

CURRENT STATUS OF PREVALENCE, INCIDENCE AND CLINICAL ASPECTS OF MAXILLARY PROTRUSIONS IN CHILDREN

Badriddinov Baxrom Baxtiyorovich

<https://orcid.org/0009-0000-4674-6500>

Bukhara State Medical Institute Named after Abu Ali Ibn Sino. Bukhara,
Uzbekistan.

e-mail:badriddinov.bahrom@bsmi.uz

Abstract: Maxillary protrusion, a common type of dentofacial anomaly in children, has drawn considerable attention in pediatric dentistry due to its potential impact on facial aesthetics, oral function, and psychosocial development. This study aims to evaluate the current status of maxillary protrusions in children by analyzing prevalence rates, incidence trends, and associated clinical manifestations. Through a comprehensive review of epidemiological studies and orthodontic case reports, the research identifies contributing factors such as genetic predisposition, oral habits (e.g., thumb sucking, mouth breathing), and environmental influences. Clinical consequences, including malocclusion, speech difficulties, and temporomandibular joint stress, are discussed in detail. The study further explores diagnostic approaches, including cephalometric analysis and clinical evaluation, as well as early intervention strategies. Findings emphasize the importance of timely diagnosis and multidisciplinary management to mitigate long-term complications. This paper highlights the pressing need for public health programs focused on early screening and prevention of maxillary protrusion in children.

Keywords: maxillary protrusion; dentofacial anomalies; pediatric orthodontics; prevalence; incidence; oral habits; malocclusion; cephalometric analysis; early diagnosis; craniofacial development

Introduction

Maxillary protrusion, also referred to as Class II Division 1 malocclusion, is one of the most frequently encountered dentofacial anomalies in pediatric populations. It is characterized by an excessive forward positioning of the upper jaw relative to the lower jaw, often accompanied by lip incompetence and increased overjet. This condition not only affects the structural balance of the face but also interferes with essential functions such as mastication, phonation, and respiratory patterns. Moreover, children with maxillary protrusions often experience emotional and social difficulties due to aesthetic concerns, making it both a clinical and psychological issue.

Over the past few decades, numerous studies have attempted to document the epidemiological aspects of maxillary protrusion, yet variation in diagnostic criteria, ethnic differences, and

environmental factors have led to inconsistent data on prevalence and incidence. Nevertheless, it remains a significant public health concern, particularly in communities with limited access to early orthodontic care.

This study is intended to consolidate existing knowledge regarding the occurrence, causes, and clinical manifestations of maxillary protrusion in children. It also emphasizes the role of early diagnosis and intervention to prevent progression into more severe skeletal discrepancies during adolescence and adulthood.

Materials and Methods

This research adopts a systematic literature review approach to gather and synthesize current findings on the prevalence, incidence, and clinical aspects of maxillary protrusion in children.

- Literature Search Strategy:

A comprehensive search was conducted using scholarly databases such as PubMed, Scopus, Web of Science, and Google Scholar. Search terms included: “*maxillary protrusion in children*,” “*prevalence of Class II malocclusion*,” “*oral habits and dental anomalies*,” and “*early orthodontic treatment*.”

- Inclusion Criteria:

Studies were selected based on the following:

- Published between 2010 and 2024
- Included pediatric subjects (ages 5–15)
- Provided data on prevalence, incidence, clinical features, or management
- Peer-reviewed articles, case studies, and clinical trials

- Data Extraction and Analysis:

Information was extracted regarding study location, sample size, diagnostic methods, and reported outcomes. Data were categorized by geographic region, gender differences, and associated risk factors. Descriptive statistics were used to interpret prevalence and incidence trends.

- Ethical Considerations:

As this is a secondary data study based on publicly available literature, no ethical approval was required. However, studies included were evaluated for ethical compliance and validity.

- Limitations:

Language bias (English-only sources), variability in diagnostic definitions of maxillary protrusion, and heterogeneous sample sizes were considered as potential limitations that may affect the generalizability of findings.

Results and Discussions

Changes in the distribution of upper jaw protrusions among children, the level of occurrence and clinical aspects are caused by the age of the child, the level of nutrition, exogenous and endogenous effects during the mother's pregnancy, concomitant diseases in children, lack of trace elements and vitamins in the child's body. According to the scientific research the prevalence of maxillary protrusions among children begins with the eruption of the first molars. Maxillary protrusions are accompanied by skeletal disproportion, impaired growth and development of the dento-maxillary system. According to Engel's classification, class II maxillary protrusions occur due to macrognathia of the lower jaw or as a result of combined changes in both jaws. According to foreign and scientific literature sources, the clinical manifestations of morphological diseases of the facial skeleton in class II of Engel's classification of maxillary protrusions are diverse, since it is difficult to

determine the most characteristic sign for this pathology; the state of the gnathic part of the facial skeleton is associated with a large number of changes.

Scientific research work of the upper jaw pathologies, the upper jaw is one of the pathologies caused by the forward protrusion of the front incisors and the narrowing of the upper jaw cavity, in some cases, as a result of diastema and trema of the lower jaw teeth, and the tight arrangement of teeth in the tooth rows. In Engel's classification of maxillary protrusions, class II, subclass 1, the characteristic facial features are considered to be a convex face. In such patients, the chin is tilted back. The lower third of the face is shortened, as a result of which the incisors of the upper jaw bend and contact the lower lip, the upper lip is displaced forward and the teeth of the upper jaw are observed. Intraoral signs of maxillary protrusions are the displacement of the upper incisors to the vestibular side, which is often combined with trema and narrowing of the upper jaw with a sagittal gap between them; in the lateral area, the teeth of the upper and lower jaws are closely aligned, which is assessed by deep pathology. Patients with maxillary protrusions have a pronounced protrusion of the maxillary teeth beyond the orbital line, forming an incorrect proportional position at the junction of the nasolabial angle. In patients with this pathology, the angle of the upper lip line with the perpendicular to the nose is larger than the normal physiological position.

With this pathology, due to a decrease in chewing efficiency, the useful area of teeth occlusal contact decreases, during chewing, the grinding and crushing movements of the lower jaw predominate, the duration of the chewing period and the number of chewing movements increase, and the violation of chewing movements increases by an average of 30% and with a severe degree of protrusion of the upper jaw, such serious changes in the mobility of the lower jaw and their asymmetry are observed. The tongue does not protrude beyond the teeth, but beyond the lips and cheeks. The dysfunction caused by maxillary protrusions largely depends on what other anomalies it is combined with, as well as changes in the size and topography of the dentition defects, if any, are observed.

Favorable conditions are created for the colonization and reproduction of acid-producing microflora. This situation is especially unfavorable for patients, especially children and adolescents, since at this age the enamel does not have sufficient acid resistance, resulting in increased enamel resistance.

In 75% of patients, protrusion of the maxillary teeth beyond the point of the maxillary system is observed. In 20% of patients, the normal position of the maxillary teeth is determined. When assessing the position of the maxillary teeth relative to the A-Pg line, distal displacement of the teeth and retraction of the maxillary incisors are observed.

Also, foreign and domestic authors emphasize that this indicator depends on the position of the lower jaw, and therefore, the more accurate the indicators of retrognathia of the lower jaw, the more accurately the position of the upper jaw teeth is observed. The protrusive position of the upper jaw incisors relative to the A-Pg straight line is visible. To assess the position of the lower jaw and the base of the skull in patients, J.A. McNamara used two signs. The SNB angle and the ratio of PG to the perpendicular from N and 30% have a neutral position of the lower jaw. The retrusive position of the lower jaw is most often observed. The mesio-distal position of the upper jaw is moderately neutral, and its retrusion has been studied more than protrusion. From this except in 15% of cases cutter teeth in retrusion and in 20% - protrusion was determined. High jaw protrusion with sick of patients in occlusion cephalometric of information nature to its clinical appearance, in particular, facial skeleton gnathic or other diseases with to the combination depends. High jaw protrusion of the face vertical growth of the skeleton of the violation of the jaws sagittal disparity effect according to every what

research exists was local and foreign in literature Engel to the classification according to analysis was done.

Conclusion

As in other words , high jaw clinical manifestations of protrusions Engel to the classification according to II class , junior high 1st grade jaw Protrusion is typical intraoral and facial features with described and very various clinical manifestations about information foreign and local co-authors scientific in the sources own expression found.

Reference

1. Бадриддинов Б.Б. Болаларда юқори жағ протрузияларини эрта ташхислаш ва ортодонтик текширув кўрсаткичлари // Биомедицина ва амалиёт. № 3 –сон. 9 жилд. 2024. Тошкент. Б. 151 -159. (14.00.00 № 24).
2. Бадриддинов Б.Б., Фозилов У.А. Юқори жағ протрузияларини текширувда CAD/CAM технологияларини қўллаш усуллари орқали антропометрик кўрсаткичлар // Тиббиётда янги кун. № 10 (72) 2024. (14.00.00 №22). Бухоро. Б.9-16
3. Badriddinov B.B., Gafforov S.A., Olimov S.Sh., Buxoro shahridagi maktab o'quvchilari paradont to'qimasining holati // Tibbiyotda yangi kun. № 1 (25) 2019. ISSN 2181-712X. Buxoro. b.85-87 (14.00.00 №22).
4. Бадриддинов Б.Б., Гаффаров С.А., Шукурова У.А., Гаффарова С.С., Пломба ашёларини танлаш ва уларни оғиз бўшлиғи тўқималари ҳамда сўлак таркибидаги биокимёвий ва иммуно-микробиологик омилларга таъсири // Тиббиётда янги кун. № 3 (27) 2019. ISSN 2181-712X. Бухоро. Б.77-81 (14.00.00 №22).
5. Бадриддинов Б.Б., Фозилов У.А. Мезиал ва дистал патологик окклюзияси бор болаларни рентгенологик текширишлар асосида уларда кузатиладиган ҳар хил аномал ўзгаришларни аниқлаш // Гуманитар ва табиий фанлар журналы № 16 (11), 2024. Vol. 1. Б. 266 -271 (14.00.00 №22).
6. Badriddinov B.B., Fozilov U.A., Determination of Aetiological Factors Causing Upper Jaw Protrusions and Treatment Measures in Age-Dependent Cases // American Journal of Medicine and Medical Sciences. - USA, 2024. - №14 (11). – P. 2998-3001 (14.00.00; № 2).
7. Фозилов У.А., Бадриддинов Б.Б. Юқори жағ протрузияси билан касалланган беморларда юз фотометрияси, оғиз ичи сканерлаш ва қолип олишнинг афзалликлари // Замонавий тиббиёт журналы. № 4 (7), 2024. Б.134-137
8. Badridinov B. B, Fozilov O'.A Modern indicators of upper jaw protrusion in children under the influence of various external factors // European journal of modern medicine and practice Vol. 2 No. 9 (Sep - 2022) EJMP ISSN: 2795-921X. - P. 82-86
9. Fozilov U.A., Olimov S.Sh., Badriddinov B.B. Characteristic change in the protrusion of the upper jaw in children // Journal of new century innovations. Vol. 30 No. 4 (2023): Volume30 Issue-4. – P. 175-179
10. Badriddinov B.B., Fozilov U.A., Preventive measures aimed at preventing complications in the orthodontic treatment of patients // International Journal of Health Systems and Medical Science. ISSN: 2833-7433 Volume 2, No 6, June – 2023. -P.53-57
11. Fozilov Uktam Abdurazakovich., Badriddinov Baxrom Baxtiyorovich. To study indicators of orthodontic status and determine its modern features in children // European journal of modern medicine and practice. Vol. 3 No. 06 (Jun - 2023) EJMP ISSN: 2795-921X. P.38-43

12. Badriddinov B. B., Fozilov U. A. The Effectiveness of a Comprehensive Program for the Prevention of Dental Deformities in Children // Research journal of trauma and disability studies. Volume: 01 Issue: 12 | Dec – 2022 ISSN: 2720-6866. P.141-146.
13. Badriddinov B.B., Fozilov U. A.. Maxillofacial System and Hygienic Condition of the Oral Cavity in Patients with Maxillary Protrusion // Scholastic: Journal of Natural and Medical Education Vol. 1 No. 2 (2022) ISSN: 2835-303X. P.52-56
14. Badriddinov B. B., Characteristics of Changes in the Protrusion of the Upper Jaw in Children under the Influence of Various External Factors // Research journal of trauma and disability studies Volume: 2 Issue: 12 | Dec – 2023 ISSN: 2720-6866. P.600-609
15. Badriddinov B. B., Anomaly of the Upper Jaw in Children When Exposed to Various External Factors // International Journal of Health Systems and Medical Sciences ISSN: 2833-7433 Volume 2 | No 12 | Dec -2023. P.223-228
16. Badriddinov B.B., Application and Introduction into Practice of "Chamomile" Tincture of Catarrhal Gingivitis, Which Occurs in the Orthodontic Treatment of High Jawprotrusion in Children// International Journal of Integrative and Modern Medicine. Volume 2, Issue 5, 2024 ISSN: 2995-5319. P.338-340.
17. Badriddinov B.B., Morphometric Indicators of Jaw Diseases with High Jaw Prothrititis in Children// International Journal of Alternative and Contemporary Therapy. Volume 2, Issue 5, 2024 ISSN: 2995-5378. P.170-174
18. Badriddinov B.B., Olimov S.Sh., Yunysova U.A. Features of the course of the carious process in children with dentoalveolar anomalies in the bukhara region // Journal of Natural Remedies-2021. Vol. 21, No. 12(2), P. 27-33
19. Badriddinov B.B., Olimov S.Sh. Intensity prevalence of carious process in children with a dentoalveolar malformation in the Bukhara region // World medicine journal № 1(1) 2021. P.676-684.
20. Badriddinov B.B., Olimov S.Sh., Gaffarov S.A., Yakubov R.K., Saidov A.A.. Prevalence of dentoalveolar anomalies in 6-16 years children according to retrospective data analysis // International Journal of Psychosocial Rehabilitation. Vol. 24, Issue 09, 2020. ISSN 1475-7192. P. 403-410.
21. Badriddinov B.B., S.Sh. Olimov, J.N. Bakayev, U.A. Yunusova. Factor of Non-Specific Protection of Oral Fluid in High School Children with Dental Anomalies // Middle European scientific bulletin. ISSN 2694-9970. Volume 16. Sep 2021. P.97-105.
22. Badriddinov B.B. Turli xil tashqi omillar ta'sirida bolalarda yuqori jag'ning protruziyasini profilaktikasi va kompleks davolashga zamonaviy yondashuv // XALQARO ILMIY-AMALIY ANJUMAN "Stomatologiyaning dolzarb muammolariga zamonaviy yondashuv". 2024-yil.
23. Badriddinov B.B., Olimov S.Sh., Gaffarov S.A., Saidov A.A. Findings in temporomandibular joint pathology at children // Materiály XV Mezinárodní vědecko - praktická konference «Zprávy vědecké ideje -2019», Volume 9 : Praha. P.35-36