Case Report

Comprehensive Treatment of Mandibular Retrusion with ALF (Advanced Lightwire Functional)

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Dr. Lemke trained as a dentist and naturopath in Germany and has been in the US since 1996. She graduated with a DMD from the University of Pennsylvania in 1998. She started her orthodontic training in 2001 and dedicated her practice in Durango, CO, completely to orthodontics in May 2008.

Chief Complaint

The male patient, 13y 3m, said about himself, “I have a rat face” and the mother was concerned about his upper front teeth sticking out.

History

The medical history was contributory for Asperger’s syndrome and post Lyme’s disease.

Although he had never been in a dental practice before he did not have any restorative dental needs nor did he display signs or symptoms or TMJ disorder.

Etiology

The mother stated that her son did not have any digit habits nor prolonged pacifier use when he was little. The alignment of the patient’s teeth suggests a combination of cranial, oro-facial, and possibly genetic factors.

Diagnosis

Using the Angle classification this was a Class II division 1 case. Using the facial profile as the center of attention it shows a well-positioned maxilla and a retruded mandible. (Fig. 1)

Treatment Objectives

1) Transverse arch development: 5 to 8.5 mm in the maxilla, 4.5 to 6 mm in the mandible (according to Pont’s index). 2) advance mandible 3) flatten curve of Spee

Appliances and Treatment

Treatment was started with an upper basic ALF appliance and a lower ALF with a lip bumper. (Fig. 2)

After transverse arch development was achieved the ALFs were converted to twin blocks with an upper labial bow, without a lower lip bumper. (Fig. 3)

The twin block broke after a few months. It had achieved some advancement of the mandible but had also led to intrusion of posterior teeth. Therefore another set of ALF appliances was inserted. The design was inspired by Dr. Terry McRobert’s Propulsar: it had upper buccal acrylic extensions and lower buccal upright wire extensions, leaving the occlusal surfaces uncovered. The patient wore these appliances for a few more months until they broke too. (Fig. 4)

By then the mandibular forward-positioning had been achieved and only smaller, corrective tooth movements needed to be accomplished. This was done by adding auxiliary wires to ALF appliances. (Fig. 5-7)

Progress of Treatment

The patient had a gentle and caring disposition but was very fearful of any unknown or unexpected occurrences. Staying still as well as tolerating impression trays/materials in his mouth was a big challenge. The biggest help in this endeavor was his mother who practiced ‘freeze’ with him and had him keep the trays in his mouth at home for prolonged periods of time.

Once the initial ALF appliances were inserted it was remarkable how much self-confidence and autonomy the patient gained in only one week (without any activation of the ALFs). As usual I greeted the patient and his mother in the waiting room; only this time the patient did not wait to be asked by his mother to follow us to the treatment room. Instead he got up as soon as he saw me, walked through the hallway ahead of us and made himself comfortable in the dental chair. The mother shared her observation that her son had clearer speech, an improved connection to the outside world, and a more confident behavior ever since he got his ALFs.

The mandibular repositioning appliances turned out to be a challenge because the patient habitually ‘leaned’ on them with his mandible thereby exerting forces that overpowered the material strength.

He was very happy as the esthetics of his upper front teeth changed. His mother shared that some of their acquaintances did not recognize her son because his facial appearance and profile had improved so much.
Figure 1 – Photos at start of treatment. Facial photos before, intraoral photos before and occlusal view of models before.

Figure 2 – Initial ALF appliances

Figure 3 – ALF twin-block appliances
RETENTION

The patient wore a myofunctional trainer for two years. (Figs. 8, 9)

FINAL EVALUATION

Overall a very rewarding and encouraging case for me which left the patient and his mother more than satisfied with the outcome. No braces were used at any point.

Since I treated this patient at the beginning of my orthodontic career the treatment time was 3.5 years: my appliance adjustments were deliberately minimal, we dealt with appliance breakage, I did not yet enforce oro-facial myology exercises enough.

Treating a similar case today I would expect a treatment time of about 2.5 years. I would still start with basic upper and lower ALF appliances but I would change the following: 1) use sturdier cribs like the Martin crib design (since ALF cribs don’t hold the molars very tight they are more forgiving if an ALF adjustment is not made 100% correct; the minimal bulk makes them very comfortable for the patient), 2) omit the maxillary labial bow because function (proper mandibular and tongue rest position) would have uprighted the upper incisors in the process 3) use heavier wires and construction for a mandibular repositioning appliance.

In the past I have treated all my patients using almost exclusively the ALF approach, avoiding fixed mechanics altogether. I still see the ALF, or a removable lightwire appliance (modified Crozat or Kernott designs with smaller wire diameters as used by Dr. Steve Broderson), as powerful tools to enhance cranial motion - which I find linked to overall health.
Case presentations about Biobloc Orthotropics™ treatment have raised the bar as to how much forward development of the midface and mandible is possible. I hope to get an opportunity to learn more about Biobloc Orthotropics™ and its cranial effects, helping me to decide the most appropriate treatment tools for my patients. Without doubt any ‘Propulsar’-like appliance still has a retruding effect on the maxilla. My question at the moment is how to weigh the cranial effects against the airway issue. More research on how different appliances affect cranial motion and airway is needed. I hope to be able to contribute some information as I have started seeing patients together with an osteopath.

Las Vegas Headliner - All Day Saturday, October 5, 2013
Prof. Dr. José Durán von Arx

Dr. Duran studied Medicine at the University of Barcelona and later Stomatology at the University of Madrid. He is currently the Head of the Department of Orthodontics at the University of Barcelona.

Dr. Duran was also the Director of the Department of Orthodontics at the Children’s Hospital of Barcelona and the Director of the Orthodontic World Institute of Barcelona.

He has published more than 300 articles as well as 3 books in the field of orthodontics, one about “Stimulotherapy in Orthodontics” (referred to as MFS) (in Spanish at this time).

Dr. Duran is the creator of the MFS philosophy: individualized prescription of the Turrin brackets and Stimulotherapy devices; he gives courses around the world about his MFS philosophy. The MFS philosophy is based on the codified diagnosis of oral functions and the goal of MFS is normalization or oral functions with the use of the Stimulotherapy devices.

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