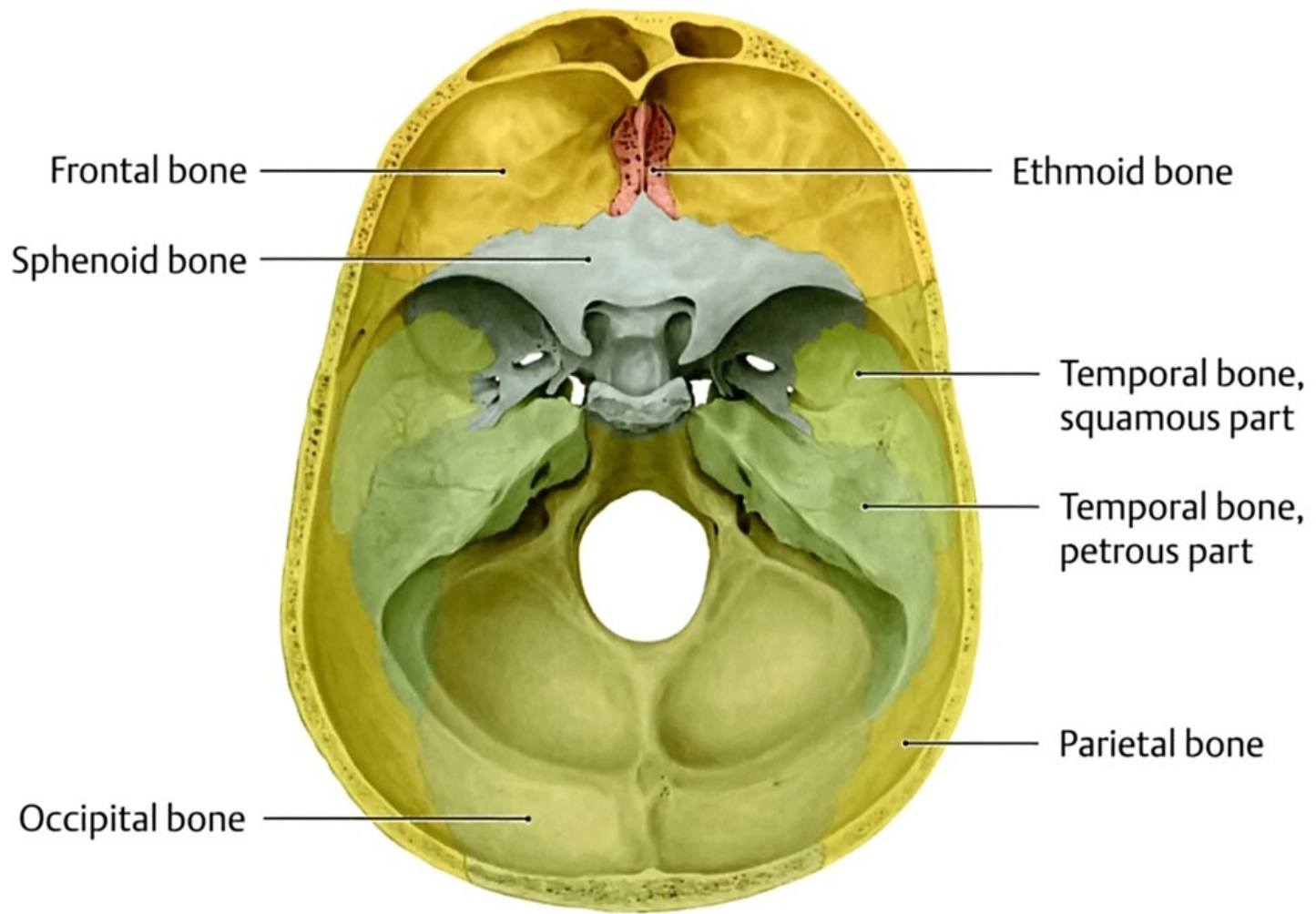
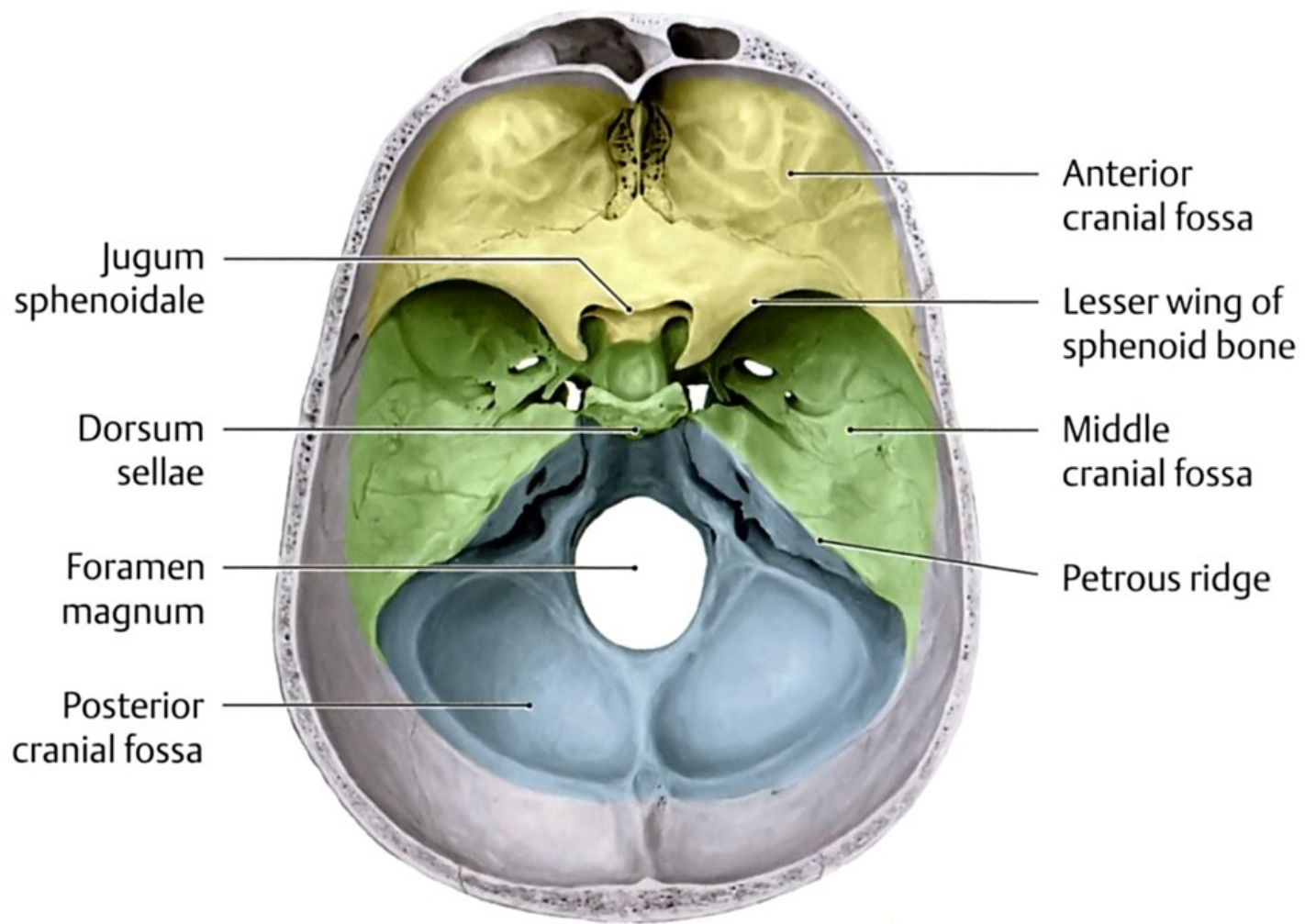


Skull – communication

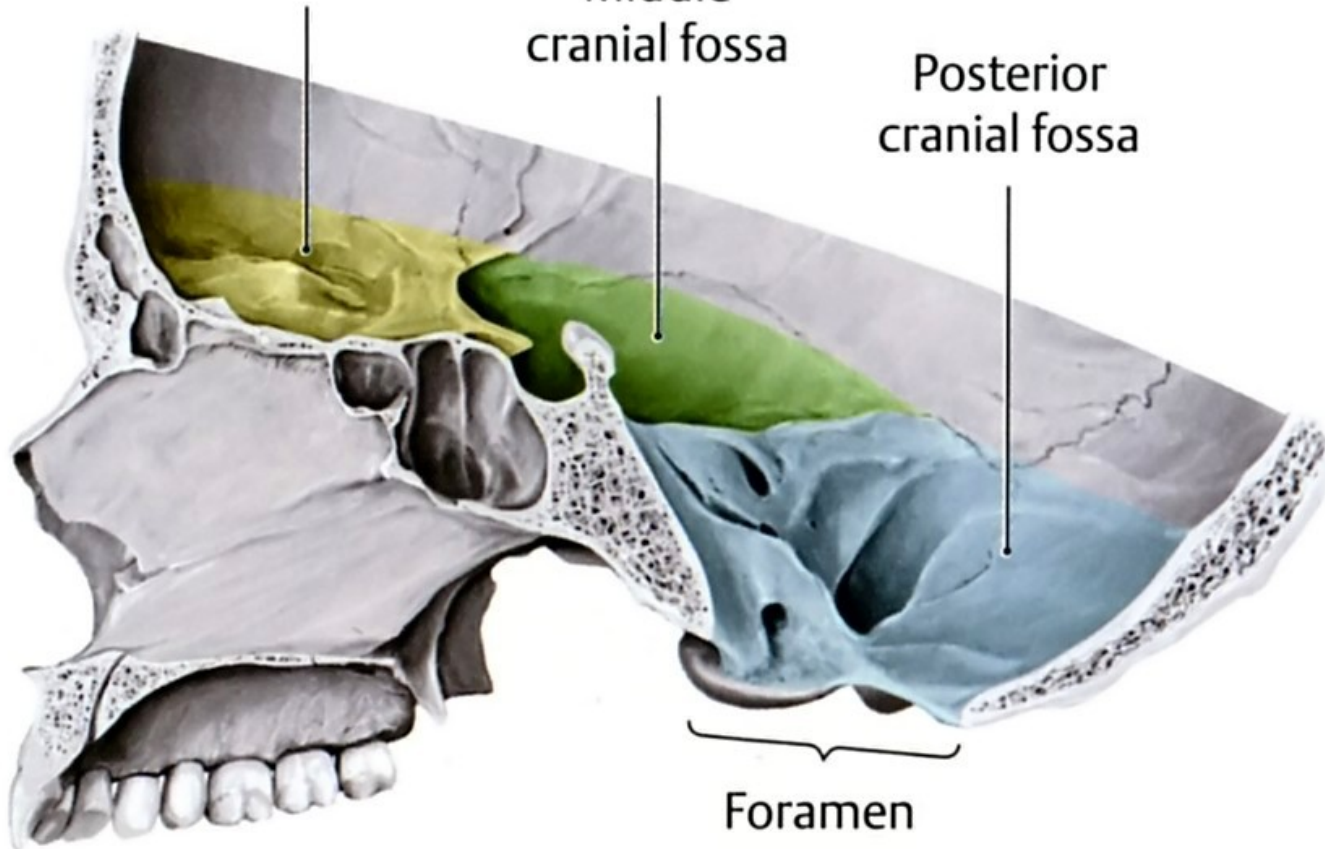




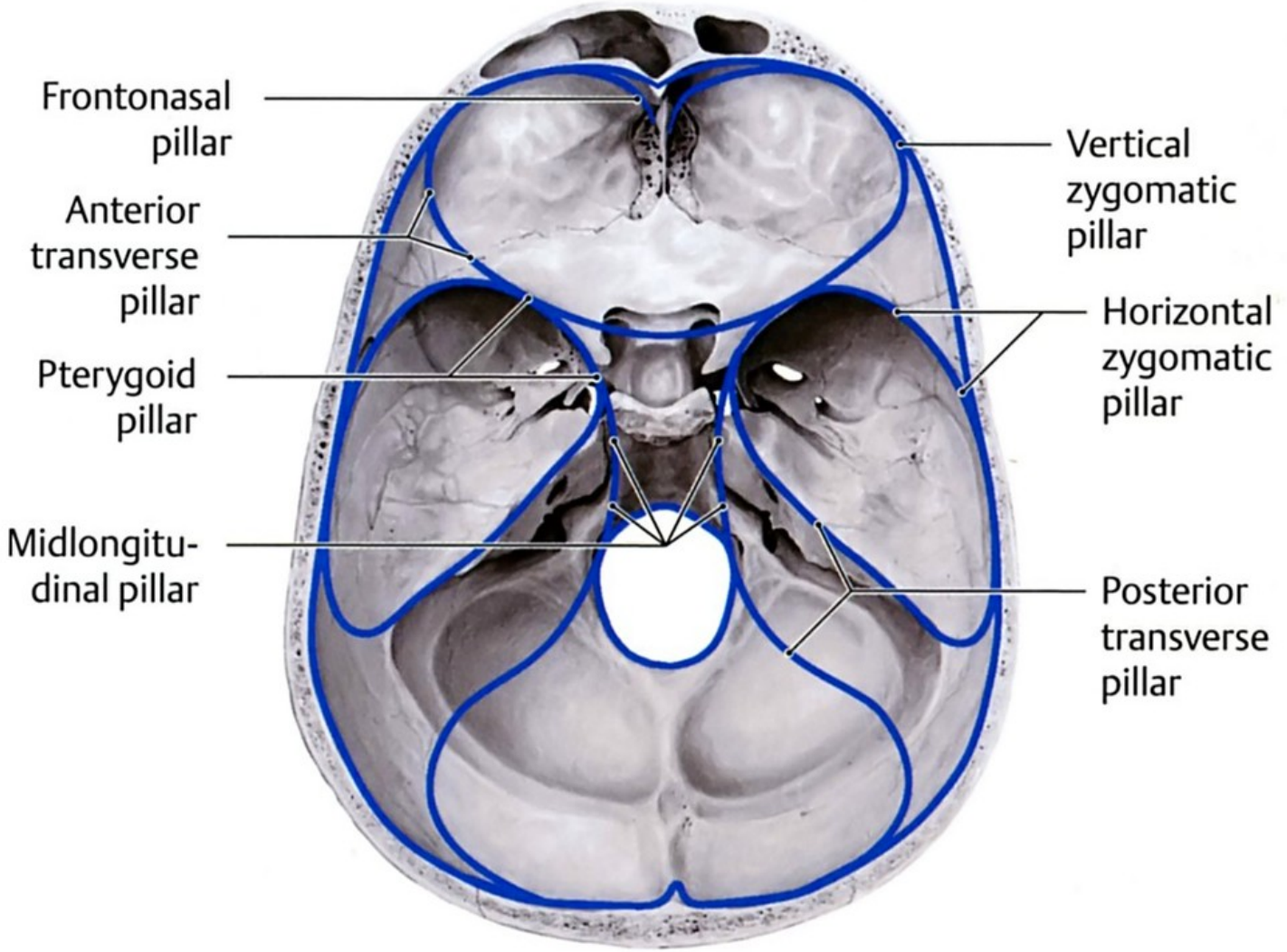
Anterior
cranial fossa

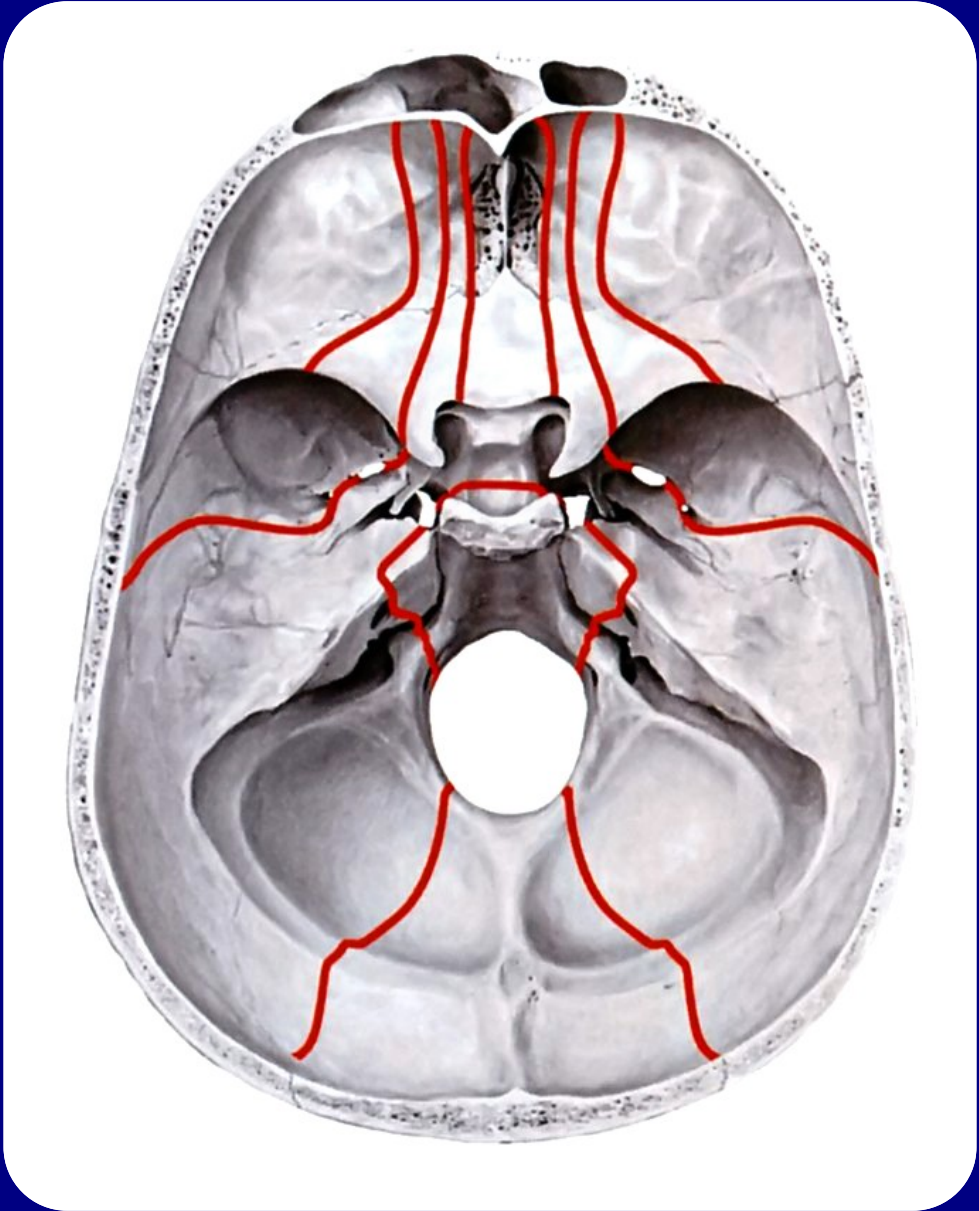
Middle
cranial fossa

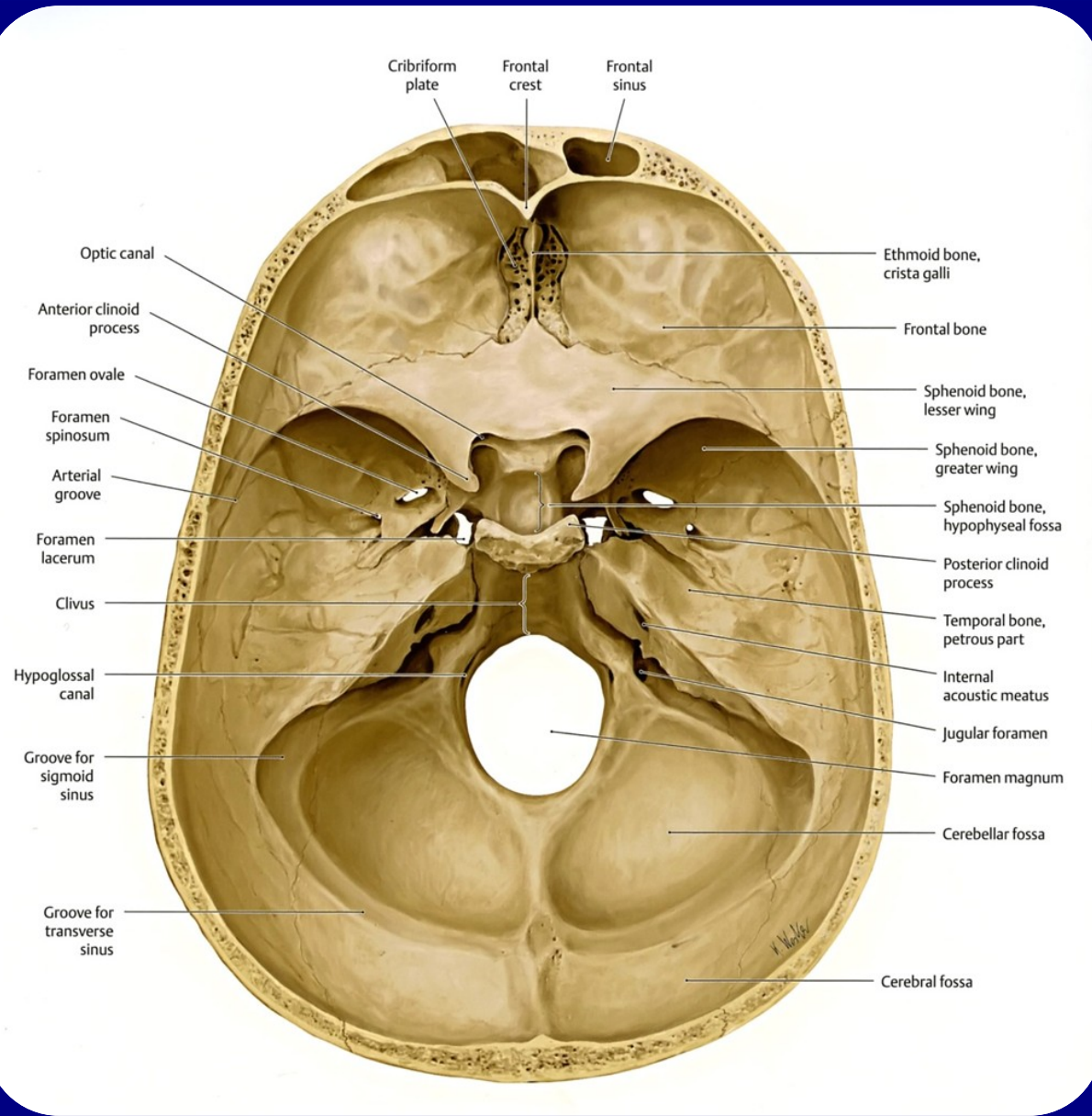
Posterior
cranial fossa



Foramen
magnum







Anterior cranial fossa

The floor:

- Cribriform plate of ethmoid
- Orbital parts of frontal
- Lesser wings of sphenoid
- Body of sphenoid – anterior to prechiasmatic sulcus

Contents:

- Frontal lobes of brain
- Olfactory bulbs
- Olfactory tracts
- Anterior meningeal vessels (from anterior ethmoid)

Communication:

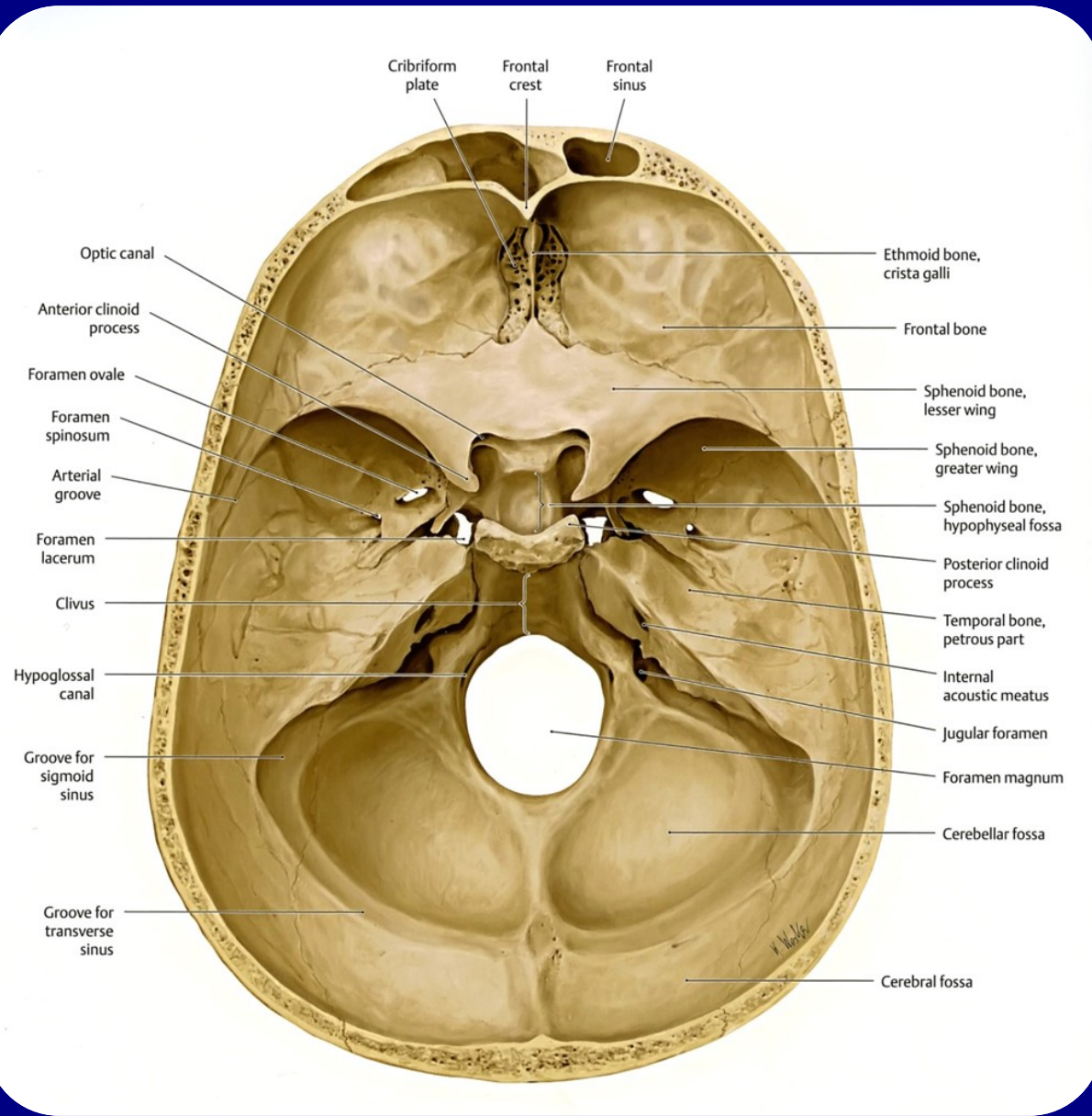
1. Through cribriform plate of ethmoid with the nasal cavity

Contents:

- Olfactory fila
- Anterior ethmoidal vessels and nerves

2. Through foramen cecum with the nasal cavity

- Extension of dura mater
- Small vein connecting veins of nasal cavity and superior sagittal sinus



Middle cranial fossa

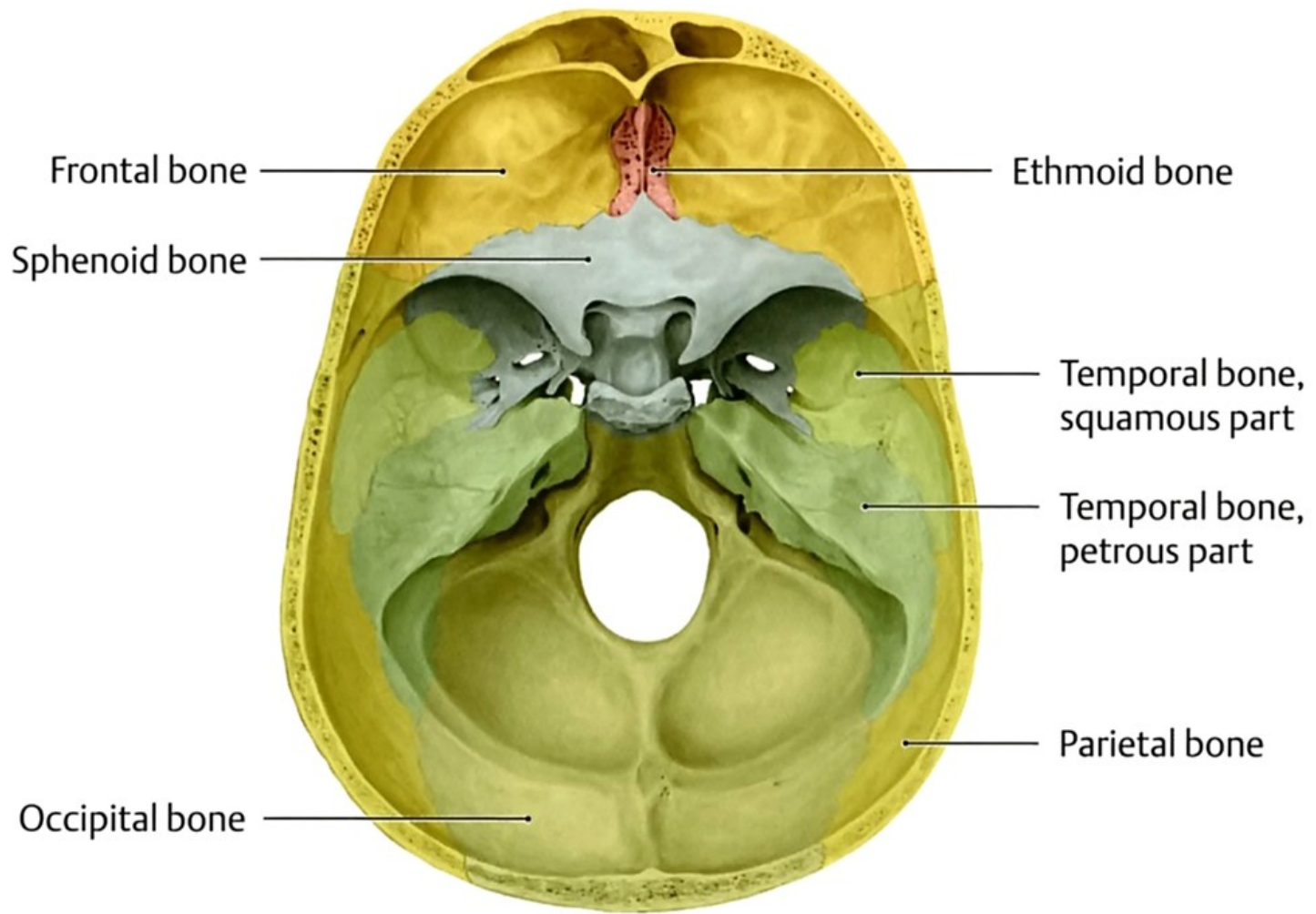
It consists of the central (body of sphenoid) and two lateral parts.

Lateral parts consist of:

- Greater wing of sphenoid
- Squamous parts of temporal
- Anterior surfaces of pyramids of temporal

The border between the anterior and middle cranial fossa

- Posterior margins of lesser wings of sphenoid
- Sphenoidal limbus



The border between the middle and posterior cranial fossae:

- Superior margins of the petrous parts of temporal
- Dorsum sellae

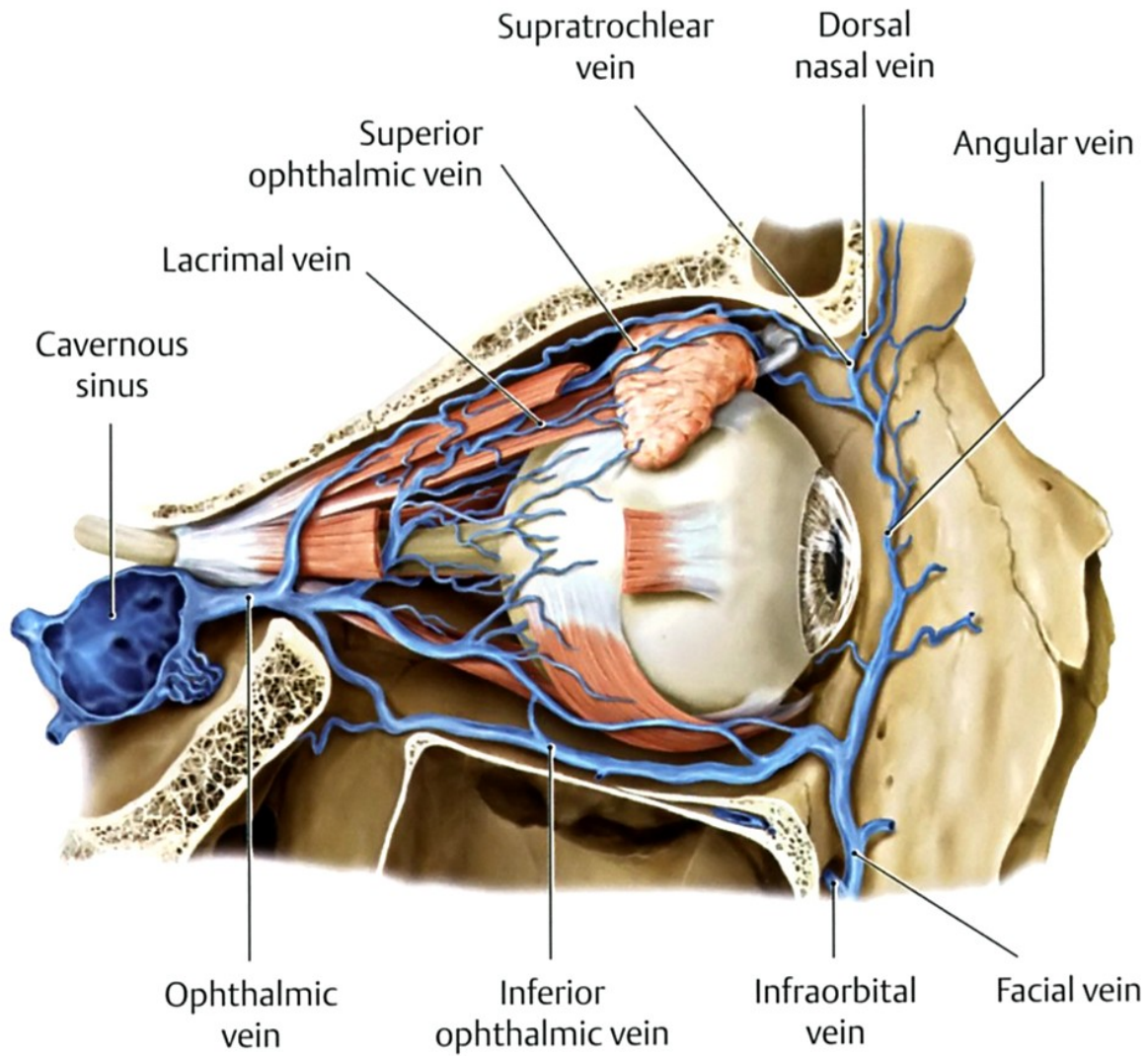
Contents:

Central part

- Interbrain
- Intercavernous sinuses

Lateral part

- Temporal lobes of brain
- Cavernous sinus
- Cranial nerves II – VI
- Internal carotid arteries
- Middle meningeal vessels
- Greater and lesser petrosal nerves



Cavernous sinus

Contents:

- Internal carotid artery
- Cavernous plexus
- Abducens nerve
- Lateral wall of cavernous sinus contains:
 - Oculomotor nerve
 - Trochlear nerve
 - Ophthalmic nerve
 - Maxillary nerve

Communication of middle cranial fossa:

1. Through superior orbital fissure with the orbit

Contents:

- Oculomotor nerve
- Trochlear nerve
- Ophthalmic nerve
- Abducens nerve
- Sympathetic postganglionic axons of the cavernous plexus
- Superior ophthalmic vein
- Superior branch of the inferior ophthalmic vein
- Ramus of middle meningeal artery

2. Optic canal – with orbit

- Optic nerve
- Ophthalmic artery

3. Foramen rotundum with pterygopalatine fossa: maxillary nerve
4. Oval foramen with infratemporal fossa: mandibular nerve;
venous plexus

5. Foramen lacerum – with region of cranial base

- Greater petrosal nerve
- Deep petrosal nerve
- Branch of artery of pterygoid canal
- Emissary vein of foramen lacerum

6. Through the sphenopetrosal fissure with external cranial base
 - Contains lesser petrosal nerve

7. Foramen spinosum : with infratemporal fossa – contains nervus spinosus and middle meningeal artery

8. Hiatus for canal of greater petrosal nerve: with the genu of facial canal

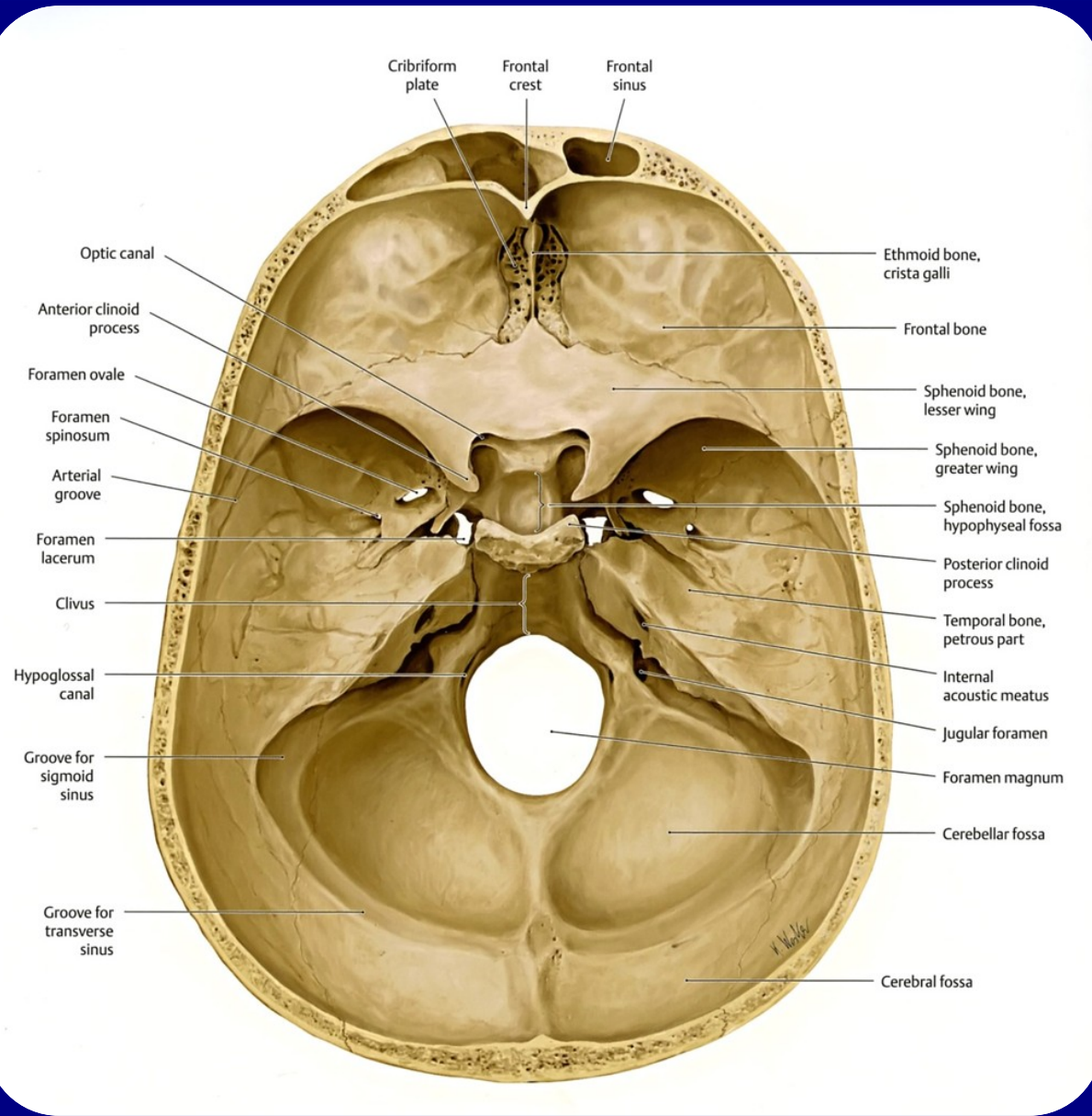
Contains: greater petrosal nerve; petrous branch of the middle meningeal artery

9. Hiatus for canal of lesser petrosal nerve – with tympanic cavity

Contains: lesser petrosal nerve and superior tympanic artery

10. Carotid canal – with external cranial base

Contains: internal carotid artery; venous cavernous plexus;
sympathetic cavernous plexus



Posterior cranial fossa

Is limited by:

- Dorsum sellae
- Clivus
- All parts of occipital
- Petrous and mastoid parts of temporal
- Grooves for transverse sinuses

Contents:

1. Medulla oblongata
2. Pons
3. Cerebellum
4. Cranial nerves VII-XII
5. Basilar artery with ramifications
6. Basilar venous plexus
7. Venous dural sinuses: occipital, marginal, transverse, sigmoid, petrosal

Communication:

1. Foramen magnum with vertebral canal
 - Medulla oblongata with meninges
 - Vertebral arteries
 - Basilar venous plexus
 - Posterior spinal arteries
 - Anterior spinal artery
 - Meningeal branches of spinal arteries
 - Spinal accessory nerves

2. Jugular foramen with parapharyngeal space

- Inferior petrosal sinus
- Glossopharyngeal nerve
- Posterior meningeal artery
- Sigmoid sinus
- Vagus nerve
- Accessory nerve
- Meningeal branch of vagus

3. Internal acoustic pore with internal acoustic meatus

- Labyrinthine artery and vein
- Facial nerve
- Intermediate nerve
- Vestibulocochlear nerve
- Vestibular ganglion

4. Mastoid foramen with external cranial base

Contains: emissary mastoid vein; mastoid branch of occipital artery

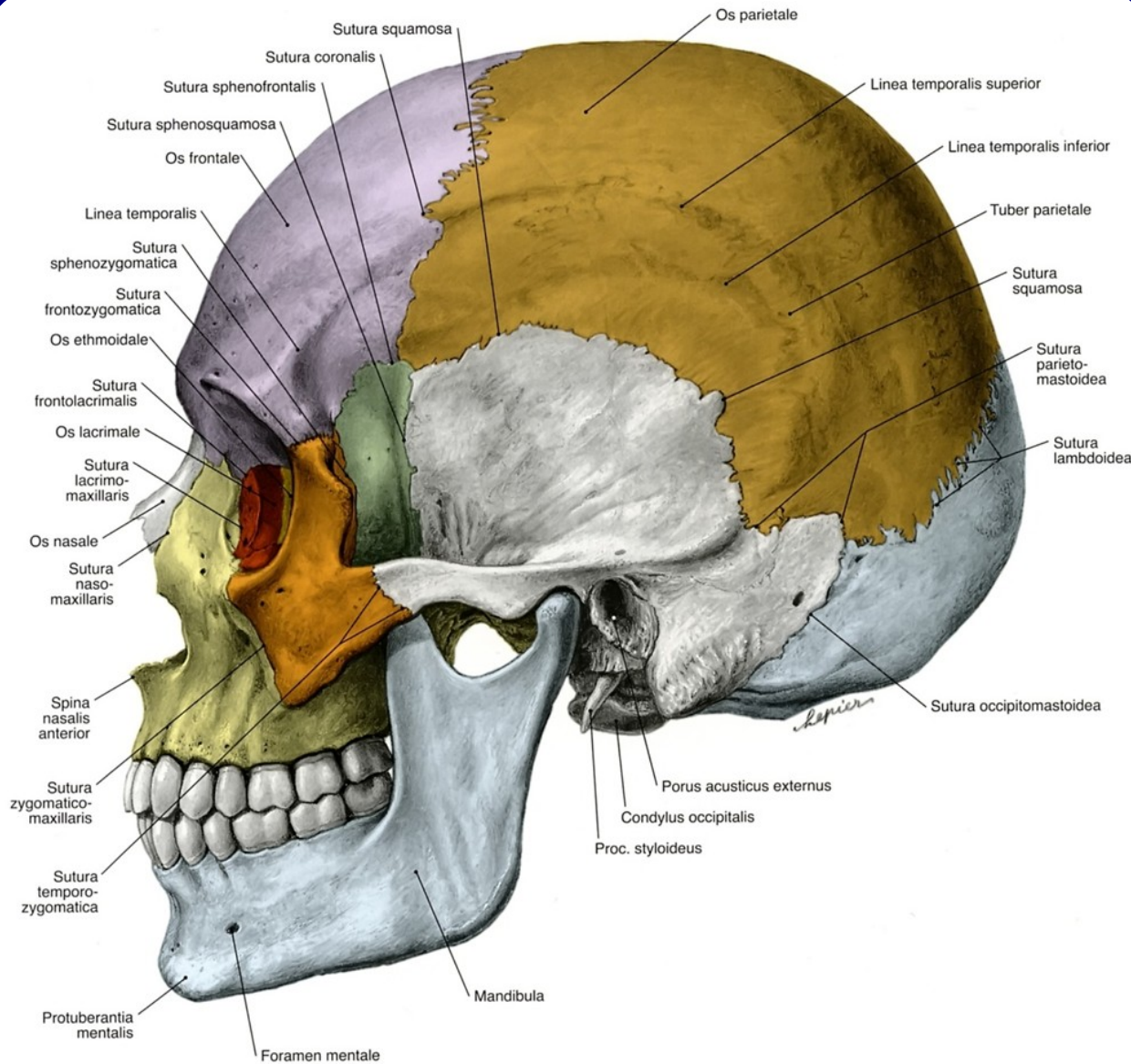
5. Condylar canal with external cranial base




Contains: emissary condylar vein

6. External aperture of vestibular aqueduct with vestibular aqueduct

Contains: endolymphatic duct

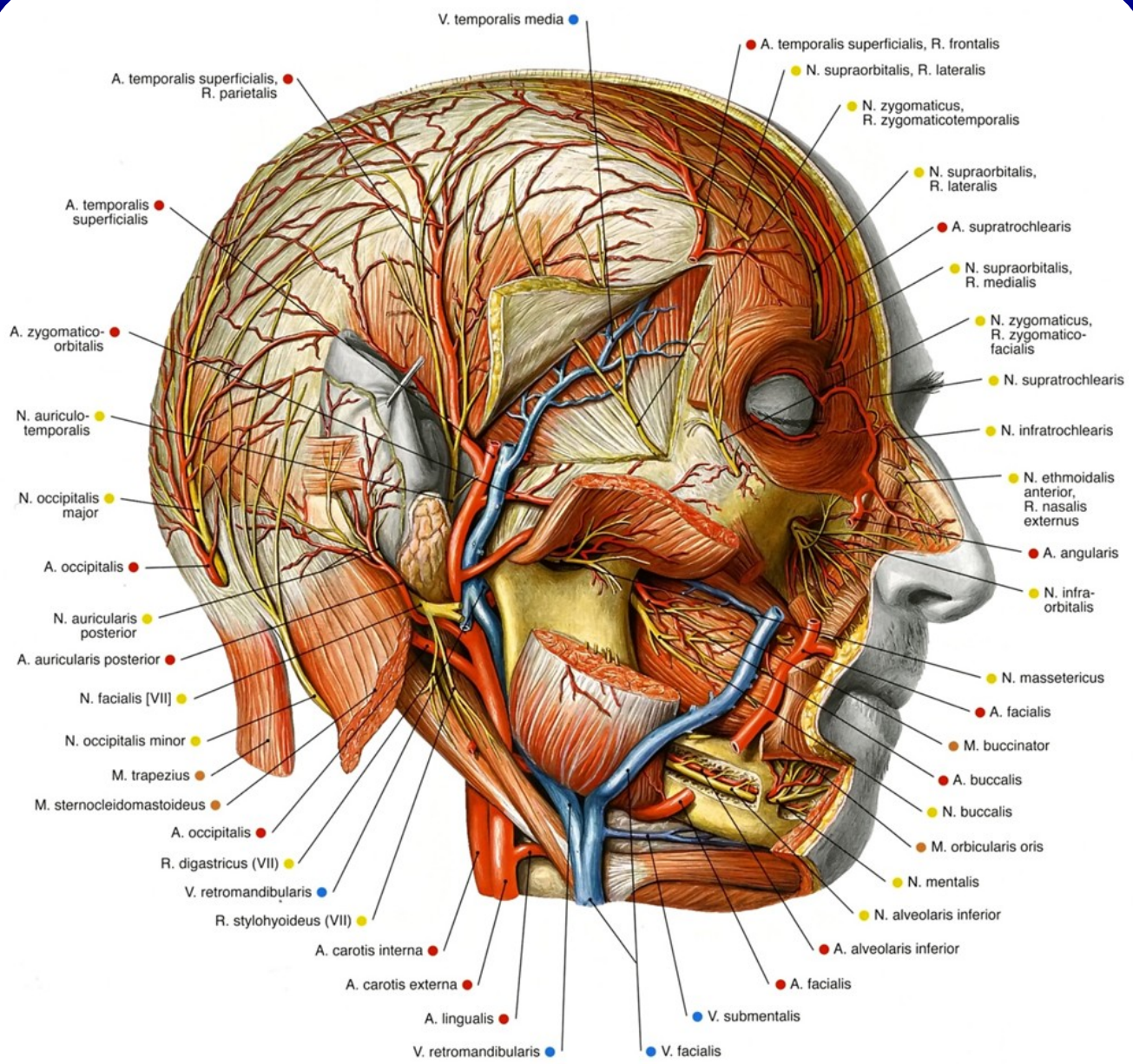
Temporal fossa



	Os frontale
	Os parietale
	Os occipitale
	Os nasale
	Os lacrimale
	Os zygomaticum
	Os sphenoidale
	Os ethmoidale
	Os temporale
	Maxilla
	Mandibula

Limitations:

- Medial wall: parietal bone, squamous temporal, temporal surface of frontal, temporal surface of greater wing of sphenoid
- Anterior wall: temporal surface of frontal; temporal surface of zygomatic
- Lateral limitation: zygomatic arch



Contents:

- Temporalis muscle
- Middle temporal vessels
- Deep temporal vessels
- Zygomaticotemporal branch of the zygomatic nerve
- Connective tissue

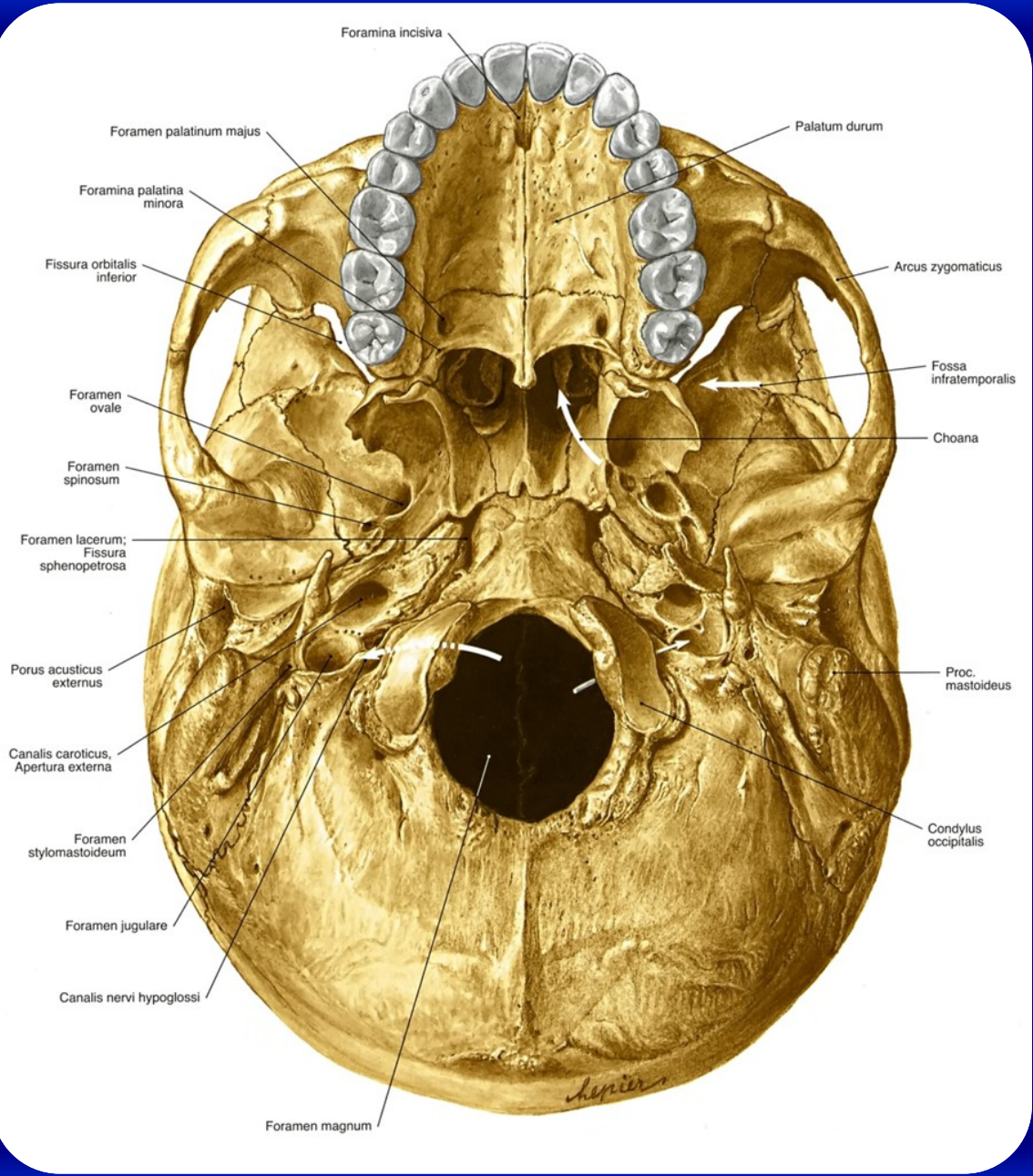
Superficially to the temporal fascia one can find the following:

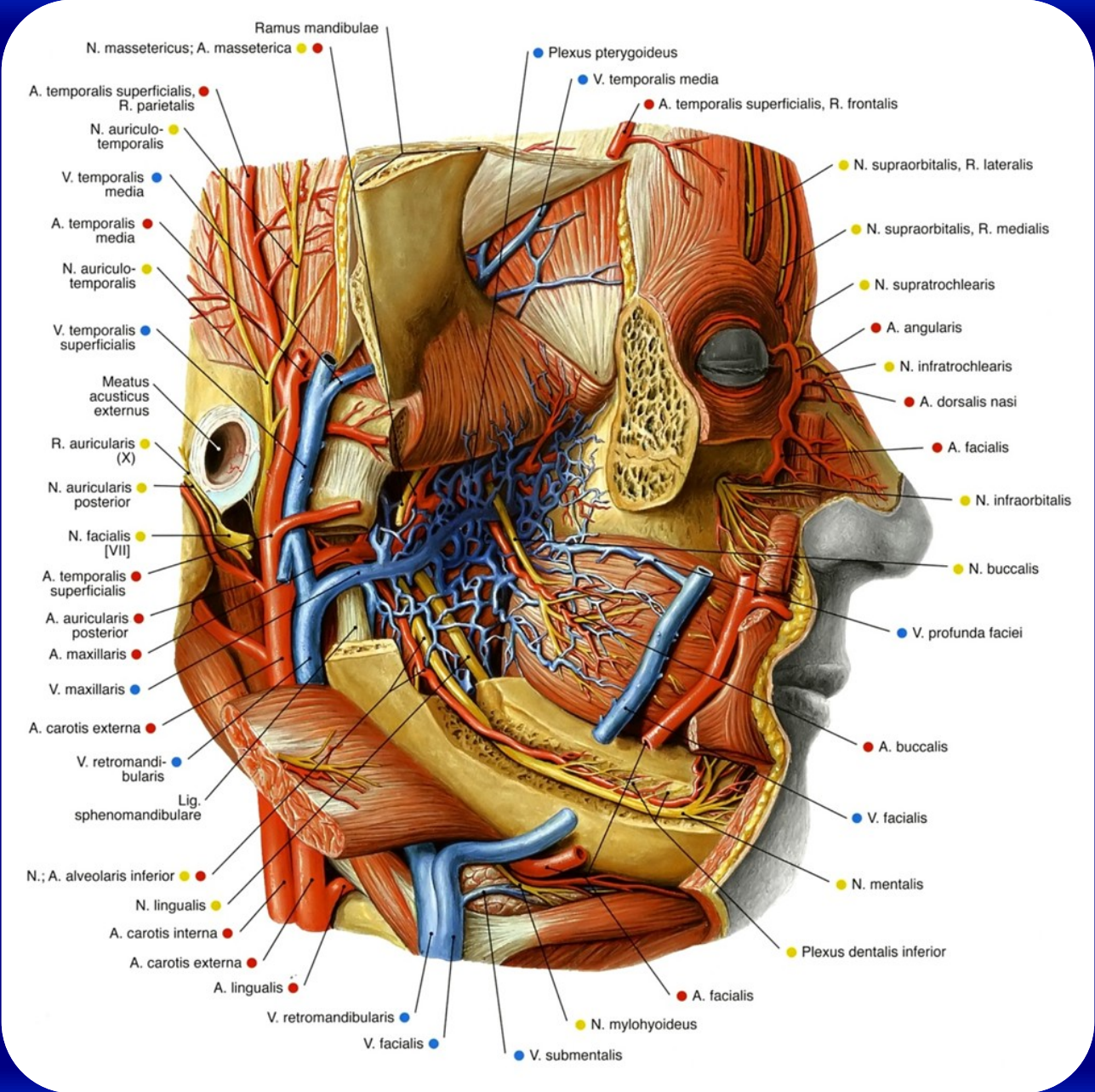
- Superficial temporal vessels
- Superficial temporal branches of the auriculotemporal nerve
- Temporal and zygomatic branches of the facial nerve

Infratemporal fossa

Limitations:

- Superior wall: infratemporal surface of the greater wing of sphenoid
- Anterior wall: infratemporal surface of maxilla
- Lateral wall : mandibular ramus
- Medial wall: lateral pterygoid plate

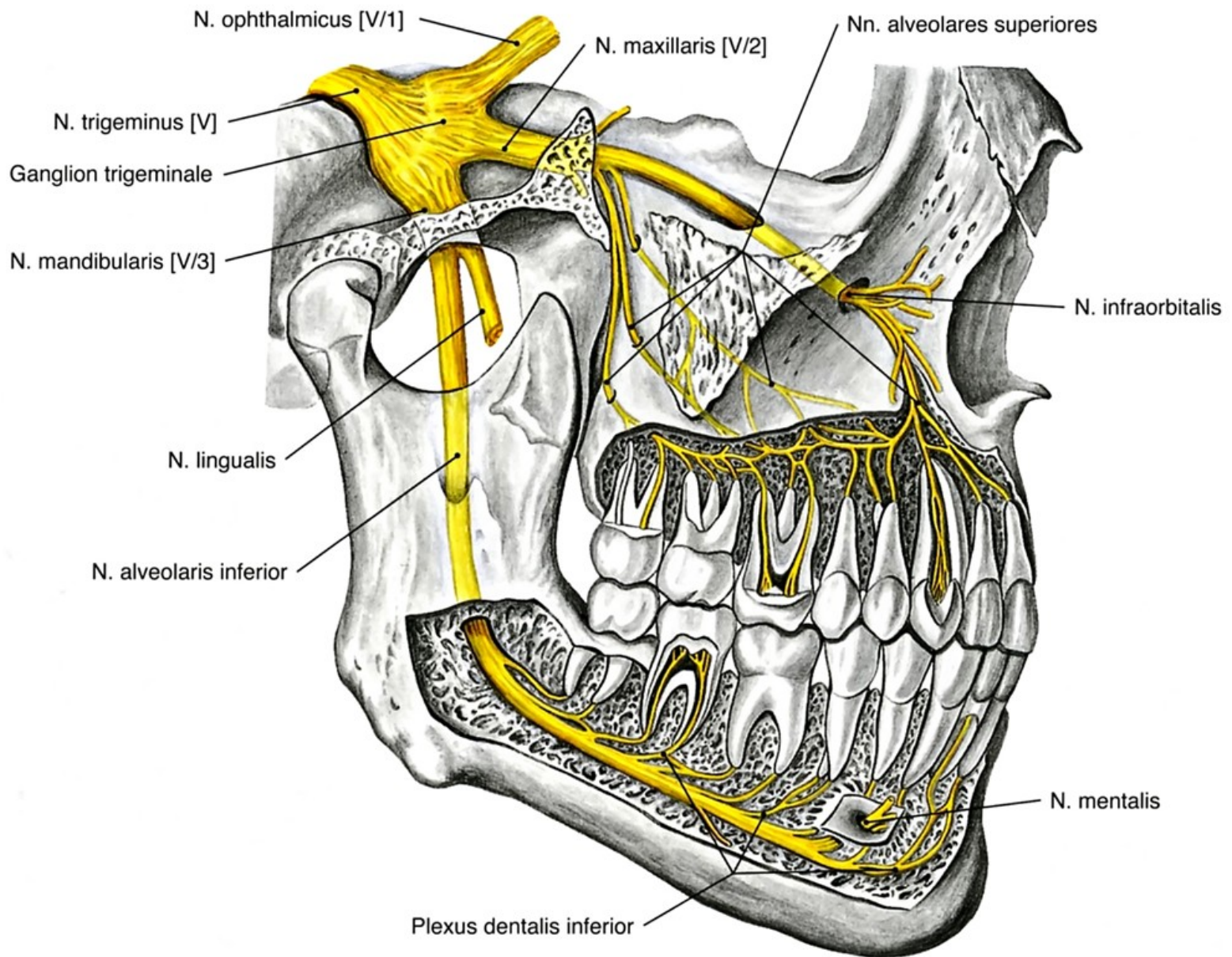




- Ramus mandibulae
- N. massetericus; A. masseterica
- Plexus pterygoideus
- V. temporalis media
- A. temporalis superficialis, R. parietalis
- A. temporalis superficialis, R. frontalis
- N. auriculo-temporalis
- N. supraorbitalis, R. lateralis
- V. temporalis media
- N. supraorbitalis, R. medialis
- A. temporalis media
- N. supratrochlearis
- N. auriculo-temporalis
- N. supratrochlearis
- V. temporalis superficialis
- A. angularis
- Meatus acusticus externus
- N. infratrochlearis
- R. auricularis (X)
- A. dorsalis nasi
- N. auricularis posterior
- A. facialis
- N. facialis [VII]
- N. infraorbitalis
- A. temporalis superficialis
- N. buccalis
- A. auricularis posterior
- V. profunda faciei
- A. maxillaris
- A. buccalis
- V. maxillaris
- V. facialis
- A. carotis externa
- A. buccalis
- V. retromandibularis
- Lig. sphenomandibulare
- V. facialis
- N.; A. alveolaris inferior
- N. mentalis
- N. lingualis
- A. carotis interna
- Plexus dentalis inferior
- A. carotis externa
- A. lingualis
- A. facialis
- V. retromandibularis
- N. mylohyoideus
- V. facialis
- V. submentalis

Contents:

- Medial and lateral pterygoid muscles
- Second portion of maxillary artery with its ramifications
- Mandibular nerve – nervus spinosus; anterior division to mm. of mastication; buccal nerve – next V3 divides into lingual, inferior alveolar, and auriculotemporal nerves
- Otic ganglion
- Chorda tympani
- Pterygoid venous plexus



Communication:

- Through the pterygopalatine fissure with pterygopalatine fossa
- Through the inferior orbital fissure with orbit
- Through foramen ovale with the middle cranial fossa
- Through the foramen spinosum with the middle cranial fossa
- Through the mandibular foramen with the mandibular canal
- Through the mandibular notch with the superficial facial region
(contains masseteric vessels and nerve)

Retromandibular fossa

Limitations:

- Anterior: mandibular ramus
- Posterior: mastoid process of temporal
- Superior: tympanic part of temporal
- Medial: styloid process of temporal with structures attached:
stylohyoid, stylopharyngeus, styloglossus muscles, and stylohyoid
and stylomandibular ligaments

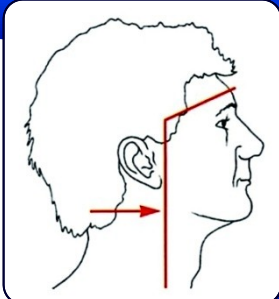
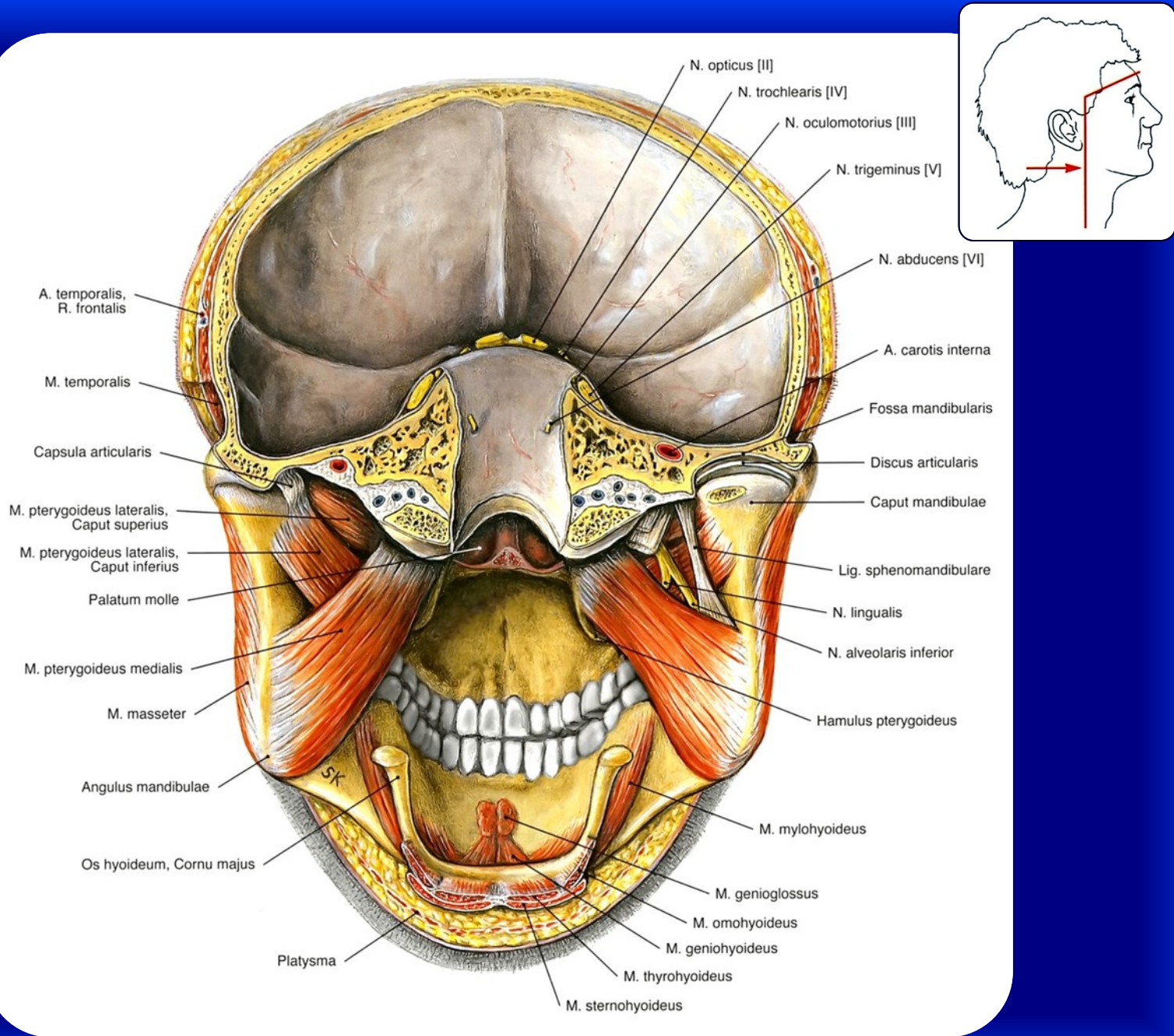
Contents:

- Deep part of parotid gland
- Facial nerve and its branches
- Auriculotemporal nerve
- External carotid artery and maxillary artery
- Retromandibular vein

Pterygomandibular space

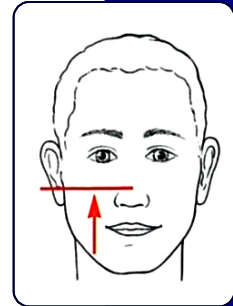
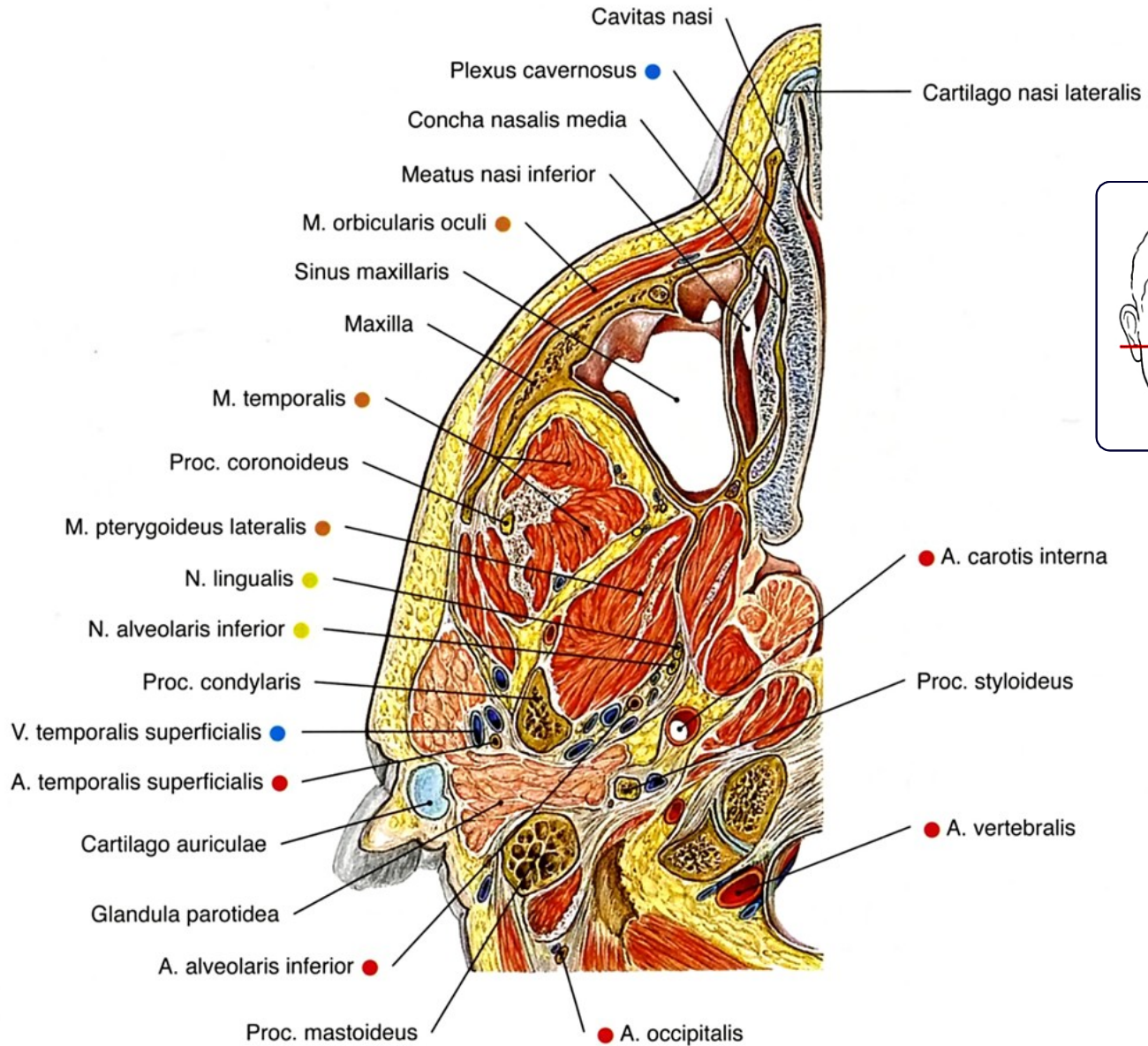
Limitations:

- Lateral: mandibular ramus
- Medial: interpterygoid fascia and medial pterygoid muscle
- Superior: interpterygoid fascia, extending between pterygoid muscles
- Anterior: buccopharyngeal raphe
- Posterior and medial: infratemporal fossa
- Posterior: retromandibular fossa



Contents:

- Inferior alveolar nerve, vein, and artery
- Middle meningeal artery
- Deep temporal vessels
- Muscular branches
- Pterygoid venous plexus
- Lingual nerve
- Chorda tympani
- Mylohyoid nerve and vessels
- Buccal nerve



The main application of anatomical knowledge
on pterygomandibular space is anesthesia
of inferior alveolar nerve!!!