

FEATURES OF THE ANATOMICAL STRUCTURE OF THE TEMPOROMANDIBULAR JOINT AND ITS BONE FORMATIONS

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Abstract. Presents a review of domestic and foreign literature devoted to the morphological features of the temporomandibular joint, which has important applied anatomical and clinical significance. A detailed study of the bone elements of the temporomandibular joint, their location, individual variability, as well as their relationship with other anatomical formations is of fundamental theoretical and clinical importance for dentistry, and in particular: orthopedic dentistry, orthodontics, gnathology. Based on a theoretical review and analysis of scientific sources of literature and publications, the issues of morphological features of the structure of the temporomandibular joint are considered depending on gender, age, type of bite and type of face. Anatomical knowledge of the temporomandibular joint is one of the foundations of clinical practice in dentistry, which allows you to understand pathological changes, conduct a diagnostic assessment and make the right choice of treatment. The bone elements of the temporomandibular joint require careful study, since changes in these components lead to functional disorders in the human body as a whole.

Key words: temporomandibular joint, articular space, condylar process, branch of the mandible, glenoid fossa, temporal bone, articular disc.

ОСОБЕННОСТИ АНАТОМИЧЕСКОГО СТРОЕНИЯ ВИСОЧНО-НИЖНЕЧЕЛЮСТНОГО СУСТАВА И ЕГО КОСТНЫХ ОБРАЗОВАНИЙ

Аннотация. Представлен обзор отечественной и зарубежной литературы, посвященной морфологическим особенностям височно-нижнечелюстного сустава, что имеет важное прикладное анатомическое и клиническое значение. Детальное изучение костных элементов височно-нижнечелюстного сустава, их расположения, индивидуальной изменчивости, а также их взаимоотношений с другими анатомическими образованиями имеет фундаментальное теоретическое и клиническое значение для стоматологии, и в частности: ортопедической стоматологии, ортодонтии, гнатологии. На основе теоретического обзора и анализа научных источников литературы и публикаций рассмотрены вопросы морфологических особенностей строения височно-нижнечелюстного сустава в зависимости от пола, возраста, типа прикуса и типа лица. Анатомические знания височно-нижнечелюстного сустава являются одной из основ

клинической практики в стоматологии, что позволяет понимать патологические изменения, проводить диагностическую оценку и делать правильный выбор лечения. Костные элементы височно-нижнечелюстного сустава требуют тщательного изучения, поскольку изменения этих компонентов приводят к функциональным нарушениям в организме человека в целом.

Ключевые слова: височно-нижнечелюстной сустав, суставная щель, мышечковый отросток, ветвь нижней челюсти, суставная ямка, височная кость, суставной диск.

The temporomandibular joint (TMJ) is one of the complex joints. It is formed by the articular surfaces of the head of the lower jaw, the glenoid fossa of the temporal bone; it contains a disc inside. The disc consists of fibrous cartilaginous tissue and divides the joint cavity into upper and lower sections. Movements in the upper and lower sections of the joint are different: sliding occurs in the upper section, rotation occurs in the lower section. Complex movements occur in the joint: around the frontal axis - lowering and raising of the jaw; along the sagittal axis - forward and backward movement; around the vertical axis - rotational (lateral) movements. Movements in the left and right joints occur simultaneously. The temporomandibular joint is considered a combined articulation; according to the shape of the articular surfaces, it is classified as ellipsoid.

During an ultrasound examination of the TMJ elements the following is visible:

- the contour of the head of the lower jaw is a hyperechoic thin continuous line;
- lower joint space - anechoic strip above the head of the lower jaw (up to 2 mm in height, uniform);
- articular disc - a biconcave lens, which is located above the lower joint space.

The disc is divided into sections - anterior and posterior. Between the sections - a thin part, the middle part of the disc. The anterior section of the disc is larger than the posterior.

The thickness of the disc depends on the shape and depth of the mandibular fossa: the deeper the fossa - the thicker the disc; the wider the fossa - the thinner the disc. The shape of the disc is flat, narrow. The purpose of the disc is to align the discrepancy between the head and the mandibular fossa and, due to its elasticity, to soften chewing movements.

The lower articular surface is formed by the condyle of the lower jaw, which has a diameter in the transverse direction from 15 to 20 mm, and in the anteroposterior direction from 8 to 10 mm.

The articular surface of the mandibular fossa is several times larger than the head of the mandible. The mandibular fossa is wider in the medial -lateral direction compared to the anteroposterior direction.

The fossa is divided into an anterior part - intracapsular, and a posterior part - extracapsular.

The shapes of the glenoid fossa vary and depend on individual characteristics and occlusion. Deep and flat forms are distinguished.

The joint capsule regulates the movement of the lower jaw. In particular, it is responsible for the amplitude of its movements. The capsule of the temporomandibular joint is mobile. In the back, the joint capsule thickens. Loose connective tissue fills the glenoid fossa, forming the retromandibular cushion. The joint capsule is divided into two sections by the attachment of the articular disc. The articular surfaces of the temporomandibular joint are covered with fibrocartilage instead of the typical hyaline cartilage present in other joints.

Continuous growth and stimulation of the condyle from birth to adulthood results in self-remodeling. The mandibular head can continually adapt to functional stimulation. Form and function are thought to be closely related, suggesting that the bony morphology of the TMJ may be related to the dynamic balance of mandibular function in three dimensions. During mandibular descent, the condylar process glides along the posterior slope of the articular eminence. The slope of the articular eminence determines the trajectory of the condyle as well as the degree of rotation of the articular disc above the condyle. In patients with a steeper articular eminence, the condyle is forced to move lower and the disc rotates more convexly when protruding or dehiscing. This may result in the mandible moving more vertically during functional movement.

The joint space is the space in the joint that is located between the glenoid fossa and the condylar process of the mandible. During the examination, the joint space is assessed in three areas:

- anterior section - located at the level of the posterior slope of the articular pits;
- upper section - to the bottom of the glenoid fossa;
- posterior section - at the level of the posterior surface of the glenoid fossa.

On X-ray examination, the joint space appears transparent.

The glenoid fossa and the articular tubercle are separated from the upper surface of the articular disc by the superior articular space. The parameters of the articular space determine how the articular head will be located in the glenoid fossa. Three positions are possible: the central position of the articular head occurs when the width of the articular space in the anterior, superior and posterior sections is close in value; the medial position of the head, when the posterior section of the articular space is larger than the anterior section; distal - when the value of the posterior section of the articular space is less than the size of the anterior section of the articular space.

Thus, the study of morphological features of the temporomandibular joint is relevant and is of not only theoretical but also practical interest. The influence of the skull and face structure on the TMJ morphology is described in many works by domestic and foreign authors.

Currently, there are many methods for studying the anatomical structure of the temporomandibular joints, but there are still no clinical and radiological indicators of the temporomandibular joint morphology, and this is very important for a dentist. Correct diagnosis and good treatment results for patients with temporomandibular joint problems can only be achieved with knowledge of the detailed structure of the TMJ. When planning treatment and prevention of temporomandibular joint diseases, it is necessary to know the correct functioning of the joint. Such knowledge has important practical and theoretical foundations in the study of the clinical picture and issues of etiology and pathogenesis in the reduction of bite, diseases of the temporomandibular joint and other dental pathologies accompanied by dysfunction of the TMJ, which requires further study.

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