

Content available at: <https://www.ipinnovative.com/open-access-journals>

International Journal of Oral Health Dentistry

Journal homepage: www.ijohd.org

Case Report

Early intervention of anterior cross bite malocclusion relating to functional class iii malocclusion

Amit Bhardwaj¹, Kratika Mishra², Vaibhav Misra³, Anuj Bhardwaj^{4,*},
Shivani Bhardwaj⁵

¹Dept. of Orthodontics, Modern Dental College and Research Centre, Indore, Madhya Pradesh, India

²Dept. of Orthodontics, Index Institute of Dental Sciences, Indore, Madhya Pradesh, India

³Dept. of Orthodontics and Dentofacial Orthopaedics, Divya Jyoti Dental College and Research Centre, Modinagar, Uttar Pradesh, India

⁴Dept. of Conservative Dentistry and Endodontics, College of Dental Science and Hospital, Rau, Indore, Madhya Pradesh, India

⁵Dept. of Prosthodontics, College of Dental Science and Hospital, Rau, Indore, Madhya Pradesh, India



ARTICLE INFO

Article history:

Received 15-06-2021

Accepted 19-08-2021

Available online 24-09-2021

Keywords:

Removable appliance

Expansion screw

Unilateral crossbite

ABSTRACT

This case report describes the treatment of a 13-year-old boy with anterior dental cross bite, unilateral cross bite and constricted maxillary arch with removable appliance to bring the teeth into a normal position. A removable acrylic appliance with a bite plate incorporating an expansion screw was used to correct the anterior dental cross bite and align the incisors.

This is an Open Access (OA) journal, and articles are distributed under the terms of the [Creative Commons Attribution-NonCommercial-ShareAlike 4.0 License](https://creativecommons.org/licenses/by-nc-sa/4.0/), which allows others to remix, tweak, and build upon the work non-commercially, as long as appropriate credit is given and the new creations are licensed under the identical terms.

For reprints contact: reprint@ipinnovative.com

1. Introduction

The origin of anterior crossbites could be either dental or skeletal. The etiology of anterior dental crossbites is due to the abnormal axial inclination of the maxillary anterior teeth.

Anterior skeletal crossbites are associated with a skeletal problem, such as mandibular prognathism and midface deficiency.¹

The incidence of anterior dental cross bite is 4-5% and is usually as a result of ectopic eruption or palatal malposition of the maxillary incisors² resulting from a lingual eruption path. Other etiological factors include trauma to the primary maxillary incisors resulting in lingual displacement of the permanent tooth buds; presence of supernumerary anterior teeth; crowding in the incisor region, an over-retained, necrotic or pulpless deciduous tooth or root; delayed

exfoliation of the primary incisors; and odontomas.²⁻⁵

2. Case Presentation

A 13-year-old boy was referred to the orthodontic clinic with the chief complaint of irregularly placed upper front teeth and an unaesthetic appearance of the maxillary central incisors that were behind the lower anterior teeth. No relevant medical and dental history, and the patient did not have a family history of Class-III malocclusion.

Pre-treatment extra-oral on smiling (Figure 1) shows unilateral crossbite of 21 with respect to 31, constricted maxillary arch. On intra-oral examination (Figure 2) the permanent maxillary left central incisors were in crossbite, and constricted maxillary arch. The patient was in early-mixed dentition and had a Class-I molar relationship on both sides, with a 2 mm overjet and 80% overbite. The maxillary dental midline was coincident with the facial midline; however, the mandibular dental midline deviated

* Corresponding author.

E-mail address: dranuj_84@yahoo.co.in (A. Bhardwaj).

approximately 4 mm to the left. A panoramic radiograph showed early mixed dentition (Figure 3) and lateral cephalometric radiographic view showed no evidence of basal problem between mandibular and maxillary arches (Figure 4).

The treatment objectives include correction of the anterior crossbite, to achieve normal overbite and overjet, alignment of anterior teeth and correction of unilateral crossbite and to improve the patient's facial and dental esthetics. For alignment and correction of the crossbite, a removable acrylic appliance with expansion screw with a posterior bite-opening platform was used.

A screw incorporated in the appliance platform was activated 0.25 mm every 4 days for 16 weeks. (Figure 5) After 2 months, the maxillary and mandibular incisors



Fig. 4: Showing lateral cephalogram of the patient.



Fig. 1: Pre-treatment extra-oral pictures on smiling



Fig. 2: Pre-treatment intra-Oral pictures showing unilateral cross bite and constricted maxillary arch.



Fig. 5: Removable appliance showing expansion screw for correction of anterior and unilateral crossbite- Early intervention.



Fig. 3: Showing OPG representing the early mixed dentition



Fig. 6: Post correction intra-Oral pictures

displayed an edge-to-edge bite relationship, and the crossbite was corrected in next 2 months (Figure 6) The posterior bite-opening platform was then removed, and screw activation continued every 7 days for another 2 months in order to establish a normal overjet. After 8 months of active treatment, the crossbite of all maxillary incisors and unilateral crossbite was corrected.(Figure 7)



Fig. 7: Showing comparison of pre-treatment and post treatment extra oral pictures.

3. Discussion

Various techniques used to correct anterior dental crossbite are tongue blades, composite inclined planes, reversed stainless steel crowns, removable acrylic appliances with lingual springs and fixed appliances.^{2–8} Factors that are taken into consideration along with the age of the child, are the number of teeth requiring repositioning, overbite, the total number of teeth involved and how parents or child was motivated.^{7–9}

4. Conclusion

An anterior crossbite affecting two or more teeth or presenting with a reverse overjet in the absence of a functional displacement, may signify an underlying skeletal discrepancy. An anterior crossbite affecting two or more teeth or presenting with a reverse overjet in the absence of a functional displacement, may signify an underlying skeletal discrepancy. An anterior crossbite affecting two or more teeth or presenting with a reverse overjet in the absence of a functional displacement, may signify an underlying skeletal discrepancy.

The timing of orthodontic interventions is important in success of treatment i.e. when to plan the early treatment or

indeed to stop skeletal discrepancies altogether three spatial planes. Correct intervention timing will certainly reduce the severity of malocclusion.

5. Source of Funding

None.

6. Conflict of Interest

None.

References

1. Moyers RE. Handbook of Orthodontics; 1973. p. 564–77.
2. Major PW, Glover K. Treatment of anterior cross-bites in the early mixed dentition. *J Can Dent Assoc.* 1992;58(7):574–9.
3. Park JH, Kim TW. Anterior crossbite correction with a series of clear removable appliances: A case report. *J Esthet Restor Dent.* 2009;21(3):149–59. doi:10.1111/j.1708-8240.2009.00257.x.
4. Bayrak S, Tunc ES. Treatment of anterior dental crossbite using bonded resin- composite slopes: Case reports. *Eur J Dent.* 2008;2(4):303–6.
5. Heikinheimo K, Salmi K, Myllärniemi S. Long term evaluation of orthodontic diagnoses made at the ages of 7 and 10 years. *Eur J Orthod.* 1987;9(2):151–9. doi:10.1093/ejo/9.2.151.
6. Vadiakas G, Viazis AD. Anterior crossbite correction in the early deciduous dentition. *Am J Orthod Dentofacial Orthop.* 1992;102(2):160–2. doi:10.1016/0889-5406(92)70029-A.
7. Kiyak HA. Patients' and parents' expectations from early treatment. *Am J Orthod Dentofacial Orthop.* 2006;129(4):50–4. doi:10.1016/j.ajodo.2005.09.018.
8. Sari S, Gokalp H, Aras S. Correction of anterior dental crossbite with composite as an inclined plane. *Int J Paediatr Dent.* 2001;11(3):201–9. doi:10.1046/j.1365-263x.2001.00256.x.
9. Croll TP, Riesenberger RE. Anterior crossbite correction in the primary dentition using fixed inclined planes. II. Further examples and discussion. *Quintessence Int.* 1988;19:45–51.

Author biography

Amit Bhardwaj, Professor and Head

Kratika Mishra, Assistant Professor

Vaibhav Misra, Professor and Head

Anuj Bhardwaj, Professor

Shivani Bhardwaj, Reader

Cite this article: Bhardwaj A, Mishra K, Misra V, Bhardwaj A, Bhardwaj S. Early intervention of anterior cross bite malocclusion relating to functional class iii malocclusion. *Int J Oral Health Dent* 2021;7(3):216-218.