

Orthodontic Correction of Segmental Anterior Cross Bite - A Case Report

¹Dr. Gurpreet Kour, Assistant professor, Department Pedodontics and Preventive Dentistry, Swami Devi Dyal Hospital And Dental College. Barwala, Panchkula

²Dr . Ambreena Khurshid, PG Student, Department of Pedodontics and Preventive Dentistry swami Devi Dyal Hospital And Dental College Barwala , Panchkula

³Dr. Maryam Siddiqui, Tutor, Department Pedodontics and Preventive Dentistry, Faculty of Dentistry, Jamia Millia Islamia

⁴Dr. Manisha Shishodia, Private Practitioner. Clove dental. Pediatric Dentist

⁵Dr. Suneel Kumar Gupta, PG Student, Department of Pedodontics and Preventive Dentistry. K.D. Dental College and hospital, Mathura

⁶Dr. Umer ul Hassan, PG Student, Department of orthodontics and Dentofacial Orthopedics. SGT Dental College and Hospital.

Corresponding Author: Dr. Gurpreet Kour, Assistant professor, Department Pedodontics and Preventive Dentistry, Swami Devi Dyal Hospital And Dental College. Barwala, Panchkula

Type of Publication: Case Report

Conflicts of Interest: Nil

Abstract

Anterior cross bite is relatively a common presentation in children during the early mixed dentition stage. Uncorrected cross bite may cause abnormal wear of the incisal edge, periodontal problems, mandibular asymmetry and temporomandibular joint dysfunction syndrome. Various methods for correction of anterior crossbite are available. This article highlights the case of successful correction of segmental anterior crossbite using removable acrylic appliances and fixed orthodontic therapy.

Keywords: Anterior cross bite, Removable appliance, Elastic forces

Introduction

Anterior crossbite is defined as an abnormal reversed relationship of a tooth or teeth to the opposing teeth in the buccolingual or labiolingual direction, and it is also known as reverse articulation [1].

If the condition arises only from palatal malposition of a maxillary tooth with associated labioversion of contacting mandibular teeth, it is referred as dental cross bite. A patient with prognathic mandible may also exhibit anterior crossbite even though teeth normally positioned over the maxillary and mandibular basal bone [2]. Such condition is known as skeletal anterior crossbite. Possible causes of dental crossbite include supernumerary teeth, odontomas, trauma to the primary predecessor, ectopic position of permanent tooth germ, retained primary predecessor, anomalies in tooth shape, size, arch length inadequacy, upper lip biting habits[3,4,5]. The prevalence of anterior cross bite ranges from 4.5% to 9.5% and comprises of 27% malocclusion cases.

Different treatment modalities are available for correction of anterior crossbite ranging from simple to complex means. A simple method include : tongue blade

which is used in the early stages of anterior crossbite development as teeth are in the erupting stage. Appliances such as catlan's appliance, removable appliances with z spring (s) or expansion screw or microscrews are often used in anterior crossbite correction in preadolescent age group.

Choice of treatment option of anterior crossbite correction depends on certain factors like etiology of crossbite, patient's age, compliance, eruption status, space availability and treatment affordability [6].

Case Report

A 13 year old boy reported to department of paedodontics and preventive dentistry with chief complaint of irregular placement of upper and lower front teeth since 6-7 years (Figure 1). On extraoral examination no gross facial asymmetry was noticed. The facial form was oval and straight facial divergence was seen. Intraoral examination, revealed class I molar and canine relationship (Figure 2). Cross bite was seen in relation to lower anteriors with rotated 11(Figure 3).

After occlusal assessment oral prophylaxis was done. Treatment for crossbite was accomplished in two stages.

In Phase I – Hawleys appliance with Z spring was given in upper arch for correction of anterior crossbite in relation to 11 (Figure 4). In lower arch hawleys appliance was given with posterior bite block to create space for correction of crossbite which was later removed after correction(Figure 5).

In Phase II - Beggs bracket was bonded to labial surfaces of 16, 15, 13, 12 , 11 , 23 and lingual surface of 11 (Figure 6). Elastic force was passed from 15 to 13 and 16 to 12 to create space for 11(Figure 7). One elastic was passed from 15 to 11 for derotation along with the couple force from lingual surface of 11 to labial surface of 23 (Figure 8). The treatment time was four months after which composite buildup was done for 11 and also bonded

retainer from 13 to 23 was placed lingually to prevent any relapse. (Figure 9).



Figure 1: Irregular upper and lower front teeth



Figure 2: class I Molar relations



Figure 3: lower anterior crossbite



Figure 4: Hawley with z- spring



Figure 8: Derotation of 11



Figure 5: Lower Hawleys



Figure 9: Postoperative view



Figure 6: Derotation of 11



Figure 7: Distalisation of molars

Discussion

The main goal in treating anterior dental crossbite is to tip the affected maxillary tooth or teeth labially to a point where a stable overbite relationship prevents relapse. Treatment may involve lingual movement of a mandibular tooth, labial movement of a maxillary tooth, or both.

The most basic form of treatment for anterior crossbite is the use of tongue blades, reversed prefabricated stainless steel crowns and inclined bite planes if the anterior crossbite exceeds 1/3 of the crown length.

Although the use of the fixed orthodontic method to correct anterior crossbite during the preadolescent period has not been widely reported in the literature, simple fixed orthodontics to correct anterior crossbite and for alignment of teeth have shown good clinical outcome[9.10].

In this case, treatment plan for correction of crossbite was divided in two phases. In phase I maxillary central incisor was moved forward using removable orthodontic appliances. Two couple force system was applied in phase II of the treatment using elastics which changed the inclination of central incisor by an arrangement which caused derotation of the tooth around its center of resistance. The crown moved facially using the space created by the elastic forces on its both sides. Elastics stretched between the teeth; were worn 24 h per day and changed every day.

Cross-bites normally correct within 3–4 months with continuous wearing of elastics. The major change will be reflected in the position of the maxillary teeth because of the cancellous nature of the maxillary alveolar bone as against the denser bone around the mandibular molar.

The fast and early therapy for the correction of crossbite in frontal segment contributes to the normal skeletal facial growth and appropriate development in nasomaxillary complex. Hence early correction with simple fixed orthodontics will always prove advantageous.

Conclusion

Treatment of anterior crossbite is often advisable to prevent complications at a later stage. Simple, tolerable and early correction of anterior cross bite is always beneficial to provide esthetics and social well being of children.

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