

COMPARISON OF TWO APPROACHES FOR THE TREATMENT OF ANTERIOR CROSS BITE

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Abstract

Anterior crossbite is the term used to describe an abnormal labiolingual relationship between one or more maxillary and mandibular incisor teeth. Different techniques have been used to correct anterior crossbites. This paper describes the comparison between two methods for correction of single tooth anterior crossbite namely the lower inclined plane and a Hawley's appliance with double cantilever spring with posterior bite plane. Though correction was achieved with both the methods but it was observed that the results were much faster with the lower inclined plane. This procedure is a simple and effective method for treating anterior dental crossbite

Key words

Anterior cross bite, Catalan's appliance, Tongue Blade Therapy.

INTRODUCTION

Moyers defines a simple anterior tooth crossbite as a dental malocclusion resulting from the abnormal axial inclination of one or more maxillary teeth [1]

The clinician should determine whether the crossbite is skeletal or dental in origin from the profile analysis and intra oral findings[2]

Dental -type anterior crossbites usually exist in those patients where :

1. The molars and cuspids are in Class 1 relationship.
2. The crossbite involves only one or two teeth.
3. The profile of the patient is generally normal and the same when the mandible is at rest.
4. The teeth are occluded and the tooth or teeth are involved in the crossbite exhibit only an abnormal lingual axial inclination usually in the presence of a causative factor. [3]

Anterior crossbite should be intercepted and treated at an early stage so as to prevent a minor orthodontic problem from progressing into major dento-facial anomaly. An old orthodontic maxim states "the best time to treat a crossbite is the first time it is seen." [4]

Anterior crossbite is the result of variety of conditions, including the following:-

1. A labially positioned supernumerary tooth may cause torsion and lingual deflection of an incisor.
2. Trauma to an anterior primary tooth may cause displacement of the developing permanent successor and eruption in crossbite.
3. An arch-length deficiency can cause a lingual deflection of permanent anterior teeth during eruption [5]

As the treatment is carried out with removable appliances good co-operation between the specialist and the patient is one of the most important conditions for successful treatment results.

In the following article, two cases of anterior

crossbite were treated with different treatment approaches i.e. one case was treated with tongue blade therapy followed by Catalan's appliance and the second case was treated with Hawley's appliance with Z-spring and posterior bite plane and comparison was made to see for faster results and better patient compliance.

CASE REPORT

Both the cases reported here were in the early mixed dentition period and had Class-1 molar and canine relationship. In both cases there was sufficient mesiodistal distance to achieve labial movement of maxillary tooth.

Case-1

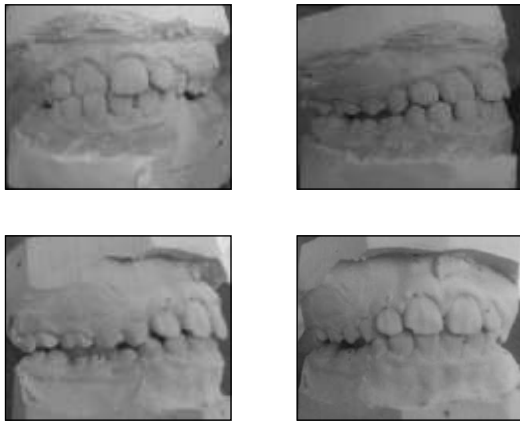
A 9 year old patient reported to the department of Pedodontics with the chief complaint of "crooked teeth". Examination revealed the normal profile of the patient, the same whether the mandible was at rest or when the teeth were occluded. The medical and dental histories were non-contributory. Intraoral examination showed that the maxillary permanent central incisors were erupted but the right central incisor i.e. maxillary right central incisor had deflected lingually. The diagnosis in this case was a single tooth dental type anterior crossbite.

Initially in this case tongue blade therapy was given. The patient was instructed to insert the tongue blade at an angle between the teeth and he was asked to bite firmly for five seconds followed by rest. This is repeated for 25 times for three times a day. But the patient reported after four days with no change. So an inclined plane was constructed which was made of acrylic, it produced a forward sliding motion of the maxillary incisors on closure. In this case, anterior crossbite correction was seen within seven days itself. No post-operative sensitivity or pain was

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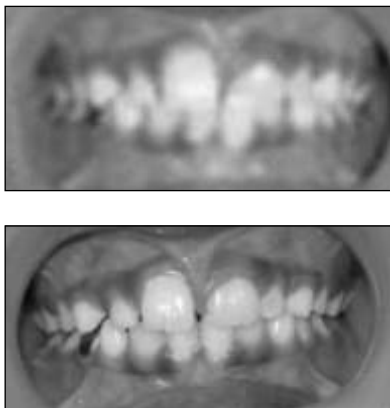
reported by the patient. But the patient was advised soft diet for one week to prevent inflammation of the surrounding periodontal structures.



Case -2

Another 9 year old patient reported to the Department of Pedodontics with the chief complaint of unesthetic appearance. The medical and dental histories were non-contributory. Extra oral examination revealed normal profile of the patient. Intraorally, it was observed that the maxillary left permanent central incisor was lingually locked.

In this particular case, a Hawley's appliance with a double cantilever spring was given on maxillary left permanent central incisor with the posterior bite plane. Since it was a deep over bite the spring was given along with a posterior bite plane to help in jumping the bite. In this case Z- spring was indicated as there was adequate space for the labialization of the maxillary central incisor. The patient was recalled after one week and the double cantilever spring was activated and the desired results were seen with in four weeks. The patient's compliance was good and the patient did not complain of any pain or inflammation.



DISCUSSION

Crossbite is one of the problem that is recommended to be corrected as soon as possible because an uncorrected crossbite can lead to undesirable growth modification thus resulting in true asymmetry of the face. The period of mixed dentition offers the greatest opportunity for occlusal guidance and interception of malocclusion. If delayed to a later stage of maturity, treatment may become more complicated.

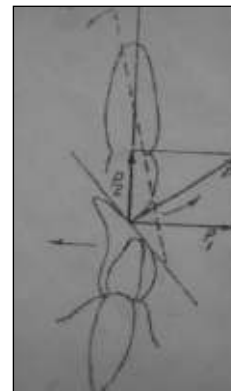
Selection of appliance for correction of the crossbite is critical for successful treatment. The appliances used for single tooth dental

anterior crossbite are :-

1. Tongue blade therapy
2. Reverse stainless steel crown
3. Fixed or removable mandibular acrylic inclined bite plane. [7]
4. Hawley's appliance with Z- spring.

The tongue blade is an effective method of treatment during the early phase of eruption, however, it requires total co-operation from the patient, which could not be achieved in our case. The reverse stainless steel crown is a well known method. The chief disadvantage of this method is the difficulty in adapting a preformed crown to fit the tooth in crossbite. Further more, the reverse stainless steel crown is an unesthetic treatment that is often rejected by the children and their relatives. [8]

Because of the disadvantages of the methods mentioned above, a cemented acrylic bite plane was given in Case 1. The lower inclined plane caps the lower incisors and is inclined at about 45° to the occlusal plane. On closing the upper incisors, which formerly occlude behind the lower incisors, bite on the inclined plane and the pressure of the bite (P) divides into two force vectors P1 and P2 (Figure 1). The pressure (P1) proclines the upper incisors. The Pressure (P2) intrudes the incisors. The steeper the plane the greater the forward pressure on the maxillary incisors. The advisable angle is 45° [p]



So, desirable results in Case 1 were seen within seven days itself with good patient compliance.

In Case 2, since there was sufficient space for the maxillary central incisor to move labially, a Hawley's appliance with a double cantilever spring was given. A maxillary posterior bite plate was inserted to allow clearance for the crossbite correction. [10] Though the patient's compliance was good, the desired results were seen within 4 weeks.

CONCLUSION

It is important to state that early correction of anterior crossbite may facilitate the eruption of canines and premolars in Class 1, eliminates traumatic occlusion of incisors, providing a normal environment for growth of maxilla and can often improve the self esteem of child. [11] In the following cases, since both the cases showed dental anterior single tooth crossbite, a comparison was made between two methods namely the inclined plane and the Hawley's type appliance and it was observed that the results from anterior inclined plane were much faster provided the patient's compliances is good.

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