Advantages of Early Treatment **Class II Malocclusion**

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It has been estimated that as many as 70% of children have a malocclusion which would benefit from early orthodontic treatment. The most common malocclusion is the skeletal Class II which is characterized by a normally positioned maxilla and a retrognathic mandible. According to two well-known orthodontists, Dr. Ruf and Dr. Pancherz, the majority of the orthodontic clinicians treat mild skeletal Class II malocclusions with the extraction of the upper first bicuspids and severe skeletal Class II malocclusions with orthognathic surgery to advance the mandible.[1] The approach that I would like to suggest is to utilize functional jaw repositioning appliances such as the Twin Block, Herbst or MARA appliance which moves the mandible forward to its more normal position.

My opinion of the three different techniques is as follows:

1. **Extraction of the upper first bicuspids.** When the maxilla is in the correct position and there is only minor crowding then extraction of bicuspids results in increasing the deficiency of the midface. The six anterior teeth are retracted into the extraction sites and this causes a retraction of the upper lip which is extremely unfavorable particularly in females. It never seemed logical to me that when the problem was a deficient lower jaw, rather than treat the lower jaw the maxillary anterior teeth were distalized. Dr. Ruf and Dr. Pancherz refer to this as camouflage orthodontic treatment. The extraction of the upper bicuspids does not correct the underlying Class II skeletal problem.
2. **The orthognathic surgery treatment** is usually accomplished when the teenagers are age 17 or older. At this age they are possibly in college or university and most are not anxious to go through a surgical procedure to advance the mandible and orthodontic treatment for 2 years or more. Dr. Ruf and Dr. Pancherz state that "the most common surgical risk of mandibular advancement is neurosensory disturbances of the lower lip that affect about 50% of the subjects. Additionally, nonunion or mal-union of the bony fragments, bad splits, and condylar resorption are frequent complications."
3. **Functional appliances.** Most parents and children, when given the three options, prefer to have early treatment with jaw repositioning appliances.

(a) Twin Block

For moderate to large overjets. For patients under age 11 my treatment of choice is the Twin Block appliance, developed by a world renowned orthodontist Dr. William Clark[2], Fife, Scotland.

Upper block, Adam's clasps upper first molars and upper first bicuspids or upper first primary molars. Midline screw to expand maxillary arch. 5 mm acrylic block covering upper posterior teeth.

Lower block, Adam's clasps lower first primary molars or lower first bicuspids. Anterior labial bow for retention and prevent flaring of lower incisors. 5 mm lower block covering lower bicuspids or lower primary molars. 5 mm blocks interlock at 70% to keep mandible forward.

(b) MARA appliance

For moderate to severe overjets for patients over age 11 the treatment of choice is the MARA (Mandibular Anterior Repositioning Appliance) appliance, developed by Dr. Jim Eckhart[3], orthodontist, Manhattan Beach, California.

Upper part: S.S. crowns upper first molars. Remove occlusal surface of S.S. crowns, mesial rests upper first bicuspids, flowable composite. Midline Hyrax screw to expand maxilla. Buccal elbows fit into buccal tube first molars.

Lower part: S.S. crowns lower first molars. Remove occlusal surface of S.S. crowns. Lingual arch. Buccal arms first molars. Lingual rests lower cuspids.

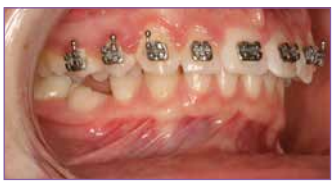
When children are treated with functional jaw repositioning appliances, such as the Twin Bock and the MARA appliances, the orthopedic or skeletal Class II problem is routinely corrected in 7-9 months. After that, a Rick-A-Nator or Twin Block II appliance must be worn for an additional 6 months in order to prevent a relapse.

Further advantages to the functional technique include:

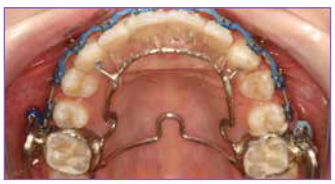
1. The expansion of the upper arch which is done routinely in skeletal Class II malocclusions helps open the nasal airway which helps facilitate nasal breathing which is far superior to mouth breathing from a health standpoint.

▲ Twin Block Appliance.

▲ Class II Cuspid.



▲ Class II Cuspid Overjet 6 mm.



▲ Upper Part MARA Appliance.

▲ MARA Appliance.

▲ Retrognathic Profile.

▲ MARA Appliance MD 5 mm.

▲ Lower Part MARA Appliance.

Dr. Brock Rondeau

Dr. Brock Rondeau is one of North America's most sought after clinicians, who lectures over 100 days per year. He is a master senior certified instructor for the International Association for Orthodontics, and the past president. Over 19,000 dentists have attended his courses and study clubs in the United States, Canada, China, Australia, England, Poland and Turkey. He has an extremely busy practice limited to the treatment of patients with orthodontic, snoring and sleep apnea and TMJ problems. Dr. Rondeau is a Diplomate of the International Board for Orthodontics, a Diplomate of the American Board of Craniofacial Pain, a Diplomate of the American Academy of Dental Sleep Medicine and a Diplomate of the American Board of Craniofacial-Dental Sleep Medicine.

References

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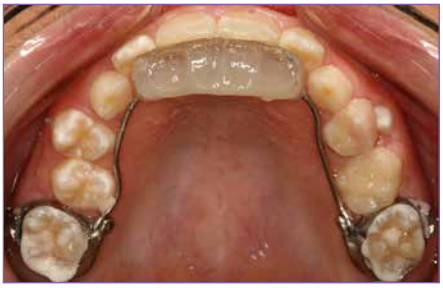
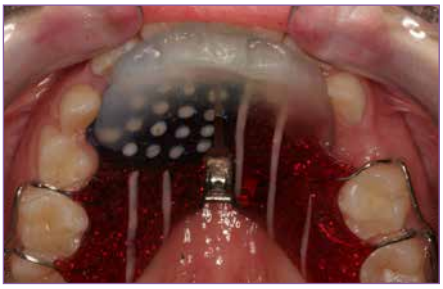
4. Clark, GT., Arand, D., Chung, E., Tong, D., Effect of anterior mandibular positioning on obstructive sleep apnea. Am Rev. Respir. 1992, 147:624-629.



▲ Rick-A-Nator



▲ Twin Block II Appliance

2. When the underdeveloped mandible is moved forward this results in a dramatic improvement in the patients' profile. (see photos: Before and After treatment)

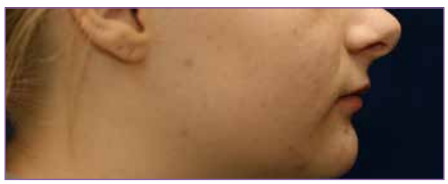
3. The routine expansion of the upper arch helps to ensure that there will be room for all the permanent teeth thus eliminating the need for extractions.

4. When the mandible is advanced with functional appliances such as the Twin Block, Herbst or MARA, the condyles move down and forward which helps improve the health of the TMJ. This was confirmed in the article by Dr. Ruf & Pancherz entitled "Orthognathic surgery and dentofacial orthopedics in adult Class II Division 1 treatment: Mandibular sagittal splint osteotomy versus Herbst appliance."[1] Their observation was that of the 64 patients treated with orthognathic surgery to advance the mandible who had pre-existing articular disc displacement (TM Dysfunction) all patient were worse following the surgery. Conversely they concluded that, of the 23 adult patients they treated functionally using a fixed functional jaw repositioning Herbst Appliance, the pre-treatment TMD problems were eliminated. The Herbst Appliance is similar to the MARA appliance. Both are fixed jaw repositioning appliances that improves the health of the TMJ. As general dentists we must be aware of this important article in order to ensure that our patients are treated correctly. Therefore, avoid referring patients for orthognathic surgery if they have pre-existing articular disc displacements (clicking jaw).

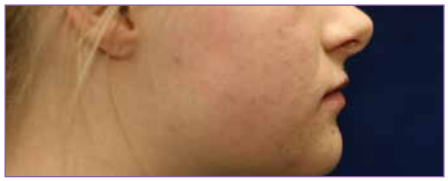
5. The expansion of the maxillary arch results in a much broader smile for the patient.

6. The advancement of the mandible at an early age may help prevent patients from having snoring and sleep apnea later on in life. Sleep apnea is a life threatening condition which can cause the following medical problems including; high blood pressure, heart attacks, strokes, Type 2 Diabetes, acid reflux, 5 times greater risk of cancer, Alzheimer's and dementia.[4] We certainly want to try and avoid these medical problems for our patients by using functional jaw repositioning appliances in children or teenagers with skeletal Class II malocclusions.

The purpose of this article is to try and encourage general dentists to make an effort to learn how to diagnose and treat our younger patients with skeletal malocclusions so that we can significantly improve the health and appearance of our children.



▲ Retrognathic Profile – Before Treatment



▲ Straight Profile – MARA Appliance

▲ Pretreatment Class II cuspid.

▲ Post treatment Class I cuspid.