

# AOAppliances, etc.

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This issue of AOAppliances, etc. marks our 16<sup>th</sup> edition. Your comments and interesting suggestions for our future issues are as always welcomed and enjoyed. Please continue to share your pearls and unique approaches utilizing laboratory appliances. We will continue with our theme of bringing you information regarding the versatile MARA. Dr. James Eckhart shares a very interesting case study in which he explains the method of implementing the MARA Kit. Whether the MARA is custom built or generated from our Kit, it continues to provide fast, dependable, and durable results. We have added additional information regarding the Kit on the flap page.

Dr. Stefan Blasius, Wurzburg, Germany, offers an interesting glimpse into the patients comfort by having an equal number of Herbst and MARA patients evaluate the oral comfort of their prescribed appliance. Dr. Blasius presented this information at the 2006 AAO and many doctors commented on the comparisons while visiting our booth.

Please take a minute to review the back cover listing the major events AOA will be attending this spring and summer. Should you be attending, please stop by at the AAO Booth 2323 and say hello.



Dr. James Eckhart, DDS  
Manhattan Beach, CA.

## Class II Malocclusion

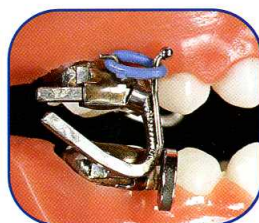
It is well established in literature that consistent posturing of the mandible forward can permanently correct a Class II malocclusion. Evidence exists that some of this correction is attributable to growth of the mandible, but the fact that this form of therapy also works in non-growing adults

implies that dentoalveolar changes in teeth position are also significant.

The MARA (mandibular anterior repositioning appliance) is a Class II corrective device which postures the mandible forward using bands or stainless steel crowns anchored to the first molars, with attached elbows and arms to guide the mandible forward, but without permanent connections between the upper and lower arches. This allows greater comfort, freedom and patient acceptance.



The anchor units are made of either stainless steel crowns or thick-walled bands and are attached to the first permanent molars. The maxillary molars have an edgewise archwire tube soldered onto the buccal surface, with a larger .063 inch square tube soldered occlusal and parallel to it, into which an adjustable .060 inch square elbow fits. The mandibular molars have an edgewise archwire tube soldered onto the buccal surface, with a soldered .060 inch square stop/arm occlusal to it, and with a soldered lingual arch connecting the two lower crowns.



The maxillary elbow and the mandibular stop/arm prevent the mandible from closing in the Class II position, only allowing closure in the Class I position. Clinicians adjust the elbow position using spacers (shims) slid onto the elbows, thus controlling the amount of mandated mandibular advancement and helping patients get used to it as gradually as

necessary. The MARA is compatible with rapid or slow maxillary expansion, and with edgewise appliances, yet does not necessarily depend on them if unneeded.



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# MARA and e-MARA

Several options for appliance construction are available.

### MODELS TO THE LAB:

Upper and lower models can be sent to the laboratory with the completed AOA Rx form. The models should show bold lines on the buccal and the midline representing the corrected bite relationship desired. Crowns or bands and a lower lingual arch will be constructed. Options are available as indicated on the Rx form.

### IN OFFICE CONSTRUCTION KIT:

For in office construction, the clinician would utilize the MARA 13 Patient Kit #600-3000. The mesial-distal molar lengths are measured and compared to the molar-to-crown table provided by AOA. The correctly sized prefabricated MARA crowns are then selected from the Kit and fitted on the plaster study models, or onto the patient's teeth. An in-office bent lower lingual arch can be soldered to the lower crowns. Elbows and advancement shims are provided in the Kit and are selected per individual case needs.

### COMPONENT e-MARA:

For in office construction for the first time and veteran MARA users, or for those who do not want to inventory a full kit, individual parts for each patient can be ordered as needed. The mesial-distal molar lengths are measured and the matching sizes are indicated on the Component e-MARA form. Extra MARA components can be ordered, such as the next size smaller and larger crown, which allows for very precise fitting. The remaining components can be stored and used for emergencies and/or future patients. Upper elbow and accessory choices are also indicated on this form. NO lower lingual arch is available with this choice, however, the clinician could bend his own.

### PICTURE e-MARA:

In lieu of either the MARA kit or individual component parts, this electronic order form can also by-pass mailing working models yet allow AOA laboratory to construct the appliance. Your patient's study models are copied on your copy machine or flat bed scanner at a 1:1 ratio in the photo window of the Picture e-MARA form. Digital images can also be inserted in this window. Based on these model images, AOA's MARA department will fit a lower lingual arch wire to your selection instructions for lower crown sizes. Other appliance options are also indicated on this form. An adjustment tips sheet is returned with each appliance for final fitting. (More chair time will be needed to adjust this type.)

### TEXT e-MARA:

The text e-MARA order form has selections to be recorded when the clinician wants to size the crowns and lingual archwire himself. Helpful measurements include occlusal to gingival heights and molar angulation. The Lower Lingual Arch Shapes Template is used to select the correctly sized lingual arch wire and also indicate the molar positions. Options are also selected. AOA's MARA department will assemble the appliances based on this accurate information. Note: Sending an electronic image of the study models will add to the accuracy of lingual arch construction. Use the PICTURE e-MARA Form along with this form. An adjustment tips sheet is returned with each appliance for final fitting.

**NOTE: The above e-MARA order forms are available on the AOA website (aoalab.com), or as paper copies. Paper copies can then be filled out and either scanned and e-mailed, faxed or mailed back to AOA. Paper copies are always available from AOA by request.**

On any of the options, the finished appliances are tried in the mouth, adjusted, removed and prepared for cementation. Glass ionomer cement is used. After cement cleanup, the elbows are adjusted to provide advancement and cheek comfort tolerable to the patient. The patient is given advice about what to expect and is told to chew soft foods for a few days.

Typical MARA adjustment appointments are every 12 weeks, and usually more advancement shims are placed on the elbows. The MARA is usually left for one year and then removed. Brackets or bands are then placed on the teeth from which the MARA was removed, and final detailing proceeds.



Patient CW began treatment at age 9 years 2 months, with a Nitantium Palatal Expander, followed by a MARA and upper partial edgewise appliance.

After 6 months of jaw widening and 3 months of MARA treatment, the overjet has improved.



After 18 months of MARA treatment, the MARA has been removed and the rest of the permanent teeth have been bonded.

After 36 months of treatment, the appliances have been removed and retainers have been delivered.



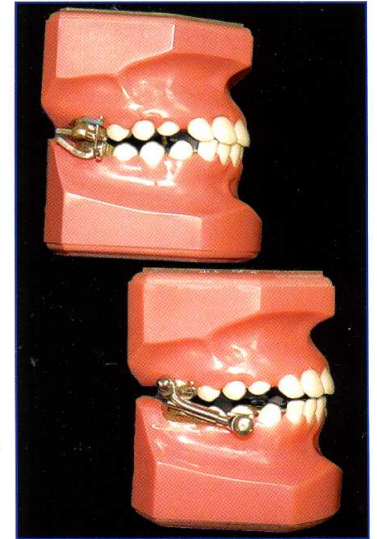


# MARA - The comfortable approach to Class II correction



Dr. Stefan Blasius

Dr. Stefan Blasius received his dental degree and certificate in orthodontics in Würzburg, Germany. During his orthodontic specialty training he attended the advanced orthodontic program at the University of Oklahoma for 12 months. After his graduation in 1999, he immediately entered into private practice and maintains a full-time private practice in Würzburg, Germany. As an advocate of economical orthodontic treatment, Dr. Blasius has a special interest in efficient Non-Compliance Class II treatment and focuses on interdisciplinary management of adult patients.



## Introduction

Fixed functional appliances are an essential tool in contemporary Class II correction. Recent studies have shown that appliances like the Herbst™ Appliance and the MARA (Mandibular Anterior Repositioning Appliance) are capable of providing adequate dentoalveolar and skeletal effects for Class II correction. But what would be the patients choice? The purpose of this investigation was to evaluate the oral comfort of the Herbst™ Appliance and the MARA.

## Material and Methods

This prospective study consisted of 30 subjects. The Herbst™ group comprised of 15 patients (7 girls, 8 boys) and had a mean age of 11 yrs 8 mo ( $\pm 7$  mo). The MARA group consisted of 15 patients (9 girls, 6 boys) with a mean age of 11 yrs 2 mo ( $\pm 8$  mo). All subjects were asked to complete a standardized questionnaire 7 days after delivery of the appliance.

## Results

Reported Sores at:

- tongue
- lips
- cheeks
- teeth

	Herbst	MARA
Has your tongue space been restricted?	26.6 %	13.3 %
Did you have difficulty in biting?	66.6 %	66.6 %
Did you have difficulty in chewing?	66.6 %	20.0 %
Did you have difficulty in swallowing?	13.3 %	6.7 %
Did you have difficulty in opening your mouth?	46.6 %	13.3 %
Did you have difficulty in closing your mouth?	26.6 %	6.7 %
Did you have difficulty in moving your mandible to right and left?	60.0 %	26.6 %
Did you notice changes in your speech?	33.3 %	26.6 %
Did you find it more difficult to perform your daily oral hygiene?	46.6 %	60.0 %
Did your social environment notice your new appliance spontaneously?	60.0 %	26.6 %
Do you recommend your appliance to other patients?	33.3 %	73.3 %

## Discussion

The results represent that both appliances seem to produce the same sores at tongue, lips and cheeks, but the Herbst™ group reported more sores at their teeth (73.3% vs. 46.6%). Although there were no differences in "biting", the Herbst™ group had more difficulty in chewing (66.0% vs. 20.0%). Great differences between the two groups were observed in the difficulty of opening the mouth (Herbst™ 46.6% vs. MARA 13.3%), closing the mouth (Herbst™ 26.6% vs. MARA 6.7%) and moving the mandible to right and left (Herbst™ 60.0% vs. MARA 26.6%). The MARA group reported more difficulties in performing oral hygiene (60.0% vs. 46.6%) and was not as often noticed spontaneously by the social environment (26.6% vs. 60.0%). However, 73.3% of the MARA group would recommend their appliance to other patients vs. 33.3% of the Herbst™ group.

## Conclusion

According to this investigation, the MARA would be the patients choice because it provides less discomfort within the oral cavity, less restrictions of mandibular motion and a more pleasant aesthetic appearance. The recommendation rate of 73.3% represents the great patient acceptance of the MARA.

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