

Correction of Deep Bite with a Functional Trainer

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ABSTRACT

In growing patients, the anterior deep bite management could be tricky to correct and retain, if not handled properly and at the correct time. This report shows how the deep bite was managed in a patient by proper diagnosis and with a comprehensive prefabricated appliance, such as the trainer system with more long-term stability.

Keywords: Average growth, Deep bite, Prefabricated trainer.

INTRODUCTION

The deep bite is a complex orthodontic problem that could be seen in the skeletal, dental and/or soft tissues of the face. Therefore, its correction demands an accurate diagnosis and selection of the correct treatment option depending on the etiology of the deep bite. If the deep bite involves the periodontal health of the patient, the removal of the etiological condition is essential.^{1,2}

The present report shows correction of deep bite with a very simple yet comprehensive trainer system in a young patient. The trainer for kids is a polyurethane prefabricated functional appliance having various features that help to control the soft tissue dysfunction detrimental to the normal development.³

CASE REPORT

A female patient of 10 years wanted to correct her proclined upper anteriors. On examination, she was found to have a 7 mm deep bite and in the mixed dentition stage. She had an Angle's class I molar relation and developing division I incisor pattern mainly due to lower lip trap. The patient also had spacing of upper incisors, mild crowding in lower incisors and no other orthodontic complaint.

The future orthodontic and periodontic problems that the deep bite could cause was explained to the parents of the patient. Patient was made to use trainer for kids (T4KTM phase I blue) (Fig. 1), prefabricated functional appliance. This also positions the mandible into a forward position and stimulates growth in the transverse direction. This appliance has previously been shown to produce dental and skeletal changes in class II division I malocclusions, but none so far to correct only deep bite (Fig. 2) and hence this paper.

Patient was advised to wear T4K, blue phase I full night and 2 hours daytime to be effective. She was a very diligent patient and after 10 months showed marked improvement in lower anterior crowding. She was then told to wear the T4K red phase II



Fig. 1: T4KTM phase I blue



Fig. 2: Pretreatment photograph showing anterior deep bite



Fig. 3: Posttreatment photograph

trainer to hold the bite and allow complete correction of the anterior crowding. The bite was allowed to open by reducing the height of the trainer in the molar and bicuspid regions. After wearing for 18 months, there was a marked improvement in the deep bite which had corrected by 3 to 4 mm (Fig. 3). After complete correction of deep bite, patient was advised to use T4K red phase II only during the night to act as a retainer of the corrected bite until after the pubertal stage of her growth.

DISCUSSION

Vertical height of the face usually gives an indication of the degree of overbite.⁴ The vertical height may be measured using the Frankfort mandibular plane angle. Also, a clinical assessment of the comparison of the upper and lower face heights from the soft tissue nasion to the base of the nose and to the chin point is made.⁵ The shorter anterior face height, the greater deep bite and conversely the longer face height have a tendency for open bite. The greater skeletal discrepancy, more likely it is for the patient to require a combination of orthodontics and orthognathic surgery to correct the problem. If lower anterior face height is greater than 50%, this can produce an anterior open bite.⁶⁻⁸ Average growers usually exhibit a more favorable response to correction, whereas short face types show difficulty in maintaining a permanent overbite correction. The most dependable factor to assess bite correction potential is the amount of vertical face growth which has occurred before treatment.^{9,10}

Patients with brachyfacial and mesofacial growth patterns have good potential for horizontal mandibular growth and respond well to procedures which are directed at enhancing mandibular advancement. In contrast, the doliofacial pattern does not respond as well to functional appliance treatment.¹¹⁻¹³ When treating patients who have a deep overbite with functional modality, vertical development of the lower molar teeth is one of the prime expectations during active treatment. This is usually achieved by trimming the posterior occlusal facets of the functional appliance.

When treating with functional appliances, the main problem encountered is noncompliance. Patients who do cooperate with a functional appliance cannot be expected to further cooperate with a fixed appliance phase because of the long term of treatment. With the trainer for kids, however, the patient is not recalled for frequent check-ups. This therefore adds to his compliance. The main advantage is that it can be worn full time and therefore produces results faster. Also, as a first line of treatment for the patient, it is not uncomfortable and encourages compliance with future orthodontic treatment.¹⁴

Since this appliance is available as a ready made appliance, the general dentist can and should be encouraged to handle such pediatric cases who come with a deep overbite.¹⁵

The present patient had an average face height which was favorable in opening the bite and was stable for 2 years post-treatment.¹⁶⁻¹⁸ This further emphasizes the importance of assessing the skeletal pattern in patients to get more stable post-treatment retention. Transverse growth helps in correcting mid line shifts.^{19,20}

CONCLUSION

The present case highlights how a deep bite can be managed with a simple and user friendly appliance which can even be handled by the general dentist/pedodontist. Treatment is more affordable to the patient. Correction achieved is more stable and orthodontic treatment which might be required later will be of a shorter duration.

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