



**DIFFERENTIATED ORTHODONTIC TREATMENT OF
OPEN BITE IN CHILDREN**

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Abstract: *Open bite is one of the complex vertical malocclusions observed in children and adolescents. It is characterized by the absence of normal vertical contact between the upper and lower teeth in a particular region of the dental arches. The development of open bite may be associated with genetic predisposition, abnormal swallowing, prolonged oral habits, tongue dysfunction, impaired nasal breathing, and disturbances in the growth of the jaws. Early diagnosis and differentiated orthodontic treatment are important because the therapeutic approach should correspond to the child's age, stage of dental development, type of open bite, severity of the anomaly, and functional disorders. Uzbek orthodontic studies have emphasized the importance of modern clinical, biometric, radiological, and cephalometric examination in the diagnosis of open bite. Treatment may include elimination of harmful oral habits, myofunctional exercises, removable orthodontic appliances, expansion plates, fixed appliances, and individualized biomechanical approaches. A differentiated treatment strategy allows the orthodontist to address not only the dental manifestations of open bite but also the functional factors contributing to its development and recurrence. Early intervention during the period of active growth may improve occlusal relationships, masticatory function, speech, and facial development.*



Keywords: *open bite, children, orthodontic treatment, differentiated treatment, malocclusion, dentoalveolar anomaly, myofunctional therapy, orthodontic appliances, cephalometric diagnosis, dental development.*

Open bite is considered one of the clinically significant vertical anomalies of the dentofacial system. The condition is characterized by the absence of contact between opposing teeth when the posterior teeth are in occlusion. In children, open bite may affect the anterior or lateral segments of the dental arches and can occur as an independent anomaly or in combination with sagittal and transverse malocclusions. Uzbek orthodontic researchers have emphasized that the diagnosis and treatment of open bite should take into consideration both the patient's age and the specific type of anomaly.

The development of open bite is multifactorial. Functional disturbances, oral habits, abnormal tongue posture, infantile swallowing, mouth breathing, and unfavorable patterns of maxillofacial growth may contribute to the formation and persistence of the anomaly. Therefore, treatment directed exclusively toward tooth movement may not always provide stable results. A comprehensive approach that combines orthodontic correction with functional rehabilitation is particularly important in growing children. The relevance of differentiated treatment is also associated with the different stages of dental development. A treatment method appropriate for a child with primary or early mixed dentition may not be suitable for an adolescent with established permanent dentition. Consequently, individualized diagnosis and selection of orthodontic appliances are essential components of successful management.

The etiology of open bite in children is multifactorial. Genetic characteristics may influence the vertical growth pattern of the face and the relationship between the jaws. Environmental and functional factors may additionally contribute to the development of the anomaly. Prolonged sucking habits, abnormal tongue position, incorrect swallowing patterns, and impaired



nasal breathing can interfere with normal dentoalveolar development. Open bite may also be associated with speech difficulties, impaired incising and chewing, and changes in the balance of the orofacial muscles. Research conducted among children in Tashkent has demonstrated an important relationship between dentofacial anomalies and speech disorders, highlighting the importance of comprehensive orthodontic and functional assessment. Clinical examination should therefore include assessment of the facial profile, lip competence, tongue position, swallowing pattern, breathing, dental relationships, and functional characteristics. Evaluation of the dental arches and measurement of the vertical gap are also important for determining the severity of the anomaly.

Early diagnosis is particularly important because the developing dentofacial system retains considerable potential for functional and orthopedic modification. Identification of harmful oral habits and functional disorders at an early age makes it possible to initiate preventive measures before the anomaly becomes more severe. Uzbek researchers have proposed using clinical, biometric, radiological, and cephalometric methods to establish the characteristics of open bite. Such examinations make it possible to distinguish dental and skeletal components of the anomaly and to select an appropriate treatment strategy. Cephalometric evaluation may provide information about facial growth direction, mandibular rotation, vertical skeletal relationships, and the position of the incisors. These findings are particularly important when determining whether treatment should primarily focus on dentoalveolar correction or whether skeletal growth characteristics must also be considered [1].

Functional rehabilitation is an important component of open-bite treatment in growing patients. Orthodontic correction may be less stable if the functional factors responsible for the anomaly remain unchanged. Myofunctional exercises are intended to improve the coordination and strength





of the orofacial muscles and to encourage an appropriate tongue resting position and swallowing pattern. The effectiveness of such exercises depends on regular performance and cooperation between the child, parents, orthodontist, and, when necessary, speech therapist. The relationship between open bite and speech disturbances is particularly important. Uzbek studies involving children have reported that comprehensive orthodontic and speech-therapy interventions can contribute to correction of both dentofacial and functional disorders [2].

The choice of orthodontic appliance should be individualized. Removable appliances may be useful during early stages of dental development, particularly when the primary objective is habit control, functional correction, or guidance of dental eruption. Fixed appliances provide more precise control over tooth movement and may be indicated in adolescents with permanent dentition. In complex cases, biomechanical approaches may be combined with vertical control mechanisms [3].

Research by Uzbek orthodontists has also investigated newer appliance designs for open-bite correction. Their reported clinical observations indicate that appliance selection should correspond to the eruption stage and the individual characteristics of the patient rather than being based solely on the presence of an open bite. Radiological examination contributes significantly to differentiated treatment planning. Lateral and frontal cephalometric analysis can help determine the skeletal and dental components of open bite. Orthopantomography may provide additional information about tooth development, eruption, and the condition of the dental arches. The Uzbek literature emphasizes that modern diagnostic methods are necessary for determining the type of open bite and for planning individualized orthodontic management. A diagnostic protocol should therefore integrate clinical examination with appropriate imaging and functional assessment. This





approach allows the orthodontist to distinguish between predominantly dental open bite and cases with significant skeletal involvement [4].

Prevention of open bite should begin with early identification of risk factors. Parents should be informed about the potential effects of prolonged oral habits and abnormal functional patterns. Regular dental and orthodontic examinations during childhood allow abnormalities to be identified before they become more difficult to correct. Retention is another important component of treatment. Because open bite has a tendency to recur when functional etiological factors persist, retention should be combined with continued control of tongue posture, swallowing, breathing, and other relevant functions. The stability of treatment depends not only on the orthodontic appliance but also on the correction of the functional environment surrounding the dentition [5].

Conclusion

Differentiated orthodontic treatment is an important approach to the management of open bite in children. Successful treatment requires early diagnosis, identification of etiological and functional factors, evaluation of dental and skeletal characteristics, and selection of orthodontic methods according to the child's age and stage of dentofacial development. The treatment plan may include elimination of harmful oral habits, myofunctional exercises, removable appliances, expansion devices, fixed orthodontic treatment, and other individualized biomechanical methods. The combination of orthodontic correction with functional rehabilitation is particularly important for achieving stable results. Comprehensive diagnosis and individualized treatment planning can contribute to improvement of occlusion, mastication, speech, facial development, and overall oral function in children with open bite.





REFERENCES

1. Nigmatov R.N., Shomukhamedova F.A., Nigmatova I.M. Studies on the prevalence and characteristics of open bite in children. Tashkent, 2017.
2. Shomukhamedova F.A., Nigmatov R.N., Suleymanova D.A., Murotova G.A., Abdukhali-lov J.A. Diagnosis and orthodontic treatment of patients with open bite. Stomatologiya. 2020. The authors emphasized modern diagnostic methods and age- and anomaly-specific orthodontic treatment.
3. Shomukhamedova F.A., Suleymanova D.A., Murotova G.A. Diagnosis of patients with open bite and their orthodontic treatment. Medicine and Innovations. 2022.
4. Nigmatov R.N., Aralov M.B., Nigmatova I.M., Atamuratova N., Khazratkulova O. Open bite in children and their orthodontic treatment. Uzbek orthodontic research publication.
5. Nigmatov R.N., Aralov M.B., Mamashokirov M. Improvement of treatment and correction of open bite in children and adolescents. 2024.
6. Nigmatova I.M., Nigmatov R.N., Inogomova F. Prevalence of dental system anomalies and speech disorders in children of Tashkent city. 2024.
7. Rustamov A.A., Akhmedov A.A. Features of diagnosis in children with an open bite. European International Journal of Multidisciplinary Research and Management Studies. 2024.