Early Correction of Developing Anterior Crossbite with Modified Essix Appliance

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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 crossbite. This paper describes the use of Modified Essix appliance for the management of anterior crossbite in children in early mixed dentition.

The case presented here demonstrates an anterior dental crossbite which was corrected using a modified Essix appliance on the mandibular arch. Correction was achieved within 8 to 10 weeks with improved and healthy periodontium. The procedure is a simple, effective, and patient compliant method for treating anterior dental crossbite.

Keywords: Anterior crossbite, Modified Essix appliance, Children, Mixed dentition.

INTRODUCTION

Anterior crossbite is defined as a malocclusion resulting from the lingual positioning of the maxillary anterior teeth in relationship to the mandibular anterior teeth. Dental crossbite involves localized tipping of a tooth or teeth and does not involve basal bone. Anterior dental crossbite has a reported incidence of 4 to 5% and usually becomes evident during the early mixed-dentition phase. This article describes early treatment with an Essix-based appliance to correct the anterior crossbite.

The Essix appliance described by Sheridan is an esthetic removable device thermoformed from plastic polyester material and is practically invisible, inexpensive, and quickly fabricated. It has minimal bulk and superior strength, is retained without clasps, and does not interfere with speech or function. Amat used a similar appliance to correct developing anterior crossbite successfully.

Appliance Fabrication

The Modified Essix appliance is fabricated and delivered as follows:

1. A full-arch Essix appliance is constructed by thermoforming a plastic sheet over a working cast of the mandible. Modified poly (ethylene-coterepthalate) resin that allows acrylic to be added with no risk of material breaking away from the appliance is used.

2. An inclined plane is built of orthodontic acrylic over the anterior teeth. The surface of the Essix sheet is prepared by roughening it where the inclined plane will be built. Cold-cure acrylic monomer is painted over the roughened area and allows it to dry. A second coat of acrylic liquid is painted over the first, repeating the process of applying powder and liquid until the desired size and shape of the final plane are achieved.

3. As the patient bites down, the finished appliance should contact only the maxillary teeth to be moved. The fit of the appliance is verified in the mouth and the patient is instructed to wear the appliance 24 hours a day except during meals. During subsequent visits, the contact points are adjusted as the maxillary incisors move toward their proper positions. Articulating paper is used to ensure that the plane contacts only the maxillary teeth that are being moved, adding or removing acrylic as indicated.

CASE REPORT

A 9-year-old male presented with flattening of mid face, cross-bite of the permanent central incisors. This further effecting periodontal health of the lower central incisors and also the locking of the teeth would further influence the sagittal growth of the skeletal bases. The patient had Class I molar and canine relationships with some anterior crowding in the transitional dentition, a slight lingual inclination of the maxillary incisors, and a moderate labial inclination of the mandibular incisors (Fig. 1). The goal of the treatment was to correct the crossbite.

The Modified Essix appliance was fabricated, and the patient was instructed to wear it full-time except during meals (Fig. 2).
After 10 weeks, the anterior crossbite had been corrected, the patient continued to wear the appliance at night for another four weeks. At the end of the retention period, he discontinued use of the Modified Essix appliance entirely. Photographs taken one month (Fig. 3) after cessation of appliance wear showed progressive disappearance of crossbite with all listed problems attended.

The Modified Essix appliance represents a safe, quick, easy and esthetically acceptable alternative for the correction of anterior dental crossbite. The procedure is low-cost, involves no discomfort, and it can be completed in only a few visits. Early treatment eliminates the functional shift, abnormal wear of lower incisor, prevents irreversible soft tissue damage, and prevents development of skeletal Class III, providing pleasing profile. This in turn reduces the psychological impact on the child.

The case reported here, correction of anterior dental crossbite was observed within 8 to 10 weeks, with no damage to teeth or marginal periodontal tissue with improved healthy periodontium.
CONCLUSION

Modified Essix appliance is esthetic, comfortable, does not impede speech, is a simple and effective method for treating anterior dental crossbite.

REFERENCES