

GROSS ANATOMY OF TEMPOROMANDIBULAR JOINT

By

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KEY FACTS ABOUT THE TEMPOROMANDIBULAR JOINT

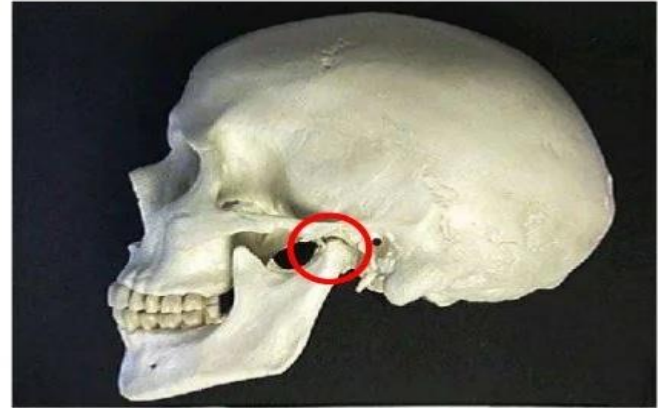
Compartments	Superior (translational movement) and inferior compartments (rotational movement)
Joint capsule	<i>Limits/borders</i> - border of mandibular fossa and neck of the mandible above the pterygoid fovea
Ligaments	temporomandibular, stylomandibular, and sphenomandibular ligaments
Vascular supply	Deep auricular, superficial temporal, and anterior tympanic arteries
Innervation	Mandibular, masseteric, and deep temporal nerves, together with the otic and superior cervical ganglions
Venous drainage	Superficial temporal vein and the maxillary vein

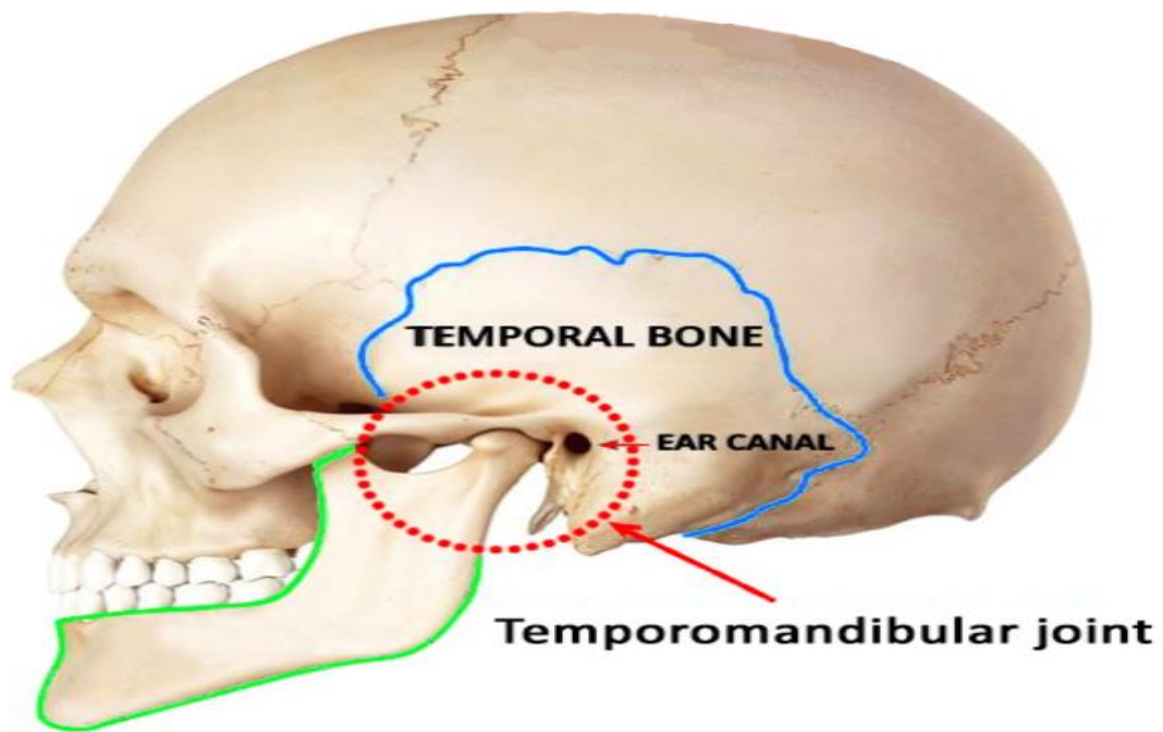
INTRODUCTION

- The most important functions of the temporomandibular joint (TMJ) are mastication and speech and are of great interest to dentists, orthodontists, clinicians, and radiologists.
- The TMJ is a ginglymoarthrodial joint, a term that is derived from ginglymus, meaning a hinge joint, allowing motion only backward and forward in one plane, and arthrodia, meaning a joint of which permits a gliding motion of the surfaces.

Temporomandibular joint

- Only mobile joint of skull formed between head of mandible and articular fossa of temporal bone.





Peculiarity of TMJ

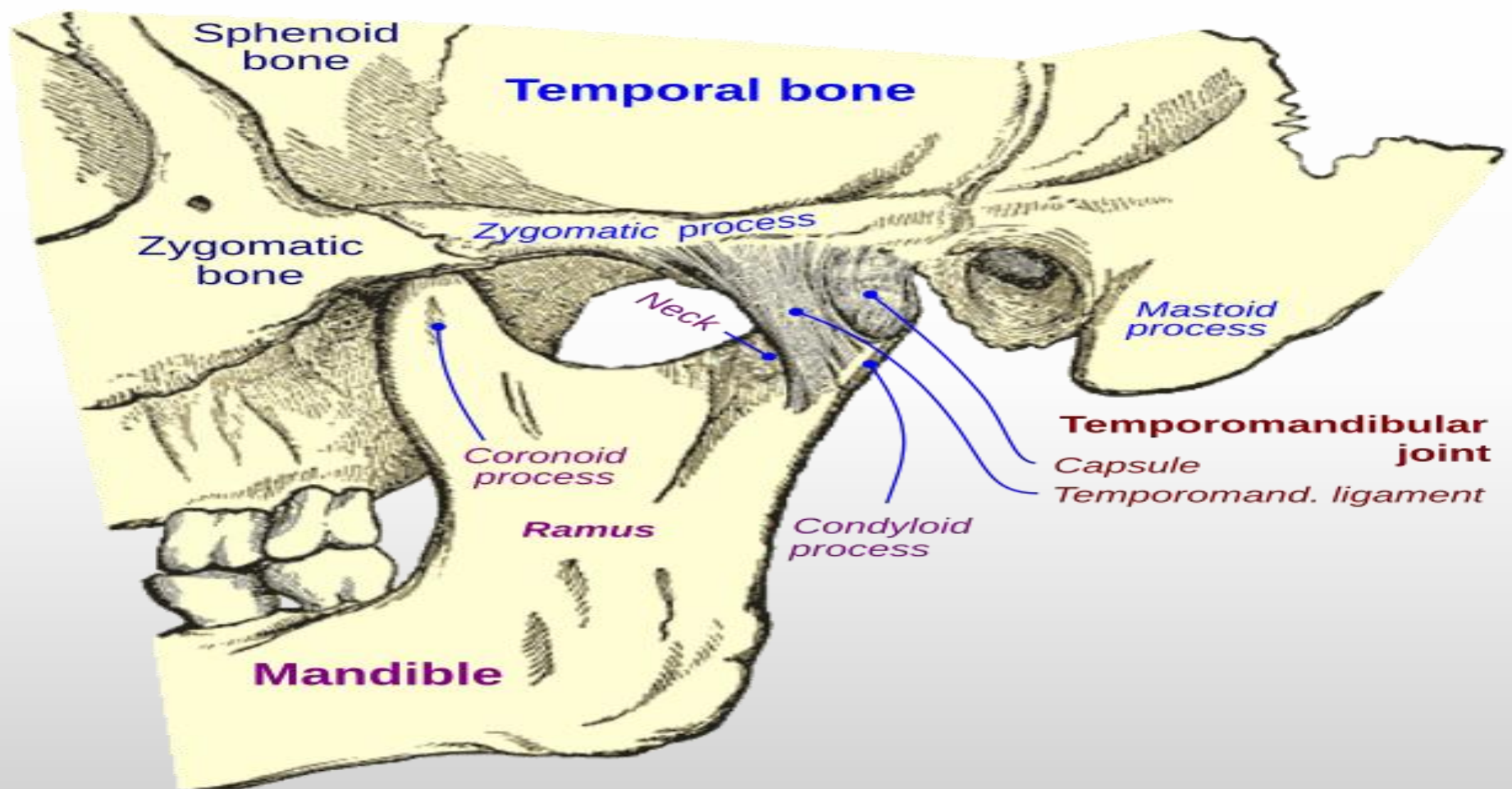
1. Bilateral diarthrosis – right & left function together
2. Articular surface covered by fibrocartilage-**instead of hyaline cartilage**
3. Only joint in human body to have a rigid endpoint of closure (**that of the teeth making occlusal contact**).

4. In contrast to other diarthrodial joints TMJ is last joint to start develop in- about 7th week in utero.

5. Develops from two distinct blastema.
 - i) Temporal.
 - ii) Condylar.

Ligaments

- Fibrous capsule
- Articular disc
- Lateral ligament of jaw
- Sphenomandibular ligament
- Stylomandibular ligament



Sphenoid bone

Temporal bone

Zygomatic bone

Zygomatic process

Mastoid process

Neck

Temporomandibular joint

Coronoid process

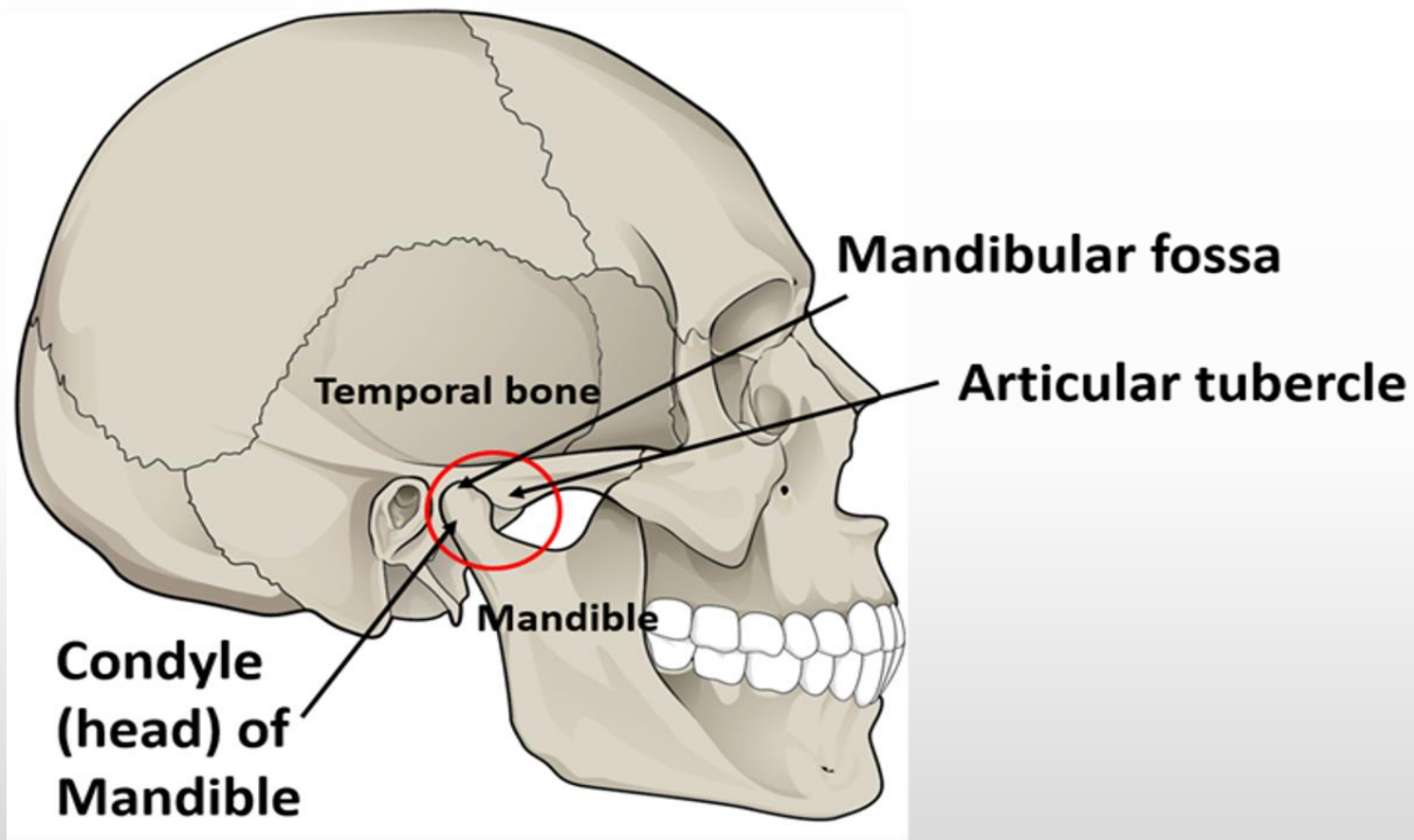
Capsule

Temporomand. ligament

Ramus

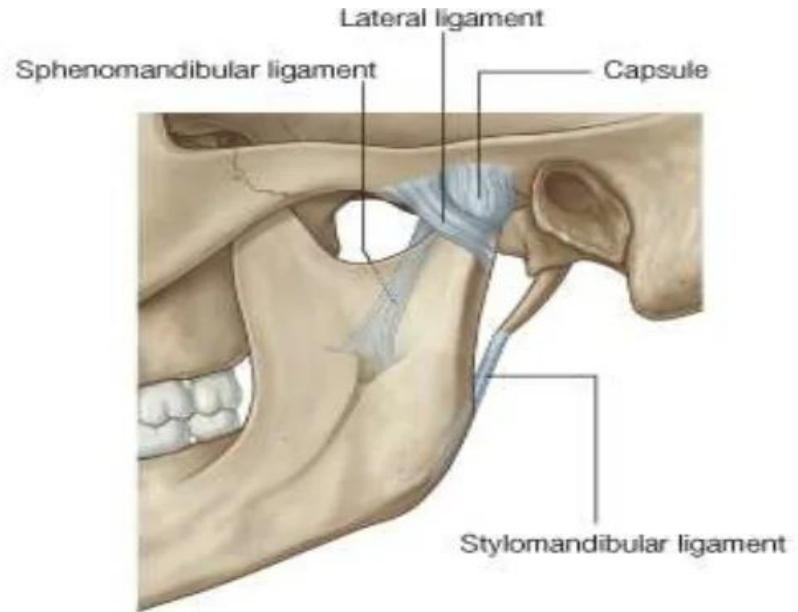
Condyloid process

Mandible



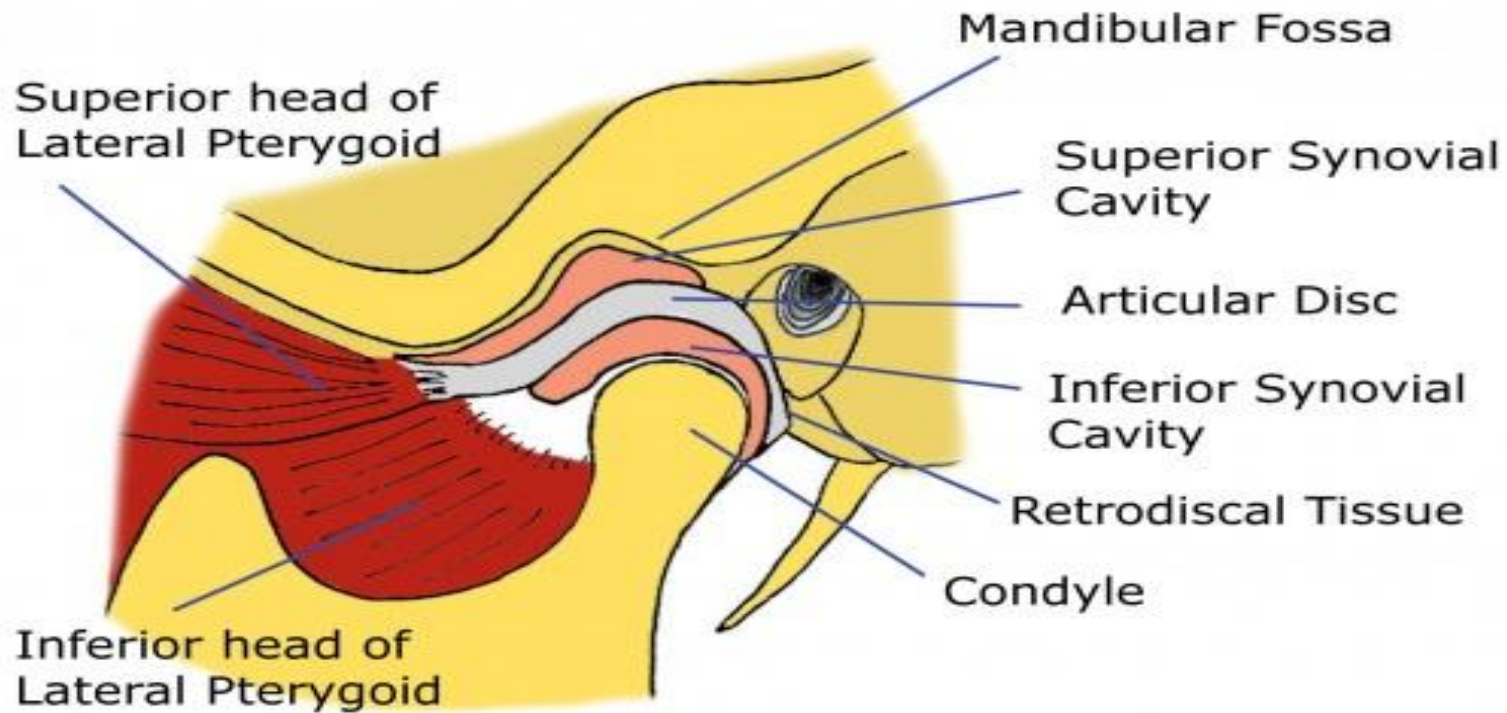
Fibrous capsule

- Above to the anterior edge of the preglenoid plane.
- Posteriorly to the squamotympanic fissure, between these to the edges of the articular fossa.
- Below to the periphery of the neck of the mandible.



Articular disc

- Fibrocartilaginous disc dividing joint cavity in upper and lower compartment.
- Shape: Oval
- Makes articular surface congruent.
- **attached——fibrous cap[sule,lateral pterygoid,head of mandible**
- **This allows disc to move forward and backward during protraction and retraction of mandible**
upper surface——articular tubercle ,mandibular



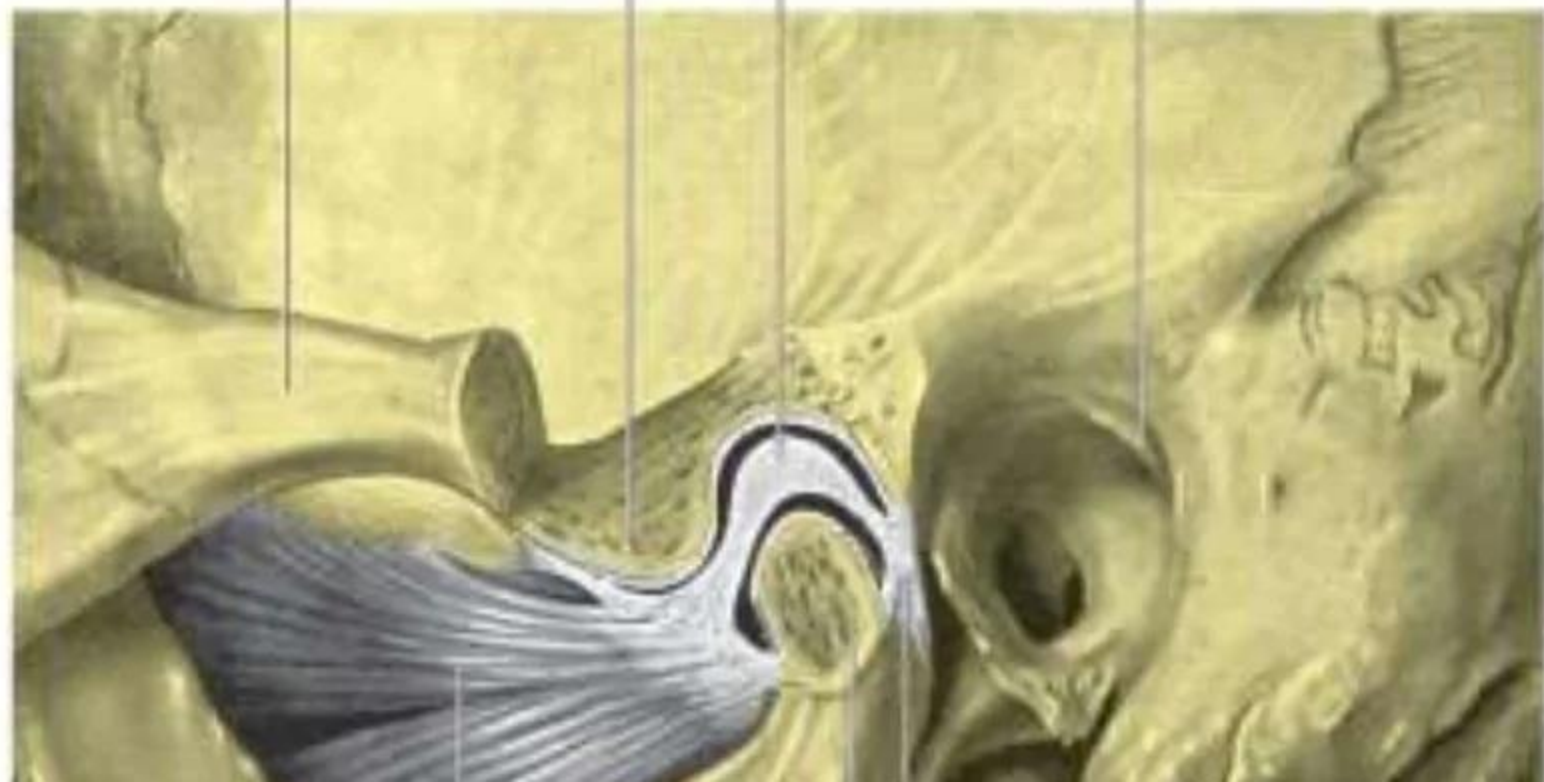
The Temporomandibular Joint

Articular eminence

Zygoma

Articular disc

Suprameatal spine

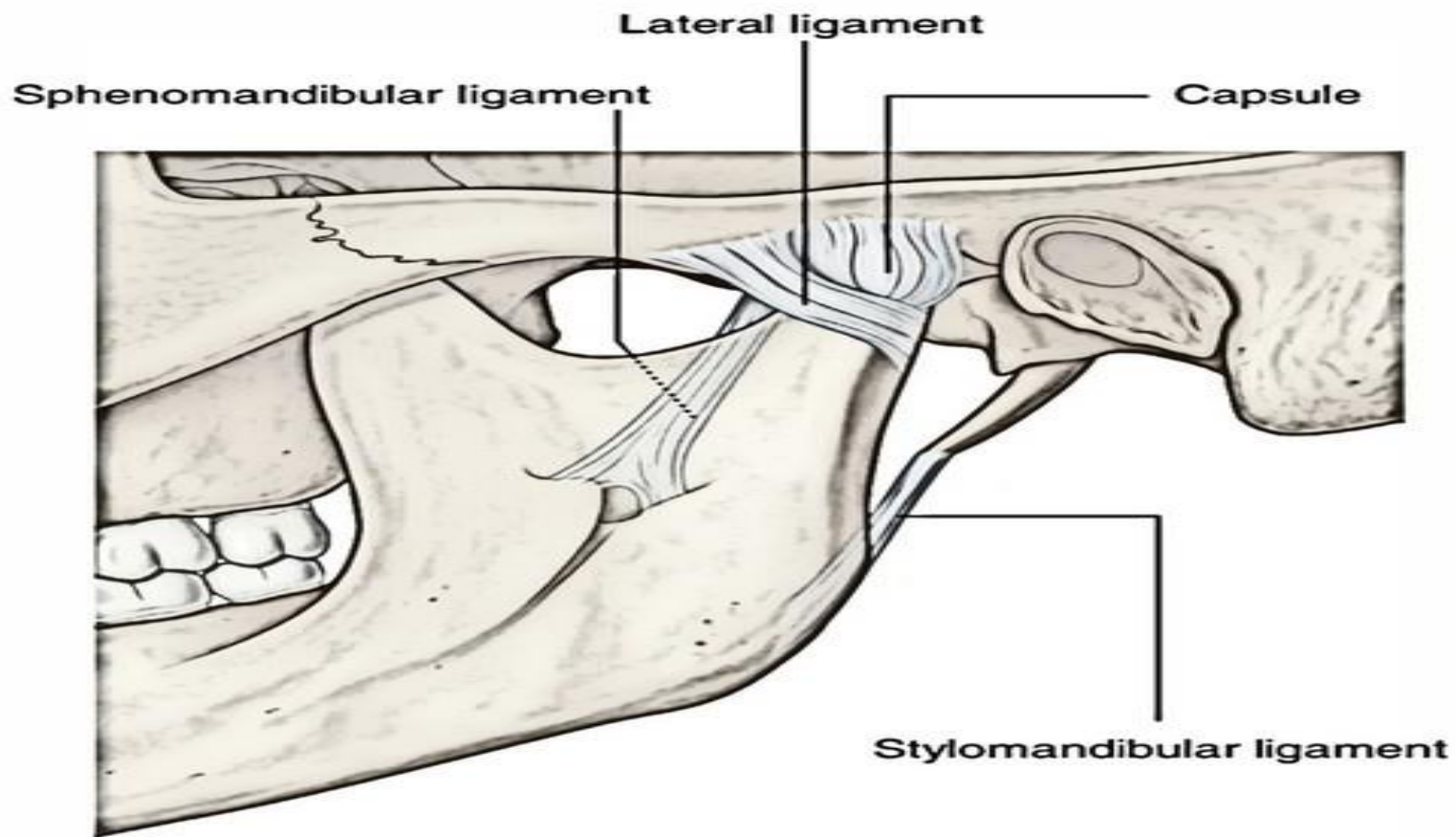


Functions of Articular disc

- Stabilize the TMJ.
- Makes articular surfaces congruent.
- Reduce wear of TMJ.
- Aid lubrication of the joint

Lateral ligament of Jaw

- Attached above to the articular tubercle on the root of the zygomatic process of the temporal bone.
- It extends downwards and backwards at an angle of 45° to the horizontal, to attach to the lateral surface and posterior border of the neck of the condyle, deep to the parotid gland.
- Function: To prevent posterior displacement of the resting condyle.

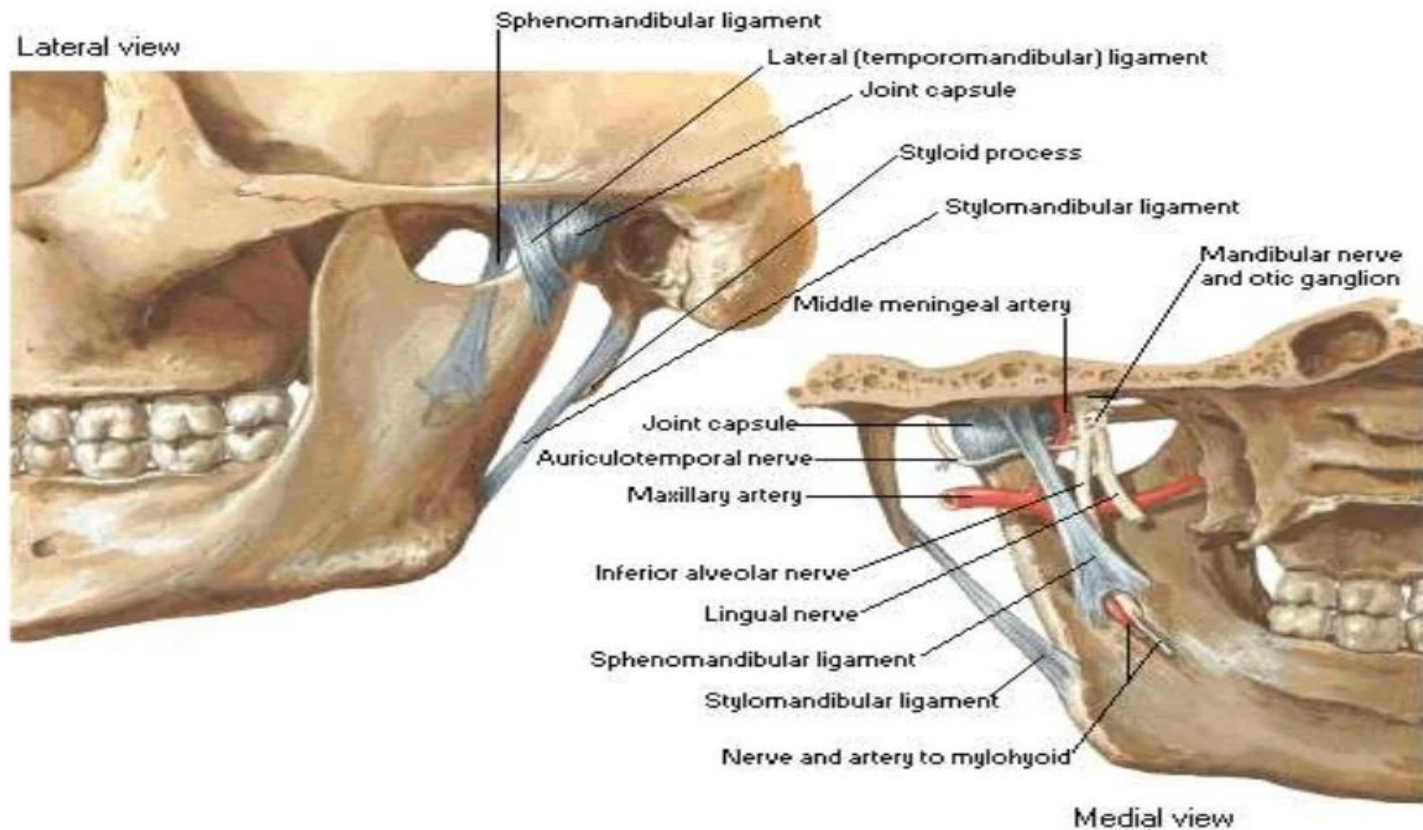


Sphenomandibular ligament

- Medial to, and normally separate from, the capsule. It is a flat, thin band that descends from the spine of the sphenoid.
- Widens at the lingula of the mandibular foramen.

Temporomandibular Joint

Lateral and Medial Views



Stylomandibular ligament

- A thickened band of deep cervical fascia that stretches from the apex and adjacent anterior aspect of the styloid process to the angle and posterior border of the mandible.
- Along with sphenomandibular ligament it is responsible for limitation of mandibular movement.

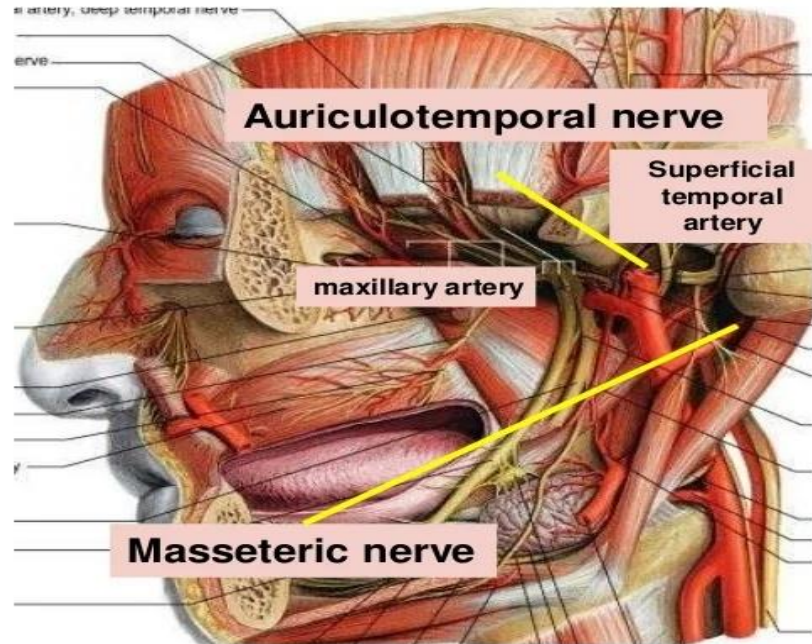
VASCULARIZATION

- Predominant vessels supplying tmj are:
 - Superficial temporal artery from the posterior
 - Middle meningeal artery from the anterior
 - Internal maxillary artery from the inferior

Blood supply & Innervation

Arterial supply : Superficial temporal artery laterally and the maxillary artery medially.

Nerve supply:
Masseteric and auriculotemporal nerves



Joint capsule

Lateral TMJ lig.

Mid. meningeal a.

Maxillary a.

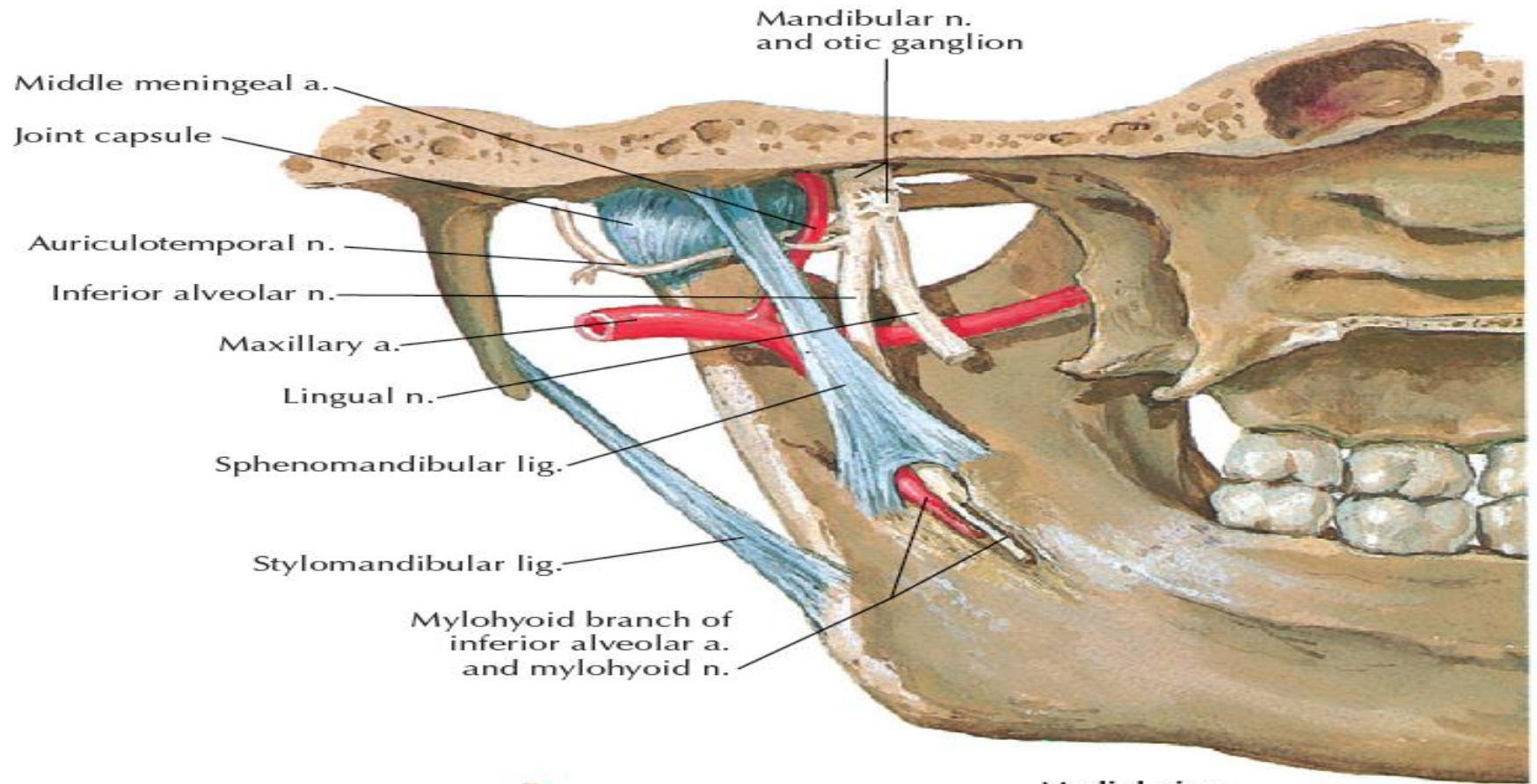
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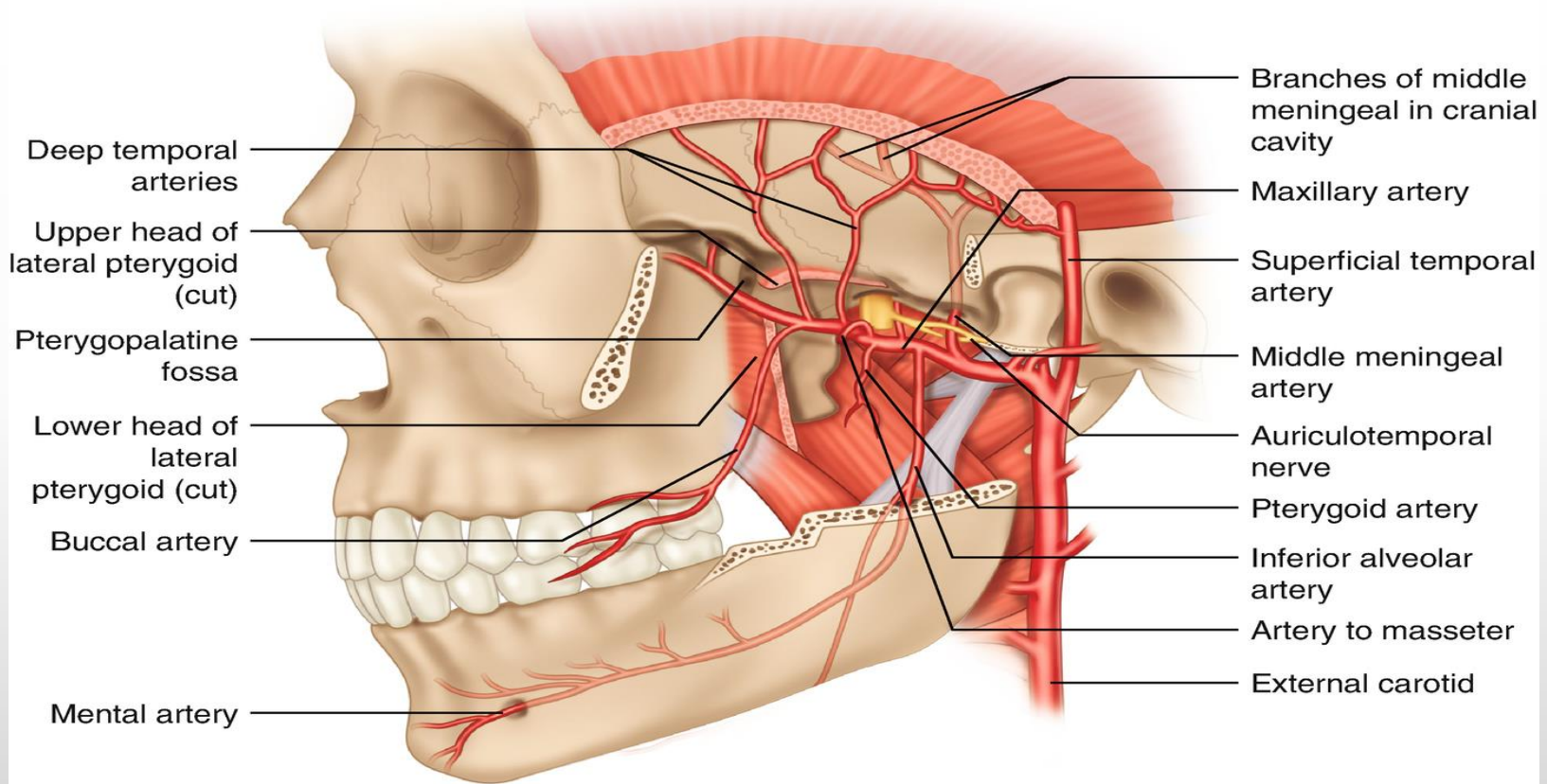


TMJ branch from superior temporal a.

Exterior carotid a.

Inferior alveolar a.





Deep temporal arteries

Upper head of lateral pterygoid (cut)

Pterygopalatine fossa

Lower head of lateral pterygoid (cut)

Buccal artery

Mental artery

Branches of middle meningeal in cranial cavity

Maxillary artery

Superficial temporal artery

Middle meningeal artery

Auriculotemporal nerve

Pterygoid artery

Inferior alveolar artery

Artery to masseter

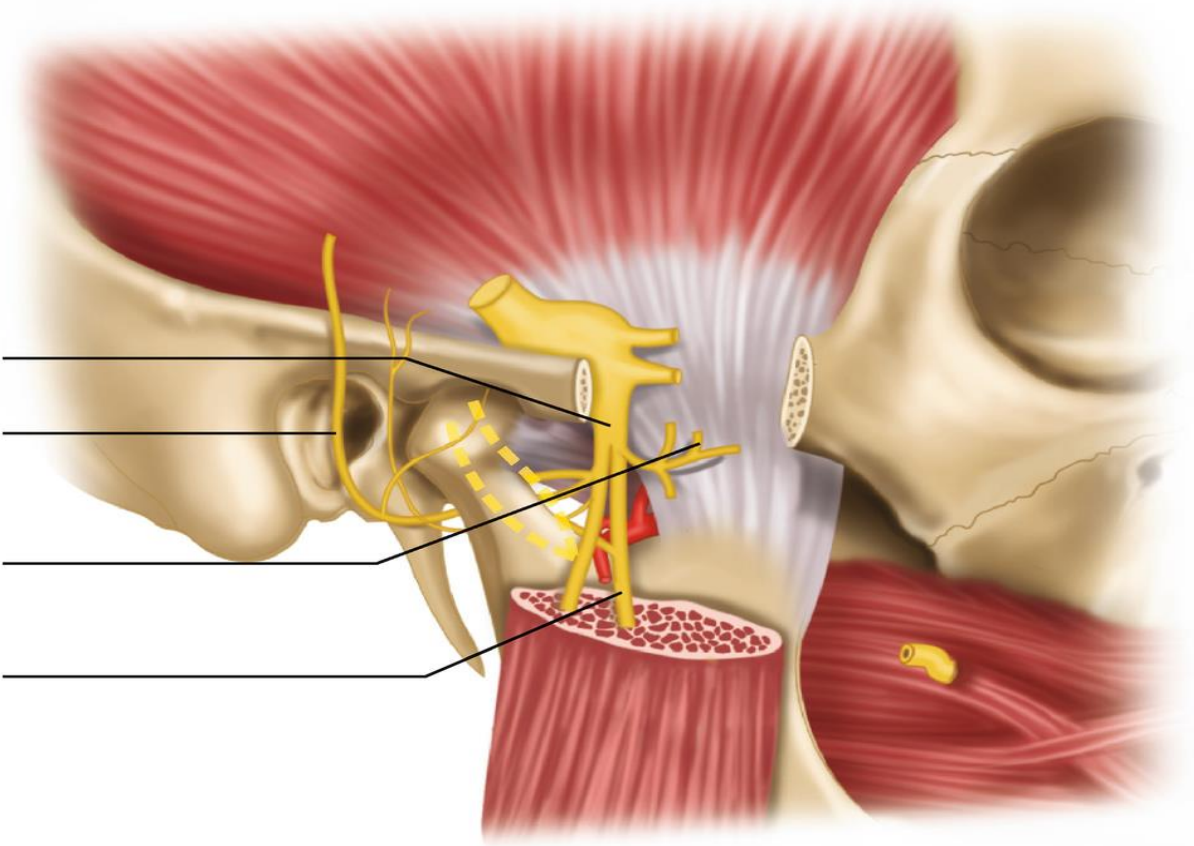
External carotid

Mandibular (CNV₃)

Auriculotemporal
nerve

Deep
temporal

Masseteric
nerve



Lymphatic drainage of TMJ is mainly to:

- A. Submandibular nodes**
- B. Submental nodes**
- C. Deep cervical nodes**
- D. Parotid nodes**

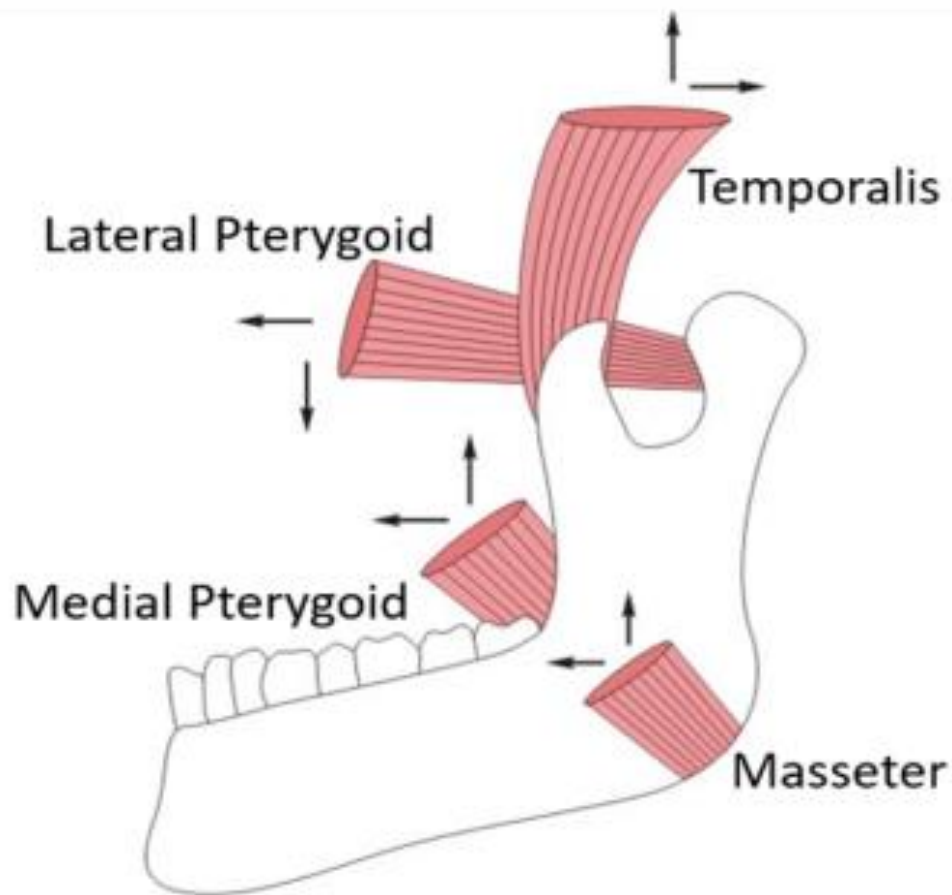


Movements of TMJ

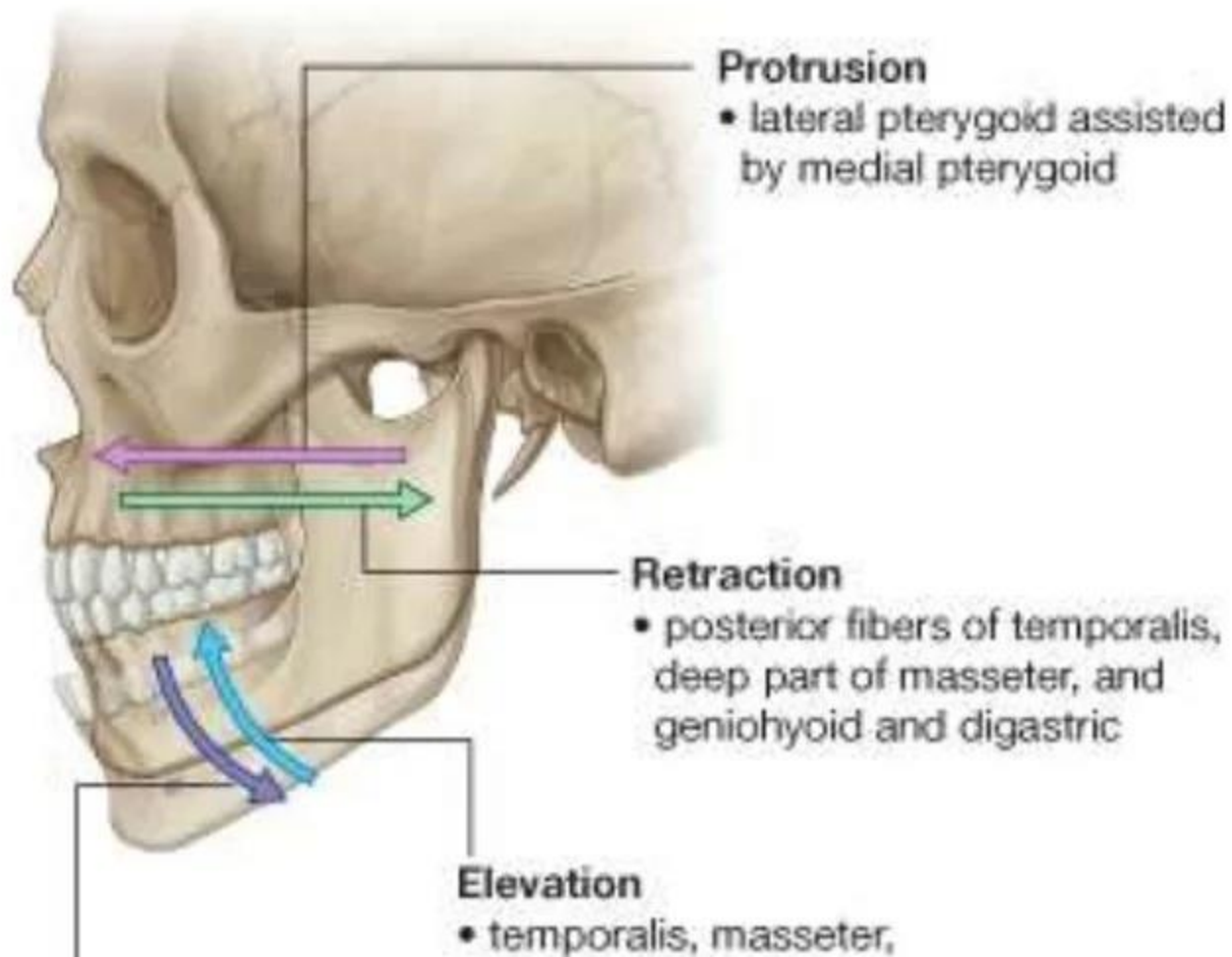
- Rotational / hinge movement in first 20-25mm of mouth opening
- Translational movement after that when the mouth is excessively opened.

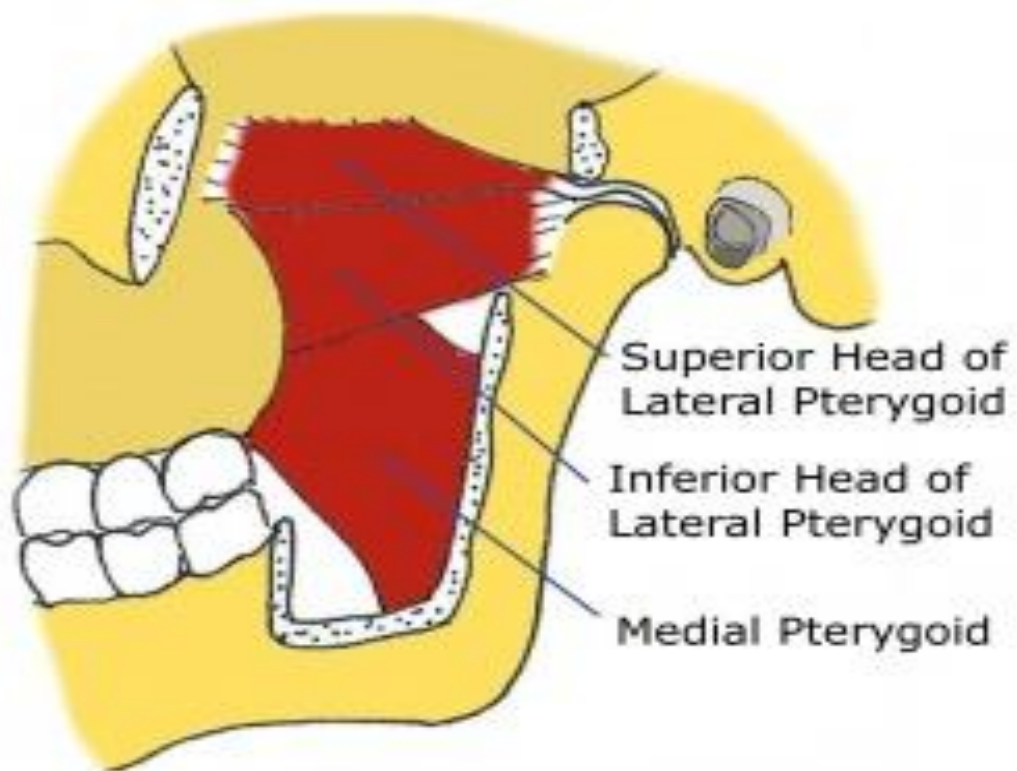
Muscles involved in movement.

Depression	Lateral pterygoid, Digastric, Geniohyoid, Mylohyoid.
Elevation	Temporalis, Masseter, Medial pterygoid.
Protrusion	Medial pterygoid, lateral pterygoid.
Retraction	Posterior fibres of temporalis.



↑	Elevation
→	Retraction
←	Protrusion
↓	Depression





Pterygoid Muscles

Temporomandibular Joint Disorder

- Tmj palpation : digital palpation of joint with mandible in both static and dynamic positions.
- Finger tips are placed over the lateral aspects of joint areas- lateral poles of condyles passing downward and forward felt.

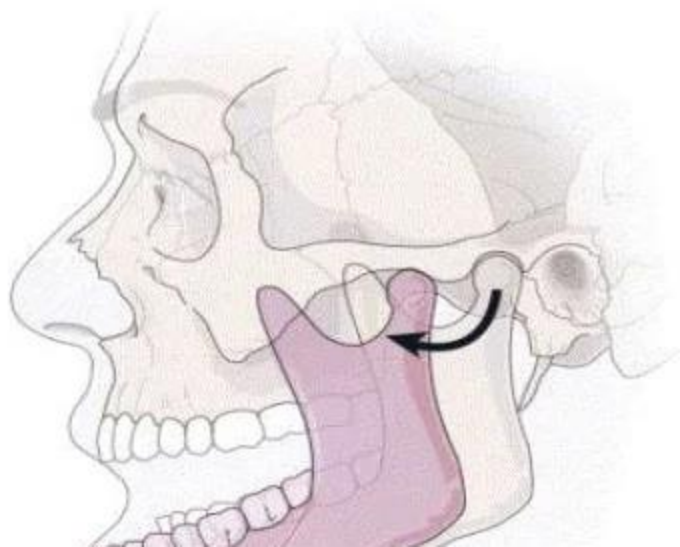
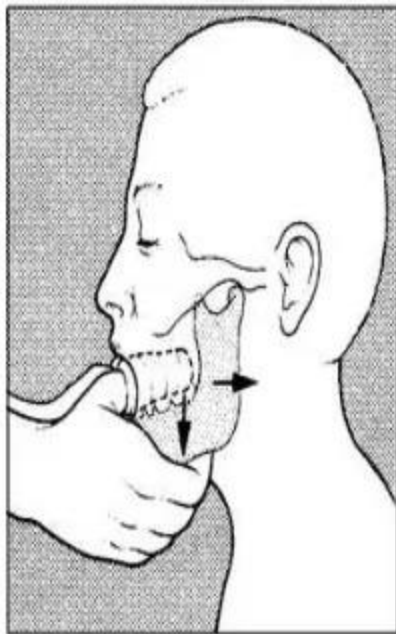


TMJ DISLOCATION

- The mandible can dislocate in the anterior, posterior, lateral, or superior position.
- Anterior dislocations are the most common These dislocations are classified as acute, chronic recurrent, or chronic
- TMJ dislocation may occur with trauma, extreme opening of the mouth during yawning, laughing, singing, vomiting, or dental treatment .
- Symmetric mandibular dislocation is most common, but unilateral dislocation with the jaw deviating to the opposite side also can occur.
- TMJ dislocation is painful and frightening for the patient.

TMJ DISLOCATION....

REDUCING A
DISLOCATED JAW



THANK YOU