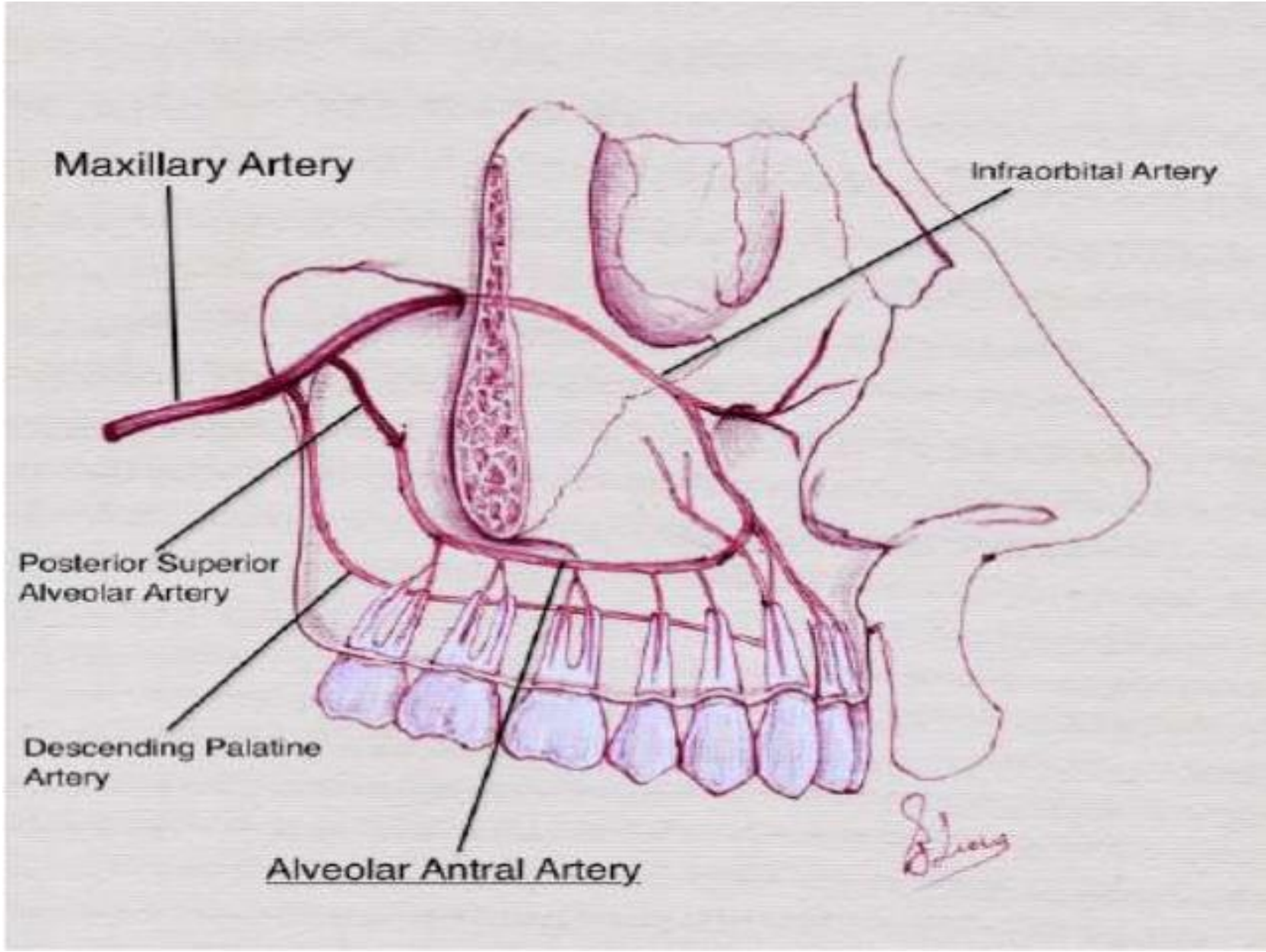


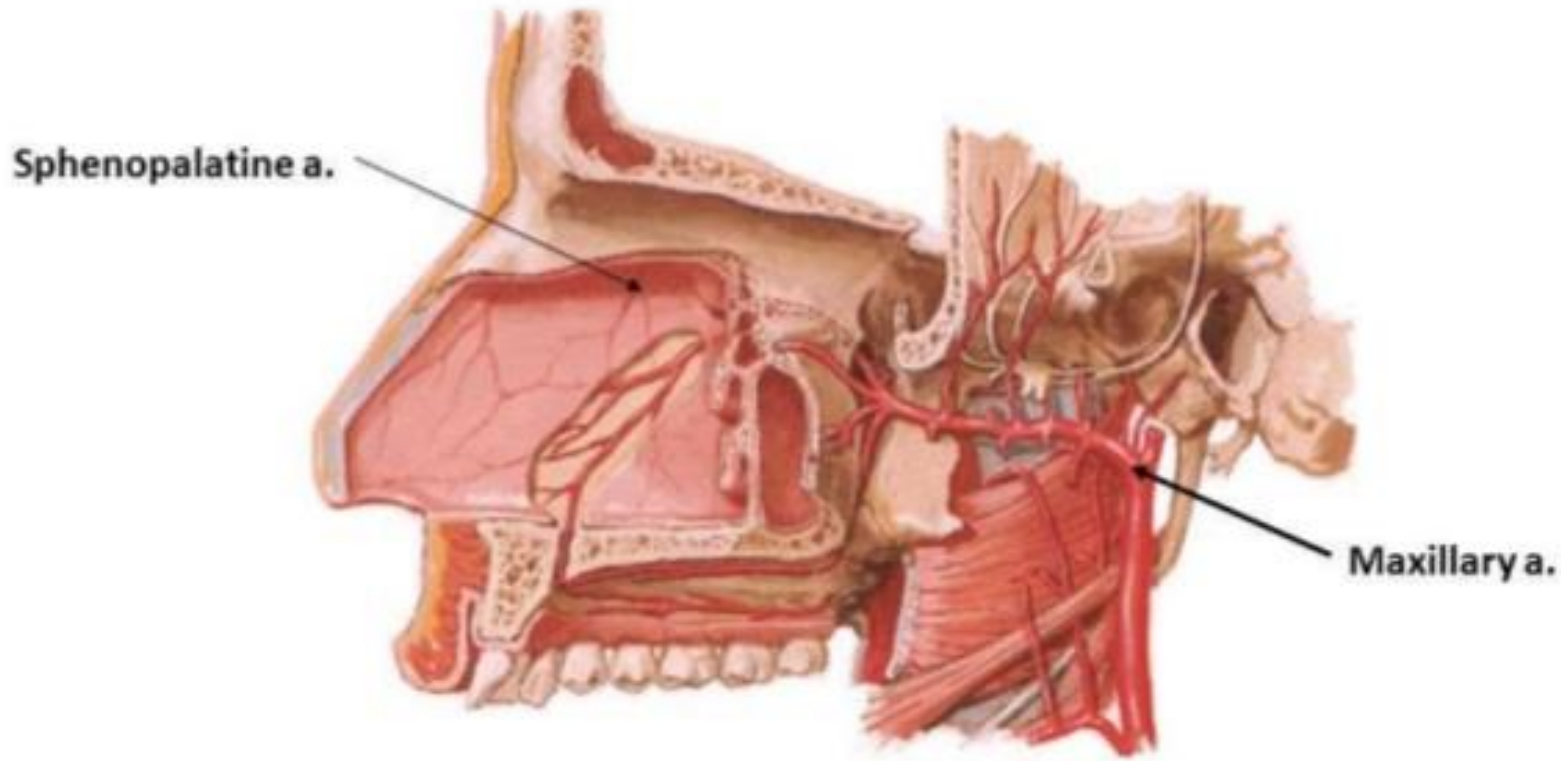
B.SECOND PART:-

1. Deep Temporal
2. Pterygoid
3. Masseteric
4. Buccal




Art. of Pterygoid canal
Pharyngeal
Sphenopalatine
Desc. pal
Infraorbital
Post. deep temporal
Ant. deep temp.
Mid. meningeal
Pterygoid
3rd part
Ant. tympanic
Access. menin-geal
2nd part
Superficial temporal
Deep auric
Post. sup. alveolar
1st part
Buccinator
Masseteric
Pterygoid
Inferior alveolar
External carotid
Mylohyoid


Maxillary Artery
Infraorbital Artery
Posterior Superior Alveolar Artery
Descending Palatine Artery
Alveolar Antral Artery



Netter, Frank H., Atlas of Human Anatomy. Ciba-Geigy Corporation, Summit, N.J. 1993. Plate 35.

Sphenopalatine Artery

-Netter

- Deep auricular artery-supplies the external acoustic meatus and the external part of the tympanic membrane
- Anterior tympanic artery-supplies the inner aspect of the tympanic membrane along with posterior tympanic branch of stylomastoid artery
- Middle meningeal artery-enters skull through foramen spinosum and divides into frontal and parietal branches. It supplies the dura mater.
- Accessory meningeal artery-enters foramen ovale
- Inferior alveolar artery-enters the mandibular canal. Supplies the molars and pre molars. Divides into incisive and mental branches. Before entering the canal, it gives lingual and mylohyoid branches

- Buccal artery-supplies buccinators muscle
- Posterior superior alveolar arteries-enters the foramina on the posterior surface of body of maxilla to supply maxillary molar and premolar teeth and mucosa of the maxillary air sinuses
- Infra orbital artery enters the orbit and gives off the anterior superior alveolar branch. Infra orbital artery sinks into the floor of the orbit and emerges on the face through the infra orbital foramen.
- Greater palatine artery-passes down the greater palatine canal, gives off lesser palatine branches. It emerges on the palate to supply its mucosa.

- Sphenopalatine artery is a continuation of the maxillary artery. It passes into the nasal cavity to supply the nasal cavity and the paranasal sinuses

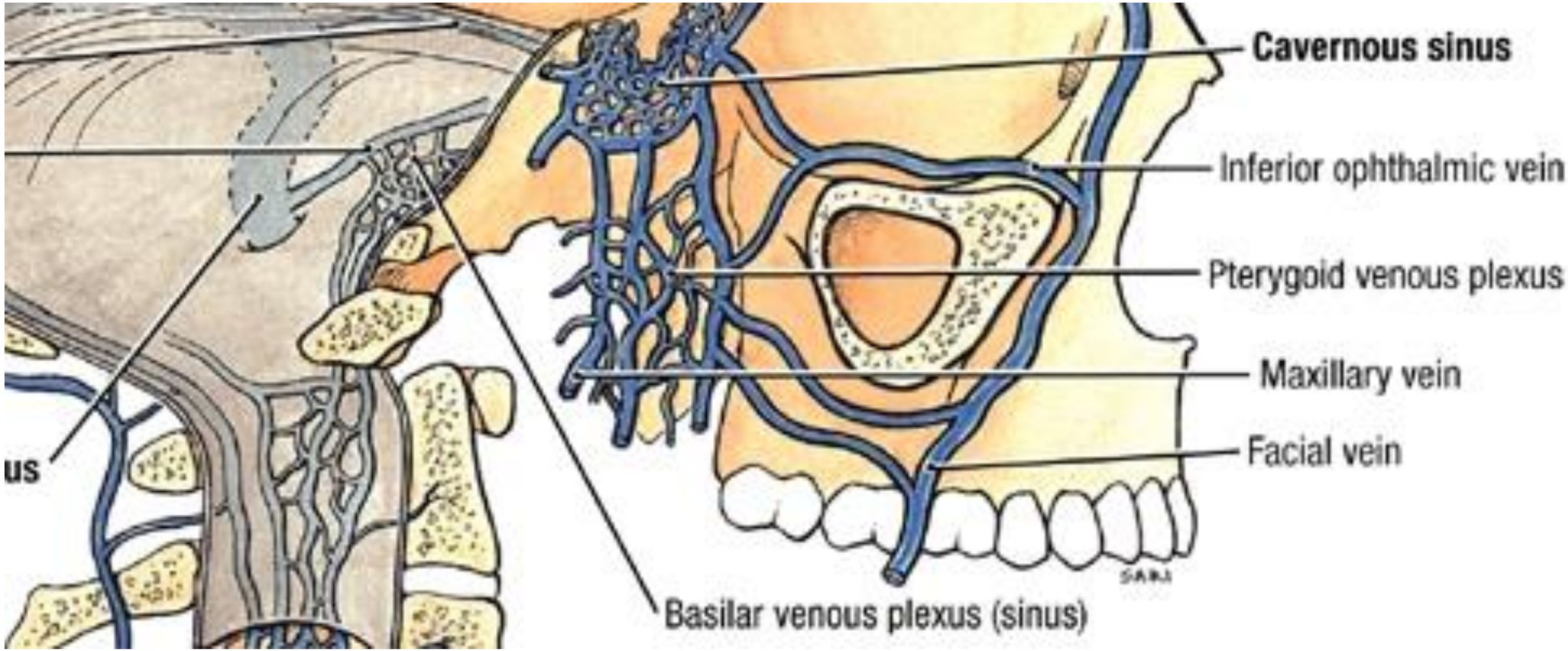
- Pterygoid venous plexus

Lies in and within the lateral pterygoid muscle.

Drained by the maxillary vein

Communicates with the cavernous venous sinus through the emissary vein

Communicates with the facial vein through the deep facial vein


Cavernous sinus
Inferior ophthalmic vein
Pterygoid venous plexus
Maxillary vein
Facial vein
Basilar venous plexus (sinus)