The ALF Appliance has been metalurgically and structurally designed to meet the specific needs of the cranial architecture. Anatomically, the maxillary complex presents a challenge to the orthopedic/orthodontic practitioner. Placing a maxillary appliance that violates functional cranial anatomy has the potential for adverse effects on the patient's neurologic, physiologic and structural functions.

by Dr. Gerald H. Smith and Heather Ashton, L.C.T.
Treatment objectives and priorities for the ALF Appliances have a threefold purpose: (1) Correct cranial distortions first; (2) Correct the distortions of the maxillae; and (3) Correct the alignment of the maxillary and mandibular teeth to balance and stabilize the cranium. Since the maxillae is the base of the skull, the maxillary ALF Appliance uses the upper teeth as handles for correcting the cranial distortions. This orthopedic/orthodontic approach deals with the totality of the patient and not just their teeth.
The maxillae is comprised of two halves joined by the intermaxillary suture. Anteriorly it joins the premaxilla (median palatine process) by means of a delicate suture which extends from the anterior palatine fossa to the interproximal area of the lateral incisor and canine teeth. During the formative years of childhood, this premaxilla provides a stress breaker for trauma sustained by the four anterior teeth. With inadequate anterior development, the maxilla can be distally impacted or locked in a superior position and clinically manifest as an anterior open bite or underdeveloped as exhibited by a “V” shaped arch, lingual tilt of the anterior teeth or anterior crowding. Posteriorly the maxilla joins the palatine bone by means of the cruciate (palatal-maxillary) suture. This suture is perpendicular to the intermaxillary suture and ends between the first and second molars. Linking these teeth with acrylic, an arch wire, fixed bridgework or partial denture will restrict sutural and cranial bone motion.

The ALF’s design specifically avoids restricting the premaxilla and palatine bones. Anteriorly the ALF derives its anchorage from bilateral “U” clasps (crescents) which engage the canine teeth (Figures 1, 2). Since the maxillary canine teeth have the longest roots in the dental arch, they serve as ideal anchors. Forces applied to the canines will affect the position of the maxillae and rest of the skull. Posteriorly the appliance is bilaterally anchored by means of cribs and crescents which engage the first molars. The first molar’s position in the dental arch and its anterior position to the cruciate (palatal-maxillary) suture and its tripod root configuration makes it an ideal posterior anchor.

To enhance anchorage, the appliance is secured by means of light cured resin shelves to engage the incisors and bicuspid teeth. Even though the main body wire is anchored, it retains its flexibility to allow release of the premaxilla, maxillae, palatines, sphenoid, temporals or any other existing cranial lesions. The entire maxillae now functions as a single unit. The teeth are the handles to the cranial base and cranial lesions are corrected in part by judiciously placed interarch elastics and specially designed omega loops and auxiliaries (Figures 3, 4).

The Arntz-Schulz Law (Dorland’s Illustrated Dictionary, 26th ed.) states that “weak stimuli increase physiological activity and very strong stimuli inhibit or abolish activity.” The ALF Appliance follows this law because it is fabricated from one of the very best orthodontic flexible metals available, Elgylx Yellow. Its nickel content is the lowest of all the metals and it also resists breakage (requiring 12 forward and backward bends before it fractured). The main body wire and molar cribs are constructed with either .025 or .028 Elgylx Yellow. The heavier gauge (.028) is used for designs that have a longer span or require a Hawley labial bow. The crescents (wires that clasp the molars and canines) are fabricated from .060 mm Leone wire. Accessory wires are made from .020 Elgylx Yellow. The soldering of the crescents is done with high heat gold solder to protect the connections when auxiliaries are later placed with low heat gold solder. The light gauge wire coupled with its flexibility enables the ALF to provide a light constant force. The use of an anterior omega loop is the key design factor which enables this appliance to widen and release the premaxilla. Expansion of the intercanine space allows the premaxilla in anterior open bite cases to release and drop down, permits the facial bones to release and sphenobasilar torsions to unwind. The ALF’s unique design and light force makes it the most cranially friendly appliance available.

Anatomical Factors Influencing ALF Design

1. Position of cruciate (junction of palatal and intermaxillary suture).

2. Position of suture dividing premaxilla and maxillae.

The ALF Appliances derive their design from the diagnosis of existing cranial lesions and dental malocclusions. It is the presence of specific cranial lesions that dictate the use of Class II or III elastics, interarch vertical elastics or posterior unilaterally or bifacial omega loops. Treatment objectives and priorities for the ALF Appliances have a threefold purpose: (1) Correct cranial distortions first; (2) Correct the distortions of the maxillae; and (3) Correct the alignment of the maxillary and mandibular teeth to balance and stabilize the cranium. Since the maxillae is the base of the skull, the maxillary ALF Appliance uses the upper teeth as...
handles for correcting the cranial distortions. This orthopedic/orthodontic approach deals with the totality of the patient and not just their teeth.

Case Study

A 16-year-old male hit the left side of his head on a basketball pole while going up for a shot. Even though the pole was padded, the impact was sufficient to cause a concussion and the patient was knocked unconscious for 3 minutes. As a result of the head trauma, the patient suffered severe left sided symptoms: constant headaches, retrobulbar eye pain, tinnitus, facial pain in the region of the cheek, shooting neck and shoulder pain. The patient also had hyperacusis, insomnia and dizziness. Extensive medical workups by neurologists, ENT, internists and psychiatrists produced no definitive diagnosis. Various medications were prescribed with no resolution of symptoms. These symptoms were present for a seven month period and prevented the patient from attending school.

Cranial Evaluation

The impact had caused a reversal of sphenobasilar motion, decreased amplitude on the left side of the cranium, left internal rotation of the temporal and malar bones, high right sphenoide with torsion in relationship to the occiput.

Dental Evaluation

A mild Class III skeletal discrepancy was present with a mild right posterior crossbite. This malocclusion existed prior to the incident but was without any symptoms. Extensive spasms were present in the following muscles: right and left external pterygoids, left masseter at the zygoma, right and left anterior temporalis, left scalenes and left upper trapezius.

Treatment Sequencing

1. Cranial manipulation was performed to correct the reversed sphenobasilar motion, free up the left temporal and malar and increase amplitude.

2. Micro-current stimulation combined with myofascial release techniques were used to release the spastic muscles.

3. ALF upper and lower appliances to correct cranial distortions.

4. Glutathione was used to detoxify the patient’s liver from all the medications that were used.

Prognosis: Excellent

The hyperacusis resolved and the headaches greatly reduced following the third cranial adjustment. Following two months of treatment with ALF Appliances the cervical and shoulder symptoms and insomnia cleared. The appliances were discontinued following resolution of symptoms.

Use of the ALF Appliances affords the dentist a means to non-invasively correct structural distortions which in turn have the potential to cause neurologic and physiologic changes throughout the body. No other medical specialty has the modalities to make these types of changes. Use of the ALF Appliance complements the osteopath, chiropractor, physical therapist, psychiatrist, orthopedist and neurologist as well as the podiatrist.

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For complete information contact:
Cordelia Mason, Executive Secretary
520 W. Pipeline Road • Hurst, TX 76053
800-322-8651 • 817-282-1501
FAX 817-282-8012

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Dr. Gerald H. Smith
Luxembourg Medical/Dental Center
303 Corporate Dr. East
Langhorne, PA 19047
Phone: (215) 968-4781

Heather Ashton, L.C.T.
2 Rutledge Circle
Fletcher, NC 28732
Phone: (704) 883-4131

REFERENCES

Delarmette, Major B.: Cranial Technique 1979-1980, p. 23

[ALF Appliances fabricated by Ashton Laboratory - only laboratory that is certified to construct the ALF Appliances. Address: Ashton Laboratories, 2 Rutledge Circle, Fletcher, NC 28732]