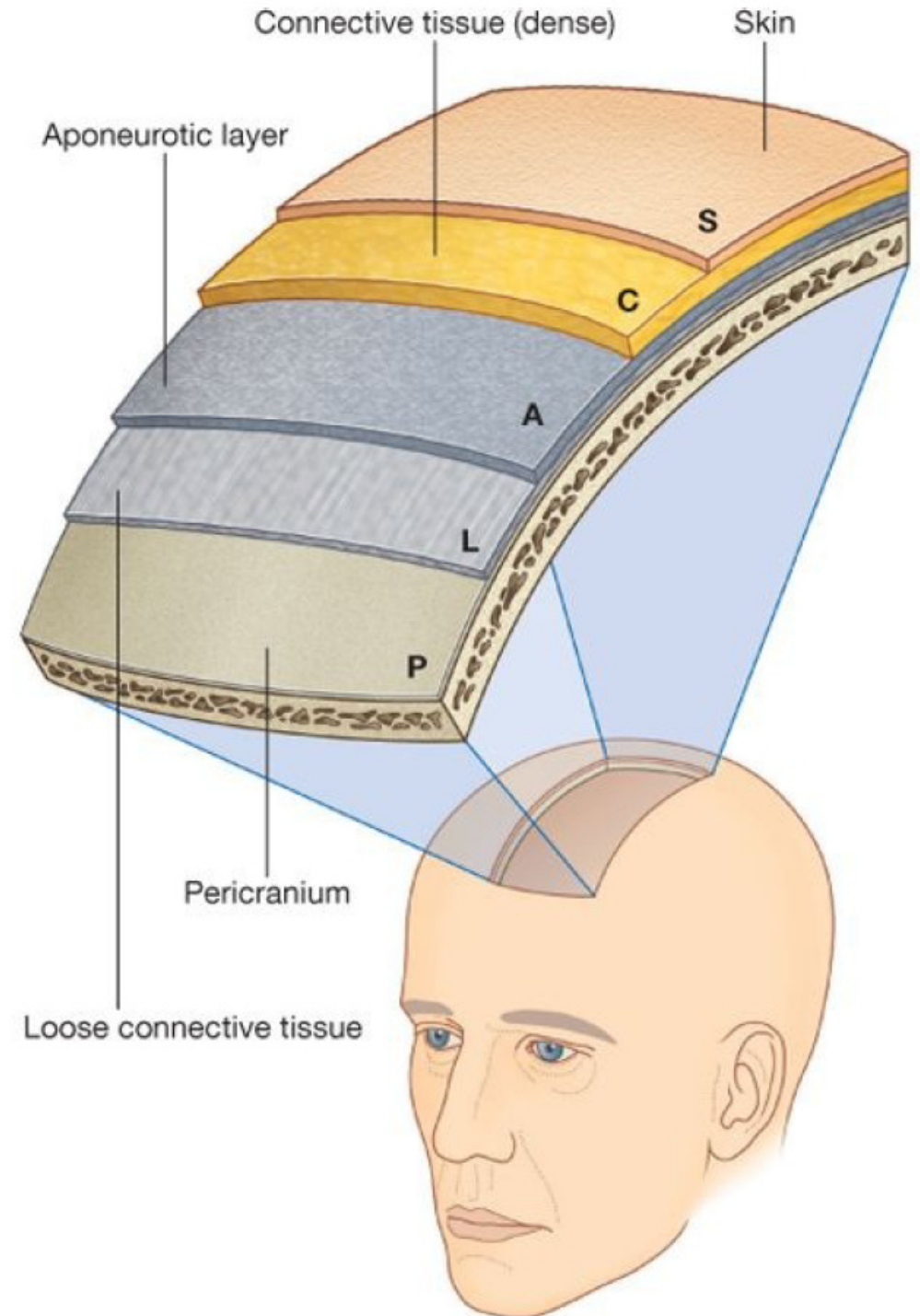


Scalp

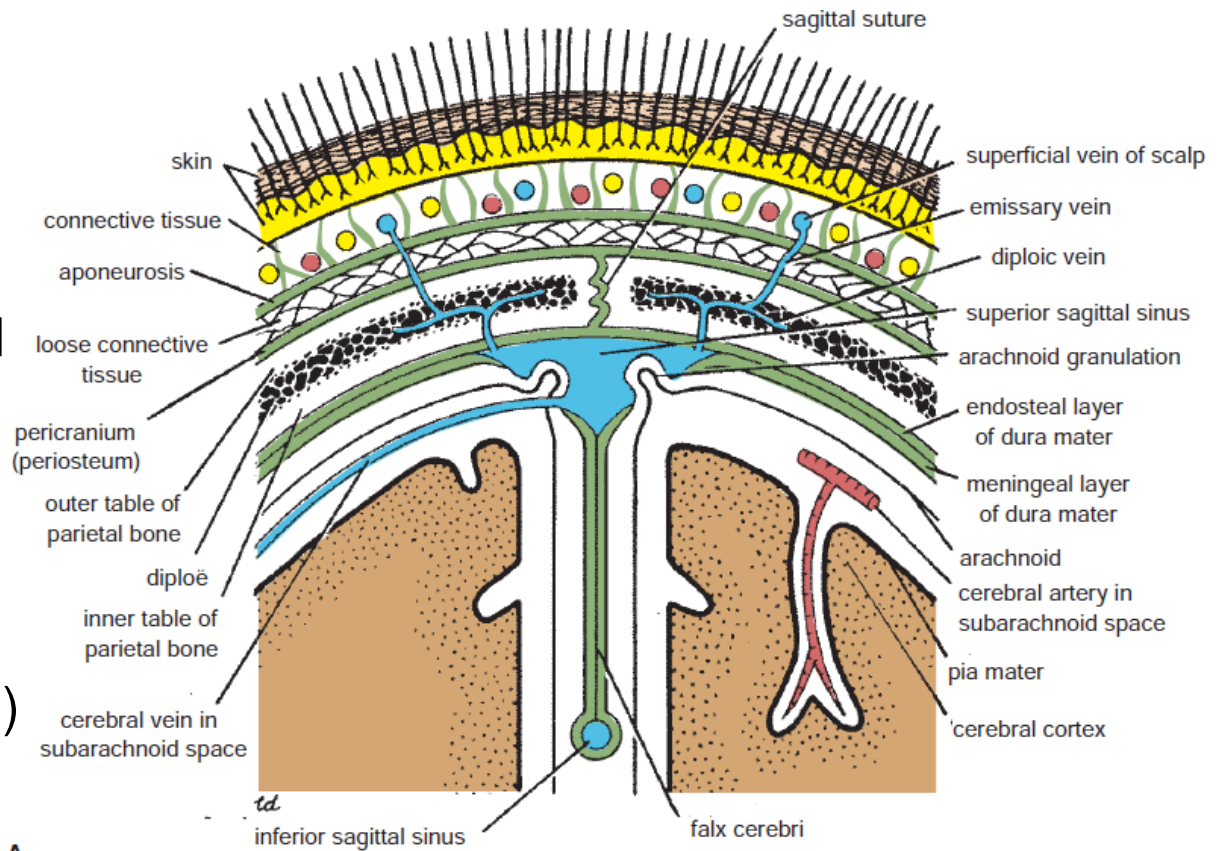
- **Anteriorly:** Supraorbital ridge
- **Posteriorly:** External occipital protuberance and superior nuchal lines
- **Laterally:** zygomatic arch

➤ Layers:

- S-skin: Hair, sebaceous glands
- C-connective tissue: (dense) Highly vascular
- A-aponeurotic layer
- L-loose connective tissue: infections spread
- P-pericranium: removable, except in the area of sutures



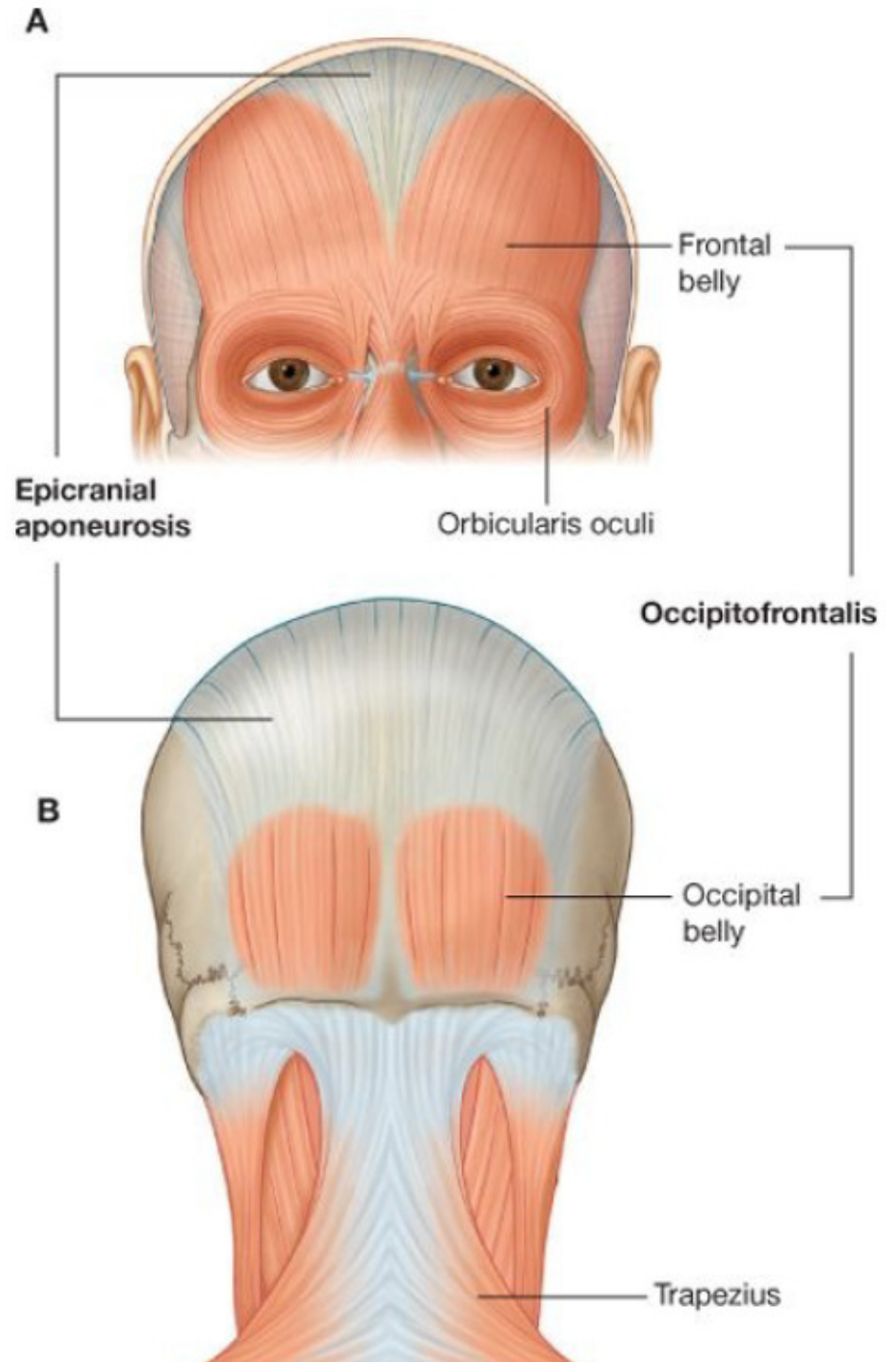
- Sebaceous cysts are common
- scalp has a profuse blood supply
 - in emergency encircle the head above the ears with a tie. Why?
- infection spreads by the emissary veins (valveless) to the skull bones, causing osteomyelitis
- Subgaleal hemorrhage: May cause raccoon eye

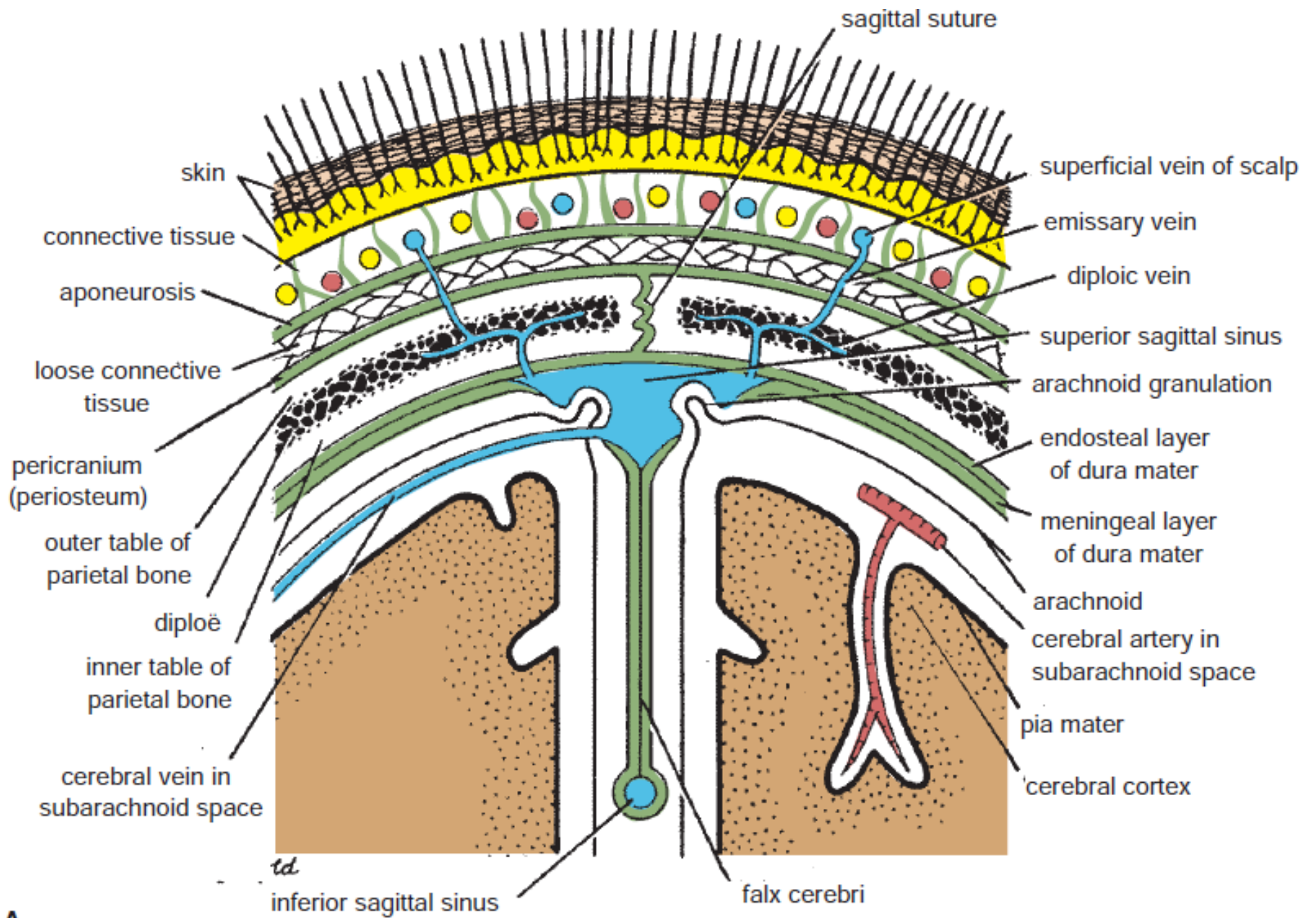


Muscles of the Scalp

Occipitofrontalis:

- **Origin:**
 - **Frontal belly:** Skin and superficial fascia of eyebrows
 - **Occipital belly:** Highest nuchal line of occipital bone
- **Insertion:** Epicranial aponeurosis
- **NS:** Facial nerve
 - Temporal branches
 - Posterior auricular branch
- **Action:** Moves scalp on skull and raises eyebrows





Sensory Nerve Supply

- **Anterior to the ears and the vertex:**
(Trigeminal)

- Ophthalmic

- Supratrochlear nerve
- Supraorbital nerve

- Maxillary division:

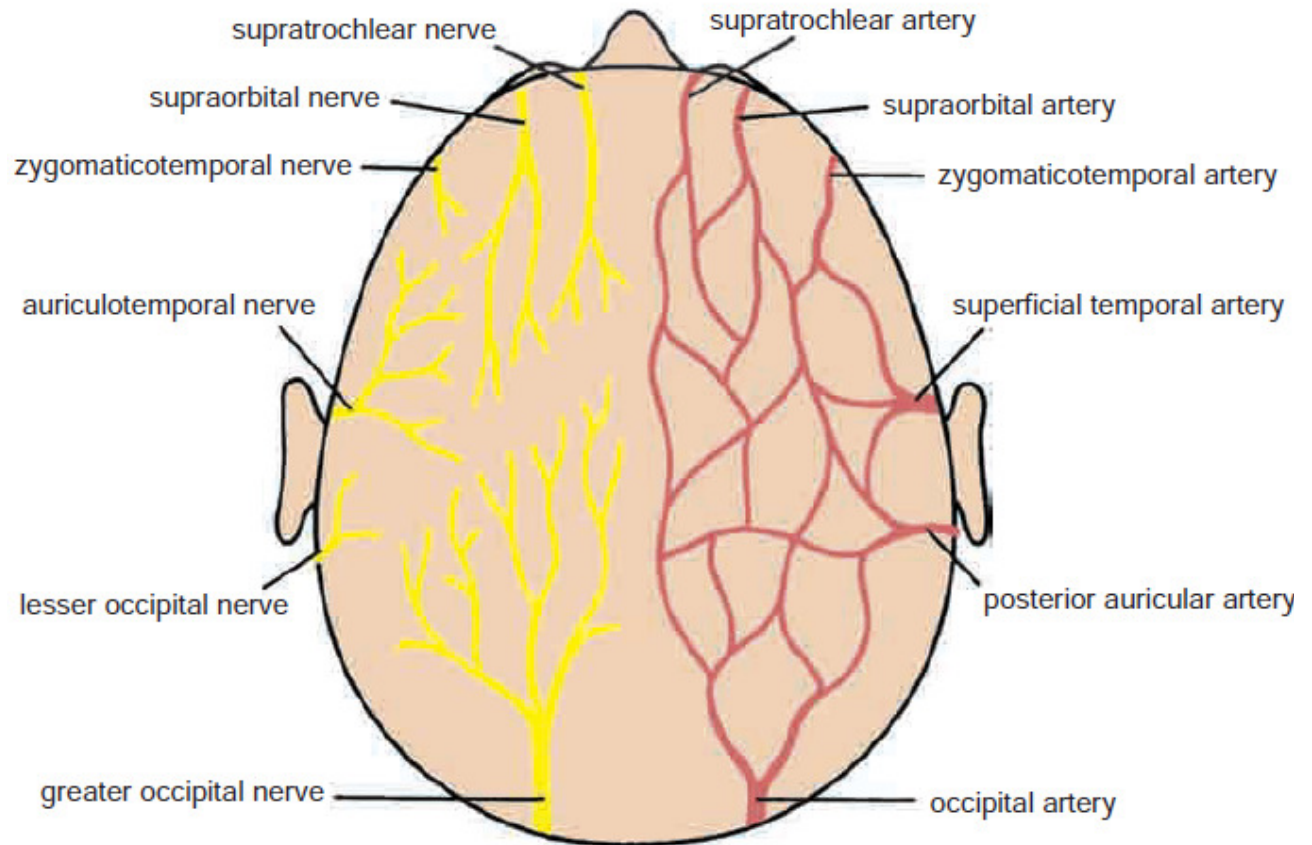
- Zygomaticotemporal nerve

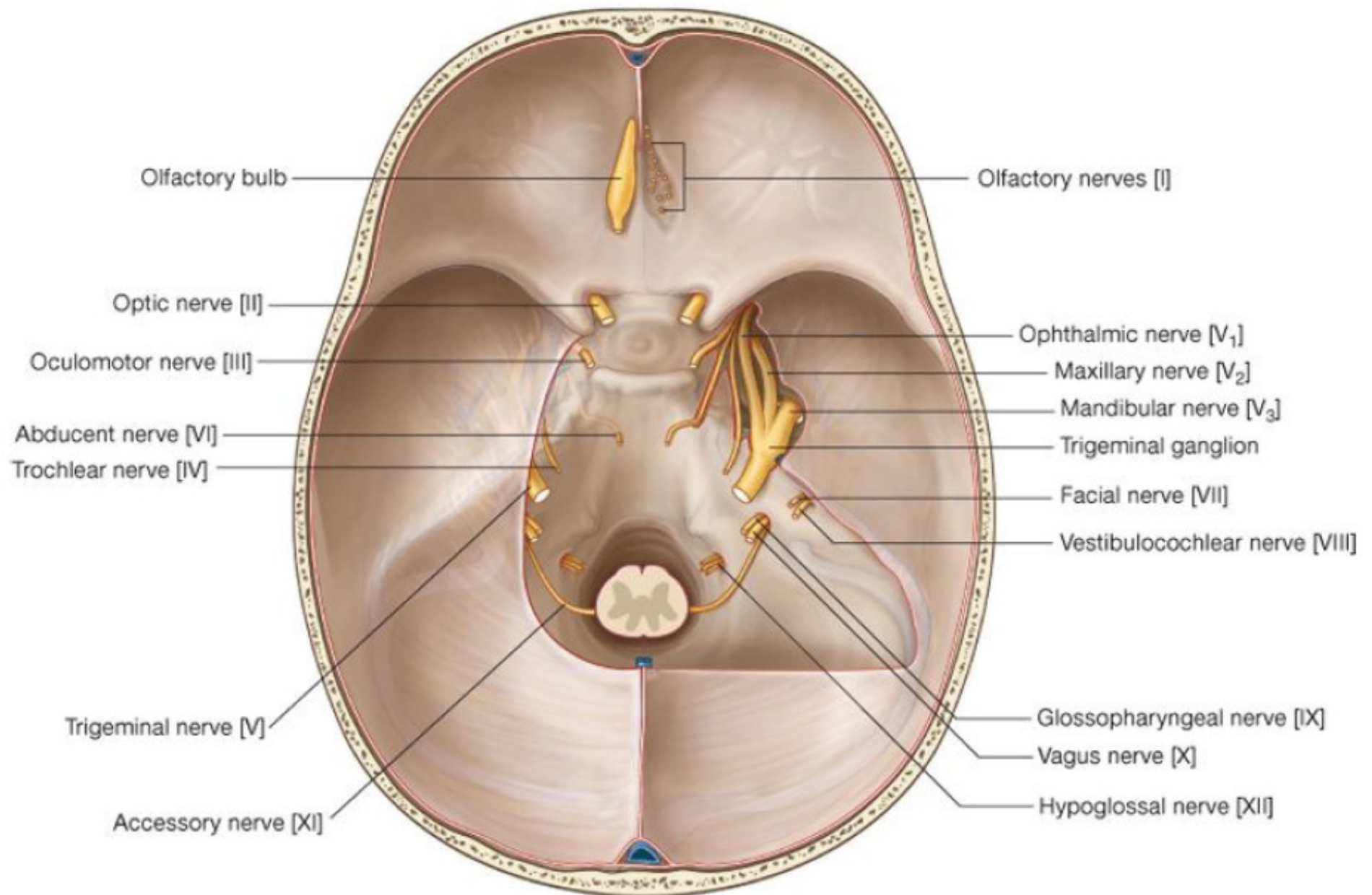
- Mandibular division:

- Auriculotemporal nerve

- **Posterior to the ears and the vertex:**
(cervical plexus)

- Lesser occipital nerve:
(C2)
- Greater occipital nerve:
cervical plexus (C2)





➤ ***Remember foramina from which cranial nerves exit the Skull***

Trigeminal Nerve

➤ Ophthalmic

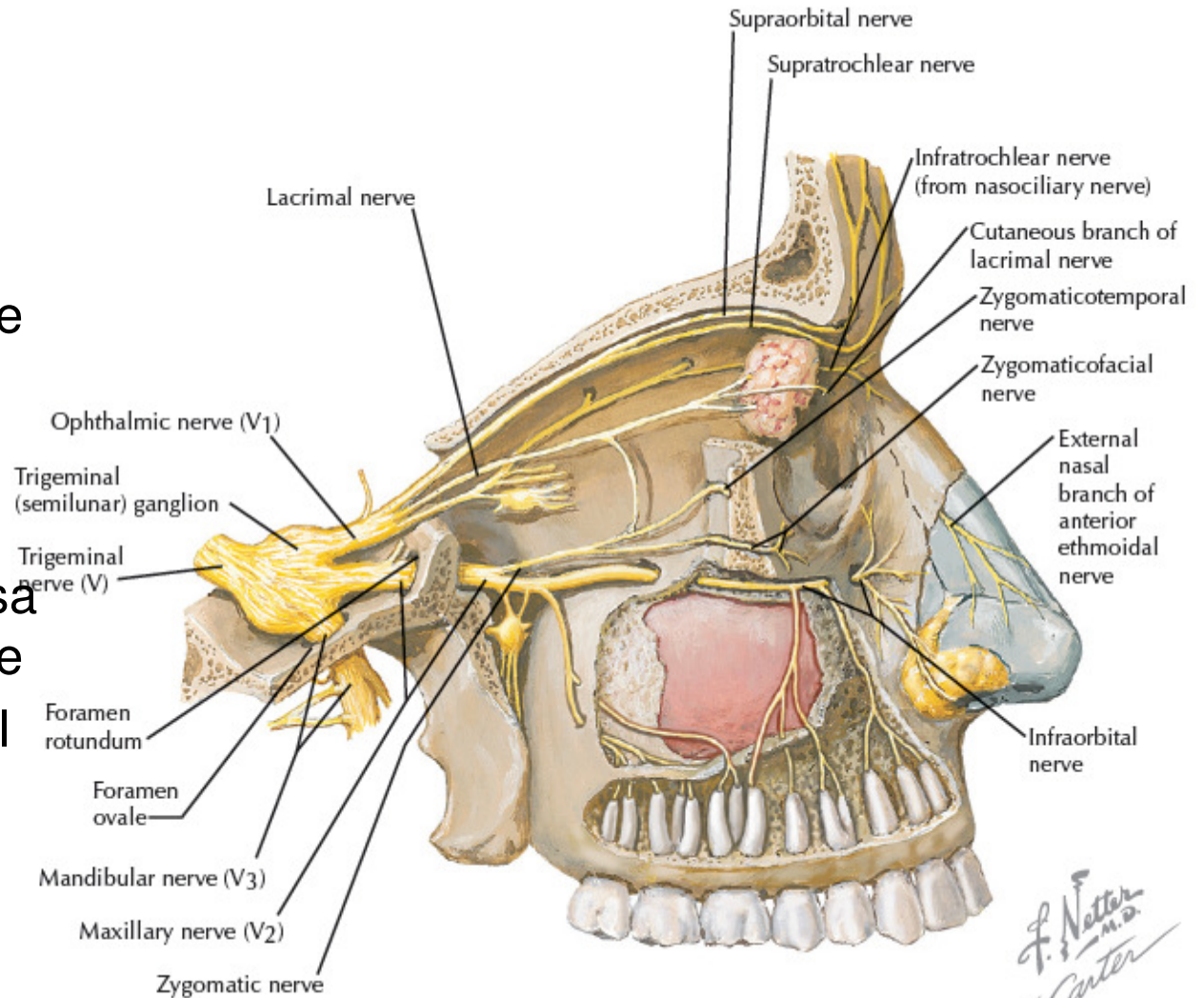
- Frontal: Superior orbital fissure
 - Supratrochlear nerve
 - Supraorbital nerve

➤ Maxillary

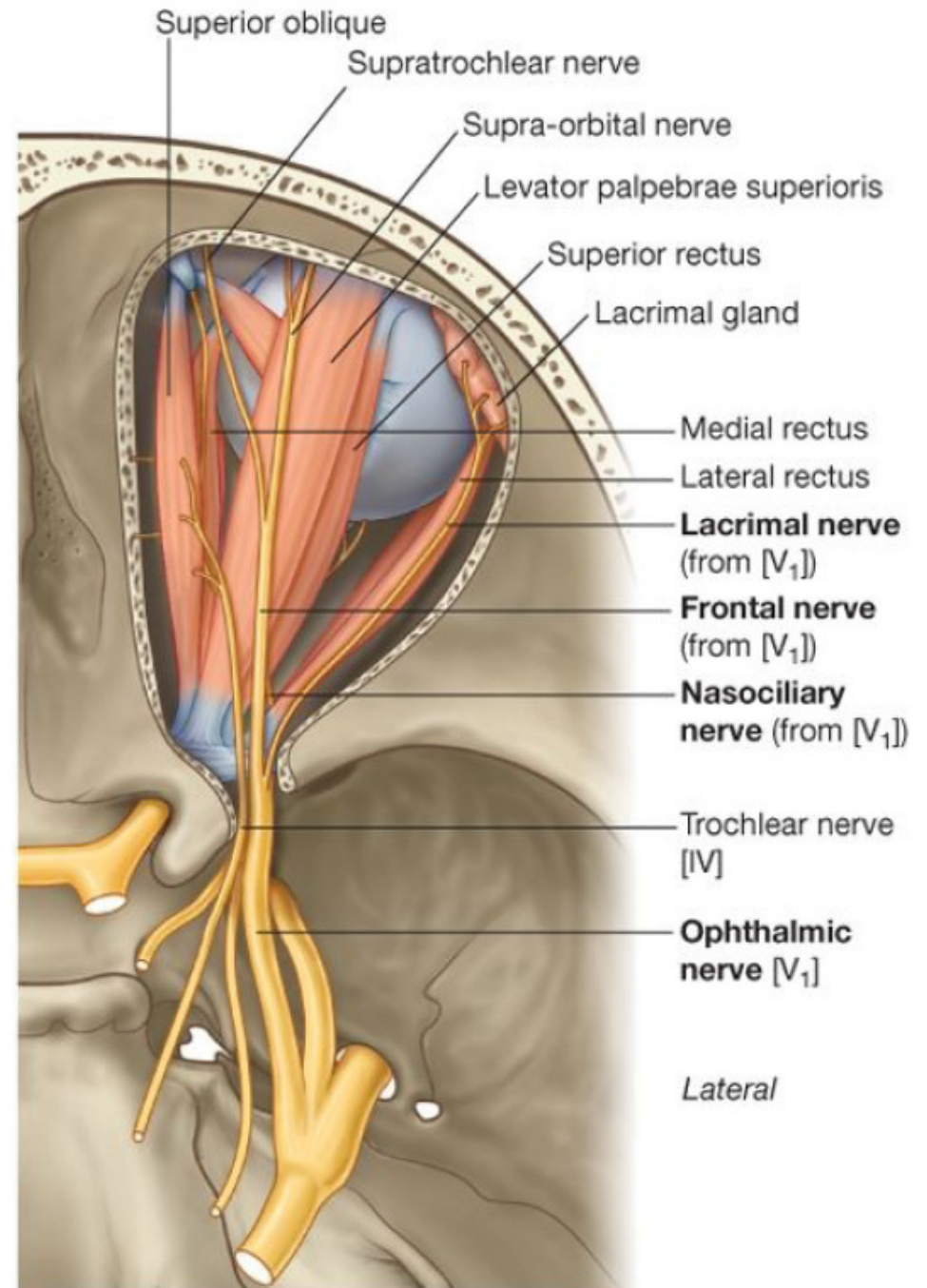
- Zygomatic: Pterygopalatine fossa
 - Zygomaticotemporal nerve
- Zygomaticofacial nerve

➤ Mandibular

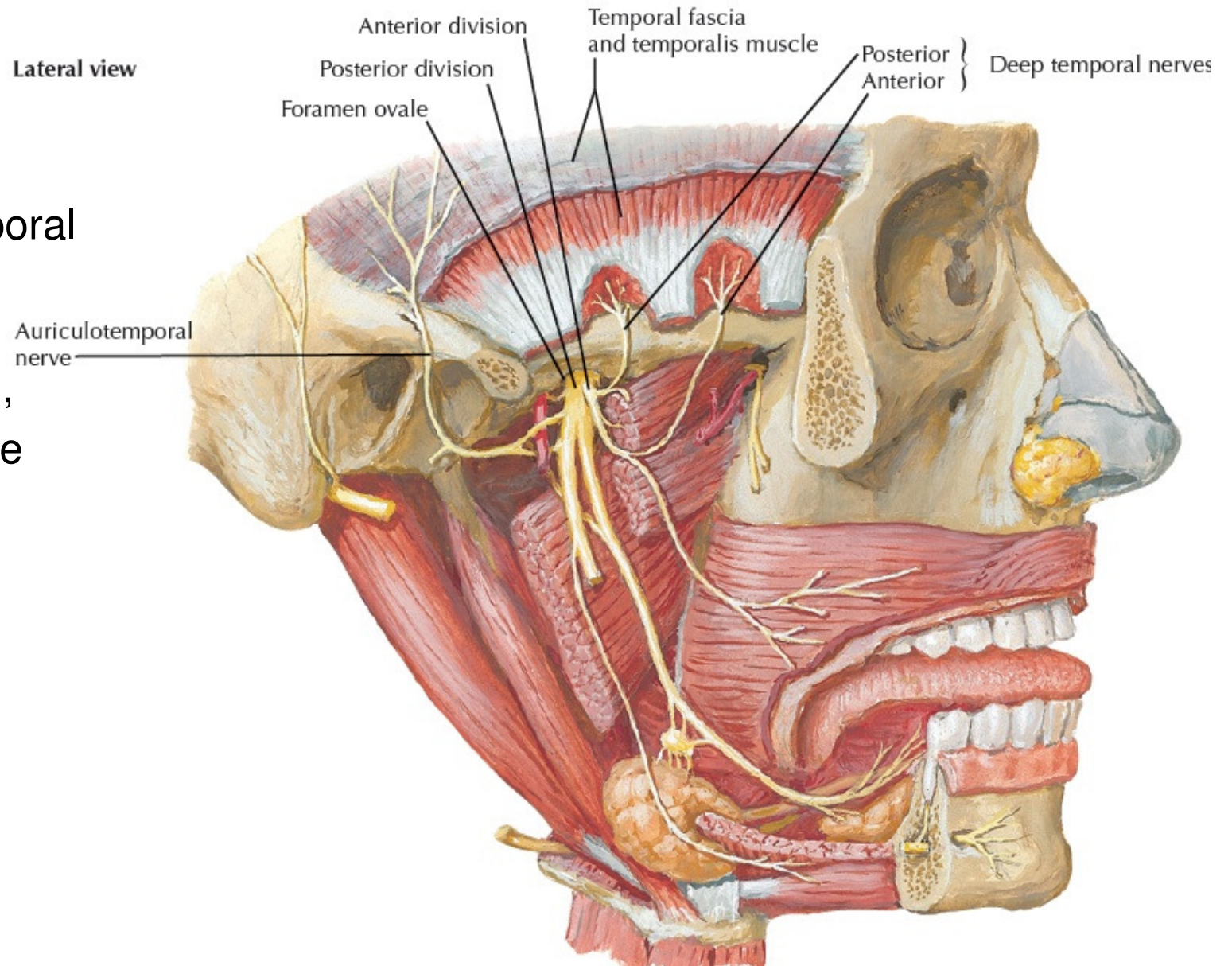
- Auriculotemporal nerve

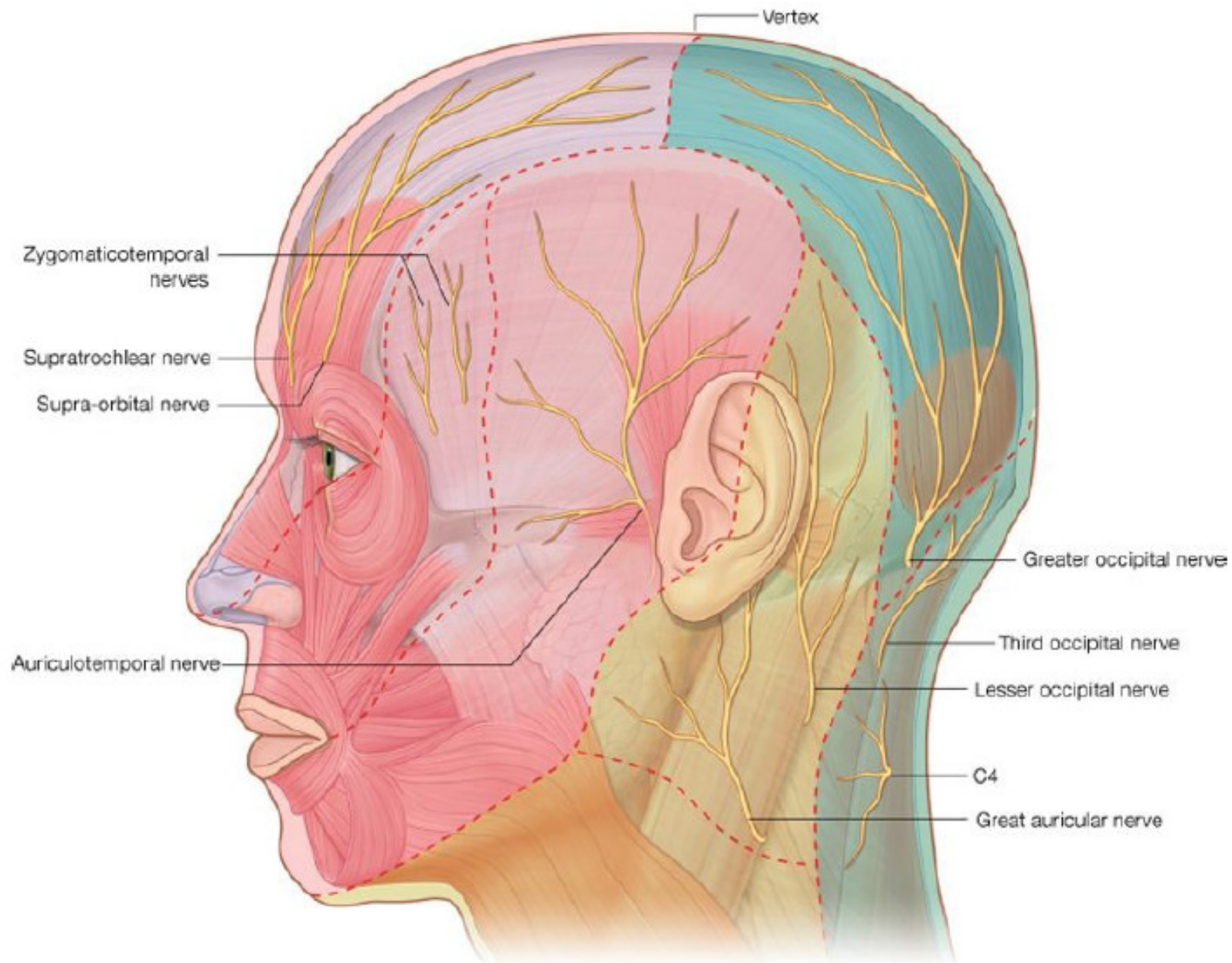


- Frontal Nerve
- Between the periosteum of the orbit and the levator palpebrae superioris
 - Supratrochlear nerve
 - Supraorbital nerve
- Both supply as far as the vertex of the skull

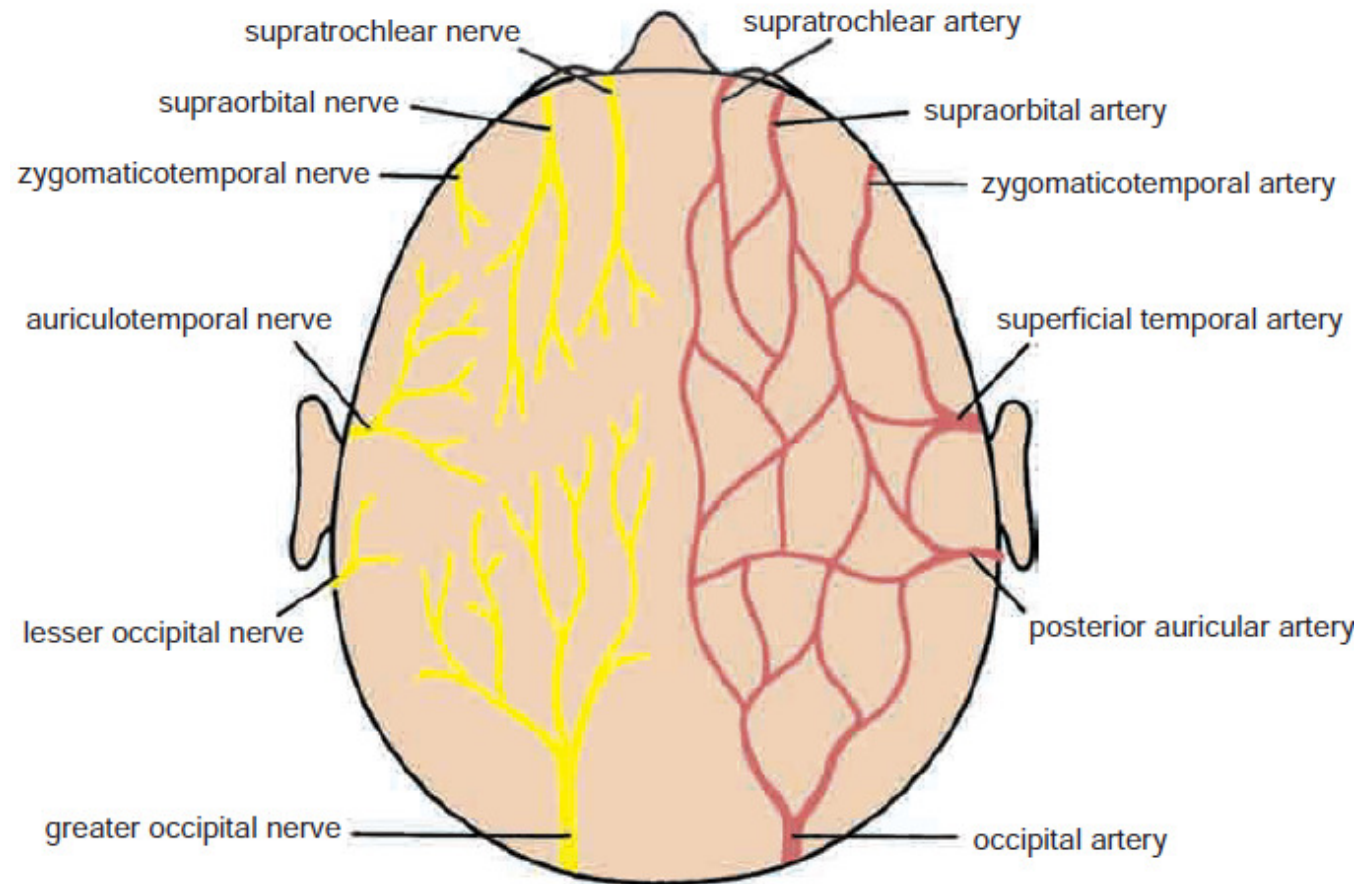


- Auriculotemporal nerve
- Deep to the parotid gland,
- Anterior to the ear



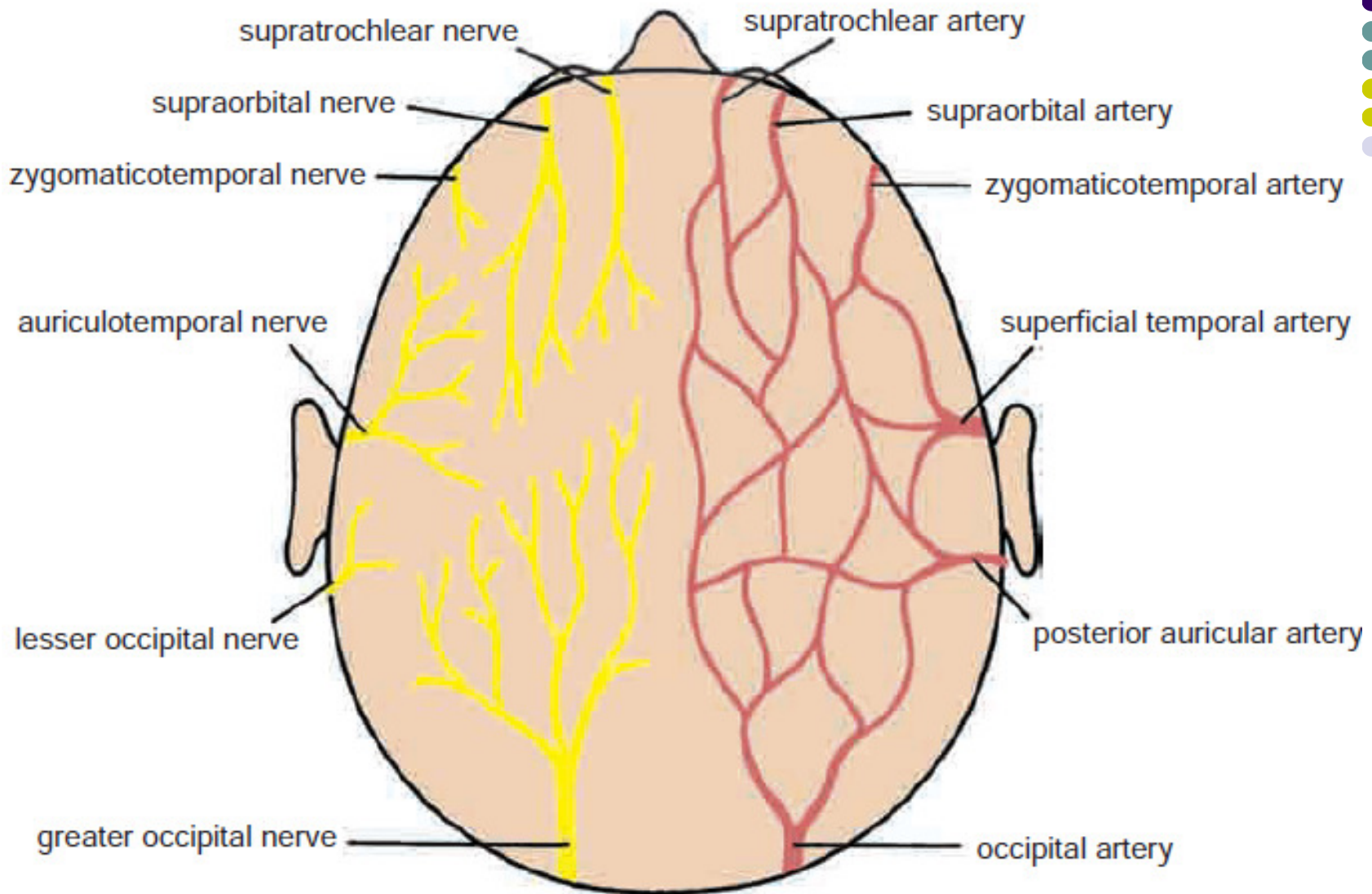


Sensory Nerve Supply of the Scalp



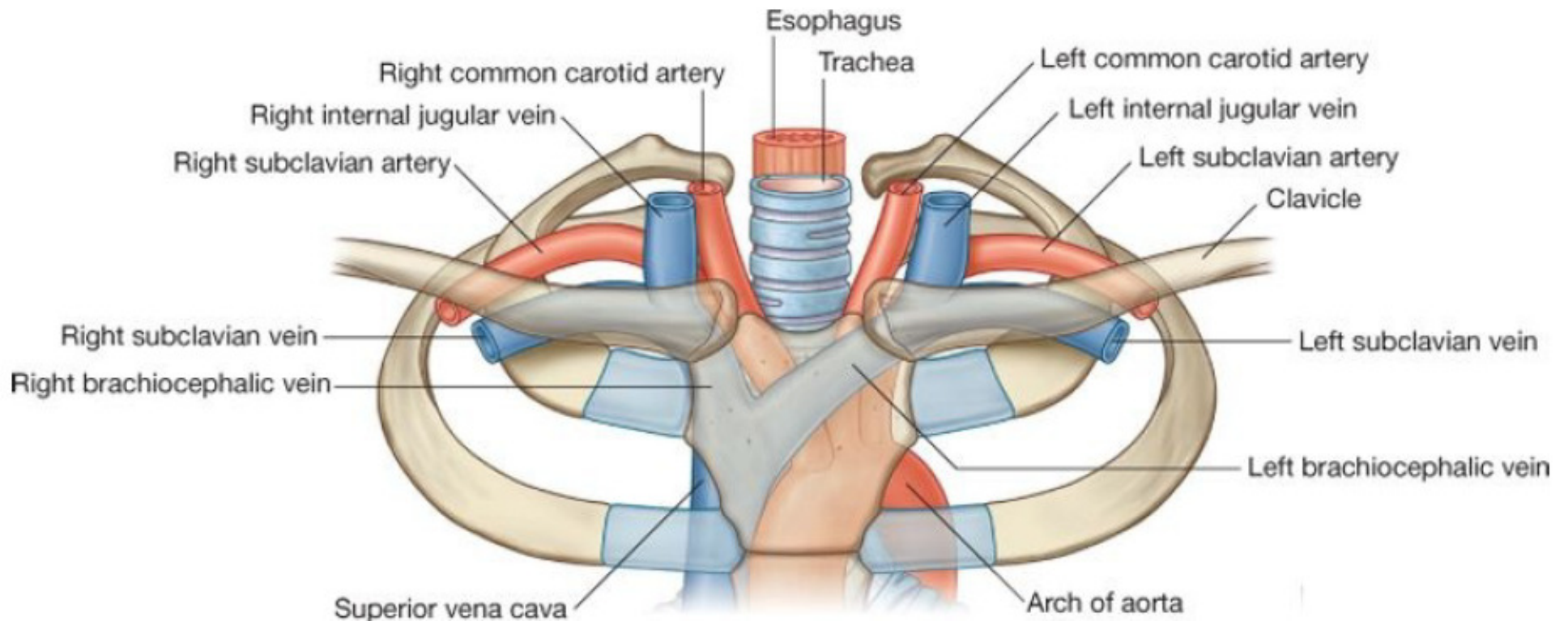
- **Supratrochlear nerve:** (Ophthalmic division) as far as the vertex of the skull
- **Supraorbital nerve:** (Ophthalmic division) as far as the vertex of the skull
- **Zygomaticotemporal nerve** (maxillary division): supplies the scalp over the temple
- **Auriculotemporal nerve** (mandibular division)
- **Lesser occipital nerve:** cervical plexus (C2)
- **Greater occipital nerve:** cervical plexus (C2)

Arterial Supply of the Scalp



- Branches from external and internal carotid arteries

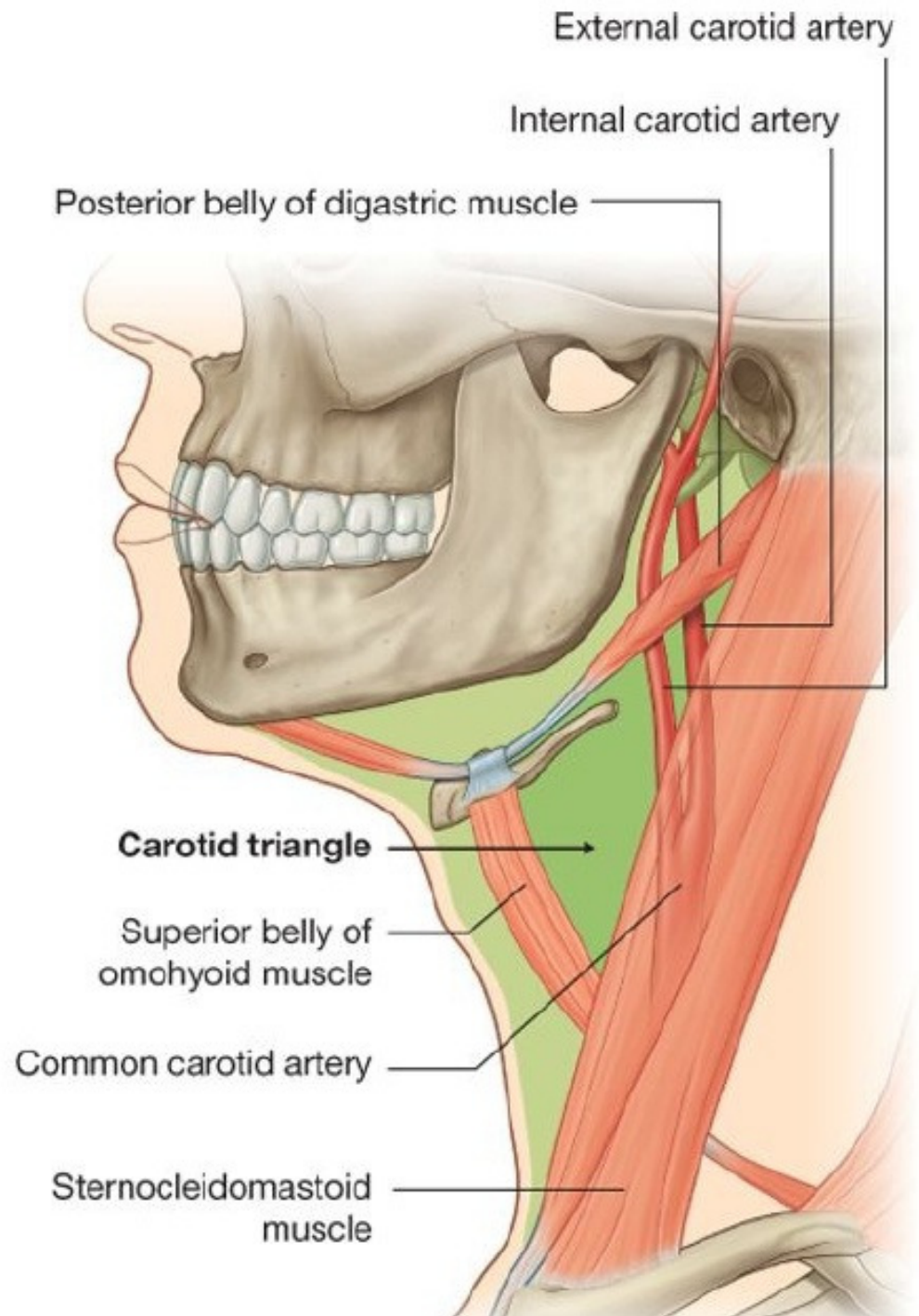
common carotid artery



- Right common carotid: from the brachiocephalic artery
- Left common carotid artery: from arch of the aorta
- **Begins:** sternoclavicular joint
- **Ends:** upper border of the thyroid cartilage.
- **Divisions:** External and internal carotid arteries

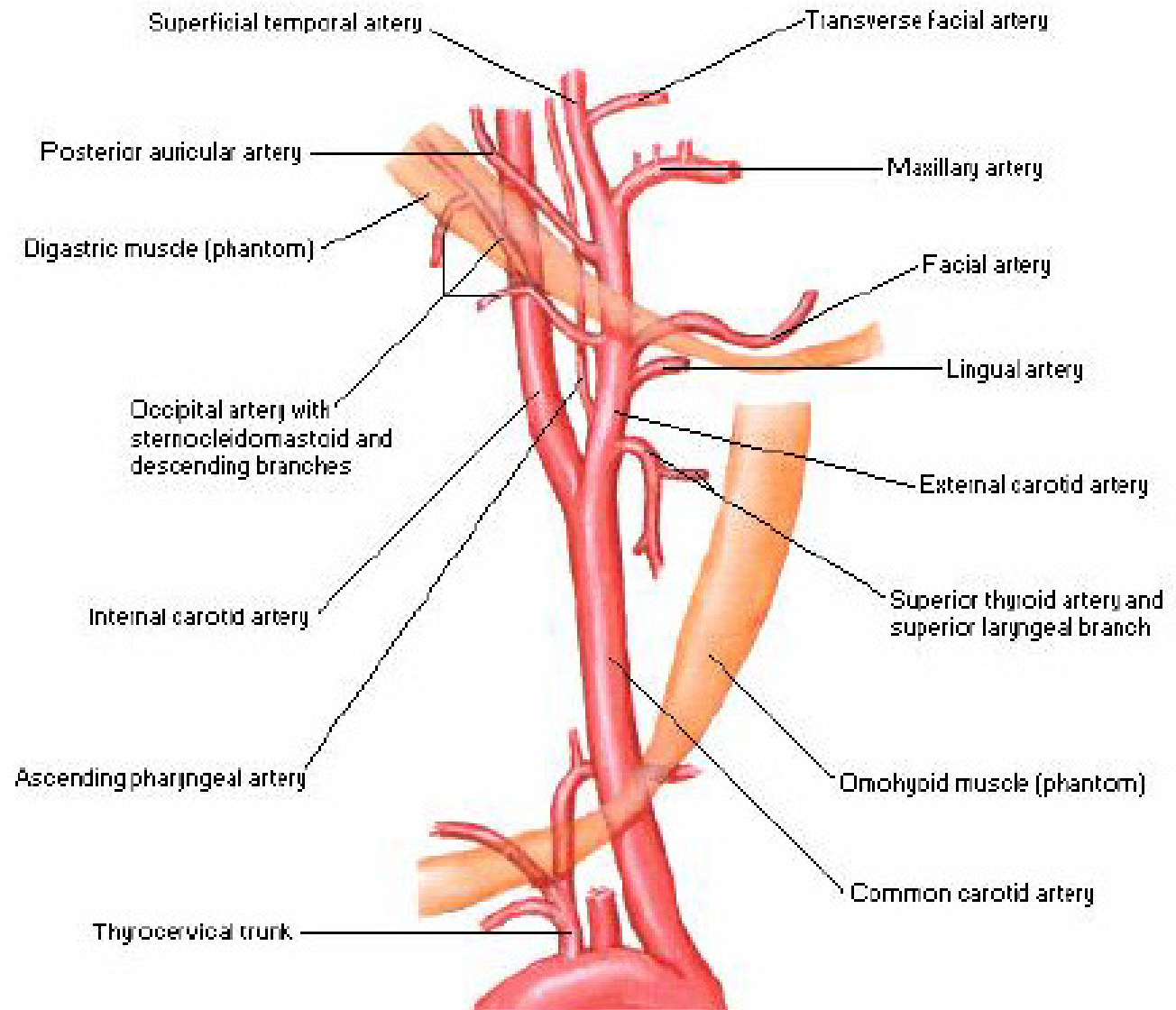
The external carotid artery

- Medial to the internal carotid artery, then passes backward and lateral to it.



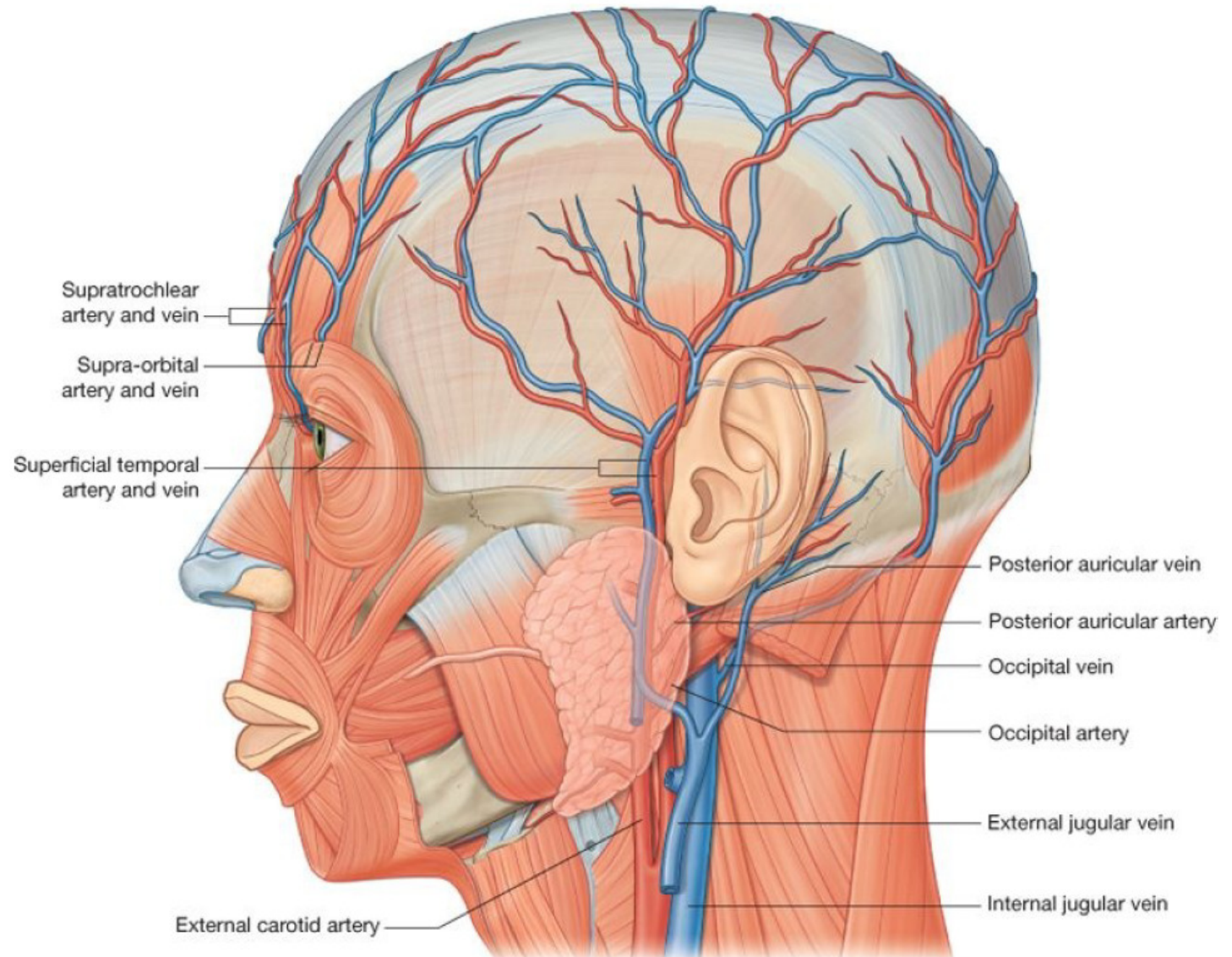
External Carotid Artery and Branches Schema

- Terminates: in the substance of the parotid gland behind the neck of the mandible .



External carotid artery

- **Superficial temporal artery:** lateral aspect of the scalp
- **Posterior auricular artery:** posterior to the ear
- **Occipital artery:** posterior aspect of the scalp



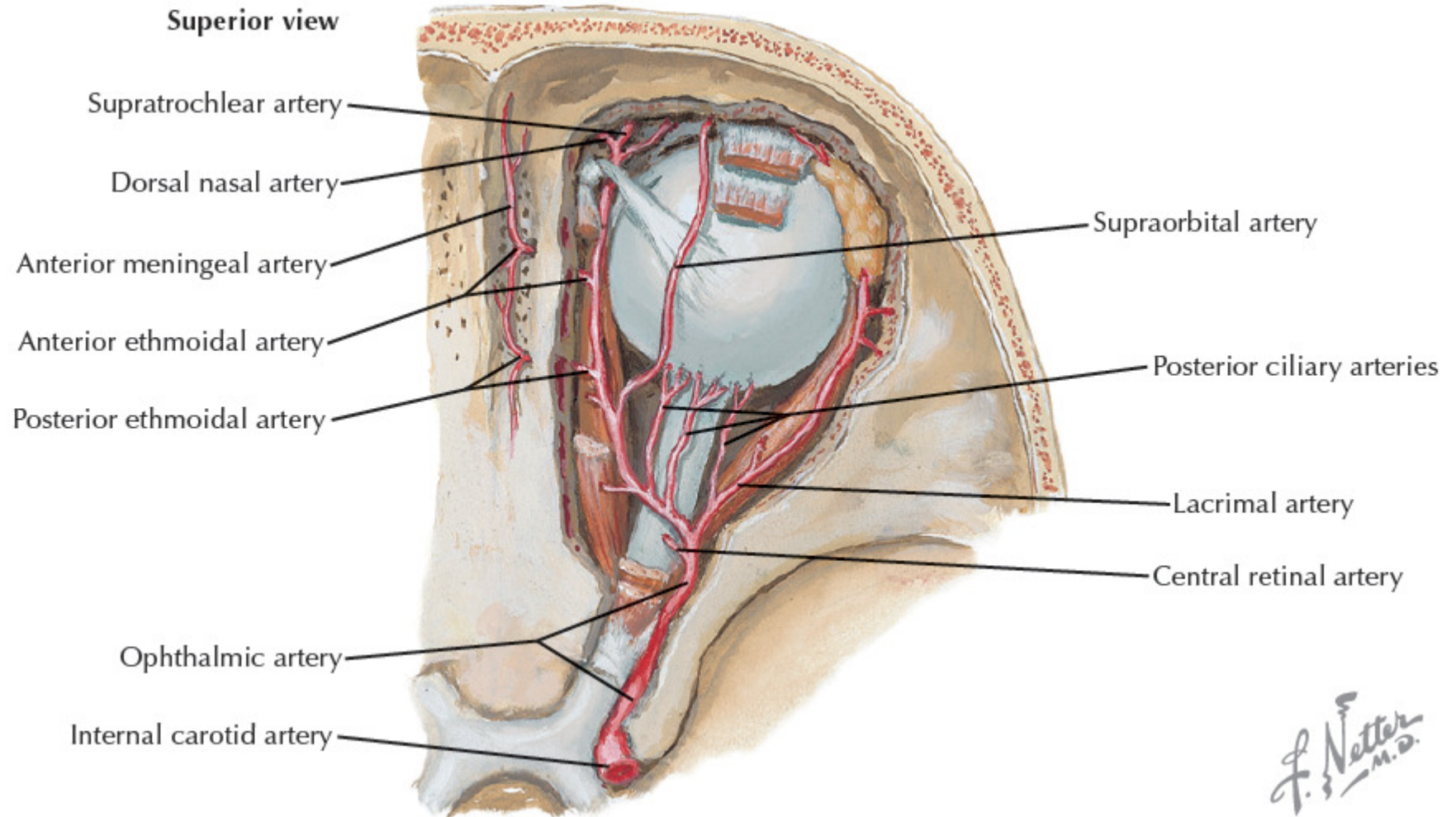
Internal Carotid Artery



- Passes deep to the parotid gland
- Through the carotid canal
- No branches in Neck



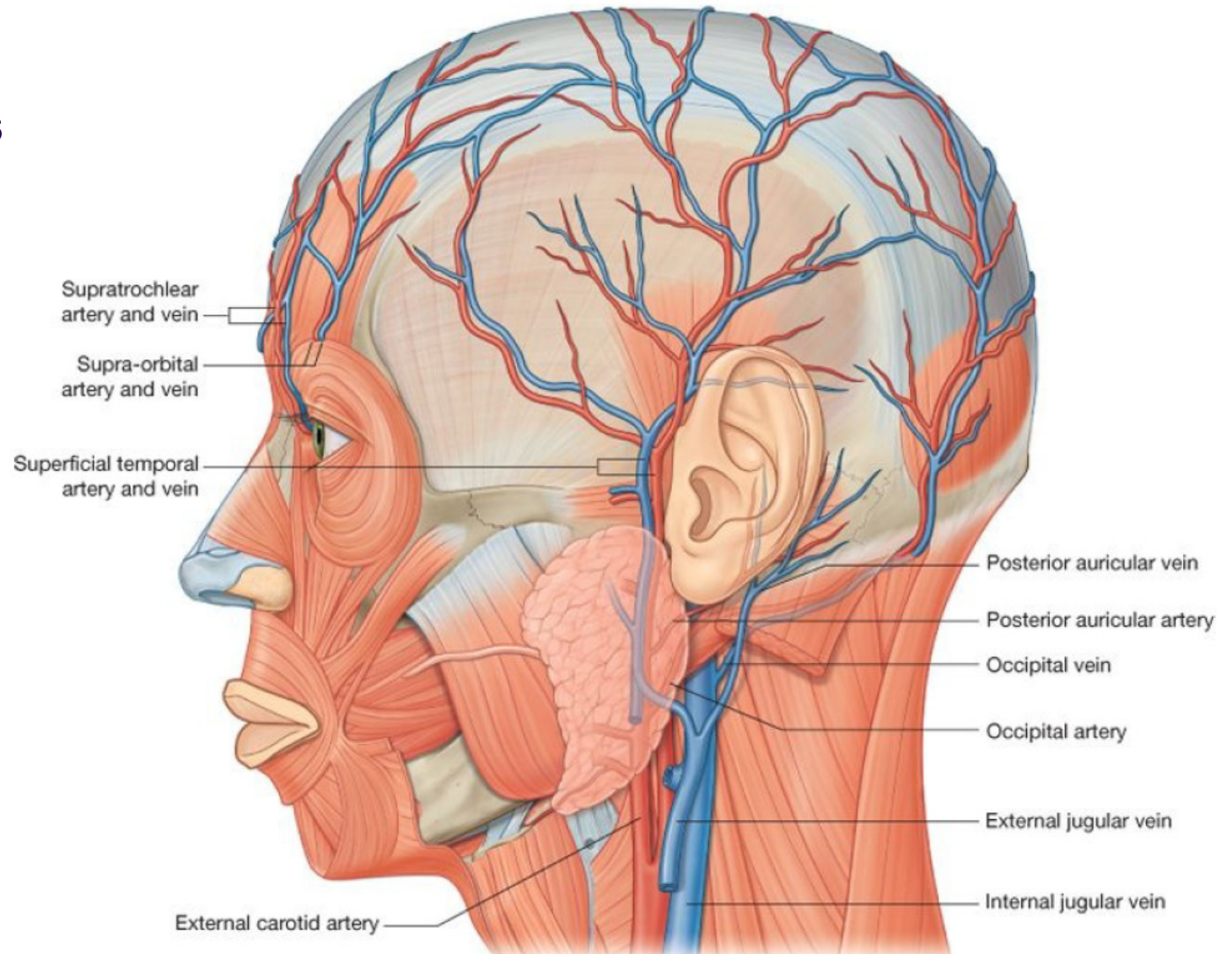
Ophthalmic artery



- **Supratrochlear artery:** (Ophthalmic artery)
- **Supraorbital artery :** (Ophthalmic artery)
- **Zygomatocotemporal artery :** (Ophthalmic artery)

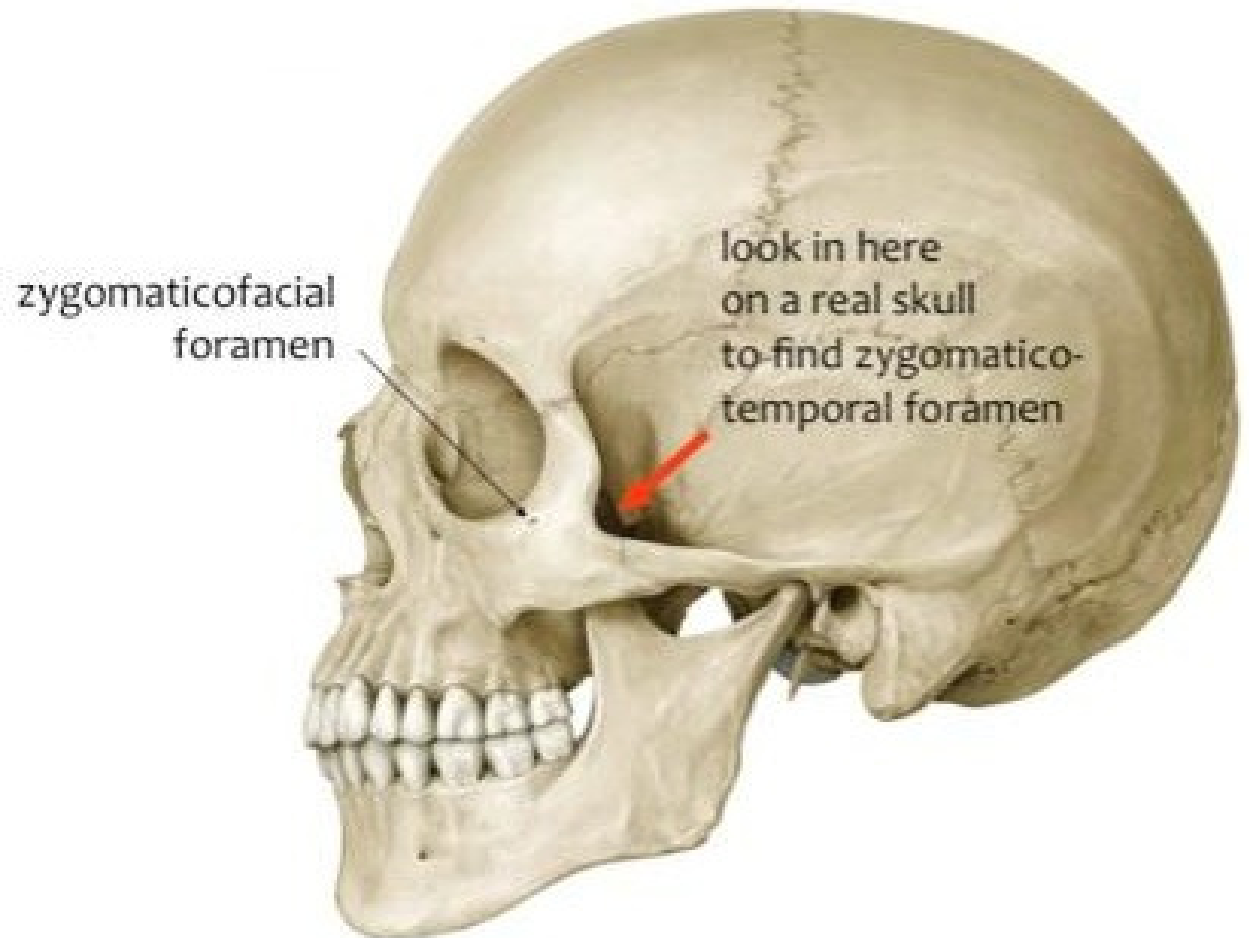
Ophthalmic artery branches

- Supratrochlear artery
- Supraorbital artery
- Anterior and superior aspects of the scalp
- Supply as far as the vertex

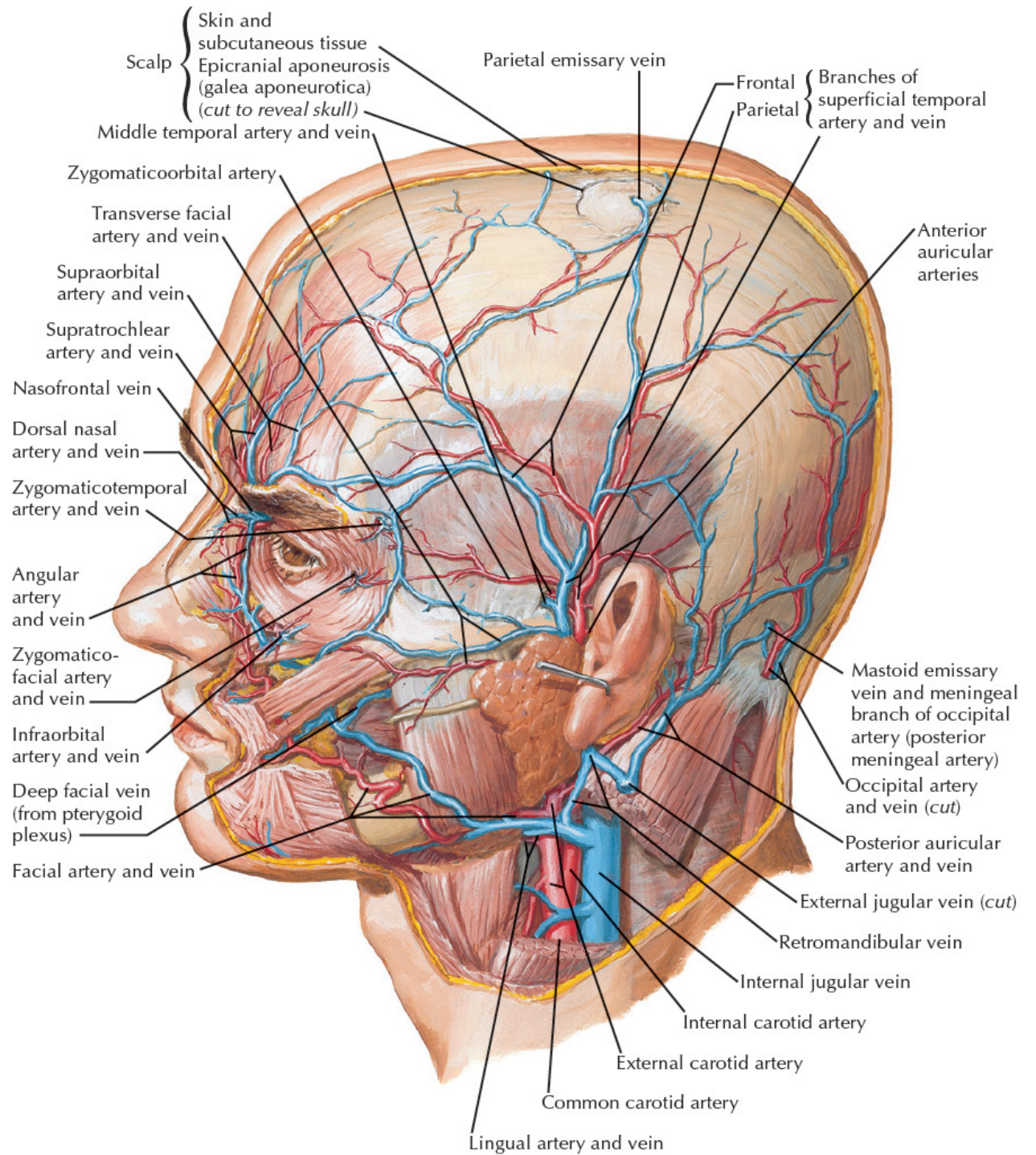


Ophthalmic artery branches

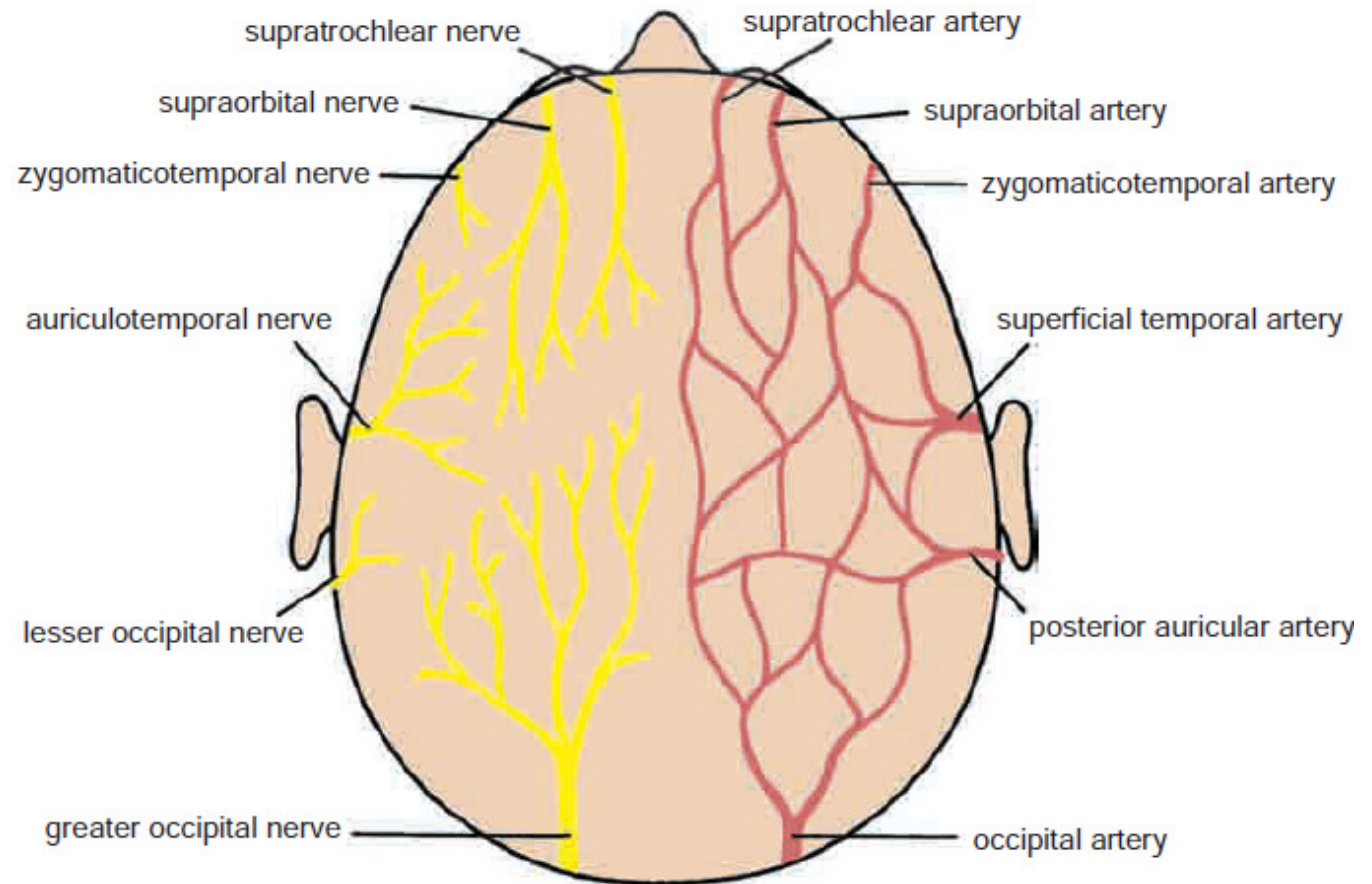
- Zygomaticotemporal Artery: from lacrimal artery
- Through: Zygomaticotemporal foramen: Near the center of the temporal surface of the zygomatic bone
- Supplies area over temporal region



Ophthalmic artery branches



Arterial Supply of the Scalp

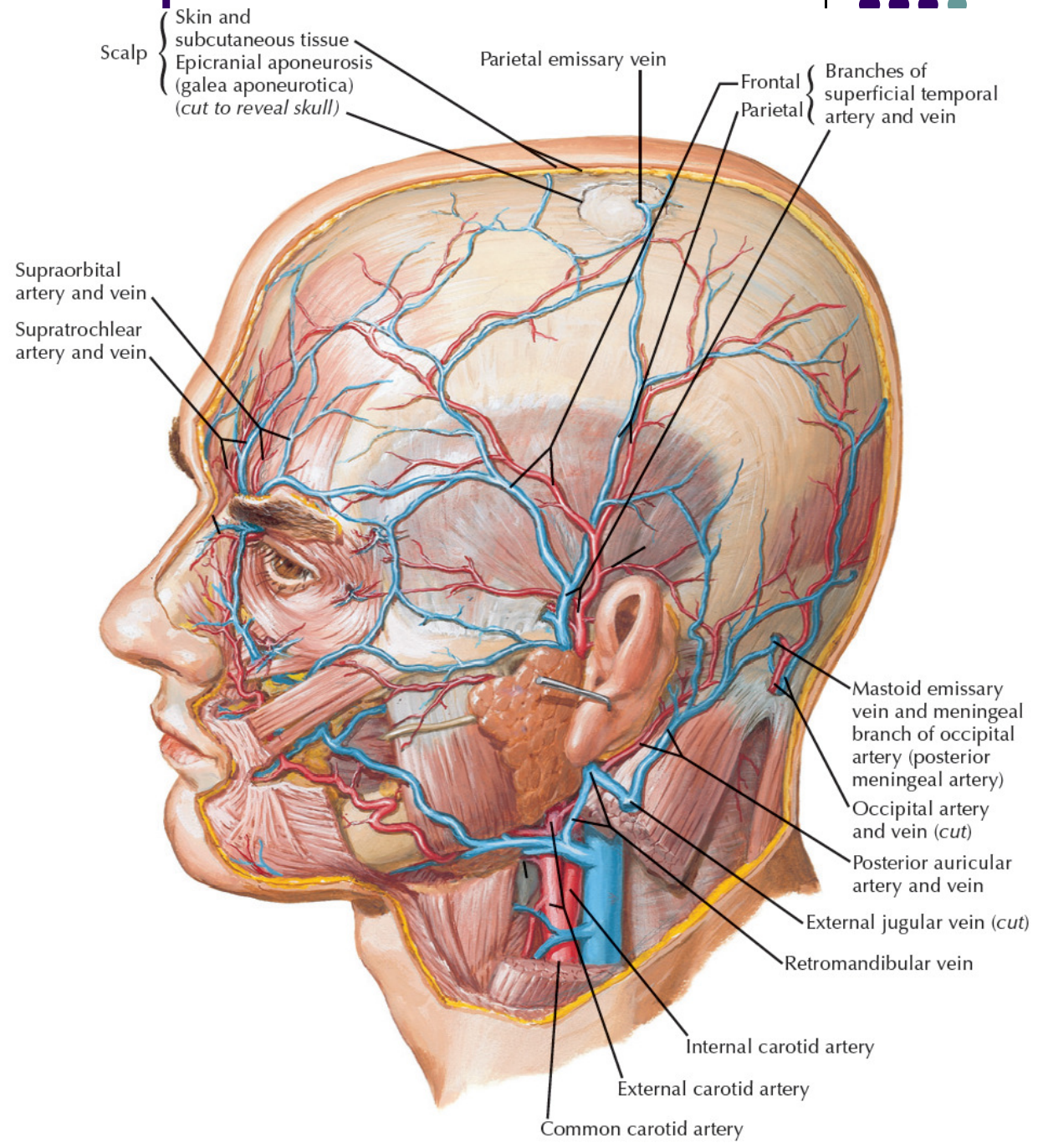


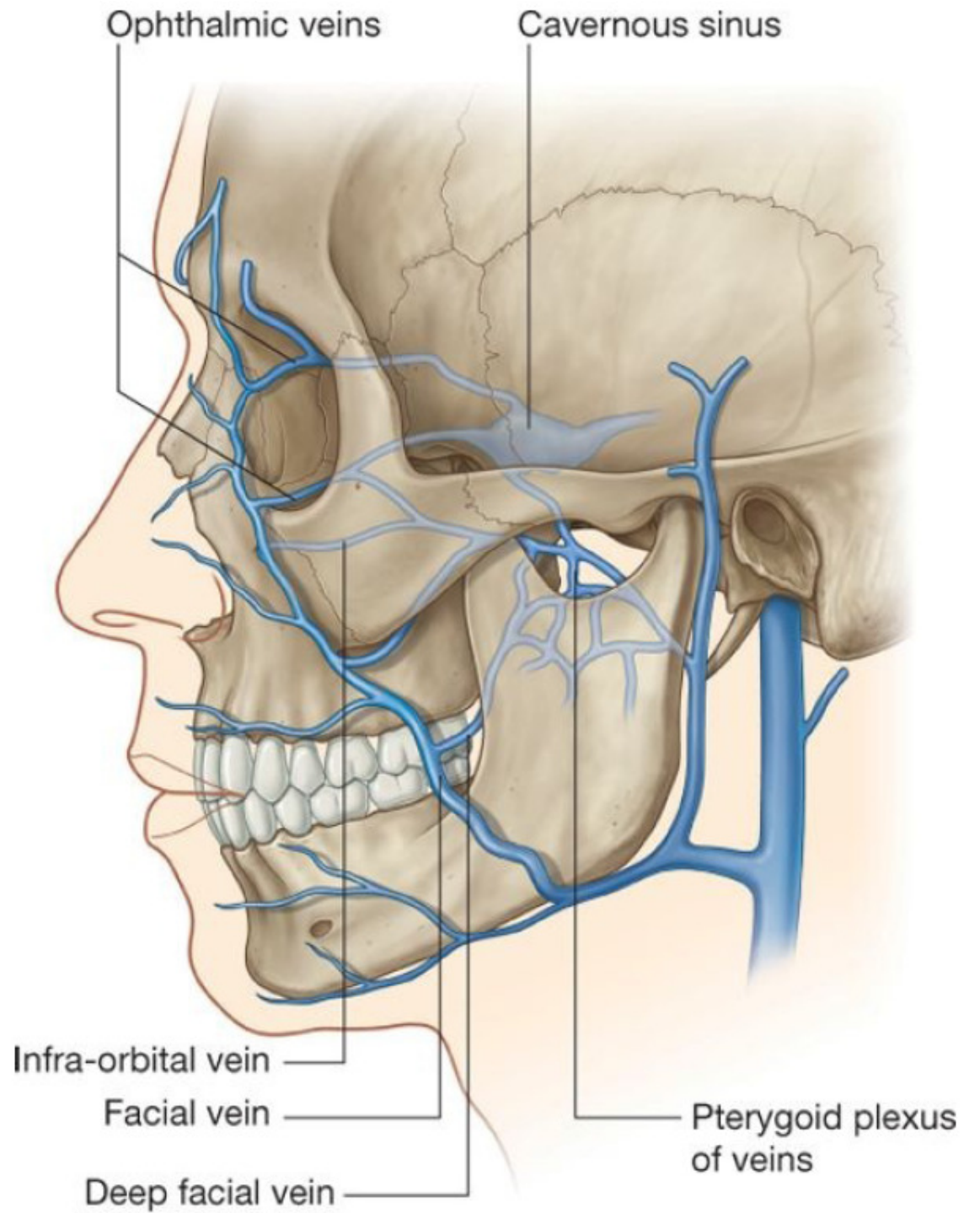
- **Supratrochlear artery:** (Ophthalmic artery)
- **Supraorbital artery :** (Ophthalmic artery)
- **Zygomaticotemporal artery :** (Lacrimal from Ophthalmic artery)
- **Superficial temporal artery** (external carotid artery)
- **Posterior auricular artery:** (external carotid artery)
- **Occipital artery :** (external carotid artery)

Venous drainage of the Scalp



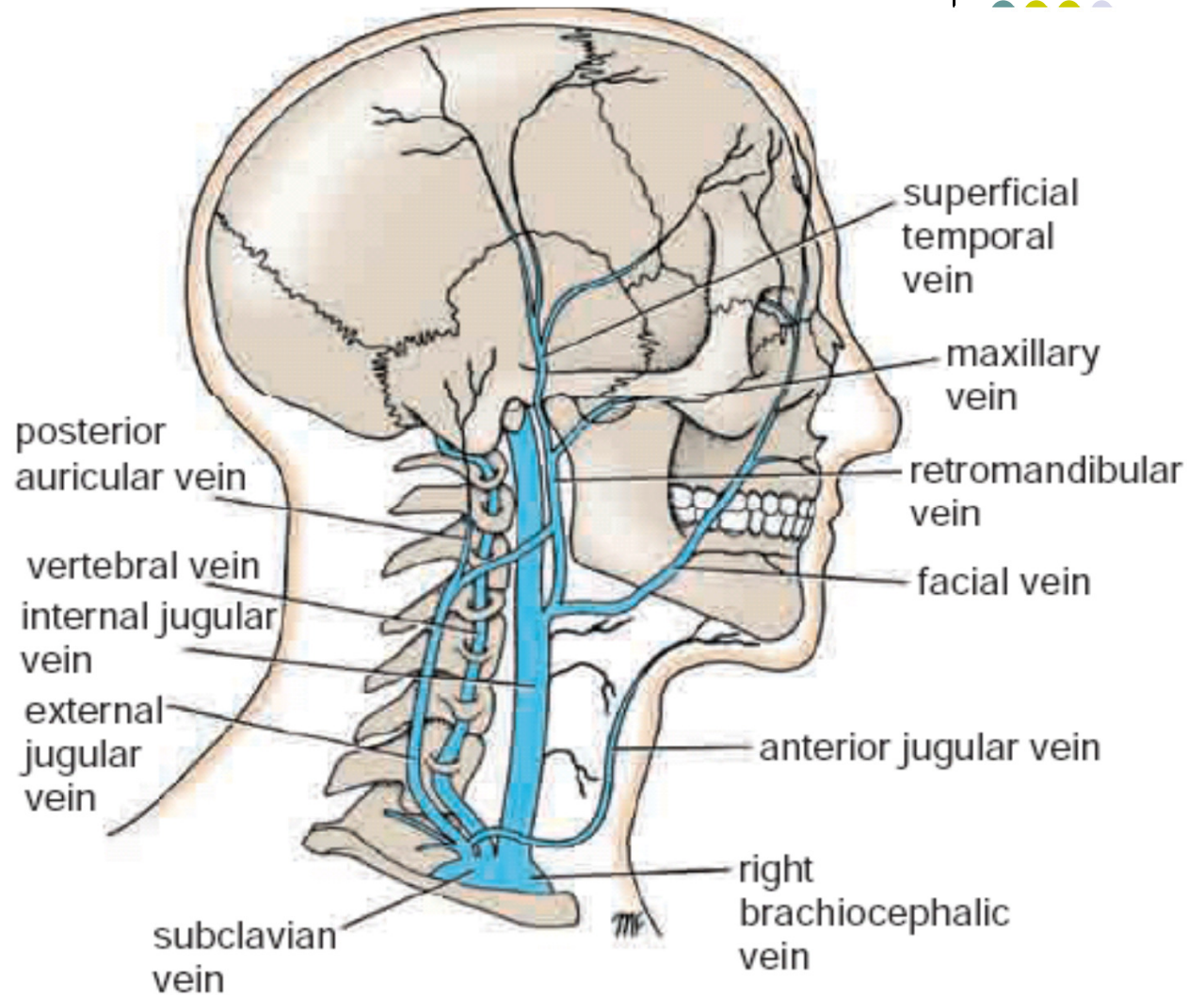
- **Supraorbital and Supratrochlear veins**
- communicate with the ophthalmic veins in the orbit
- Form the facial vein (medial angle of eye)





The facial vein

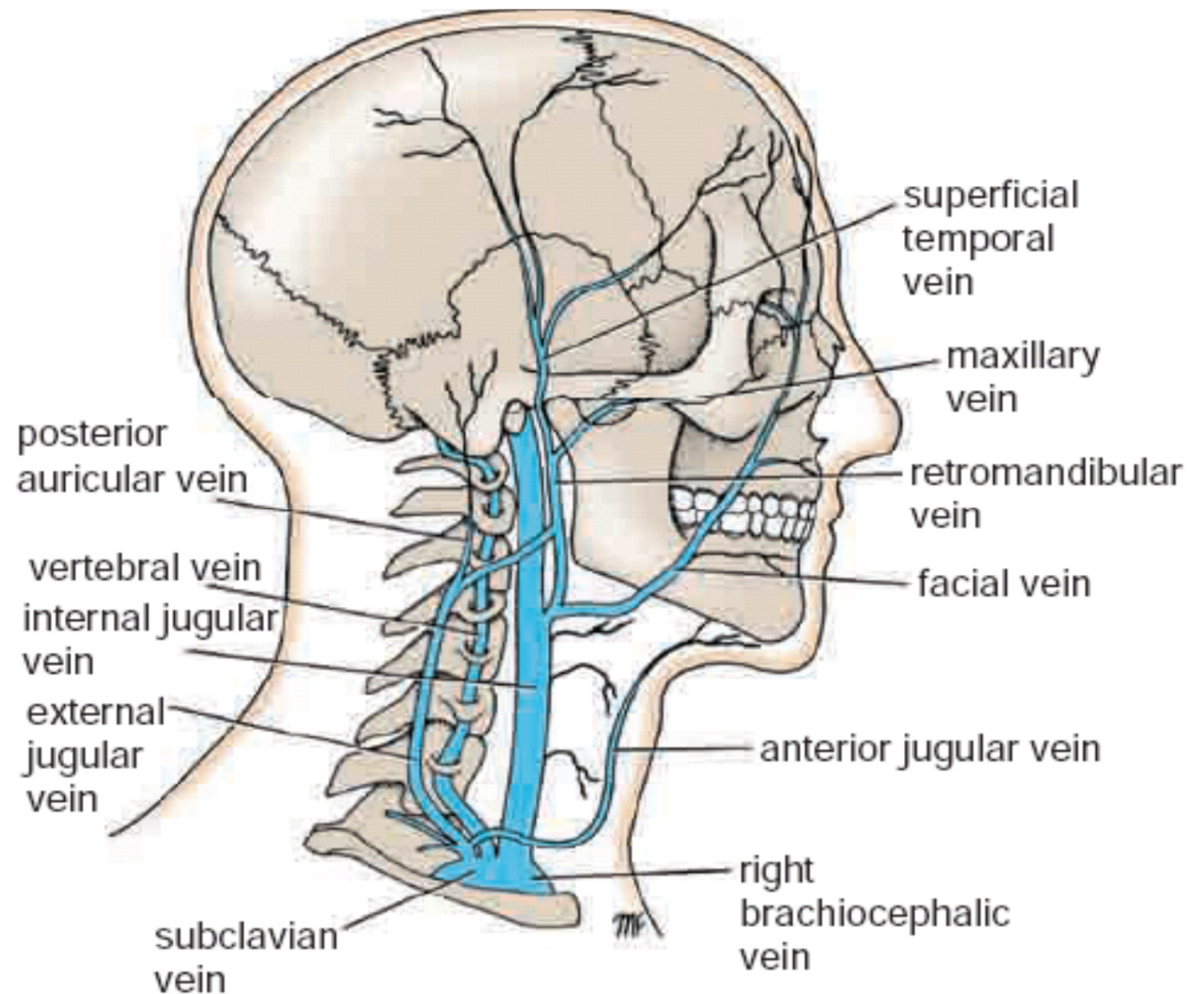
- join the anterior division of the retromandibular vein, and drains into the internal jugular vein.
- Retromandibular vein: Union of superficial temporal and the maxillary veins



➤ **Superficial Temporal Vein**

- Formed on the side of the scalp
- Enters the parotid gland, where it joins the maxillary vein to form the retromandibular vein.

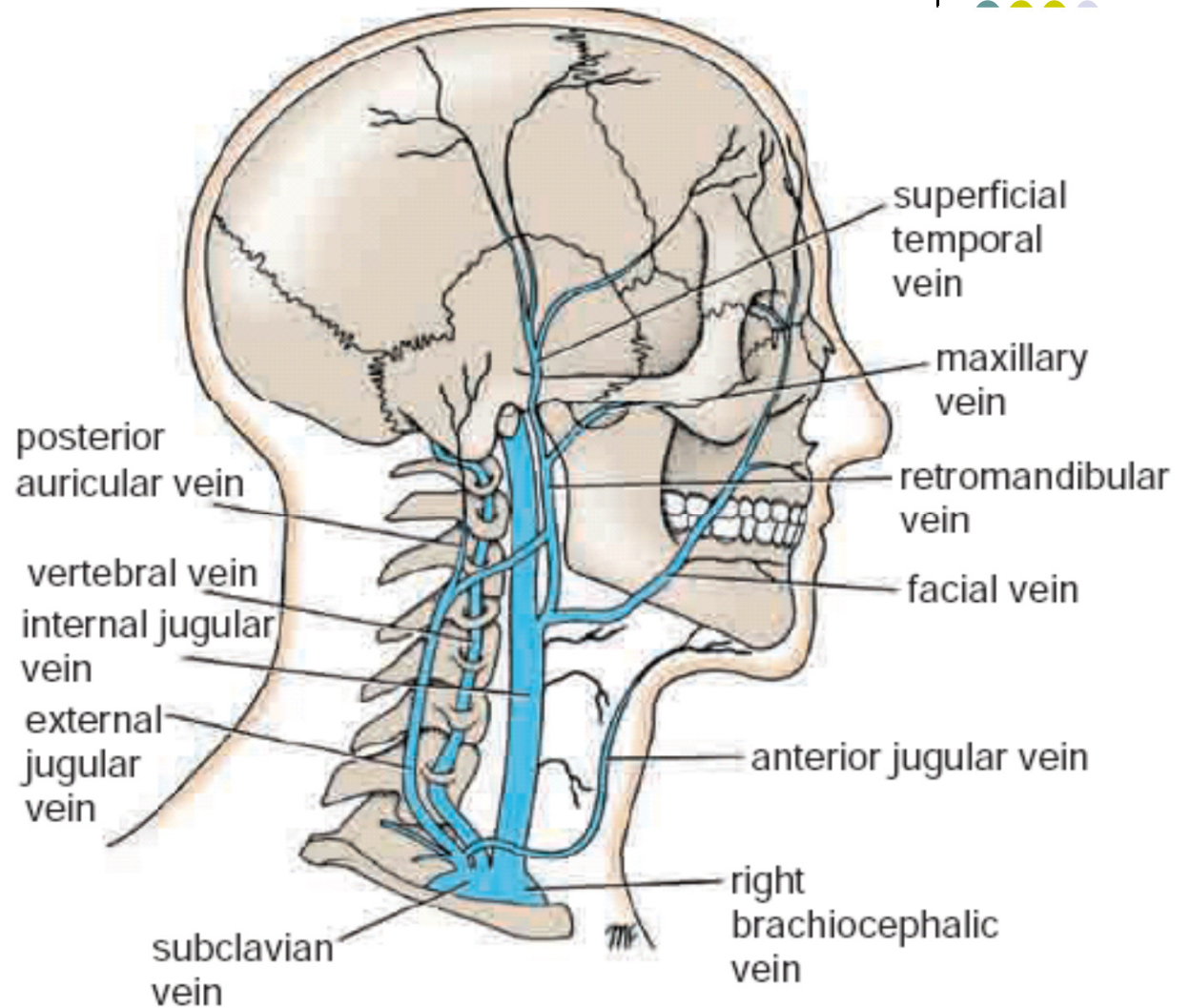
- **Posterior auricular vein:** joins the posterior branch of retromandibular vein to form the external jugular vein.



The retromandibular vein

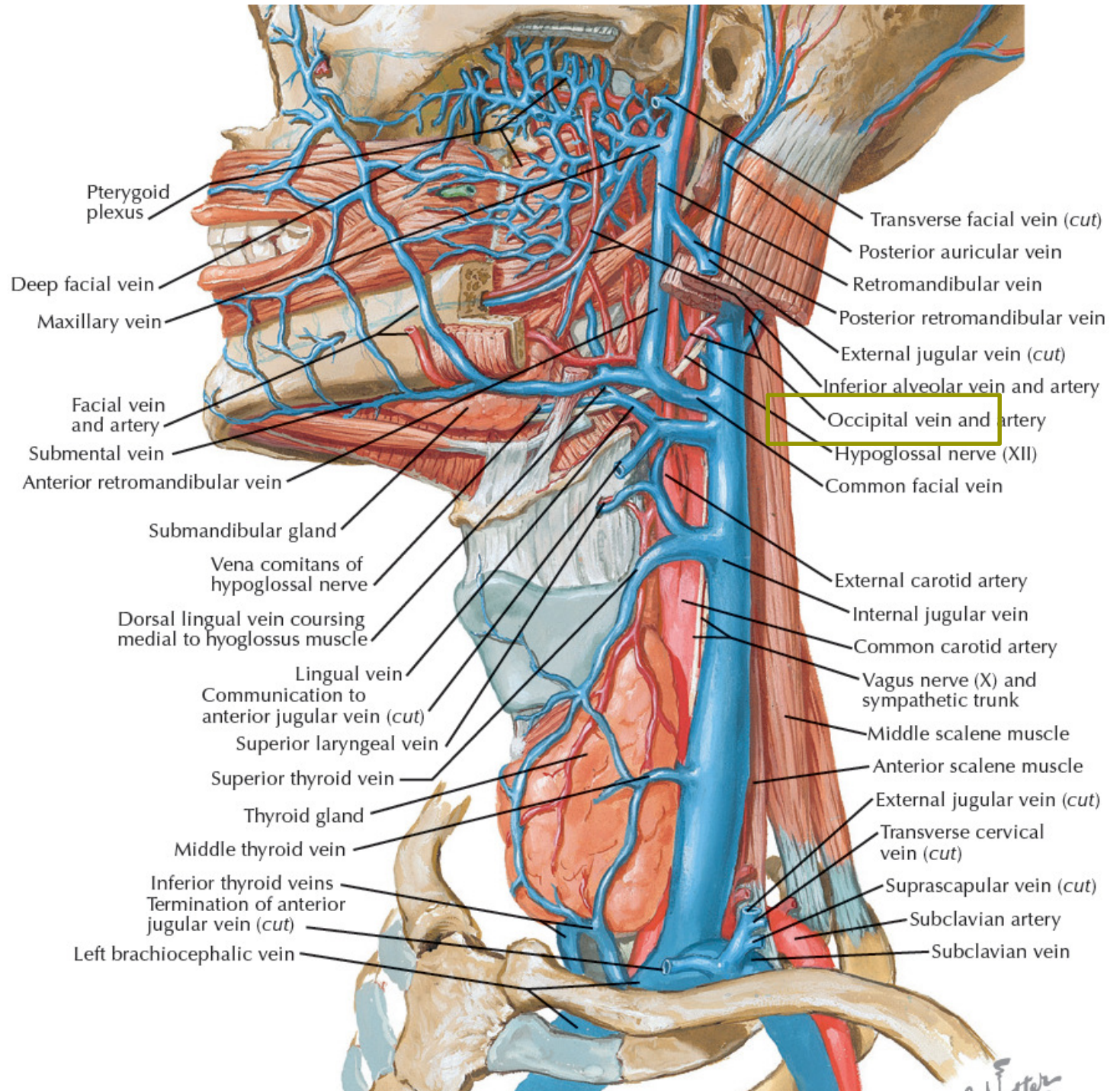


- Formed by the union of the superficial temporal and the maxillary veins
- On leaving the parotid salivary gland, it divides into
 - **Anterior branch:** joins the facial vein,
 - **Posterior branch:** joins the posterior auricular vein to form the external jugular vein.



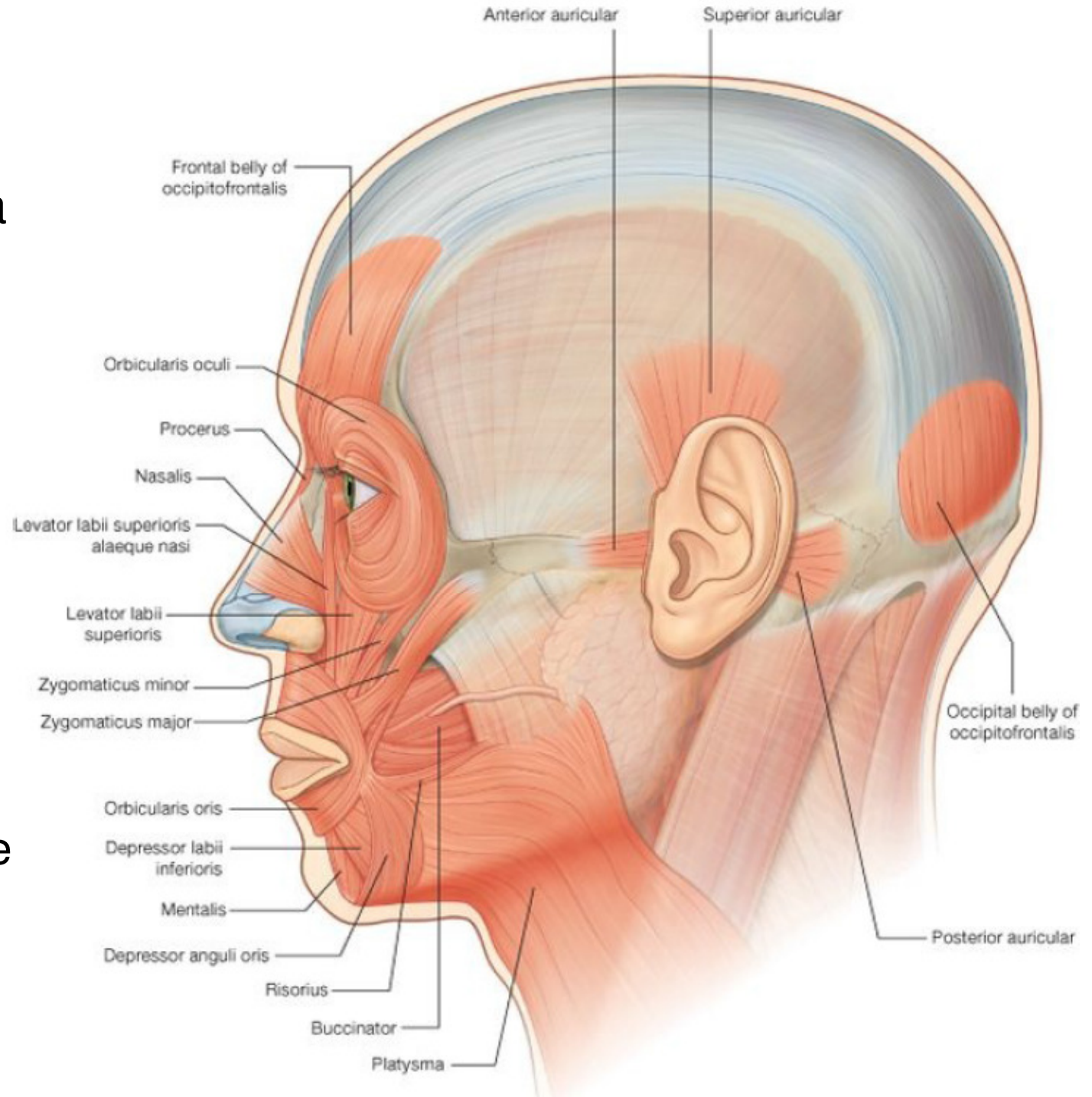
Occipital vein

- Posterior aspect of the scalp
- Plexus of veins in posterior triangle
- Internal jugular vein

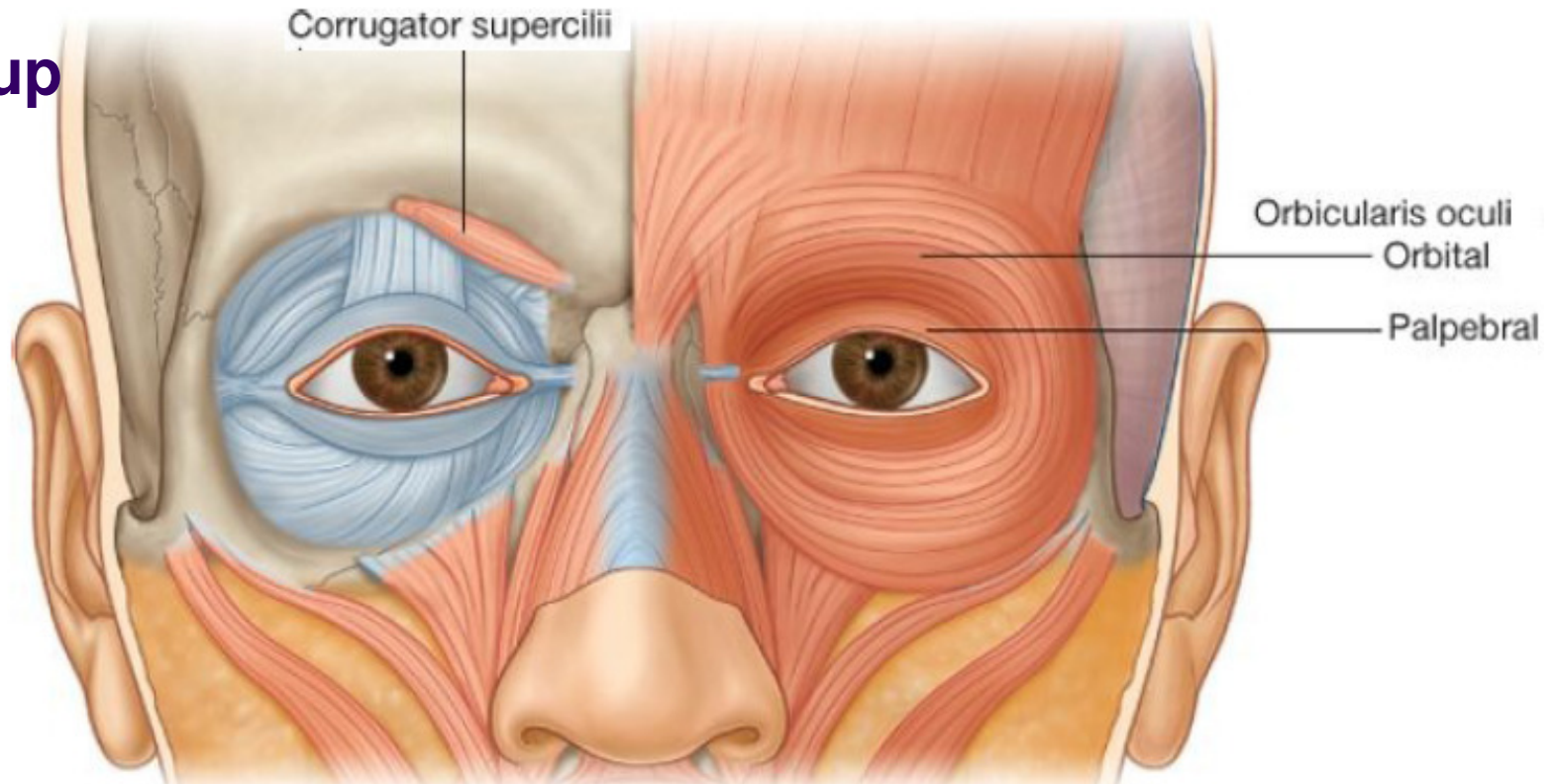


Face

- Skin
- No deep fascia
- **Muscles** embedded in the superficial fascia
- Origin: facial bones
- Insertion: Skin
- localized around orifices
- NS: Facial nerve



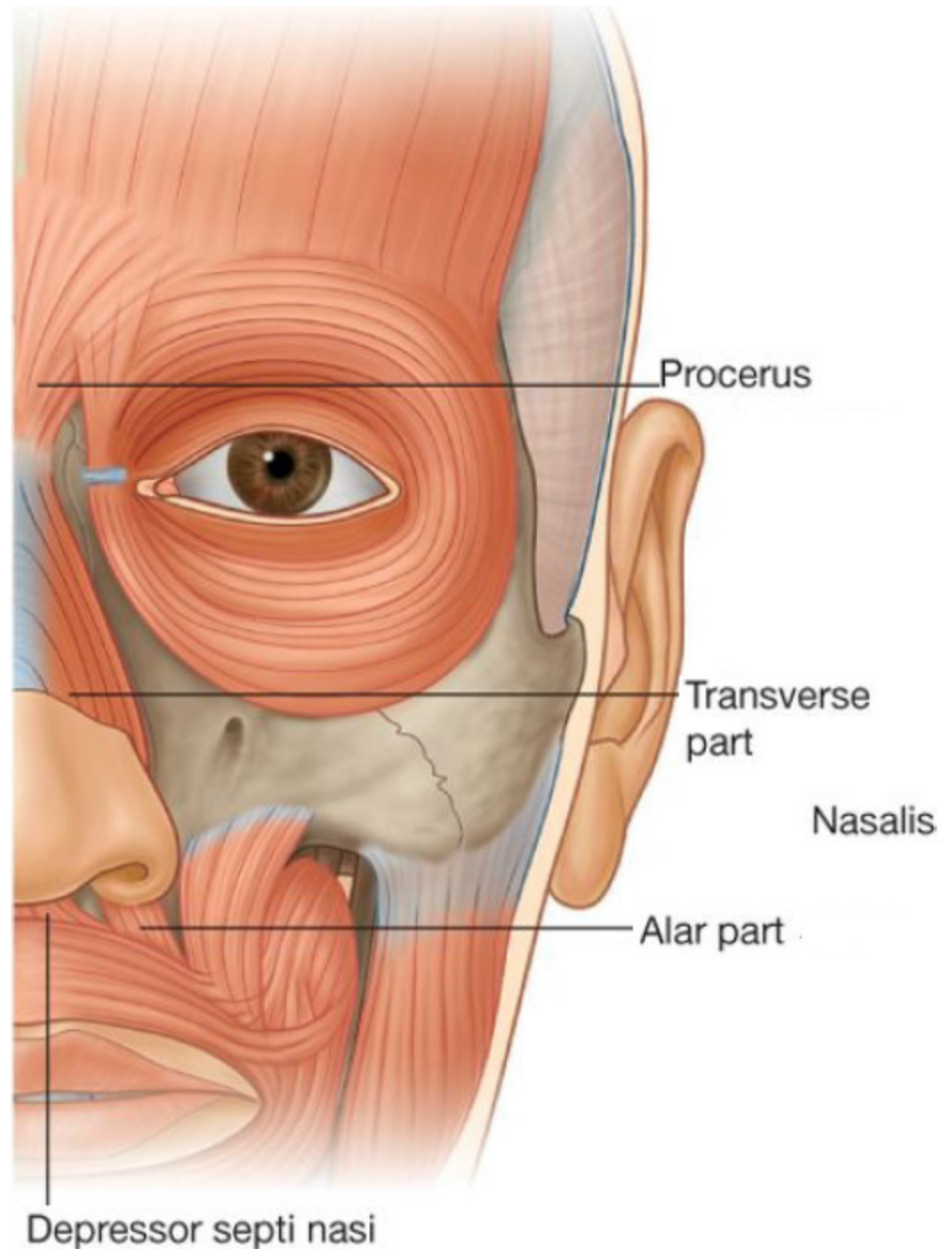
Orbital group



- **Orbicularis oculi:**
 - **Orbital part:** Closes the eyelids forcefully
 - **Palpebral part:** Closes the eyelids gently
- **Corrugator supercilii:** Draws the eyebrows medially and downward, Vertical wrinkles of forehead

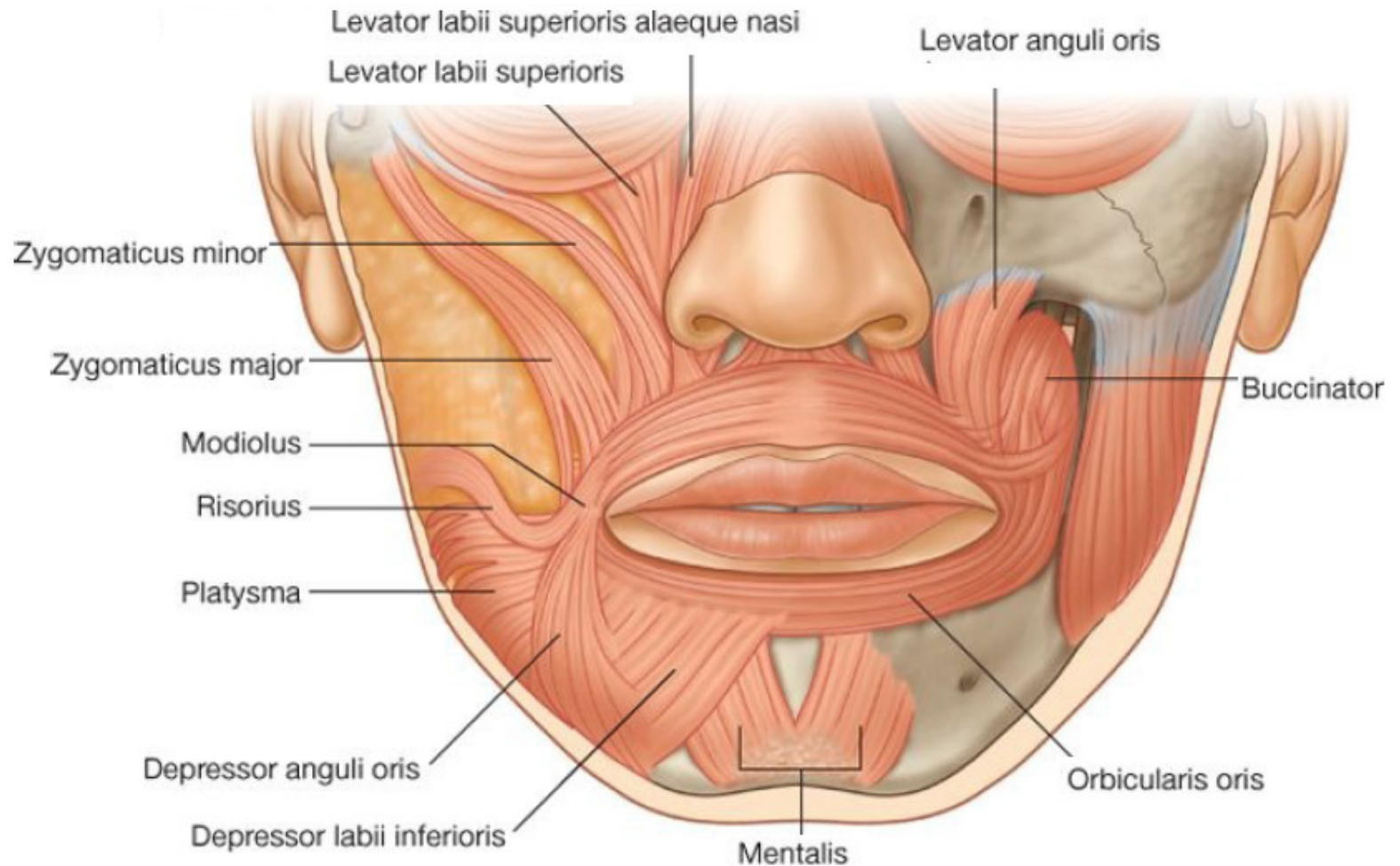
Nasal group

- **Nasalis:**
 - **Transverse part** (compressor naris): compresses mobile nasal
 - **Alar part** (dilator naris): Widens nasal aperture
- **Procerus:** Draws down medial angle of eyebrows producing transverse wrinkles over bridge of nose
- **Depressor septi nasi:** Pulls nose inferiorly



Oral group

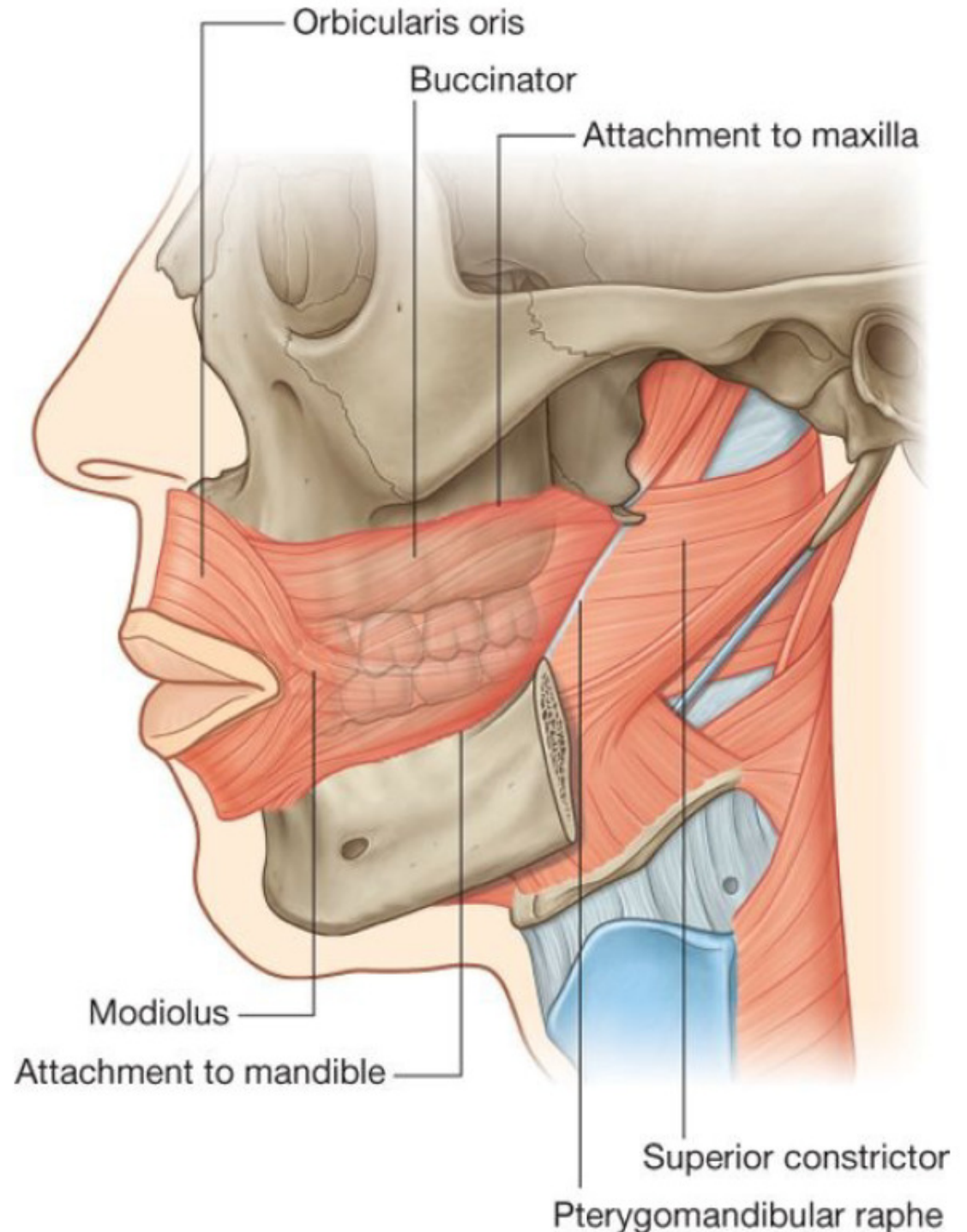
- **Modiolus:** button-shaped connective tissue at the interface between the muscles of the lips and cheeks



- **Orbicularis oris:**
 - **Origin:** Maxilla, mandible, and skin
 - **Insertion:** Encircles oral orifice
 - **Action:** Closes and protrudes lips

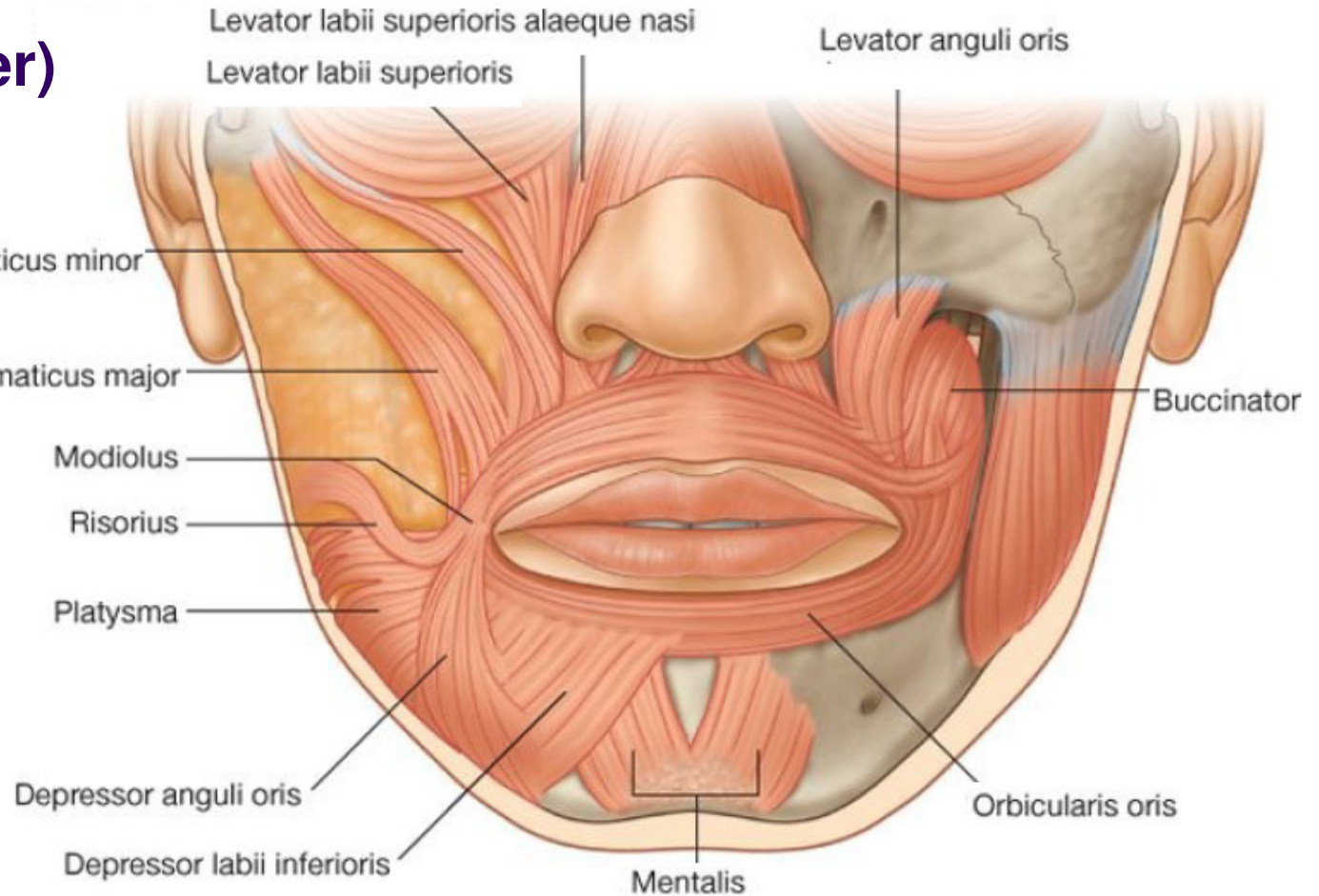
Buccinator muscle

- **Origin:**
pterygomandibular raphe, from the alveolar part of the mandible and alveolar process of the maxilla
- **Insertion:**
modiolus
- **Action:** holds the cheeks against the alveolar arches and keeps food between the teeth when chewing



Oral group: (Upper)

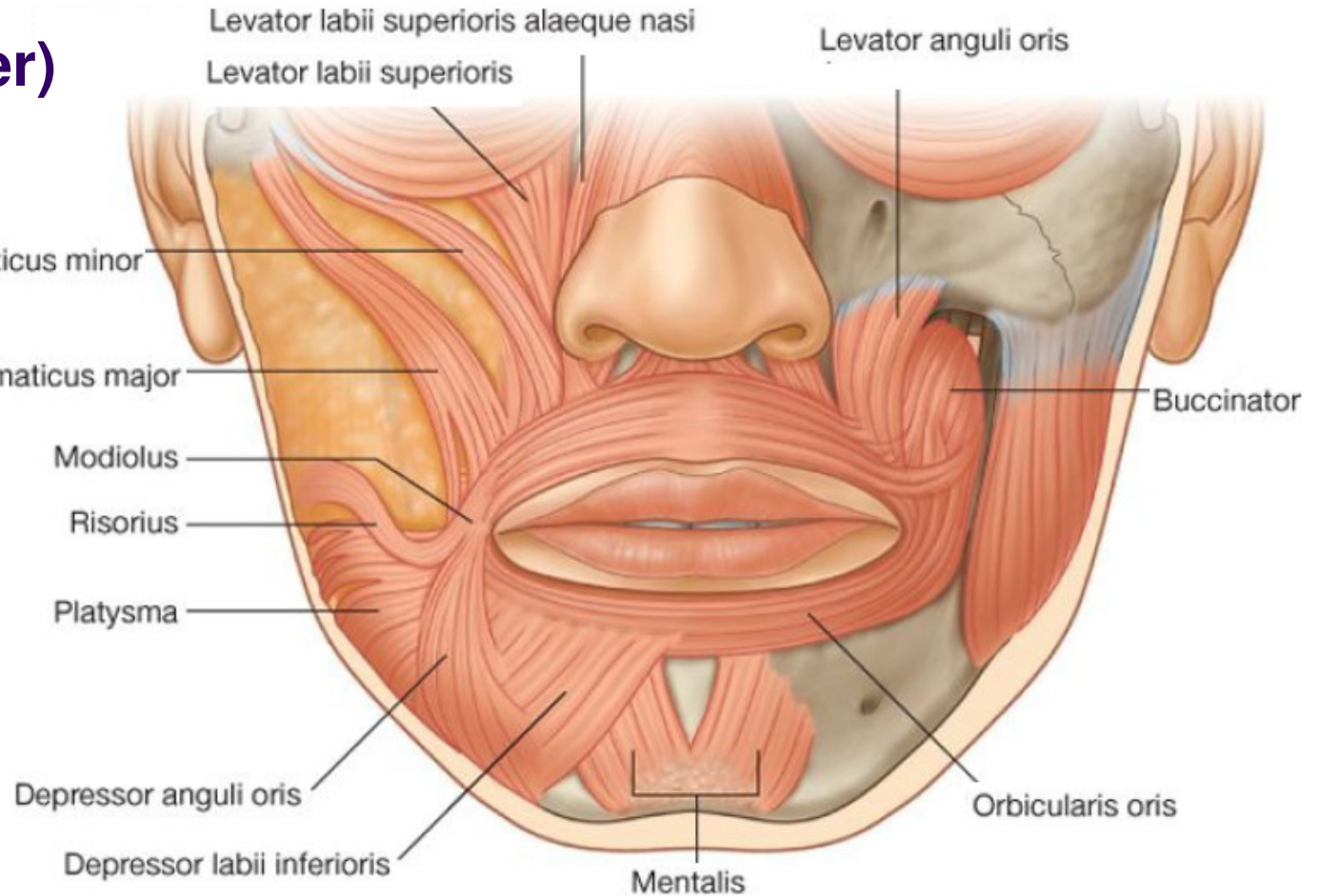
- **Risorius:**
- **Zygomaticus major**
- **Zygomaticus Minor**
- **Levator labii superioris**



- **Levator labii superioris alaeque nasi**
- **Levator anguli oris**

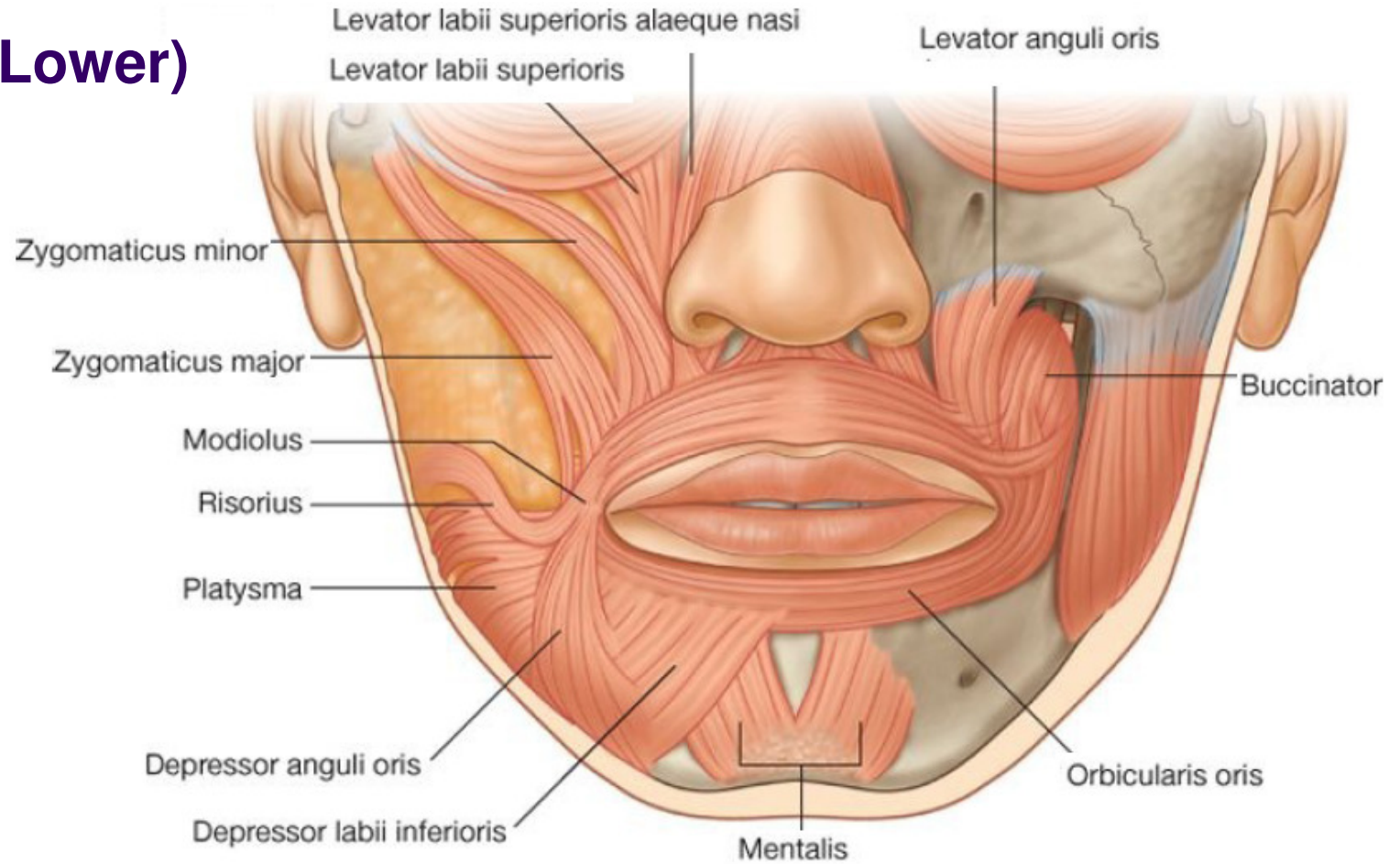
Oral group: (Upper)

- **Risorius:**
- **Zygomaticus major**
- **Zygomaticus Minor**
- **Levator labii superioris**



- **Levator labii superioris alaeque nasi**
- **Levator anguli oris**

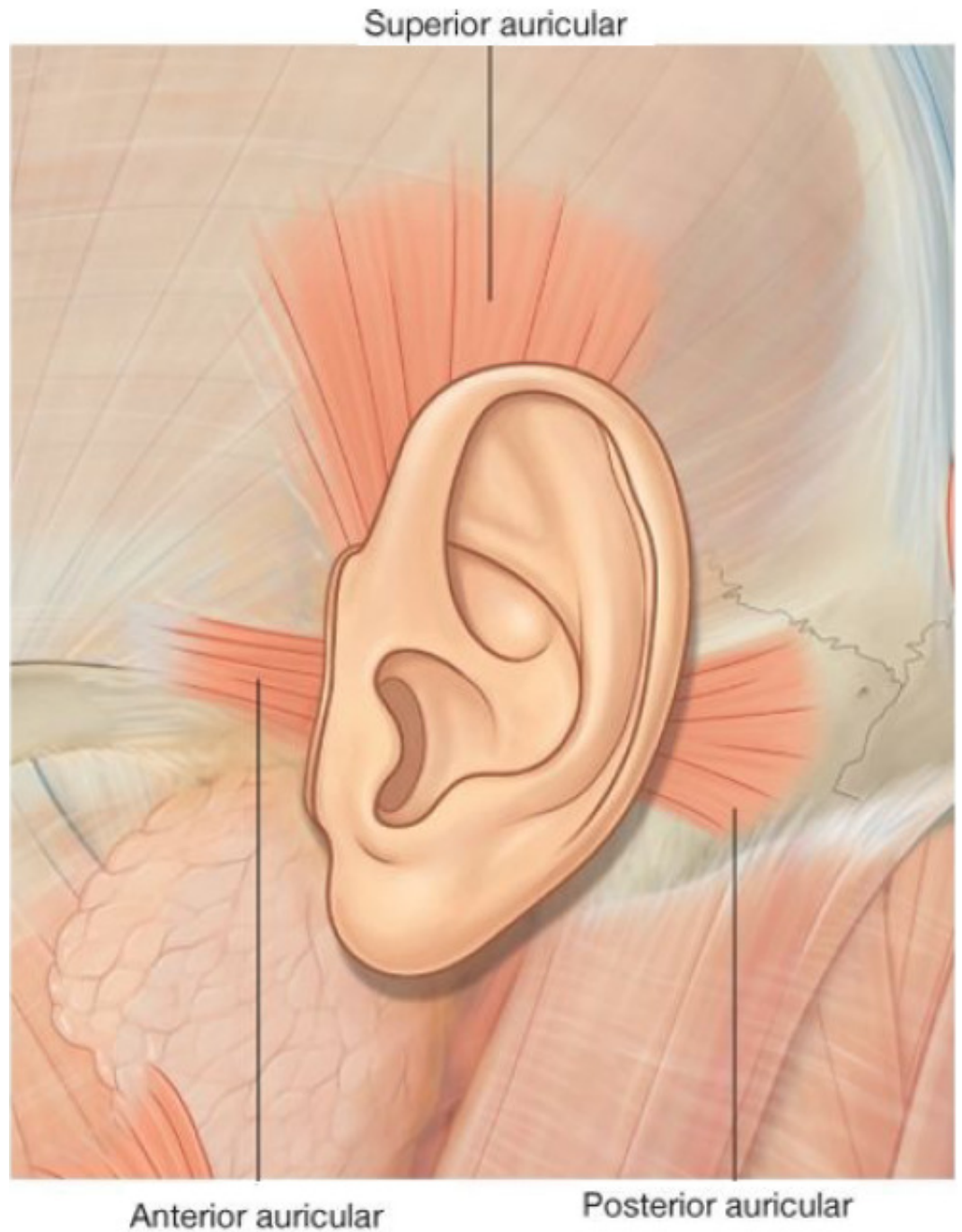
Oral group: (Lower)



- **Depressor anguli oris**
- **Depressor labii inferioris**
- **Mentalis**: raises and protrudes

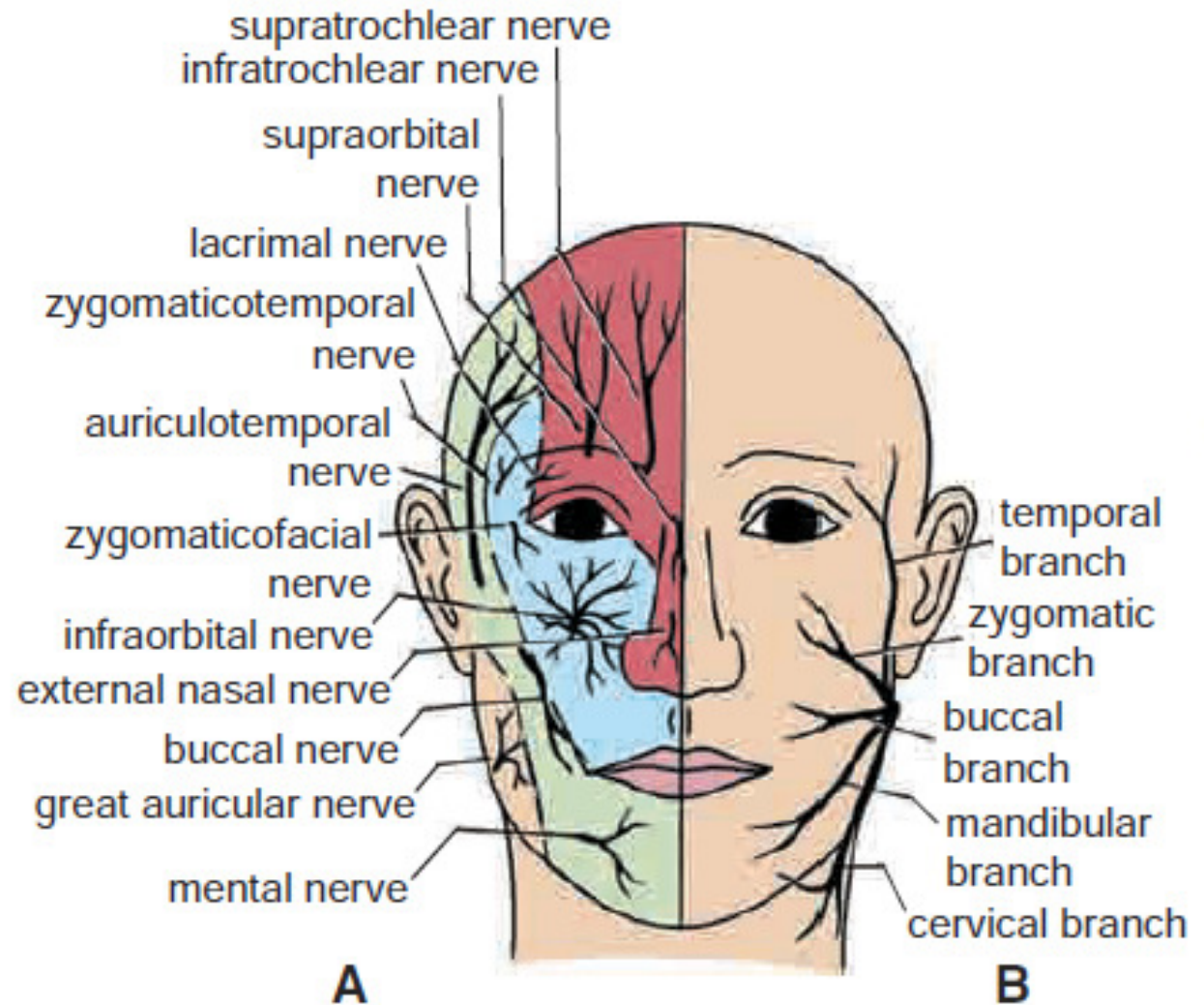
Auricular muscles

- Anterior auricular
- Superior auricular
- Posterior auricular



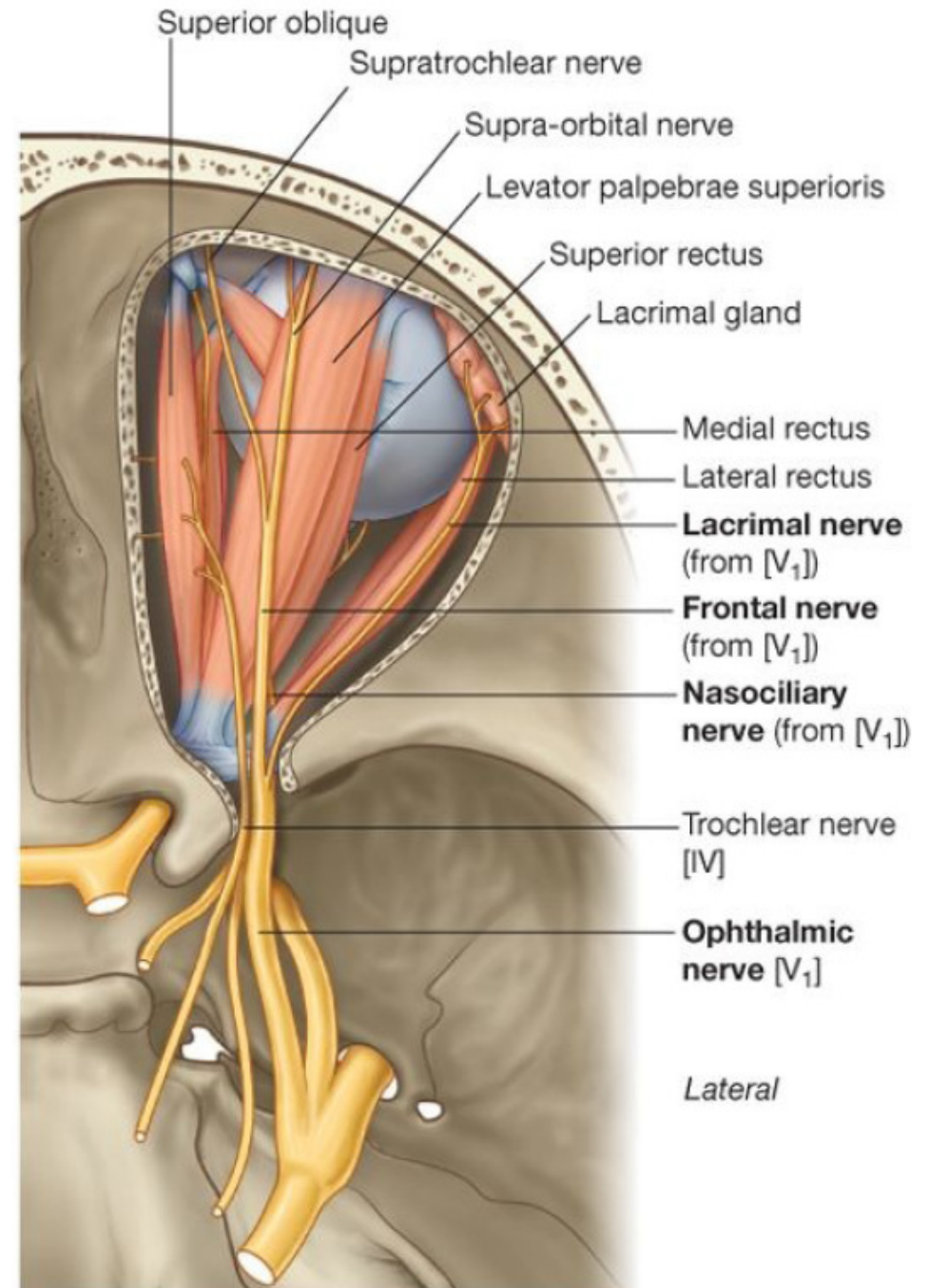
Sensory Nerve Supply of face

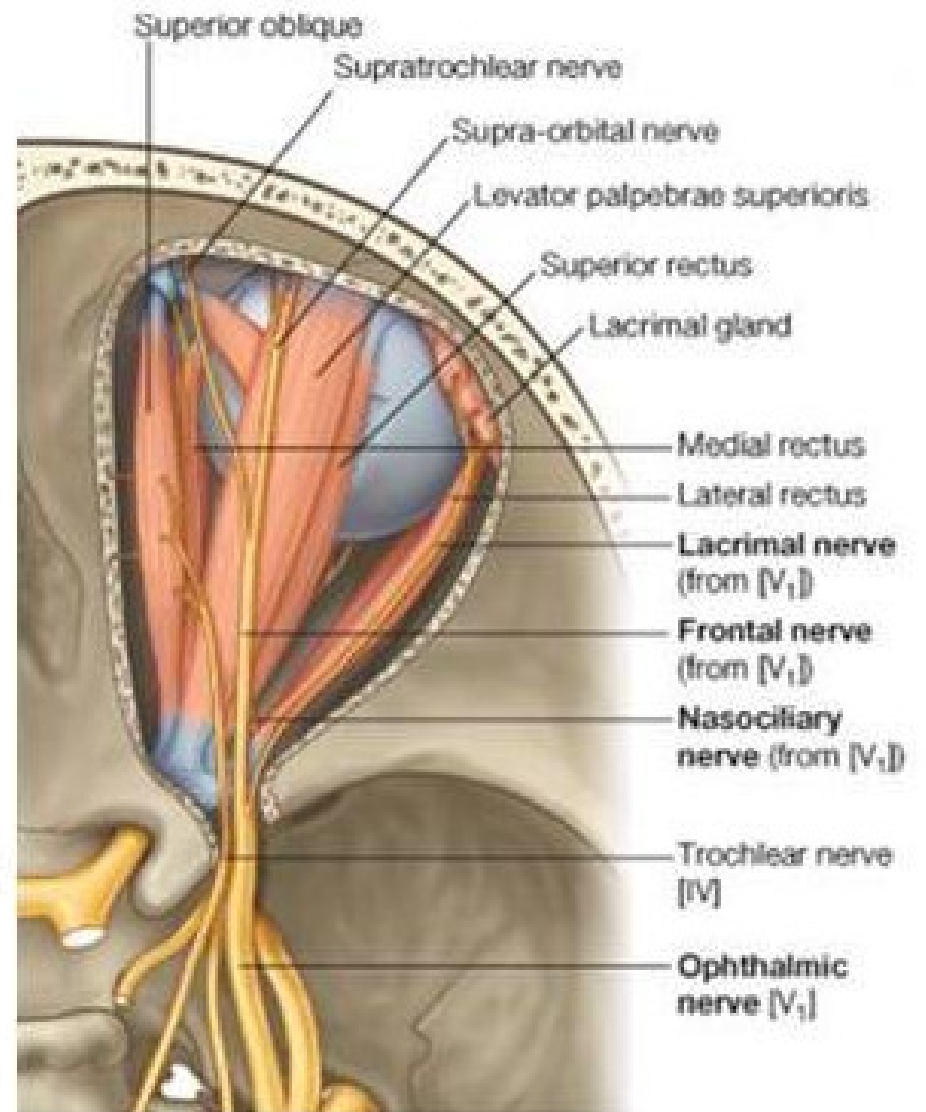
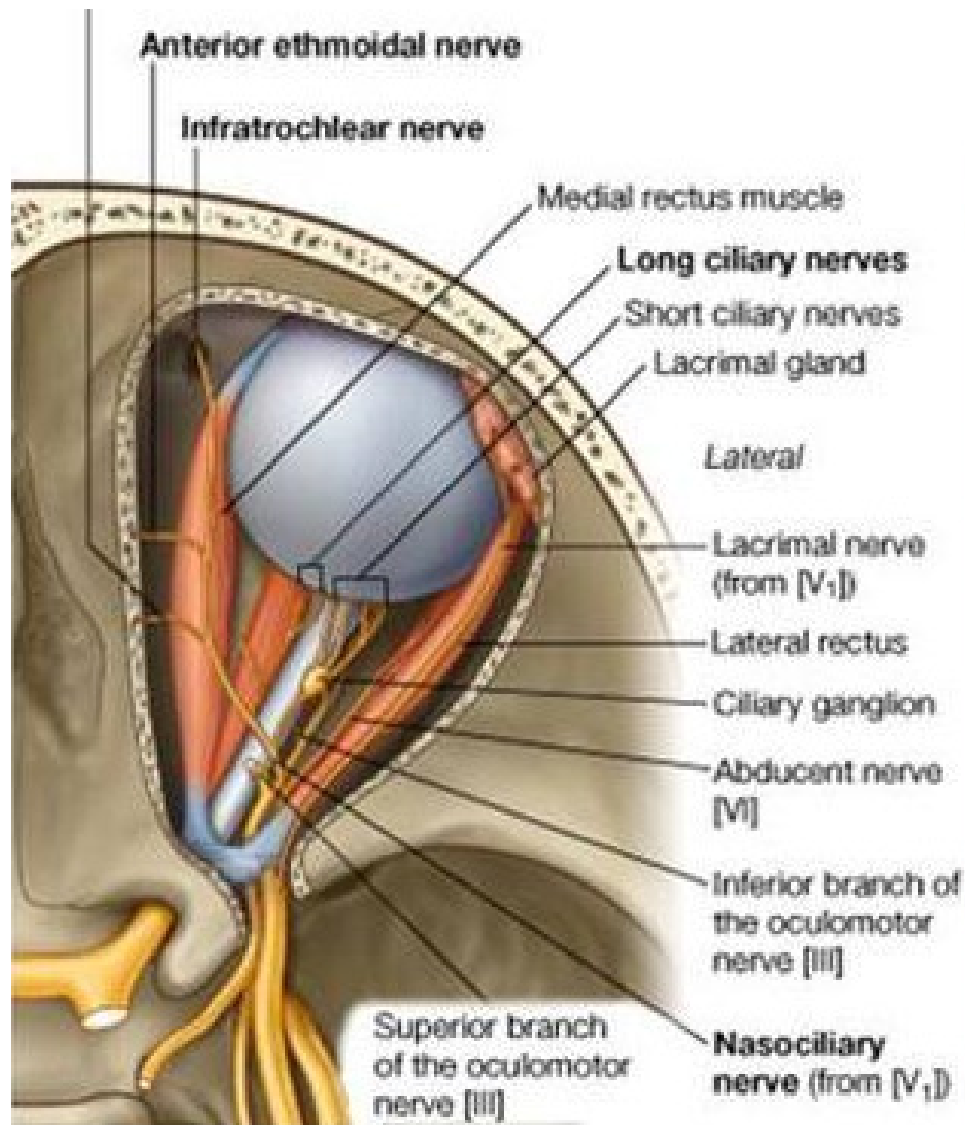
- **Trigeminal (V)**
 - **Ophthalmic**
 - **Maxillary**
 - **Mandibular**
- **Exception:**
 - **Great auricular:** over the angle of the mandible and the parotid gland



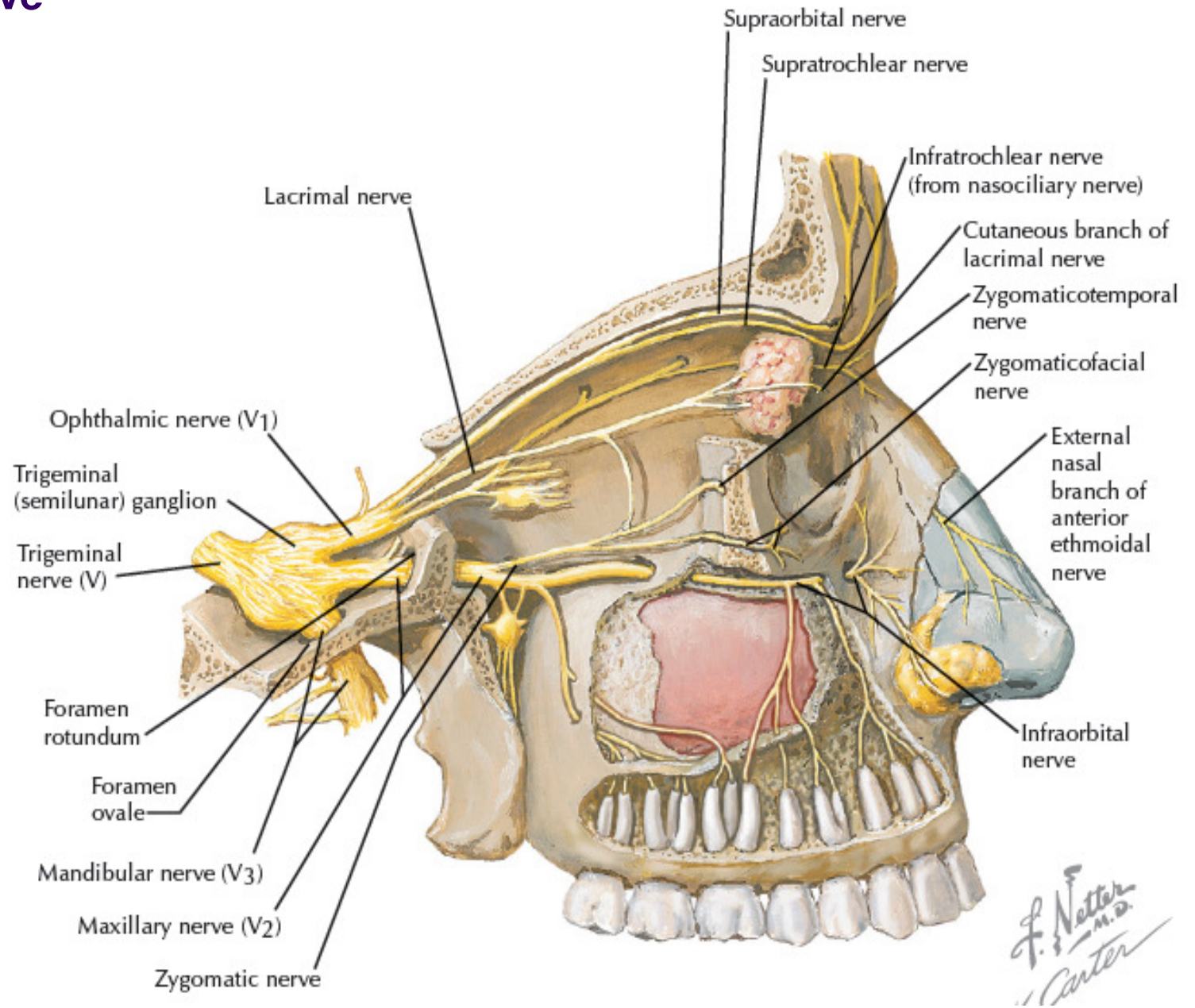
Ophthalmic Nerve

- **Supratrochlear nerve**
 - **From Frontal N**
- **Supraorbital nerve**
 - **From Frontal N**
- **Infratrochlear nerve**
 - **Branch from Nasociliary N**
- **Lacrimal nerve**
- **External nasal nerve**
 - **From Anterior ethmoidal**
 - **From Nasociliary N**

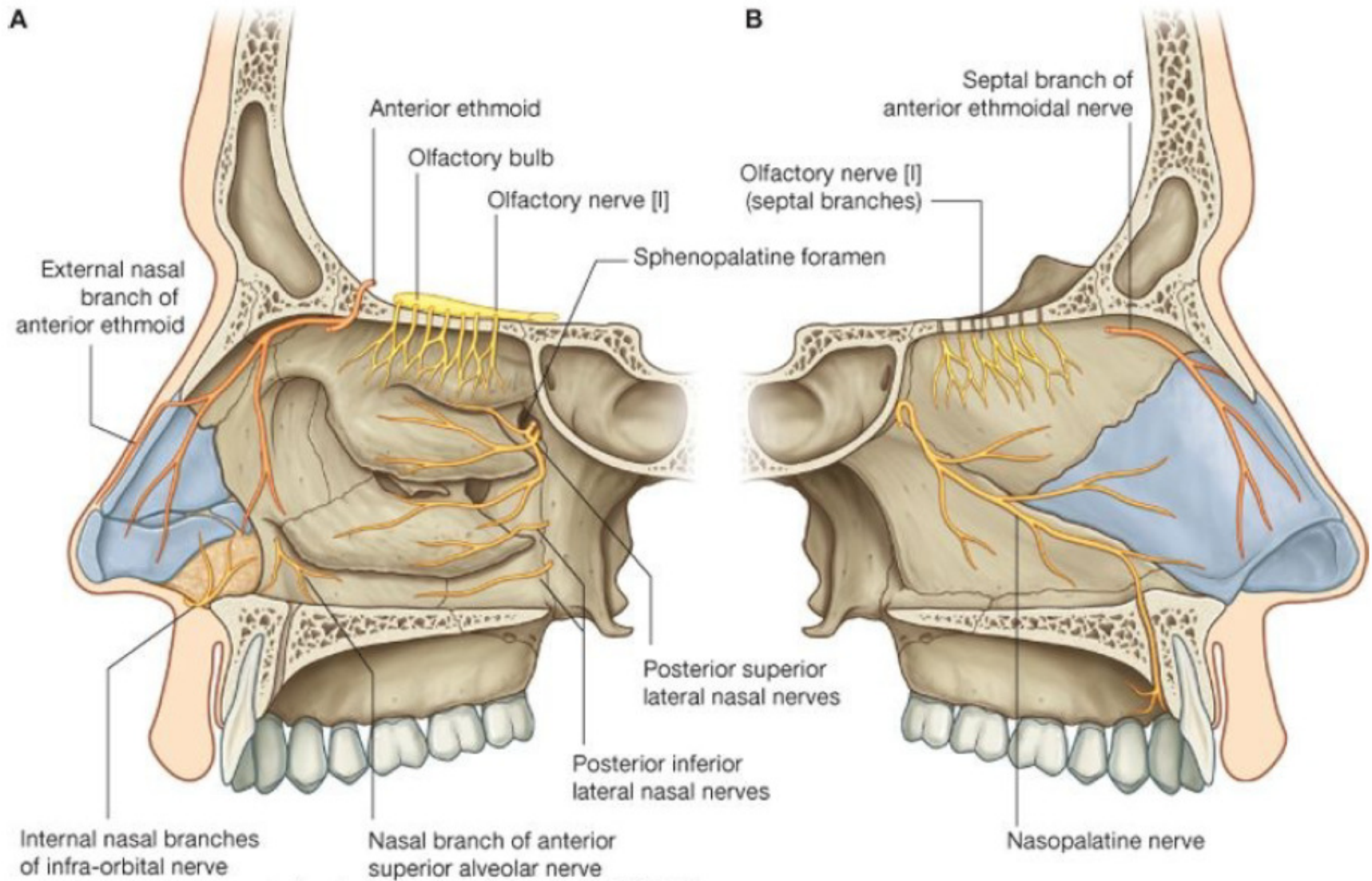




Ophthalmic Nerve

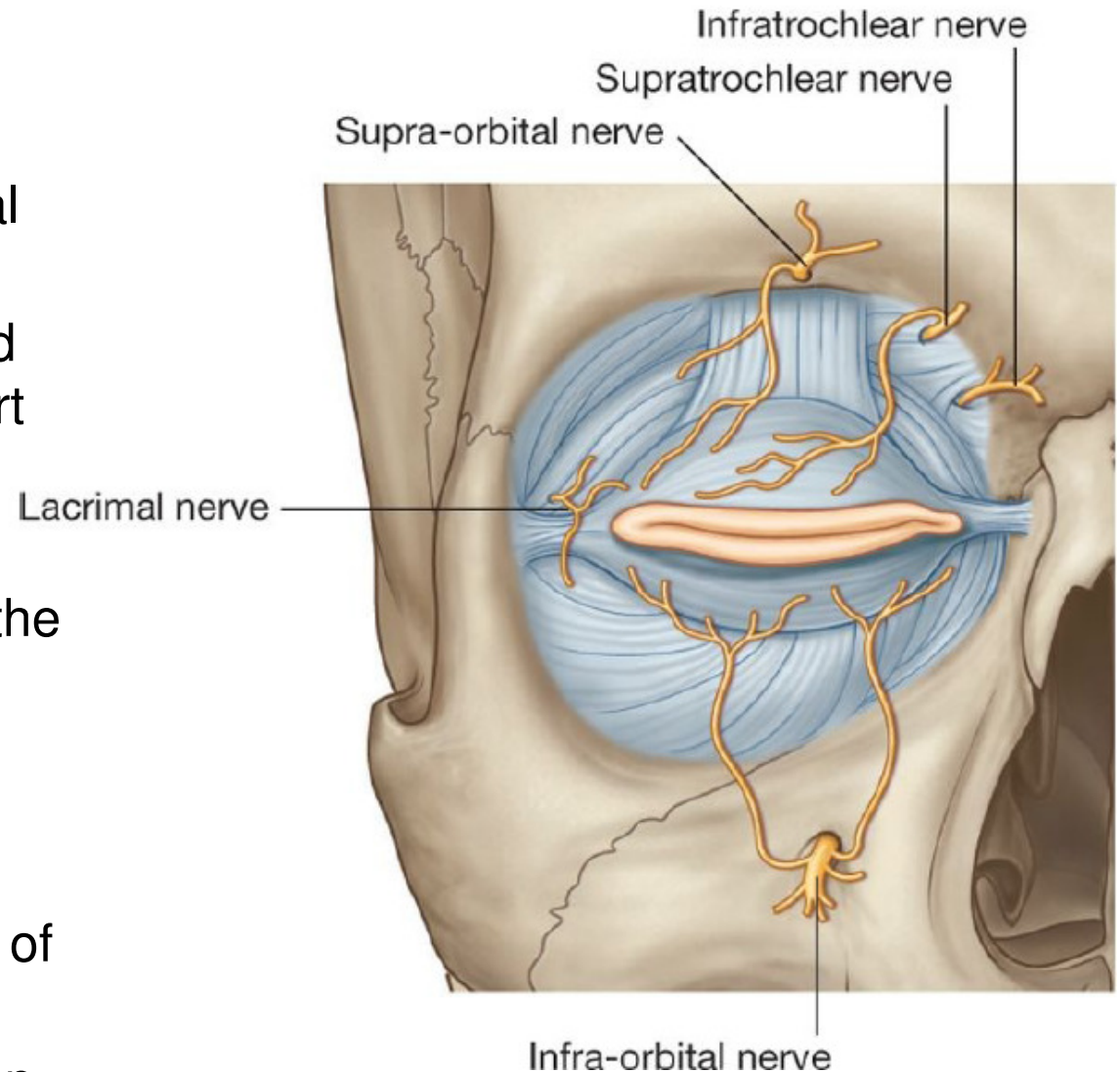


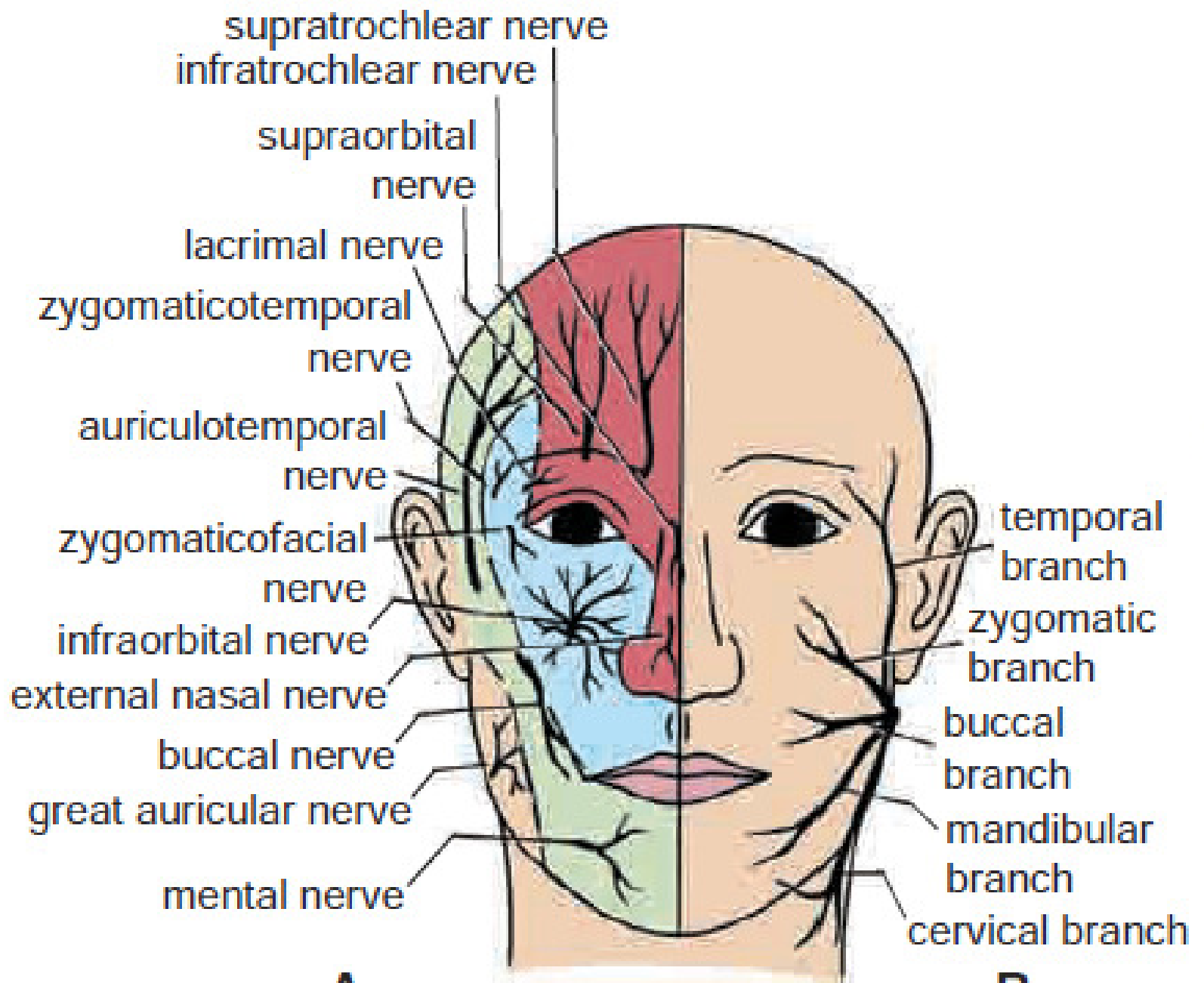
Ophthalmic Nerve



Ophthalmic Nerve

- **Supratrochlear nerve:** skin and conjunctiva on the medial part of the upper eyelid
- **Supraorbital nerve:** skin and conjunctiva on the central part of the upper eyelid
- **Infratrochlear nerve**
 - Skin and conjunctiva on the medial part of the upper eyelid and bridge of the nose
- **Lacrimal nerve:** skin and conjunctiva of the lateral part of the upper eyelid
- **External nasal nerve:** skin on the side of the nose down as far as the tip



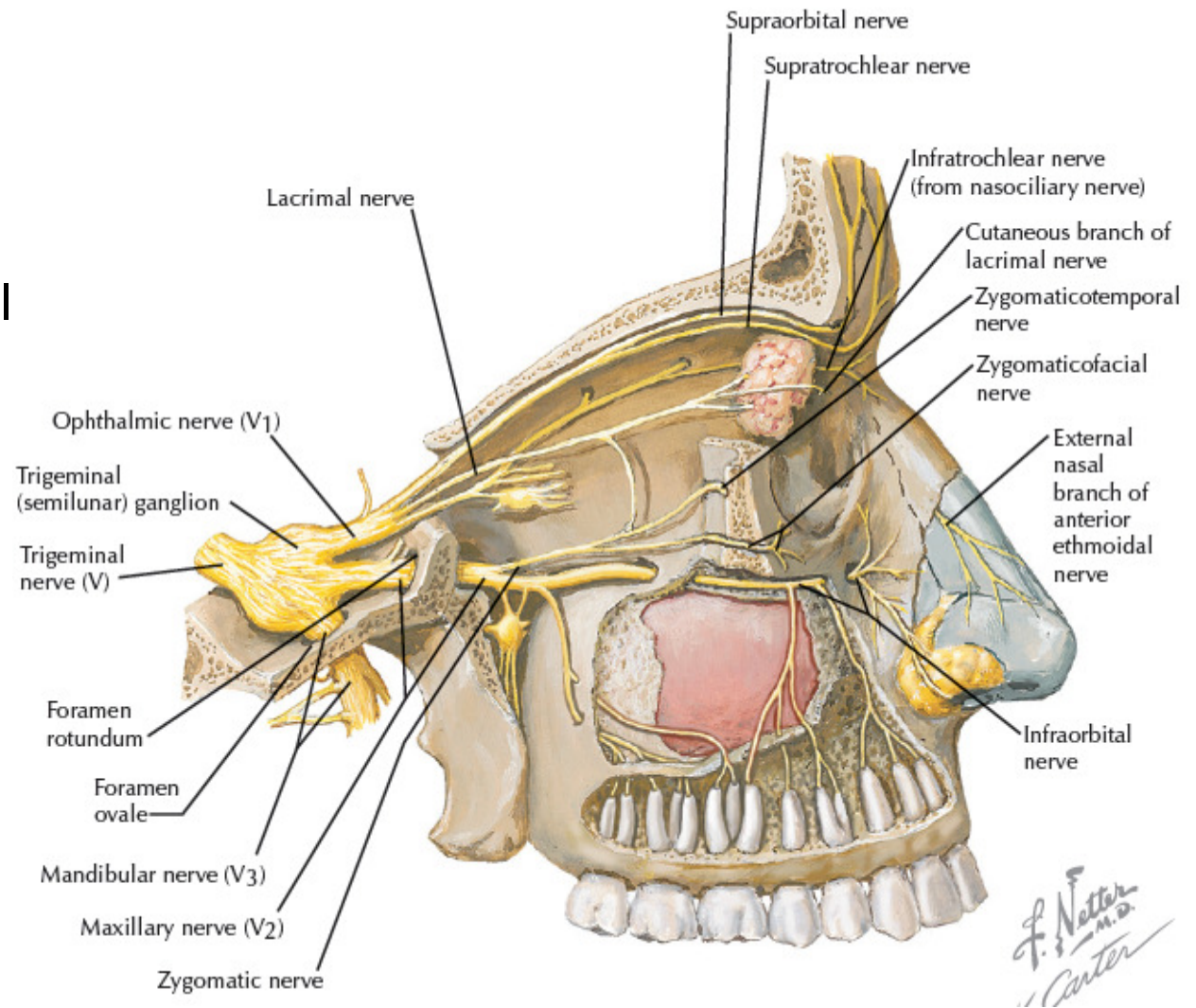


A

B

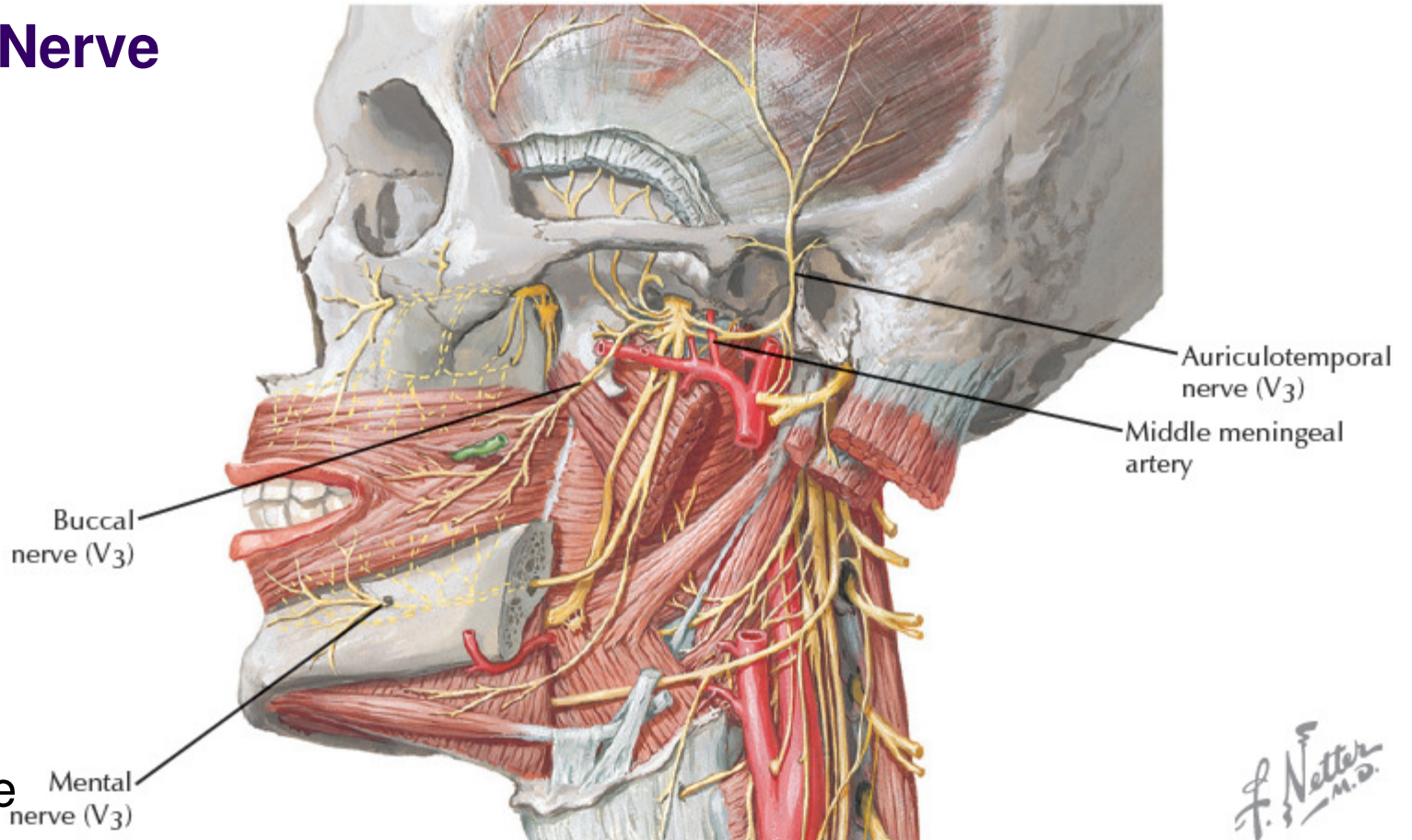
Maxillary Nerve

- **Zygomatic nerve:**
 - Pterygopalatine fossa
 - Inferior orbital fissure
 - Zygomaticotemporal nerve: skin over the temple
 - Zygomaticofacial N: skin over the prominence of the cheek
- **Infraorbital nerve:**
 - Inferior palpebral: skin of the lower eyelid and cheek
 - Nasal: the side of the nose (ala)
 - Superior labial: upper lip



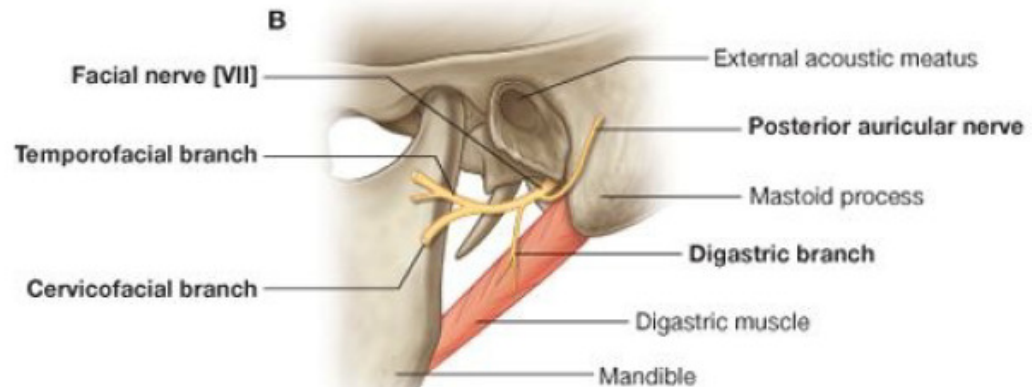
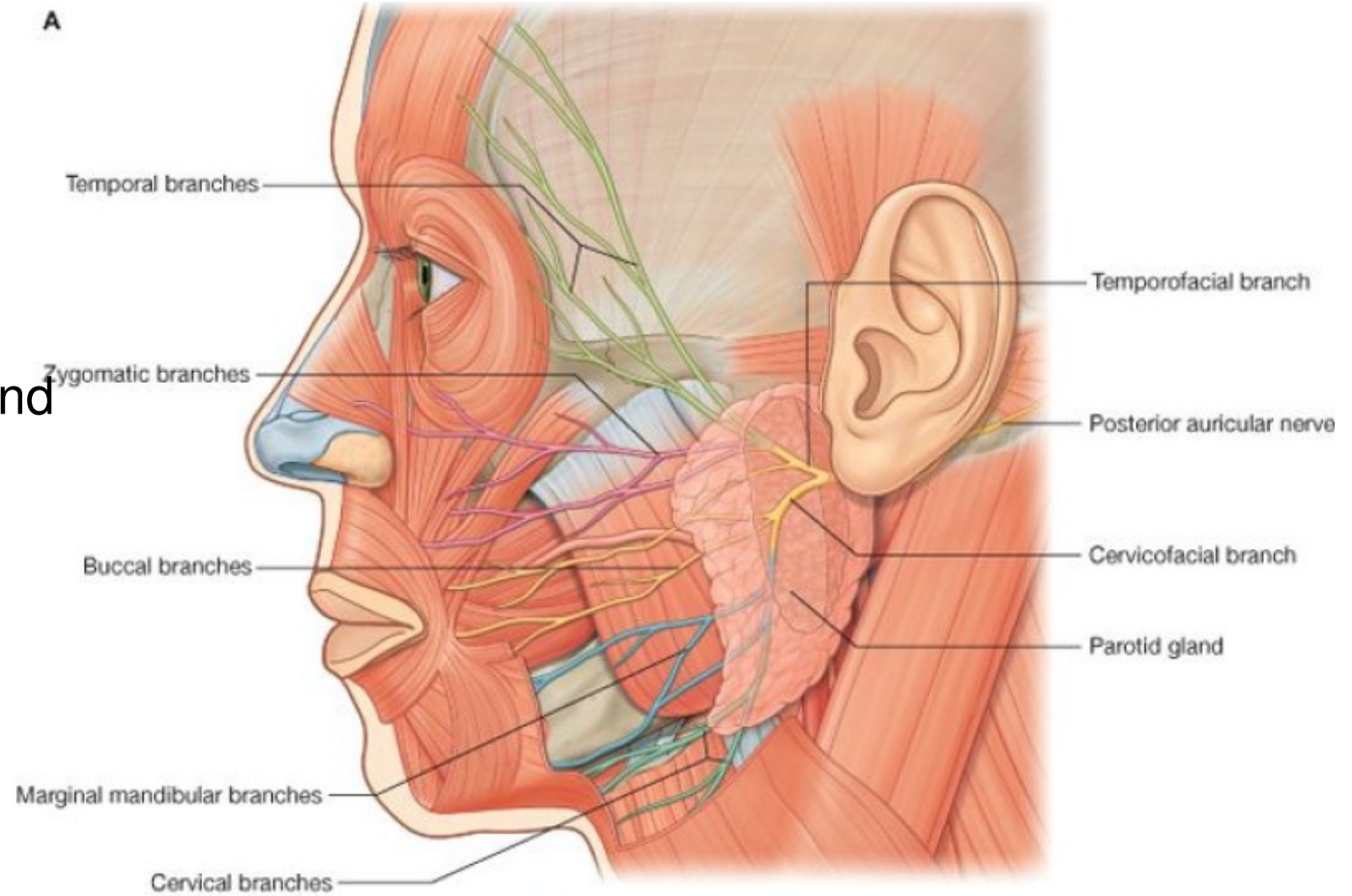
Mandibular Nerve

- **Mental nerve:** skin of the lower lip and chin
- **Buccal nerve:** skin over the buccinator and mucous membrane lining its inner surface and gingiva along the mandibular molars
- **Auriculotemporal nerve:** skin of the auricle, the external auditory meatus, the outer surface of the tympanic membrane, and the skin of the scalp above the auricle



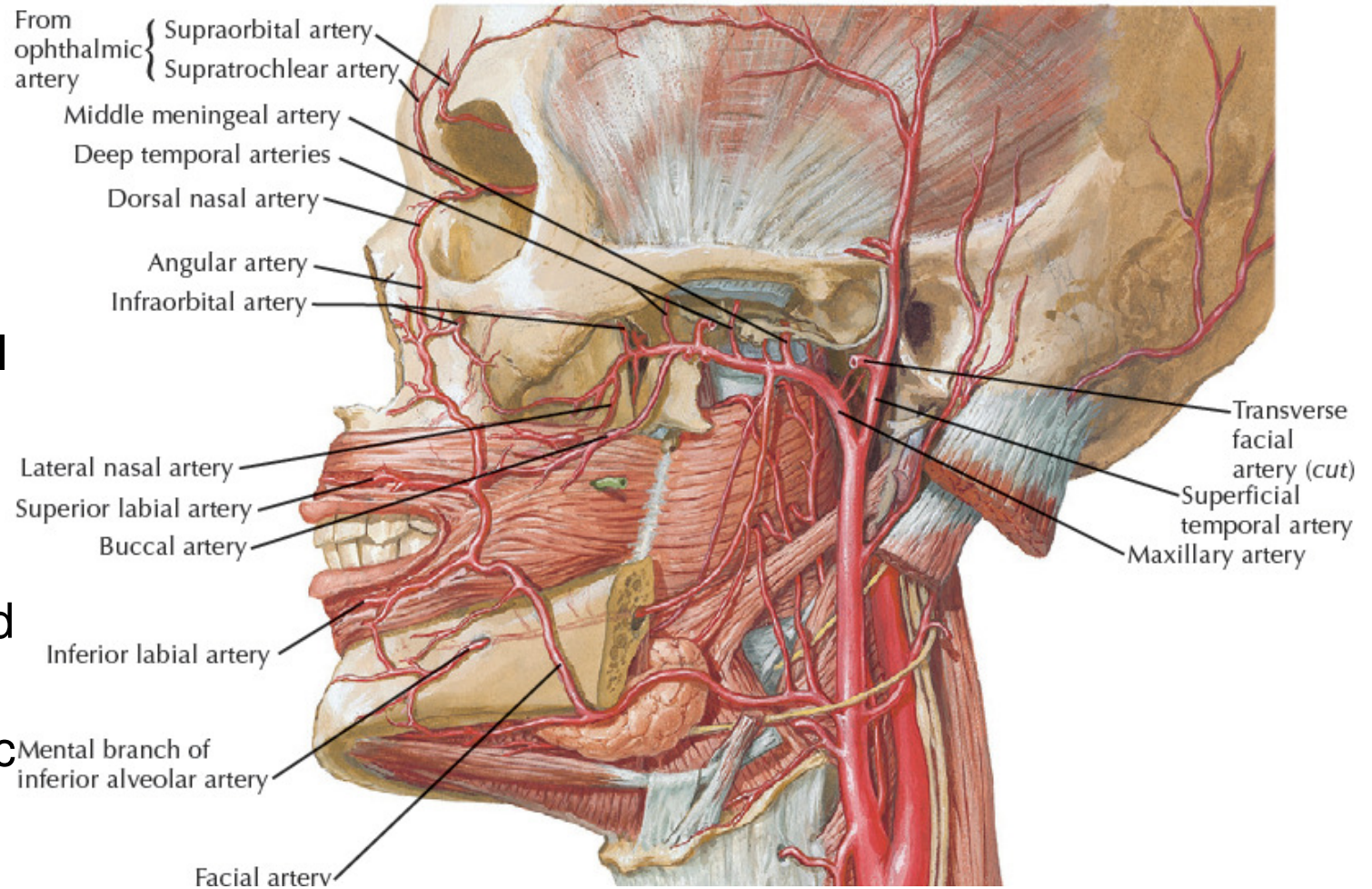
Motor Nerve Supply of face

- ❖ Stylomastoid foramen
- ❖ Substance of the parotid salivary gland
- ❖ Branches:
 - **Temporal**
 - **Zygomatic**
 - **Buccal**
 - **Manidbular**
 - **Cervical**



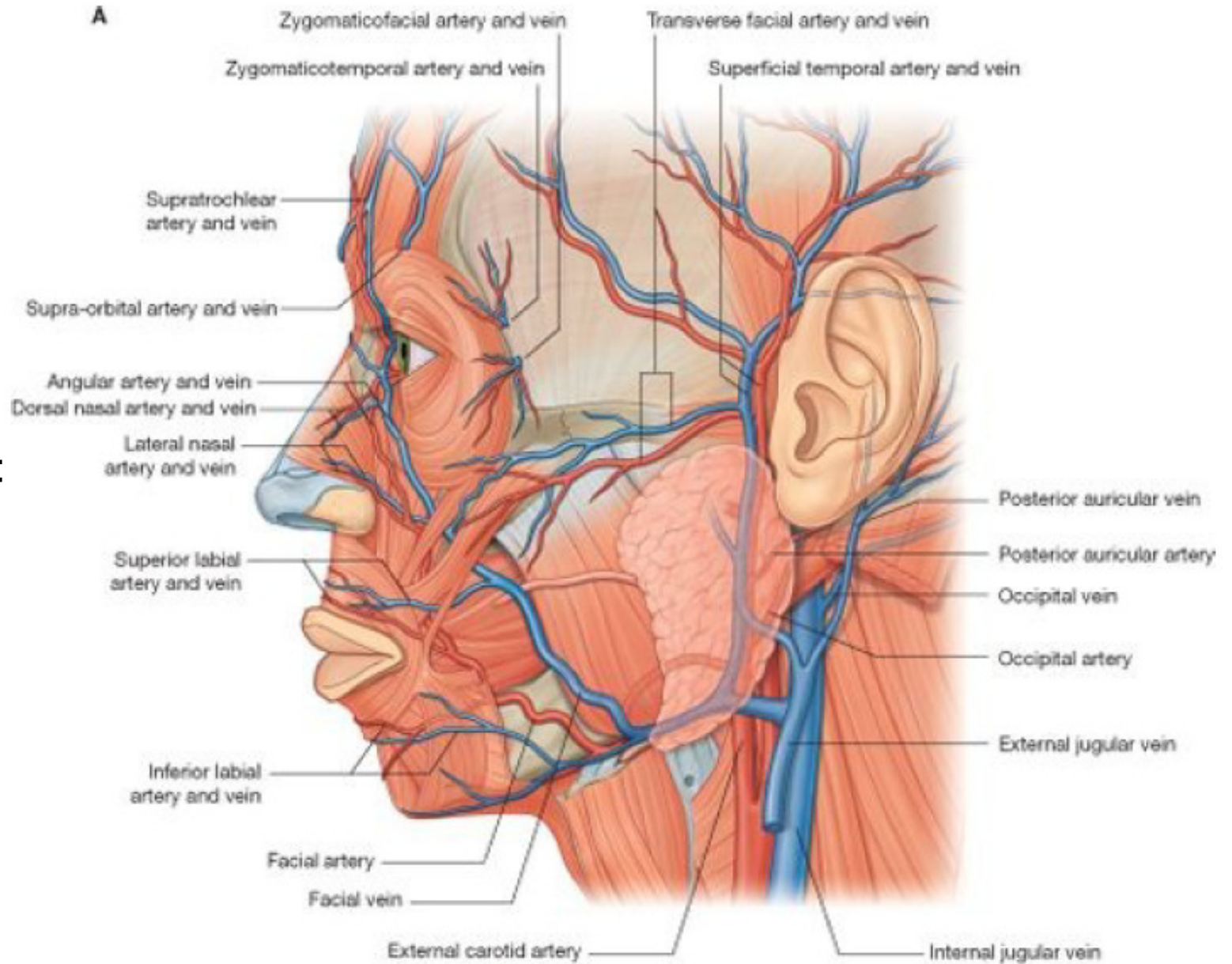
Vascular Supply of the Face

- External carotid artery
 - Superficial temporal
 - Facial
 - Maxillary
- Internal carotid artery
 - ophthalmic



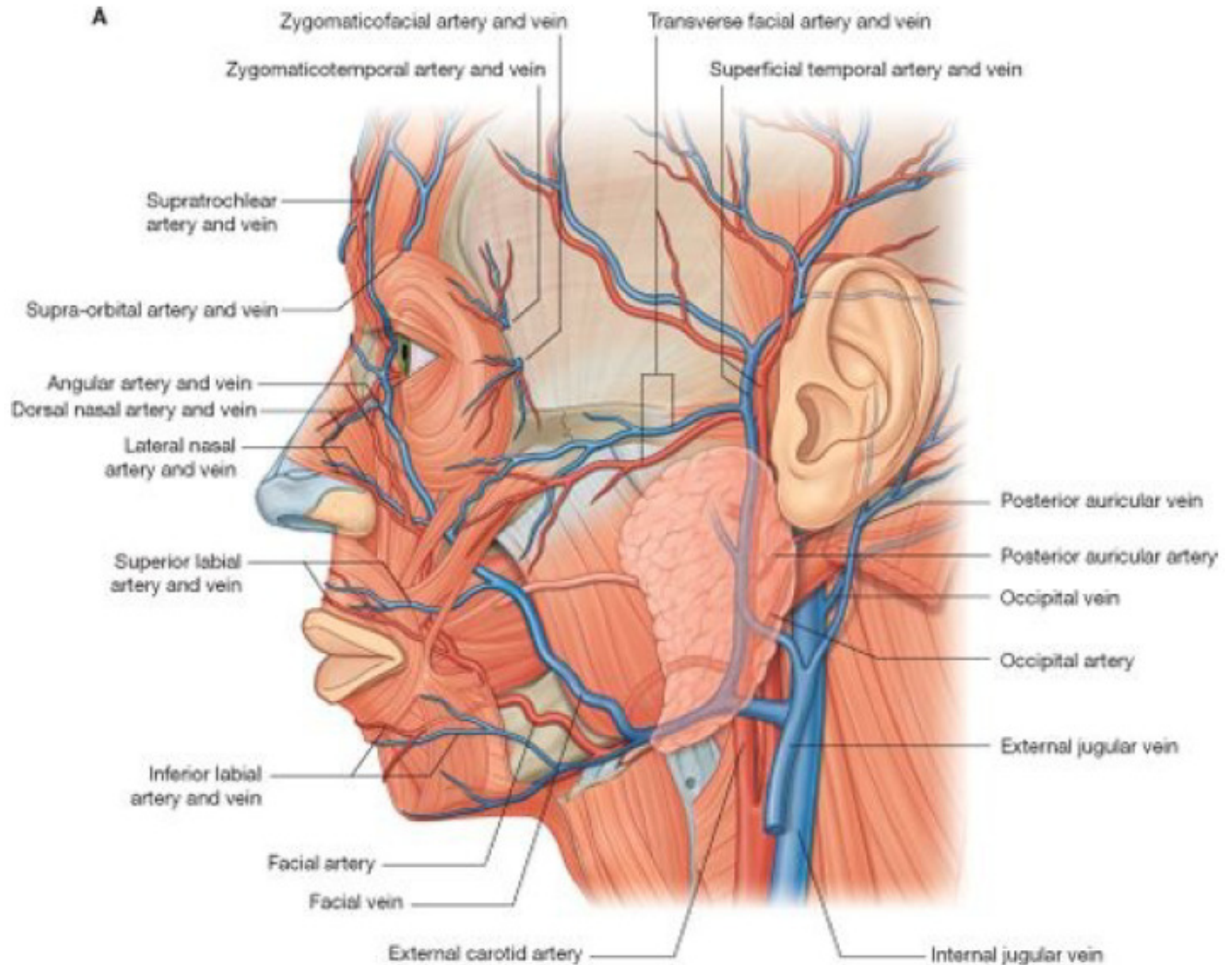
Vascular Supply of the Face

- Superficial temporal artery
- Transverse facial artery:



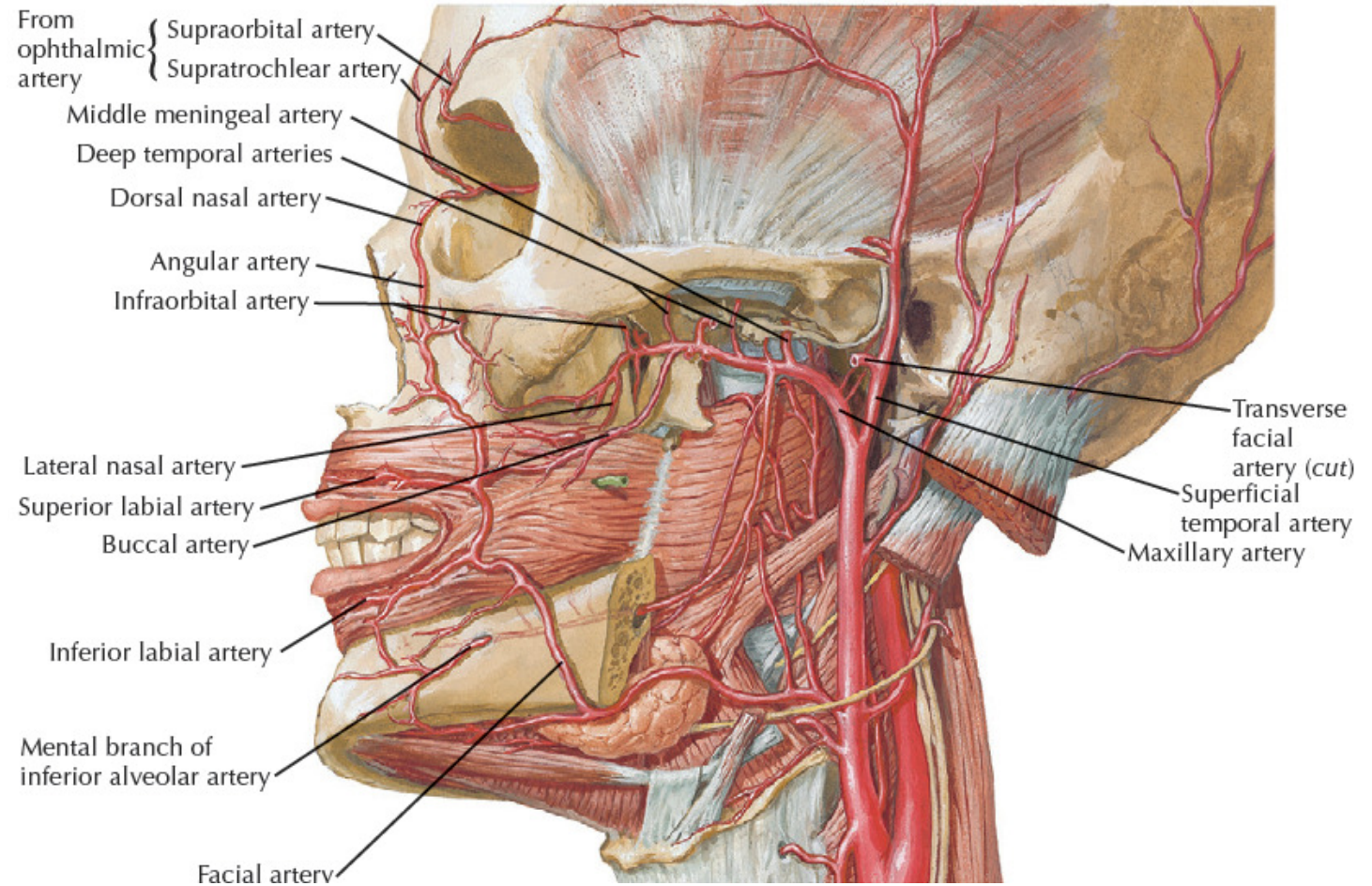
Vascular Supply of the Face

- Facial artery
- Superior labial artery
- Inferior labial artery
- Lateral nasal artery
- Angular artery

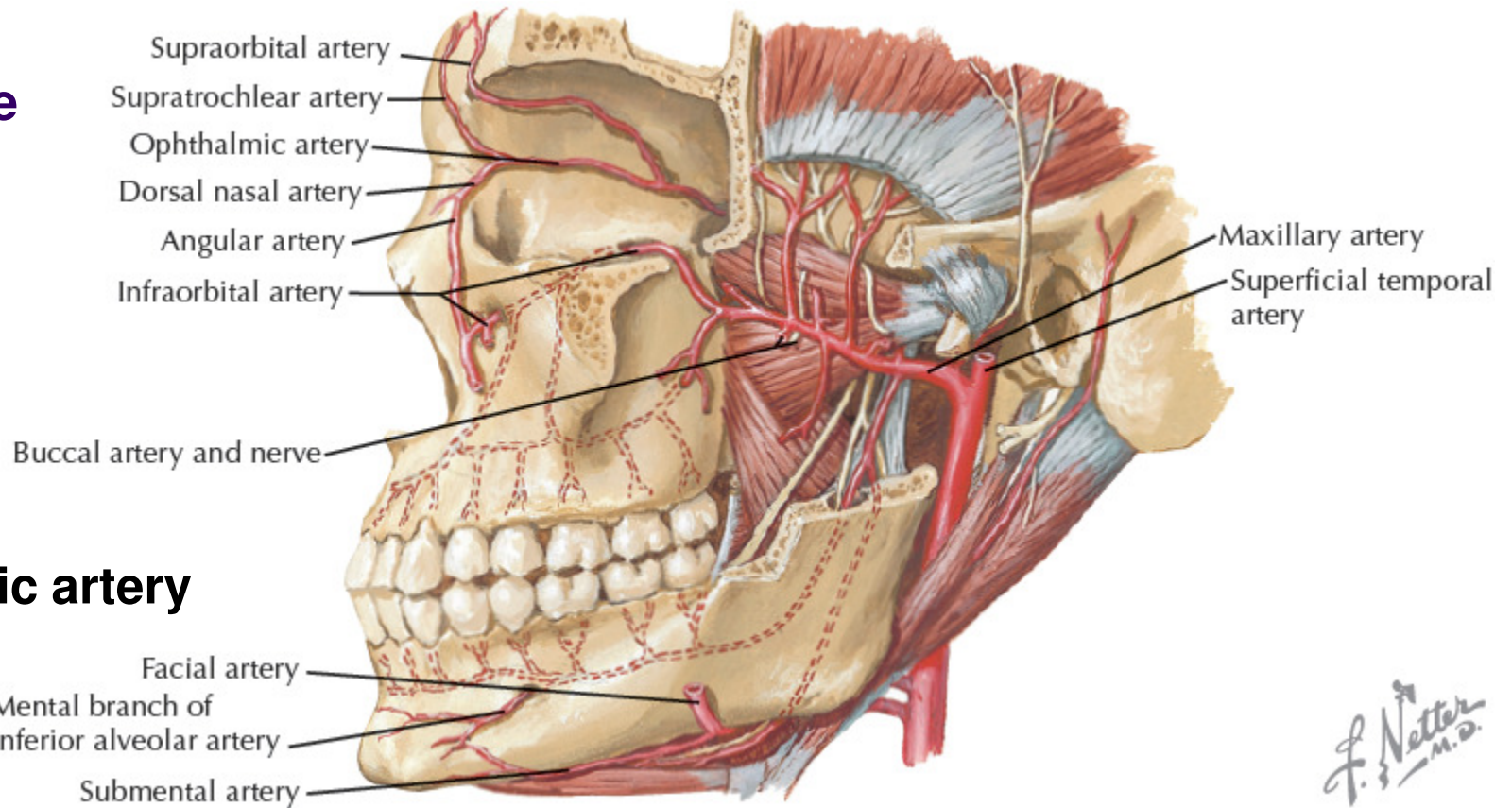


Vascular Supply of the Face

- Maxillary artery:
 - Infraorbital
 - Buccal
 - Mental: from inferior alveolar supply the chin



Vascular Supply of the Face



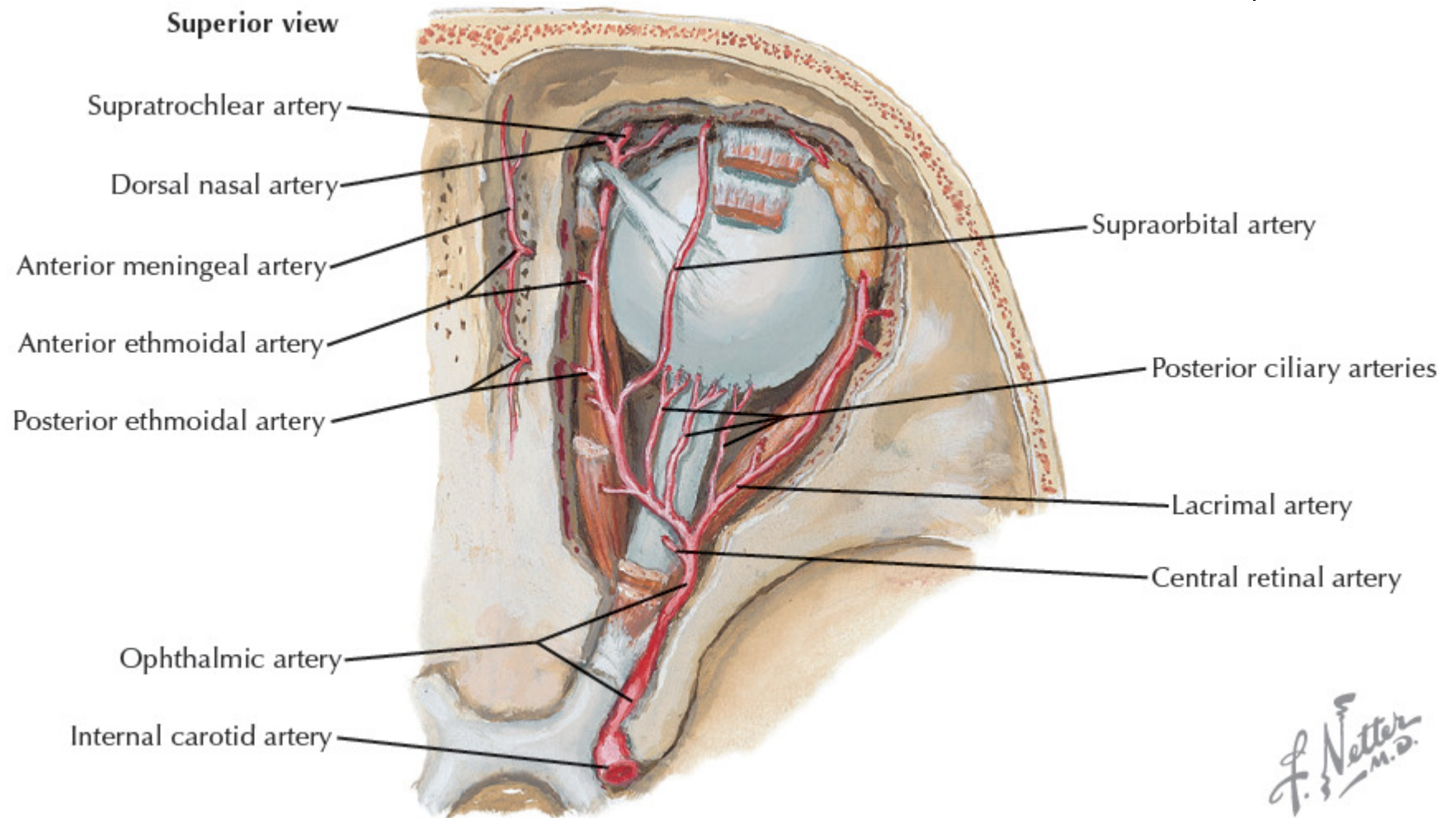
➤ Ophthalmic artery

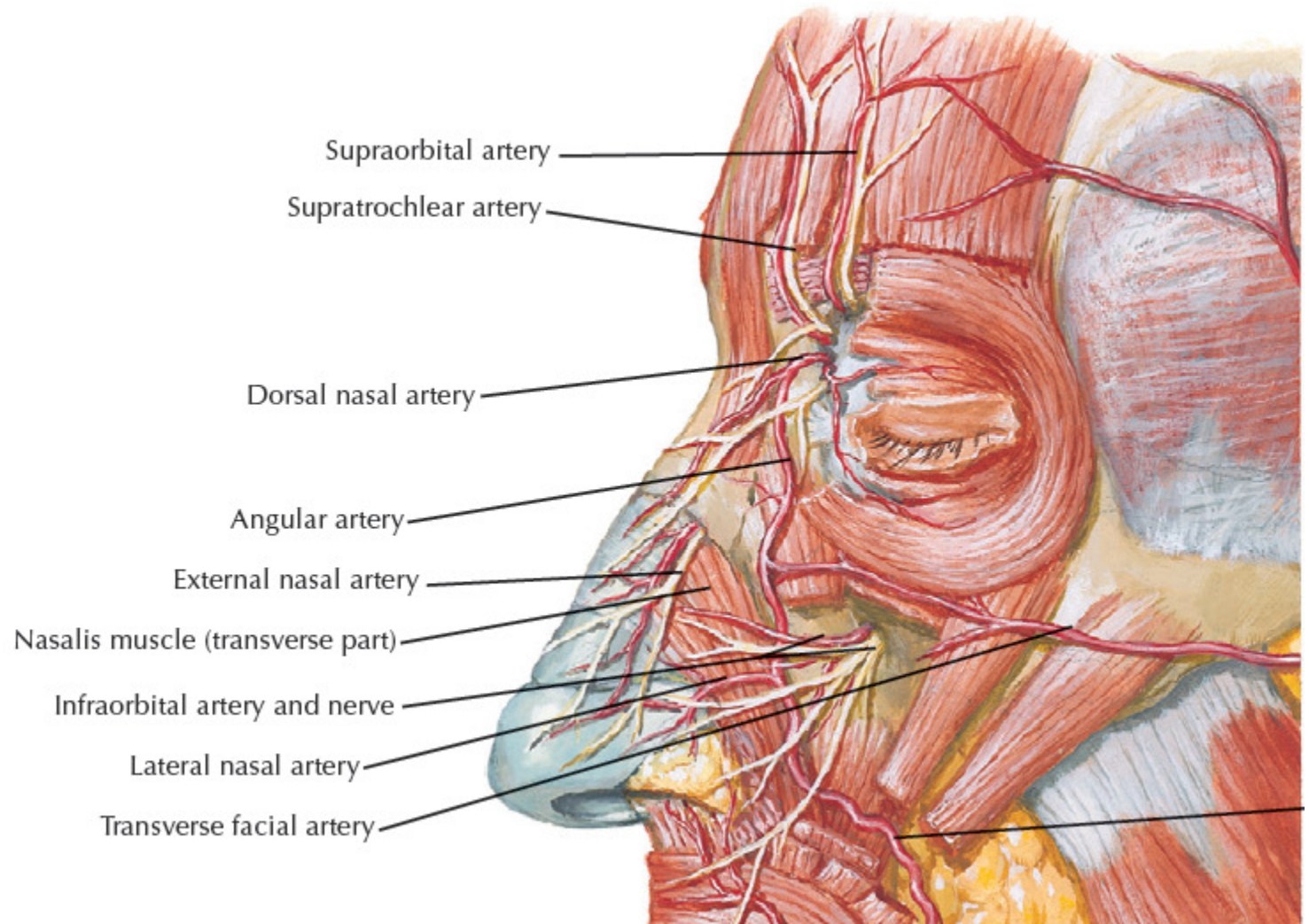
- **Supratrochlear artery**
- **Supraorbital artery**
- **Zygomaticofacial artery:** from lacrimal artery
- **Dorsal nasal**

Ophthalmic artery



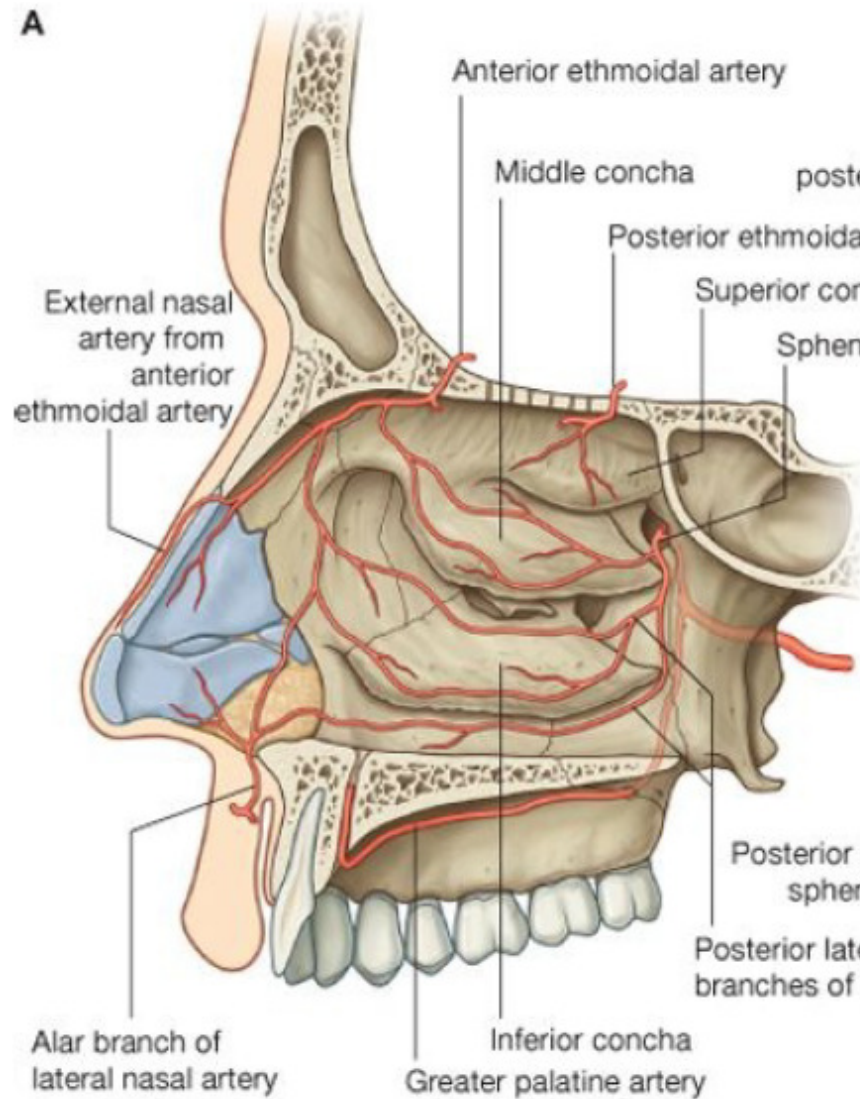
Superior view



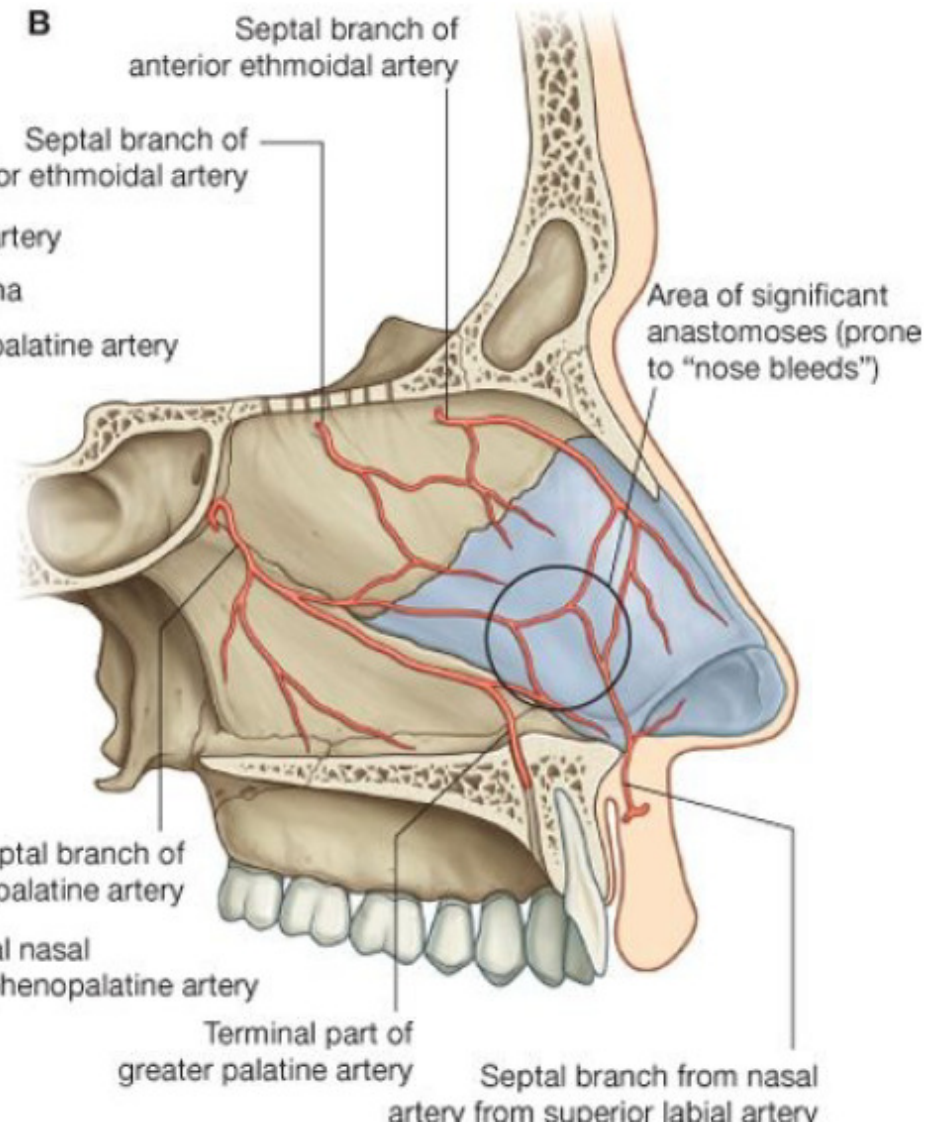


- **Dorsal nasal**
- **External nasal artery:** from anterior ethmoid a

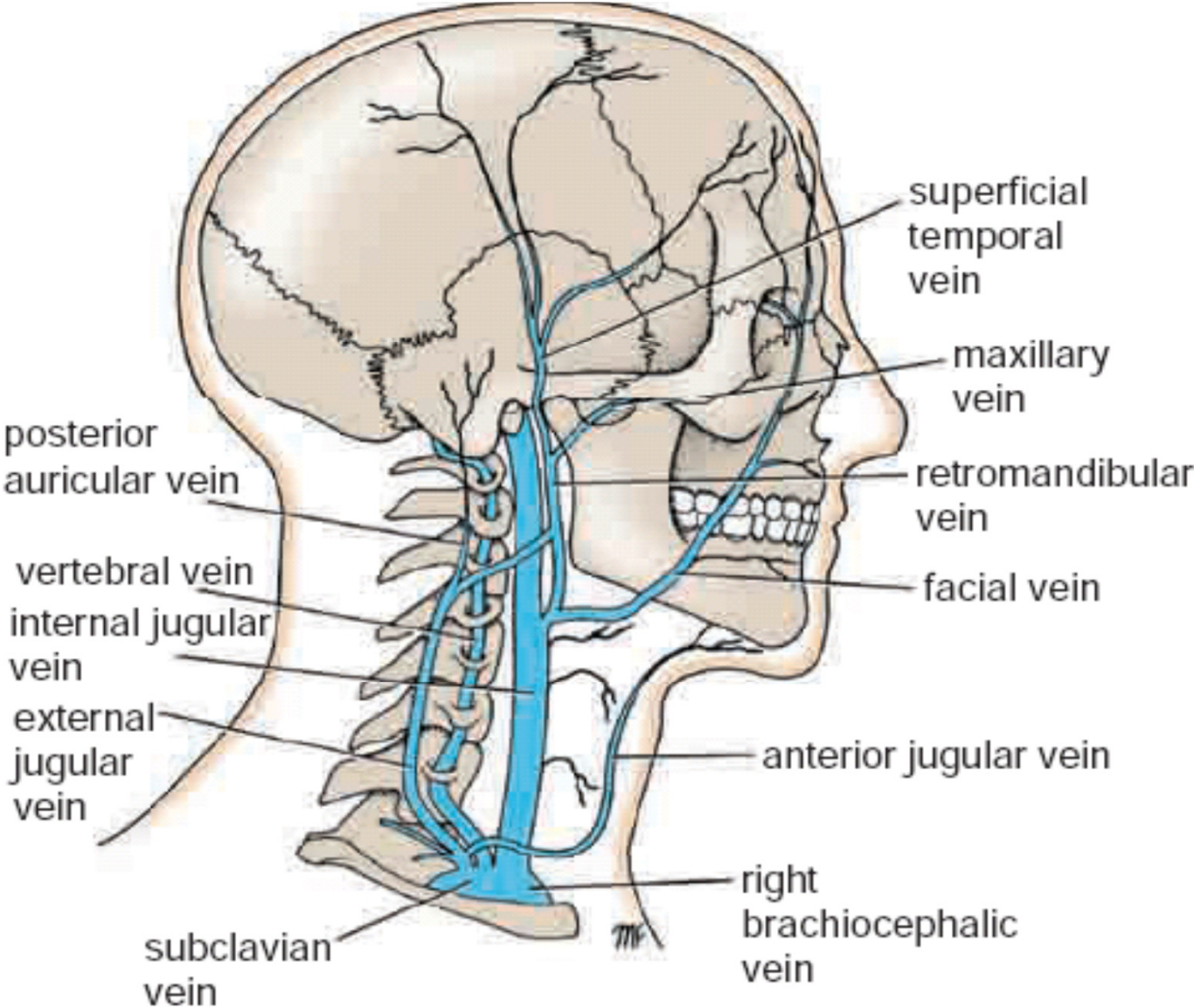
A



B

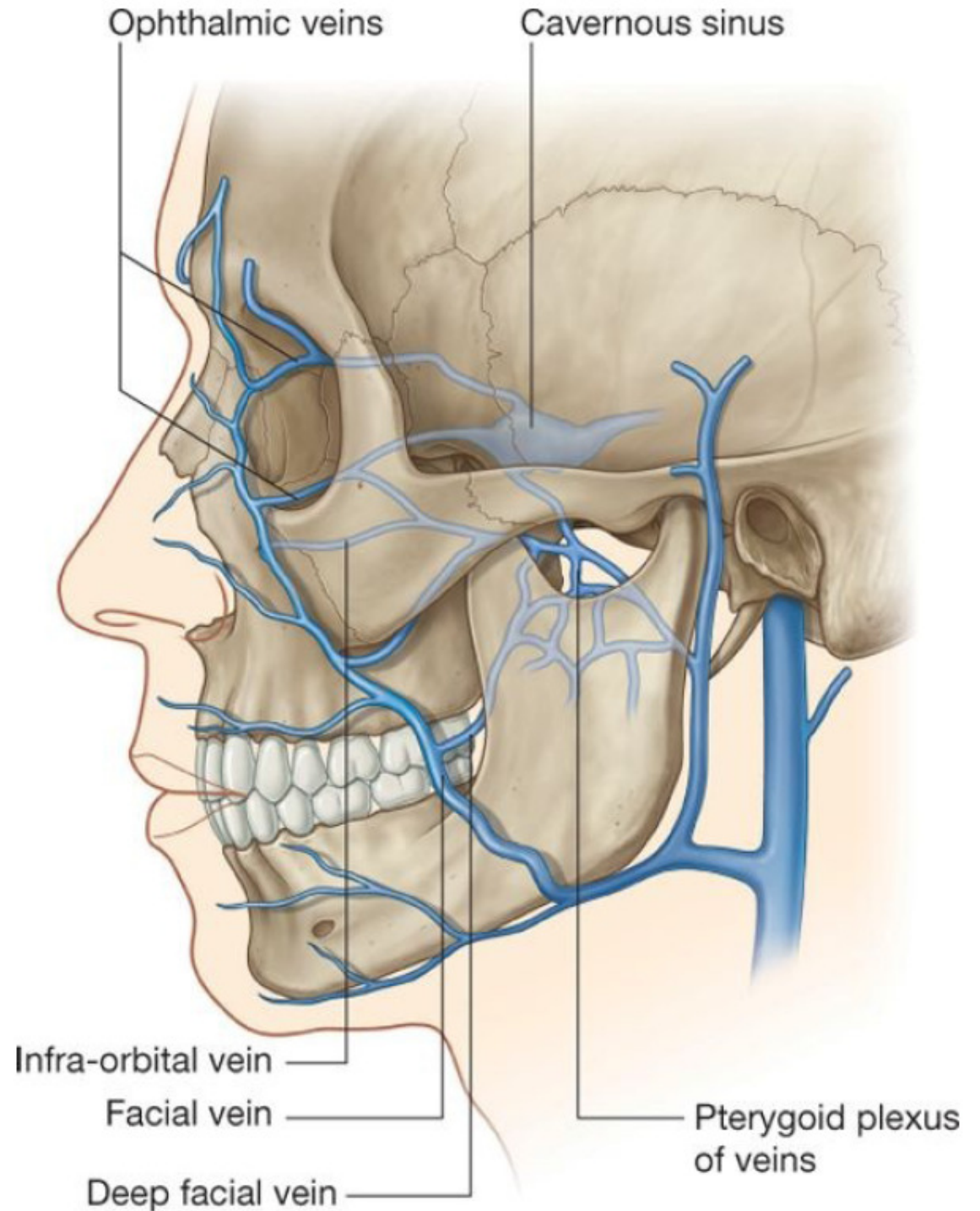


Venous drainage of the Face

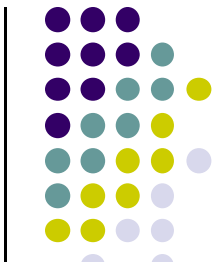


Venous drainage of the Face

- Communicating veins:
 - Superior ophthalmic
 - Inferior ophthalmic
 - Infraorbital
 - Deep facial
- Deep veins
 - Pterygoid plexus
 - Cavernous sinus

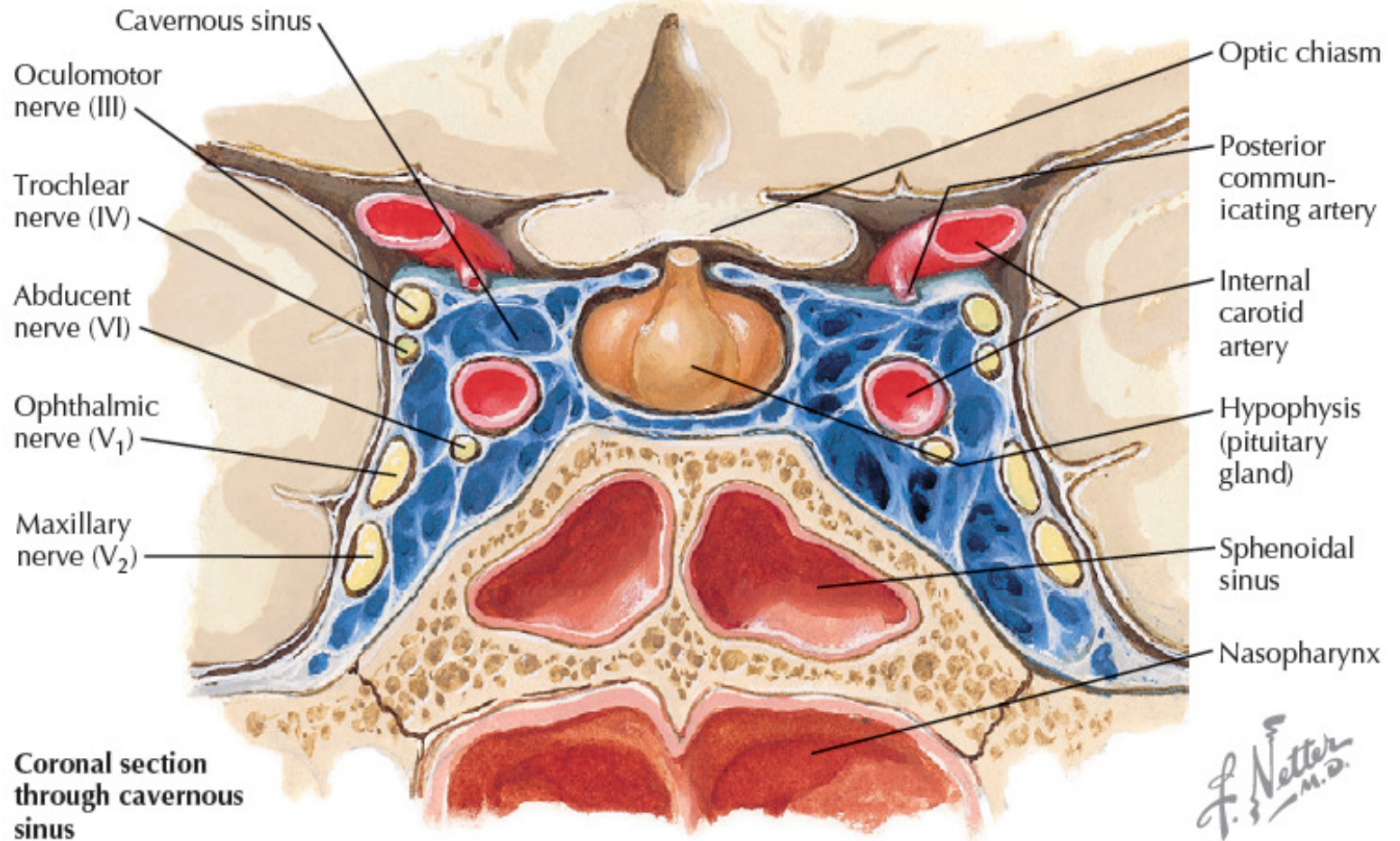


Infections in the dangerous area of the face can lead to Cavernous Sinus Thrombosis



Cavernous sinus syndrome

- sepsis from the central portion of the face or paranasal sinuses



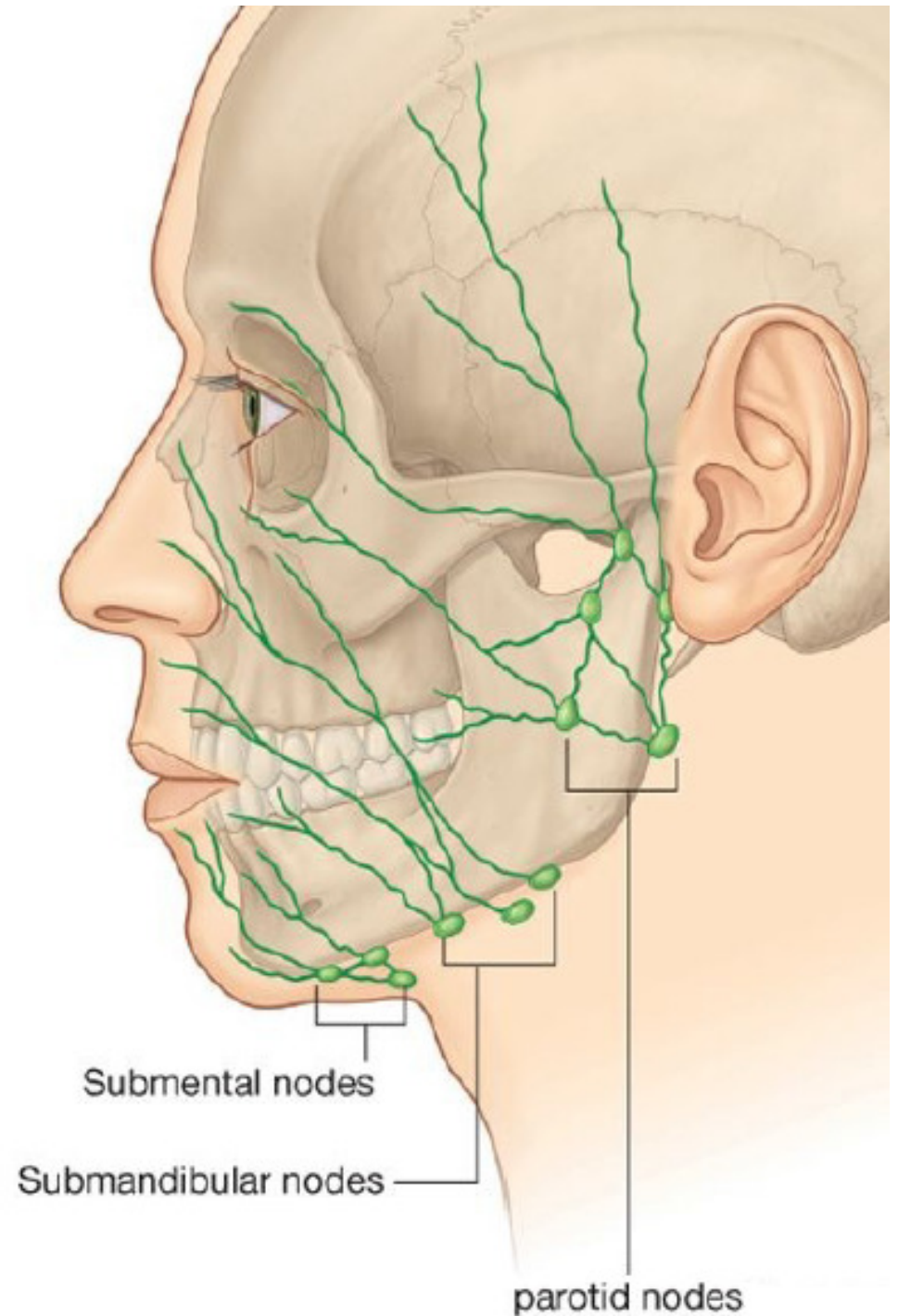
❖ clinical manifestations:

- Ophthalmoplegia with diminished pupillary light reflexes
- Venous congestion leading to periorbital edema
- Exophthalmos
- Pain or numbness of the face



Lymph drainage of the Face

- **Submandibular nodes:**
medial corner of the orbit, most of the external nose, medial part of the cheek, the upper lip and the lateral part of the lower lip
- **Submental nodes:**
central part of the lower lip and the skin of the chin are drained
- **Parotid nodes:**
part of the external nose, and the lateral part of the cheek lateral parts of the eyelids



Lymph drainage of the Scalp

- **Occipital nodes:**
- **Mastoid nodes:**
posterior to the vertex
- **Pre-auricular and parotid nodes:** anterior to the vertex
- **Submandibular nodes:**
forehead

