

# **Temporomandibular Joint**

## *Anatomy*

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# Introduction

- When the dental practitioners encounters TMJ disorders the dentist faces a daunting task
- Therefore it is very essential for the dental practitioner to have basic knowledge of this unique joint

# TMJ Synonyms

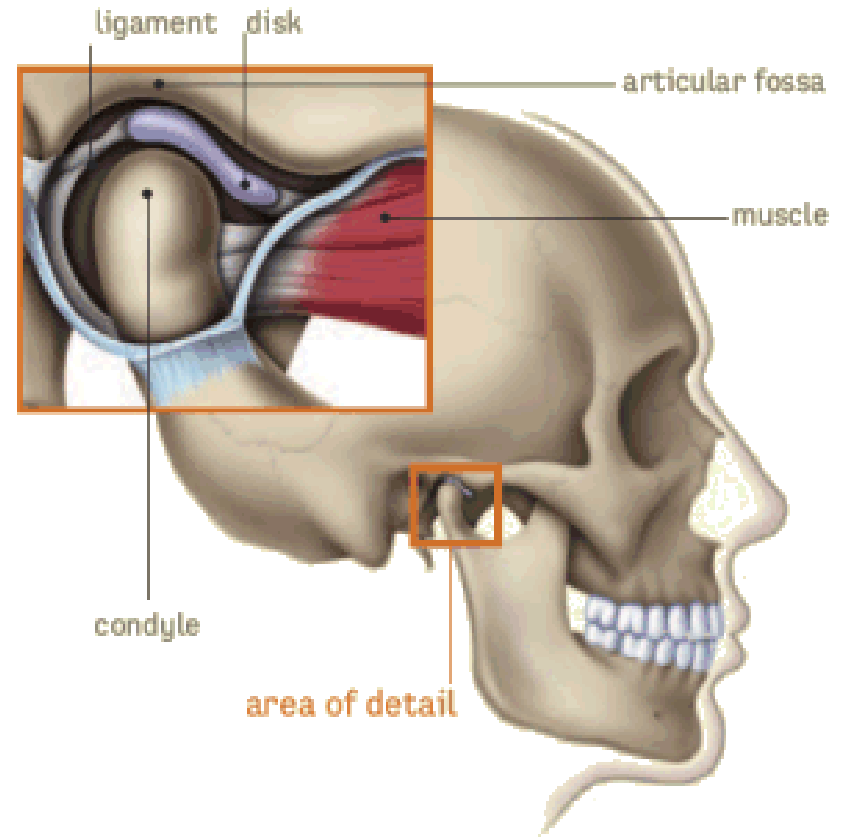
- Craniomandibular articulation
- Ginglymus joint
- Diarthrodial joint
- Mandibular joint
- Synovial joint

# Type of joint

- The TMJ is a synovial joint between the condylar head and articular fossa of the squamous part of temporal bone
- It is a synovial joint as the joint cavity is filled with synovial fluid
- It is further classified as ginglymus (sliding hinge) joint
- The TMJ differ from other synovial joints as its articular surfaces is covered by fibrocartilage and not hyaline cartilage

# Structures involved in the TMJ

- Articular eminence
- Articular fossa
- Condyle
- Capsule
- Ligaments
- Synovial lining
- Articular disc



# Articular Eminence

- It is bony eminence present on the inferior aspect of the zygomatic process of the temporal bone
- The lateral aspect of the articular eminence is often referred to as articular tubercle

# Articular fossa

- It is a depression anterior to the external auditory meatus
- It is limited anteriorly by articular eminence and posteriorly by posterior glenoid process or posterior glenoid tubercle
- The centre of articular fossa is thin and it is possible to drive the condyle into the middle cranial fossa by a powerful blow to the mandible

See the [video](#)

# Fibrous connective tissue

- A layer of avascular fibrous connective tissue forming the articular zone lines the articular eminence, condylar head and articular fossa
- Consist of collagen fiber bundles with fibroblast situated between the fiber bundles
- The thickness of fibrous connective tissue is more on posterior slope of articular eminence
- This is mainly an adaptation to the stress generated when the condyle and articular disc glide across the posterior slope of articular eminence

See the [video](#)



# Condyle

See the [video](#)

- The condyle comprises Head n Neck
- The condylar head or the articulating surface is covered by a thick fibrous connective tissue containing fibroblast
- The fibrocartilage occurs in the condyle and articular eminence
- Presence of fibrocartilage helps in adapting stress

# Capsule

- Anteriorly, the capsule is attached approximately 4 mm anterior to the apex of the articular eminence
- Posteriorly, the capsule, is attached to the anterior lip of the petrotympanic fissure
- Superiorly, the capsule is attached to the margins of the articular fossa


# Capsule, cont

- Inferiorly, the capsule is attached to the neck of the condyle medially and laterally
- Anteriorly and posteriorly, the capsule is loose, to allow mandibular movement
- Medially and laterally, the capsule is firm, to stabilize the mandible during movement
- The medial capsule is not as strong as the lateral capsule, which is reinforced by lateral ligament

# Ligaments

- The lateral ligament is present lateral to the capsule
- The lateral ligament runs from the inferior border of zygomatic process of the temporal bone obliquely downwards-backwards to get inserted into the neck of the condyle

See the [video](#)



# Ligaments, continued

- The TMJ is supported by two accessory ligaments to protect the joint during wide excursions :
  1. The Stylomandibular ligament
  2. The Sphenomandibular ligament



# Ligaments, continued

- The stylomandibular ligament runs from the tip of the styloid process to the angle and posterior border of the mandible
- The sphenomandibular ligament runs from the greater wing of the sphenoid bone to the lingula of the mandibular ramus

# Synovial lining

- The synovial consist of two layer:
  1. Outer fibrous layer
  2. Inner synovial lining

The synovial lining lines all the intraarticular structures except the articular eminence, articular fossa, articular disc, condyle and fibrocartilage.



# Synovial fluid

- The Synovial lining produces synovial fluid
- In healthy TMJ there is very little amount of synovial fluid
- Increase amount of synovial fluid indicates joint pathology



# Composition of synovial fluid

- The synovial fluid consists of hyluronic acid- protein complex with very few glycosaminoglicans (GAGs)
- The synovial fluid consists of a protein known lubricin, which help in lubrication joint



# Function of synovial fluid

- To reduce friction between the articular surfaces by serving as a lubricant
- To provide nutrition to the non vascularised tissue of the articular surface and the disc
- To remove debris from the joint surface

# Articular disc

See the [video](#)

- The articular disc consists of dense avascular fibrous tissue
- The articular disc is divided into anterior, intermediate and posterior zone
- The articular disc fits like a cap over the condyle
- Medially and laterally the disc is attached to the capsule
- Anteriorly and posteriorly the disc is divided into superior and inferior lamellae



# continued

- When the mandible is at rest the ideal articular disc position in the articular is with posterior band at approximately “12 o’clock position”

# Functions of articular disc

- It divides the joint into superior and inferior compartment
- By adapting to the articular surface it increases the stability of joint
- Protecting articular surface
- Shock absorption
- Helps in joint movement

# Innervation of TMJ

- The nerves that innervate the TMJ are:
  1. Auriculotemporal nerve
  2. Masseteric nerve
  3. Posterior deep temporal nerve

They are derived from mandibular nerve after its passage through the foramen ovale, which is located medial to the articular eminence



*THANK'S 4 YOUR ATTENTION*

SEMOGA SUKSES