

AOA Appliances, etc.

ALLESEE ORTHODONTIC APPLIANCES/PRO LAB

VOLUME 5, NUMBER 1, 2001

EFFICIENT TREATMENT BY DESIGN: USING THE MARA FOR CLASS IIS

by Eugene Simon, DDS, MS and Andre Haerian, DDS, MS
Sylvania, Ohio

In our two-orthodontist practice, our goal is to design treatment plans that increase efficiency without compromising quality. In treating Class II patients we like to:

- Refrain from treatment plans that result in highly variable results.
- Minimize patient and parental roles in the treatment process.
- Combine treatment steps.

Our system for treating Class IIs that are primarily due to a retrusive mandible is mandibular protrusion usually combined with palatal expansion and upper incisor flaring incorporated in a functional appliance system requiring minimal patient cooperation. The MARA (mandibular anterior repositioning appliance), as popularized by Dr. Jim Eckhart, is our functional appliance of choice in achieving our Class II treatment goals. For comfort, we modified the MARA to include a buccal shield on the lower arm (Figure 1).

For patients who are mandibular retrusive with growth potential, start MARA treatment combined with the hyrax expander (Figure 2) before loss of the lower second primary molars and transition from functional therapy to full braces without having to wait for tooth eruption. Because stainless steel crowns are used as anchorage on the first molars, the bite opens enough to allow 3 to 4 mm advancement even in Class II, division 2, cases.



Figure 1. MARA modified with a buccal shield on lower arm for patient comfort. As shown, there should be no more than 3 mm distal protrusion of the horizontal leg through the upper tube of the upper elbow to avoid soft-tissue irritation.



Figure 2. MARA combined with a hyrax expander used on a mandibular retrusive patient with growth potential.

continued on following page

THINKING APPLIANCES

Thank you for your positive response to our *AOA Appliances, etc.* newsletter – your feedback is tremendously appreciated. We continue to receive excellent ideas regarding appliance modifications, clinical applications, and personal-related “pearls” on how offices sell their appliances to both patients and parents. We are collecting wonderful ideas for you and will present them in future newsletters.

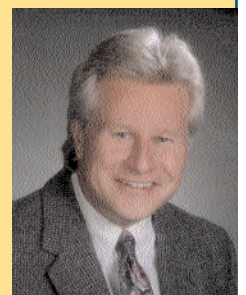
In this issue, Drs. Eugene Simon and Andre Haerian from Sylvania, Ohio, present an article on their continual success with the MARA appliance. They have used a variety of functional appliances and share why they have chosen the MARA over other appliances.

Dr. Duncan Higgins from Delta, British Columbia, Canada, shares his approach to correcting Class IIs in Phase 1 treatment with a system he developed after 20 years of using various functional appliances.

We are also featuring Drs. James Hilgers and Stephen Tracey's newest modified expander, the MDA Expander. This clever design allows for both expansion and distalization of the molars and incorporates the Ormco Compact RPE Expansion Screw for patient comfort.

Thanks again for your positive comments. Please continue to keep me advised on any modifications or internal “pearls” you have so I can share them with the profession. Simply drop me a note or call me on our convenient toll-free line at (800) 262-5221.

David Allesee, General Manager
AOA/Pro Laboratory



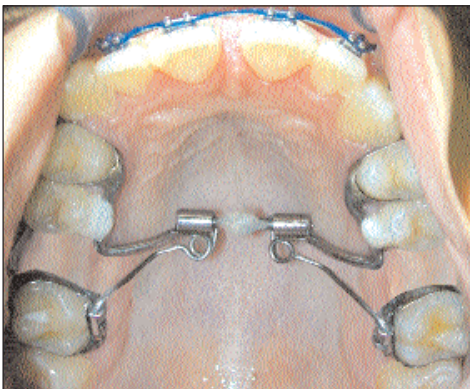
HILGERS/TRACEY MDA EXPANDER

The Mini-Distalizing Appliance, featuring the Ormco Compact RPE

The MDA Expander is a small, clean expansion appliance that has the power to distalize molars and is designed with the comfort and size advantages of the revolutionary Compact RPE. The .032 Preformed TMA® Pendulum Springs deliver constant force over the treatment time for dependable molar distalization, and the Compact RPE can expand up to 11 mm. A simple stainless steel ligature can be used to tie back the TMA Springs to the RPE screw until you decide to release the springs, either immediately after seating or as expansion is complete.



Before expansion.

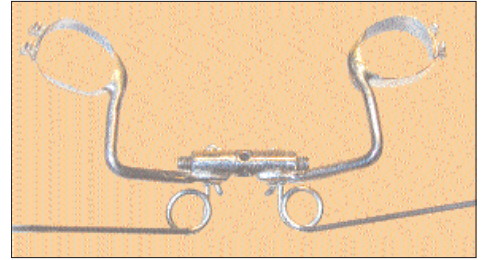


After expansion.

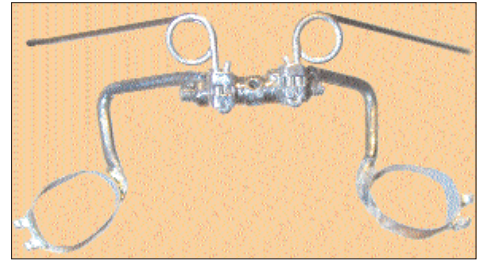
The upper arch is bonded at the time of appliance placement to increase anchorage, and sectional archwires are used from the bicuspid to the central incisors until the desired expansion is completed.

AOA/Pro uses a laser welder* to secure the sheaths to the palatal side of the Compact RPE. This special process is far superior to soldering or tack welding in preserving the screw mechanism.

* Soldering is not recommended and may degrade the expansion abilities of the screw. Standard "tack" welding may not provide enough strength to attach the sheaths securely against the forces generated by the TMA Springs.



Top view.



Bottom view.

WHAT TO SEND TO AOA/PRO

An upper model in either stone or orthodontic plaster. Bands seated on both the first bicuspid (or first deciduous molars) and first molars.

WHAT YOU WILL RECEIVE FROM AOA/PRO

We will return the construction models and the appliance with the lingual sheaths attached to the first molars and the TMA Springs activated and tied to the RPE screw legs.

UPCOMING 2001 COURSES/LECTURES FOR CONSIDERATION

DRS. TERRY & BILL DISCHINGER

Dischinger Orthodontic 2-Day Training Camp

In-House Hands-On Herbst/Damon 2 Course

April 20-21, June 22-23 & October 19-20
Lake Oswego, Oregon

Doctor and Staff (limited attendance)

Contact Paula Allen-Noble at (800) 990-3485

DR. LARRY HUTTA

In-House Hands-On Herbst Course

October 5-6 – Worthington, Ohio

Doctor and Staff (limited attendance)

Contact Jennifer Widows at (614) 885-2000

DR. DIDIER FILLION

In-Office Lingual Basic & Advanced Courses

For dates and information:

Contact Dr. Fillion at 33-1-48-59-16-17

DRS. JIM HILGERS & STEVE TRACEY

Adventures in Orthodontics

October 10-13 – Palm Springs, California

Contact Suzie Gleason at (949) 830-4101

DR. MARIO PAZ

Hands-On Lingual Ortho (typodonts/patients)

April 30-May 1 – Orange, California (Ormco)

October 4-6 – Beverly Hills, California

Contact Kaci, Korkis at (310) 822-4224

CHARLENE WHITE PROGRESSIVE CONCEPTS

East Coast Convention

July 13-14 – Myrtle Beach, South Carolina

Speakers:

CHARLENE WHITE (leader/presenter)

DR. TERRY DISCHINGER

A Walk Through Our Office from Initial Phone Call to Deband

(for doctor & staff)

DR. BILL DISCHINGER & PAULA ALLEN-NOBLE

Close Encounters with Class II Correctors

(for clinical staff)

Contact Jana Whitley at (800) 445-7805



Figure 3. Stainless steel crowns used as anchorage on first molars opens bite enough to allow 3 to 4 mm advancement; expansion causes cuspal interference and thus opens the bite even further.



Figure 4. After palatal expansion, the upper anterior teeth were bracketed and flared as needed to allow additional mandibular advancement.

Expansion, which is started immediately after delivery of the appliance, causes cuspal interference and thus opens the bite even further (Figure 3). After palatal expansion, bracket the upper anterior teeth and flare them as needed to allow additional mandibular advancement (Figure 4). If extraction needs are obvious initially and are not going to be affected by MARA therapy, extractions can be completed prior to placement of the MARA and leveling can be started (if archwire tubes have been soldered on the first molar crowns).

As with any new clinical procedure, there are modifications that have been made by those pioneering the appliance. These changes occur in response to problems that manifest themselves in daily use. Below are a few suggestions we would like to share with you that have been successful for us.

- To prevent breakage, which is minimal, avoid protruding the mandible too far initially and during future advancements. Be sure that the patient can bite forward correctly into the protruded position without biting and grinding down, causing the upper elbow to hit the top of the lower arm (Figure 5).
- To avoid soft-tissue irritation in the back of the upper cheek, allow no more than 3 mm distal protrusion of the horizontal leg through the upper tube of the upper elbow (Figure 1).

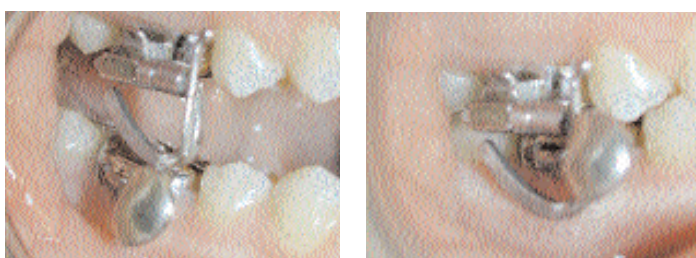


Figure 5. Patient biting down incorrectly (left). Patient biting correctly in forward position (right).

- If expansion and multiple mandibular advancements change the position of the upper/lower molar, adjust the position of the upper elbows. If the patient has caused severe distortion to the upper elbow, replace it.
- To avoid damage to the first molars, place a thin coat of Vaseline® on the occlusal surface of the first molars before cementation.

Following appliance removal, give MARA patients a six-week rest period, allowing for relaxation of the musculature. At the end of the rest period, take new orthodontic records for treatment evaluation. Separate the patient during the records appointment and proceed with banding and bonding to finish the case. It usually takes 10 to 14 months

for correction of most Class IIs using the MARA. If there is still a significant Class II situation and/or extractions are indicated when the records are reviewed, revise the treatment plan.

Some severe mandibular retrognathic cases are not totally correctable by functional appliance therapy. To become more accurate in prediction of this area, our office is keeping thorough records on MARA patients as a group for current and future analysis.

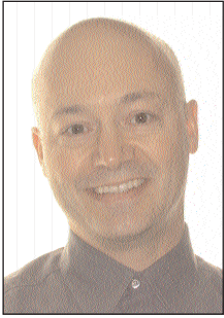
A thesis study by Dr. David Chermack at the University of Detroit demonstrated that the MARA is effective for Class II correction through dental and skeletal changes in the craniofacial complex. In his study, which was based on patients treated in our office with the MARA using the protocol described in this article, he found that the 5.8 mm Class II molar correction was obtained by 47% skeletal changes (2.7 mm) and 53% dental changes (3.1 mm). The skeletal changes were completely due to growth of the mandible, approximately 2.7 mm. The dental changes were mainly seen in the upper molars. There was an average of 2.4 mm of distalization, which accounted for 77% of the total dental movement. The lower molars moved forward approximately 0.7 mm, accounting for only 23% of the total dental movement. The skeletal changes indicated that the MARA produced an increase in the mandibular length and had no headgear effect on the maxilla. Dentally there was distalization of the upper molars, forward movement of the lower molars and incisors, and a slight amount of proclination of the lower incisors. Additionally, some intrusion of the upper molars was noted.

MARA CLASS II MOLAR CORRECTION (5.8 MM)

- Skeletal 2.7 mm (47% mandibular growth)
- Dental 3.1 mm (53% dental movement = 2.4 mm upper/0.7 mm lower)

The MARA has been an intricate factor in obtaining our goals in designing Class II treatment plans that increase efficiency without compromising the quality of care provided to our patients.

USING BITE-JUMPING SPRINGS IN PHASE



by Duncan W. Higgins, DDS, MSD
Delta, British Columbia, Canada

Current research on the stability of functional appliance therapy indicates that the bite-jumping appliance creates tension on the condyle, causing the mandible to lengthen, but when it is removed, the condyle remodels due to compression. I always wondered why the soft-tissue convexity angle didn't improve more with functional appliances in the long term, and

if compression due to soft tissue tension could cause remodeling in surgical mandibular advancement cases – even with rigid fixation – then why not in bite-jumping cases. Why don't all pseudo Class IIIs with condylar distraction turn into true Class IIIs? Dr. Lysle Johnston's term "mortgaging mandibular growth" seems to be the best explanation. What we *can* count on is overcorrection of dentoalveolar movement within biologic limits using light, continuous forces.

My experience with bite-jumping appliances over the past 20 years is similar to many. I began with Frankel appliances, followed by Bionators, which evolved into using Twin Blocks, Cantilever Herbst* appliances and Jasper Jumpers. Other than breakage, the problem I had with Jasper Jumpers was that the greater the Class II correction, the worse the posterior crossbite I created.

When I began using hybrid appliances, my treatment philosophy was to use an appliance that would allow simultaneous anteroposterior and transverse correction. I prefer to correct the Class II molar relationship in the late mixed dentition and then place full edgewise appliances after the second molars erupt, keeping treatment time in braces to a minimum. If you wait for second molars to erupt to distal drive the first molars, you may miss the optimal time for growth modification, especially if you have late eruption in a female.

I have developed a treatment system that I've named the Class II Spring Appliance** (Figures 1 & 2), which is fabricated with a maxillary expansion appliance, a Triple "L" Arch (lower labial lingual arch) and Ormco Bite Fixer Springs. (Note: The Class II Spring Appliance can be combined with other bite-jumping springs. When ordering the Triple "L" Arch from AOA/Pro Laboratory, indicate what type of bite-jumping spring you want used and the appliance will be modified accordingly.)

In most cases where only post Class II correction arch coordination is necessary, use the Ormco Compact Screw (Figure 2). If the patient has a posterior crossbite or crowding because of a narrow maxilla,

expand the maxilla first, using a Super Screw (Ortho Design). Band the upper 6's and either the upper 4's or upper e's to prevent the upper 6's from tipping too much. If the treatment plan involves serial extraction of all four first bicusps, band the upper e's or 5's, and 6's. Use headgear tubes on the upper 6's to attach bite-jumping springs.

Once space is gained from the expansion, use upper 2x4 mechanics, if necessary. After alignment, segment the archwire to maintain the incisors. I prefer not to retract the upper incisors with a continuous archwire. That goes back to my graduation from Bionators to Twin Blocks.

If the upper incisors are well aligned and the maxilla doesn't need expanding, cement the maxillary expander made with the Compact Screw and the Triple "L" Arch at the same time and place the springs immediately. If you need to expand the maxilla first using the Super Screw, wait to cement the Triple "L" Arch until you are ready to attach the springs.

The mandibular Triple "L" Arch is made from .045 Elgiloy wire (Rocky Mountain) for rigidity. Place occlusal rests on the lower 4's, d's, or e's. Gurin locks (3M Unitek) allow easy activation of the springs. You can place the springs bilaterally or unilaterally. When using the Ormco Bite Fixer, use size 5 to facilitate maximum opening and less breakage due to stretching and distorting the spring. Doing so also keeps the spring active through a wider range of opening. Another advantage is that a longer spring places the lower stop further forward, keeping the force more horizontal. The long "sliding rail" buccal section accommodates movement of the clasp-end of the spring backward along the wire for



Figure 1. Side and front view using Ormco Bite Fixer Springs.

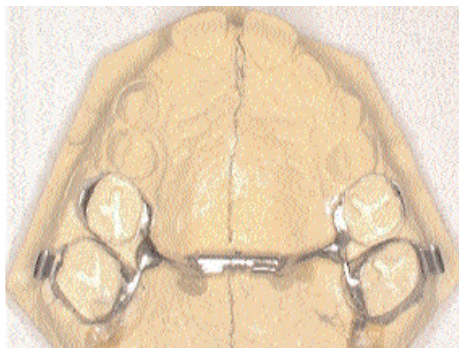


Figure 2. Maxillary expander with Ormco Compact Screw (left). Mandibular Triple "L" Arch (right).

1 TREATMENT

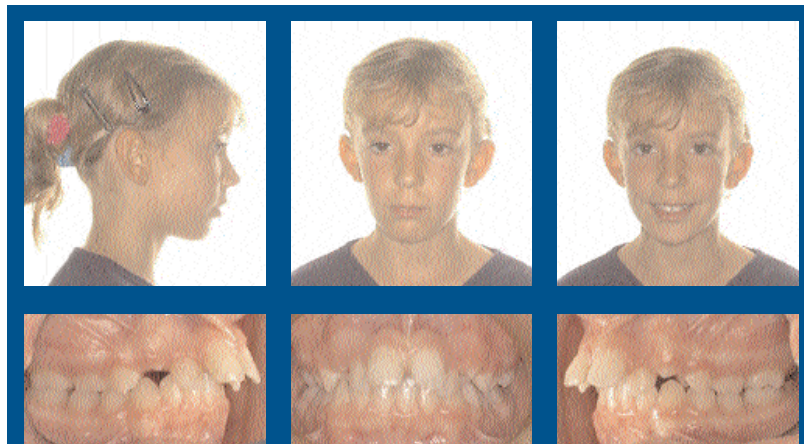
even greater opening. When using the Ormco Bite Fixer, a solder stop is placed at the distal of the labial bow to prevent the spring from getting hung up and distorting. Use a resin-reinforced glass-ionomer cement and microetch the bands. We rarely have a loose band. With this system, the patient functions in centric occlusion with a seated condyle compared with Herbst appliances, where the condyle is distracted and the incisors are edge-to-edge.

See the patient every six weeks and overcorrect the molars to a full cusp Class III. Then remove the springs and Gurin locks and start maxillary expansion, if necessary. Test the stability of the Class II correction for a couple of months and replace the springs, if necessary. Debanding is much easier than removing crowns, especially if you have used resin-reinforced glass-ionomer cement.

Emergencies are easy to handle. If a spring breaks, instruct the patient to remove the lower portion by twisting the clasp off the wire and then make an appointment to remove the upper portion and replace the spring.

I find that all Class II intermaxillary force systems, including functional appliances, result in mesial movement of the mandibular dentition and proclining of the mandibular incisors. Placing edgewise appliances and adding labial root torque to the lower incisors does not prevent mesial movement. It only changes tipping of the incisors to bodily movement. I would rather take my chances with tipping than see the roots pushed through the labial plate of bone. In 20 years of using functional appliances, I have not found gingival recession on the lower incisors to be a problem, but I use my knowledge of biomechanics to keep it to a minimum.

I pit the entire mandibular arch against the maxillary bicuspids and first molars before the upper second molars have erupted, which helps open space for the erupting upper canines. The orthopedic changes that take place are the restriction of forward maxillary growth during normal forward mandibular growth. The continuous action of the springs contributes to rapid overcorrection of the Class II molar relationship and maxillary anchorage preparation before a brief period of detailing with edgewise



Pretreatment: Female, age 9 years, 4 months, Class II, division 1.



Treatment included RPE for 6 months followed by upper 2x4 utility arch for 5 months followed by Class II Spring Appliance for 6 months. Progress records were taken 4 months after removal of the Spring Appliance. She is now ready for full edgewise appliances for a brief time to finish treatment in the permanent dentition.

appliances in the permanent dentition, pushing on the lower incisors for as short a time as possible.

This approach to Phase 1 treatment has had a great impact on clinical efficiency and stress reduction for our patients and staff.

* Herbst is a registered trademark of Dentaaurum, Inc.
** U.S. Patent No. 6,168,430 B1

P-RAX MOLAR DISTALIZER

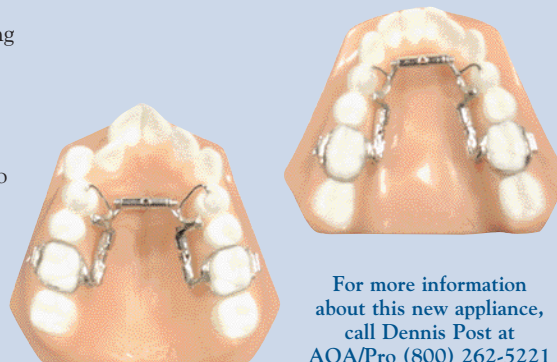
Designed by Dr. Mario Paz, the P-RAX can be used to treat children or adults requiring molar distalization and can accommodate midpalatal expansion when indicated.

Advantages

- Avoids molar tipping because of its rigidity.
- Controls distalization precisely by manually turning the Ormco Compact Screw.
- Accommodates differential distalization when required.
- Patient adapts easily to the appliance.
- Reduces reliance on patient cooperation.

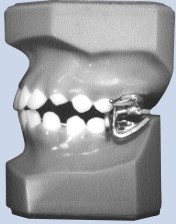
Clinical Tips

- Provide excellent work models – appliance must be closely adapted to tissue to avoid tongue irritation.
- Turn screw 1/4 turn two times per week for molar distalization.
- Use large Nance button when anchorage needs are greater.
- Remove third molar, if necessary, for ease of distalization.



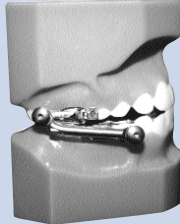
For more information about this new appliance, call Dennis Post at AOA/Pro (800) 262-5221 or (262) 886-1050.

SEE WHAT AOA/PRO HAS ON DISPLAY IN TORONTO – BOOTH 421



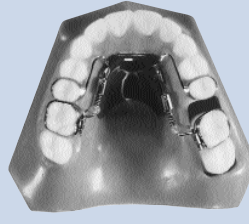
The MARA

New ligation system and lower arm design of the Standard MARA. Innovative advancement modifications available.



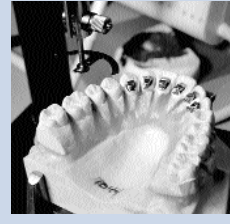
Herbst Appliances

Many design variations favored by Drs. Dischinger, Mayes, Smith, Hilgers, Damon, Hutta, Grummons and other leading clinicians.



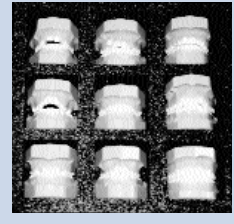
Distalizing Appliances

Modifications from the Hilgers/Tracey MDA Expander to the families of Pendulum, Pendex, RAX and Distal Jet appliances.



Indirect Bonding

Latest innovations in indirect bonding technology. Ask about our new bonding techniques.



Pro®-Pal Products

All the tools necessary to enhance patient consultation and staff education.

The AAO is an excellent opportunity for you to meet David Allesee, Max Hall, Paula Allen-Noble and other representatives and technicians on the AOA/Pro team, and we look forward to assisting you. We're also featuring a number of speakers at Ormco's Clinical Impressions Live! sessions. Visit www.ormco.com/events to review the full schedule of speakers and times.

April

19-22 **Dr. Terry Dischinger (Paula)**
IN-OFFICE HANDS-ON
HERBST/DAMON 2 COURSE
Lake Oswego, Oregon

May

5-8 AAO – Toronto, Ontario
(Paula & Max)
5 Paula Allen-Noble
HERBST APPLIANCE
(entry to intermediate)
MARA APPLIANCE
(intro staff hands-on mini clinics)
8 **HERBST APPLIANCE**
(advanced staff scientific program)

June

6 **Dr. James Hilgers (Paula & Max)**
Newport Beach, California

7-8 **Dr. Terry Dischinger**
HERBST APPLIANCE BASIC &
ADVANCED PRINCIPLES
University of Buffalo, Buffalo,
New York (Paula)

22-23 **IN-OFFICE HANDS-ON**
HERBST/DAMON 2 COURSE
Lake Oswego, Oregon (Paula & Max)

July

12-16 **CHARLENE WHITE PROGRESSIVE**
CONCEPTS (Paula & Max)
Myrtle Beach, South Carolina
Dr. Terry Dischinger
A WALK THROUGH OUR OFFICE
FROM INITIAL CALL TO DEBAND
Dr. Bill Dischinger & Paula Allen-Noble
CLOSE ENCOUNTERS WITH
CLASS II CORRECTORS
27-29 G.O.R.P., Houston, Texas (Paula & Max)

Where in the World are Paula & Max

Max and Paula are always delighted to meet with you and your staff whenever possible. They are also available for presentations on a variety of laboratory and clinical topics for study club, alumni and society meetings. Give them a call to discuss a presentation or contact your Ormco representative to schedule a time to meet while they are visiting your area.

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