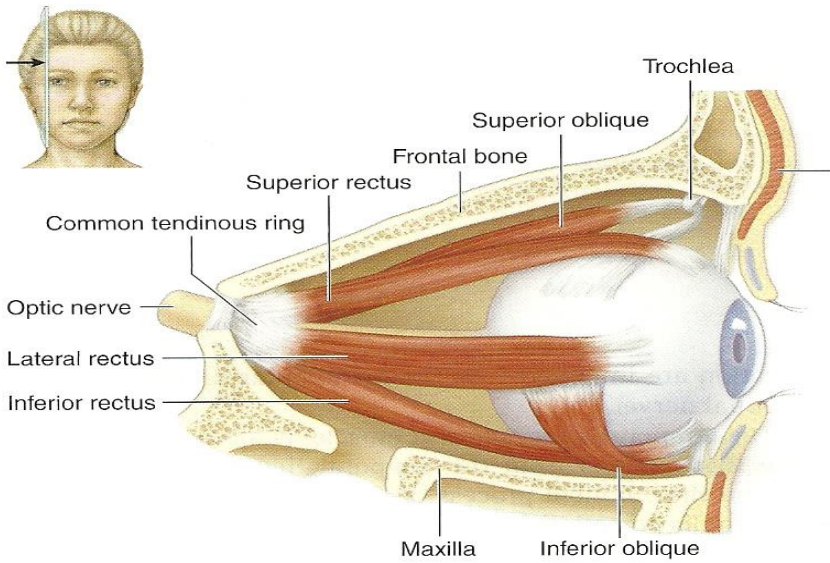
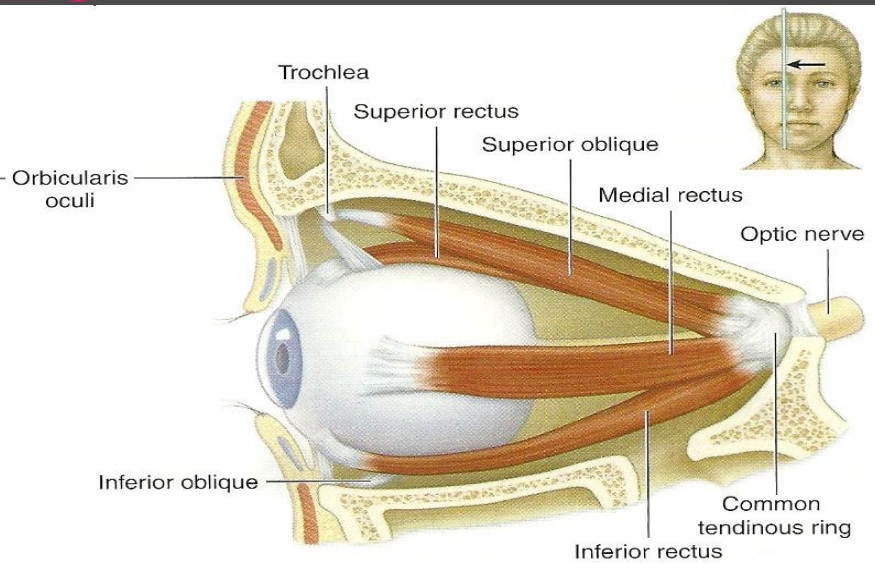
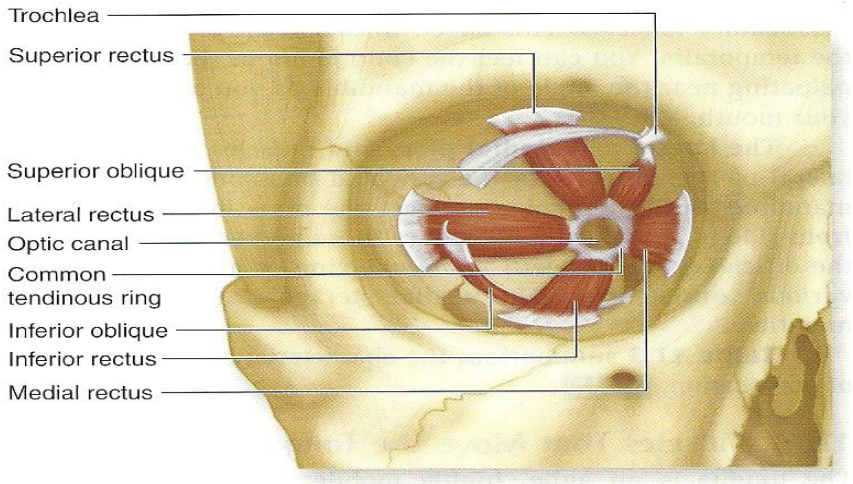
EYE MUSCULES



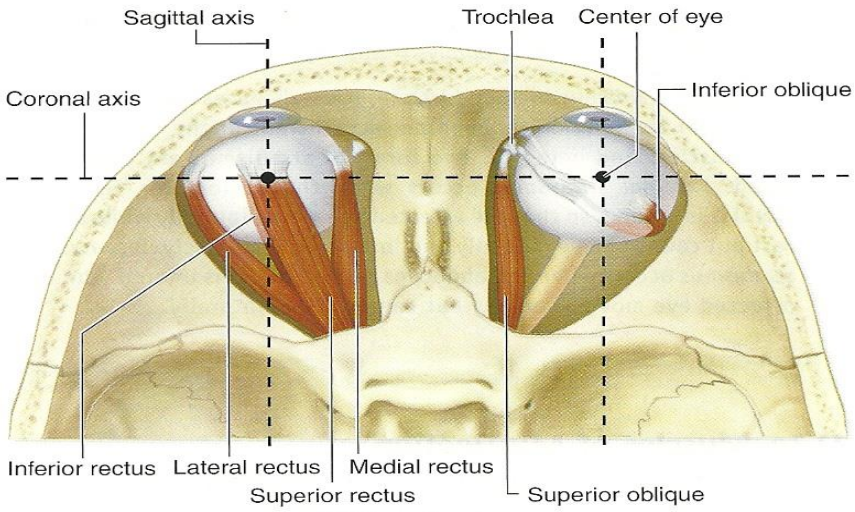
(a) Lateral view, right eye



(b) Medial view, right eye



(c) Anterior view of right orbit, eye removed



(d) Superior view

MUSCULES

Table 11.2 Extrinsic Eye Muscles

Group/Muscle	Action	Origin/Insertion	Innervation
RECTUS MUSCLES			
Medial rectus (mē′dē-ăl rek′tus) *rectus* = straight	Moves eye medially (adducts eye)	O: Common tendinous ring I: Anteromedial surface of eye	CN III (oculomotor nerve)
Lateral rectus (lat′er-ăl rek′tus)	Moves eye laterally (abducts eye)	O: Common tendinous ring I: Anterolateral surface of eye	CN VI (abducens nerve)
Inferior rectus (in-fē′rē-ōr rek′tus)	Moves eye inferiorly (depresses eye) and medially (adducts eye)	O: Common tendinous ring I: Anteroinferior surface of eye	CN III (oculomotor nerve)
Superior rectus (soo-pēr′ē-ōr rek′tus)	Moves eye superiorly (elevates eye) and medially (adducts eye)	O: Common tendinous ring I: Anterosuperior surface of eye	CN III (oculomotor nerve)
OBLIQUE MUSCLES			
Inferior oblique (in-fē′rē-ōr ob-lēk′) *obliquus* = slanting	Moves eye superiorly (elevates eye) and laterally (abducts eye)	O: Anterior orbital surface of maxilla I: Posteroinferior, lateral surface of eye	CN III (oculomotor nerve)
Superior oblique (soo-pēr′ē-ōr ob-lēk′)	Moves eye inferiorly (depresses eye) and laterally (abducts eye)	O: Sphenoid bone I: Posterosuperior, lateral surface of eye	CN IV (trochlear nerve)

Study Tip :

Study Tip!

Remembering the innervation of the eye muscles can be difficult. Use the following "chemical formula" to help you learn the eye muscle innervation:

$$[(SO_4)(LR_6)]_3$$

In other words, the superior oblique **(SO)** is innervated by cranial nerve IV **(4)**, the lateral rectus **(LR)** is innervated by cranial nerve VI **(6)**, and the rest of the eye muscles are innervated by cranial nerve III **(3)**.

Mastication

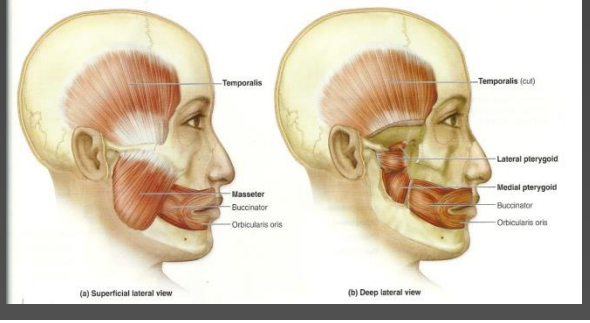


Table 11.3 Muscles of Mastication

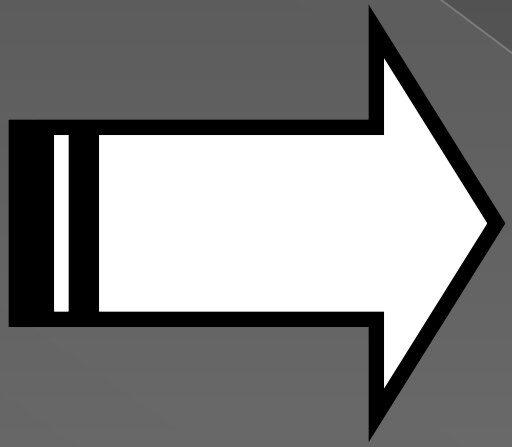
Muscle	Action	Origin/Insertion	Innervation
Temporalis (tem-pō-rā′lis) *tempora* = pertaining to temporal bone	Elevates and retracts mandible	O: Superior and inferior temporal lines I: Coronoid process of mandible	CN V_3 (trigeminal nerve, mandibular division)
Masseter (ma′se-ter) *maseter* = chewer	Elevates and protracts mandible; prime mover of jaw closure	O: Zygomatic arch I: Coronoid process, lateral surface and angle of mandible	CN V_3 (trigeminal nerve, mandibular division)
Medial pterygoid (mē′dē-ăl ter′i-goyd)	Elevates and protracts mandible; produces side-to-side movement of mandible	O: Maxilla, palatine, and medial surface of lateral pterygoid plate I: Medial surface of mandibular ramus	CN V_3 (trigeminal nerve, mandibular division)
Lateral pterygoid (lat′er-ăl ter′i-goyd) *pterygoid* = winglike	Protracts mandible; produces side-to-side movement of mandible	O: Greater wing of sphenoid and lateral surface of lateral pterygoid plate I: Condylar process of mandible	CN V_3 (trigeminal nerve, mandibular division)

Mastication

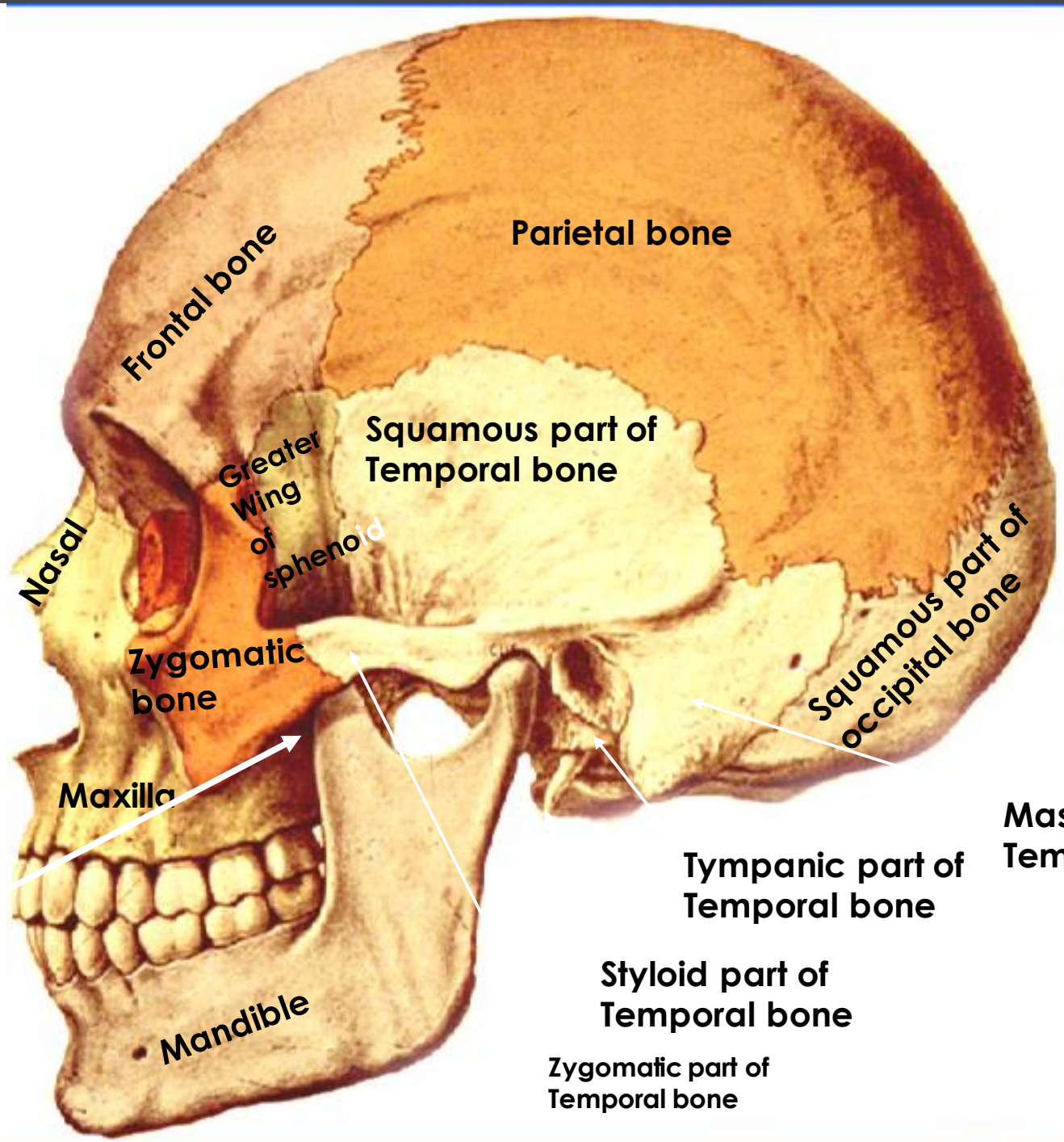
- Movements of the mandible are classified as:
- • Elevation
- • Depression
- • Protrusion
- • Retrusion
- • Side-to-side (lateral) excursion

Objectives

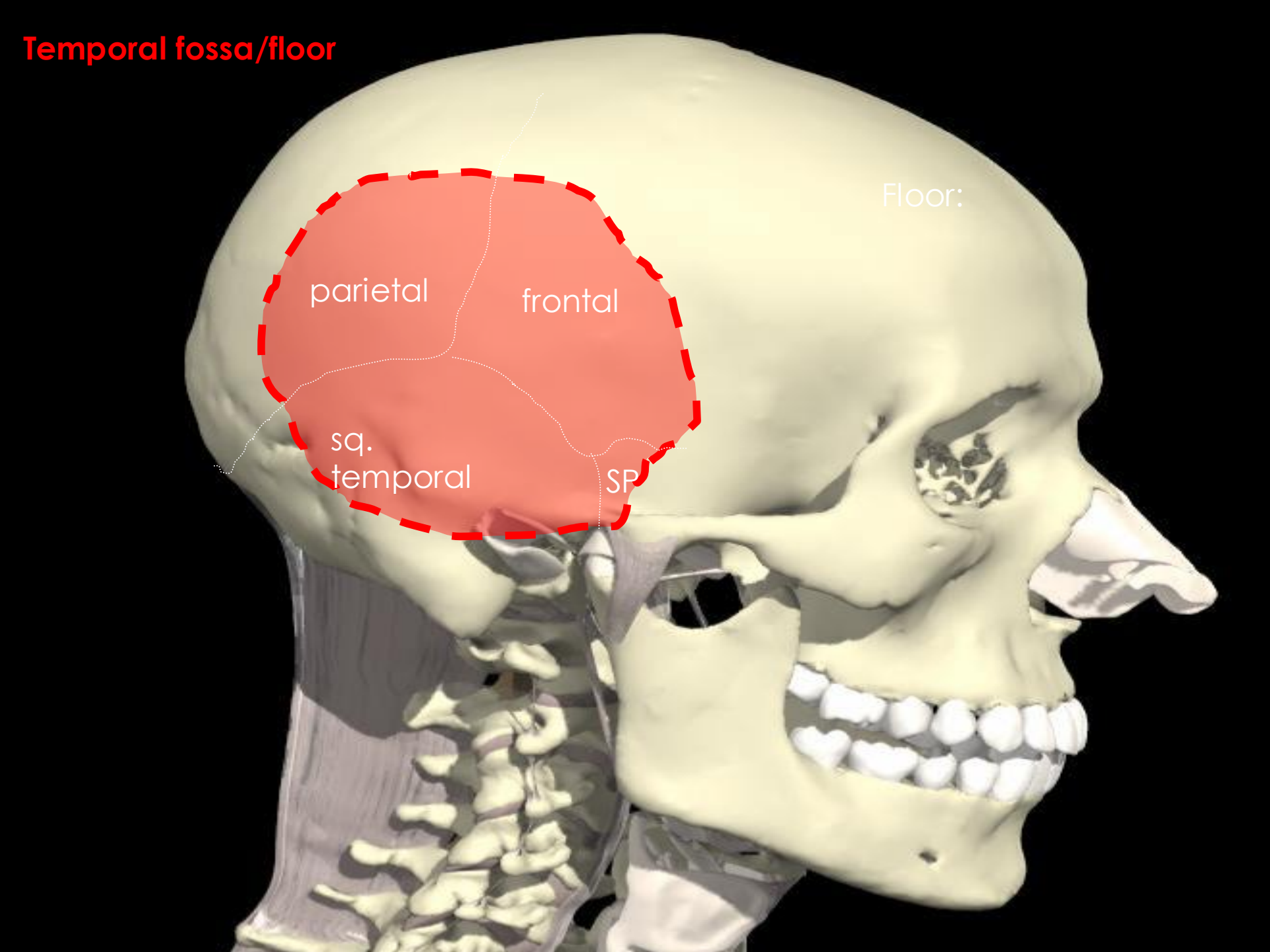
- Temporal fossa
- Normal basalis externa
- **mandible**
- **Temporal and infratemporal fossa contents**
- **Muscles of mastication**

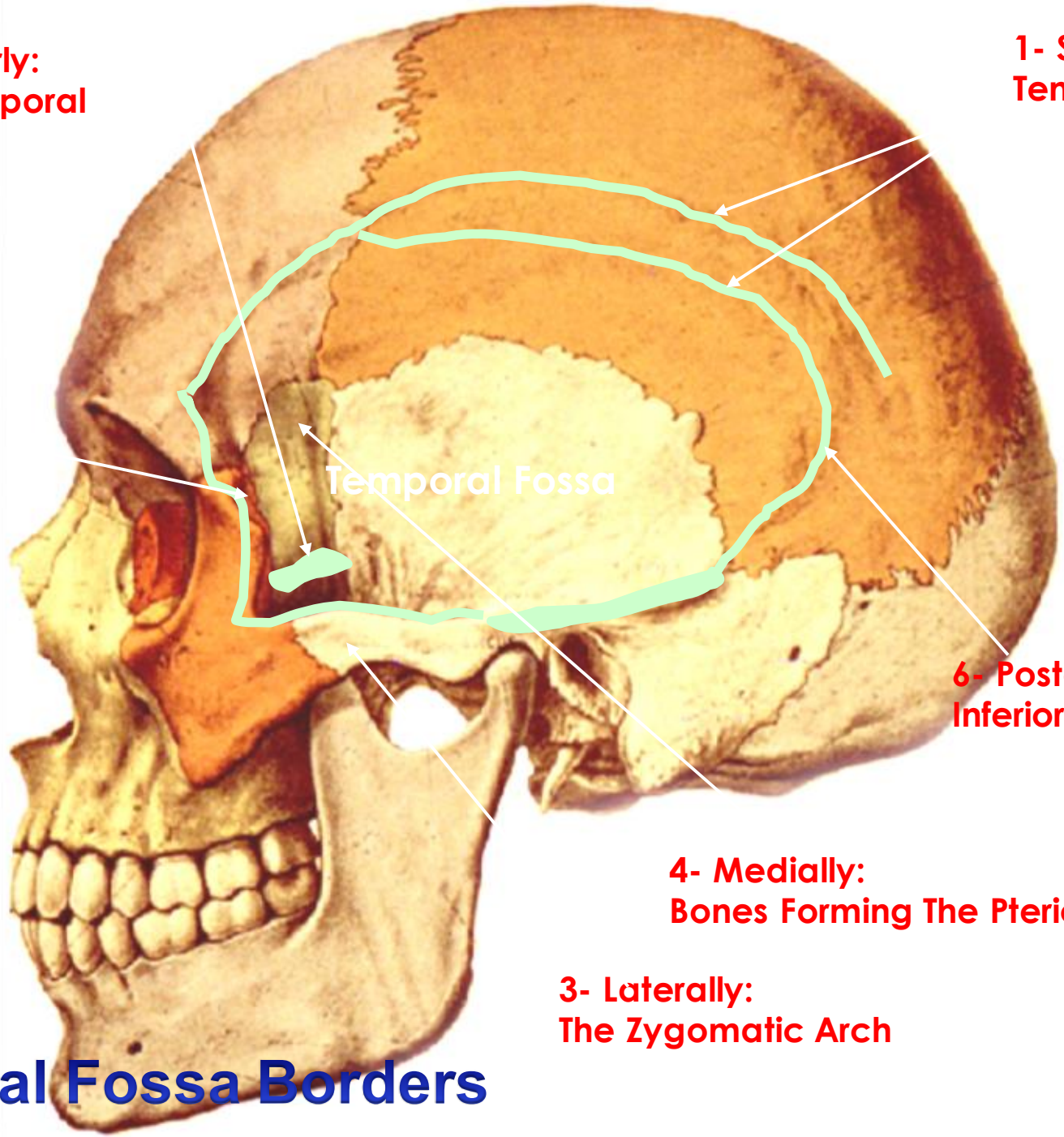


Temporal fossa


Parietal bone
Frontal bone
Squamous part of Temporal bone
Greater Wing of sphenoid
Nasal
Zygomatic bone
Squamous part of occipital bone
Maxilla
Mastoid part of Temporal bone
Tympanic part of Temporal bone
Palatine Bone
Styloid part of Temporal bone
Mandible
Zygomatic part of Temporal bone

Temporal fossa/floor





2- Inferiorly:
Infra-temporal

1- Superiorly:
Temporal

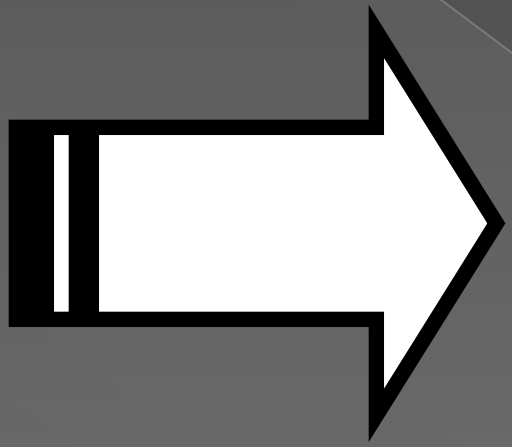
5- Anteriorly:
Zygomatic,
Frontal,
and
Greater Wing

6- Posteriorly:
Inferior Temporal line

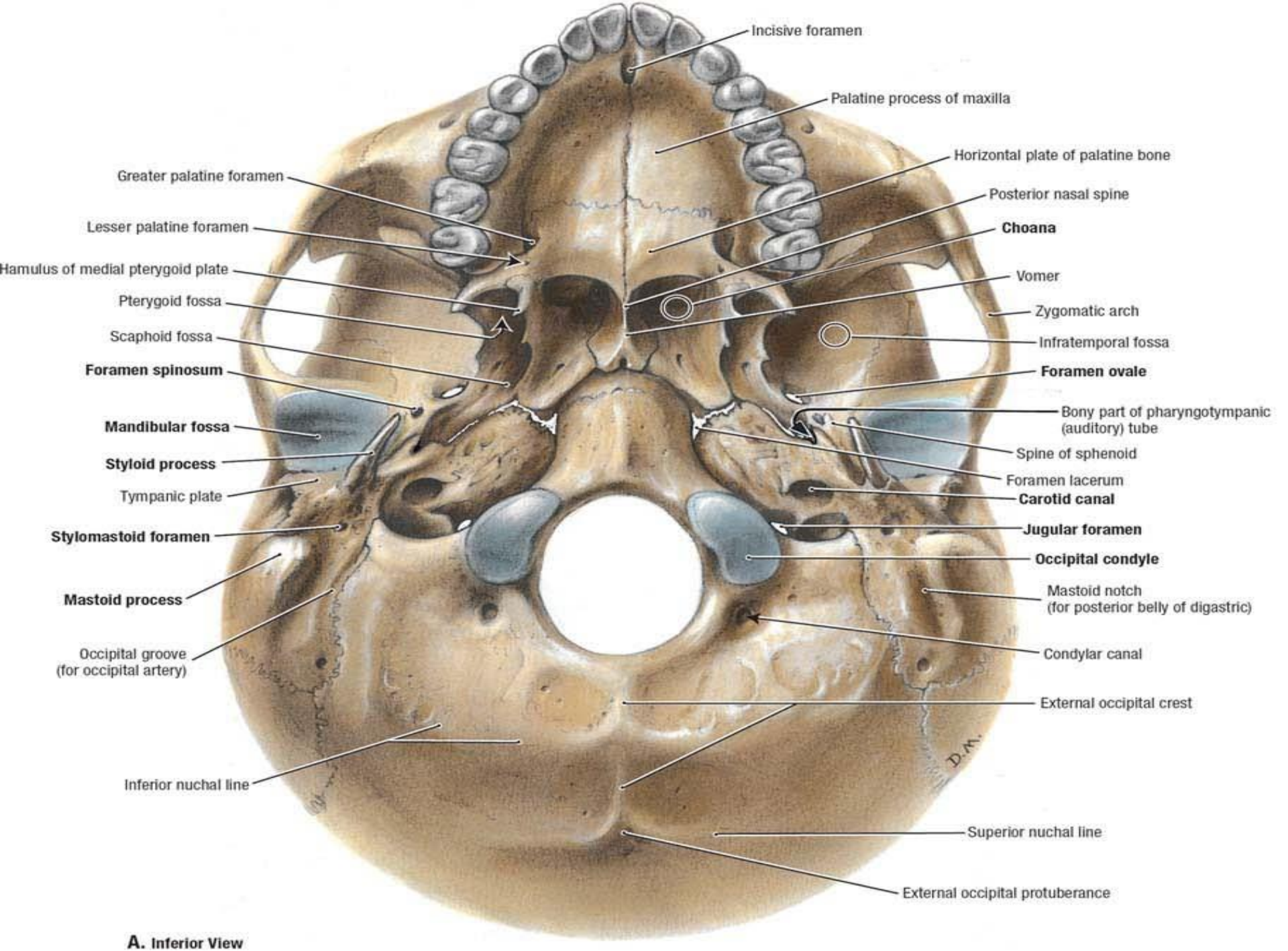
4- Medially:
Bones Forming The Pterion

3- Laterally:
The Zygomatic Arch

Temporal Fossa Borders



Norma basalis externa

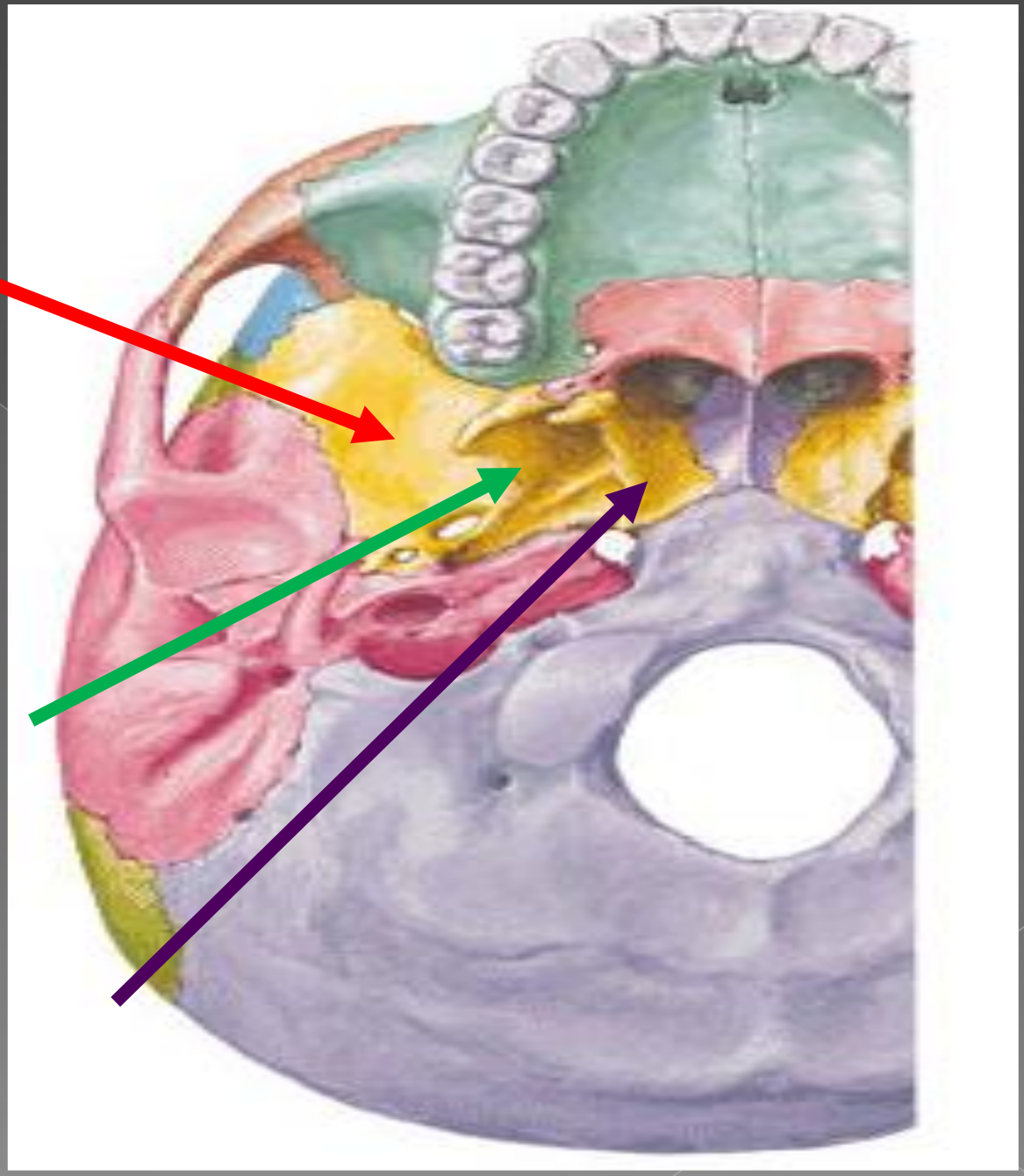


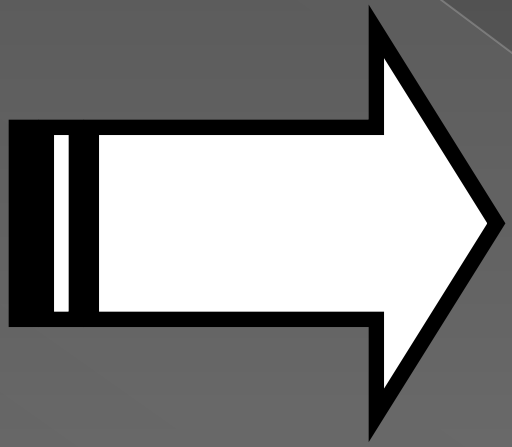
A. Inferior View

Infratemporal surface of greater wing of sphenoid

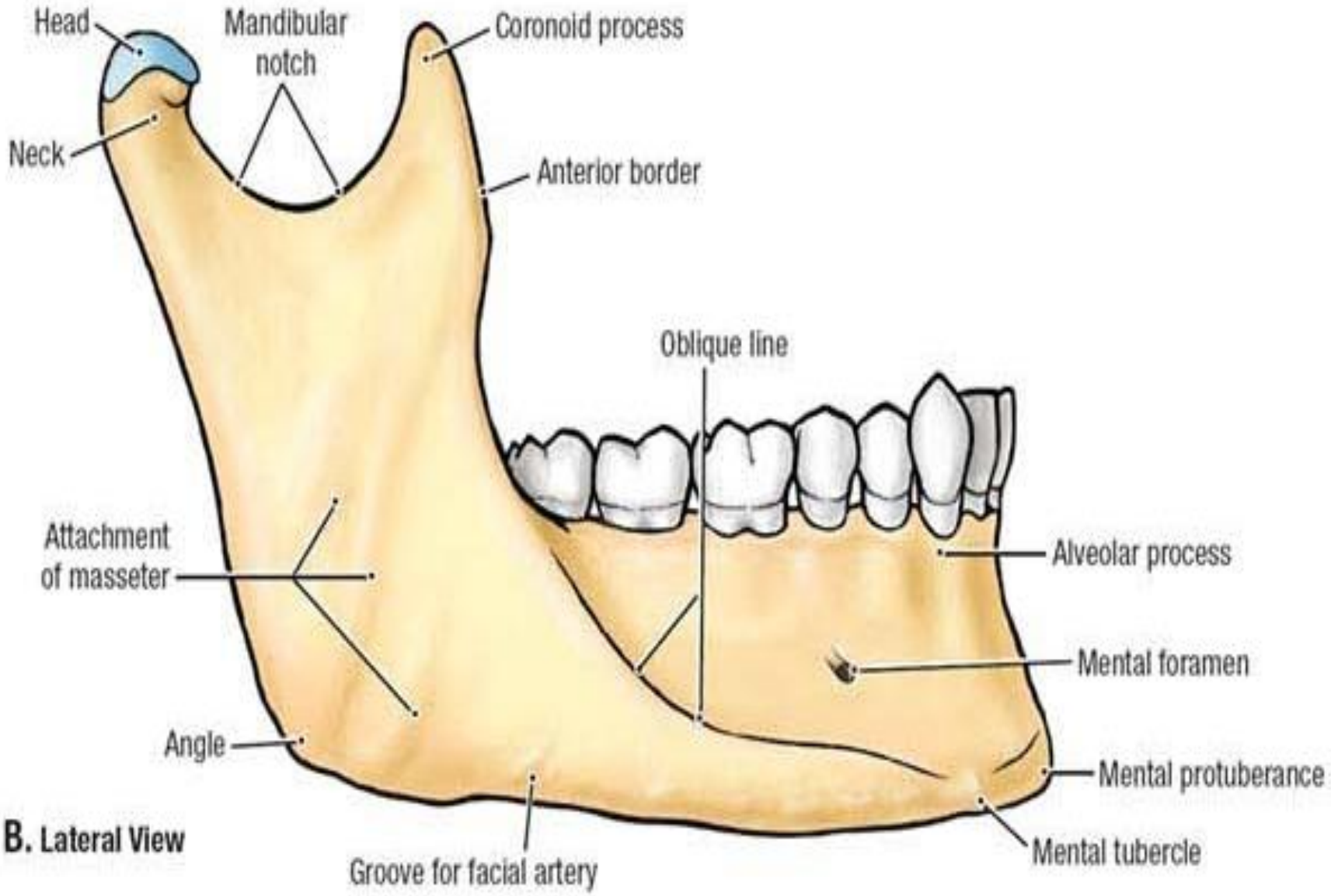
Lateral pterygoid plate

Medial pterygoid plate

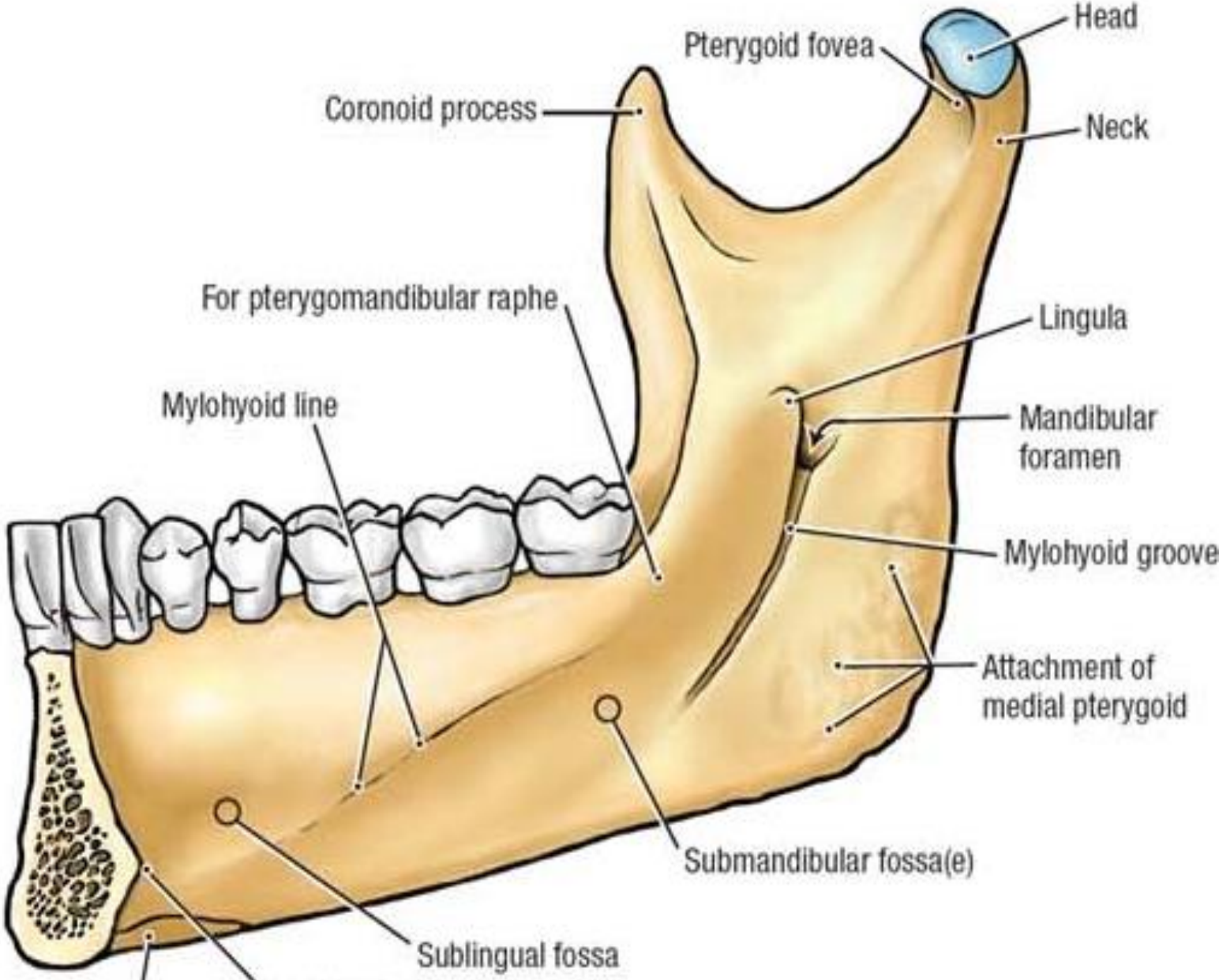




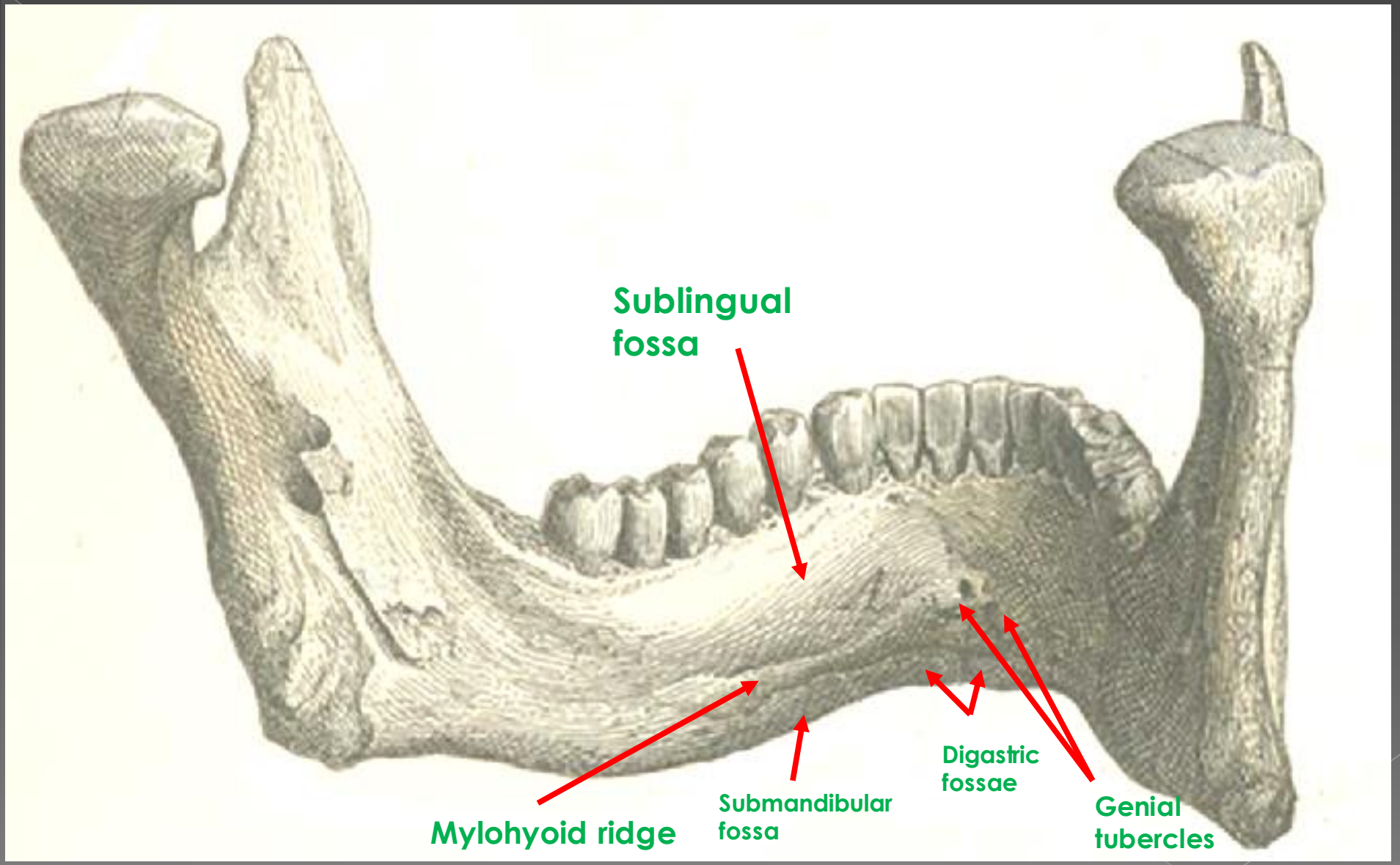
Mandible



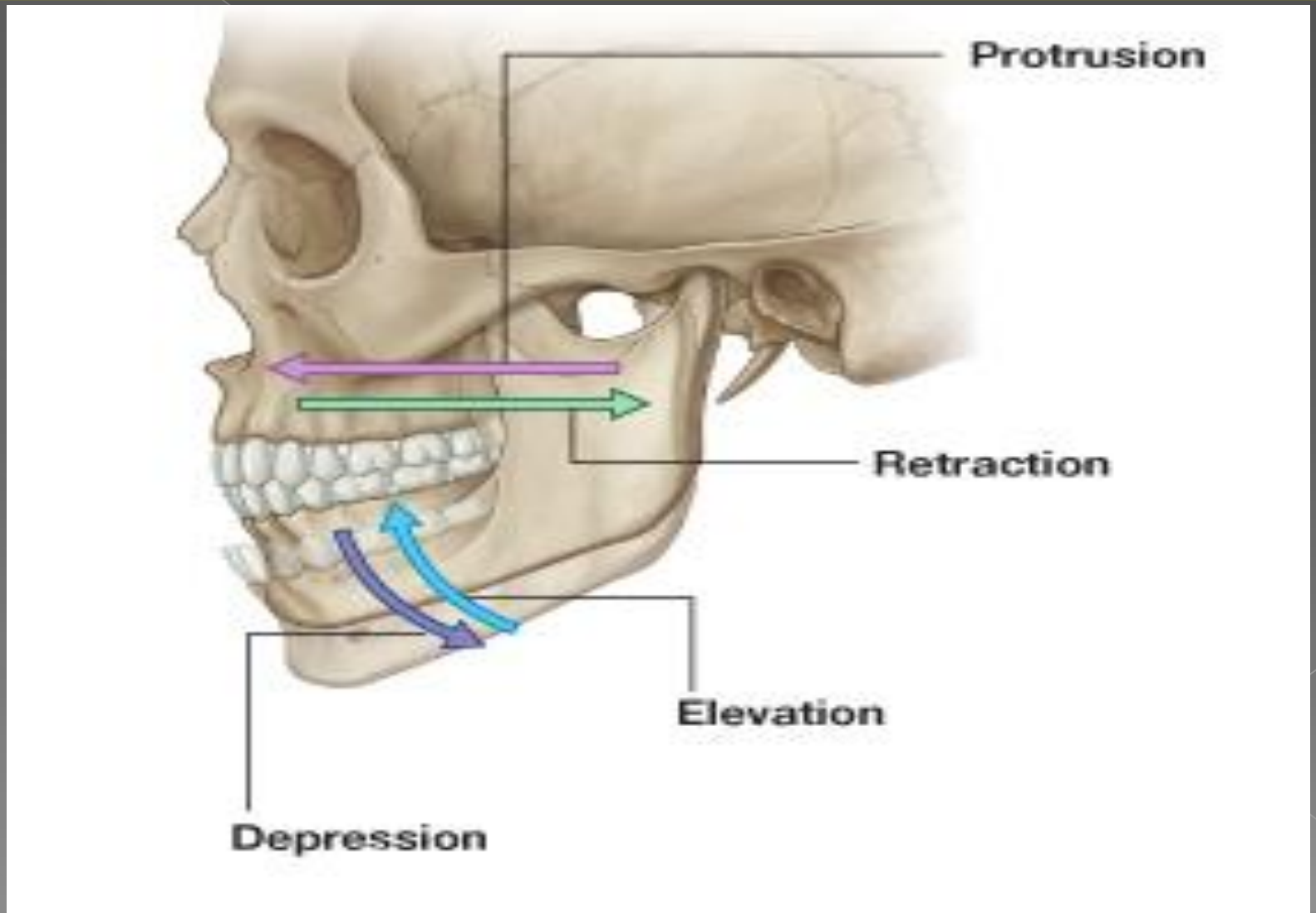
B. Lateral View



F. Medial View


Sublingual fossa
Mylohyoid ridge
Submandibular fossa
Digastric fossae
Genial tubercles

Movements at temporomandibular joint



Contents of fossa

- **Temporal fascia**

- **Muscles:**

A. Muscles of mastication:

1. Temporalis.
2. Masseter
3. Lateral pterygoid.
4. Medial pterygoid.

B. Muscles of the palate:

1. Tensor palati.
2. Levator palati.

- **Nerves**:

1. Mandibular nerve and its branches.
2. Maxillary nerve and its branches.
3. Chorda tympani.

- **Parasympathetic ganglia:**

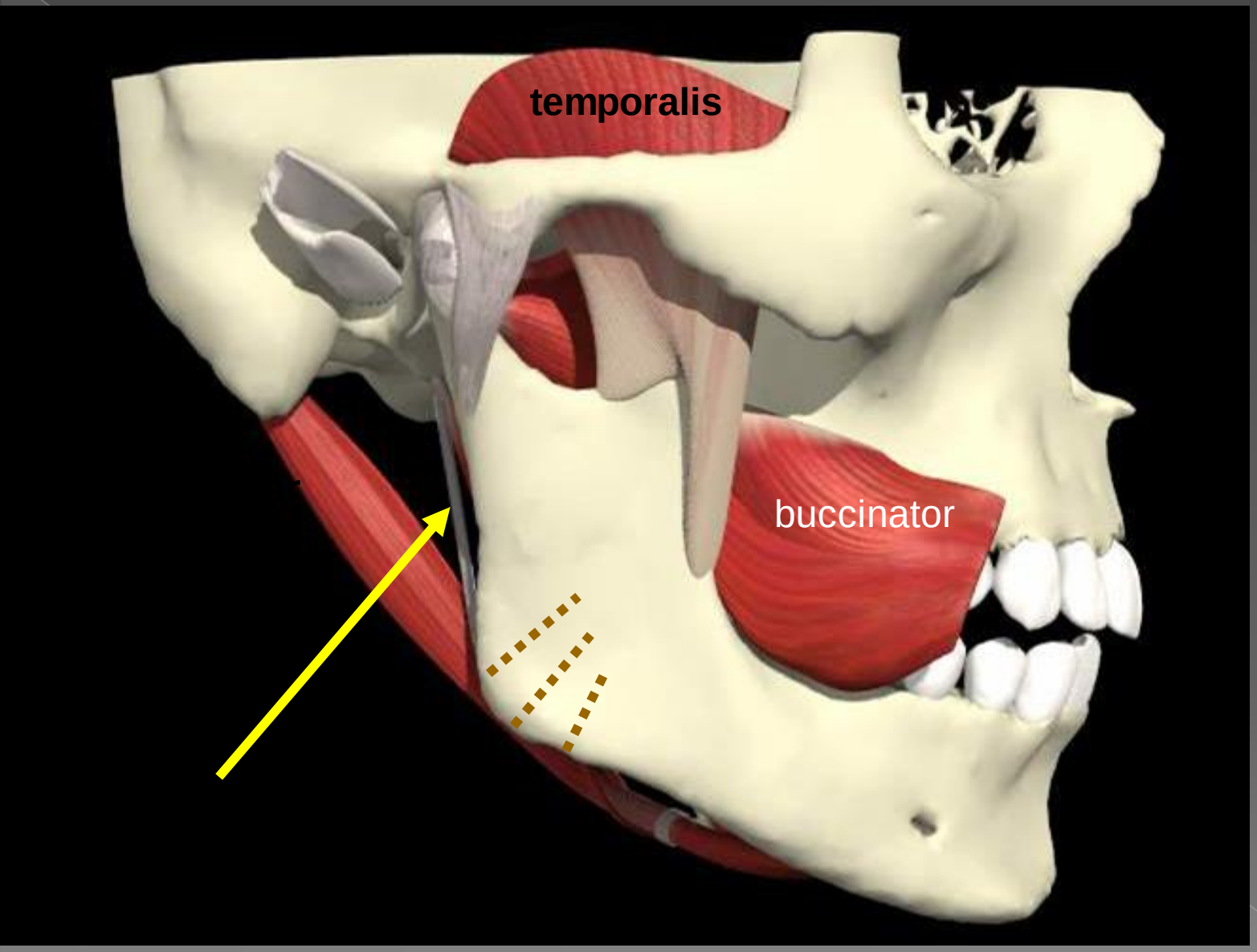
1. Otic ganglion.
2. Sphenopalatine ganglion.

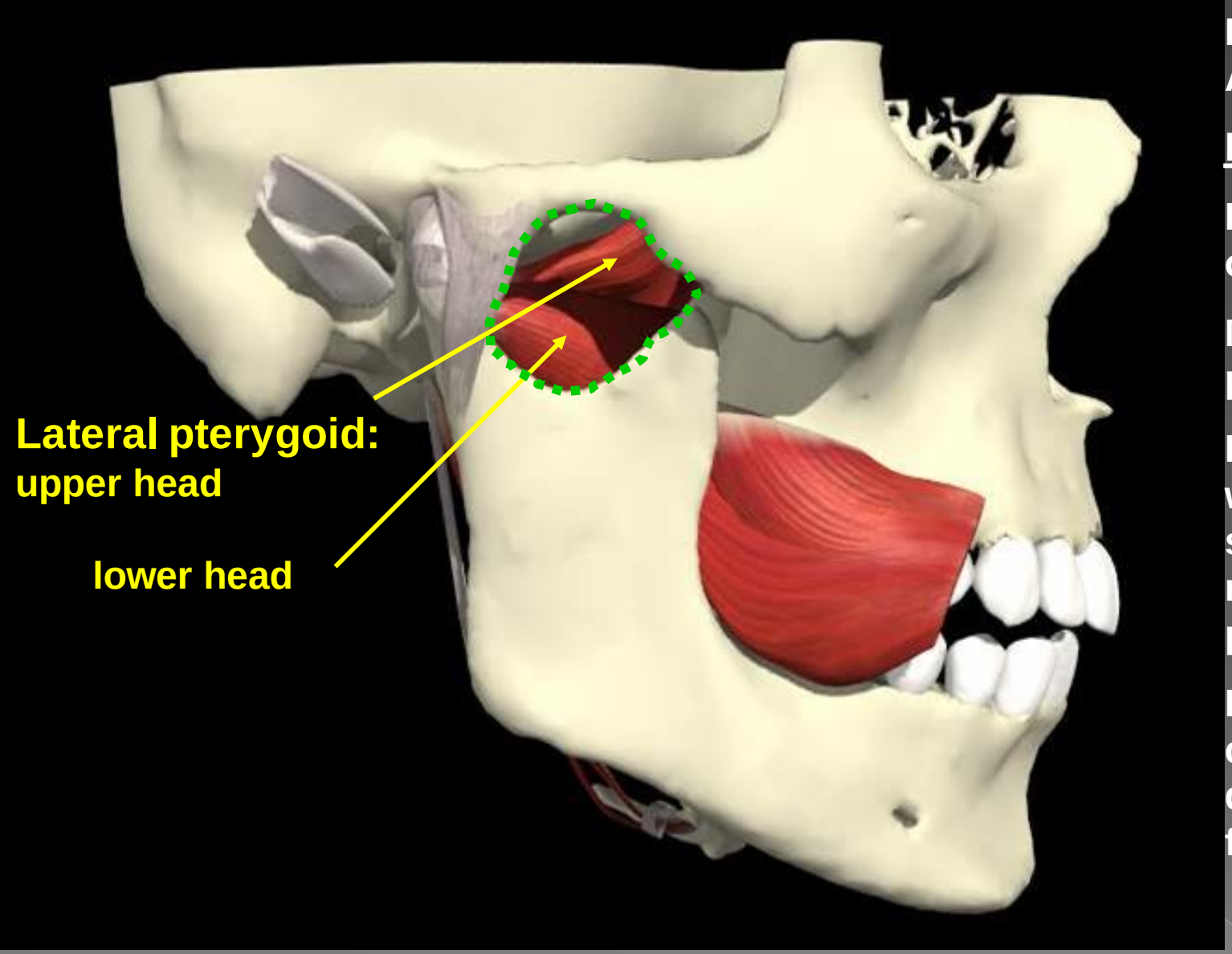
- **Vessels:**

1. Maxillary artery and its branches.
2. Pterygoid venous plexus, tributaries and communications.

- **Joints:**

Temporomandibular joint.


temporalis
buccinator



INFRATEMPOR-AL FOSSA

borders:

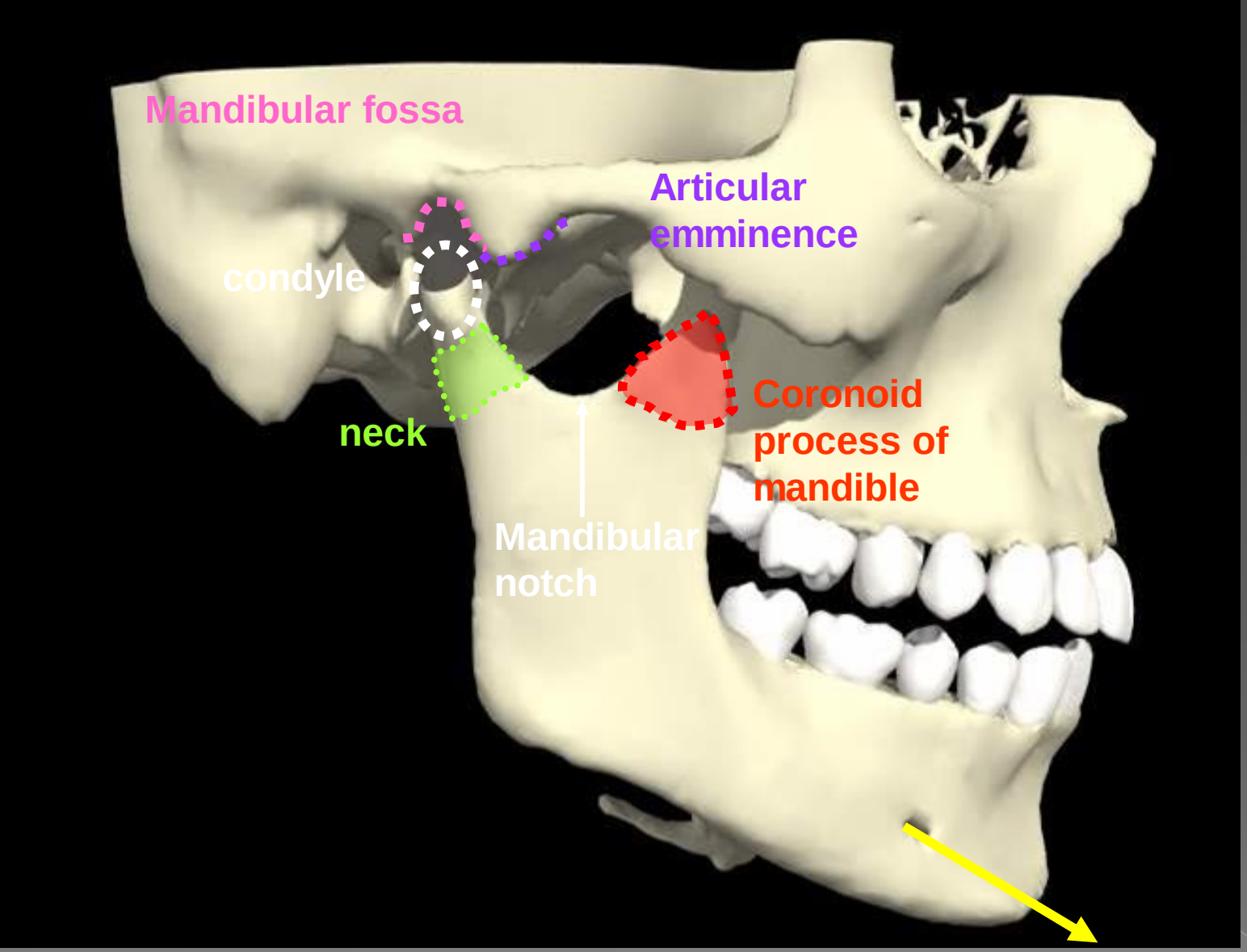
Lateral: ramus of mandible

Medial: lateral pterygoid plate

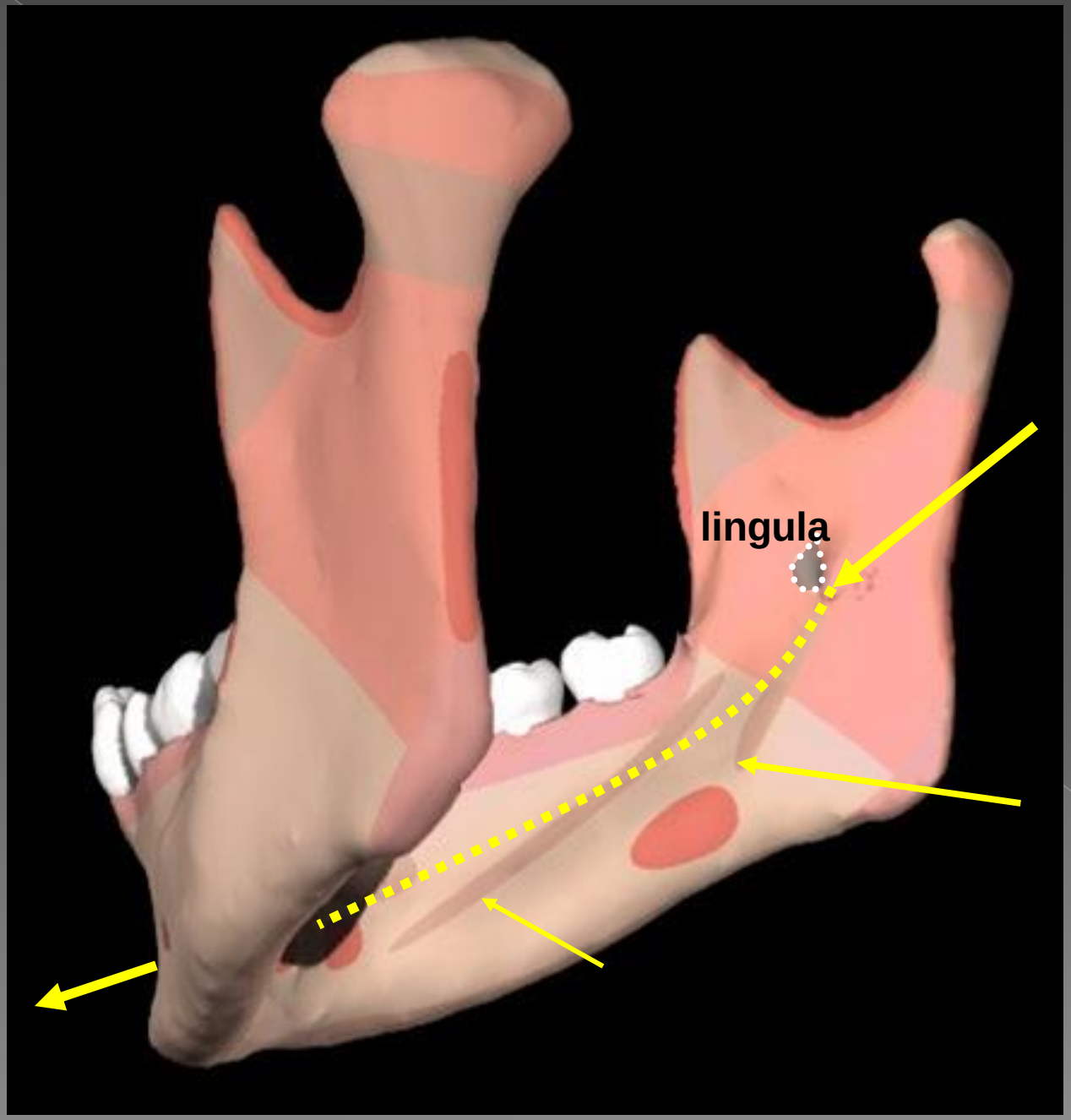
Roof: greater wing of sphenoid, adj. maxilla & palatine bones

Inferior: continuous with deep cervical fascia

Line of action of lateral pterygoids is from anterior to posterior in horizontal plane. They PROTRACT or pull the mandible forward.



Mental foramen for V3 sensory branch



Injections to numb the lower teeth also numb chin and lower lip but not uppers

Mandibular foramen for inferior alveolar branch of V3, vv.

Mylohyoid groove for V3 branch to mylohyoid

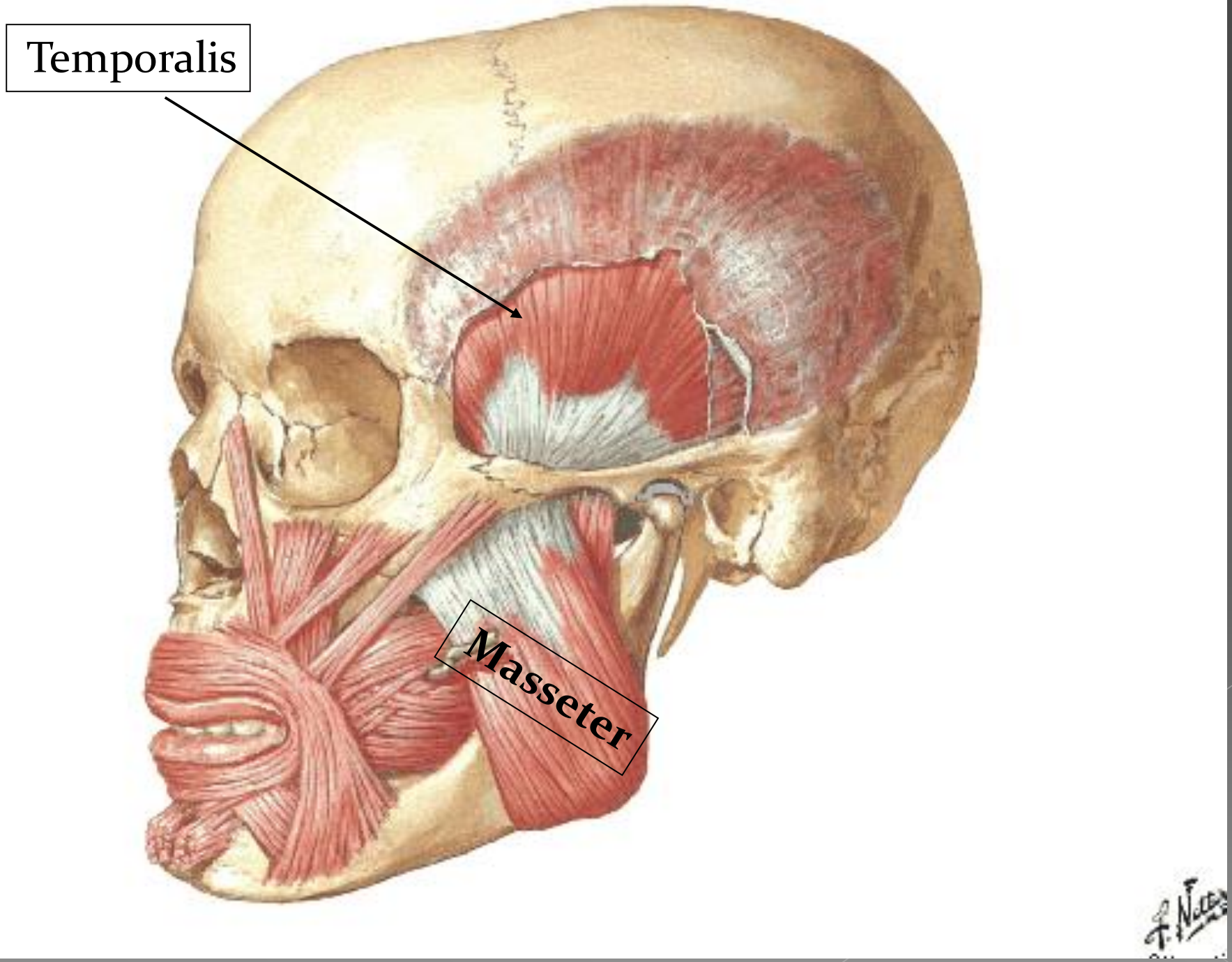
1- Muscles

Arranged in two layers:

First Layer:

1-**The masseter.**

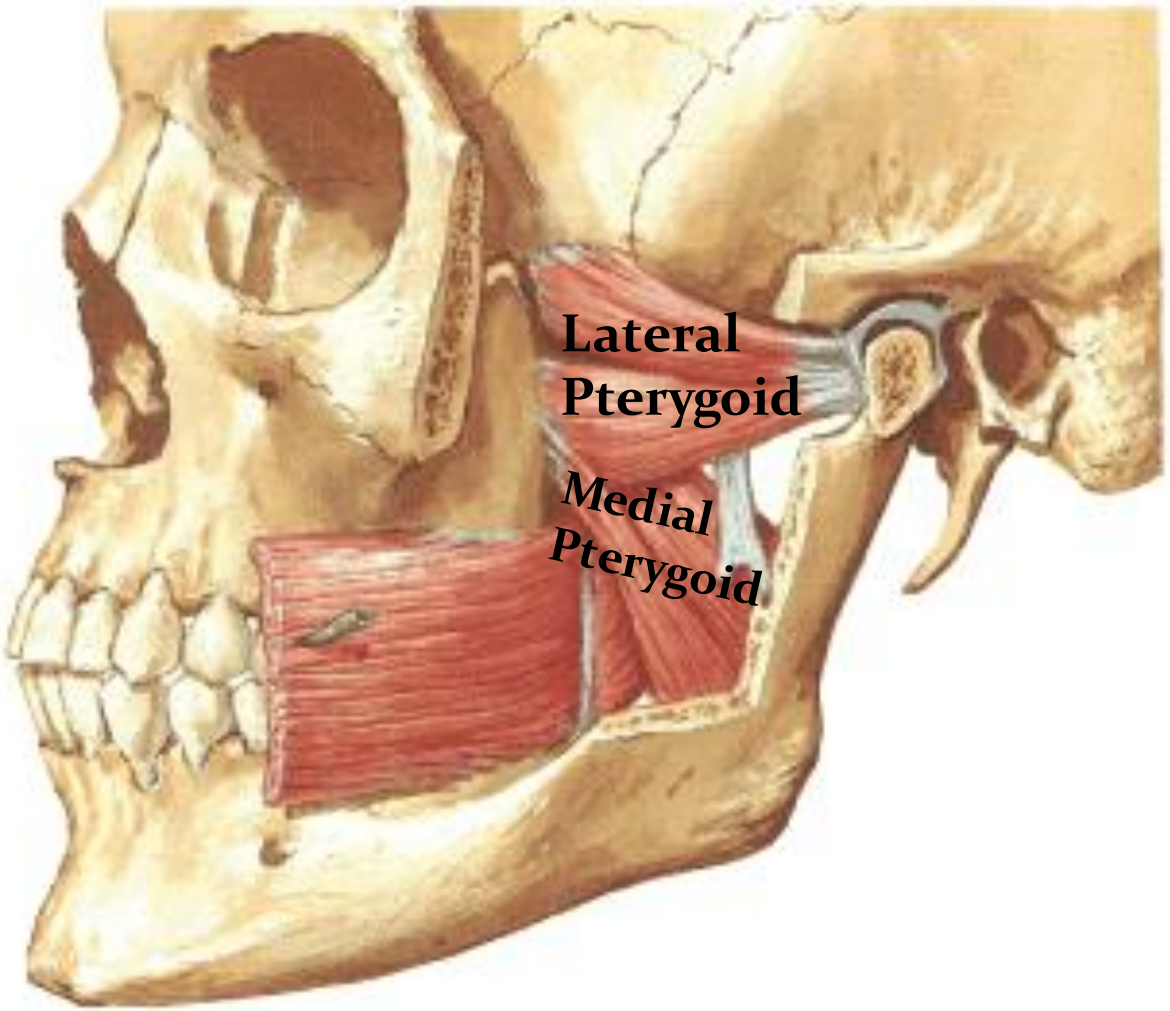
2-**The temporalis**


Temporalis
Masseter

Second layer:

3-The medial pterygoid.

4-The lateral pterygoid.

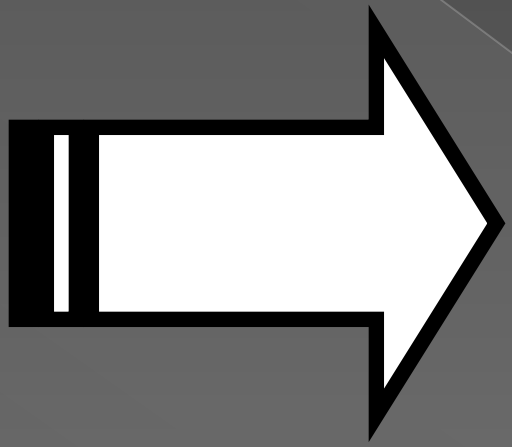

Lateral
Pterygoid
Medial
Pterygoid

Muscles of mastication

General scheme:-

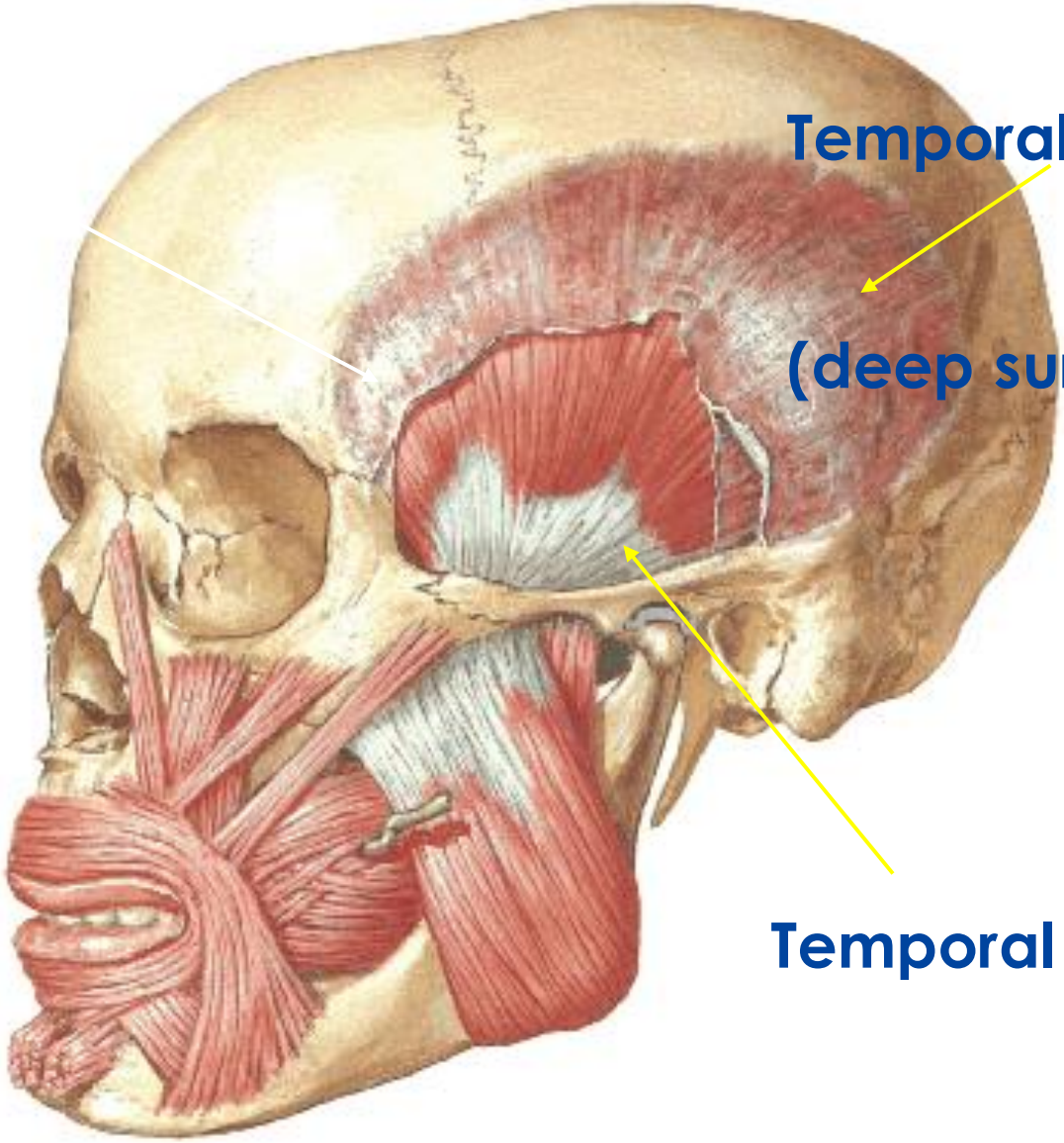
- **Origin:-**
  All arise from the **skull** (temporal and infratemoral region)
- **Insertion**: all are inserted in **mandible**
- **Nerve supply:-**all are supplied by **anterior division of mandibular nerve** except **medial pterygoid by trunk of mandibular nerve**
- **Action** :

1. all causes **protraction of mandible** except **temporalis** which cause **retraction**
2. All causes **elevation of the mandible** except **lateral pterygoid** which causes **depression**
3. **Lateral +Medial pterygoid** = side to side movement
4. **Masster + Medial pterygoid** =they regulate the position of the angle of the mandible in the vertical plane.



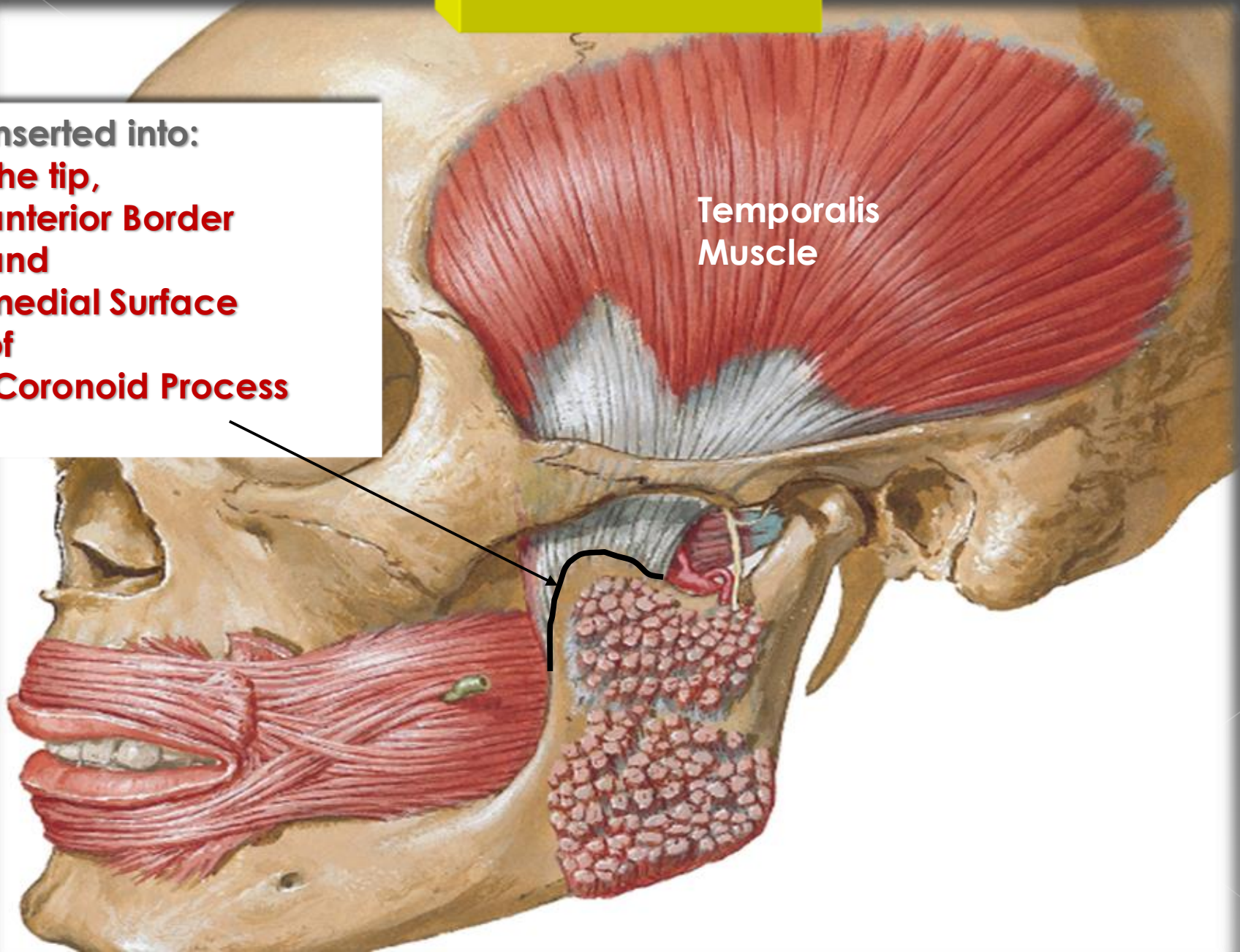
1-Temporalis muscle

Origin

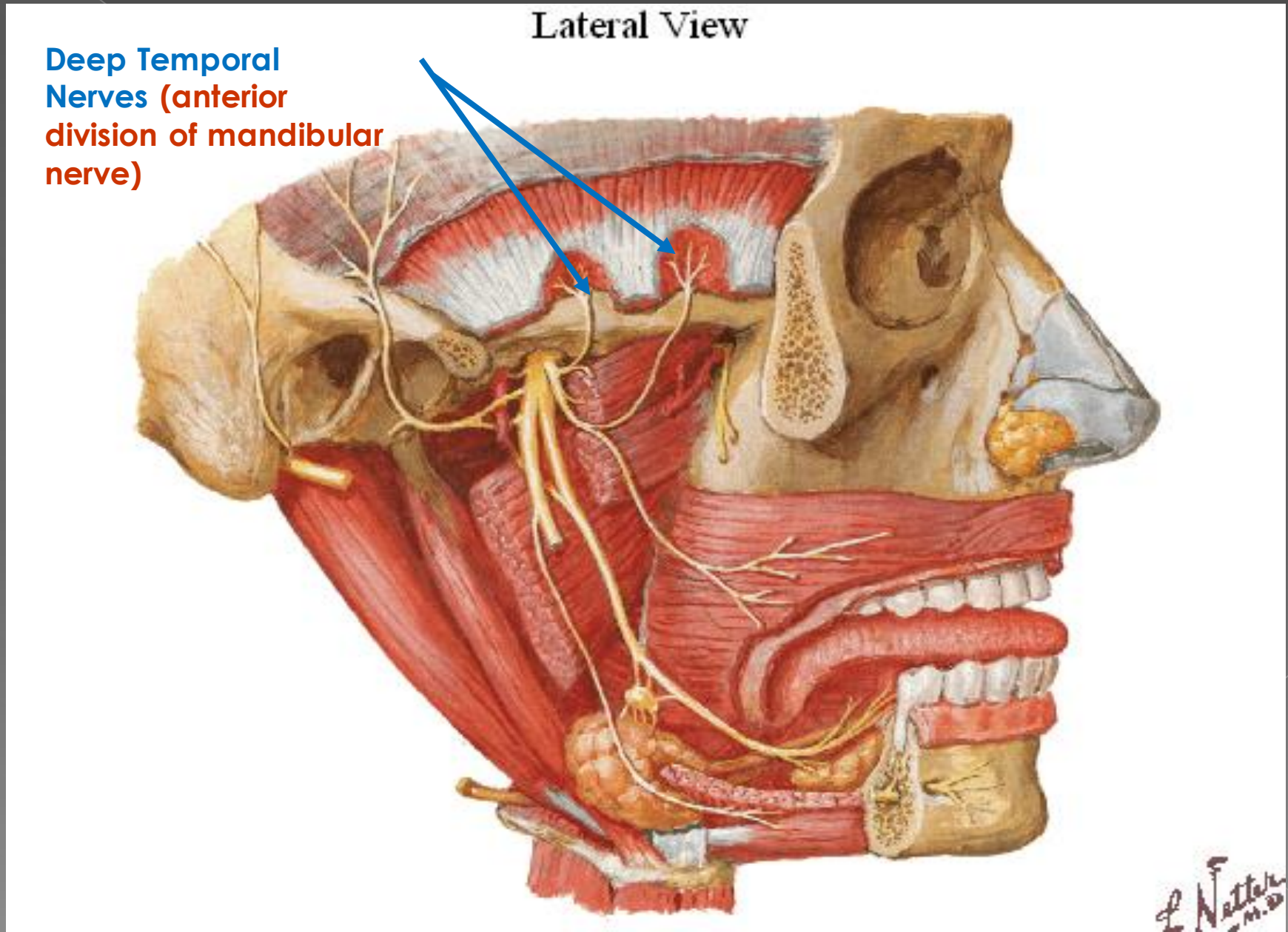


Insertion

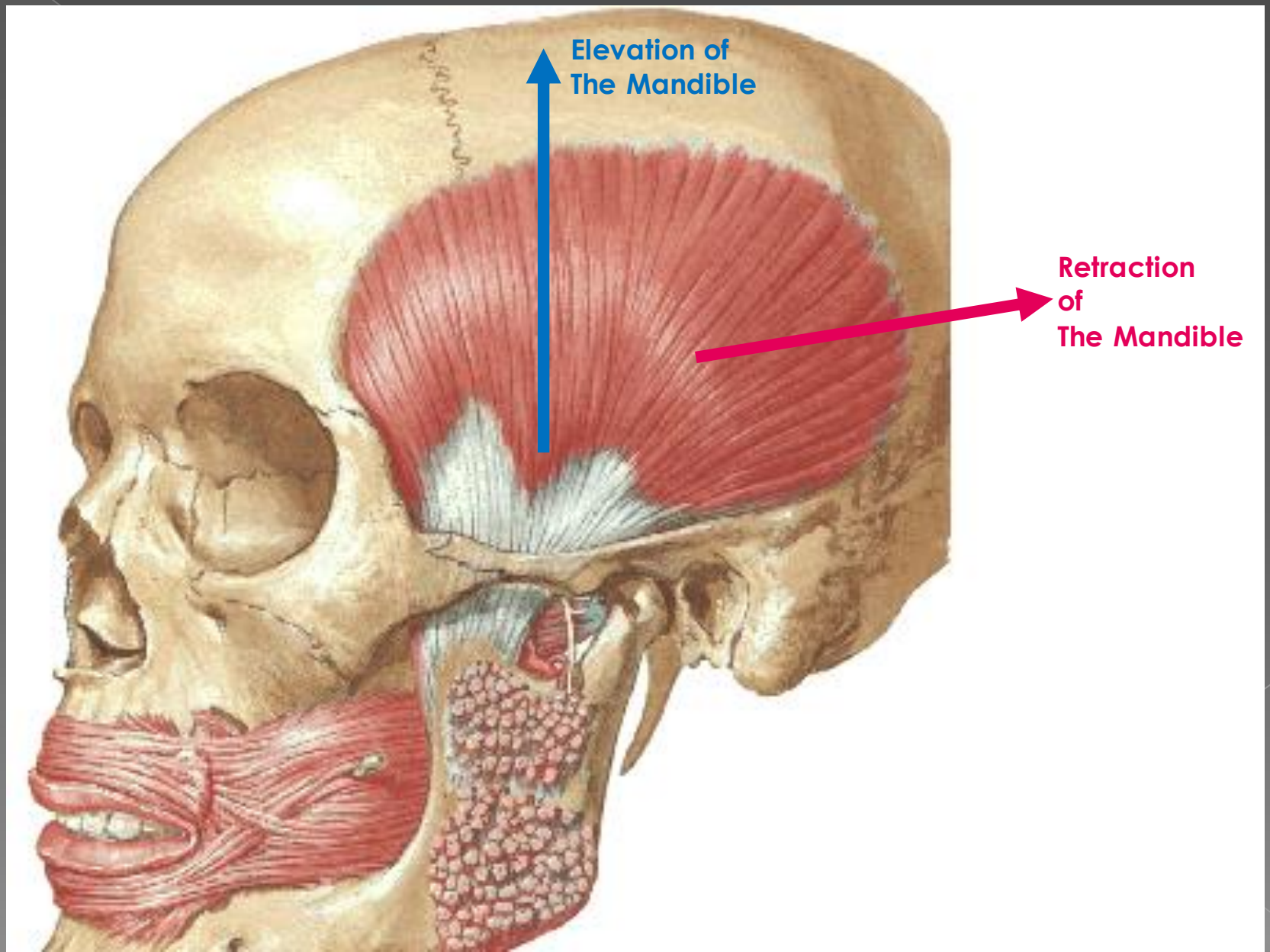
Inserted into:
The tip,
anterior Border
and
medial Surface
of
Coronoid Process

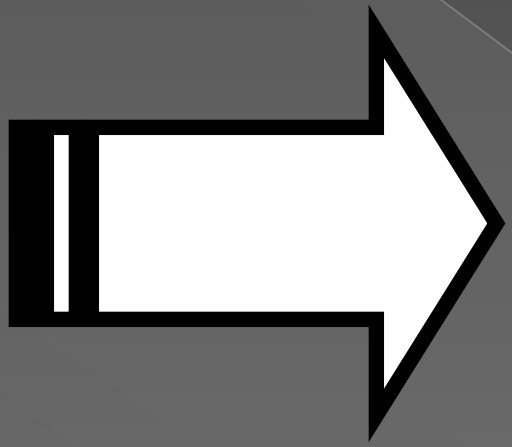


Nerve supply

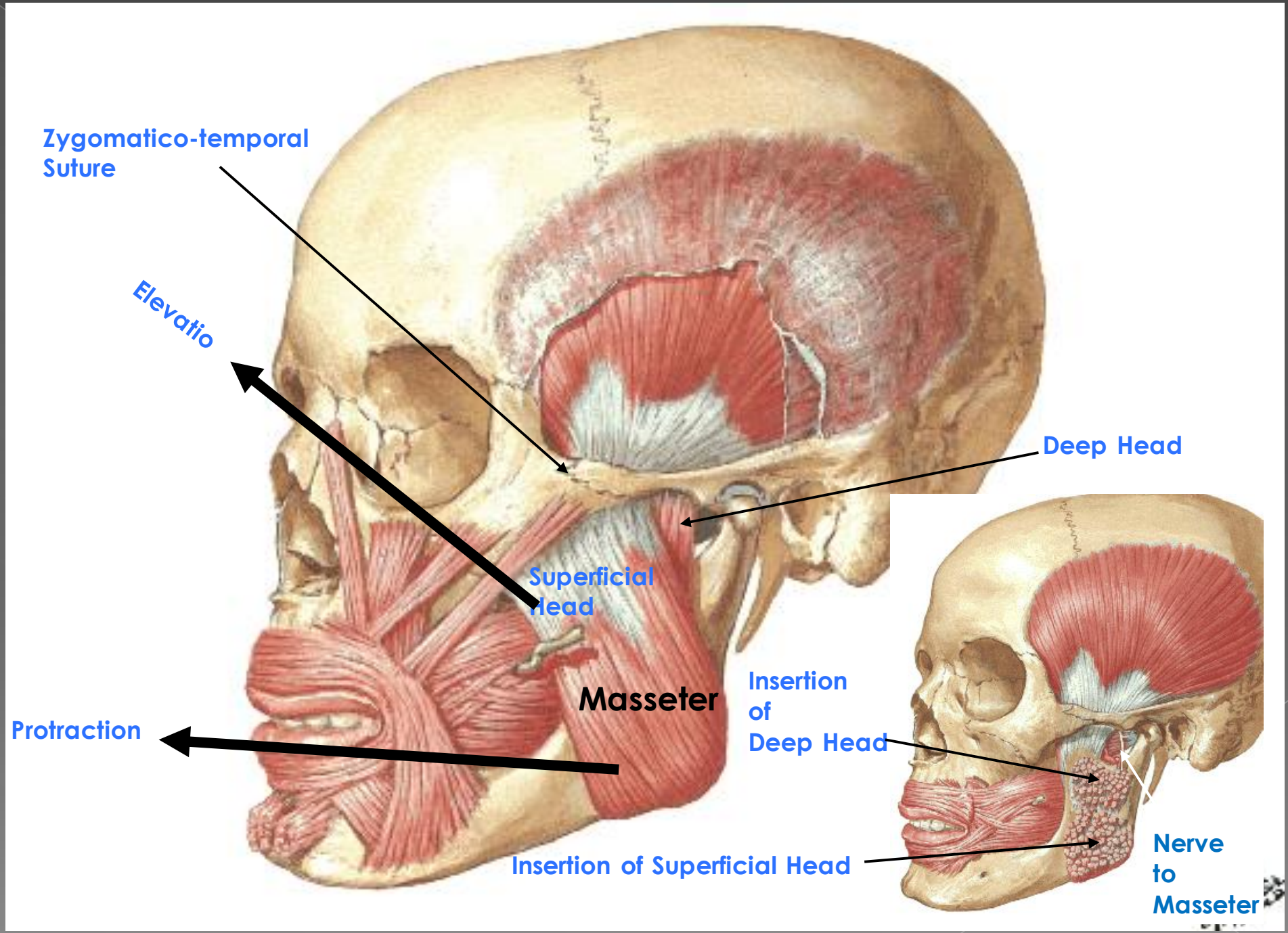


Action

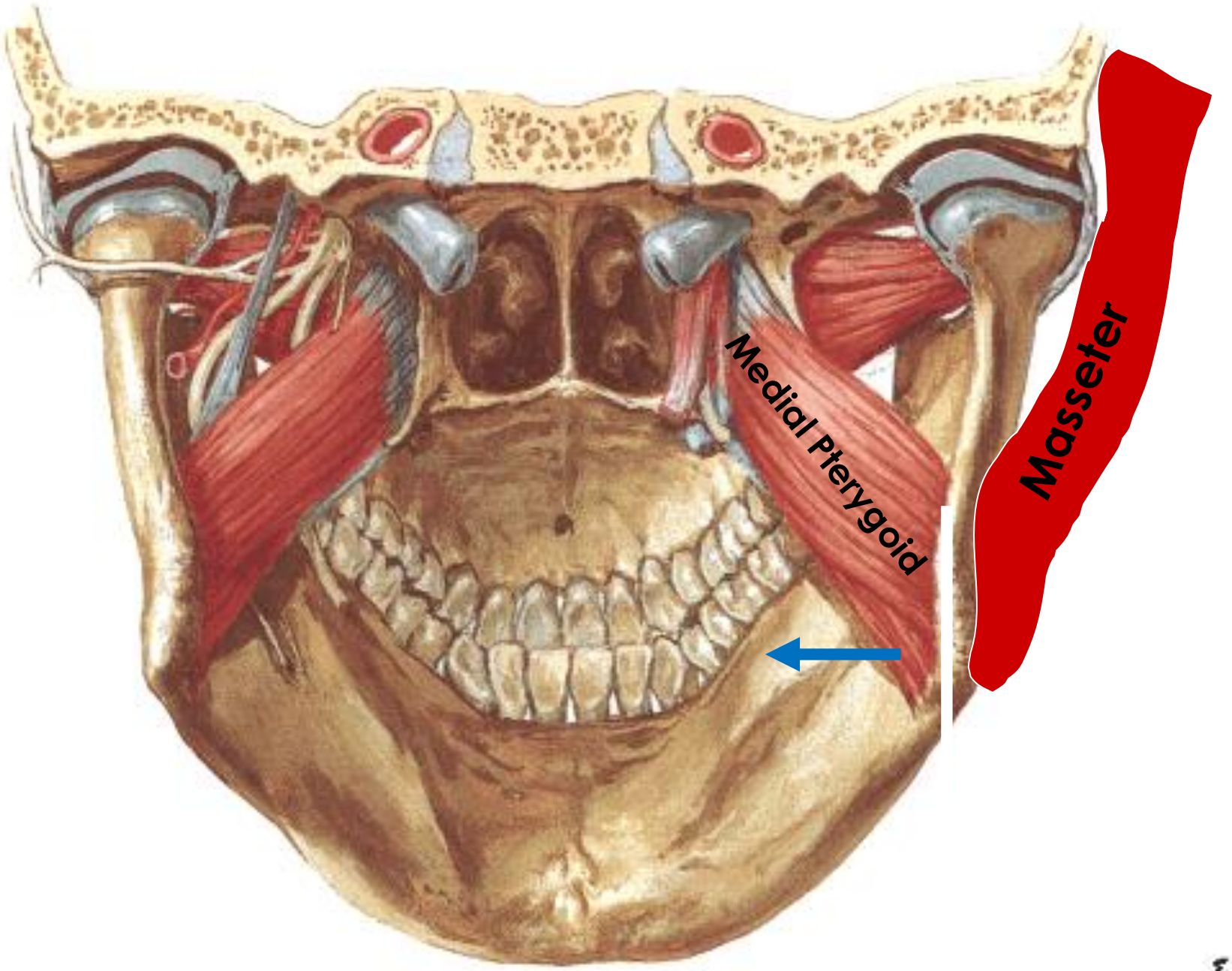


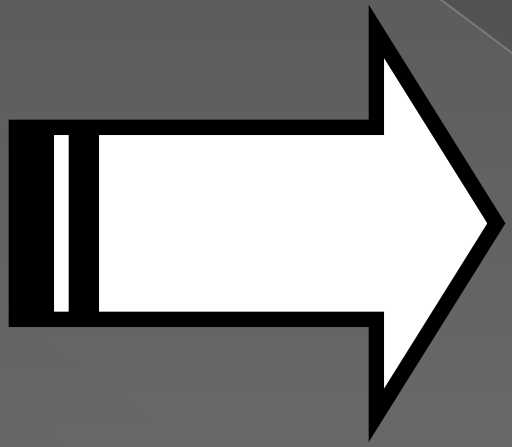


2-Masseter muscle

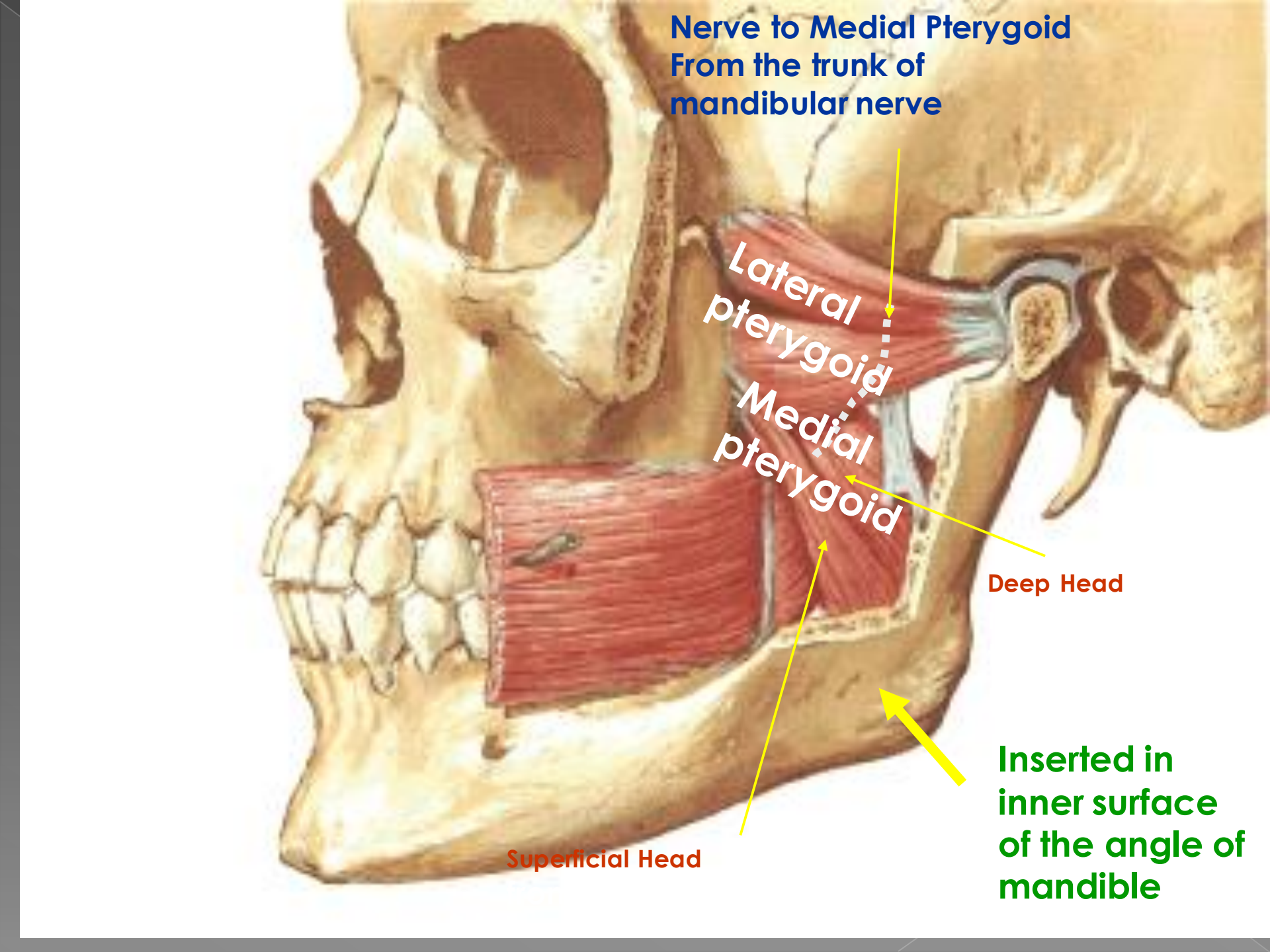

Zygomatico-temporal Suture
Elevatio
Deep Head
Superficial Head
Masseter
Protraction
Insertion of Deep Head
Insertion of Superficial Head
Nerve to Masseter

Posterior View



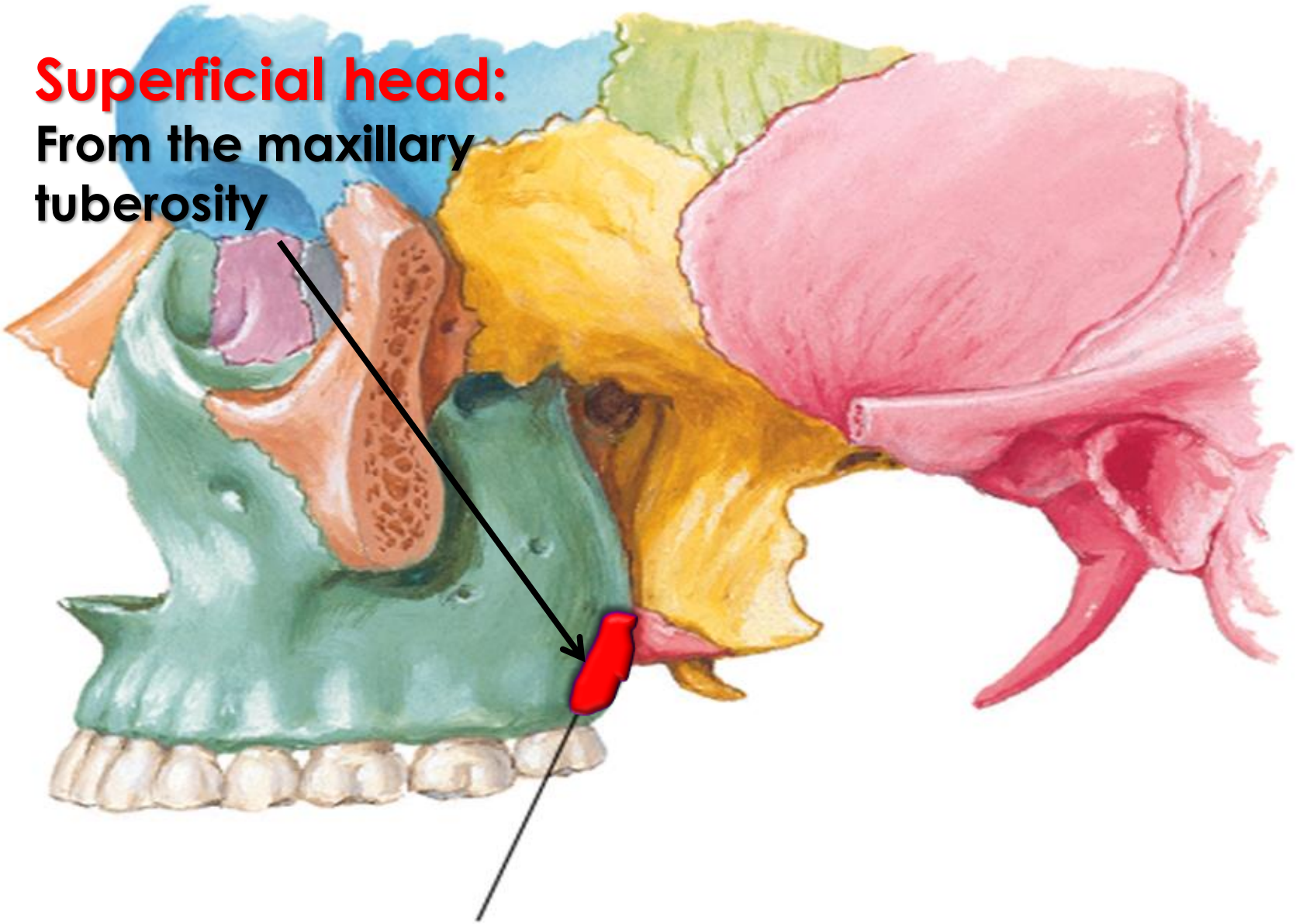


3-Medial pterygoid muscle

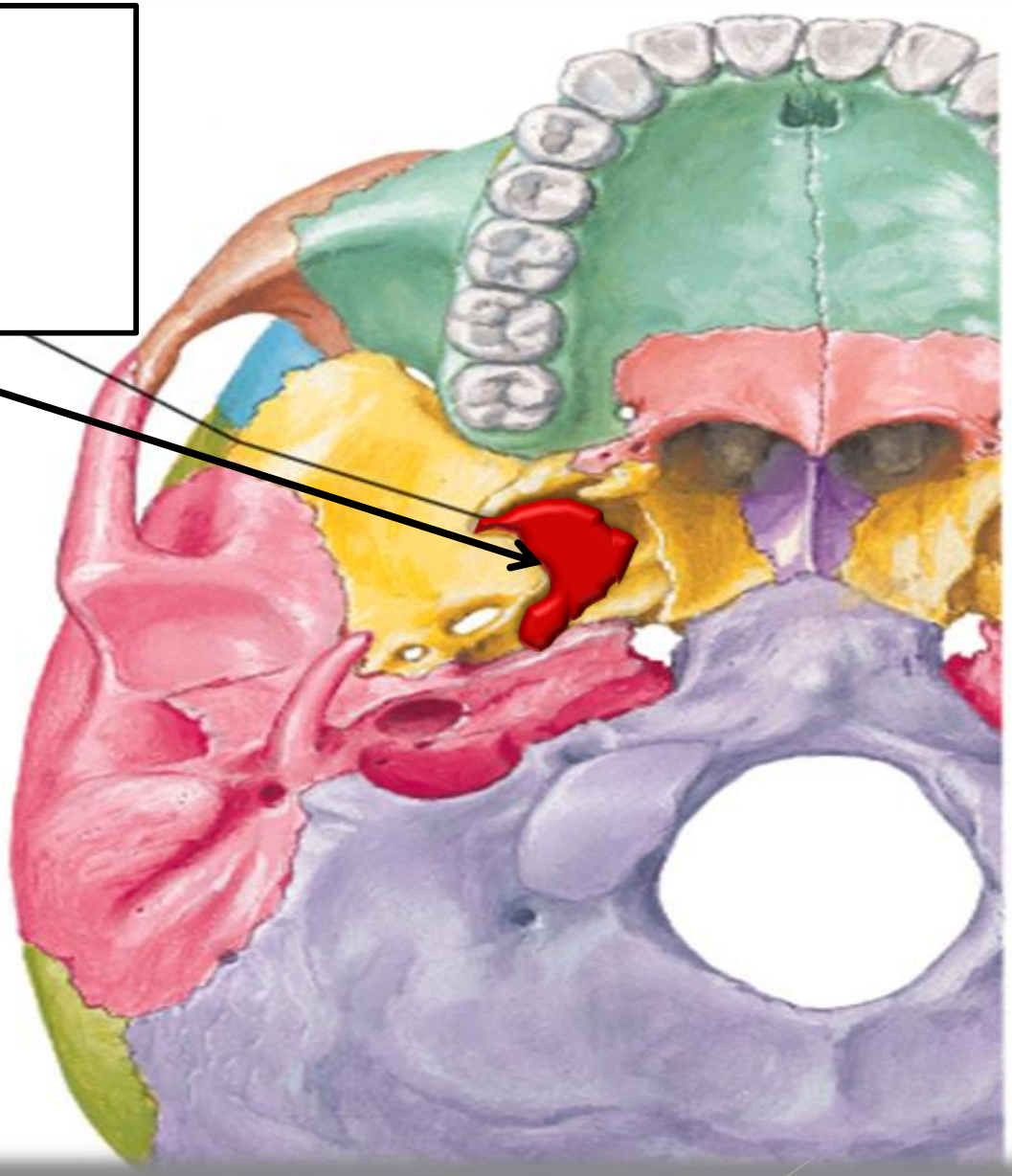

Nerve to Medial Pterygoid
From the trunk of
mandibular nerve
Lateral
pterygoid
Medial
pterygoid
Deep Head
Superficial Head
Inserted in
inner surface
of the angle of
mandible

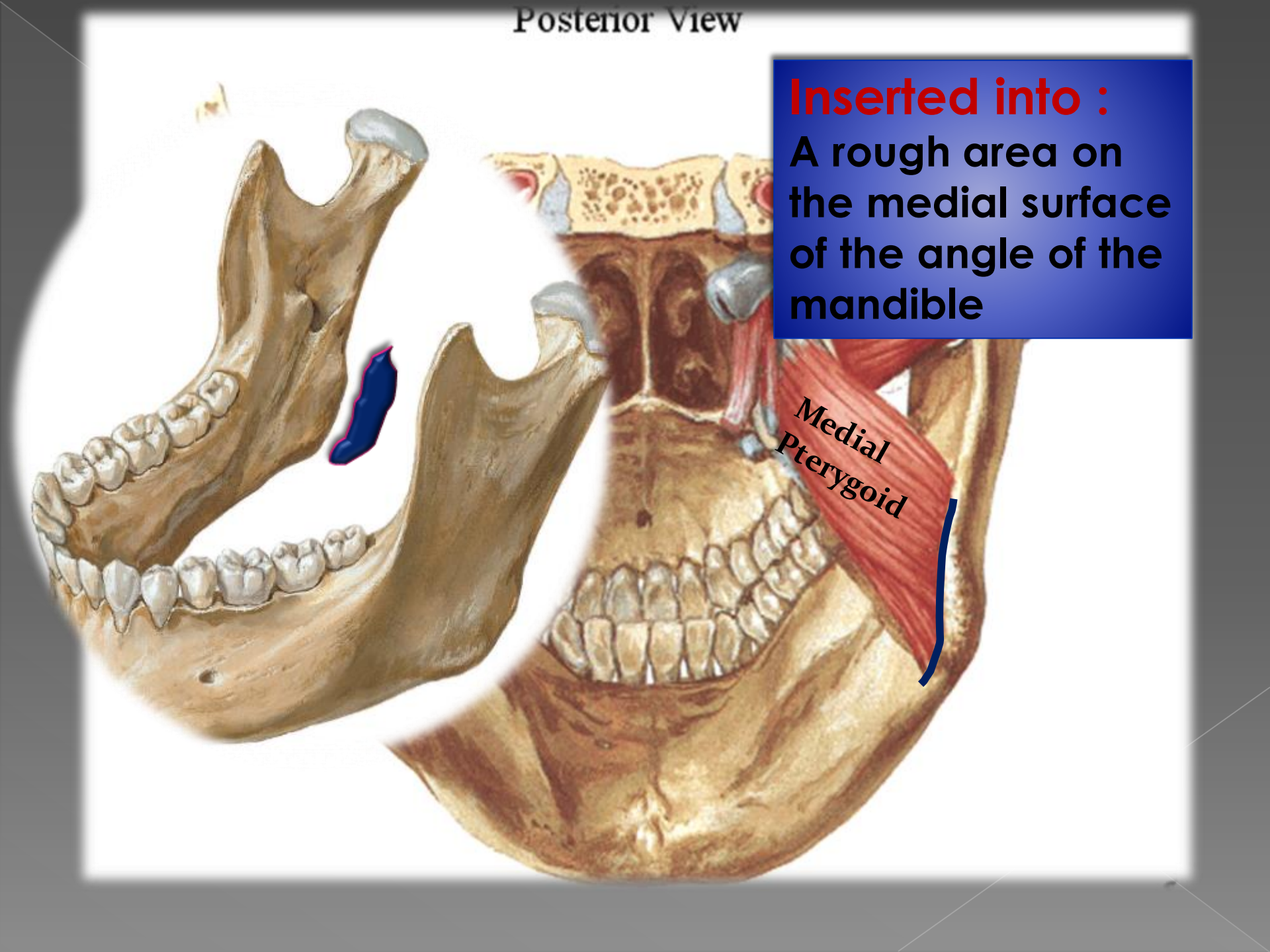
Superficial head:

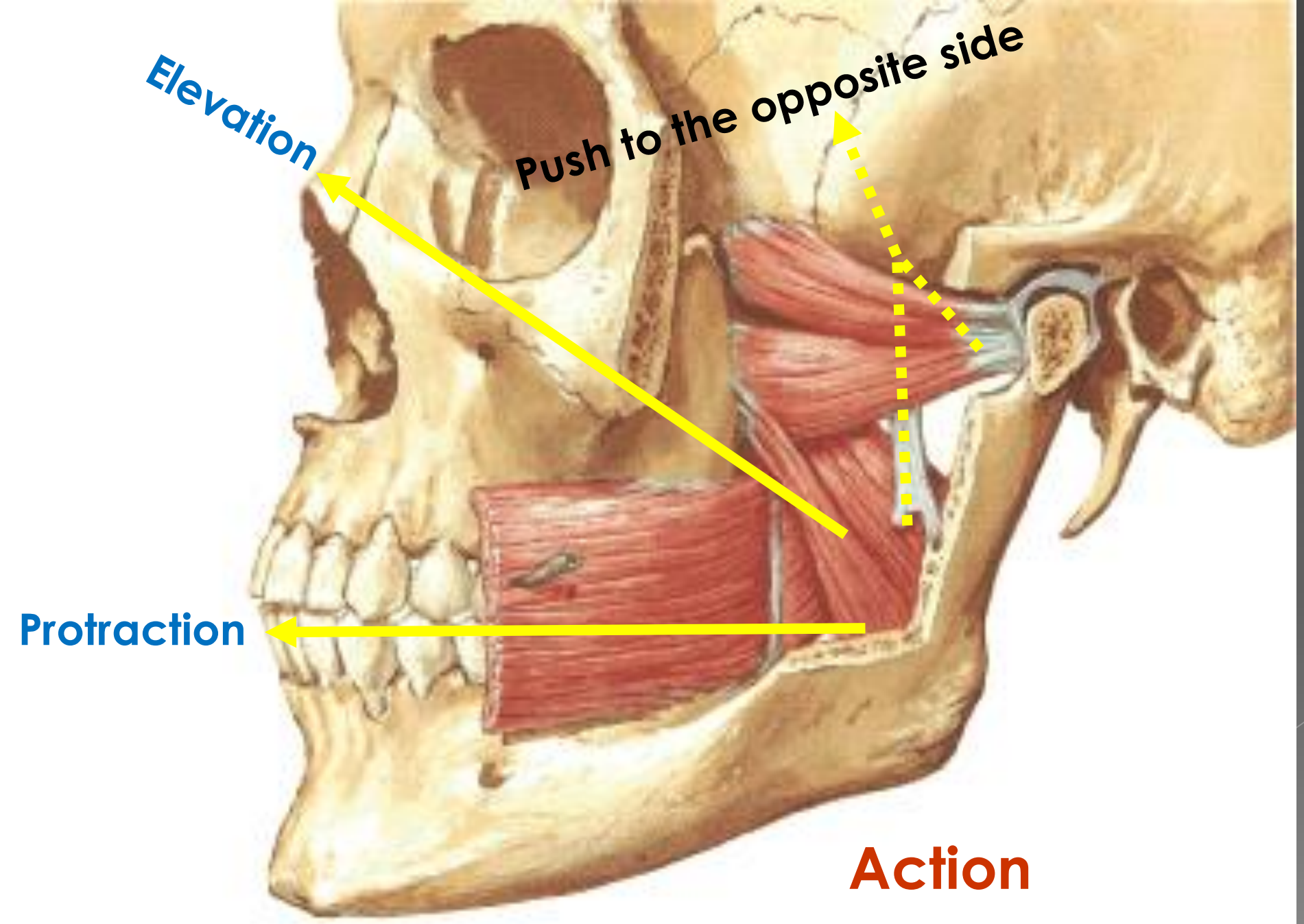
From the maxillary tuberosity



Deep Head:
From the medial surface of lateral pterygoid plate.




Posterior View
Inserted into :
A rough area on the medial surface of the angle of the mandible
Medial Pterygoid


Elevation
Push to the opposite side
Protraction
Action

Posterior View