

An Orthodontic Attachment for Patients with Fixed Prosthetic Restorations

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Adult orthodontic patients with fixed pontics in the molar regions commonly show crowding, rotations, or elongation of the anterior teeth. Higher moments than usual are required for intrusion of the anterior segment,¹ and in many cases, these moments will overtax the bond strength of a conventional attachment to a gold or ceramic bridge.²⁻⁵ The traditional alternative is to remove the pontic so a band can be fitted over the crowned tooth. To do so, however, the bridge must be sectioned, which reduces posterior anchorage.

A new molar attachment (Fig. 1) is not fused to a molar band, but laser-welded to a sturdy horizontal stainless steel bar (4mm × 4mm × 1mm). To use the bar, a horizontal slot must be drilled into the pontic of the bridge with a cylindrical carbide bur (Fig. 2). The attachment can be fixed with self- or light-curing resin or any band cement.

Once in place, the new attachment serves the same purposes as a conventional molar band attachment, while using the whole extension of the bridgework for posterior anchorage (Fig. 3).

Case Report

A 40-year-old female presented with crowding of the mandibular incisors, a crossbite between the maxillary right lateral incisor and mandibular right canine, and bridge work in the mandibular right buccal quadrant (Fig. 4). The mandibular right lateral incisor was extracted, the mandibular left first molar was separated as usual for an orthodontic band, and the bridgework was prepared with a slot for the special attachment (Fig. 5). The new attachment was inserted into the pontic and fixed with resin (Fig. 6).

A removable appliance with lateral support was used to protrude the maxillary right lateral incisor and allow correction of the anterior crossbite (Fig. 7). A multibracketed appliance (Fig. 8) was used to level the mandibular arch (Figs. 9A, 9B).

Discussion

As in seating any band, care must be taken to ensure correct orientation of the new attachment.^{6,7} If the horizontal slot is properly placed, the existing bridge can serve as a rigid posterior segment in the segmented arch technique.^{1,8} When constructing the cantilever arms for this technique in a patient with multiple bridges, one must be aware of the relative positions of the pontics. Usually, the first molars are missing, and the pontics are at equal distances from the anterior segment. But if attachments must be placed into pontics at different distances from the anterior segment, the biomechanical conditions will change due to unequal lengths of the cantilever arms. Such a situation must be corrected by differential activation.^{1,8}

Removal of the attachment is most conveniently accomplished by grinding off the protruding part and polishing the remnant in the slot. In most patients, this remnant will be barely visible. If a more esthetic appearance is desired, the horizontal insert can be ground off, as in preparing a cavity, and a tooth-colored filling can be made to close the slot. In many cases, however, the bridgework needs to

be replaced after orthodontic therapy because of changes in the occlusal relationship (Figs. 9A, 9B).

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□

FIGURES

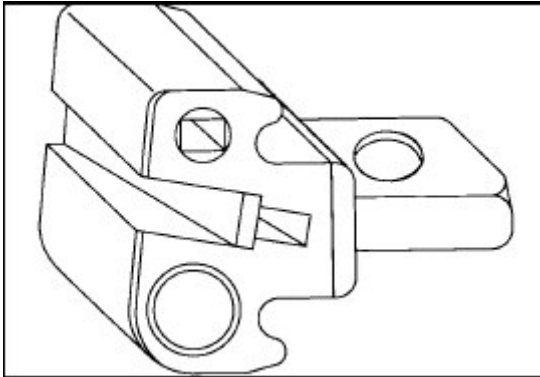


Fig. 1 New molar attachment laser-welded to stainless steel bar.

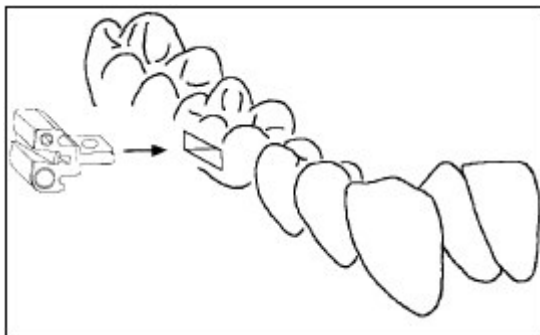


Fig. 2 Molar attachment inserted into slot prepared in pontic.



Fig. 3 Two-piece intrusion arch in patient with bridge from mandibular right first bicuspid to second molar.



Fig. 4 40-year-old female with bridgework in mandibular right buccal quadrant.



Fig. 5 Patient after extraction of mandibular right lateral incisor, conventional separation of mandibular left first molar, and preparation of bridgework on opposite side for special attachment.



Fig. 6 Special attachment inserted into pontic and fixed with resin.



Fig. 7 Removable appliance with lateral support used to protrude maxillary right lateral incisor and allow correction of anterior crossbite.



Fig. 8 Multibracketed mandibular leveling arch in place.



Fig. 9A After correction of anterior crowding and crossbite. Horizontal bar in pontic slot was leveled off and polished, rather than being filled esthetically, because bridge needed to be replaced after treatment due to poor marginal fit.



Fig. 9B After correction of anterior crowding and crossbite. Horizontal bar in pontic slot was leveled off and polished, rather than being filled esthetically, because bridge needed to be replaced after treatment due to poor marginal fit.

REFERENCES

- 1 Burstone, C.J.: Deep overbite correction by intrusion, *Am. J. Orthod.* 72:1-22, 1977.
- 2 Buyukyilmaz, T.; Zachrisson, Y.O.; and Zachrisson, B.U.: Improving orthodontic bonding to gold alloy, *Am. J. Orthod.* 108:508-510, 1995.
- 3 Cochran, D.; O'Keefe, K.L.; Turner, D.T.; and Powers, J.M.: Bond strength of orthodontic

composite cement to treated porcelain, Am. J. Orthod. 111:297-300, 1997.

4 Whitlock, B.O. III; Eick, J.D.; Ackerman, R.J. Jr.; Glaros, A.G.; and Chappell, R.P.: Shear strength of ceramic brackets bonded to porcelain, Am. J. Orthod. 106:358-364, 1994.

5 Zachrisson, Y.O.; Zachrisson, B.U.; and Buyukyilmaz, T.: Surface preparation for orthodontic bonding to porcelain, Am. J. Orthod. 109:420-430, 1996.

6 Graber, T.M. and Swain, B.F.: Orthodontics: Current Principles and Techniques, C.V. Mosby Co., St. Louis, 1985.

7 Schwindling, F.P.: Theorie und Praxis der Segmentbogentechnik nach Burstone, Edition Schwindling, Merzig, Germany, 1991.

8 Burstone, C.J.: Rationale of the segmented arch technique, Am. J. Orthod. 48: 805-822, 1962.

FOOTNOTES

1 To be produced by Dentaaurum, Inc., 10 Pheasant Run, Newtown, PA 18940.

2 For example: Komet Model No. 1957, Brasseler GmbH, Lemgo, Germany.