Temporal and infratemporal fossa

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Lecture ILOS & Objectives:

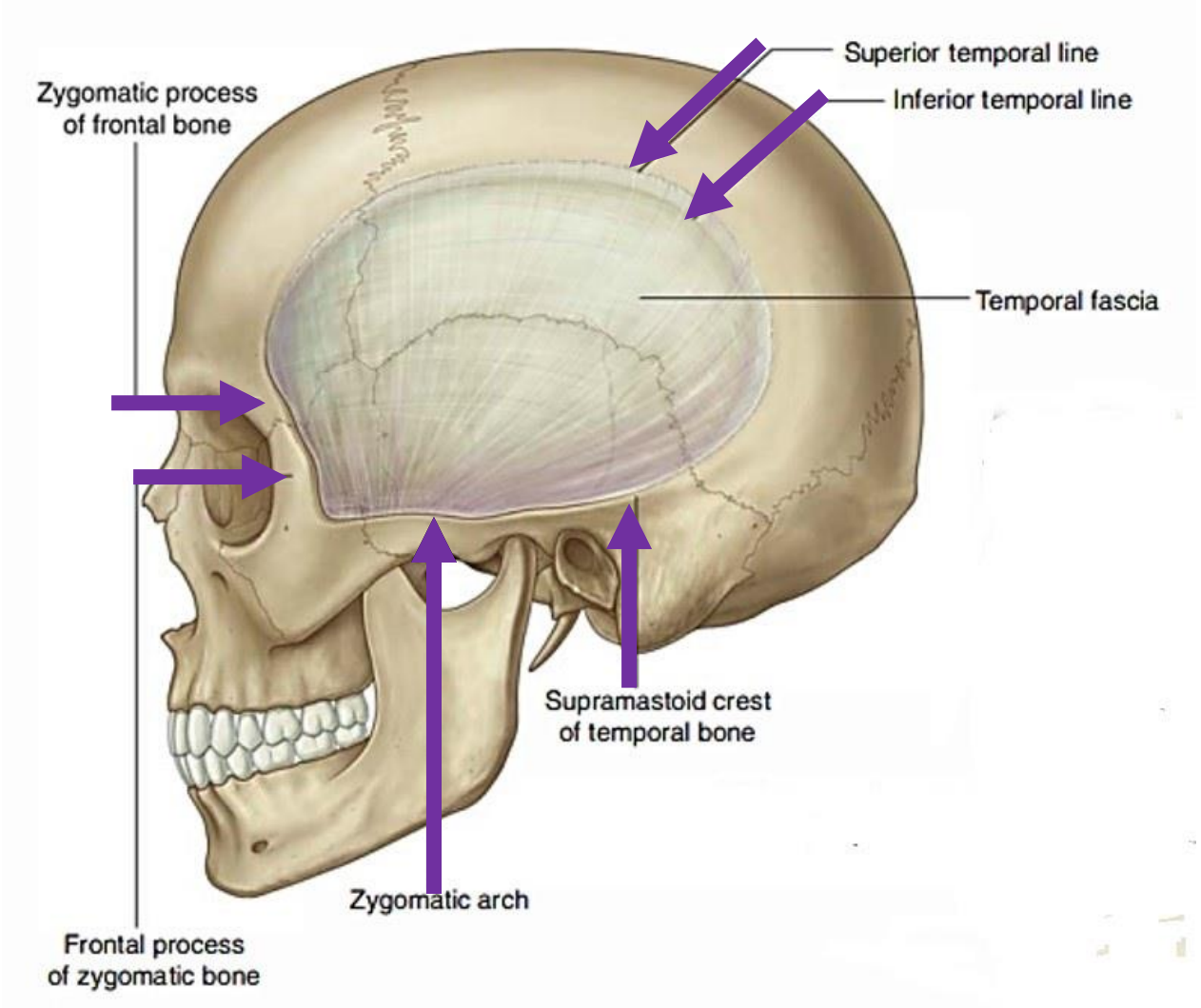
By the end of this lecture the student should be able to:

1. **Define temporal fossa, its boundaries and list its contents.**
2. **Define infratemporal fossa, its boundaries and list its contents.**
3. **Describe origin, insertion, nerve supply and action of the muscles of mastication.**
4. **Identify pterygoid venous plexus and list its communications.**
5. **Identify maxillary vein and how it end**
6. **Identify the mandibular nerve and its branches.**

Temporal Fossa

- It is the region lying at the upper part of the side of the skull above the zygomatic arch (temple).
- **Boundaries:**

1. frontal process of zygomatic bone.
2. Zygomatic process of frontal bone
3. Superior temporal line
4. Supramastoid crest
5. zygomatic arch



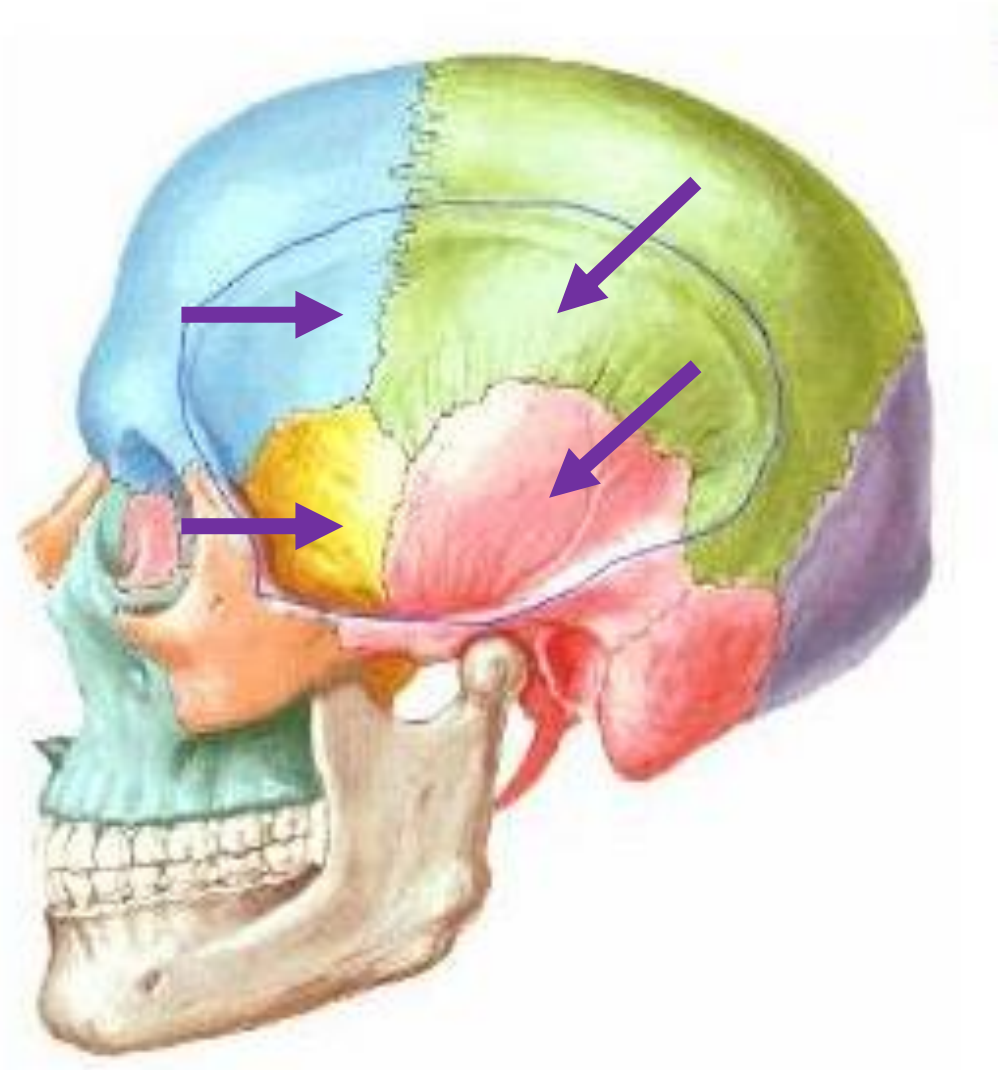
Temporal Fossa

Walls:

Medial wall: Formed by parietal, frontal, squamous part of temporal bone and greater wing of sphenoid

Anterior wall: *Formed by:* the zygomatic process of frontal bone & the frontal process of zygomatic bone.

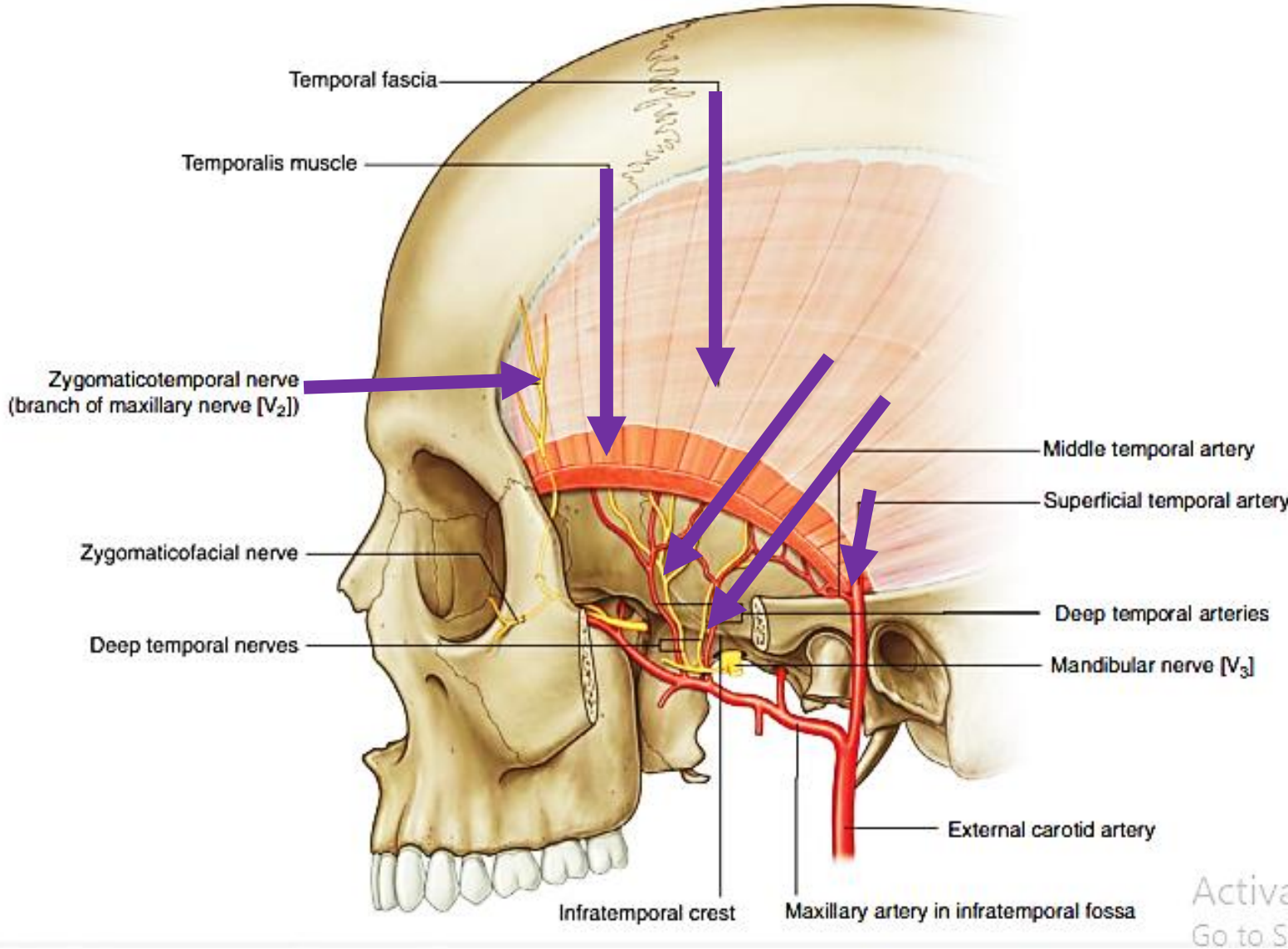
Lateral wall: Formed by the zygomatic arch



Temporal Fossa

Contents:

1. Temporalis muscle and fascia.
2. Deep temporal nerves and vessels
3. Superficial temporal vessels
4. Zygomatico- temporal nerve
5. Auriculotemporal nerve



Infratemporal Fossa

Boundaries:

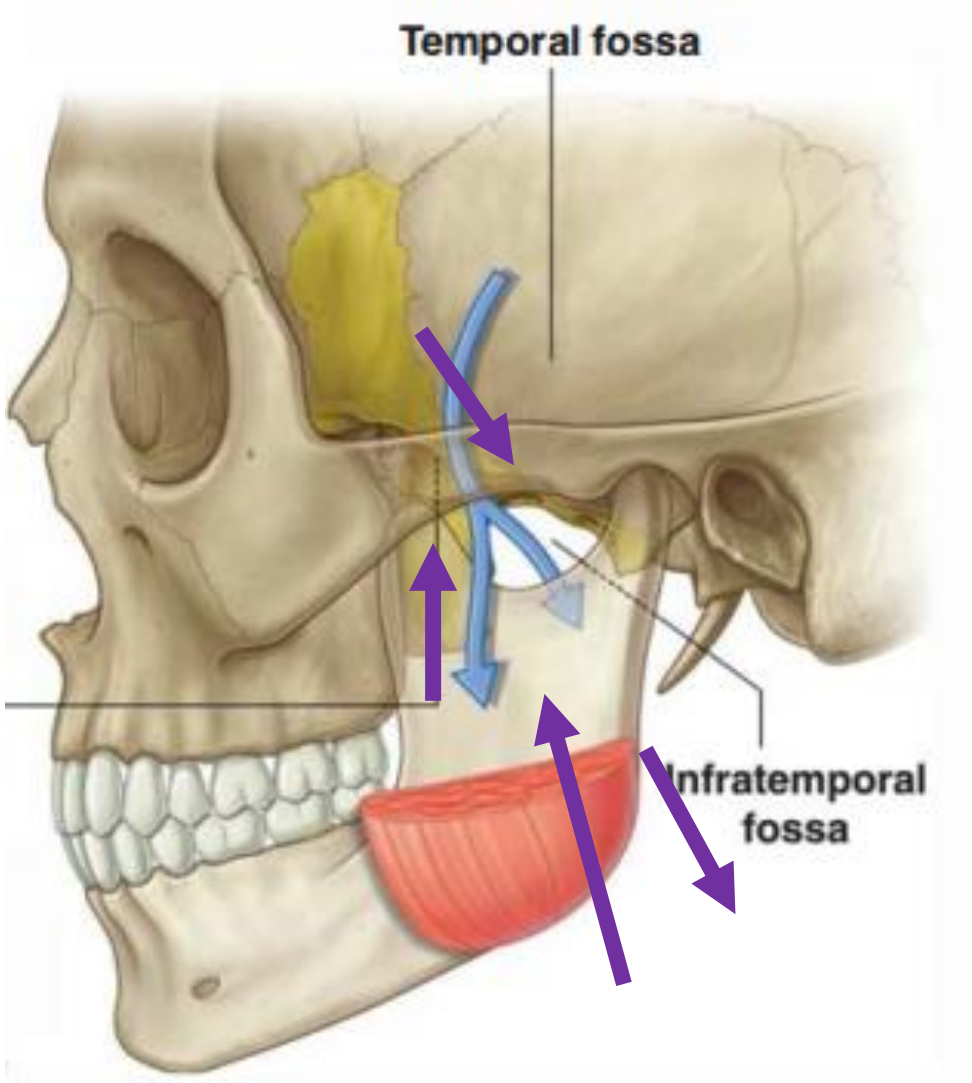
Above: Infratemporal surface of the greater wing of sphenoid and infratemporal crest.

Anteriorly: Back of maxilla.

Medially : Lateral pterygoid plate.

Laterally: zygomatic arch, coronoid process and ramus of mandible.

Below and posteriorly: the fossa is free



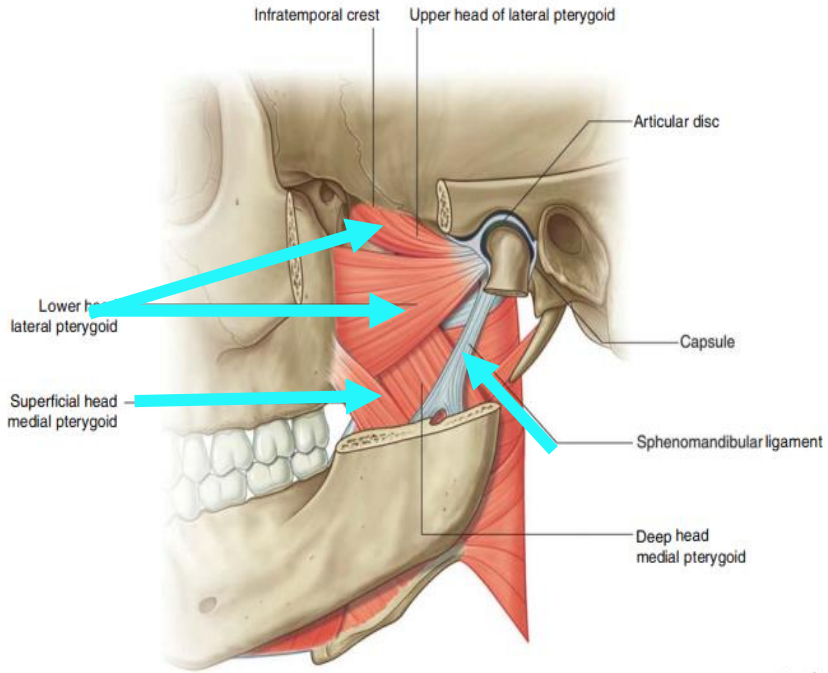
Contents of Infratemporal Fossa

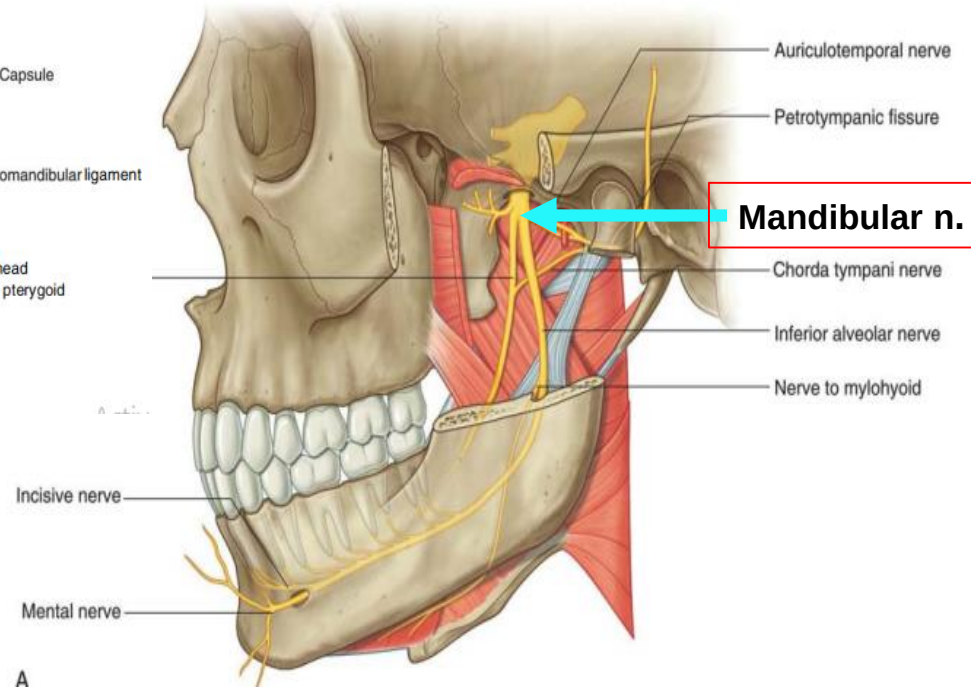
1. Muscles& ligaments:

- Lateral pterygoid muscle
- Medial pterygoid muscle
- Sphenomandibular ligament

2. Nerves:

- Mandibular nerve
- Maxillary nerve
- Chorda tympani nerve
- Otic ganglion





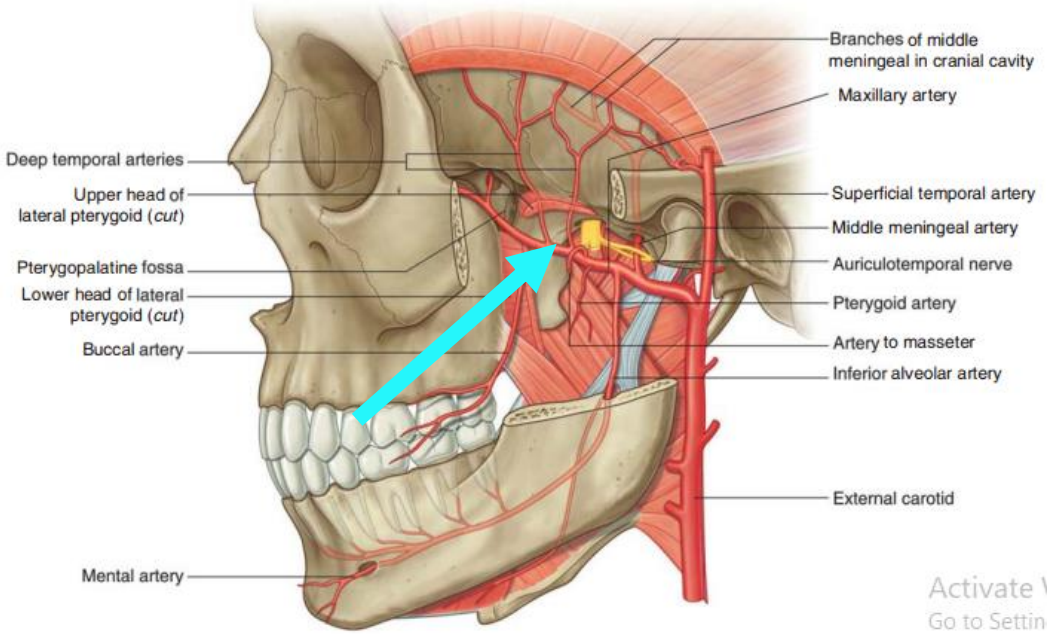
Contents of Infratemporal Fossa

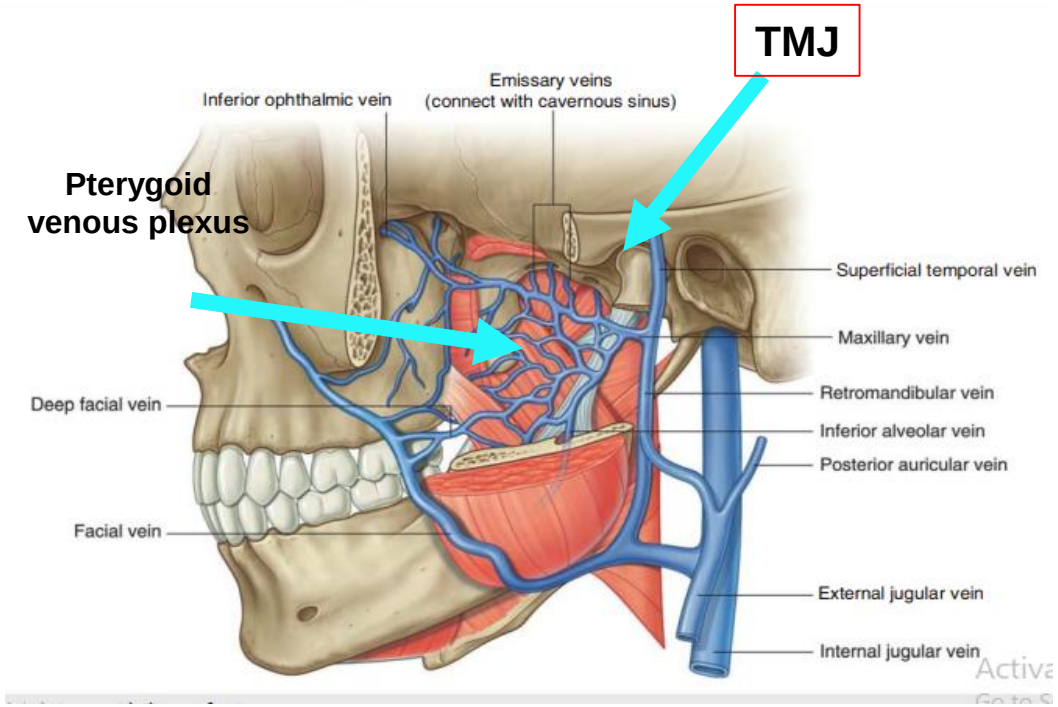
3. Vessels:

- Maxillary artery
- Pterygoid venous plexus

4. Joints:

- Temporomandibular joint (TMJ)

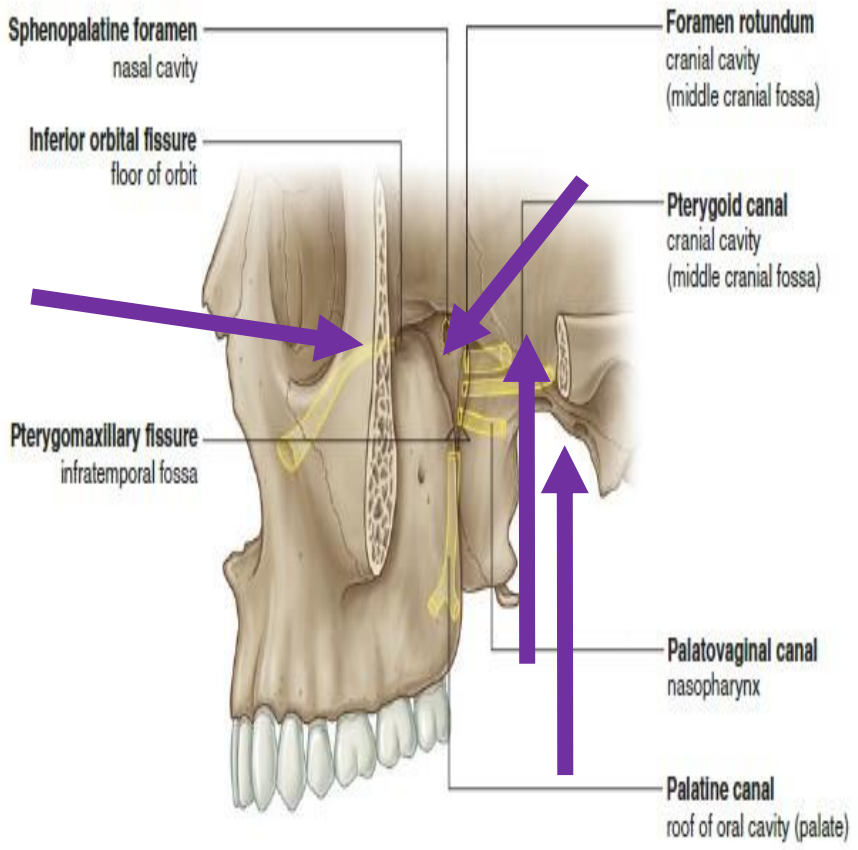




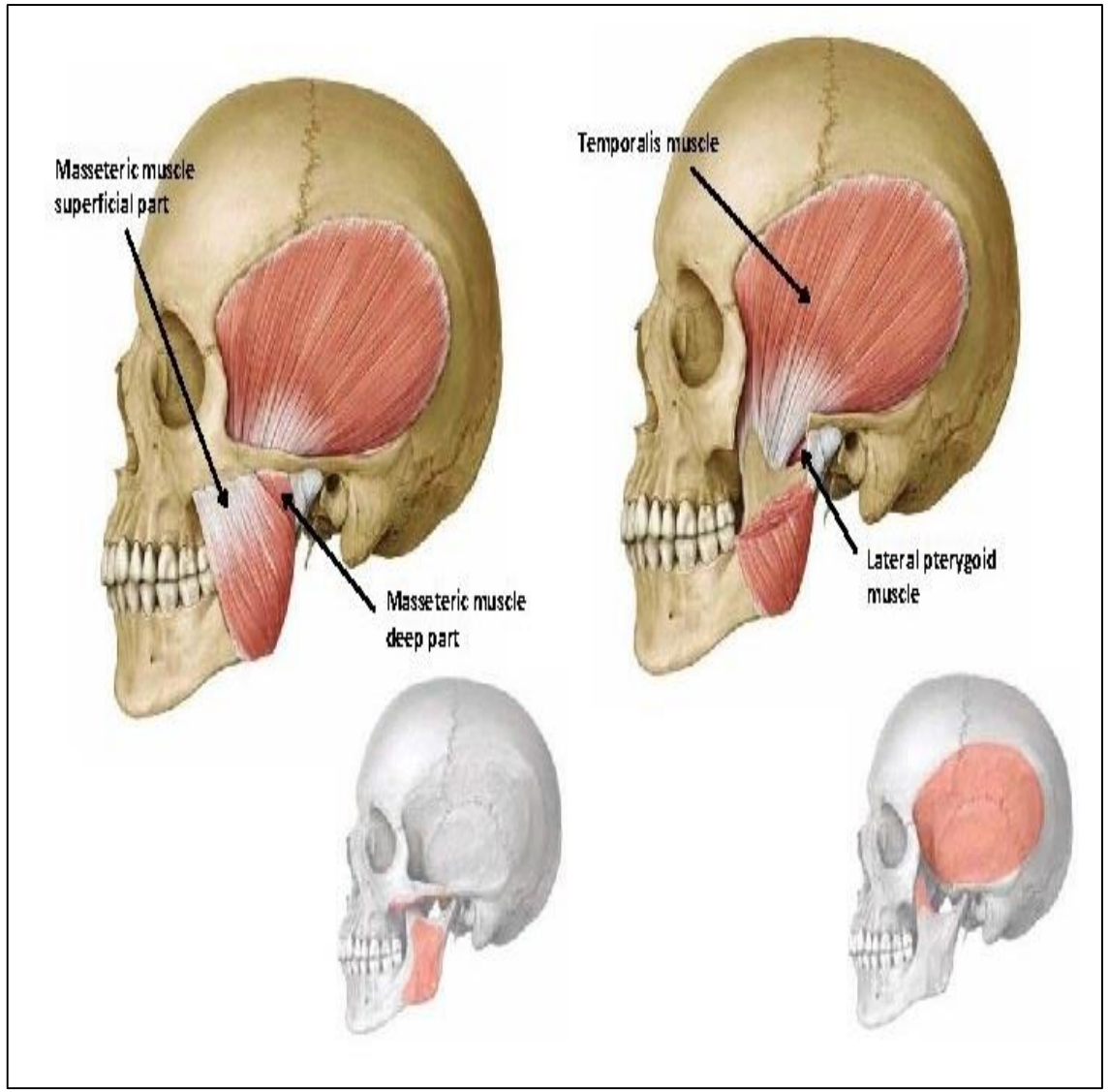
Communication of Infratemporal Fossa

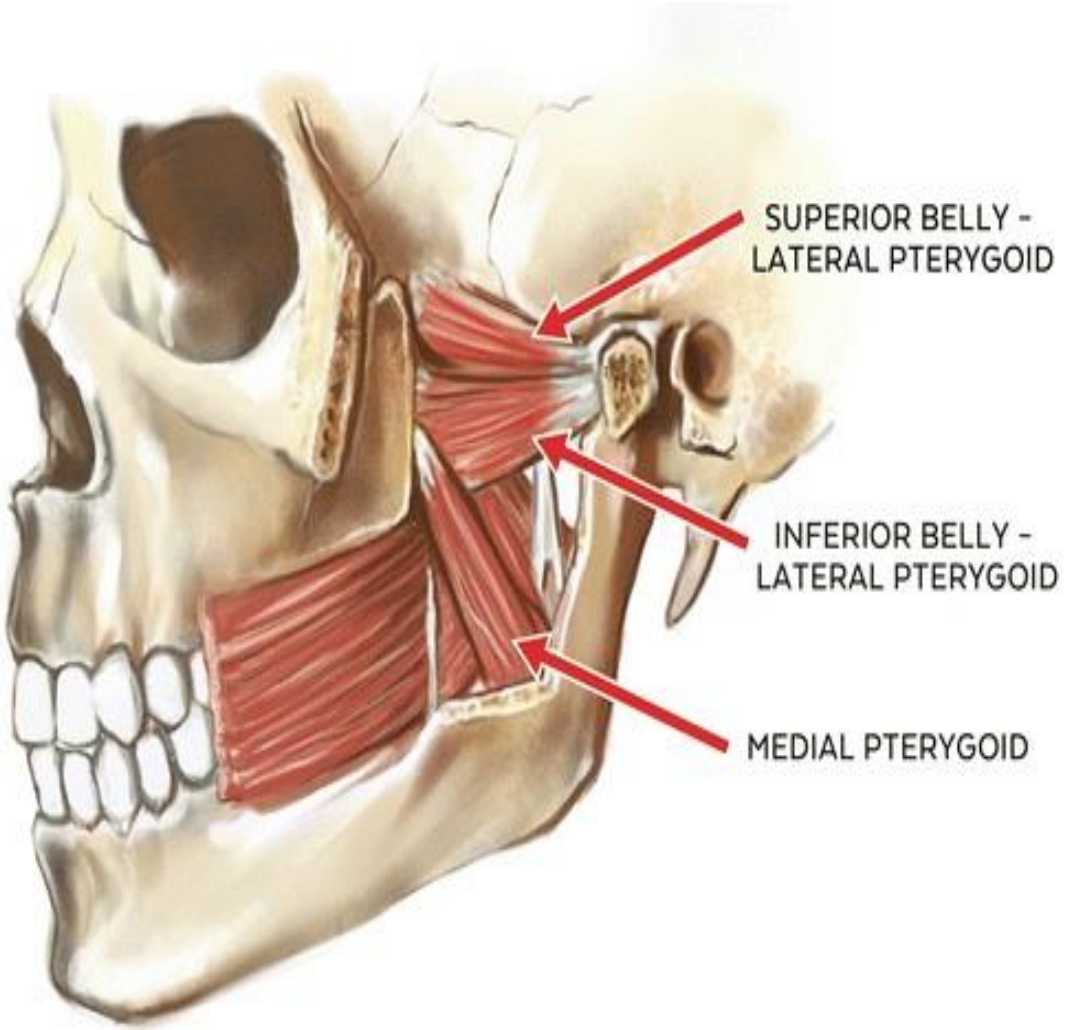
Communications:

- Orbit through the inferior orbital fissure.
- Pterygo-palatine fossa through the pterygo-maxillary fissure.
- Temporal fossa through the gap deep to zygomatic arch.
- Middle cranial fossa through foramen ovale and foramen spinosum



Muscles of mastication





Temporalis

ORIGIN:

Floor of the temporal fossa

Deep surface of the temporal fascia

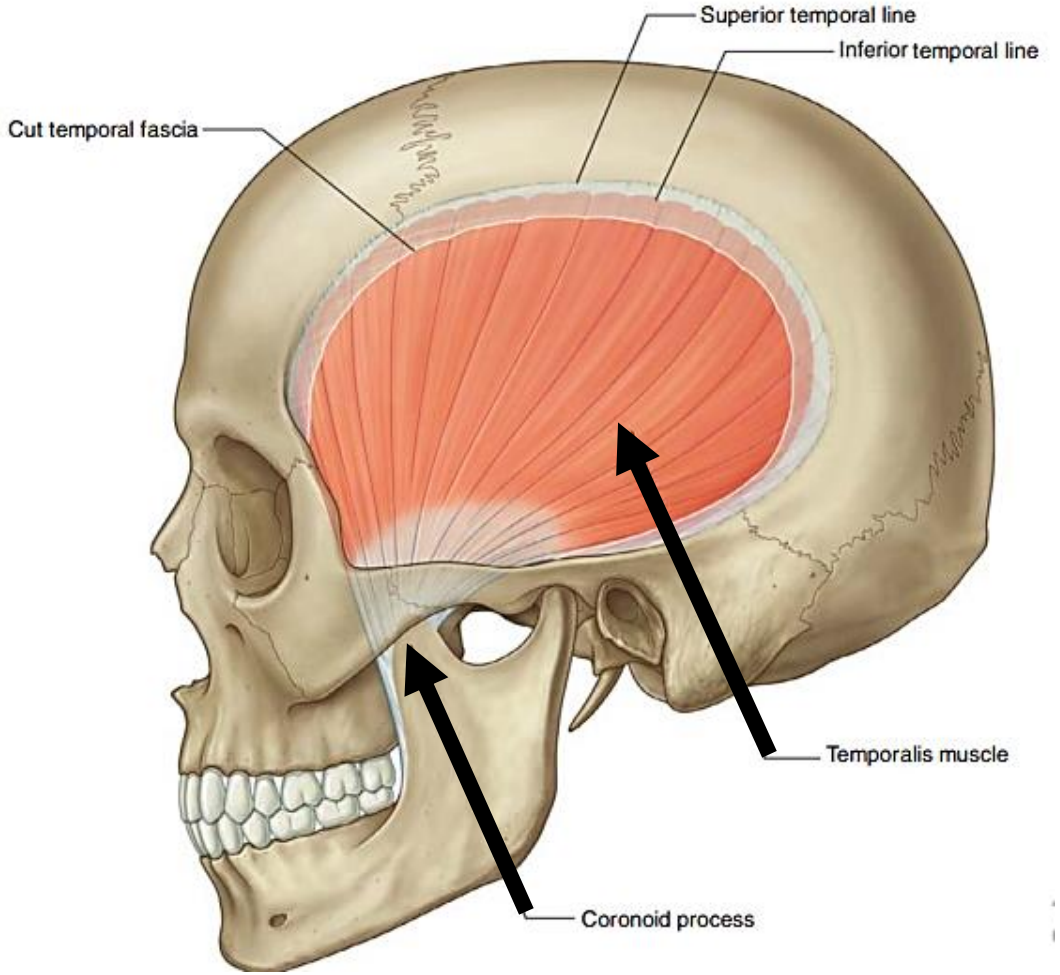
Insertion :

Tip, margins and inner surface of the coronoid process of the mandible

Nerve supply: Deep temporal branches of mandibular nerve.

Action:

1. Anterior fibers elevate the mandible
2. Posterior fibers retract the mandible



Masseter

ORIGIN:

Superficial part: from the lower border of the zygomatic arch.

Deep part:_ from the deep surface of the zygomatic arch

Insertion :

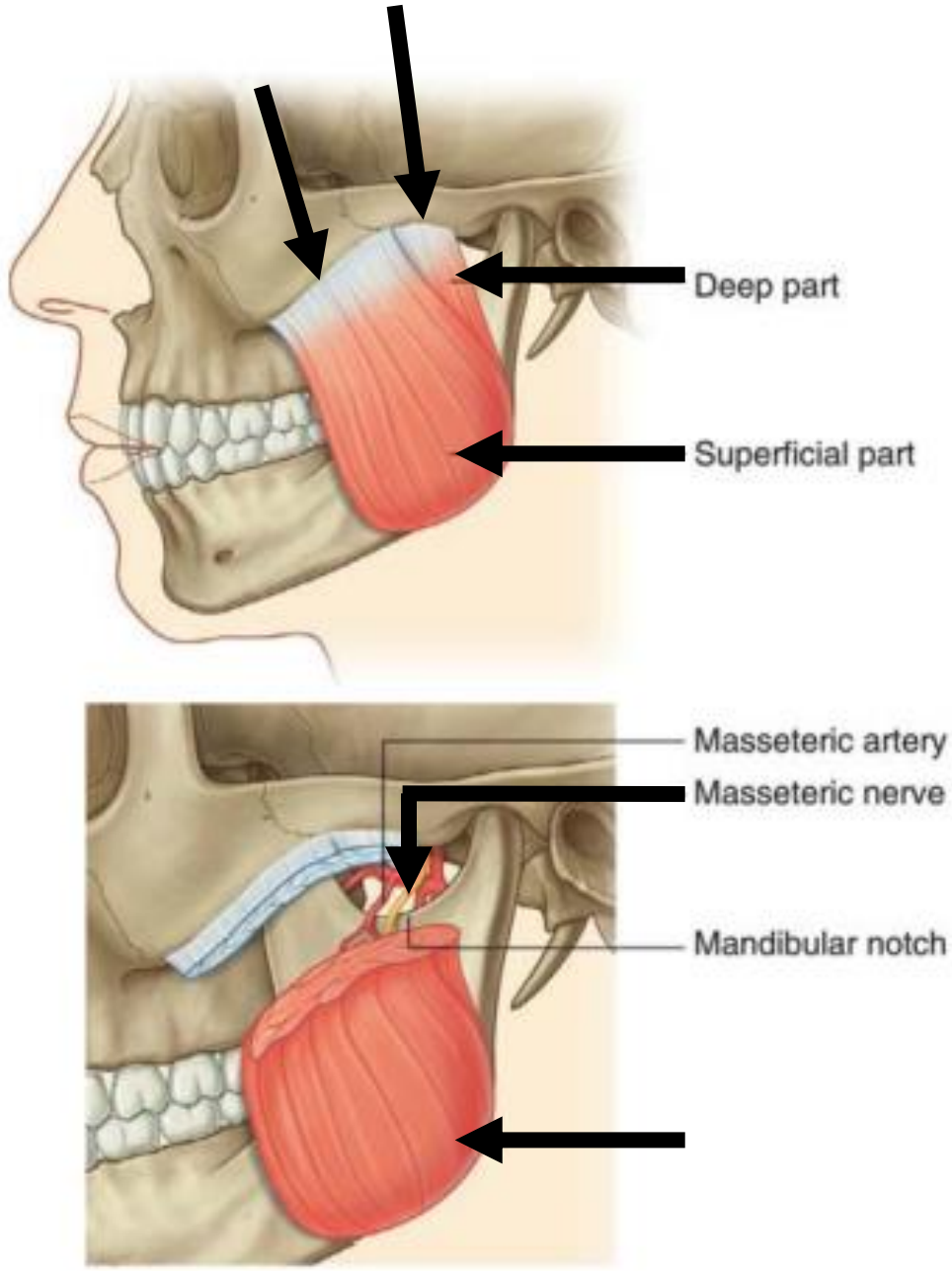
Lateral surface of the ramus of mandible

Nerve supply: masseteric branch of anterior division of mandibular nerve.

Action:

elevates the mandible

Protrude the mandible



Lateral pterygoid

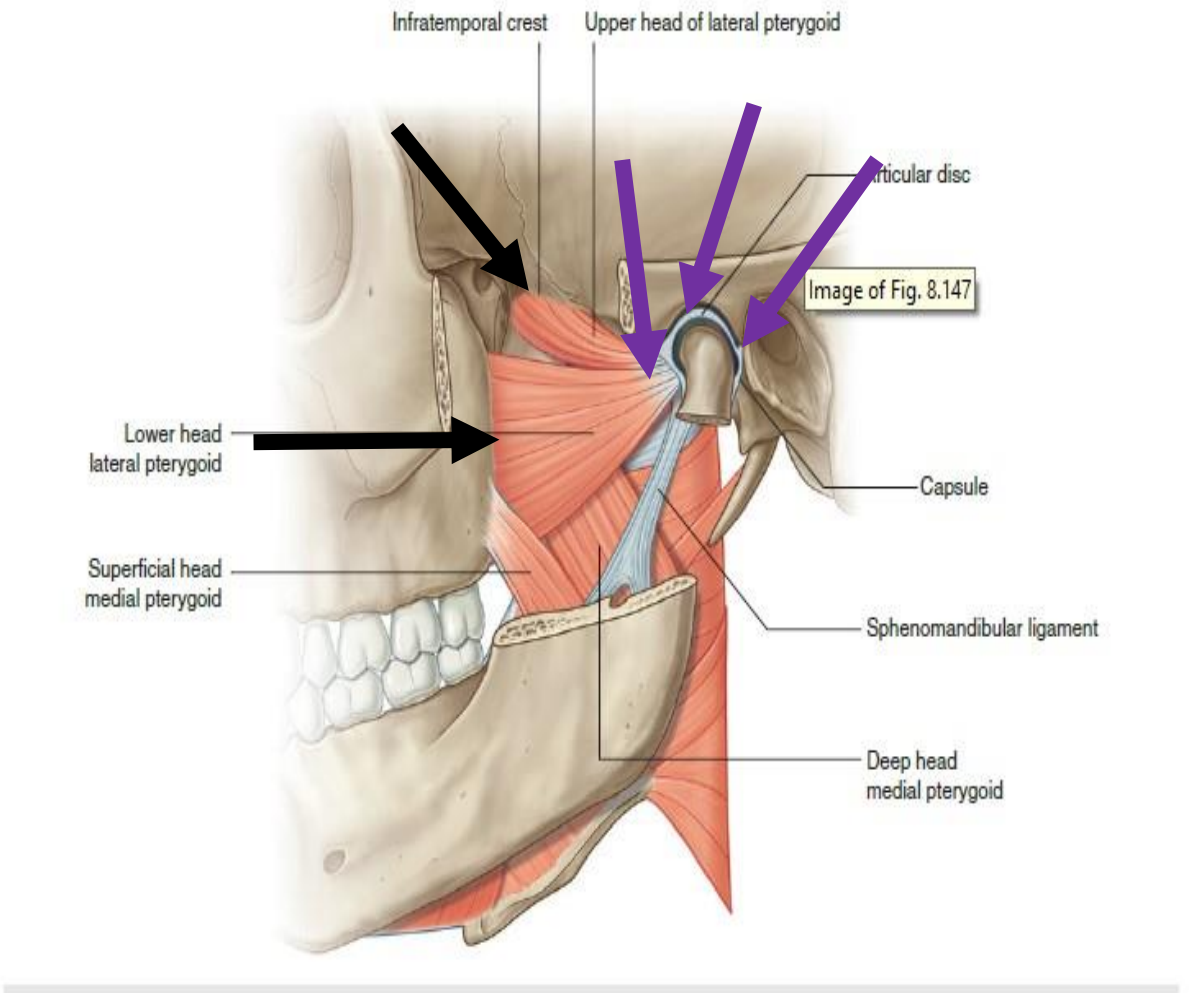
ORIGIN:

Upper head: From the infratemporal crest and infratemporal surface of the greater wing of the sphenoid

Lower head: From the lateral surface of the lateral pterygoid plate.

Insertion :

- Pterygoid fovea on the front of the neck of mandible
- Articular disc
- Capsule of the tempro-mandibular joint.

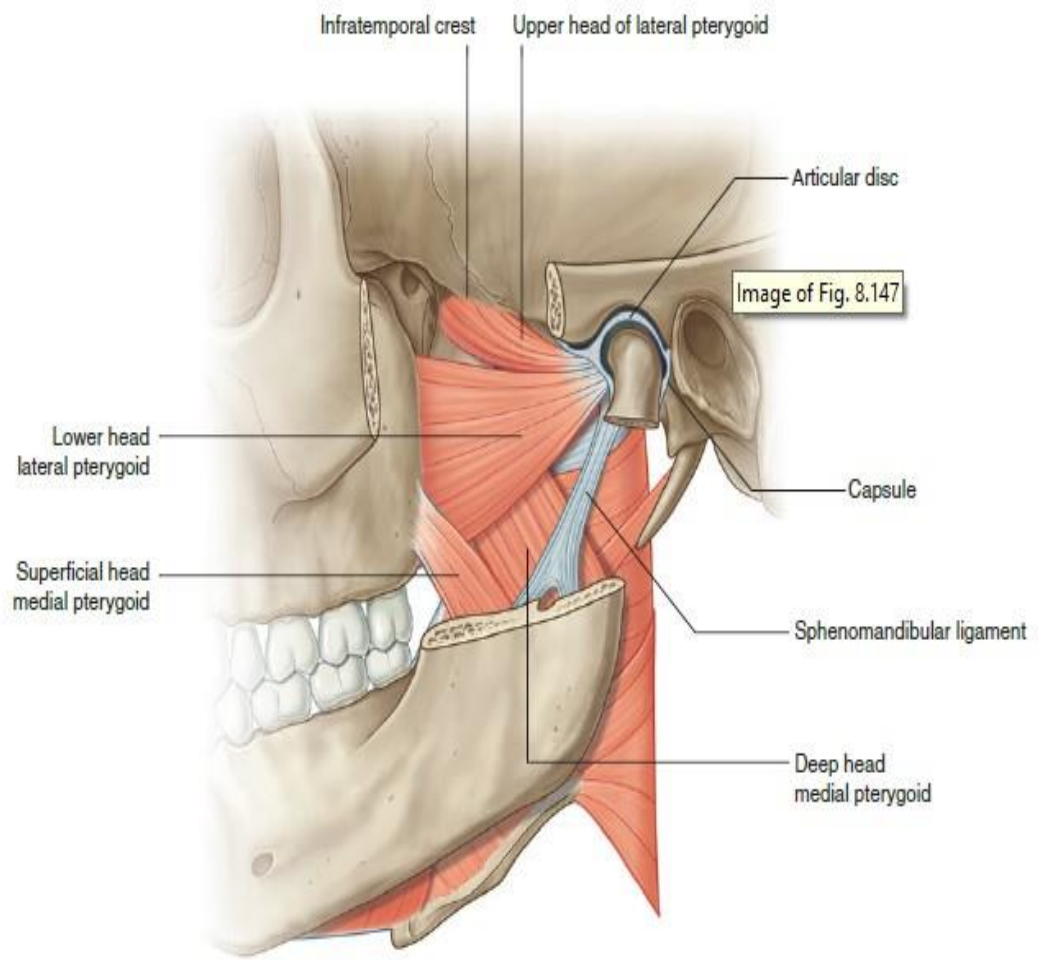


Lateral pterygoid

Nerve supply: from anterior division of mandibular nerve.

Action:

- Depression of mandible
- protrusion (forward pull or protrusion)
- side to side movements of mandible.

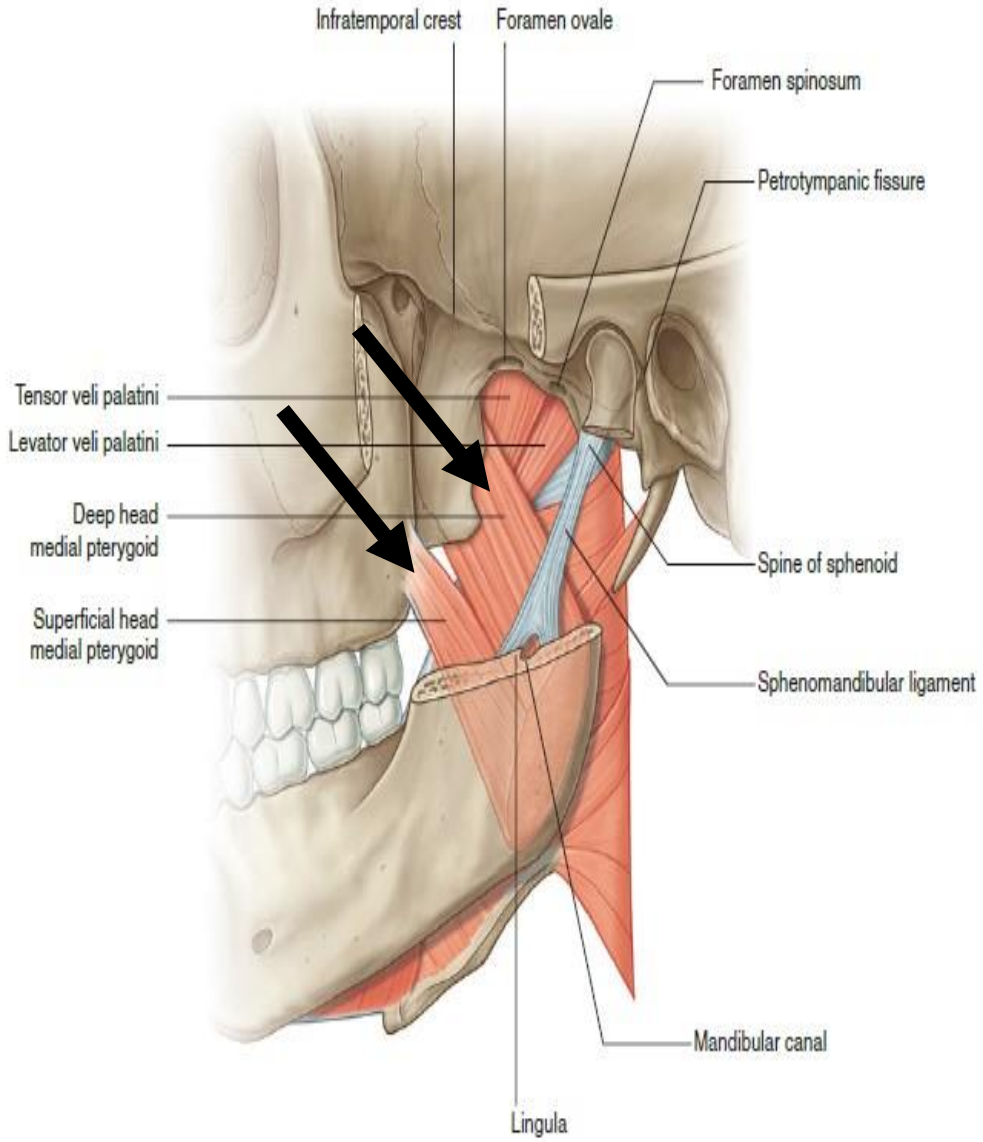


Medial pterygoid

ORIGIN:

Superficial head: from the tuberosity of the maxilla.

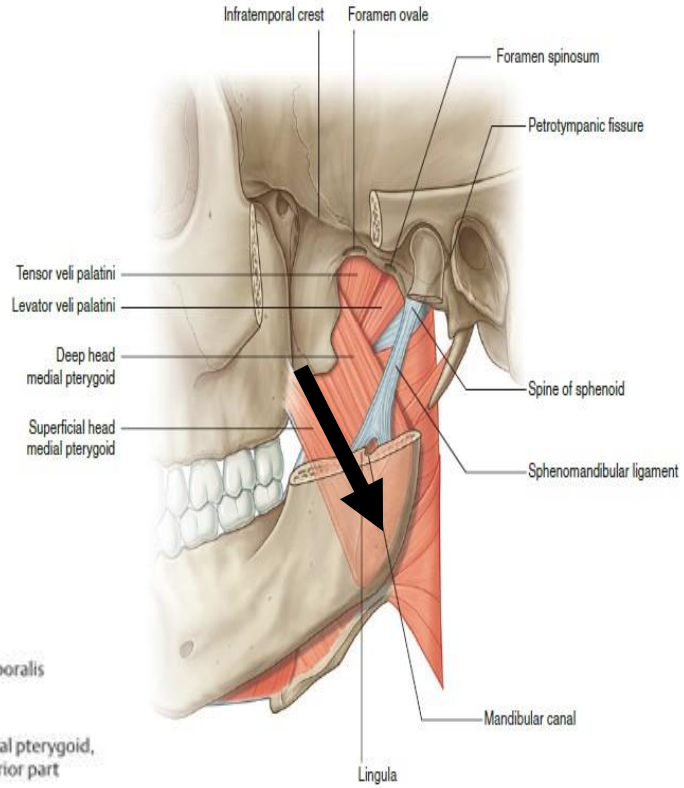
Deep head: from the medial surface of the lateral pterygoid plate

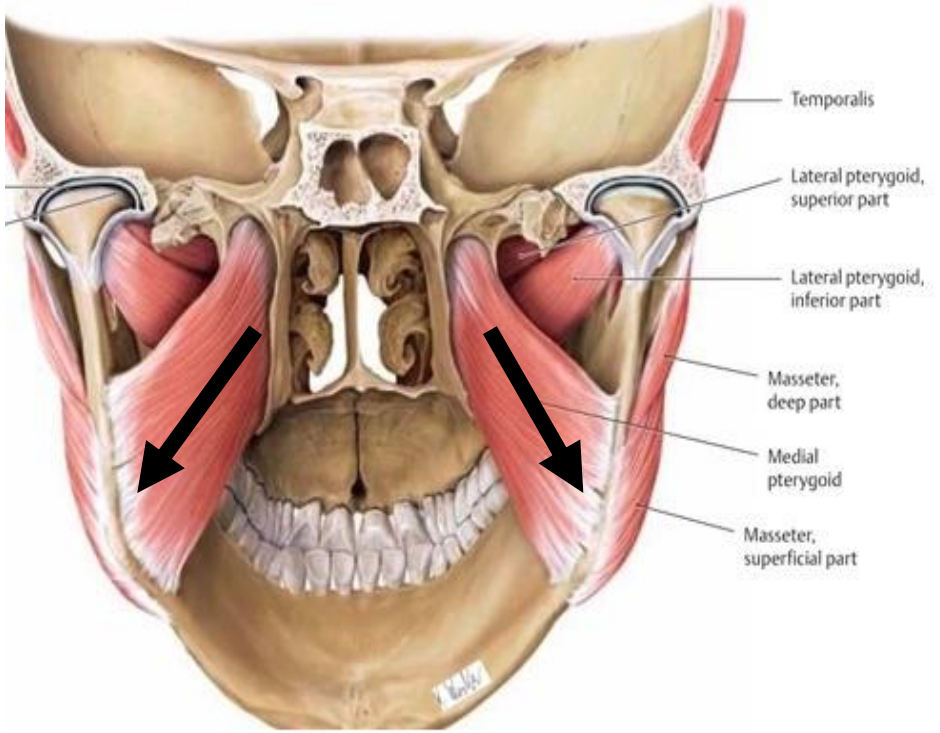


Medial pterygoid

Insertion :

Medial surface of the ramus of the mandible below the mandibular foramen and behind the mylohyoid groove.





Nerve supply: By a branch from the **trunk** of mandibular nerve

Action:

- Elevation
- protrusion
- side to side movements of mandible

Veins of infratemporal fossa

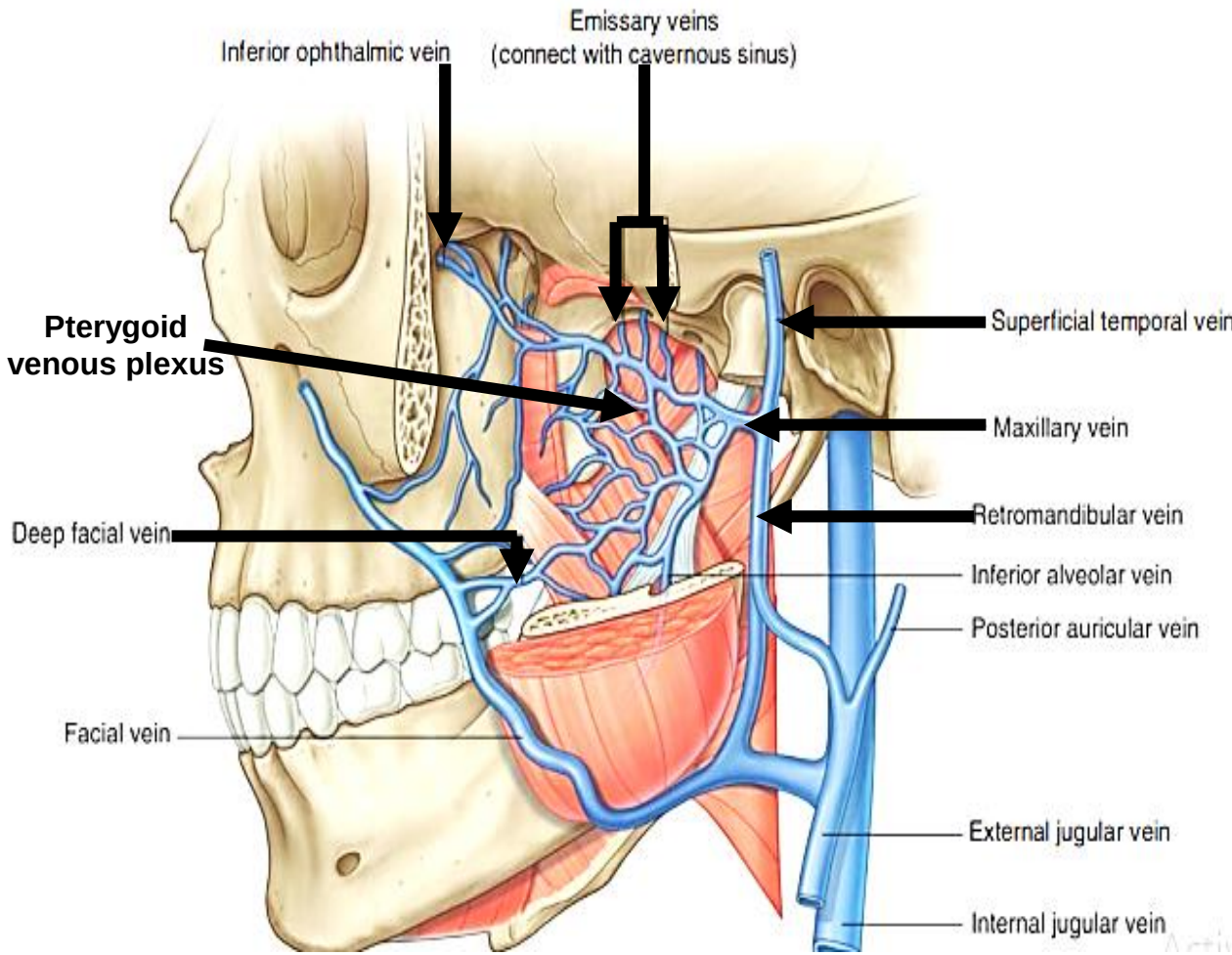
Pterygoid venous plexus

- This plexus is situated in the infratemporal region around the lateral pterygoid muscle.
- The posterior end of the plexus is drained through a short maxillary vein.
- **It communicates with:**

1. Anterior facial vein through the deep facial vein.
2. Cavernous sinus by emissary veins which pass through foramen oval, foramen lacerum and emissary sphenoidal foramen.
3. Pharyngeal plexus.
4. Inferior ophthalmic vein through the inferior orbital fissure

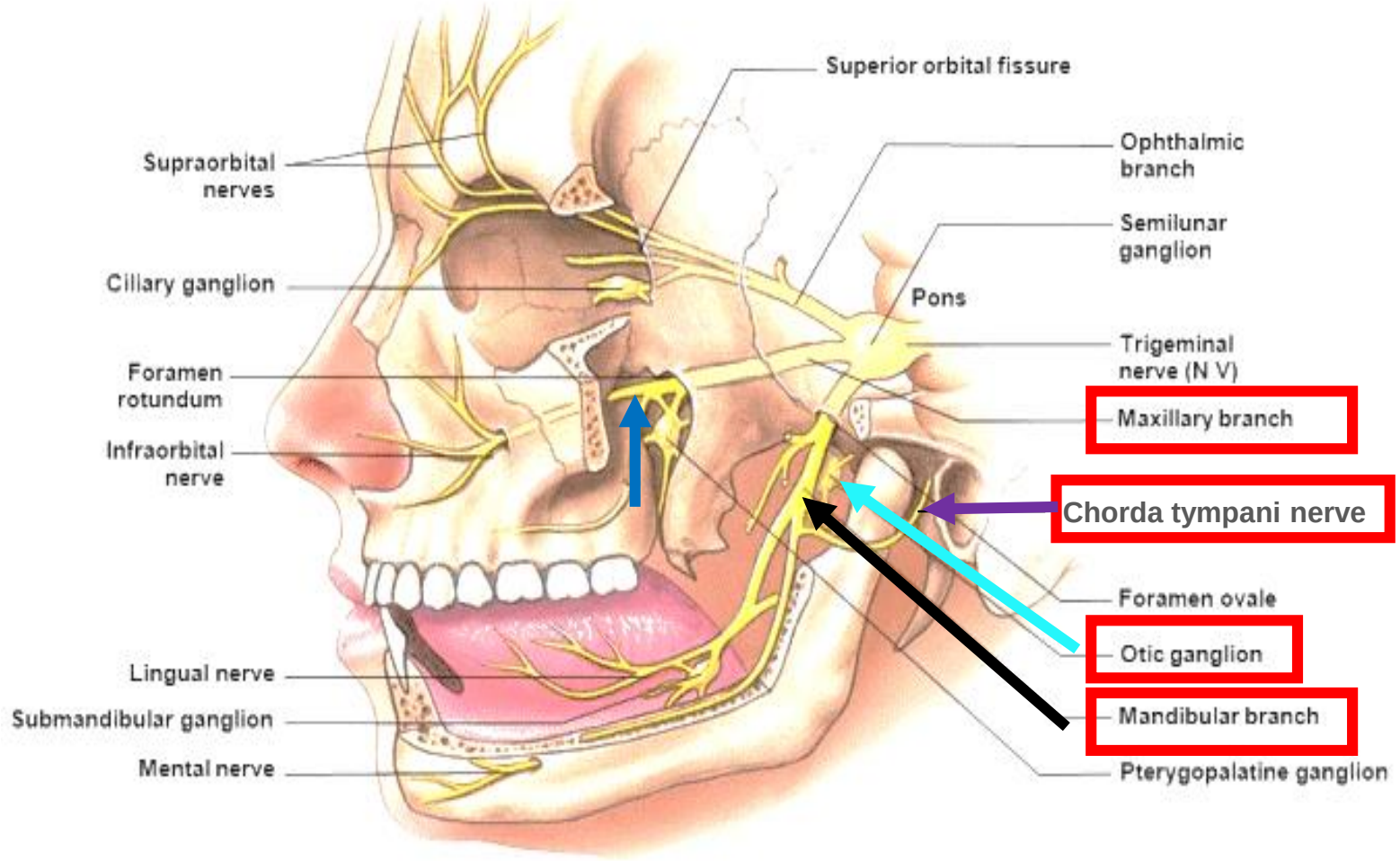
Maxillary vein:

- A short vein joins superficial temporal vein within parotid gland to form retromandibular vein



Nerves in the infratemporal fossa

- **Mandibular nerve**
- **Maxillary nerve (short course)**
- **Chorda tympani nerve**
- **Otic ganglion**



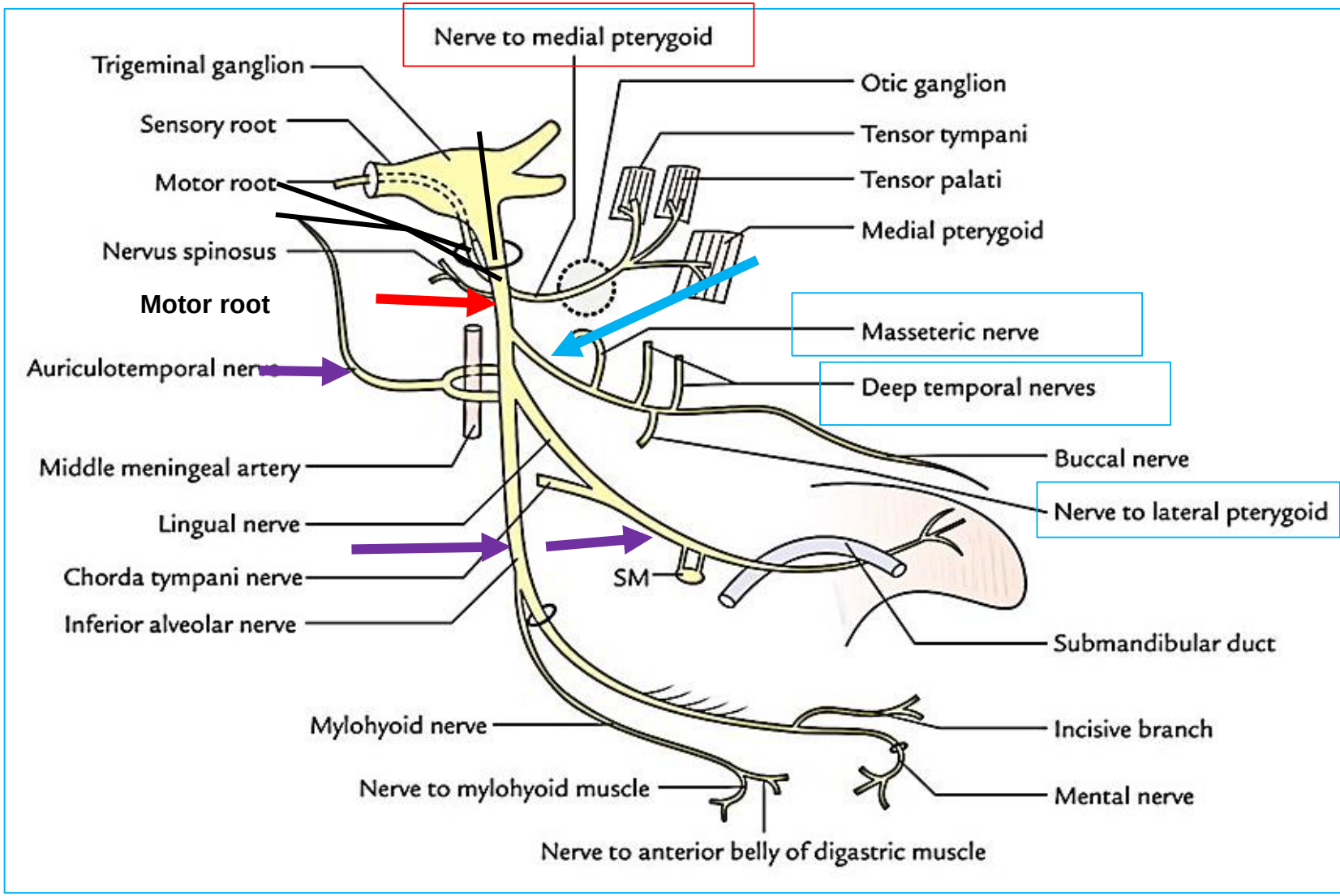
Mandibular Nerve

- It is the largest of the 3 divisions of trigeminal nerve.
- It is formed of large motor root and small sensory root
- **Branches**

1. From trunk

✓ Nerve to medial pterygoid

✓ Nervus spinosus



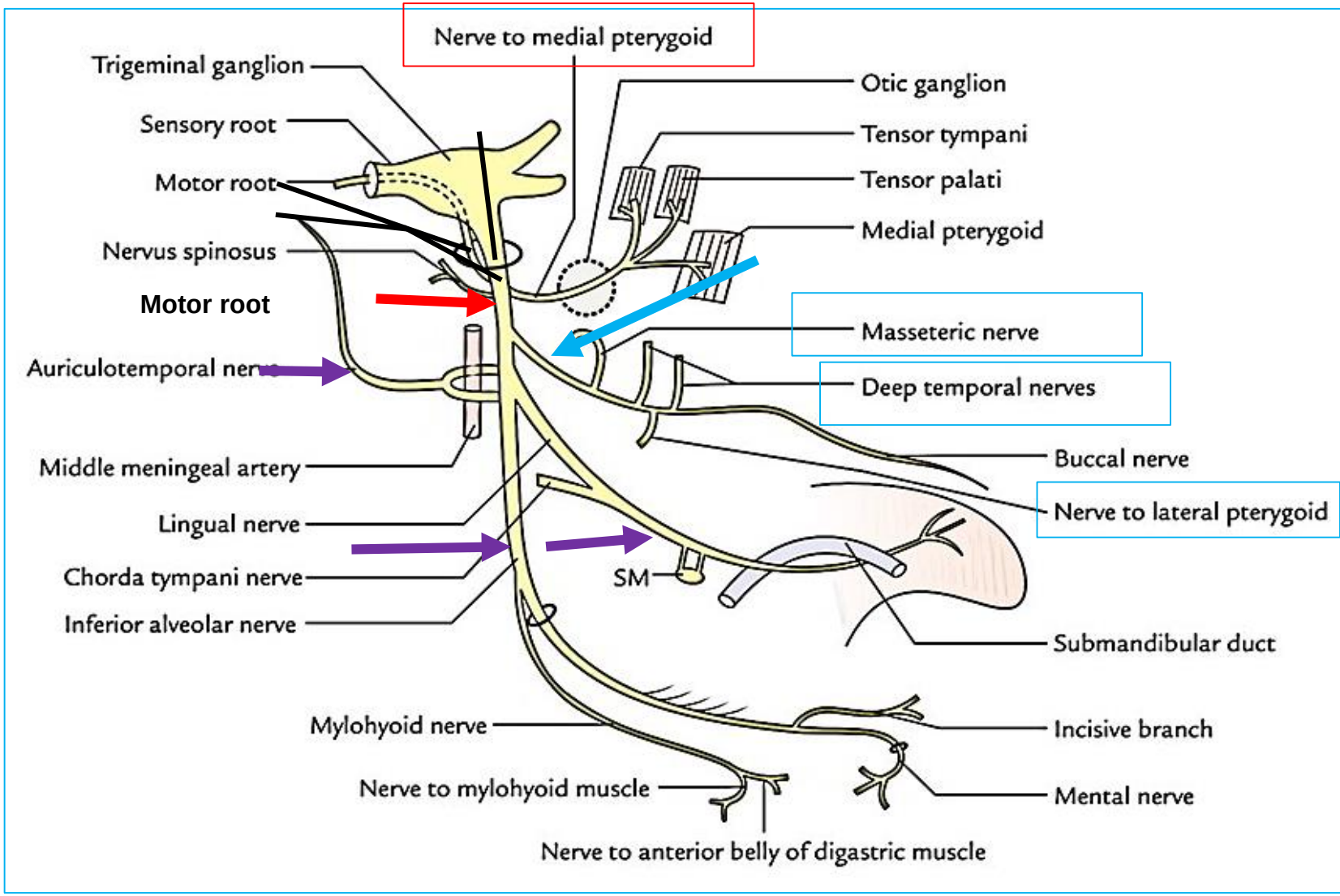
Mandibular Nerve

2. From Anterior division:

- ✓ ***Masseteric nerve*** (motor)
- ✓ ***Two deep temporal nerves*** (motor)
- ✓ ***Nerve to the lateral pterygoid*** (motor)
- ✓ ***The buccal nerve*** (sensory)

3. From posterior division:

- ✓ **Auriculo-temporal (sensory)**
- ✓ **Lingual**
- ✓ **Inferior alveolar**



REFERENCES

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- Gray`s Anatomy for students, Third Edition
- Grant`s Atlas of Anatomy


THANK
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