

# MANAGEMENT OF DEEP BITE WITH MYOFUNCTIONAL TRAINER SYSTEM (A CASE REPORT)

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## ABSTRACT

The deep bite is complex orthodontic problem and if not managed early can have serious implications in the form of severe generalized attrition, requiring full mouth rehabilitation at a later stage of life, especially in short facial type cases. The present case report shows how the deep bite can be managed in a adolescent patient by careful diagnosis and with simple, yet comprehensive prefabricated myofunctional appliance such as trainer system (Myofunctional Research Co. Australia) with more predictable long term stability. Different treatment outcome in short and long facial types is also discussed.

**Keywords:** Deep bite, Long facial type, Prefabricated Myofunctional appliance, Short facial type, Trainer for kids (T4K™) Phase I (Blue), Phase II (Red)

## INTRODUCTION

The excessive overbite is a complex orthodontic problem that may involve a group of teeth or the whole dentition, alveolar bone, mandible and maxilla and /or soft tissues of the face. Thus the correction of this problem demands a careful diagnostic analysis, treatment plan and selection of treatment therapy<sup>1</sup> The correction of deep overbite is highly desirable if the overbite affects the facial esthetics and impairs the dental health of an individual. Excessive overbite has also been linked to the periodontal disease.

The present case report shows management of deep bite with the very simple, yet comprehensive Trainer system in a young child. The Trainer for Kids (T4K™, Myofunctional Research Co, Australia) is a polyurethane prefabricated functional appliance, having various

design features<sup>2</sup> that help to control the soft tissue dysfunction detrimental to the development of various malocclusions

## CASE REPORT

A young male child (FG) aged 09 years reported to the orthodontic clinic with 7 mm (80%) deep bite in early mixed dentition phase. Patient had a Angle's class I molar relation and developing division 2 incisor pattern contributed largely by lower lip functioning above the upper incisor edges. (Figure 1 A-D) Patient lower dental midline was shifted to left by 2 mm. Patient had apparently no other problem and wanted to have a preventive orthodontic check-up so that any problem if present can be taken care as early as possible. Patient also presented with a minor crowding of upper and lower anterior teeth.

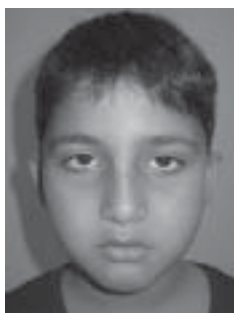


Fig 1 A Front

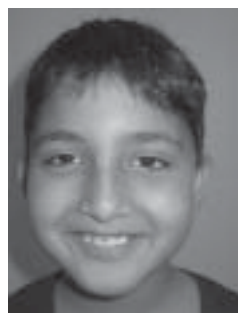


Fig 1B Front Smiling



Fig 1C Profile Right Lateral



Fig 1D Intraoral Front Occlusal

**Figure 1 Pretreatment Photographs**

The potentially handicapping deep bite problem was made aware to the parents, and patient was advised to use Trainer for kids (T4K™ Phase I Blue, Myofunctional. Research Co. Australia, Figure 2). This prefabricated functional appliance changes the posture of the mandible into a forward position,<sup>3</sup> and stimulates transverse development.<sup>4</sup> Although this pre-fabricated functional appliance has been demonstrated to produce skeletal and dental improvement in Class II, division 1 malocclusion patients,<sup>3,4</sup> there are no reports using this functional appliance for the exclusive management of deep bite. Thus, the purpose of this paper is to present a clinical case where a patient with Angle's Class I malocclusion, with developing division 2 incisor pattern was successfully treated during the mixed dentition period.

Patient was advised to wear T4K, Blue Phase I (Figure 3) for two hours per day and over night to be effective. Patient showed good compliance and after ten months of appliance wear patient showed marked improvement in upper and lower minor crowding. After the completion of Upper and lower alignment, patient was given T4K Red, Phase II (Figure 4) trainer (which is harder than Blue, Phase I) to hold the bite and to allow complete correction of upper and lower anterior crowding.

The bite was allowed to open by cutting the Trainer (By scissor) on the distal aspect (Figure 5) so as to allow free eruption of lower first molars and it was subsequently cut in pre-molar region as well so as to be present only in anterior area. After 18 months of regular wear patient showed marked improvement in deep bite which was

corrected to ideal deep bite of 1-2mm. After complete correction of deep bite, patient was advised to use T4K Red, Phase II only during night time so as to act as a bite holding appliance till the time patient pubertal growth spurt is complete.

#### DISCUSSION

Vertical dimension of face gives some indication of the degree of overbite. The vertical dimension is usually measured in terms of facial height and the shorter the anterior facial height the more likely it is that the patient will have a deep overbite. Conversely the longer the facial height the patient is more likely to have an anterior open bite. Deep overbites associated with a short anterior facial height and open bites with long face heights are difficult to correct with orthodontics alone. The greater the skeletal difference the more likely it is that the patient will need a combination of orthodontics and orthognathic surgery to correct the occlusion and the underlying skeletal discrepancy. There are various ways of measuring the vertical dimension, one of the most common is to measure the Frankfort Mandibular Plane Angle which is usually difficult by general dentist. Another way of measuring the vertical dimension of face is to measure the lower facial height and the upper facial height.

The lower anterior facial height is the distance from the base of the chin to the base of the nose. The upper anterior facial height is the distance from the base of the nose to a point roughly between the eyebrows. These dimensions can be measured with a ruler although the index finger and thumb will do almost as well. The lower and



**Fig 2** Trainer Label, Myofunctional Research Co, Australia



**Fig 3** Trainer For Kids Phase I Blue (soft)



**Fig 4** Trainer for Kids Phase II Red (Hard)



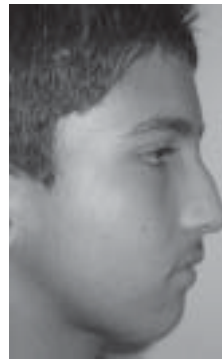
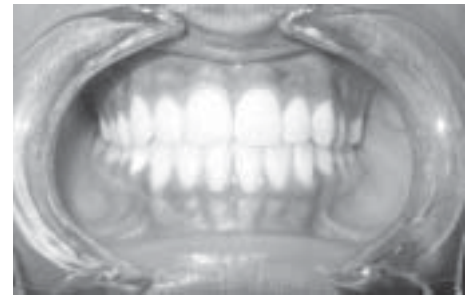
**Fig 5** Trainer (Phase II Red) cut on the distal aspect on both side to allow bite opening



Fig 6 A Front



Fig 6B Front smiling

Fig 6C Profile  
Right LateralFig 6D Intraoral Front Occlusal  
(maxillary and mandible midlines  
perfectly matched)

### Figure 6 Post-treatment Photographs

upper facial heights are usually equal. If the lower anterior facial height is reduced, this can result in a deep overbite that can be difficult to correct. Conversely, if the lower anterior facial height is greater than 50% this can produce an anterior open bite<sup>5</sup>

Long facial types usually exhibit a favourable reaction to overbite correction, whereas short facial types usually present a problems in maintaining permanent overbite correction. The very best and most dependable characteristic for assessing the bite opening potential is the amount of vertical facial growth which has occurred prior to treatment.<sup>6</sup>

The present patient had deep overbite along with a long facial height due to which the deep bite correction was quite dramatic and will be more stable which is evident from the fact that post treatment photographs (Figure 6, A-D) showed almost no relapse inspite of being taken two years after the completion of active treatment. This further emphasis the importance of knowing the skeletal pattern in a particular patient for more predictable treatment outcome. The another important observation was complete correction of midline discrepancy which could be attributed to trainer stimulating the transverse growth of arches.<sup>4</sup>

### CONCLUSION

The present case show that how a potentially handicapping malocclusion can be managed with a very simple yet comprehensive prefabricated myofunctional Trainer system without the option of braces at early age and without letting the

problem to develop to a stage where its correction and stabilization will be more difficult. The simplicity of treatment further emphasis that how this potentially handicapped malocclusion can be managed even by a general dentist/pedodontist which is more often than not to see this problem, without referring the patient to a specialist and can also have better financial rewards.

The treatment with trainer system is cost effective, natural and more patient friendly, as Trainer wear is part time and not full time, compared to conventional braces. The only draw back with this system is patient compliance, which does not become that much a problem once the patient is made aware of potential benefits of this treatment.

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