

THE EDITOR'S CORNER

MARA Mia!

In 2021, I conducted a JCO webinar titled “Efficient and Stable Class II Correction with MARA and Herbst Appliances.” (It’s still accessible on our website, jco-online.com, and free to watch for subscribers.) While the Herbst is the most commonly used fixed functional appliance, my general sense is that young orthodontists are more interested in learning about the MARA because of its more compact design.

The MARA (Mandibular Anterior Repositioning Appliance), introduced in 1995 by James Eckhart and Douglas Toll, operates similarly to a fixed Twin Block. Removable “elbows” are inserted through .062" × .062" tubes soldered to the maxillary first-molar bands. During jaw closure, these elbows push against “shoulders” soldered to the mandibular first-molar bands, thus advancing the mandible. Shims ranging from 1mm to 4mm in width can be added to the elbows to progressively increase the amount of Class II correction.

My MARA laboratory design includes three key components: Rollo bands on the first molars, a maxillary mini-expander, and a mandibular lingual arch. It is of utmost importance to ensure that the lingual arch contacts the cingulae of the lower incisors. The only exception is in cases with lower anterior spacing, to allow for consolidation; in this scenario, occlusal rests are needed on the lower first premolars to keep the lingual arch from tilting downward and impinging on the gingiva.

At the appliance-delivery appointment, I bond the upper and lower components, but I refrain from inserting the elbows. Instead, I instruct the parents to activate the expansion screw with a quarter-turn for 14 days, even in the absence of anterior crowding or a posterior crossbite. This initial expansion serves two purposes: it prevents the elbows from becoming stuck on the solder joints of the shoulders, and it gives the patient time to acclimate to the framework before mandibular advancement begins.

Four weeks later, the patient returns to the office to have the elbows inserted in the maxillary bands, using double stainless steel ligature ties and two separators over the top for stability. Waiting longer will risk having the patient inadvertently flatten the upper-molar tubes. Initially, the elbows are inserted without shims to help the patient adapt to biting correctly into a forward position. Shims are added at subsequent appointments to advance the mandible and align the midlines.

The MARA is usually worn for nine to 12 months. I prefer to use it without braces, except in Class II, division 2 cases. This approach promotes better oral hygiene, reduces the occurrence of emergencies, and shortens the overall time in braces. Still, some parents become restless and request upper braces after six months or so. After removing the MARA, I prefer to allow the posterior teeth time to settle before bonding the remaining brackets.

The most common MARA mistakes are caused by inadequate or excessive expansion. Underexpansion occurs when a transpalatal arch is used instead of a maxillary expander. Overexpansion occurs when more than 14 quarter-turns are applied, preventing the elbows from engaging the shoulders. If this happens, a MARA key can be used to torque the elbows inward. In the presence of severe crowding, however, I suggest prescribing a Herbst instead, since its components remain connected.

Most orthodontists use either the Herbst or the MARA, but I routinely use both. I prescribe the Herbst when greater maxillary expansion or mandibular advancement is needed, while I find the MARA more suitable for moderate Class II malocclusions or when patients are reluctant to accept the bulkier Herbst appliance. If I had to choose between the two, I believe the Herbst to be more efficient, but I have found the MARA to be a necessary tool in my noncompliant Class II armamentarium.

NDK