

Functional possibilities of prevention in orthodontics

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Summary

Introduction. It was previously demonstrated that abnormal neuromuscular function can disturb the development of an optimal dentofacial pattern.

Objectives. The role of the present study was to investigate the effect of myofunctional appliances in the interception of malocclusion.

Material and method. The role of myofunctional trainers in the interception of malocclusion was evaluated. We present one case treated with T4K and another one with Myobrace, together with the obtained result after a period of maximum 8 months.

Results. The cases showed significantly better alignment and occlusion after the myofunctional treatment.

Conclusion. Myofunctional therapy can be very useful in intercepting malocclusions and providing initial alignment.

Key words: functional orthodontics, trainers, interception, malocclusion, myofunctional therapy.

Introduction

Functional appliances are considered by many authors as orthopaedic tools that influence the craniofacial system of the growing child by transmitting and guiding natural muscle forces [1,2,3]. Most of the functional appliances, such as the bionator, activator or Frankel regulator have rigid components that guide the mandible into corrected position and transmit the functional stimuli [4,5]. The use of elastic materials in the construction of functional appliances was first proposed by Stockfish, who managed to add interocclusal rubber to its appliances in order to obtain a stimulating effect for the muscles [3].

Previous studies have shown that, when early treatment is instituted, 80% of the malocclusion can be treated with orthopedic appliances and the remaining 20% solved with the straight wire appliances [6]. Muscle factors, tongue position, and function, all play a great part and can lead to eventual change or recurrence of the original problems. Myofunctional appliances have been used for many years. There is a definite place for these appliances in orthodontics today because they are simple and economical, but the cases need to be carefully selected, and the operator needs to be well trained in their use.

The TRAINER™ (T4K™) system was

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introduced by Myofunctional Research Company in 1991 as a habit correction with some tooth aligning properties thrown in. It could not be defined as a positioner or a functional appliance. The MYO-BRACE™ was introduced in 2004 and took the positioner concept, improved it for better compliance and tooth alignment, and then added back what has been learned about habit correction from the TRAINER System™ used for more than a decade.

It was demonstrated that most patients treated with myofunctional appliances do not require braces at the end of the treatment. Early treatment provides greater stability for crowding and rotation corrections, by allowing collagenous fiber development only after the incisors have erupted straight [7].

Objectives

Although the use of myofunctional appliances such as the oral screen in the primary and mixed dentitions are mentioned in the literature, few studies have been published concerning the specific alterations induced by these procedures in the early occlusal developmental stages [8].

The aim of this study was to investigate the efficacy of the myofunctional appliances in patients with developing occlusion.

Material and method

The following cases were treated during a scientific project in the Department of Pediatric Dentistry and Orthodontics, "Victor Babes" University of Medicine and Pharmacy, Timisoara.

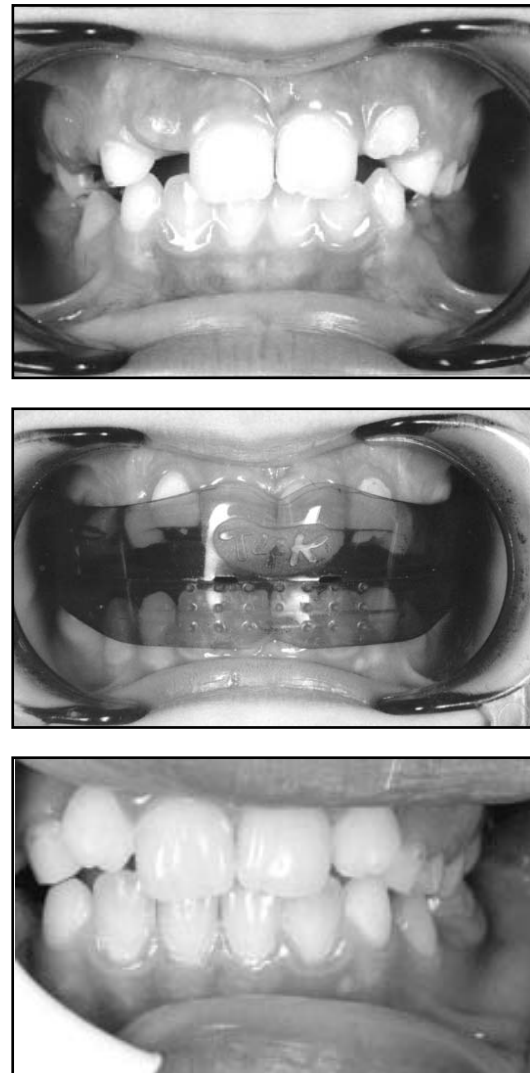
Results

Case 1

An 8-year-old girl came to our department with her family seeking orthodon-

tic treatment. Clinical examination revealed lack of space for proper alignment of upper incisors. A T4K myofunctional trainer was prescribed, and treatment was started with phase 1 (blue) trainer. The patient was instructed to wear the trainer for minimum one hour daily and overnight. After 6 months, eruption of lateral incisors was guided into a corrected position and the occlusion was improved (*Figure 1 a, b, c*).

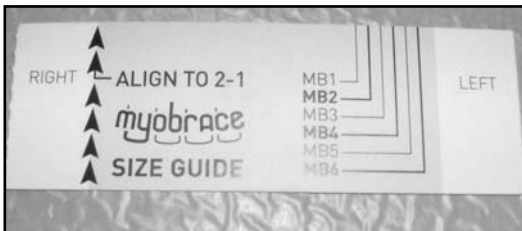
Figure 1 a, b, c. An 8-year-old girl with problems of space for the developing dentition (a). T4K Trainer phase 1 was applied for improvement of dental alignment and development of dental arches (b). Results after 6 months (c).



Case 2

A 10-year-old boy was referred by his dentist to our department for orthodontic treatment. The boy was located about 250 km away from our faculty, in an area without an orthodontist. Clinical examination revealed a Class II/1 malocclusion, lack of space for the alignment of upper frontal group, midline deviation and a big overjet (Figure 2 a, b, c, d, e),

Figure 2 a, b, c, d, e. Case 2, initial examination revealed a Class II malocclusion, narrow arches, deep bite and a 4 mm overjet. After determining the correct size, treatment with Myobrace was introduced. After 8 months, occlusion is improved, midline shift is corrected, overbite and overjet reduced.



Due to the low possibility of coming for frequent activation and also due to the functional problems, we started the treatment with Myobrace and he was instructed to wear it for 2 hours during day and overnight. The patient cooperation was excellent, and the results included a better arch alignment, improved overbite and overjet, corrected midline in only 8 months.

Conclusion

Myofunctional appliances are simple and effective orthodontic devices. They will correct the dental arch relationship and will improve the patient's facial profile by promoting favorable mandibular growth changes into Class 1 skeletal and dental occlusion. Possibilities of preventive orthodontic care of children arise during all stages of oral growth and development. It is in our duty to provide

treatment in the best interest of the child, in order to achieve a state of normality in the neuromuscular, skeletal, and dental structures. The ideal time of starting the

procedure is in early mixed dentition, when the elimination of functional problems can lead to the interception of a malocclusion.

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