

Management of anterior teeth crossbite using double cantilever spring with posterior bite plane - A case report

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Abstract:

Anterior dental crossbites are one of the most common orthodontic problems that we observe in growing children. Anterior crossbite correction in early mixed dentition is highly recommended as this kind of malocclusion do not diminish with age. Uncorrected anterior crossbite may lead to abnormal wear of the lower incisors, dental compensation of mandibular incisors leading to thinning of labial alveolar plate and/or gingival recession. There are several methods for solving this problem. This paper reports a case of anterior crossbite, which was corrected using the Hawley's appliance with double cantilever spring in a short period of 3 – 4 weeks without causing any damage to the tooth or the periodontium.

Conclusion: Dental anterior cross-bite involving one or more teeth can be corrected by means of double cantilever spring with posterior bite plane.

Keywords: Crossbite, Hawley's appliance, early orthodontic intervention

Introduction

According to American Association of Orthodontists Glossary, Cross-bite is defined as an abnormal relationship of a tooth or teeth to the opposing teeth, in which normal buccolingual or labiolingual relationships are reversed.¹ Anterior dental cross-bite is described as one or more upper teeth erupting lingual in relation to the lower teeth with which they should occlude when the mandible is in maximum intercuspation. As clinicians, our ultimate goal must be to achieve a rapid and stable correction of these malocclusions. The interception of dental anterior cross-bite is easier at early stages of occlusal development.

Various treatment modalities to correct these malocclusions have been advocated. These include tongue blade therapy, reverse stainless steel crowns, removable Hawley retainer with anterior Z-springs and bonded resin composite slopes, Bruckl appliance and Clear Aligner. Fixed appliances such as 2x4 appliances can also be used. Z' springs or double cantilever springs are routinely recommended for correction of anterior

dental crossbite. In the present case of anterior dental crossbite that have been corrected using a removable Z-Spring appliance.²

Case Report

A 11 year old girl reported to the Department of Pedodontics and Preventive dentistry, Rashtriya vidyalaya Dental college Bangalore with the chief complaint of locked upper front teeth. On clinical examination it was found that 11 and 21 were in cross bite with 31 and 41 (Fig 1). After careful examination, it was decided to treat the case with Hawley's appliance with posterior bite plane and a double cantilever springs. Treatment included the education of the patient about the use of appliance intended to be given for the correction of cross bite.

In meanwhile Intermediate treatment included thorough oral prophylaxis. Definitive treatment: Alginate impression was made for both the arches and immediately poured with dental stone. Hawley's appliance with posterior bite plane and double cantilever spring were made for the correction of cross-bite in relation to 11 and 21 (Fig 2). Appliance was inserted in patient's mouth and she was trained to insert and remove by her own under parental guidance. Patient was recalled after 24 hours to check fit of the appliance. She was recalled on 7 day for initial activation of double cantilever springs simultaneously and further activations were done at the end of each week. In the 4 week, cross bite was found to be corrected with 11 & 21 (Fig 3).

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Figure: 1 Pre treatment view



Figure: 2 Appliance in the mouth



Figure: 3 Post treatment view

Discussion

An important factor to consider in orthodontic treatment is whether to use a removable or a fixed appliance. Treatment involving removable appliances will ensure maintenance of good oral hygiene. They reduce chairside time during treatment as they are fabricated in the laboratory.³ However chances of breakage, losing the appliance and need for good cooperation from patients and supervision of parents are some of the drawback. With regards to fixed therapy, the advantages over removable type of appliance are significant and includes lesser bulk, lesser chairside time, better control, and lesser treatment time needed.

However, they increase the chair side time needed and require specialized training.⁴ Removable Hawley appliance with auxiliary springs is the most frequently used appliance for minor anterior crossbite treatment. The auxiliariy or finger springs are activated to exert labial forces on and move the maxillary incisors. This appliance is known to deliver slow-light continuous forces and it incorporates acrylic palatal coverage, double cantilever springs and wire clasps. The success and prognosis of this procedure is greatly dependent on patient cooperation and parental supervision. Further, there is no precise control of the amount and direction of force applied. The main emphasis need to be placed on the diagnosis and evaluation of the malocclusion. So, patients must be selected carefully when using this Hawley's appliance with auxiliary springs. The crossbite must be a simple dental crossbite with no skeletal component Facial profile and occlusion should be Class I and there should be adequate room in the arch for correction of the crossbite.⁵

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