American Journal of Bioscience and Clinical Integrity
https://biojournals.us/index.php/AJBCI
ISSN: 2997-7347

Malocclusion – Modern Views, Types and Treatment

Kuzieva Madina Abdusalimovna
Department of Clinical Sciences of the Asian International University, Bukhara, Uzbekistan

Received: 2024, 15, Sep
Accepted: 2024, 21, Sep
Published: 2024, 22, Oct

Annotation: The article provides an overview of modern approaches to the identification and justification of the choice of management tactics for patients with malocclusion and crowding of teeth. Malocclusion is caused by impaired jaw growth or abnormalities in teething. For example, crowding of teeth occurs if permanent teeth are large and erupted on time, and jaw growth has stopped. Sometimes a violation of jaw growth can result in the absence of canines, incisors or premolars, or the appearance of gaps and diastems (gaps between the front teeth).

Keywords: dental growth disorders, malocclusion, crowding of teeth, orthodontic treatment.

Dental anomalies are a common pathology and are detected in 30-50% of the adult population. The most common type is the crowded position of the teeth (33.7%).

Depending on the severity and combination with the absence of individual teeth, they can lead to aesthetic and functional disorders [1, 2]. Such patients are characterized by a lack of space in the dental arch and various variants of incorrect tooth placement. At the same time, there is a decrease in the longitudinal length of the dental arch relative to the sum of the mesiodistal size of the crowns of the teeth that form it [3]. One of the most common anomalies is crowding of incisors. Multiple incorrect tooth positions are often noted.

It is believed that these anomalies are based on genetic factors that determine the inheritance of pathological signs – the number, shape, size of teeth, as well as the parameters of the jaws and bones of the facial skull [4]. Genetically determined anomalies include disproportions in the size of the jaws, their underdevelopment, a decrease in the width of the dentition, as well as the eruption of wisdom teeth [5]

Among the causes of narrowing of the dentition, many heterogeneous causes are considered, primarily related to the peculiarities of childhood – difficulty in nasal breathing, sucking fingers, sluggish chewing, the presence of somatic diseases that contribute to metabolic disorders and weakening of the body, primarily rickets, dyspepsia, infectious and other diseases [6]. It is believed

that changes in the nutritional structure of the population in recent decades have contributed to a significant change in the functional characteristics of the jaws, which in turn has strengthened the observed tendency to decrease the size of these bones. At the same time, a clear relationship between jaw formation disorders with soft food intake and the predominance of oral respiration has not been established at present.

The mechanism of formation of crowding of teeth at an early age is usually associated with the eruption of incisors, which significantly seals both dentitions. In most cases, the volume of space on the upper dentition is sufficient for all four incisors, however, a space deficit may be detected on the lower dentition during this period, the size of which is on average 1.6 mm [7]. This contributes to the appearance of mandibular crowding of incisors. The development of crowding of teeth at an older age often coincides with the incision of the third molars. A number of researchers believe that the pressure arising from the eruption of the third molars contributes to the occurrence of late crowding of the incisors [8]. However, this pathology can also be detected in patients with complete absence of third molars.

Crowding of the frontal teeth complicates pathologies, accompanied by morphological, functional and aesthetic disorders of the maxillofacial region [9]. In the presence of the above factors, unfavorable conditions for the formation of the dental arch are created, contributing to malocclusion, as well as prerequisites for the presence of aesthetic disorders [10]. Crowding of the front teeth contributes to the occurrence of functional overload of some teeth along with a decrease in the load on others, as well as deterioration of oral hygiene. It is believed that in the case of incorrect placement of teeth, the periodontium perceives an occlusive load, the direction of which changes, as a result, periodontal overload develops, which qualifies as functional and traumatic, leading to circulatory disorders of the tissues of the dental system [11]. It was also found that crowding of teeth significantly determines the development of caries, the occurrence of periodontitis, which in turn complicates and reduces the possibility of using orthodontic treatment methods [12]. Often, anomalies in the position of teeth lead to various psychoemotional disorders in patients [13].

The classification of crowding of the front teeth provides for 4 degrees of severity of this anomaly. The lung is characterized by a uniformly close arrangement of teeth, while the shape of the dental arches is not disturbed. The average degree is manifested by changes in the position of the teeth – buccal or oral displacement, tilt of the tooth, turning it around its axis.

The severe degree is characterized by a combination of violations of the shape of the dental arch and a change in the shape of the alveolar process or part of it, often with the ejection of two teeth from the dentition. With a very severe degree, there is a narrowing of the dentition, with more than two teeth being pushed out of the dentition and the wrong position of the other teeth [14].

Most often, there are signs of crowding, such as the superimposition of the corners of the front teeth on each other, the palatine arrangement of the lateral incisors and canines, the "staggered" position of the lower incisors, the vestibular and high position of the canines on the upper jaw, a change in the shape of the dental arch [15].

In the anterior part of the jaw, there is a narrowing, shortening, as well as its trapezoidal flattening. These changes are accompanied by a lack of multiple occlusal contacts, a lack of space, and malocclusion. As a rule, patients have impaired movements of the mandible and pathology of the temporomandibular joint [16].

Crowding of teeth is usually detected when the patient actively visits an orthodontist in connection with aesthetic disorders such as an "unattractive smile", strained closing of the lips [7]. Aesthetic aspects can cause a person to be withdrawn, refuse active communication, and interfere with the choice of a number of professions [17].

The diagnosis of crowding of the front teeth is carried out using a set of methods, starting with a clinical examination.

A complete examination is performed using instrumental methods (radiography), extra- and intra-oral photographing is performed, plaster models of the jaws are analyzed [18]. The analysis is performed both using plaster models and using a computer based on the established values of the studied indicators. At the same time, the mesiodistal dimensions of the crowns of the anterior and lateral teeth are estimated – the sum of these indicators is the length of the dentition. In the case when the sum of the sizes of permanent teeth is greater than the size of the available space, it is stated that there is insufficient space on the dental arch and crowding of the front teeth.

In cases where the size of the estimated space is higher than the required level, gaps are observed between individual teeth [19, 20].

With constant occlusion in patients with missing teeth, the most important diagnostic criterion is to assess the presence of space in the dental arch and identify the need in its increase [21]. The length of these segments is measured and the difference between the sum of the mesiodistal dimensions of 12 teeth and the total size of six segments of the dental arch is estimated [22]. To identify a deficiency in the dental arch, an important criterion is the presence or absence of rotation of the upper molars. The location of teeth in three planes is studied. The discrepancy in the location of the lateral teeth is revealed based on an assessment of the ratios of tangents drawn to the distal surface of the unidirectional premolars and molars perpendicular to the median palatine suture [23].

Currently, it is generally recognized that a multidisciplinary approach should be applied in the treatment of patients with malocclusion. In some cases, pronounced disorders require orthodontic care, without which rational prosthetics is impossible. At the same time, the complex of medical and rehabilitation measures requires the participation of various specialists: dentists, therapists and orthopedists, periodontologists, orthodontists, ENT specialists, psychologists. The basic principle of choosing methods of treating dental crowding implies the need to achieve harmony of the structure and all functions of the face. At the same time, it is necessary to take into account the patient's growth perspective.

At the stage of orthodontic diagnosis, it is necessary to determine: the possibility of orthodontic correction without removing complete teeth; the need to remove wisdom teeth to facilitate the leveling of the dentition, if they are correctly positioned in the dentition. At the same time, a number of adverse treatment factors should be taken into account and predicted, such as the duration of treatment, the possibility of complications in the form of gingival margin recession and periodontal pathology, the possibility of unsatisfactory aesthetic treatment results [30].

Orthodontic methods are used in the treatment of persons with a dental anomaly or deformity in persons with a malocclusion. It is in childhood and adolescence that the maximum effect of their use is noted, since orthodontic treatment promotes local weakening of bone tissue with an increase in its plasticity [35]. Non-removable orthodontic equipment developed in recent years provides an opportunity to assist patients with complex anomalies and deformations of the dental system [36].

Depending on the age of the patients, various orthodontic devices are used to expand the dentition and apical base.

At the same time, the possibilities of placing an individual tooth in the correct position are also determined. When forming a temporary bite, positioners with functional Frenkel regulators are used; when changing the bite, expansion plates with screws or with a spring are used.

With constant occlusion, arc devices with braces are used [37].

It is shown that the use of passive self-ligating braces is accompanied by the least load, whereas when using active self-ligating braces, the load is higher, and with hard ligation, the load increases significantly. It is believed that the use of self-ligating braces in people with crowded teeth can reduce the duration of treatment [38].

Fully transparent passive self-ligating braces have low friction and low load doses with more

efficient tooth movement [39, 40].

Optimization of the treatment of persons with dental anomalies and deformities of the formed occlusion requires the use of an integrated approach [41]. It is generally recognized that the close cooperation of various specialists makes it possible to achieve the best results of orthodontic treatment and significantly improve the quality of life of this category of patients [42].

In recent years, specialists have been paying more and more attention to ensuring the long-term stability of the results of orthodontic treatment. In the aspect of the problem under consideration, for this purpose, the frequency of long-term complications of ongoing therapeutic and rehabilitation measures is assessed, as well as changes in the transversal parameters of dental arches and characteristics of the apical basis are identified [43].

The final stage of active orthodontic action is called alignment and aims to establish all teeth in the necessary tight occlusal contact before retention begins. The duration of the retention period takes more than a year, regardless of the age and degree of crowding of teeth [44]. Throughout the retention period, there is an improvement in the periodontal condition with closed dentition, which is evidence of the presence of occlusal stability. When using double-jaw orthodontic structures in the retention period, an increase in the number and area of occlusal contacts is ensured, which leads to an even distribution of loads on the periodontium.

Optimal lip tone ensures a favorable retention period with stabilization of the result [45].

Conclusion. The literature data indicates that the phenomenon of mismatch of bone size to the size of the dentition may be the result of a number of genetic and functional reasons. From an evolutionary point of view, it was found that the size of the human jaw gradually decreased, reaching its current average value in all three planes. In fact, this phenomenon consists in the fact that the size of the supporting bone tissue is less than necessary for adequate positioning of the entire dentition, which causes a shortage of space for the correct formation of the occlusal plane.

However, it should be noted that at present, the peculiarities of changes in the characteristics of the soft tissues of the face in young patients and in middle-aged people who have an occlusion anomaly and a dentition defect have not been sufficiently studied. Various aspects of orthodontic treatment and rehabilitation in relation to this group of patients are poorly developed, there are no recommendations for practitioners regulating the diagnosis and therapy of occlusion anomalies combined with dentition defects. A classification of crowding of the position of teeth has not been developed depending on the lack of space and the individual periodontological biotype of the patient.

Improving the effectiveness of orthodontic treatment of patients of the first period of adulthood with a significant lack of space in the dentition requires an analysis of the morphometric parameters of the cortical bone of the jaws using modern diagnostic methods. At the same time, in this cohort of patients, the structural features of the cortical layer of bone tissue have not been sufficiently studied, the technique of clinical and X-ray examination of the cortical layer of bone tissue with a crowded position of teeth has not been developed. Computer modeling programs have been insufficiently developed that are used in the diagnosis and treatment of various forms of space deficiency in the dentition and crowding of teeth. There are no clinical studies to evaluate the effectiveness of modern treatment methods in patients with severe lack of space in the dentition. In conclusion, it should be noted that the choice and use of various orthodontic treatment strategies is impossible without getting an idea of the changes occurring in the dental system, as well as in the absence of data on the effectiveness of various approaches to the treatment of patients with dental crowding.

Literature

1. Abdusalimovna, K. M. (2024). Current Representations of Simple Prosthodontics. *Best Journal of Innovation in Science, Research and Development*, *3*(3), 228-234.

2. Abdusalimovna, K. M. (2024). THE USE OF CERAMIC MATERIALS IN ORTHOPEDIC DENTISTRY.(Literature review). *TADQIQOTLAR*, *31*(3), 75-85.
3. Abdusalimovna, K. M. (2024). THE ADVANTAGE OF USING ALL-CERAMIC STRUCTURES. *TA'LIM VA INNOVATSION TADQIQOTLAR*, *13*, 49-53.
4. Abdusalimovna, K. M. (2024). CLINICAL AND MORPHOLOGICAL FEATURES OF THE USE OF METAL-FREE CERAMIC STRUCTURES. *TA'LIM VA INNOVATSION TADQIQOTLAR*, *13*, 45-48.
5. Кузиева, М. А. (2023). Клиникоморфологические Критерии Органов Ротовой Полости При Применении Несъемных Ортопедических Конструкций. *Research Journal of Trauma and Disability Studies*, *2*(12), 318-324.
6. Abdusalimovna, K. M. (2024). MORPHO-FUNCTIONAL FEATURES OF THE METHOD OF PREPARATION OF DEPULPATED TEETH FOR PROSTHETICS. *SCIENTIFIC JOURNAL OF APPLIED AND MEDICAL SCIENCES*, *3*(4), 301-307.
7. Abdusalimovna, K. M. (2024). Clinical and Morphological Features of the Use of Non-Removable Orthopedic Structures. *JOURNAL OF HEALTHCARE AND LIFE-SCIENCE RESEARCH*, *3*(5), 73-78.
8. Dzhuraevna, K. M. (2023). THE FREQUENCY OF DENTAL DISEASES IN CHILDREN (LITERATURE REVIEW). *Лучшие интеллектуальные исследования*, *12*(1), 159-168.
9. Dzhuraevna, K. M. (2023). FEATURES OF THE OCCURRENCE OF DENTAL DISEASES IN CHILDREN. *Лучшие интеллектуальные исследования*, *12*(1), 178-185.
10. Dzhuraevna, K. M. (2024). Prevalence and Course of Dental Diseases Among Younger Patients. *Research Journal of Trauma and Disability Studies*, *3*(5), 433-436.
11. Dzhuraevna, K. M. (2024). Features of Caries Morbidity in Preschool Children. *Research Journal of Trauma and Disability Studies*, *3*(3), 300-305.
12. Dzhuraevna, K. M. (2024). Clinical and Morphological Aspects of Cracks on The Back Teeth in Adults. *Research Journal of Trauma and Disability Studies*, *3*(5), 429-432.
13. Хайитова, М. Д. (2023). РАСПРОСТРАНЕННОСТЬ И РАСПРЕДЕЛЕНИЕ ТРЕЩИН НА ЗАДНИХ ЗУБАХ СРЕДИ ВЗРОСЛЫХ ПАЦИЕНТОВ (ОБЗОР ЛИТЕРАТУРЫ). *Лучшие интеллектуальные исследования*, *12*(1), 186-195.
14. Хайитова, М. Д. (2023). Особенности Возникновение И Течение Кариеса Зубов. *Research Journal of Trauma and Disability Studies*, *2*(12), 356-363.
15. Хайитова, М. Д. (2023). КЛИНОКО-МОРФОЛОГИЧЕСКИЕ ОСОБЕННОСТИ ВОЗНИКНОВЕНИЯ СТОМАТОЛОГИЧЕСКИХ ЗАБОЛЕВАНИЙ У ДЕТЕЙ. *Лучшие интеллектуальные исследования*, *12*(1), 169-177.
16. Хайитова, М., & Тайлакова, Д. (2023). ВЗГЛЯД СТОМОТОЛОГА НА ГИГЕНУ ПОЛОСТИ РТА У ДЕТЕЙ. *Инновационные исследования в современном мире: теория и практика*, *2*(23), 58-59.
17. Saloxiddinovna, X. Y. (2024). MORPHOFUNCTIONAL FEATURES OF THE STRUCTURE AND DEVELOPMENT OF THE OVARIES. *EUROPEAN JOURNAL OF MODERN MEDICINE AND PRACTICE*, *4*(4), 220-227.
18. Saloxiddinovna, X. Y. (2024). Modern Views on the Effects of the Use of Cholecalciferol on the General Condition of the Bod. *JOURNAL OF HEALTHCARE AND LIFE-SCIENCE RESEARCH*, *3*(5), 79-85.

19. Халимова, Ю. С., & Хафизова, М. Н. (2024). МОРФО-ФУНКЦИОНАЛЬНЫЕ И КЛИНИЧЕСКИЕ АСПЕКТЫ СТРОЕНИЯ И РАЗВИТИЯ ЯИЧНИКОВ (ОБЗОР ЛИТЕРАТУРЫ). *TADQIQOTLAR. UZ*, *40*(5), 188-198.
20. Халимова, Ю. С. (2024). Морфологические Особенности Поражения Печени У Пациентов С Синдромом Мэллори-Вейса. *Journal of Science in Medicine and Life*, *2*(6), 166-172.
21. Xalimova, Y. S. (2024). Morphology of the Testes in the Detection of Infertility. *Journal of Science in Medicine and Life*, *2*(6), 83-88.
22. KHALIMOVA, Y. S. (2024). MORPHOFUNCTIONAL CHARACTERISTICS OF TESTICULAR AND OVARIAN TISSUES OF ANIMALS IN THE AGE ASPECT. *Valeology: International Journal of Medical Anthropology and Bioethics*, *2*(9), 100-105.
23. Salokhiddinovna, K. Y. (2024). IMMUNOLOGICAL CRITERIA OF REPRODUCTION AND VIABILITY OF FEMALE RAT OFFSPRING UNDER THE INFLUENCE OF ETHANOL. *EUROPEAN JOURNAL OF MODERN MEDICINE AND PRACTICE*, *4*(10), 200-205.
24. Abdurashitovich, Z. F. (2024). THE RELATIONSHIP OF STRESS FACTORS AND THYMUS. *ОБРАЗОВАНИЕ НАУКА И ИННОВАЦИОННЫЕ ИДЕИ В МИРЕ*, *36*(6), 188-196.
25. Abdurashitovich, Z. F. (2024). MORPHO-FUNCTIONAL ASPECTS OF THE DEEP VEINS OF THE HUMAN BRAIN. *ОБРАЗОВАНИЕ НАУКА И ИННОВАЦИОННЫЕ ИДЕИ В МИРЕ*, *36*(6), 203-206.
26. Abdurashitovich, Z. F. (2024). ASTRAGAL O'SIMLIGINING TIBBIYOTDAGI MUHIM AHAMIYATLARI VA SOG'LOM TURMUSH TARZIGA TA'SIRI. *Лучшие интеллектуальные исследования*, *14*(4), 111-119.
27. Abdurashitovich, Z. F. (2024). ODAM ANATOMIYASI FANIDAN SINDESMOLOGIYA BO'LIMI HAQIDA UMUMIY MALUMOTLAR. *ОБРАЗОВАНИЕ НАУКА И ИННОВАЦИОННЫЕ ИДЕИ В МИРЕ*, *41*(4), 37-45.
28. Abdurashitovich, Z. F. (2024). THE IMPORTANCE OF THE ASTRAGAL PLANT IN MEDICINE AND ITS EFFECT ON A HEALTHY LIFESTYLE. *ОБРАЗОВАНИЕ НАУКА И ИННОВАЦИОННЫЕ ИДЕИ В МИРЕ*, *41*(4), 88-95.
29. Abdurashitovich, Z. F. (2024). Department of Syndesmology from the Science of Human Anatomy General Information About. *Research Journal of Trauma and Disability Studies*, *3*(3), 158-165.
30. Abdurashitovich, Z. F. (2024). THE COMPLEXITY OF THE FUSION OF THE BONES OF THE FOOT. *JOURNAL OF HEALTHCARE AND LIFE-SCIENCE RESEARCH*, *3*(5), 223-230.
31. Abdurashitovich, Z. F. (2024). MUSHAKLAR TO'GRISIDA MA'LUMOT. MUSHAKLARNING TARAQQIYOTI. MUSHAKLARNING YORDAMCHI APPARATI. *TADQIQOTLAR. UZ*, *40*(3), 94-100.
32. Abdurashitovich, Z. F. (2024). APPLICATION OF MYOCARDIAL CYTOPROTECTORS IN ISCHEMIC HEART DISEASES. *ОБРАЗОВАНИЕ НАУКА И ИННОВАЦИОННЫЕ ИДЕИ В МИРЕ*, *39*(5), 152-159.
33. Abdurashitovich, Z. F. (2024). SIGNIFICANCE OF BIOMARKERS IN METABOLIC SYNDROME. *EUROPEAN JOURNAL OF MODERN MEDICINE AND PRACTICE*, *4*(9), 409-413.

34. Narzulaeva Umida Rakhmatulloevna and Rakhmatova Fotima Ulugbekovna, “PATHOGENETIC MECHANISMS OF DISORDERS IN THE HEMOSTASIS SYSTEM OBSERVED IN PATIENTS INFECTED WITH COVID-19”, IEJRD - International Multidisciplinary Journal, vol. 7, no. ICMEI, p. 3, Feb. 2023.
35. Narzulaeva, U. (2023). PATHOGENETIC SIGNIFICANCE OF HYPERLIPIDEMIA IN THE CLINICAL COURSE OF ARTERIAL HYPERTENSION. International Bulletin of Medical Sciences and Clinical Research, 3(11), 86-91.
36. Narzulaeva, U. (2023). PATHOGENETIC SIGNIFICANCE OF HYPERLIPIDEMIA IN THE CLINICAL COURSE OF ARTERIAL HYPERTENSION. International Bulletin of Medical Sciences and Clinical Research, 3(11), 86-91.
37. Нарзуллаева, У., Самиева, Г., & Пардаева, З. (2022). ПАТОФИЗИОЛОГИЯ РЕПЕРФУЗИОННОГО ПОВРЕЖДЕНИЯ МИОКАРДА. Журнал вестник врача, 1(2), 155–158. https://doi.org/10.38095/2181-466X-2020942-154-157
38. Самиева, Г., Нарзулаева, У., & Самиев, У. (2023). Течение артериальной гипертензии у жителей засушливого региона. Каталог монографий, 1(1), 1–108. извлечено от https://inlibrary.uz/index.php/monographs/article/view/27456
39. Oripova, O. O., Samieva, G. U., Xamidova, F. M., & Narzulaeva, U. R. (2020). Sostoyanie plotnosti raspredeleniya limfoidnyx kletok slisistoy obolochki gortani va proyavleniya mestno immuna pri xroncheskom laringite (tahlil seksionnogo material). Akademiya,(4 (55)), 83-86.
40. Rakhmatulloevna, N. U., & Abdurasulovna, B. M. (2022). GEMOREOLOGIK BUZILISHLAR VA ERITROTSITLAR AGREGATSION XOSSALARI O’ZGARISHINING PATOGENETIK MEXANIZMLARI. JOURNAL OF BIOMEDICINE AND PRACTICE, 7(6).