



Fig. 1



Fig. 2



Fig. 3



Fig. 4

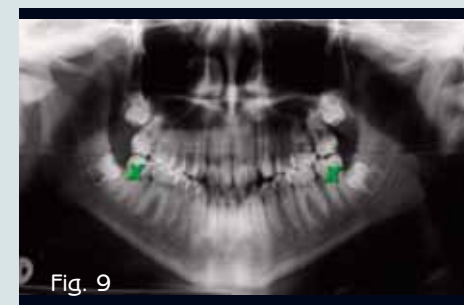


Fig. 9



Fig. 10



Fig. 11

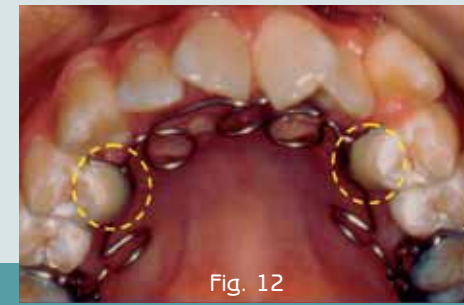


Fig. 12



Fig. 13



Fig. 14



Fig. 15

A Multi-Disciplinary Approach to Class III Therapy

Using The Delta Force and ALF Appliances in Conjunction with Terminal Arch Extractions

By J. Wellington (Skip) Truitt, DDS & Livier Carreon-Truitt, DDS



Fig. 5



Fig. 6



Fig. 7

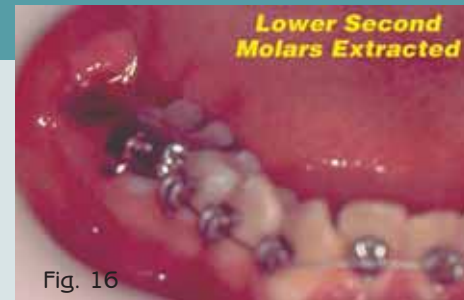


Fig. 16



Fig. 17

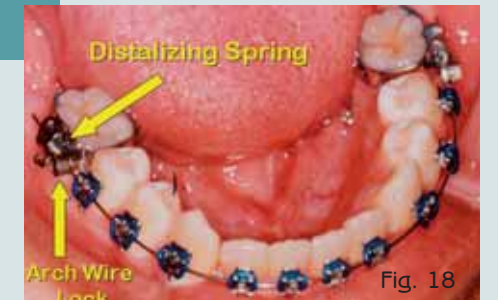


Fig. 18

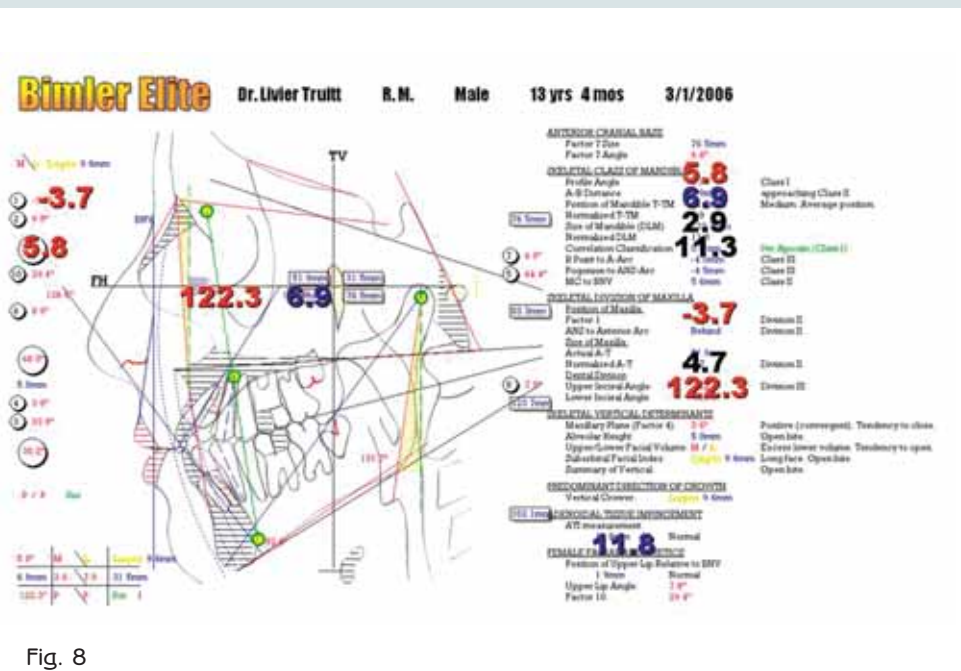


Fig. 8

The use of the low friction Delta Force appliance in conjunction with the bio-compatible forces generated by the ALF appliance creates a new approach to treating under-developed arches. It is now possible to develop the size of both the upper or lower arch and level, align and torque the teeth all at the same time.

The patient used as an example for this article was a Hispanic male 13.4 years of age. His chief complaint was his unaesthetic smile. Complete orthodontic records were made at his initial appointment. (Fig. 1-7)

Evaluation of the Bimler Elite Cephalometric analysis showed the patient to be a skeletal Class III and a skeletal Division II in both the size of the maxilla and the position of the maxilla. (Fig. 8) 1, 2, 3

The panoramic radiograph showed the third molars to be developing very well in all four quadrants. (Fig. 9)

The following was the proposed treatment plan:

- Develop the maxilla using a combination of ALF and Delta Force appliances.
- Remove the mandibular second molars with the view to third molar replacement.
- Level and align the mandibular arch with no torque using the Delta Force appliance.
- Distalize the lower buccal segments and retract the mandibular incisors.
- Burn anchorage within the maxillary arch using a Forward Pull (Reverse Pull Head Gear).
- Remove the maxillary second molars with the view to third molar replacement.
- Retain the finish case with upper and lower Spring Hawley retainer.

Treatment began by placing an upper ALF appliance on First Molar Bands with standard pre-adjusted .022 buccal tubes containing 10° of torque. (Fig. 10)

Composite ledges were placed on both the left and right maxillary 1st bicuspids to secure the crescent wires of the ALF appliance. (Fig. 11) All three of the anterior omega loops were activated. The omega loops mesial to the first molars were left passive to function as shock absorbers. (Fig. 12) 4, 5, 6

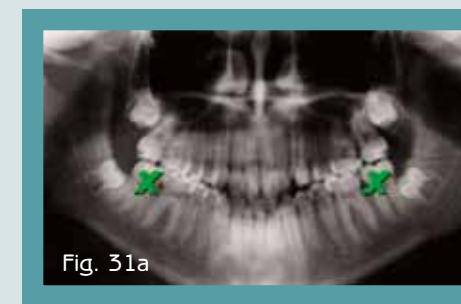
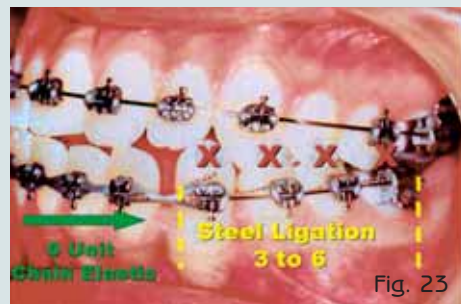
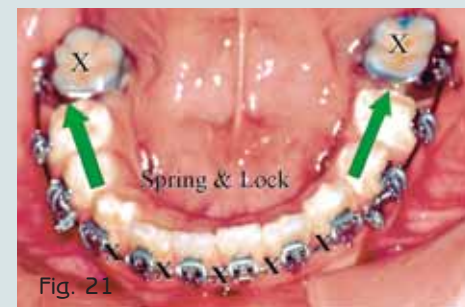
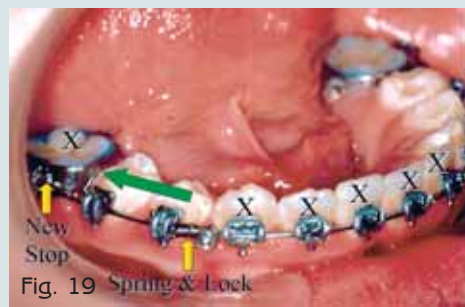
Delta Force brackets were placed on the maxillary teeth through the second bicuspids. The starting upper arch wire was .020 x .020 beveled multi-gradient thermal Niti. All of the Delta Force brackets were placed in the minimum ligation configuration. (Fig. 13, 14 & 15) The ligature elastics were replaced every four weeks, and

the .020 x .020 arch wire was replaced every sixty days with a new arch wire of the same type and gauge.

The treatment objective for this first phase of therapy was to develop the maxillary arch over the mandibular arch. Once this first phase of treatment was accomplished therapy could be initiated on the lower arch.

The mandibular second molars were removed and the lower arch was placed in the Delta Force appliance. The arch wire gauge was .018 multi-gradient thermal Niti. The objective was to level and align the dental alveolar base with no torque maintaining the skeletal Class III compensation. (Fig. 16 & 17) 7,8,9,10,11,12

Once the lower arch was leveled and aligned .045 molar distalizing springs and .022 arch wire locks were placed mesial to the first molars (Fig. 18) The springs were



activated unilaterally and both first molars were distal driven. The first molars were then locked in position with new arch wire locks.

The distalizing springs and arch wire locks were then placed mesial to the first bicuspids. Both the first and second bicuspids were bilaterally driven to contact the first molars. The ligation of the bicuspids was in the minimum configuration reducing the friction. (Fig. 19, 20 & 21)

The mandibular cuspids were next retracted using 3/16", 4 1/2 oz. elastics from the cuspids to the first molars. Note the arch wire lock mesial to the lower first molar and the Delta Force rotating wedge on the distal of the upper cuspid. (Fig. 22)

After bilateral cuspid retraction was fully completed steel ligature wire was tied from the first molars through the cuspids and the arch wire locks removed mesial to the first molars. A six unit chain elastic was placed cuspid to cuspid to retract the lower incisors and correct the dental midline. (Fig. 23, 24 & 25)

Once the upper arch development was completed the ALF appliance was removed. The upper .020 x .020 multi-quadrant thermal Niti arch wire

was replaced with a .018 x .025 steel arch wire. Elastics were worn from the upper first molars to the Reverse Pull Head Gear. These elastics were 5/16", 8 oz., and were worn at night only. The objective was to "burn anchorage" in the upper arch. (Fig. 26 & 27)

The final step in the treatment was to insure the patient had correct cuspid and anterior guidance. This was accomplished by wearing 1/8", 4 1/2 oz elastics from the upper cuspid pendulum to the lower cuspid and first bicuspid pendulums in a triangle configuration. These elastics were worn full time except for eating and hygiene and changed by the patient every twelve hours. (Fig. 28)

The maxillary second molars were then extracted. The upper arch wire was removed and ligature elastics placed around all of the empty brackets in the medium configuration for protection. The lower arch wire was left in place to act as a retainer. The occlusion was allowed to function for four weeks and re-evaluated.

Both the occlusion and the function of the Temporal Mandibular Joints were normal at the end of



this four week period. The Delta Force appliance was totally removed and the patient placed in upper and lower Spring Hawley retainers. (Fig. 29 & 30)

The retention period was six months active retention (full-time wearing except for eating and hygiene), followed by six months passive retention (night time wearing only) sequencing out of the retainers one night per month. At the end of the twelve months the patient wore the retainers only once a week at night.

The patient was then monitored on a six month basis until all four third molars had erupted into occlusion. (Fig. 31)

Active treatment time from the initial placement of the upper ALF and Delta Force appliances to the beginning of retention was fourteen months.

The post retention records demonstrate the long term stability that was obtained by compensating the skeletal Class III. (Fig. 32 & 38)



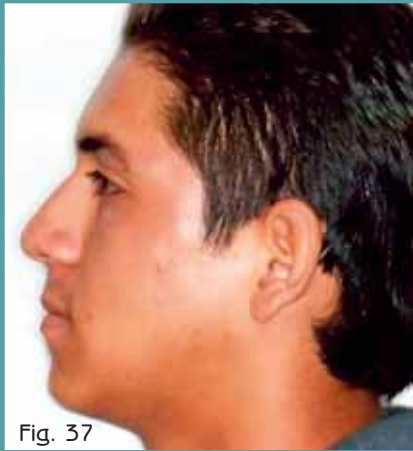


Fig. 37



Fig. 38

Conclusion:

The technique that has just been presented using a low friction Delta Force appliance in conjunction with an ALF appliance reduces the time of treatment, but also greatly increases the stability of the case. The key mechanical principles to

understand are the ability to reduce friction within the bracket, and being able to begin torquing the teeth at the very start of the therapy. This in turn creates a parallel relationship of the roots and reduces the forces required for sliding mechanics.

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