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MODERNIZATION OF TREATMENTAL STRATEGIES FOR PARTIAL ADENTHIA BASED ON A COMPREHENSIVE ASSESSMENT OF THE COMPOSITION OF THE CELVICO-LOWER JAW JOINT

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✓ ***Rezume***

Analysis of the long-term results of orthopedic treatment of partial adentia shows that ignoring the pathological processes in the CNS is one of the main reasons for unsatisfactory outcomes. Up to 45% of patients, within 3-5 years after prosthetics, complain of discomfort, pain sensations in the TMJ area, limited mouth opening, and other symptoms of joint dysfunction.

Keywords: partial adentia, temporomandibular joint, temporomandibular joint dysfunction, dental prosthetics, occlusive rehabilitation, morphofunctional disorders, articulation, chewing effectiveness, jaw biomechanics, complex treatment.

МОДЕРНИЗАЦИЯ ТЕРАПЕВТИЧЕСКИХ СТРАТЕГИЙ ПРИ ЧАСТИЧНОЙ АДЕНТИИ НА ОСНОВЕ КОМПЛЕКСНОЙ ОЦЕНКИ СОСТОЯНИЯ ВИСОЧНО-НИЖНЕЧЕЛЮСТНОГО СУСТАВА

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✓ ***Резюме***

Анализ отдаленных результатов ортопедического лечени я частичной адентии показывает, что игнорирование патологических процессов в ВНЧС является одной из основных причин неудовлетворительных исходов. До 45% пациентов в сроки от 3 до 5 лет после протезирования предъявляют жалобы на дискомфорт, болевые ощущения в области ВНЧС, ограничение открывания рта и другие симптомы дисфункции сустава

Ключевые слова: частичная адентия, височно-нижнечелюстной сустав, дисфункция ВНЧС, зубное протезирование, окклюзионная реабилитация, морфофункциональные нарушения, артикуляция, жевательная эффективность, биомеханика челюстей, комплексное лечение

ЧАККА-ПАСТКИ ЖАҒ БЎҒИМИ ҲОЛАТИНИ ҲАР ТОМОНЛАМА БАҲОЛАШ АСОСИДА ҚИСМАН ТИШ ЙЎҚОТИЛИШИДА ДАВОЛАШ СТРАТЕГИЯЛАРИНИ ТАКОМИЛЛАШТИРИШ

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✓ ***Резюме***

Қисман тиш йўқотилишини ортопедик даволашнинг узоқ муддатли натижаларини таҳлил қилиш шуни кўрсатадики, чакка-пастки жағ бўғимидаги (ЧПЖБ) патологик жараёнларга эътибор бермаслик қониқарсиз натижаларнинг асосий сабабларидан биридир. Протезлашдан кейин 3 йилдан 5 йилгача бўлган даврда беморларнинг 45% гача ЧПЖБ соҳасидаги ноқулайлик, оғриқ ҳисси, оғиз очилишининг чекланиши ва бўғим дисфункциясининг бошқа белгиларидан шикоят қилади.

Калит сўзлар: қисман тиш йўқотилиши, чакка-пастки жағ бўғими, ЧПЖБ дисфункцияси, тиш протезлаш, окклюзион реабилитация, морфофункционал бузилишлар, артикуляция, чайнаш самарадорлиги, жағлар биомеханикаси, комплекс даволаш

Introduction

Partial adentia is one of the most pressing problems in modern dentistry, affecting up to 80% of the adult population in various age groups. According to epidemiological studies by the WHO, the prevalence of partial tooth loss demonstrates a persistent growth trend, which is associated with increased life expectancy, changes in the structure of morbidity, and socio-economic factors [1]. Traditional approaches to treating partial adentia are primarily aimed at restoring the anatomical integrity of the dental arch and the basic functions of the dentoalveolar system. However, modern studies convincingly demonstrate that isolated examination of dental defects without considering the condition of the temporomandibular joint (TMJ) does not ensure long-term stability of treatment results and can lead to serious complications [2].

The pathogenetic relationship between partial adentia and CNS dysfunction has a complex multifactorial character. Loss of teeth initiates a cascade of pathological processes, including disruption of occlusal balance, change in the trajectory of mandibular movement, discoordination of chewing muscles, and progressive destructive changes in the structures of the temporomandibular system. Clinical manifestations of TMJ dysfunction are detected in 68-85% of patients with various forms of partial adentia, and the severity of the disorders correlates with the duration of the defect and its topography [3]. Modern diagnostic technologies, including high-resolution magnetic resonance imaging, conical-beam computed tomography, electromyography, and occlusion functional analysis, open up new possibilities for objectively assessing the morphofunctional state of the PCOS. However, the potential of these methods in clinical practice is not fully realized due to the lack of standardized protocols for comprehensive diagnostics and algorithms for interpreting the obtained data [4].

Analysis of the long-term results of orthopedic treatment of partial adentia shows that ignoring the pathological processes in the CNS is one of the main reasons for unsatisfactory outcomes. Up to 45% of patients, within 3 to 5 years after prosthetics, complain of discomfort, pain sensations in the TMJ area, limited mouth opening, and other symptoms of joint dysfunction [5]. Existing therapeutic strategies for partial adentia are characterized by fragmented approaches and insufficient personalization of treatment measures. The lack of unified criteria for assessing the condition of the CNS, algorithms for choosing optimal treatment tactics, and dynamic observation protocols significantly limits the possibilities of improving the effectiveness of therapy and preventing complications [6].

Modernization of therapeutic strategies for partial adentia should be based on the integration of modern understanding of the pathophysiology of the CNS, achievements in diagnostic technologies, and the principles of personalized medicine. A comprehensive assessment of the morphofunctional state of the CNS as an integral component of planning and conducting orthopedic treatment represents a promising direction for the development of dental rehabilitation [7]. The scientific novelty of the proposed research lies in the development of an integrated approach to the therapy of partial adentia, based on a comprehensive multi-level assessment of the condition of the temporomandibular joint using modern diagnostic technologies and mathematical modeling of biomechanical processes. The practical significance of the work is determined by the possibility of increasing the effectiveness of partial adentia treatment, reducing the frequency of complications, and improving the quality of life of patients through the implementation of scientifically based personalized therapeutic algorithms.

Purpose of the study: to develop and implement modernized therapeutic strategies for the treatment of partial adentia based on a comprehensive multi-parametric assessment of the morphofunctional state

of the temporomandibular joint to improve the effectiveness and long-term stability of orthopedic rehabilitation results.

Material and methods. We examined 94 patients at the Department of Surgical Stomatology and Dental Implantology of Samarkand State Medical University from 2022 to 2024, who were divided into 3 groups depending on the orthopedic treatment method: the control group (32 patients) underwent dental row defects. The comparison group (31 patients) underwent operations aimed at restoring the disclusion of the canines using occlusal caps, followed by methods of prosthetics of dental row defects. The main group of 31 patients used occlusal caps of the proposed modification for the restoration of post-occlusal teeth, and then prosthetic procedures were performed for dental row defects.

After questioning, patients underwent external examination, during which the facial configuration, the condition of the skin, especially its layers in the TMJ area, the severity of nasolabial and mental folds, the nature of the lips, the height of the lower part of the face, as well as the presence of facial asymmetry were clarified. In addition, the symmetry and amplitude of free movements of the lower jaw, the presence of shifts when opening and closing the mouth, were assessed.

For a more detailed diagnosis of pain disorder syndrome, we used the "Program for determining the severity of temporomandibular joint pain disorder syndrome." We developed a computer program "Improving the treatment of patients with partial adentia based on biomechanical parameters of the temporomandibular joint."

The maxillary capps have the impression of the antagonist teeth of the lower jaw, and the projection of the palatal surface of the upper molars also has guide plates made of metal plates with a thickness of 0.3 mm. The guiding plates are designed to restore the movement of the rounded shape of the lower jaw along the palatal surface of the upper molar.

Research results. In the examined patients, defects of the lateral surfaces of the dental rows and signs of TMJ dysfunction prevailed. In all patients of the studied groups, unpleasant sensations were noted on palpation of the PCOS area, in 3.13% - pain sensations, however, 87.50% of patients did not experience pain on palpation of the PCOS area, 90.63% of patients did not experience pain on palpation of the chewing muscles. Palpation of one to three muscles caused pain in 9.37% of the examined patients.

During auscultation, joint noises during mandibular movements were detected in 40.63% of patients. During palpation, pathological joint murmur was detected in 9.37% of patients. In 50% of patients, pathological joint murmur was not detected.

According to the program we developed to determine the severity of TMJ disorders, facial asymmetry was noted in 18.75% of individuals with normal dental occlusion. Furthermore, in 12.50% of cases, the asymmetry disappeared when the mouth was opened, and in 6.25% of cases, facial asymmetry persisted even with vertical movements of the lower jaw. In 81.25% of patients, the face was symmetrical in a normal occlusion position. When opening and closing the mouth, pain in the chewing muscles was observed in 9.37% of cases. 90.63% of patients had no pain in the chewing muscles. 87.50% of those who participated in the study did not experience pain sensations, and 9.37% of patients had a history of pain syndrome observed only once. In 3.13% of patients, the formation of pain syndrome acquired a periodic character. In 87.50% of cases, there were no complaints about the presence of pain syndrome. In 12.5% of patients in the main group, mandibular movement caused pain in the temporomandibular joint, in 87.50% of patients, pain was not observed. At the same time, in 9.37% of patients, pain occurred only during vertical movements of the lower jaw, and in 3.13% of patients, pain occurred due to various movements of the lower jaw. When opening the mouth, symmetrical movements of the lower jaw relative to the midline of the face were observed in 34.38% of patients, deviation - in 53.12%, deflection - in 12.50%, i.e., at the end of opening the mouth, the lower jaw shifted to the side by at least 2 mm.

Thus, various signs of defects and disorders of the CNS function were recorded in the lateral parts of the dental rows. A defect was detected in the lateral parts of the dental rows, in the control group of patients with dental dislocations, a mild degree of musculoskeletal disorders was observed more often, and moderate and severe degrees were less common, while moderate degrees were more common in the main and comparison groups. According to the computer program for calculating the mutual occlusion ratios of teeth and dental rows, early contact of dental rows in normal occlusion was not detected in 59.38% of patients. Supercontacts in normal occlusion were detected in 40.62% of patients in the main group. Of these, 15.62% of patients had 1-2 premature contacts. In 15.62% of patients, early contacts

were observed in 3-4 cases, in 9.38% of individuals - in 5 or more cases. In dynamic occlusion in all examined patients, supercontacts were noted in 37.50% of patients. In 18.74% of cases, 1-2 early contacts were identified, in 9.38% of cases - 3-4 super contacts, and in 9.38% of cases - 5 or more early contacts of dynamic occlusion. In 62.50% of the examined patients, early contacts with dynamic occlusion were not detected. At the time of examination, 68.75% of all examined patients had non-removable orthopedic structures in their mouth that met all the requirements and did not require replacement. In 31.25% of patients, there were no orthopedic structures in the mouth.

Thus, a computer program was used to examine patients and assess the index of occlusal relationship disorders between teeth and dental rows.

Conclusions

Thus, the degree of impairment of temporomandibular joint function in relation to canine occlusion in patients with lateral dental defects was determined using a computer program based on clinical signs, and it was noted that canine occlusion disorders in patients with lateral dental defects increase the severity of TMJ dysfunction in patients of the comparison group and the main group by 20.06% and 16.83% compared to patients of the control group with preserved canine occlusion, and the symptoms of severe TMJ musculoskeletal dysfunction - by 16.44% and 16.43%, respectively. When determining the frequency of pain syndrome associated with canine occlusion in patients with dental defects complicated by temporomandibular joint dysfunction, it was established that pain syndrome was observed in 35.48% and 38.71% of cases in patients with defects complicated by temporomandibular joint dysfunction, in addition, under the influence of canine occlusion disorders, the course of the disease worsens, but the frequency of occurrence increases in patients of the main and comparison groups, respectively.

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