Anatomy of Tempomandibular joint

Presented by
Dr Abhilasha

CO (Course outcome)	PO(Programme outcome)
CO3- Description and demonstrate the Tempomandibular joint with attachments of associated structures and its clinical application	PO 1- Demonstrate comprehensive knowledge and application of the Trisutra concept to explore root causes, identify clinical manifestations of disease to treat aments and mantain heathy status
	PO 2- Demonstrate knowledge and skills in Ayurveda, acquired through integration of multi disciplinary perspectives and keen observation of clinical and practical experiences.

Specific Learning Objectives

1.	**Structure of Tempomandibular joint**
2.	**Ligaments, relations of Tempomandibular joint.**
3.	**Movements, clinical aspect of Tempomandibular joint.**
Domain	**Cognitive – Application**
Must to know/desirable to know/Nice to know	**Must to Know**

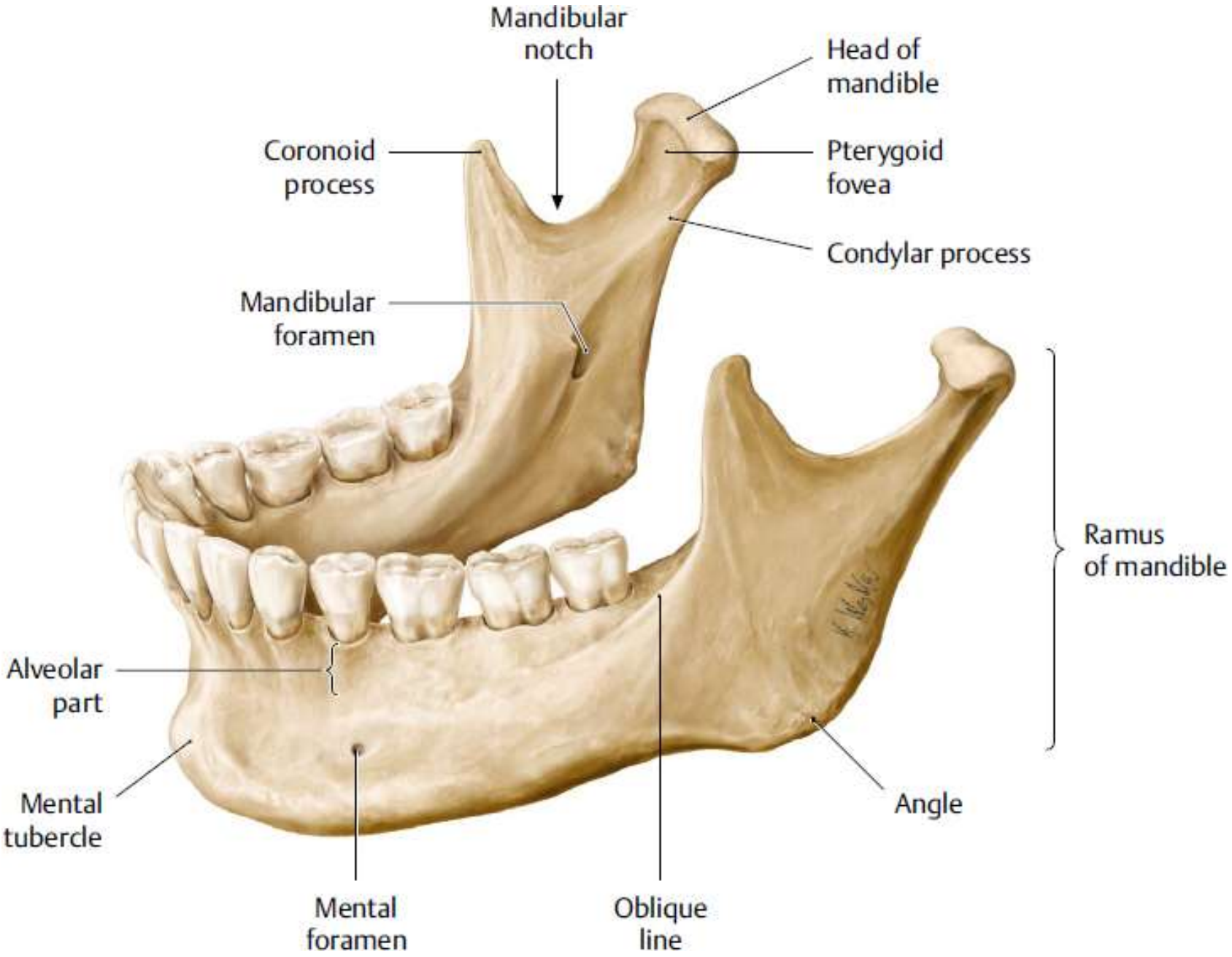
Miller pyramid	Knows how
Bloom texonomy	Understand

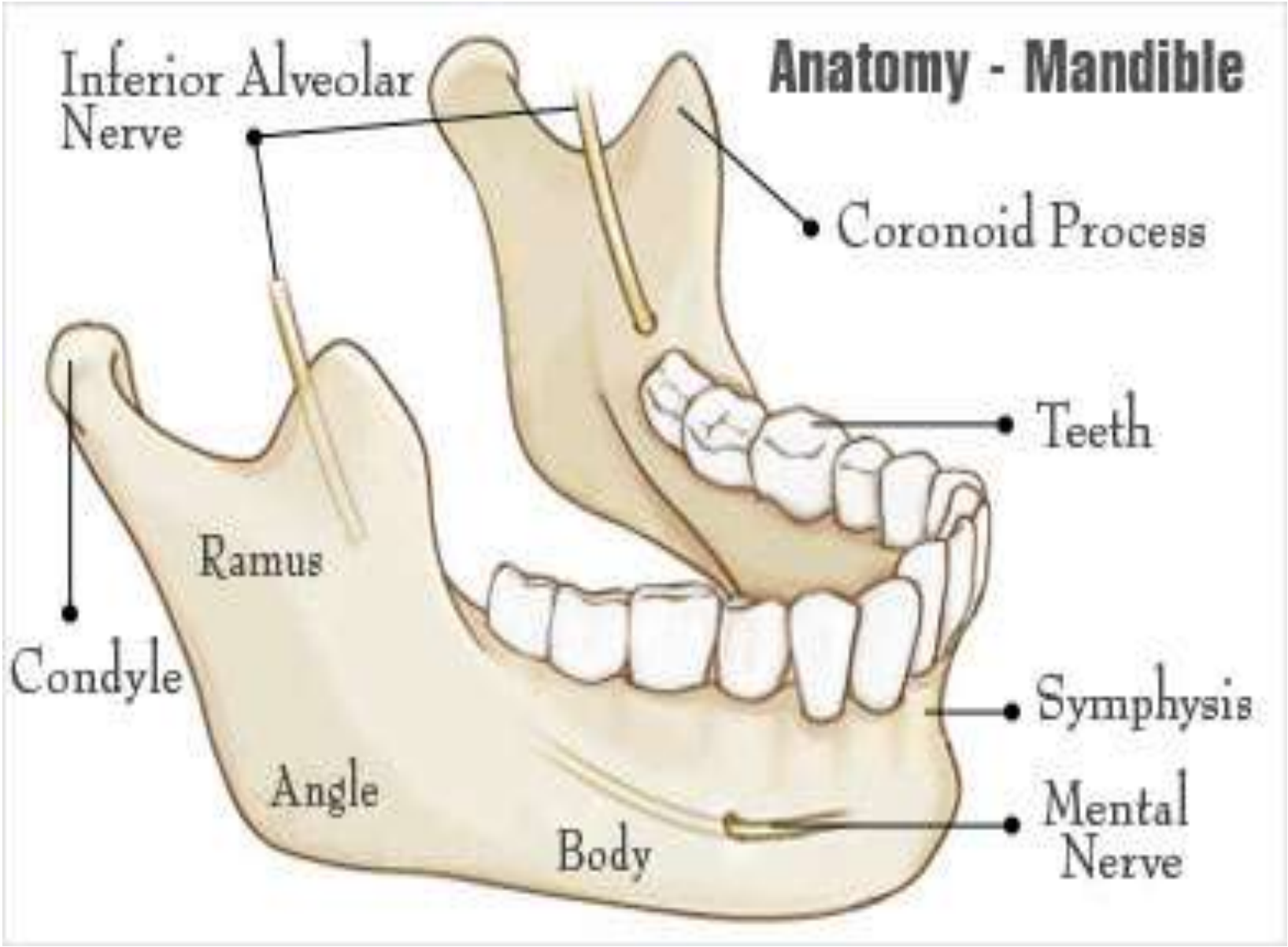
Tempomandibular joint

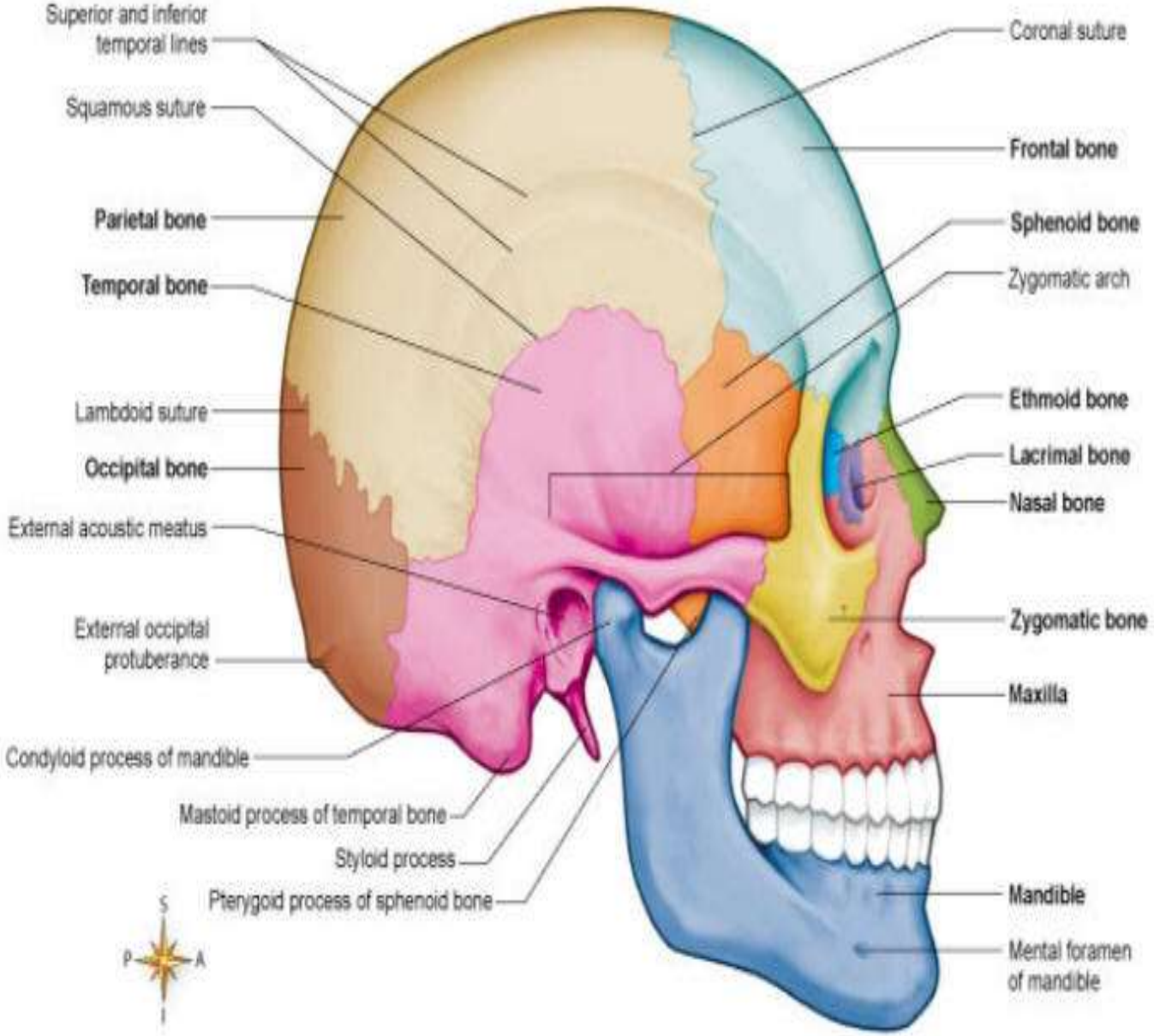
- **The temporomandibular joints (TMJ) are the two joints connecting the jawbone to the skull.**
- **It is a bilateral synovial articulation between the temporal bone of the skull above and the mandible below**

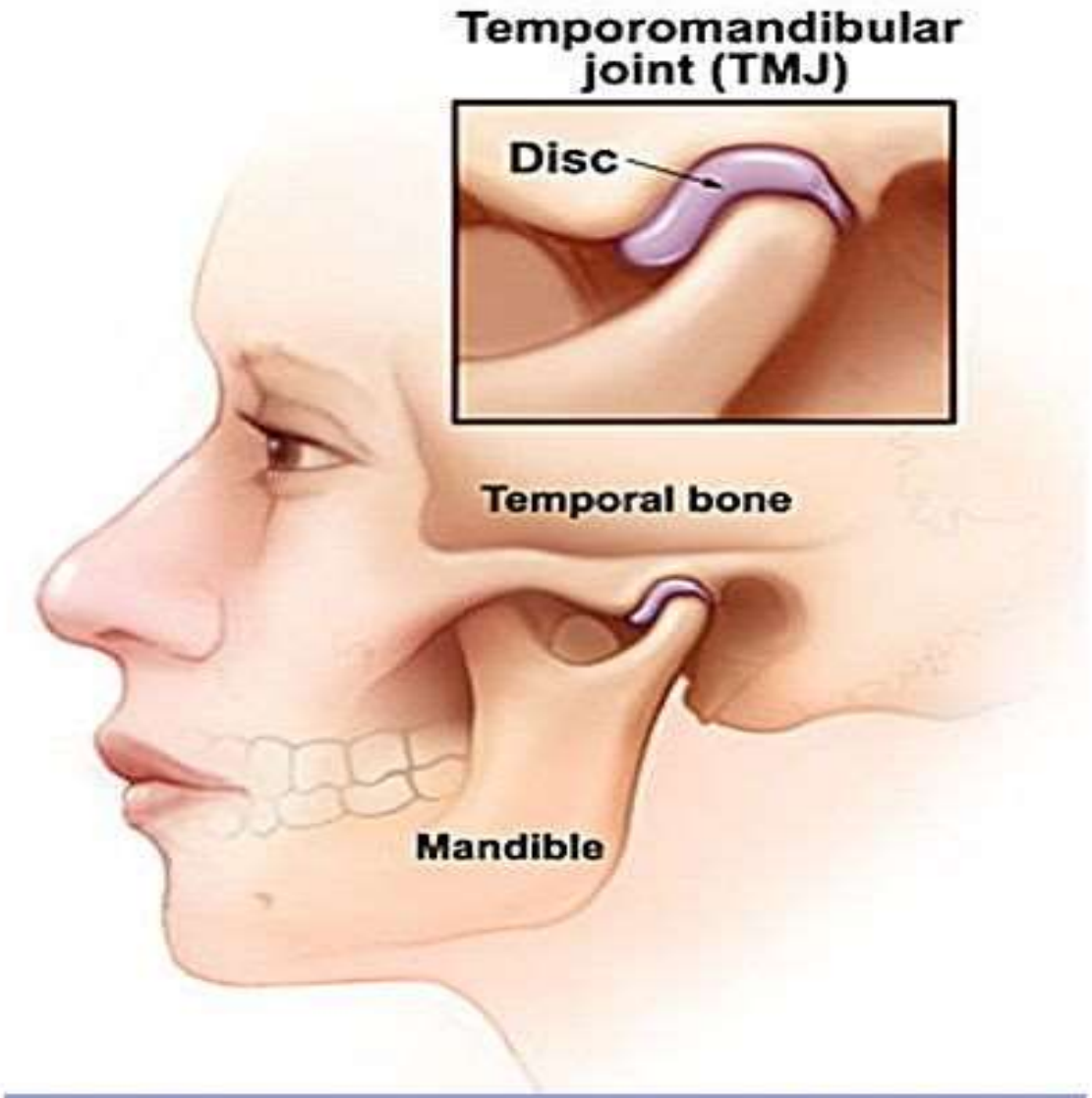
Articular surfaces

- **The condyle of the mandible articulates with the temporal bone in the mandibular fossa.**
- **The mandibular fossa is a concave depression in the squamous portion of the temporal bone**


Mandibular notch
Head of mandible
Coronoid process
Pterygoid fovea
Condylar process
Mandibular foramen
Ramus of mandible
Alveolar part
Mental tubercle
Angle
Mental foramen
Oblique line


Anatomy - Mandible
Inferior Alveolar Nerve
Coronoid Process
Teeth
Ramus
Condyle
Symphysis
Angle
Mental Nerve
Body


Superior and inferior temporal lines
Squamous suture
Parietal bone
Temporal bone
Lambdoid suture
Occipital bone
External acoustic meatus
External occipital protuberance
Condyloid process of mandible
Mastoid process of temporal bone
Styloid process
Pterygoid process of sphenoid bone
Coronal suture
Frontal bone
Sphenoid bone
Zygomatic arch
Ethmoid bone
Lacrimal bone
Nasal bone
Zygomatic bone
Maxilla
Mandible
Mental foramen of mandible
S
P
A
I



Fibrous capsule

- **The capsule is a dense fibrous membrane that surrounds the joint**
- **It attaches to the articular eminence, the articular disc and the neck of the mandibular condyle**

Articular Disc

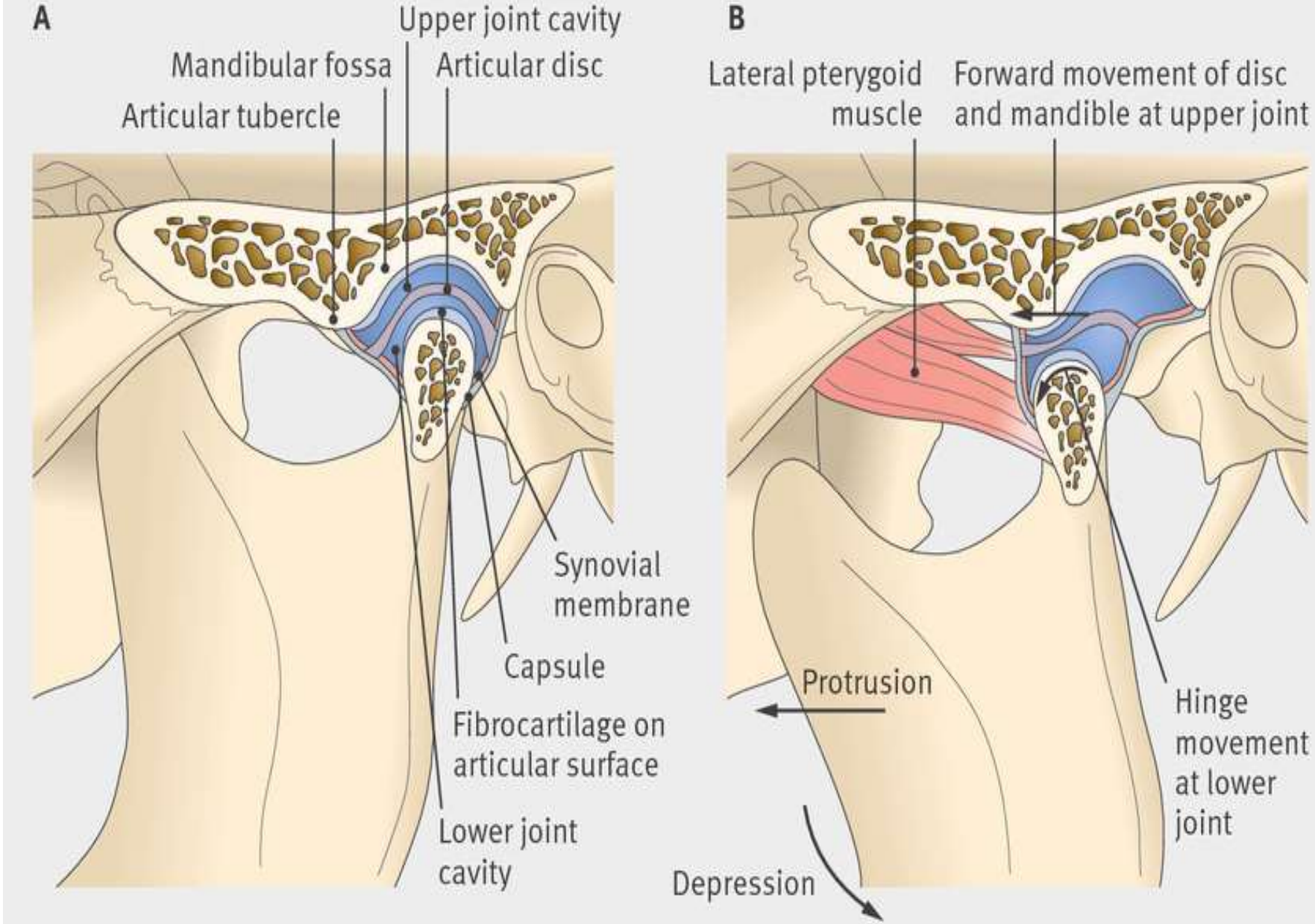
- **The unique feature of the temporomandibular joint is the articular disc.**

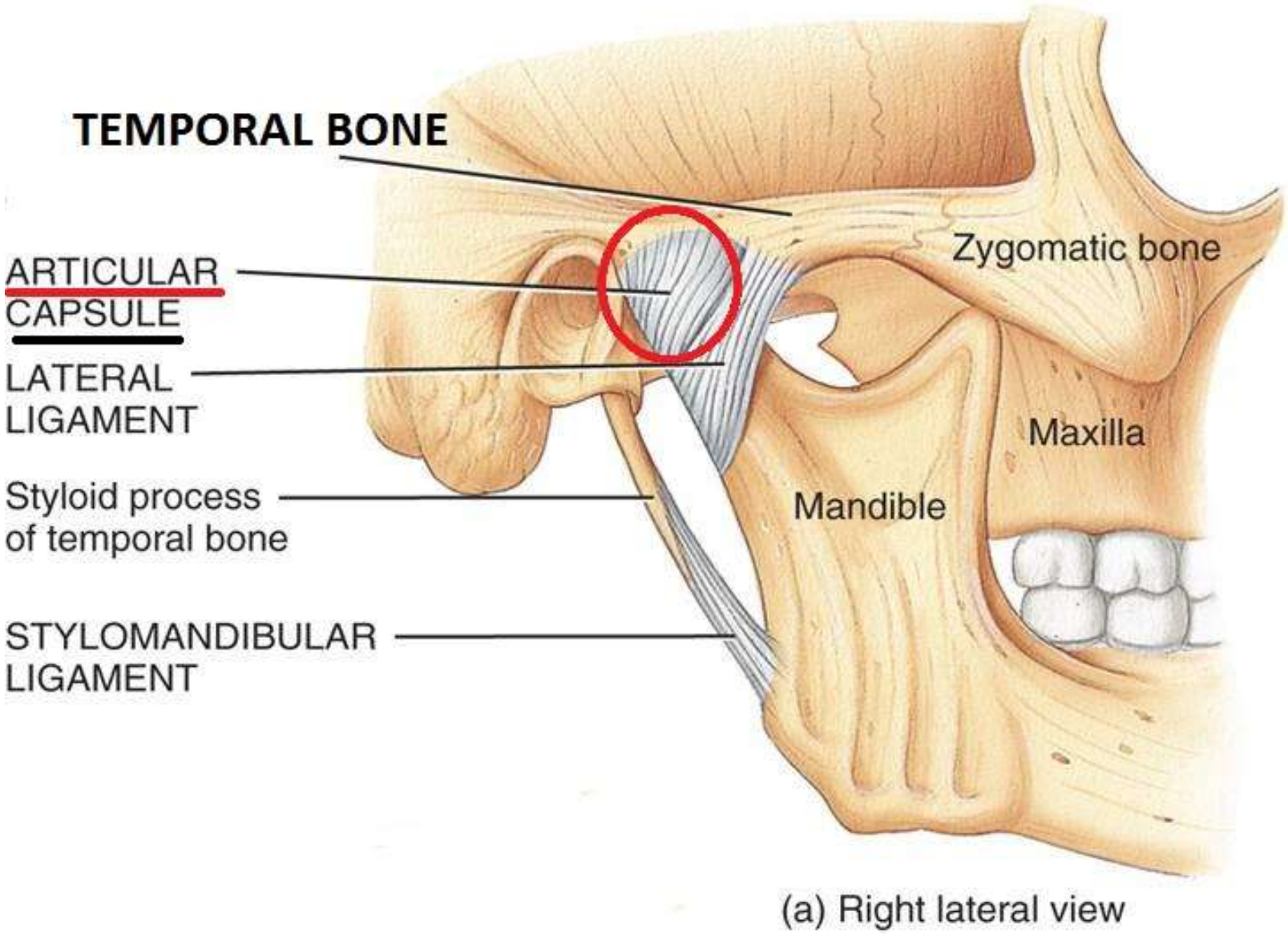
- **The disc is composed of dense fibrous connective tissue that is positioned between the two bones that form the joint.**

- **The disc divides each joint into two. These two compartments are synovial cavities, which consists of an upper and a lower synovial cavity.**

- **The central area of the disc is avascular and lacks innervation, and, in contrast, the peripheral region has both blood vessels and nerves.**

- **The synovial fluid in the synovial cavities provides the nutrition for the avascular central area of the disc**


A
Upper joint cavity
Mandibular fossa
Articular disc
Articular tubercle
Synovial membrane
Capsule
Fibrocartilage on articular surface
Lower joint cavity
B
Lateral pterygoid muscle
Forward movement of disc and mandible at upper joint
Protrusion
Hinge movement at lower joint
Depression



(a) Right lateral view

- **The lower joint compartment formed by the mandible and the articular disc is involved in rotational movement—this is the initial movement of the jaw when the mouth opens.**

- **The upper joint compartment formed by the articular disc and the temporal bone is involved in translational movement—this is the secondary gliding motion of the jaw as it is opened widely.**

Ligaments

There are three ligaments associated with the temporomandibular joints:

- **Temporomandibular Ligament**
- **Stylomandibular Ligament**
- **Sphenomandibular Ligament**

- **The major ligament, the temporomandibular ligament, is actually the thickened lateral portion of the capsule, and it has two parts: an outer oblique portion and an inner horizontal portion**
- **The base of this triangular ligament is attached to the zygomatic process of the temporal bone and its apex is fixed to the lateral side of the neck of the mandible.**

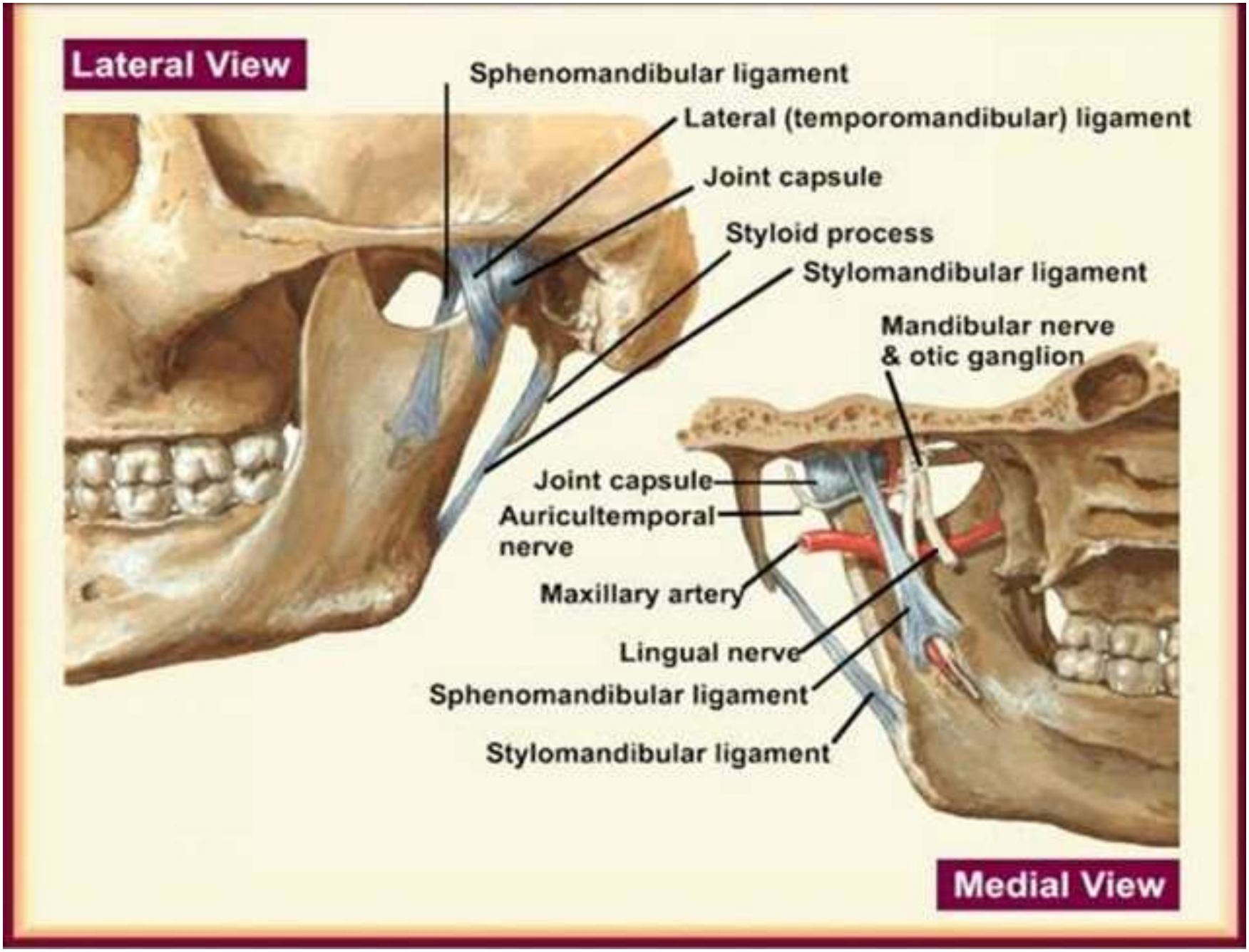
The two minor ligaments, the stylomandibular and sphenomandibular ligaments are accessory and are not directly attached to any part of the joint.

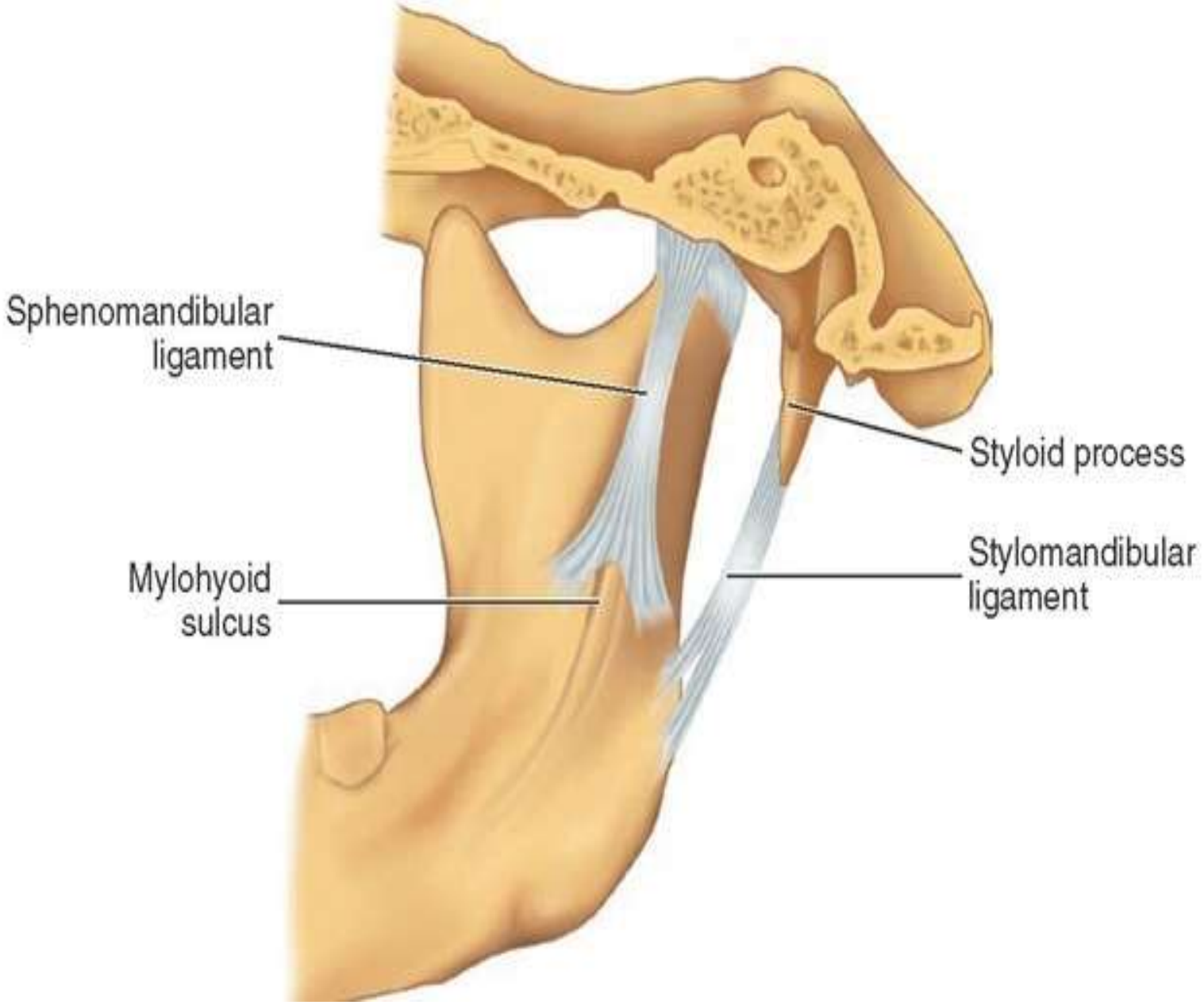
Stylomandibular Ligament

The stylomandibular ligament runs from the styloid process of temporal bone to the angle of the mandible it separates the parotid and submandibular salivary glands. It also becomes taut when the mandible is protruded.

Sphenomandibular Ligament

The sphenomandibular ligament runs from the spine of the sphenoid bone to the lingula of mandible.


Lateral View
Sphenomandibular ligament
Lateral (temporomandibular) ligament
Joint capsule
Styloid process
Stylomandibular ligament
Mandibular nerve & otic ganglion
Joint capsule
Auriculotemporal nerve
Maxillary artery
Lingual nerve
Sphenomandibular ligament
Stylomandibular ligament
Medial View


Sphenomandibular ligament
Styloid process
Stylomandibular ligament
Mylohyoid sulcus

Nerve supply

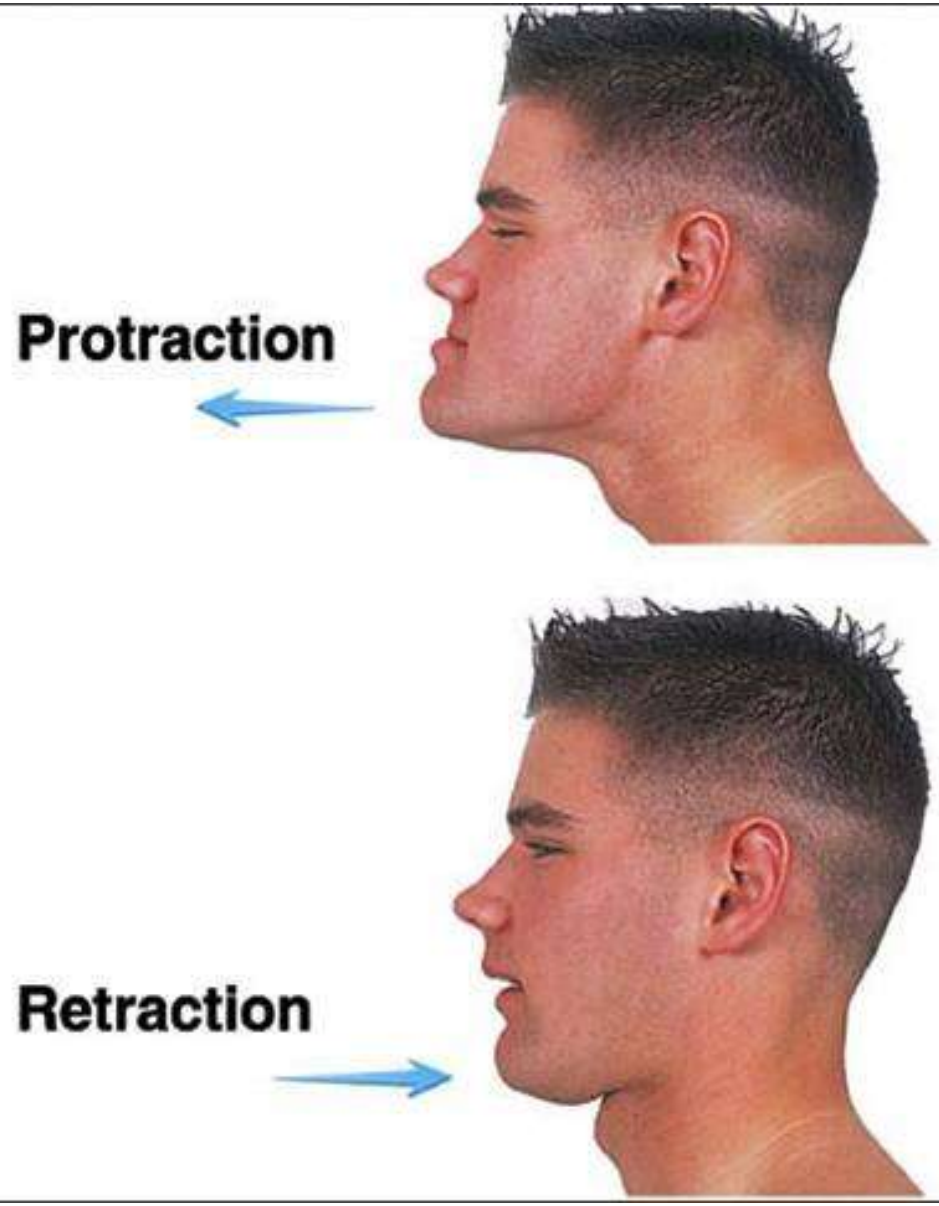
The auriculotemporal and masseteric branches of mandibular branch of the trigeminal nerve.

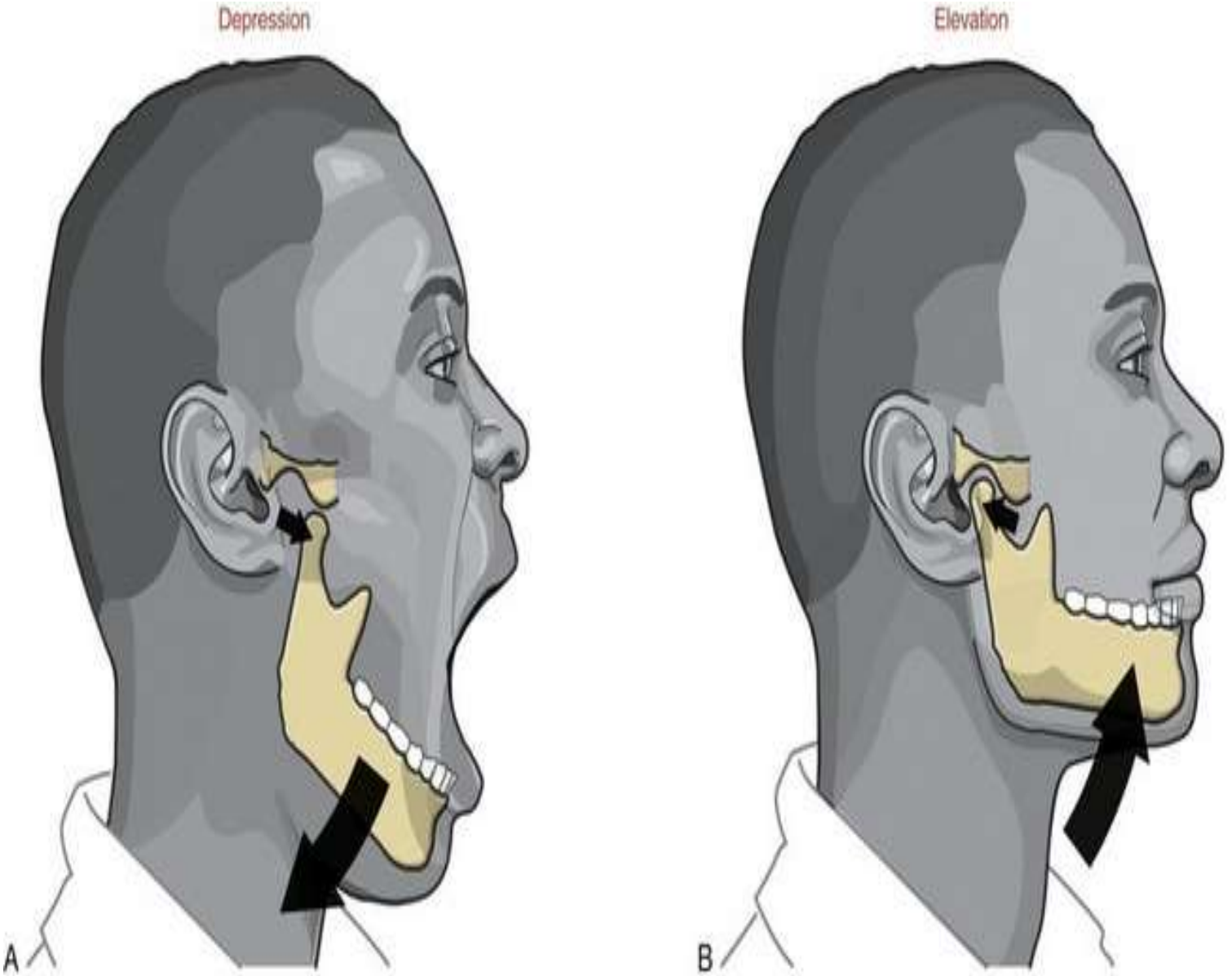
Blood supply

- **Superficial Temporal Artery.**
- **Deep Auricular Artery**
- **Anterior Tympanic Artery**
- **Ascending Pharyngeal Artery**
- **Maxillary Artery**

Movements

- **Mastication,**
- **Gliding**
- **Elevation**
- **Depression**
- **Protrusion.**
- **Retrusion.**

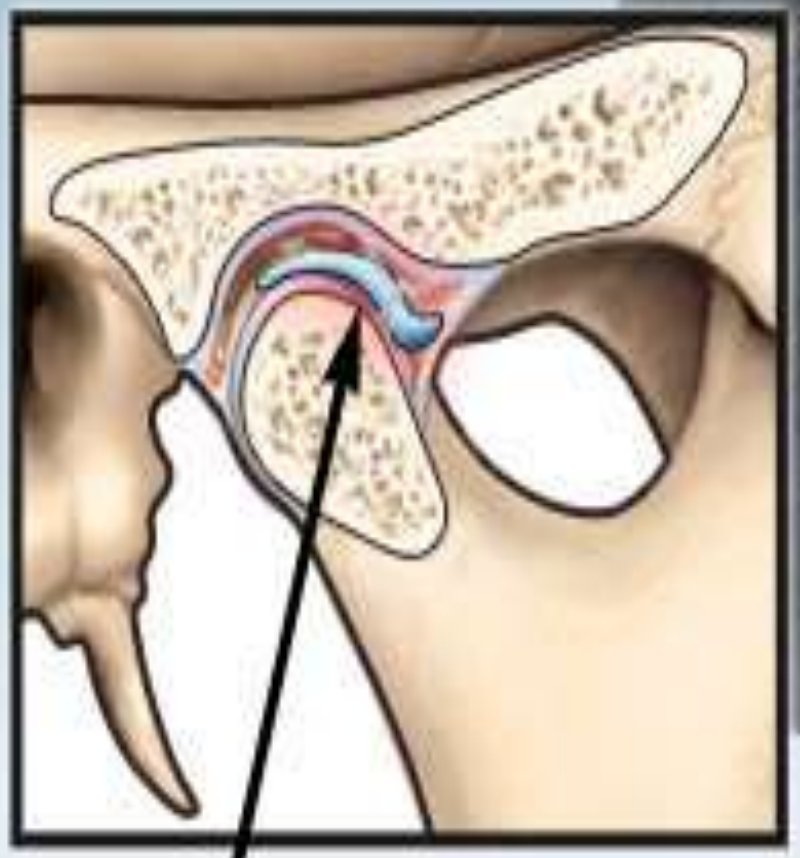

Protraction
Retraction


Depression
Elevation
A
B

Clinical Conditions

- **Arthritis**
- **Inflammation of TMJ**
- **Dislocation of TMJ**

TMJ Disorders

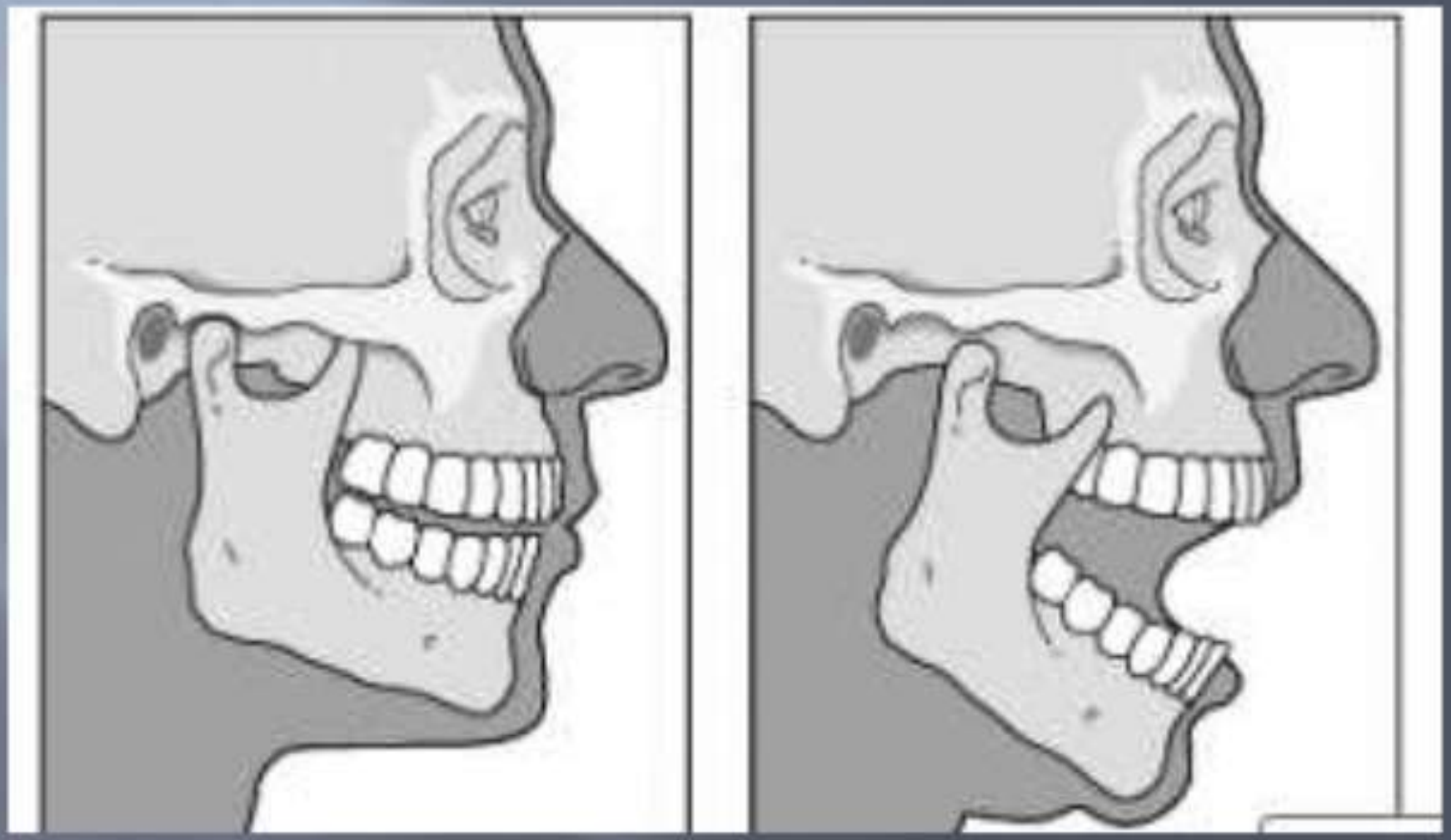


Inflammation and irritation of the TMJ joint

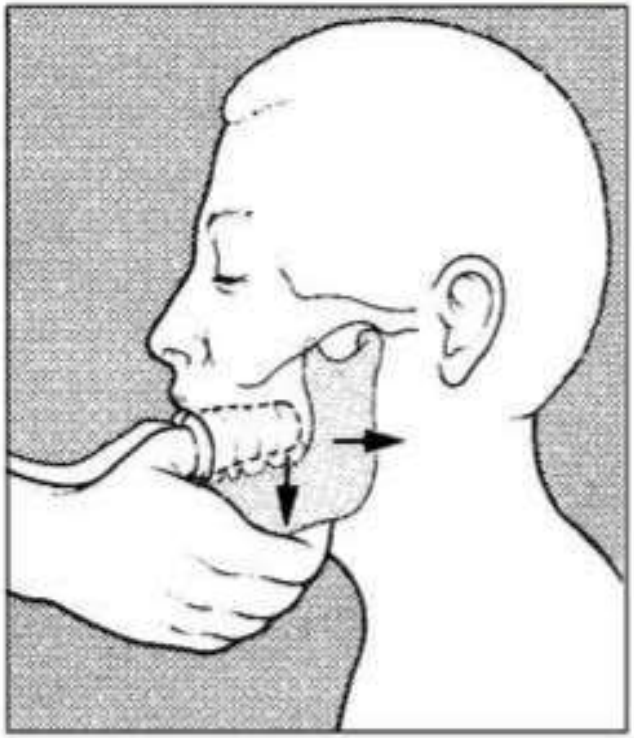
Normal TMJ joint


Cheek bone
Jaw bone
Inflamed joint

Tmj dislocation



REDUCING A DISLOCATED JAW



press his premolar
teeth downwards,
at the same time
press the underneath
of his chin
upwards and backwards

Formative Assessment – Anatomy of TMJ

Q. No.	Question	Marks
1	Describe the anatomical features of the TMJ.	5
2	Explain the movements of TMJ and the muscles involved.	5
3	Write a note on the articular disc of the TMJ.	5
4	Describe the ligaments associated with the TMJ.	5
5	Discuss the blood supply and nerve supply of the TMJ.	5

Thank You

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