



**ФУНДАМЕНТАЛ ВА
КЛИНИК ТИББИЁТ
АХБОРОТНОМАСИ**

***BULLETIN OF* FUNDAMENTAL
AND CLINIC MEDICINE**

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**BULLETIN OF FUNDAMENTAL
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**ФУНДАМЕНТАЛ ВА КЛИНИК
ТИББИЁТ АХБОРОТНОМАСИ
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КЛИНИЧЕСКОЙ МЕДИЦИНЫ**

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**MODERN PERSPECTIVES ON THE ETIOLOGY AND TREATMENT OF
TEMPOROMANDIBULAR JOINT DYSFUNCTION****Solijonov Sh.Q., Rahimberdiyev R.R.**

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Resume. The mandible is connected to the temporal bone through the structures of the temporomandibular joint (TMJ). This joint is the only mobile articulation of bones in the skull. It represents a complex system driven by a variety of muscles. The TMJ is involved in performing vital functions of the human body: mastication, deglutition, and speech.

Keywords: temporomandibular joint dysfunction, Malocclusions, Orthodontic Treatment, bruxism

**ЧАККА-ПАСТКИ ЖАҒ БЎҒИМИ ДИСФУНКЦИЯСИ ЭТИОЛОГИЯСИ ВА ДАВОЛАШГА
ДОИР ЗАМОНАВИЙ ҚАРАШЛАР****Солижонов Ш.Қ., Раҳимбердиев Р.А.**

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Резюме. Пастки жағ чакка суяги билан чакка-пастки жағ бўғими (ЧПЖ-Б) тузилмалари орқали боғланган. Ушбу бўғим калла суягидаги ягона ҳаракатчан бирикма ҳисобланади ва турли мушаклар ёрдамида ҳаракатга келтириладиган мураккаб тизимдир. ЧПЖ-Б инсон организмнинг ҳаётий муҳим функцияларини бажаришда иштирок этади: чайнаш, ютиш ва нутқ сўзлаш.

Калит сўзлар: чакка-пастки жағ бўғими дисфункцияси, тишлоқ аномалиялари, ортодонтик даволаш, бруксизм.

**СОВРЕМЕННЫЕ ВЗГЛЯДЫ НА ЭТИОЛОГИЮ И ЛЕЧЕНИЕ ДИСФУНКЦИИ ВИСОЧНО-
НИЖНЕЧЕЛЮСТНОГО СУСТАВА****Солижонов Ш.Қ., Раҳимбердиев Р.А.**

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Резюме. Нижняя челюсть соединена с височной костью посредством структур височно-нижнечелюстного сустава (ВНЧС). Данный сустав является единственным подвижным сочленением костей черепа. Он представляет собой сложную систему, приводимую в движение различными мышцами. ВНЧС участвует в выполнении жизненно важных функций человеческого организма: жевании, глотании и речи.

Ключевые слова: дисфункция височно-нижнечелюстного сустава, аномалии прикуса, ортодонтическое лечение, бруксизм.

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Introduction. The prevalence of TMJ disorders is quite high both in the general population and among patients seeking orthodontic care (28–76%) [1]. TMJ dysfunction (TMJD) is most strongly associated with the following factors: female gender ($p=0.009$), TMJ clicking ($p=0.026$), and headaches ($p<0.001$). Until recently, data regarding the relationship between occlusion and TMJD were scarce. With the development and wide clinical implementation of radiological and hardware methods for studying the structures and functions of the masticatory apparatus, it became possible to establish a correlation between the state of the TMJ and occlusal features. This review presents the results of the latest scientific research in this field.

TMJ Dysfunction and Malocclusions. When comparing the prevalence of TMJD in patients with malocclusions versus the general population, no significant difference was found [11]. A series of studies aimed to determine which specific forms of dentofacial anomalies contribute most to the development of TMJ pathology. It was revealed that TMJD is most characteristic of individuals with open and deep bites. This fact is confirmed by several researchers. A correlation was found between TMJD symptoms (mandibular deviation during mouth opening, joint noise, and tension of the lateral pterygoid muscles upon palpation) and an increase in vertical incisal overbite ($p<0.05$). According to Sonnesen et al., patients with a deep bite experienced significantly higher rates of bruxism (clenching) $p<0.01$), headaches ($p<0.001$), masticatory muscle dysfunction ($p<0.001$), and disc displacement ($p<0.05$) compared to control groups.

The role of masticatory muscle strength in shaping maxillofacial structures during growth is well known. Andersen et al. found a link between TMJD and decreased masticatory muscle strength ($p < 0.009$). Reduced strength was typical for women ($p < 0.0001$) and individuals with a vertical growth pattern and an increased mandibular angle ($p < 0.0002$) [5]. Radiological data showed that vertical growth is characterized by a decrease in the anterior joint space, while horizontal growth is characterized by its increase [7].

TMJ Dysfunction and Orthodontic Treatment. Research indicates that TMJD symptoms can be observed in healthy subjects and tend to increase with age or during menopause. Therefore, the onset of TMJD during orthodontic treatment may not be causally related to the treatment itself. Orthodontic treatment performed in adolescence (with or without extractions) does not have any significant impact on the manifestation of TMJD in later life. Currently, there is little evidence that orthodontic treatment can prevent TMJD.

Reduced Inter-alveolar Height and TMJD. Studies have shown that a reduction in inter-alveolar height is rarely associated with the onset of TMJD symptoms. No correlation was found between the absence of more than five posterior teeth and TMJD [11], nor between the number of occlusal contacts and dysfunction [18]. In patients using complete dentures, poor denture quality did not lead to TMJD.

Dynamic Occlusal Parameters and TMJD. A strong correlation exists between TMJD and a discrepancy between Centric Occlusion (CO) and the position of Maximum Intercuspal Position (MI) of more than 2 mm. A significant role in the formation of TMJD is played by premature contacts on the balancing side.

Position of the Condyles Relative to the Articular Fossa. With the rise of CT and MRI, defining the "ideal" position of the mandibular heads (condyles) has become more precise. In asymptomatic individuals with neutral occlusion, a central position of the condyles in the fossa is most typical [10]. Meta-analysis suggests ideal intra-articular spaces are: medial — 2.94 mm, lateral — 2.16 mm, and superior — 2.55 mm. Patients with disc displacement (with or without reduction) more frequently exhibited a posterior (distal) position of the condyles [3].

Treatment of TMJ Dysfunction. Data on long-term treatment results remain limited. Current evidence suggests:

- Pain Relief: Achieved through occlusal splints and low-intensity laser therapy.
- Bruxism: Botulinum toxin therapy effectively reduced pain and the frequency of bruxism episodes, whereas simple splints were less effective for bruxism itself.
- Occlusal Splints: Using a maxillary stabilization splint resulted in the disappearance of symptoms in 64% of patients. Using a splint helps relax the lower head of the lateral pterygoid muscle, allowing the mandible to shift posteriorly into a more balanced position.
- TENS Therapy: Transcutaneous Electrical Nerve Stimulation (TENS) is widely used for pain relief. It reduces the activity of the anterior temporal muscle and increases the activity of the masseter muscle during maximum clenching. It provides a more pronounced temporary analgesic effect when combined with drug therapy ($p = 0.019$).

Conclusion. Recent scientific data confirm the necessity of monitoring TMJ status during any dental treatment involving occlusal changes. Special attention should be paid to female patients, those with severe deep or open bites, and those with a vertical growth pattern. The most effective treatments for TMJD involve occlusal modification via splints followed by dental treatment to achieve maximum tooth contact in a position of muscular balance. Laser therapy is effective for increasing the range of motion in the TMJ, and TENS can serve as a valuable adjunct to pharmacological pain management.

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