Myobrace System: A no-braces approach to malocclusion and a myofunctional therapy device

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Abstract

Myobrace is a preformed functional orthodontic device, especially used in interceptive orthodontic cases. Its mechanism of action is a combination of a functional device, a positioner and a myofunctional therapy device.

The purpose of this study is to describe the appliance, in particular its structural characteristics and its mechanism of action.

Introduction

Myobrace (MB) is a preformed orthodontic device, designed for the treatment of malocclusions in patients in late mixed dentition (8-12 years). However, it can be used also in adult patients and, in any case, only for non-extractive cases and for mild or moderate malocclusions (Fig. 1).

It works promoting the balance of facial and masticatory muscles, and re-educating the posture of the tongue. It has a threefold purpose: to get a myofunctional effect, together with a dental alignment and a mandibular development.

Discussion

Myobrace is a removable and preformed in various series appliance. It consists of a single block which contacts both arches, and it is built on a head-to-head incisal relation. The purpose of its structural elements is to actively redirect the language and the perioral musculature, correct breathing, and align the anterior teeth. In early mixed dentition the device can also encourage the correct dental and facial development.

The device was introduced in 2004, and it has the same features and structural elements of the other “Trainer System” appliances. In fact, Myobrace can produce the same effects, but it was also designed to exert mild forces on misaligned teeth and to improve the arch form.

The main components of all the “Trainer System” appliances, including the Myobrace, are (Fig. 2,3, 4):

- Guides for teeth: promote their correct alignment. The guides are narrower anteriorly and wider posteriorly, since they correspond to the sizes of the incisal edges and occlusal surfaces of the teeth. The upper and lower channels are separated by about 2 mm of thermoplastic material;
- Labial and buccal shields: prevent the interposition of lips and cheeks, and impart a slight force on the front misaligned teeth;
- Tongue tag: positioned at the retro-incisive papilla, acting as a proprioceptive stimulus to the tip of the tongue, and as a Myofunctional trainer for the correct tongue posture;
- Tongue guard: prevent the tongue trust and interposition, forcing it in its natural position, stimulating the nasal breathing and discouraging bad habits (such as atypical swallowing, interposition of the lower lip, and finger sucking);
- Lip bumper: discourages hiperactivity of the mental muscle, relaxing it.

Myobrace has been designed to combine the ability of dental alignment of the rigid appliances (such as Occlus-o-guide), and the properties of the soft and flexible ones (as the Multi-p). The latter are more comfortable for the patient and will fit more easily in case of malocclusion, but they often have not a sufficient force for the arches development and for dental alignment.

The only structural difference, compared to the other “Trainer System” appliances, is for an internal additional hard nylon element, called "Inner-Core", or "Dynamicore" (Fig. 5).

It makes the the labial and buccal shields more resistant, and, consequently, increases the ability to counteract the force developed on the teeth by the buccinator and orbicularis muscles, when these are hyperactive, to provide a moderate expansion and to correct the arch shape. Also it exerts a significant force on the teeth and has an high elastic memory. Its preformed shape produces a lengthening and a correction of the arch shape in the anterior area.

However, in the outer part and at the level of individual tooth slots, the Myobrace is made of soft and flexible silicone to ensure comfort and adaptability, and it embraces the teeth, transferring the information...
contained in Dynamicore. The device has slots for the dental elements (from fourth to fourth), and has distal ends longer to cover the second molars (Fig. 4).

Its structure is therefore designed to simulate a fixed appliance: the soft outer part has the function of the orthodontic wire, while the inner rigid part simulates the function of the brackets, engaging the teeth individually. This double structure implies a better acceptance and increases the patient’s compliance.

Unlike other “Trainer System” devices, the Myobrace has some additional channels in the front area, that can produce a force directly on the anterior elements, in order to improve their alignment. Moreover, the presence of Dynamicore inside, makes its base slightly thicker, sometimes creating difficulties to keep the lips together when the device is in situ. These cases can be solved by a pre-treatment with Trainer For Kids appliance (T4K).

There are 7 measures of the Myobrace: the choice of the appropriate measure is made measuring the distance between the distal portion of the lateral upper right incisor, and the and left one, with a special ruler, regardless of any crowding or diastema. The measure is based on the mesial-distal dimensions of the upper incisors, and not on their position. In cases where there is a severe crowding or wide spaces, and it is difficult to make measurements with a ruler, they can be measured individually and then added together, to get the total size of the four upper incisors. This distance is finally confronted with a specific table to choose the correct size of the device (Fig. 6).

The measure number is printed on the the left distal end of the device. Moreover, each measure is characterized by a different color of the inner core, which makes the instant identification easier.

If the choice falls between two different sizes, it is preferable to choose the largest one.

Once chosen and placed the device in the patient’s mouth, the upper canines, even if not yet erupted, must be into their slots, and that the dental midline coincides with the appliance’s midline.

As all prefabricated appliances and positioners, it is possible that the device does not position correctly in severe clinical cases. In more severe cases of malocclusion, where greater flexibility is required, it is possible to start treatment with a particular type of "Myobrace without Dynamicore" (MBN), which will provide lower forces on the arches and teeth, but a better fit. This version of Myobrace is available in 7 measures and it is different because it has dental slots, but it has not Dynamicore (Fig. 7).

More commonly, for the first six months of treatment, we use the Myobrace for 2 hours during the day, and the Myobrace without Dynamicore (MBN) during the night. In this way the device has a good adaptability and increased comfort during sleep, and also a sufficient force on the teeth during the daytime hours. Secondly for use at night, the Myobrace without Dynamicore will be replaced by the Myobrace with Dynamicore.

Furthermore, the manufacturer has realized the "Myobrace Starter" (MBS), that is used in cases of more severe crowding (from 7mm to 10mm) in which an expansion of the arch is required, or in the early stages of treatment, when the device is difficult to insert. It is made ??of soft silicone, without slots for the teeth, and containing inside the Dynamicore, which is the most important structure to achieve arch expansion (Fig. 8).

The MBS, not containing slots, is available in one size and in two different versions: one is made of softer and flexible silicone, to fit in the initial stages of treatment (blue: Phase I), and the other is more rigid (red: Phase II), made of polyurethane. The MBS can be used for the first 6-12 months to improve the arch form and the dental alignment, so as to allow the insertion of the Myobrace (MB) appliance.

**Conclusions**

Myobrace is a removable appliance that combines the rehabilitation of the oral musculature to the properties of a dental positioner, acting on the mouth breathing, atypical swallowing and on the thumb-sucking.

It can be used in replacement of other functional appliances: in fact it is a viable alternative for the treatment of malocclusions at an early age, as it acts advancing the mandible and improving dental alignment. Although the manufacturer recommend to use it from 8 years, in patients with no more than 5mm overjet and 4-6mm crowding, we can say that you will get results even when using it in children from 6 years of age, having 7 mm overjet and crowding over 6mm.

**References**

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Illustrations

Illustration 1

Fig. 1: Myobrace appliance (MB)

![Myobrace appliance (MB)](image)

Illustration 2

Fig. 2: Structural features of Myobrace: Dynamicore, tongue tag and guard, lip bumper, tooth slots

![Structural features of Myobrace](image)
Illustration 3

Fig. 3: Tongue tag and tongue guard, lip bumper, and Dynamicore (in blue)

Illustration 4

Fig. 4: individual tooth slots, from 4th to 4th
Illustration 5

Fig. 5: Dynamicore (in blue) within the Myobrace

Illustration 6

Fig. 6: Choice of the appropriate misuse of the Myobrace
Illustration 7

Fig. 7: Myobrace without Dynamicore (MBN)

Illustration 8

Fig. 8: Myobrace Starter (MBS)