

Maxillary nerve and Temporomandibular joint (TMJ)

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Lecture ILOS & Objectives:

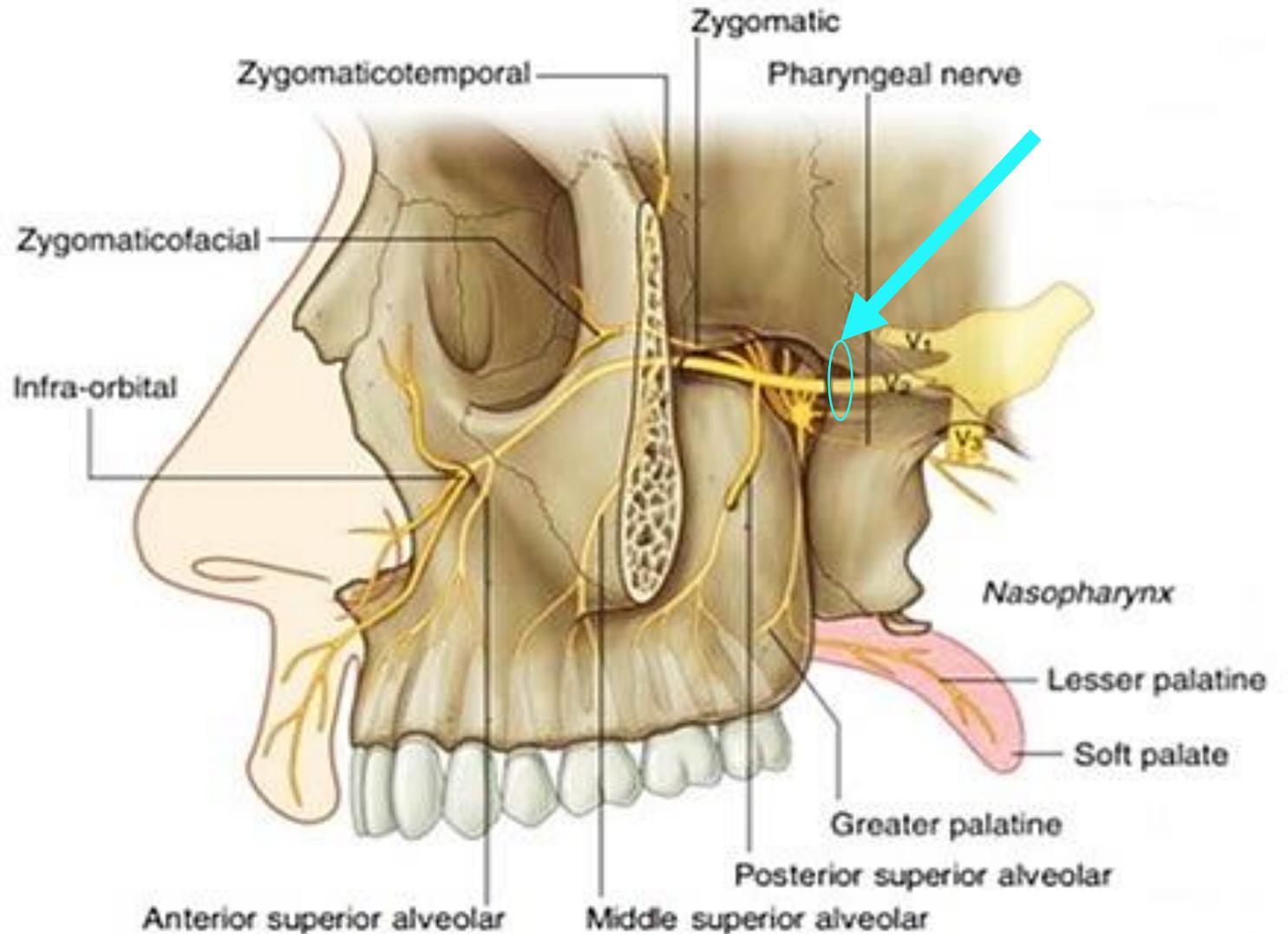
By the end of this lecture the student should be able to:

- 1. List the branches of maxillary nerve**
- 2. Define the type and articulation of temporomandibular joint.**
- 3. Identify the attachments of the capsule of temporomandibular joint.**
- 4. Define the ligaments of temporomandibular joint.**
- 5. Define nerve supply and arterial supply of temporomandibular joint.**
- 6. Enumerate the movements of temporomandibular joint and identify the muscles producing these movements.**

(maxillary nerve)

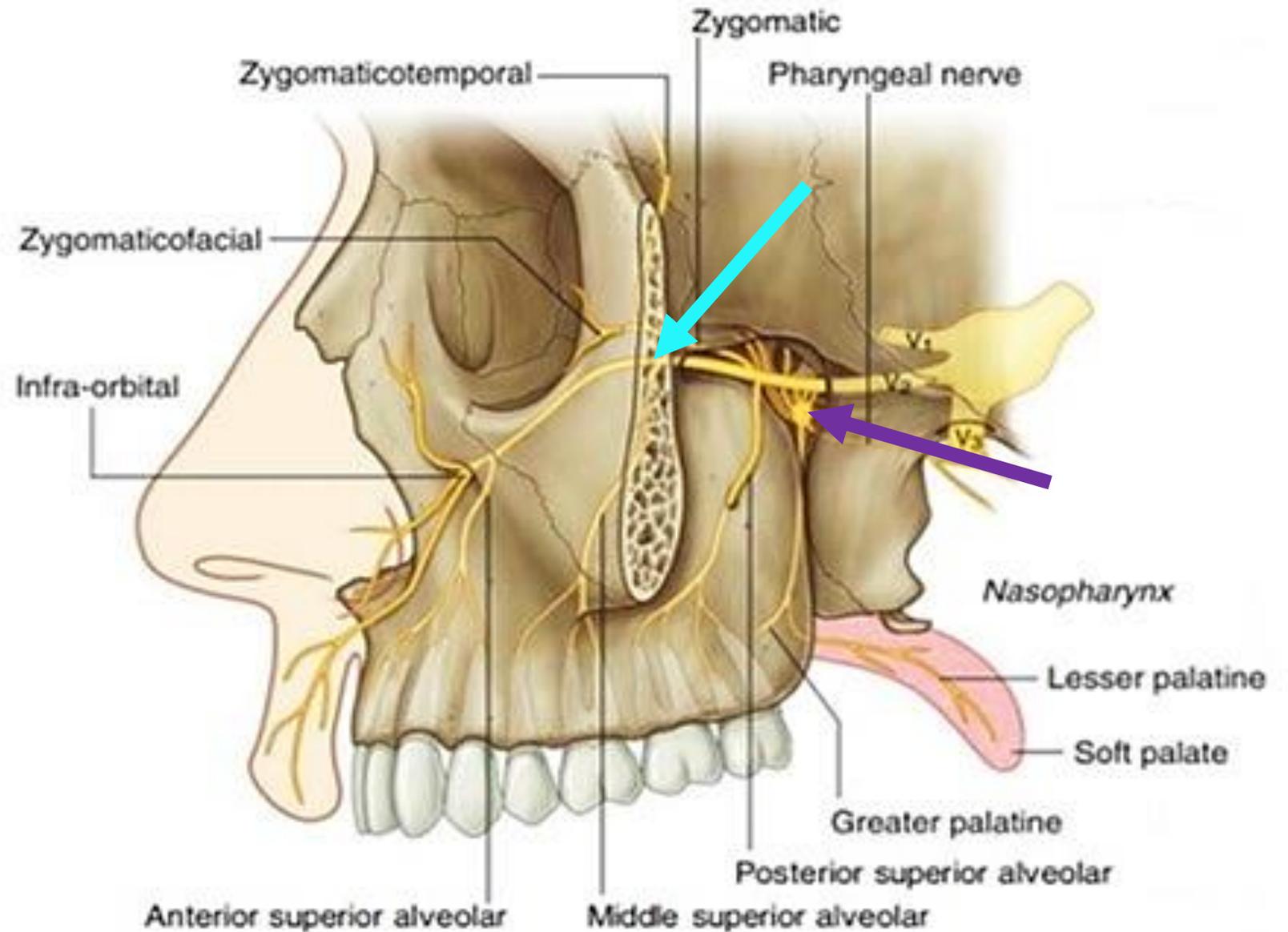
Maxillary nerve

- **Course and relations:**
- It arises from the convex anterior border of the trigeminal ganglion
- It leaves the middle cranial fossa through the foramen rotundum.



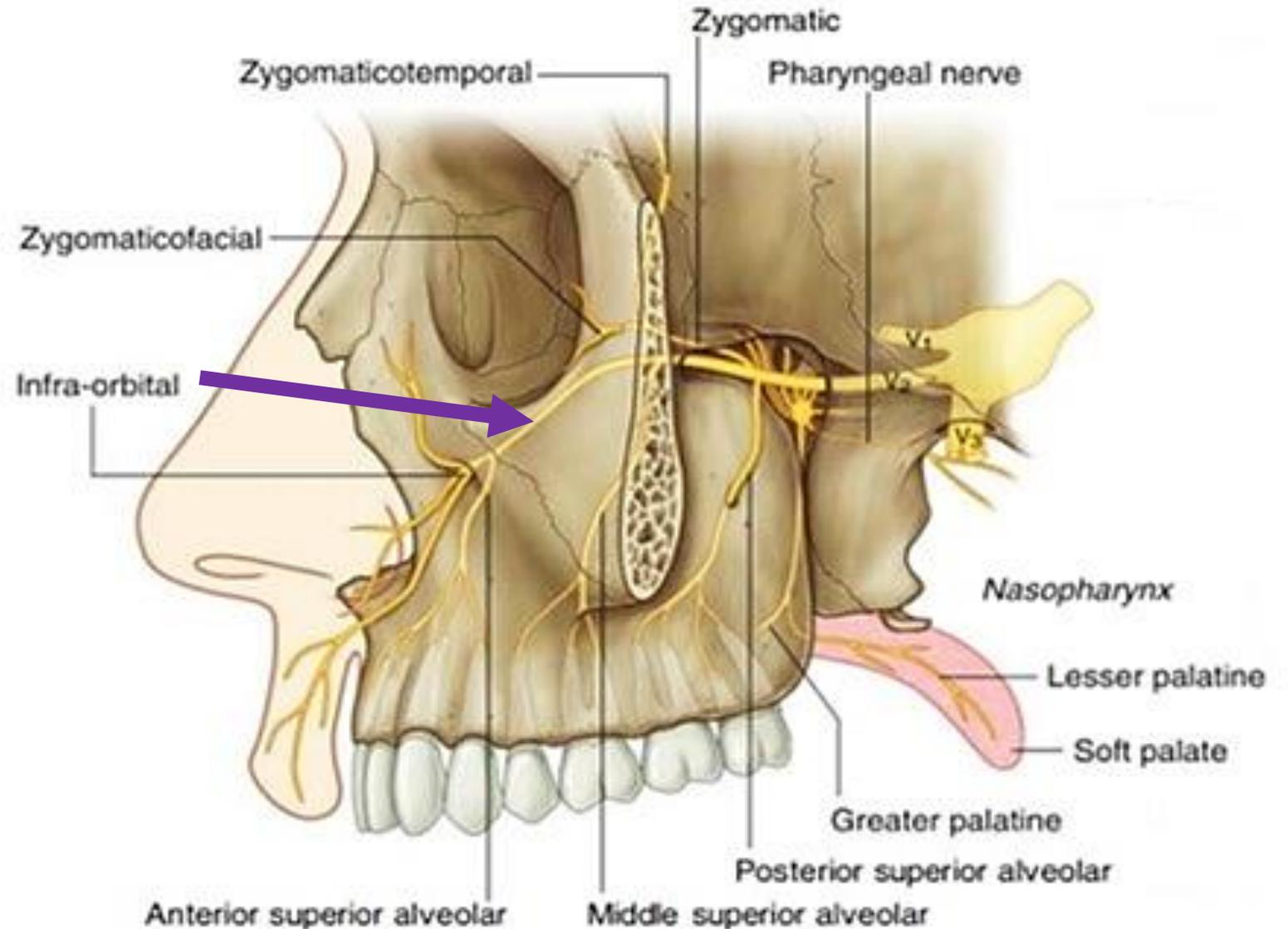
Maxillary nerve

- It enters the pterygopalatine fossa where the pterygo- palatine ganglion is suspended from the nerve.
- It crosses the infratemporal fossa to enter the orbit through the inferior orbital fissure



Maxillary nerve

- Its continuation in the orbit is called the inferior orbital nerve, which runs in the infraorbital groove and canal in the floor of the orbit
- It emerges on the face through the infraorbital foramen.



Maxillary nerve

Branches

In the middle cranial fossa:

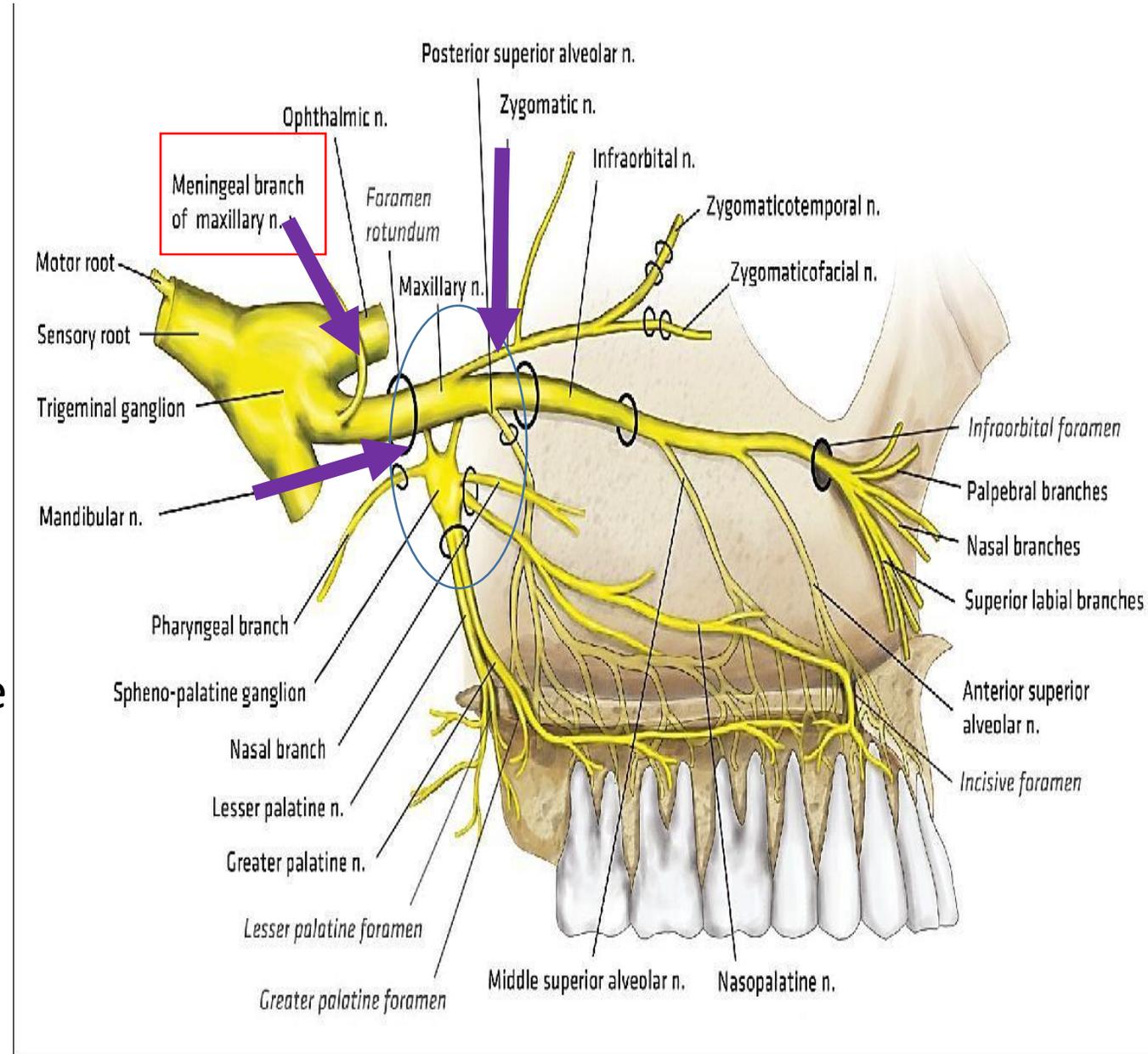
Meningeal branch: to the dura mater of the fossa

In the pterygopalatine fossa:

1. Ganglionic branches: Pre & post-ganglionic branches by which the sphenopalatine ganglion is suspended.

2. Zygomatic nerve

- It divides into **2** branches which penetrate the zygomatic bone:
- **Zygomatiko-temporal** to the temporal fossa
- **Zygomatiko-facial** to the face



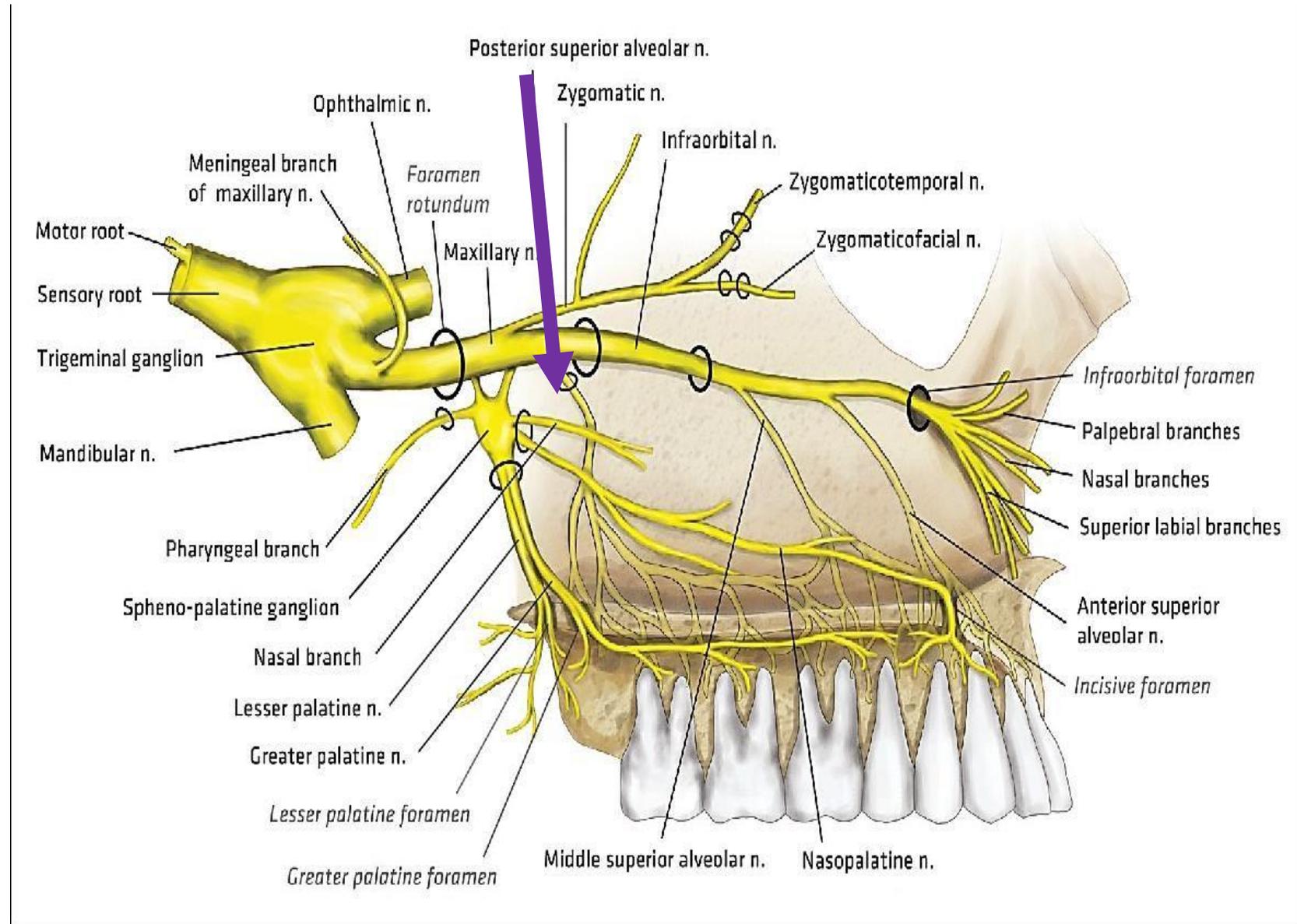
Maxillary nerve

Branches

In the pterygopalatine fossa:

3. Posterior superior alveolar nerve:

- Enters the posterior surface of the maxilla to supply the upper molar teeth, the mucosa of the upper gum and the maxillary sinus.



Maxillary nerve

In the infraorbital canal

- Here it is called the infraorbital nerve. *It gives:*

1. Middle superior alveolar nerve

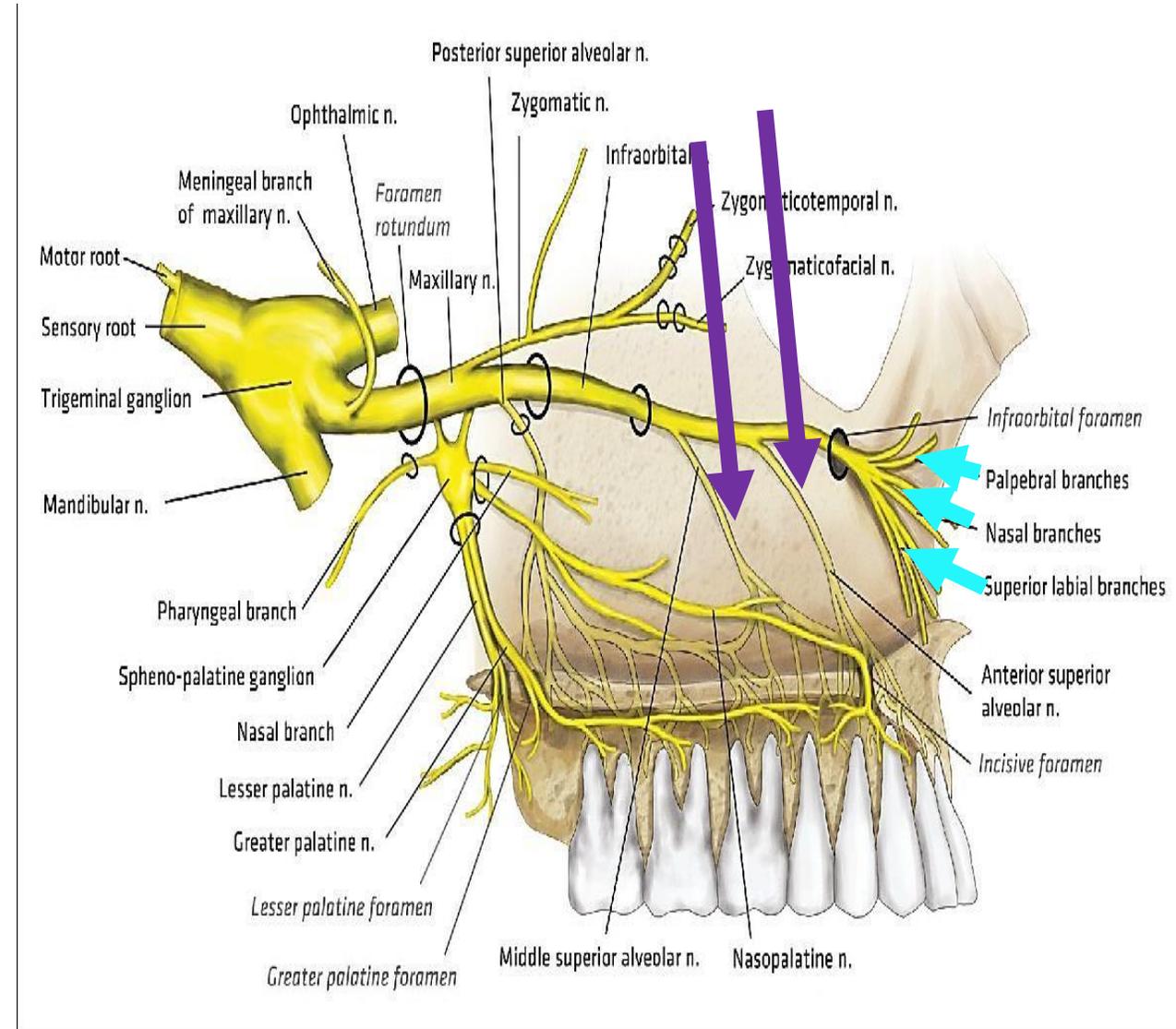
- Supplies the upper premolar teeth, mucosa of maxillary sinus and upper gum

2. Anterior superior alveolar nerve

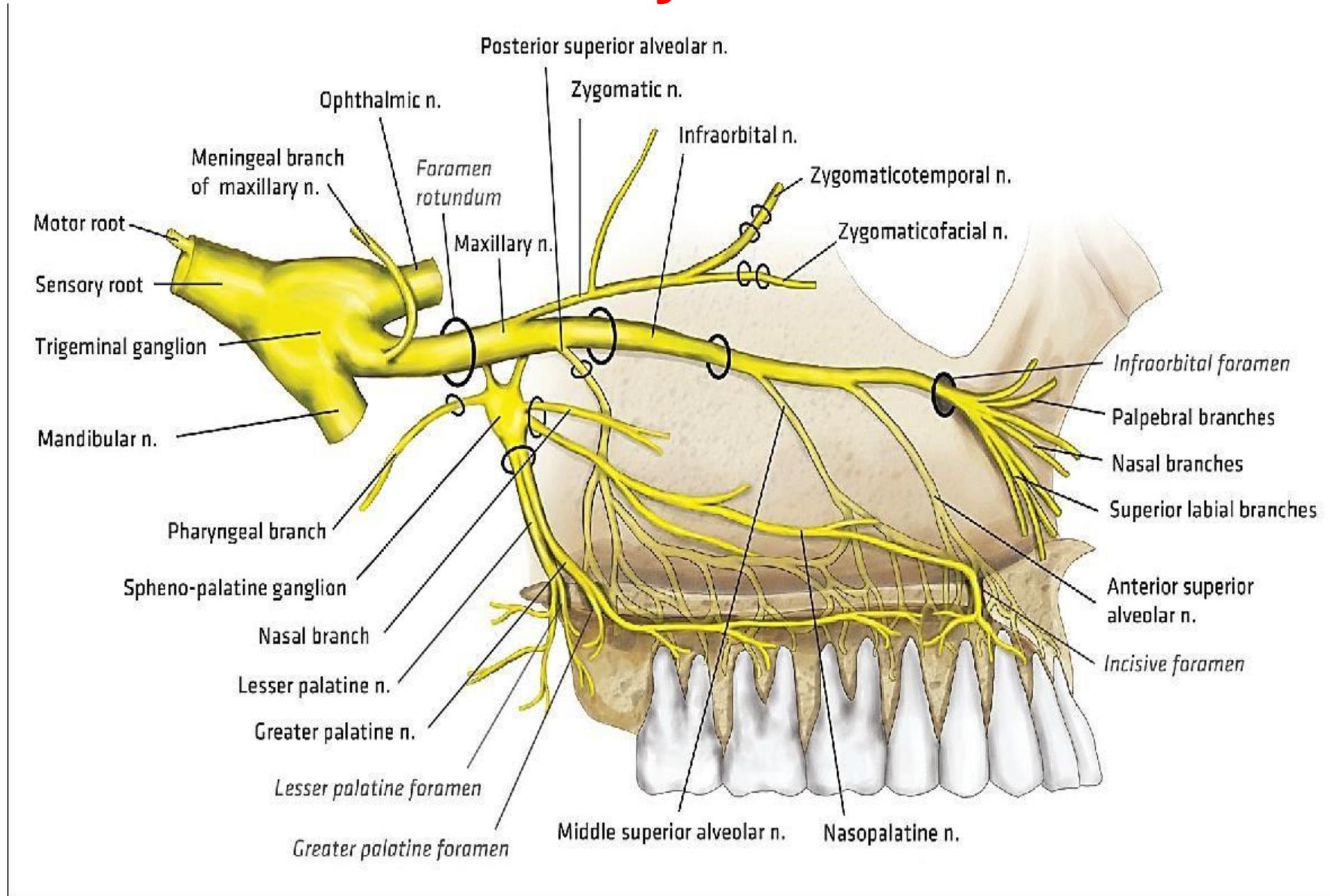
- *Supplies the upper incisors and canine teeth and the upper gum.*

In the face:

- It gives 3 terminal branches
- Nasal branches To the side of the nose
- Labial branches To the skin and mucosa of the upper lip.
- Palpebral branches To the lower eyelid



Maxillary nerve



Temporomandibular joint (TMJ)

Temporomandibular Joint

- **Type:**

It is a synovial joint of condyloid variety, having 2 cavities separated by a disc.

- **Articulation:**

Above :

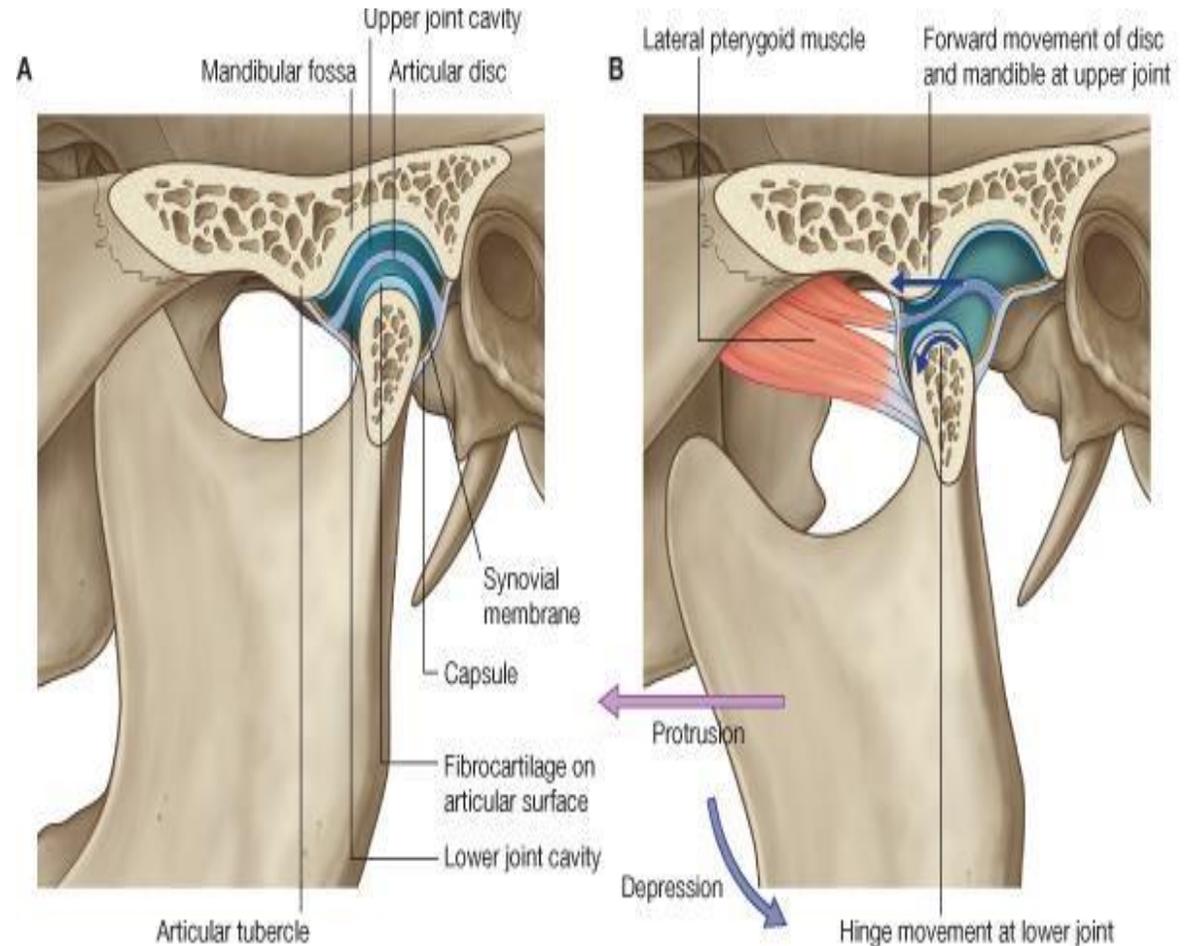
The articular tubercle and the anterior portion of the mandibular fossa of the temporal bone.

This surface is concavo-convex.

Below :

The head of the mandible.

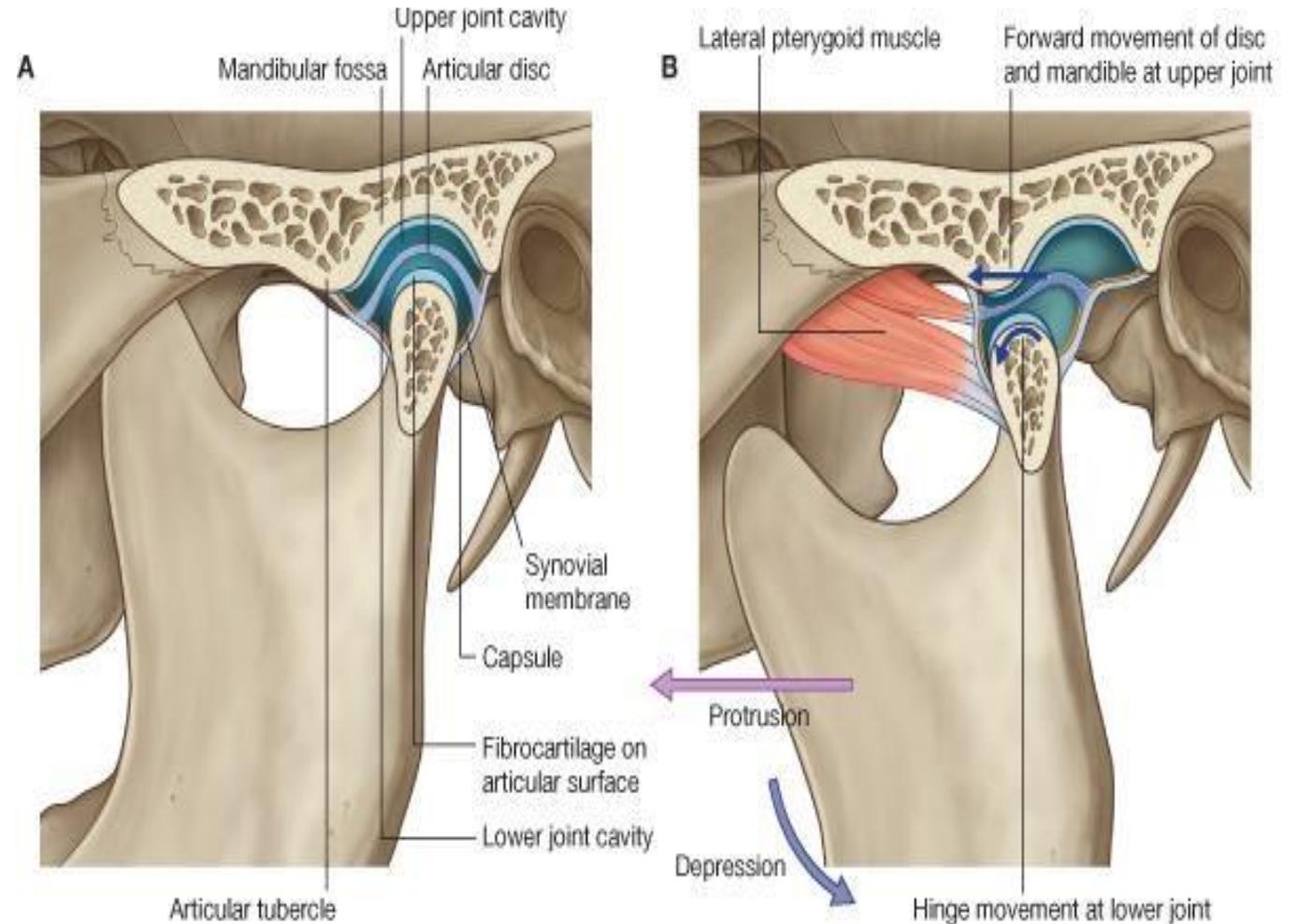
This surface is convex.



Temporomandibular Joint

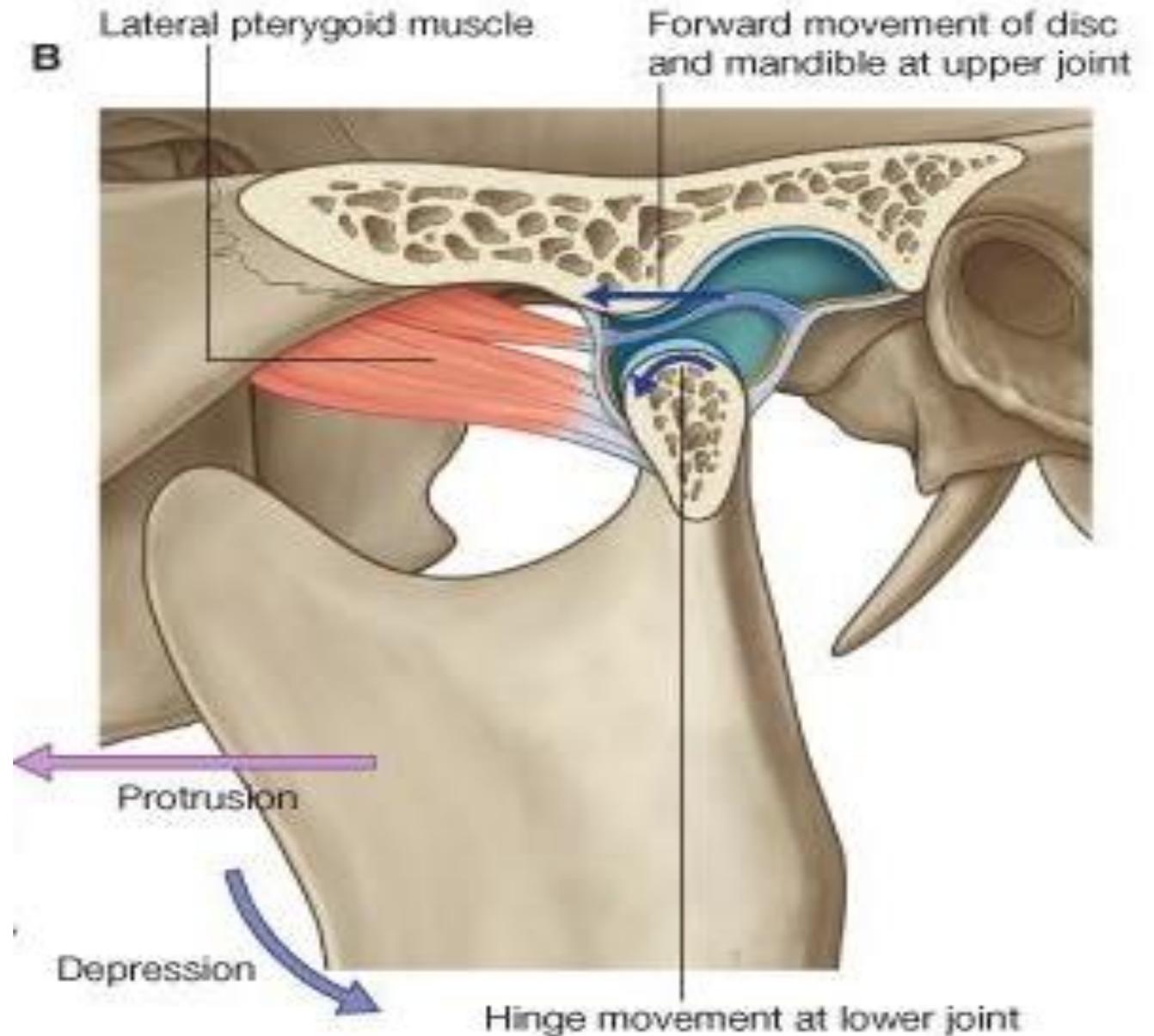
Capsule:

- Surrounds the joint and is attached to :
 - **Above** : The articular eminence and the margins of mandibular fossa
 - **Below** : The neck of the mandible.
 - **Posteriorly** : The lips of the squamo-tympanic fissure
- The capsule is lax above the articular disc, but it is taut below it



Articular disc

- It divides the joint into upper and lower cavities.
- It is an oval plate of fibrocartilage with avascular center.



Temporomandibular Joint

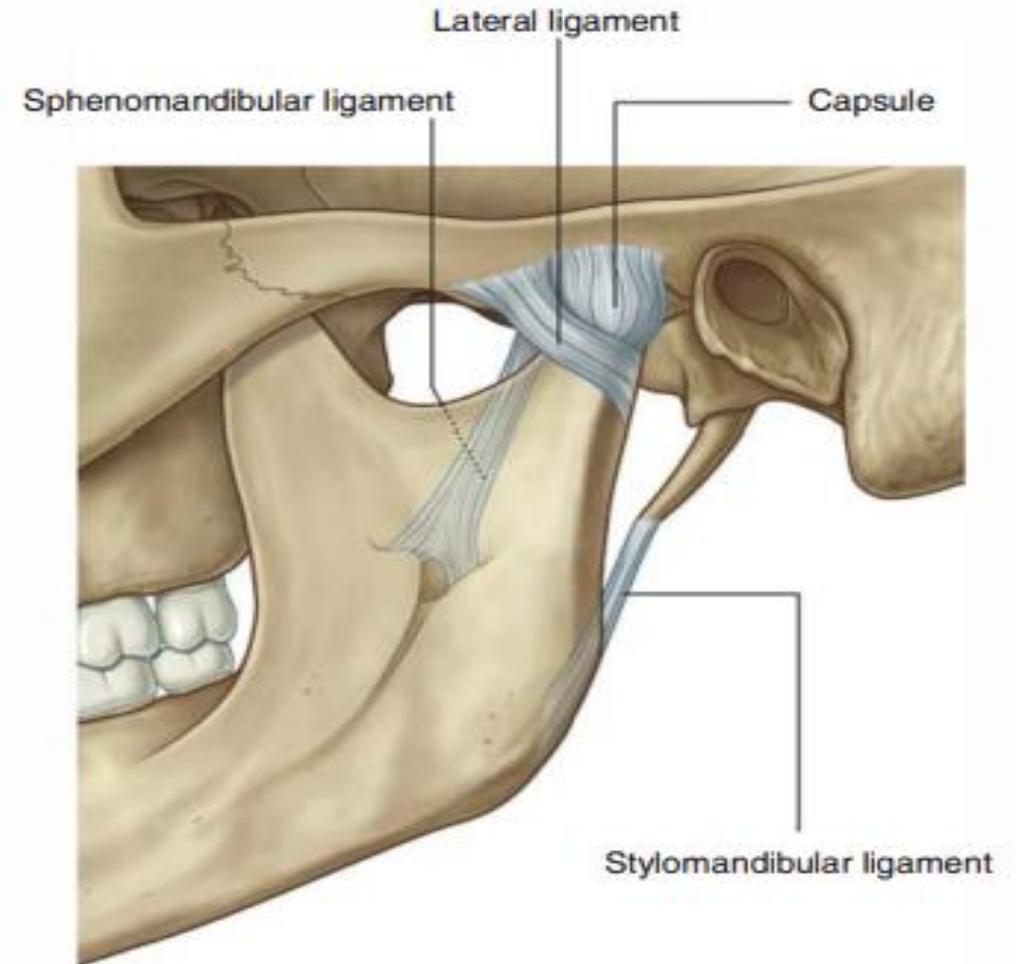
Ligaments:

1. Lateral temporomandibular ligament :

- Lies on the **lateral** aspect of the capsule
- It is a short triangular ligament
- It is attached **above** to the tubercle of the root of the zygoma **and below** to the lateral surface of the neck of the mandible
- It limits the movement of the mandible in the posterior direction .

2. Sphenomandibular ligament

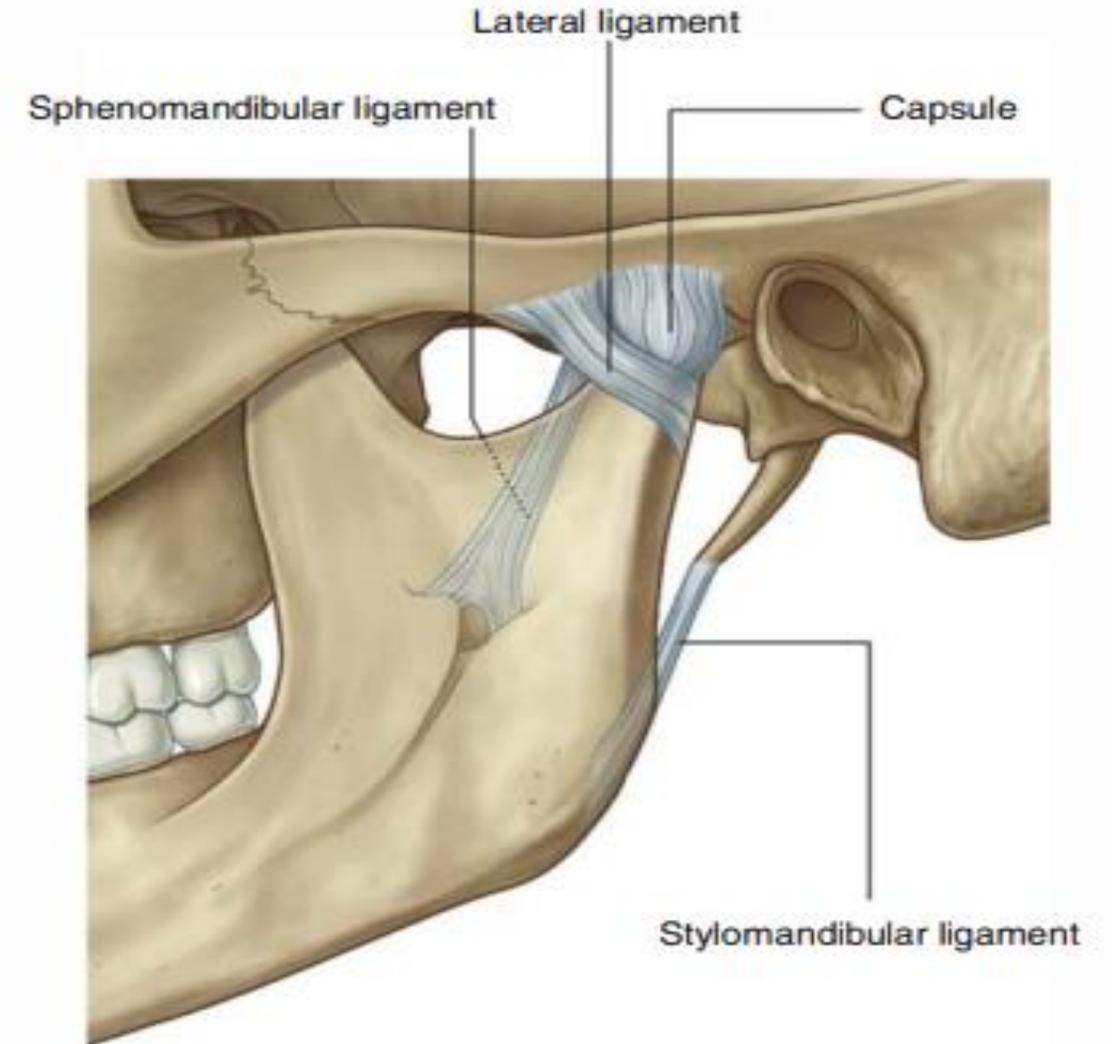
- Lies on the **medial** side of the joint.
- It is a thin band of fibres.
- It is attached **above** to the spine of sphenoid bone and **below** to the lingula of the mandibular foramen



Temporomandibular Joint

3. Stylomandibular ligament :

- Lies **behind and medial** to the joint .
- It is a thick band of fascia
- It is attached **above** to the tip of the styloid process and **below** to the angle of the mandible.



Temporomandibular Joint

Nerve supply

- Auriculotemporal nerve
- Masseteric nerve

Arterial supply

- Superficial temporal artery
- Maxillary artery

Temporomandibular Joint

Movements:

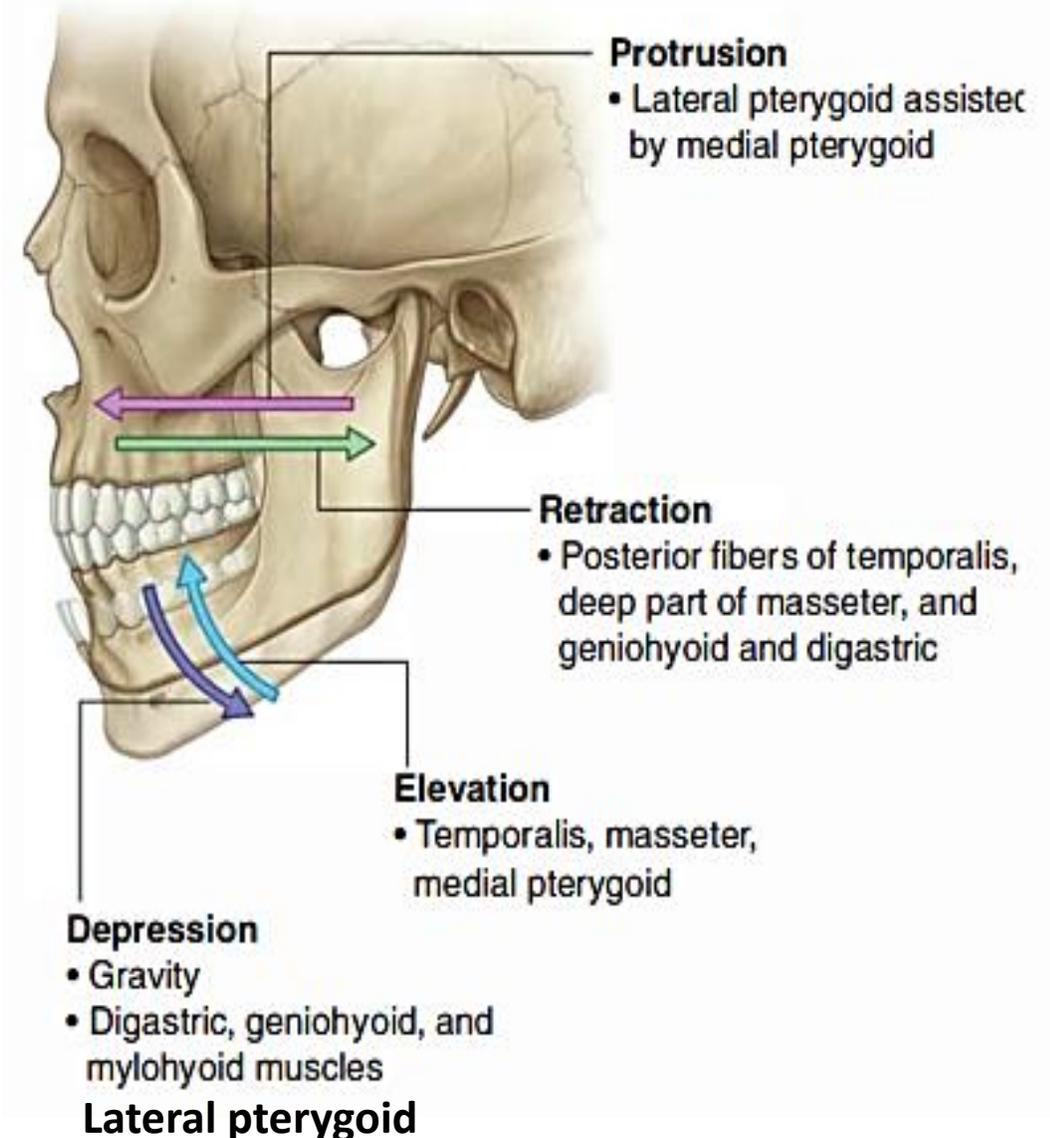
Depression: By the lateral pterygoid assisted by mylohyoid, geniohyoid, and digastric muscles.

Elevation : By the medial pterygoid , temporalis and masseter

Protrusion: By the lateral & medial pterygoids assisted by the superficial oblique fibres of masseter.

Retraction: By posterior fibers of the temporalis .

Side to side (chewing): By the lateral and medial pterygoid of both sides acting alternately



- **Relations**

- **Anteriorly**

- Mandibular notch
- Insertion of lateral pterygoid
- Masseteric nerve and artery.

- **Posteriorly**

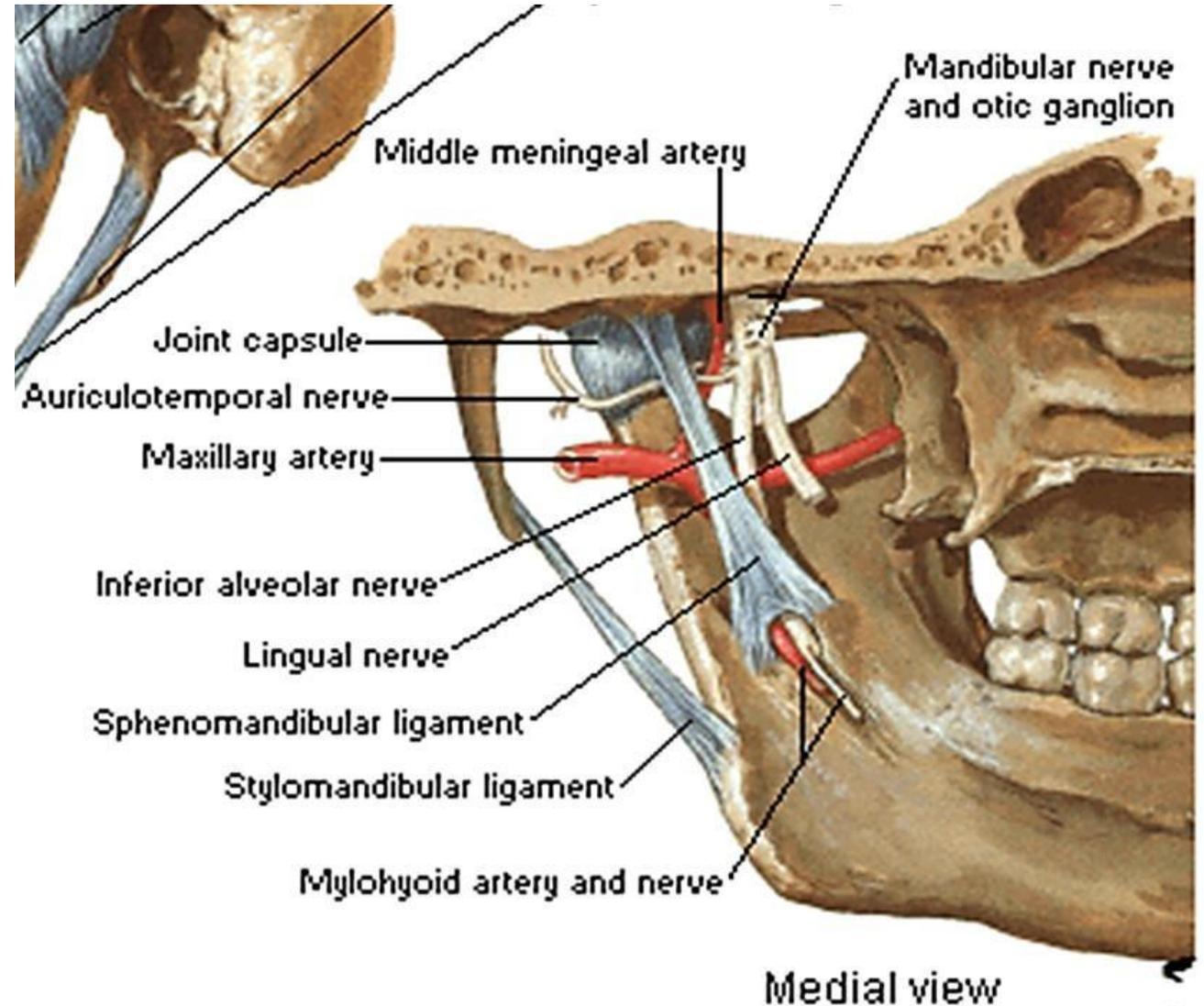
- Tympanic plate of the external auditory meatus

- **Laterally**

- Parotid gland and fascia

- **Medially:**

- Maxillary artery and vein
- Auriculotemporal nerve.



REFERENCES

- **Snell`s clinical anatomy by regions ,Tenth Edition**
- **Gray`s Anatomy for students, Third Edition**
- **Grant`s Atlas of Anatomy**

THANK
You! 😊

