

CASE REPORT

Early Interception of Malocclusion by Treating Anterior Crossbite with Catalans Appliance: A Case Report

Deepika Kapoor¹, Deepanshu Garg², Neeraj Mahajan³, Jasvir Kaur⁴

ABSTRACT

Introduction: An abnormal labiolingual relationship between one or more maxillary and mandibular incisor teeth is referred to as anterior crossbite. Many treatment modalities have been used to correct anterior crossbites.

Case report: This paper describes the case report of a 8 year old boy who reported with anterior crossbite. The treatment was planned and the use of Catalans appliance was thought to be appropriate.

Conclusion: Within two weeks after the cementation of the Catalan's appliance the problem was resolved and the crossbite was corrected. After that recall examination was done after 6 months that showed normal incisal relation without any relapse.

Keywords: Anterior Crossbite, Catalans Appliance, Malocclusion, Mixed Dentition

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¹Lecturer, Department of Pedodontics, ²Lecturer, Department of Oral Medicine and Radiology, College of Medical Sciences Teaching Hospital, Bharatpur, Chitwan, Nepal, ³Hod And Prof, Department of Pediatric and Preventive Dentistry, Guru Nanak Dev Dental College and Research Institute, Sunam, Punjab, ⁴Senior Lecturer, Department of Pedodontics, BJS Dental College, Ludhiana, India

Corresponding author: Dr. Deepika Kapoor, P-18, Tej Bagh Colony, Patiala, India

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INTRODUCTION

Moyers defines a simple anterior tooth crossbite as adental malocclusion resulting from the abnormalaxi-

al inclination of one or more maxillary teeth.¹ 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."²

During the early mixed- dentition phase, the incidence of anterior dental crossbite has been reported as 4-5%.³ Many of the causes which lead to this condition include supernumerary teeth especially mesiodens; erupted or unerupted, infection of the primary incisors causing delay in their exfoliation, trauma to the tooth bud at an early age, scar tissues from surgeries like cleft lip repair.⁴

Gingival recession and thinning of labial alveolar plate are the most common effects of crossbite. Early interceptive treatment is required for anterior crossbite so that severe consequences like tooth mobility and TMJ problems can be avoided.⁵

A stable overbite relationship has to be created by tipping the affected maxillary tooth or teeth labially. When this normal overjet/ overbite relationship has been created than relapse is prevented. For correction of anterior crossbite, the various methods used include tongue blades, reversed stainless steel crowns, fixed acrylic inclined planes, bonded resin-composite slopes, removable acrylic appliances with finger springs, and Bruckl appliance.

The use of Catalan's appliance is recommended in the early mixed dentition stage which provides an ideal platform to reverse the bite. Before using this appliance, the origin of crossbite whether dental or skeletal has to be considered. Dental crossbite means localized tipping of a tooth or teeth and does not involve basal bone.⁶ to correct this condition initially bite opening is done by using a bite plane and then teeth are brought into proper position.⁷

There are relatively less documented case reports about the use of Catalan's appliance in the treatment of anterior crossbite. So, this paper documents a case in where anterior dental crossbite was successfully corrected using a simple fixed Catalan's appliance.

CASE REPORT

A 8 year old male patient accompanied by his parents reported to the Department of Pediatric and Preventive Dentistry, Sunam, India with the chief complaint of “crookedteeth”. (Figure-1,2). On extraoral examination normal profile of the patient was seen, that was same whether the mandible was at rest and in occlusion. The medical and dental histories were not relevant. On Intraoral examination the maxillary permanent central incisors were erupted but the right central incisor i.e. maxillary right central incisor had deflected lingually. So, a single tooth dental type anterior crossbite was diagnosed.

Following clinical and radiographic examinations, the decision was made to fabricate an inclined plane. (Figure 3). After informing the parents about the malocclusion, a written consent to proceed with the treatment was taken. The crossbite was corrected after the cementation of the Catlan’s appliance within two weeks. (Figure 4) After that recall examination was done after 6 months that showed normal incisal relation without any relapse.

DISCUSSION

Interceptive orthodontics includes early treatment of anterior crossbite which if left untreated can lead to severe malocclusions. Locking of the maxillary teeth behind mandibular teeth should be treated on emergency basis when first seen in the oral cavity to re-establish proper muscular balance.⁸ Traditionally, the treatment of anterior crossbite includes a Catalans appliance so as to aid in the labial movement of the maxillary teeth by guiding them into proper position.⁹

This treatment is successful only when there is proper space in the maxillary arch to accommodate the maxillary incisors in the right position in the dental arch.¹⁰ The presence of crowding in mandibular incisors, temporomandibular joint problems, and maxillary deficiency has to be considered before suggesting this appliance. When the root of the tooth is being formed, carrying out interceptive orthodontic treatment for anterior crossbite is ideal. The important role plays not only the age of the child but also the motivation for treatment, how he or she perceives the problem.

Many treatment modalities including tongue blade therapy, reverse stainless steel crowns, removable Hawley retainer with anterior Z-springs and bonded resin-composite slopes are there for the treatment of anterior crossbites.



Figure-1: Post-operative photograph



Figure-2: Preoperative intraoral view



Figure-3: Catlans appliance delivered



Figure-4: Post-operative photograph

In Catalans appliance, an inclined plane is used that guides the position of the maxillary incisors and helps to tip the maxillary incisors into normal alignment.¹⁰ Hence, this method is a safe, cost effective, rapid and easy alternative for the treatment of crossbite. It is cemented on the incisors, so the treatment outcome does not depend on patient cooperation and does not hamper the growth or cause any discomfort to the patient, and treatment is completed in very few visits to the dentist. The appliance causes speech difficulties, problems with mastication and risk of anterior open bite if kept cemented more than 2 months. Therefore, a proper followup is required so that the appliance can be removed as soon as the problem is corrected.⁷

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. A simple removable appliance for the correction of anterior crossbite was presented. A complete clinical assessment and proper diagnosis must be made so that a proper treatment and appliance design are planned. General practitioners and pediatric dentists can utilize this technique to manage cases with similar malocclusions.

ETHICAL STATEMENT

The consent of the parents of the patient were sought prior to and approved the inclusion of his case and his photograph in this study.

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