

CORRECTION OF SINGLE TOOTH ANTERIOR CROSSBITES USING FIXED INCLINED PLANES

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INTRODUCTION

Anterior crossbites of dental origin are encountered relatively frequently in the primary and early mixed dentitions. If the etiology is truly dental and space is available, the problem should be corrected when it is encountered. The most common etiology of nonskeletal anterior crossbites, is the lack of space for the permanent incisors, and it is important that a the treatment plan focusses on management of the total space situation in addition to the crossbite. Since the permanent tooth buds form lingual to the primary teeth, a shortage of space may force the permanent maxillary incisor teeth to remain lingual to the line of arch and erupt into crossbite (1).

In functional anterior crossbites, the mandible is in a normal position during rest.

However during closing of the mouth, due to one or more primary contacts the lower jaw moves forward and an anterior crossbite is seen. Primary contacts are usually in the region of primary canines or anterior incisors (2).

The timing of treatment remains controversial. Appliance therapy in the primary dentition is feasible if the child is old enough to tolerate an appliance. In very young children delaying treatment until the child is more mature is recommended. However, delaying the treatment until the permanent dentition, may cause loss of space required for the eruption of the canines.

The benefits attributed to the early treatment of these malocclusions focus on gaining space for the eruption of canines, improving self esteem of the growing child and on eliminating traumatic occlusion to the incisors in crossbite. Therefore a growing number of clinicians believe in the advantages of early intervention (3, 4).

Anterior crossbites diagnosed after the incisors have erupted require appliance therapy for correction. The first concern is that adequate space is available so that tooth movement can be completed, which usually requires bilateral disking or extraction of the adjacent primary teeth. The most common problems associated with these simple removable appliances are lack of patient cooperation, poor design leading to lack of retention, and improper activation. Teeth can also be tipped out of anterior crossbite using fixed appliances, either with or without attachments placed on individual teeth. This technique does reduce some of the need for patient compliance (1, 5).

Fixed inclined planes can be used in cases of functional anterior crossbites or single tooth crossbites with enough overbite.

The aims of the present article are to illustrate a simple, effective, less time consuming and cost effective method for the early treatment of single tooth anterior crossbites in the early mixed dentition.

CASES

The two cases that this study is presenting are both similar in etiology and the malocclusion that they are presented with. One of the patients is seven and the other is ten years old. They have single tooth crossbites with adequate spaces in the dental arch. The diagnostic evaluation determined that tipping would provide appropriate correction (Figures 1-2).

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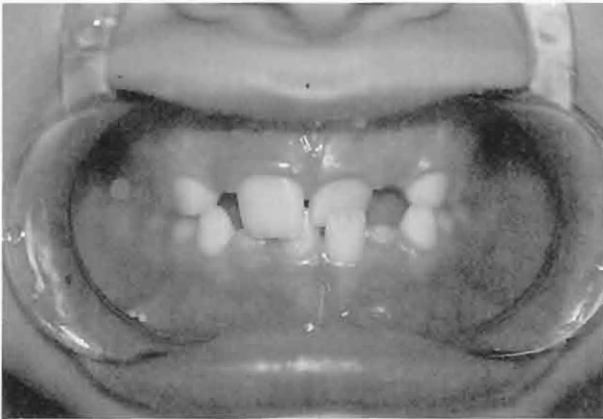


Figure 1: Pretreatment intraoral picture of case 1.



Figure 3: Case 1 with the fixed inclined plane inserted.

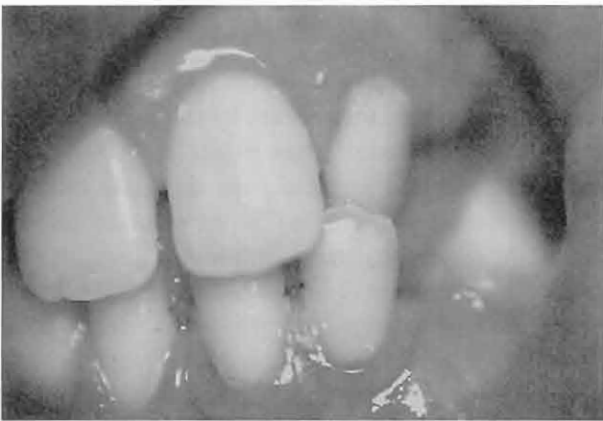


Figure 2: Pretreatment intraoral picture of case 2.



Figure 4: Case 1 with the fixed inclined plane inserted.

Treatments were initiated using fixed inclined planes fabricated in the patients' mouths. The cold acrylic is molded to a dough like consistency and placed over the patient's lower anterior teeth. The lower jaw is gently pushed backwards, the patient is then asked to bite until there is a space of 3-4 mm. between the upper and the lower anterior teeth. The acrylic is shaped taking the first tooth that contacts it, into consideration. When the acrylic gets warm it is taken out of the patient's mouth and kept outside until it is hard and then trimmed and polished. The fixed inclined plate is cemented in the patients mouth (Figures 3-4).

The patients were recalled after one week to check the appliance, and the inclination of the appliance was corrected if necessary (Figures 5-6).



Figure 5: Case 1 at the end of first week.



Figure 6: Case 2 at the end of first week.

The patients wore the appliance for a period of two weeks. At the end of that period it was seen that the teeth in crossbite had been successfully treated (Figures 7-8).



Figure 7: Case 1 at the end of two weeks treatment period.



Figure 8: Case 2 at the end of two weeks treatment period.

DISCUSSION

Early interceptive treatment for irregularities of this type, should be initiated to prevent existing problems from getting worse and minimize or eliminate the need for orthodontic treatment at a later stage. Early crossbite correction can also have a favorable effect on growth.

The patients presented in this article are coming from lower socio-economical status and they may not get a chance for extensive orthodontic treatment in later stages of development. This interceptive treatment is cost effective for both the patient and the doctor.

The force that is generated with fixed inclined planes, comes from the contractions of masticatory muscles. The fixed anterior inclined plate directs the closing forces that are on the buccal teeth, to the incisors. The chewing force so directed, effects the upper and lower anterior teeth in opposite directions in the same amount (reciprocal anchorage). The upper anterior teeth move labially, while the lower anteriors move lingually. The dominant movement seen, is the proclination of the upper incisors. The retrusion of the lower incisors is considerably less. This is because the acrylic of the inclined plane, forming a unity of the lower anterior teeth and increasing the anchorage in this unit. Since the upper anterior teeth, starting with the tooth of the primary contact, will be meeting the chewing forces, there will be more proclination of the upper anterior teeth. The lingual movement of the lower anterior teeth is practically none. The appliance is discontinued when the proclination of the upper anterior teeth and enough overbite is achieved. When there is an open bite on the buccal sides of the arches at the end of treatment, the chewing forces continue to be met by the upper and lower anterior teeth. The palatal surfaces of the upper anterior teeth continue to act as an inclined plane, thus moving the upper anterior incisors labially and the lower incisors lingually and decreasing the buccal openbite. The rest of the posterior openbite, will close with the eruption of the buccal teeth, and vertical alveolar bone growth (2). In the cases presented in this article posterior openbite was minimal.

CONCLUSION

In the present study we aimed at familiarizing the practicing clinician with the benefits of early intervention

to anterior crossbites of dental origin. This approach ensures maximum benefits in the shortest treatment time, and it is cost and time effective.

LITERATURE

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