

# Temporomandibular joint - structure and motility

Temporomandibular joint, *articulatio temporomandibularis*, is one of the most complex joints of the human body.

## Type [edit | edit source]

Polyarticular joint, includes *discus articularis*.

## Articular surfaces [edit | edit source]

Articular head is *caput mandibulae*. Articular fossa is *fossa mandibularis* including *tuberculum articulare*, the scale-like part of the temporal bone. Articular fossa is convex in the front part due to the arching of tuberculum articulare → in sagittal section: horizontal S shape (saddle shape). The convex part of the articular fossa (tuberculum articulare) is being created after completion of the eruption of the milk teeth.

Unlike other joints, the articular surfaces are covered by fibrocartilage.

## Discus articularis [edit | edit source]

Articular socket is in the first half of life divided by the articular disc into two completely separate sections: tempor

odiscal and discomandibular. Older people have a central perforation in the disc → both sections communicate with each other. Discus articularis is composed of a fibrocartilage which is thinner in the middle (possibly with a space in older people). Discus is more firmly attached to the inside and bottom of the joint capsule so that it moves in the same direction as the head during movements.

## Capsule [edit | edit source]

The articular capsule extends posteriorly from the fissura tympanosquamosa anteriorly to in front of the anterior edge of the tuberculum articulare. On the sides, it starts around the articular fossa and attaches to the neck of the mandible.

## Reinforcement of the joint capsule and ligaments [edit | edit source]

The joint capsule is reinforced by these joint ligaments:

- ligamentum laterale – on the outer side of the joint, from the zygomatic process of the temporal bone to the neck of the mandible;
- ligamentum mediale – on the inner part of the joint;
- ligamentum sphenomandibulare – medially from leagues mediale, from the spina ossis sphenoidalis to the lingula of the mandible;
- ligamentum pterygospinale – medially from leagues mediale, from spina ossis sphenoidalis to lamina lateralis processus pterygoidei;
- ligamentum stylomandibulare – from the processus styloideus to the posterior edge of the ramus mandibulae;
- raphe pterygomandibularis – from the hamulus pterygoideus behind the last molar of the mandible.

Although some ligaments go outside the joint, they are important for ensuring movements in the joint.

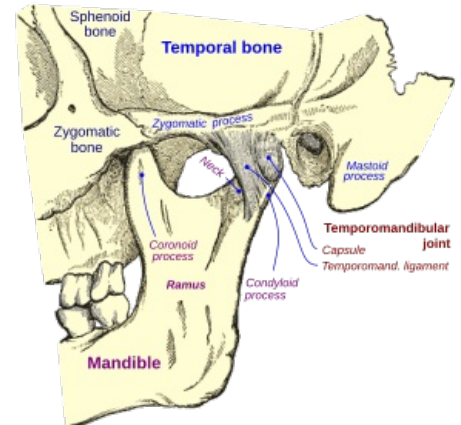
## Zenker's retroarticular plastic cushion [edit | edit source]

Zenker's retroarticular plastic cushion is a special device in the temporomandibular joint. It is important for the function of the joint, because when the mandible is depressed, its head moves forward and an empty space would be created behind it. It is made up of fatty tissue with many veins, these veins belong to the pterygoid plexus. The venous plexus fills with blood during opening of the mouth, during which the head and disc move forward. Between the articular capsule and the neck of the mandible on the one hand and the external ear canal on the other, a negative pressure is created, which is balanced by the filling of this braid. When closing the mouth, i.e. during the backward movement of the head, blood is forced from the veins into the vena retromandibularis.

## Movements [edit | edit source]

Movements in the jaw joint are only possible when both joints are free.

Basic movements of the mandible:



- depression – opening mouth;
- elevation – closing mouth;
- protraction – forward movement;
- retraction – backward movement.

During these movements, the same movement occurs in both joints at the same time.

Another type of movement:

- lateropulse – movement to the sides; at a given moment, different movements occur in the joints of the right and left side. This type of movement is a combination of protraction of one side and rotation of the other side. The head, to which side the lateropulse occurs, remains in the socket and rotates slightly laterally. The articular head of the opposite side is moved forward and downward.

The muscles affecting mandible movements:

- depression: *m. mylohyoideus*, *m. digastricus* (venter anterior), *m. geniohyoideus*
- elevation: *m. masseter*, *m. temporalis* a *m. pterygoideus medialis*;
- protraction: *m. pterygoideus lateralis*, *m. masseter*;
- retraction: *m. temporalis*, *m. masseter*;
- movements to sides: *mm. pterygoidei*.

## References

### Literature

- PETROVICKÝ, Pavel, et al. *Anatomie s topografií a klinickými aplikacemi I. : Pohybové ústrojí*. 1. edition. 2001. pp. 463. ISBN 80-8063-046-1.