Torquing Auxiliary for Posterior Protraction

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My recent article pointed out the loss of anterior torque control due to the lack of standard bracket slot and archwire dimensions, the result being unwanted lingual tipping of the incisors during protraction of the posterior teeth.[1] One approach I suggested to ensure proper anteroposterior incisor control in such cases was to use an incisor lingual-root-torquing auxiliary as an overlay. This article illustrates that technique.

Torquing Auxiliary

The continuous Opus Loop Archwire* is designed to deliver the moments required for en masse protraction of posterior teeth, but only a portion of the force.[2] My original recommendation was to use intermaxillary elastics or springs to deliver the remaining force to the posterior teeth. This assumed sufficient root-lingual twist in the wire passing through and ligated to the incisor brackets, with passive contact in those bracket slots to maintain axial inclination control of the incisors during protraction. It also assumed that a rigid stainless steel rectangular wire was in place in the opposing arch to avoid side effects from the light (150g) intermaxillary force.

An alternative is to overlay an .012" torquing auxiliary on an .020" archwire** (Fig. 1). This overlay controls incisor axial inclinations

*Patent pending by the author.

**256-Begg Two-Arm Prewound on Stage III Archwire, kit #241-200, TP Orthodontics, Inc., 100 Center Plaza, LaPorte, IN 46350.

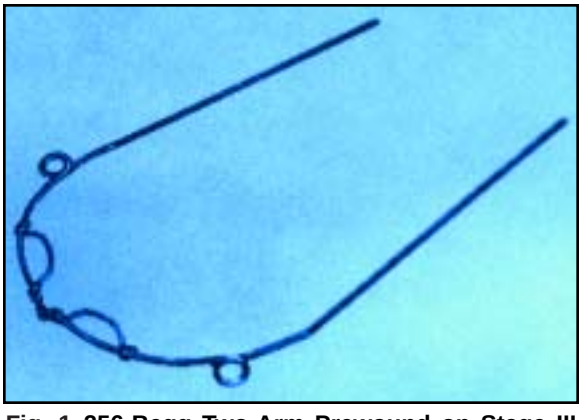

Fig. 1 256-Begg Two-Arm Prewound on Stage III Archwire.

Fig. 2 Overlay carried over Opus Loop Archwire and cinched back through buccal molar headgear tube.

Fig. 3 Overlay stepped behind Opus loop and cinched back against two crossed ligature wires at apical surface of single buccal molar tube.

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and anteroposterior positions, supplies the additional 150g of force per side to the posterior teeth, and avoids the need for the opposing arch to be in a rigid wire before posterior protraction can begin. Treatment efficiency is thus enhanced, because other steps can be simultaneously performed in the opposing arch.

The .020" wire is tucked under the apical wings of the edgewise central incisor brackets (Fig. 2). A ligature is threaded through the small midline stop loop in the wound .012" torquing wire and tied to one of the incisor brackets' mesial wings to keep the auxiliary from moving gingivally. When cinched back through any available molar tube (the headgear tube in Figure 2), the auxiliary delivers a mesial force of 150g at that tube.

The auxiliary is also available with .014" wound torquing arms, but these deliver substantially more than 150g of force, which could lingually displace the anterior segment in this application.

If the molar has only a single buccal tube, the torquing auxiliary can be placed behind rather than in front of the Opus loop. Two crossed ligatures are then tied over the .020" overlay wire at the apical surface of the molar tube, forming a firm stop for the overlay wire to be cinched against (Fig. 3).

The overlay should be recinched as the posterior teeth move mesially, but the interval between these reactivations is not critical. Because the axial inclinations of the central incisors change imperceptibly as protraction occurs, the overlay will continue to deliver a constant force. For example, if the Opus Loop Archwire is .017" × .025" TMA,*** the posterior teeth will move 2.5mm on each side before the loops are completely deactivated.[2] Longer-than-usual intervals between appointments can therefore be scheduled if the patient can be trusted to call for an emergency appointment in the event of appliance damage.

***Registered trademark of Ormco/"A" Company, 1717 W. Collins Ave., Orange, CA 92867.

Conclusion

The torquing auxiliary shown here can be used with other closing loops and with protraction sliding mechanics on rectangular archwires. It reliably delivers an additional 150g/side of mesial force while controlling the incisors' axial inclinations and maintaining their anteroposterior positions.

REFERENCES

1. Siatkowski, R.E.: Loss of anterior torque control due to variations in bracket slot and archwire dimensions, J. Clin. Orthod. 33:508-510, 1999.
2. Siatkowski, R.E.: Continuous archwire closing loop design, optimization, and verification, Am. J. Orthod. 112:393-402, 487-495, 1997.