How to avoid extractions when treating malocclusions using MRC's Bent Wire System and Trainer System for arch development

The MRC Bent Wire System and Trainer System are two appliances designed to achieve better occlusion and reduce the need for extractions. These systems are particularly suitable for use in the lower arch, as they can be used to improve arch development without increasing the risk of relapse. In some cases, the Trainer can be used in conjunction with other appliances to achieve improved arch form and reduce the need for extractions.

The Trainer is a pre-fabricated functional appliance that can be used to treat mandibular displacement, which is commonly associated with tongue thrusting and poor oral function. This appliance is typically used in conjunction with the Bent Wire System to achieve improved arch form and reduce the need for extractions.

An advantage of this system is that it does not involve using acrylic in the palatal vault. A functional appliance designed with acrylic on the palate and that is not properly built can lower the tongue, encouraging tongue thrusting, and, thus, either worsening the malocclusion or producing a relapse (Fig. 5). The Trainer is a pre-fabricated functional appliance, which means that it does not involve using acrylic in the palate. It allows the tongue to position correctly and the patient to speak normally.

The BWS is also suitable for use in the lower arch. Typical treatment tends to use only upper expansion for three to four months, after which time the wire component of the BWS is removed (the bands are used for later use of the BWS). The Trainer (with the inner-cage of acrylic) is typically used in the lower arch to achieve improved arch form and reduce the need for extractions.

The following two cases show the effect of the BWS Orthodontic System on arch development.

Case No. 1: This 18-year-old female patient

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consulted because of a crowded dentition involving unusually misaligned central incisors with a midline shift of 10 mm and with lost "c" space on the lower left side. The parents requested that the treatment be non-extraction, although they had previously been advised that future orthodontic treatment might require this option (Fig. 6).

The diagnosis was classified as Class I with normal slight overjet and with normal overbite. No skeletal discrepancy was found on cephalometric measurements and, therefore, of cost models report- ed a lack of arch development. This case was diagnosed as a Class I malocclusion with underdevelopment of both dental arches. Midline shift was primarily as a result of the lost lower "c" space. Soft-tissue analysis showed a mouth-open posture and hyperactive peri-oral musculature. It was considered the myofunctional habits were a contributing factor to the malocclusion and, thus, a suitable case for the BWS and Trainer combination prior to fixed appliances once the permanent dentition was fully erupted.

The plan of treatment involved a first phase with a BWS for the upper arch combined with an I-2 Trainer and a "c" space on case for increased flexibility and use with the BWS. The I-2 Trainer was used one-hour daily plus overnight while sleeping. Monthly adjustment to the active portion of the BWS were made in increments of 1.2 mm per month.

This treatment was continued for four months, after which time the upper BWS was re-moved and I-2 Trainer was used to maintain the expansion achieved by the BWS. The I-2 Trainer also encouraged the tongue to assist in maintaining the maxillary expansion without retainers. At this stage, the lower arch form and dental alignment was assessed and showed considerable improvement. It was noted that the space for the lower left permanent canine had increased — an effect thought to be produced by the combination of maxillary arch expansion and retraining of the myofunctional habits. The midlines were also seen to be closing.

Space for the lower canines was ultimately achieved without a lower BWS. The case is further improved by continued use of the I-2 Trainer and the Myobrace Regular™ to exploit the eruption stage prior to treatment. Finalization with fixed appliances as required. This allows the dentition to "catch up" and prevents excessive tooth mobility. It is thought that much of the expansion achieved by this system is dento- alveolar rather than sutureal, as with a rapid maxillary expander and other acrylic expanders. Also, there is more development of the lower anterior dentition which is an effect previously found in the research on the Trainer (Ramirez-Yañez, 2005b). This difficulty in cases like this, requiring large amounts of expansion to achieve a non-ex traction result, is a tendency to create an open bite. Although this occurs to some extent, the BWS Orthodontic System does not open the bite as much as more conventional techniques because the tongue position is favorably altered by use of the Trainer. This conjecture may require further investigation to verify.

Once again, spontaneous alignment of the lower anterior dentition has occurred without the need for any additional BWS for the lower arch. This effect is not just restricted to these two cases but is a routine observation of the BWS Orthodontic System. This case also illustrates the stability achieved in the lower dentition as no retainers were used apart from right use of the Trainer.

Although this patient is not at the ideal age, the pictures show that it was possible to obtain space for all permanent canines, without extraction and with good stability.

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thus, the bws orthodontic system has shown to improve the overjet and overbite but to maintain them when they are corrected at the beginning of treatment. This system treats muscular dysfunctions that may be the cause of crowding and malocclusion and may cause relapse after treatment is finished. Thus, the BWS Orthodontic System may be proposed as an excellent alternative form of treatment in those cases where arch development is required to align teeth, patients want to minimize or even avoid brackets and extractions, the mandible needs to be relocated, soft tissue dysfunction is present and treatment needs to be performed in a reasonable period of time.

References


About the Authors

Chris Farrell, BDS, graduated from Sydney University in 1971 with a comprehensive knowledge of traditional orthodontics using the BEGG technique. Through clinical experience, he took an interest in TMJ/TMD disorder and, after further research, Farrell discovered that the etiology of malocclusion and TMJ disorder was myofunctional, contradicting the current views of his profession. Farrell founded Myofunctional Research Co. (MRC) in 1989 and has become the leading developer of intra-oral appliances for orthodontics, TMJ and sports mouthguards.

German O. Ramirez-Taulea, DDS, PhD, is a dentist from Colombia (South America) with more than 20 years of experience in guiding craniofacial growth and development. He is a specialist in pediatric dentistry (Mexico) and functional maxillofacial orthopedics (Mexico and Brazil), and is trained in orthodontics (Mexico). Ramirez has a master’s in oral biology and a PhD in dental sciences (Australia). He has published more than 30 articles about early orthodontic treatment and craniofacial biology in peer-reviewed international journals.