

Early treatment of class III malocclusions: The DBE, a new expansion and anchorage appliance

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Note: The author has no financial interest in the products described in this article.



INTRODUCTION

Several authors report the effectiveness of maxillary expansion and facemask therapy in Class III growing patients ^(1,2,4,6,8). Many different types of removable or fixed appliances were described in the past. The success of removable appliances depends on patient compliance ⁽⁵⁾.



Usually, an acrylic rapid palatal expander bonded to the upper first permanent molars and the deciduous molars ⁽⁹⁾ obtains the fixed orthodontic anchorage for facemask therapy in the mixed dentition. Fixed appliances seem to be more effective as anchorage units even though sometimes they may cause hygiene or bonding problems in very young patients. To prevent these problems, a banded maxillary expander for the deciduous teeth (DBE) is presented.

FABRICATION



The deciduous banded expander (DBE) is fabricated on primary molar bands (Ormco) which are positioned on the E's (deciduous upper molars). Alginate impressions are taken. Vestibular and a palatal .036" SS wires, crossing through the space between the deciduous lateral and canine are soldered to the bands. Two hooks for facemask elastics are placed in the canine vestibular position. Finally the mid-palatal screw is soldered to the appliance.



After 5 days of separator elastics, the DBE can be cemented (fig1). The recommended cement is 3M Unitek multi curing glass ionomer cement.

CASE 1

E.I. 4-1/2 year-old female, skeletal Class III, OJ: -3mm, OB: -2mm

(fig 2-3-4)



The severe Class III malocclusion required very early orthodontic treatment.

The expander screw was activated during the first 21 days. Facemask with elastics (1/4" 6 oz Ram,Ormco) was worn during the night hours (10 hours per day).

Results after 8 months of treatment are shown in the Fig.8-9-10

CASE 2

A.I. 6 year-old male, skeletal Class III, OJ: -2mm OB: -3mm

fig 5-6-7



Anterior protraction treatment followed 15 days of expansion. Facemask was worn with elastics (1/2" 14 oz. Whale,Ormco) 10 hours per day.

Results after 6 months of treatment are shown in the Fig.11-12-13

DISCUSSION



Facemask therapy often follows maxillary expansion since the latter supposedly disrupts the circummaxillary sutural system and facilitates the orthopedic effects of the facemask ^(1,2). Recently, Baccetti et Coll ⁽⁴⁾, studying the effects of the treatment in mixed dentition, observed that children treated at an early age, showed a significant forward displacement of the maxillary complex and a significant upward and forward direction of condylar growth, leading to smaller increments in total mandibular length.



These findings suggest that severe skeletal Class III malocclusions should be treated very early.

Furthermore an anterior crossbite is perceived to be esthetically displeasing by health care practitioners. Early treatment of such conditions has been advocated both by the public and by some in the orthodontic community ⁽⁴⁾.



The treatment of Class III malocclusions in the early mixed dentition can provide more favorable craniofacial changes than the treatment in the late mixed dentition. Significant improvement in maxillary growth seems to be correlated to the disarticulation of the palatal bone from the pterygoid process which is possible in early mixed dentition and which was observed experimentally on dry skulls by Melsen ⁽³⁾.



Bonding procedures are difficult to perform during early childhood. Lack of precision in the etching and bonding phases can result in premature appliance failures.

Banding (with glass ionomer cement) is less sensitive to moisture than the usual bonding procedure. It is also faster (only 40 seconds to light cure) and very comfortable.



The DBE appliance is more hygienic than the acrylic bonded RPE. No gingival recession or inflammation around the teeth and in the palate were observed during the treatment and after debanding. Removal of the appliance can be obtained in a few seconds using posterior band-removing pliers.

In case of cementation failure, the appliance can be easily removed and recemented.



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Virtual Journal of Orthodontics
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