

CLINICAL SECTION

Molar bands for ‘precision’ bonding of lingual retainers

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Bonded retainers have been used principally for long-term retention of treated cases. Various methods of bonding lingual retainers have been described in the literature over the past two decades. However, accurate and passive placement of retainers has always been a matter of concern. This report presents a simple and economical method for accurate and passive placement of bonded lingual retainers that enables the operator to save considerable chair time.

Key words: Molar bands, soldering, passive, precise, retainers

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Introduction

In the late 1970s and early 1980s, Zachrisson^{1–4} published several papers elucidating the application of bonded lingual retainers. Since then, the use of 3-3 or 4-4 lingual retainers has steadily grown, and several methods^{5–8} for delivering fixed lingual retainers have been introduced. However, the accurate and passive placement of the retainer has always been a matter of concern.⁹

Elastics,² dental floss¹⁰ or ligature wires help in securing the retainer in place but cannot ‘precisely’ position the retainer. Holding the retainer wire with a plier or finger pressure¹ is especially risky, as any movement during curing can weaken the bond. A silicone transfer tray is time-consuming to fabricate and trim,¹¹ and can become deformed during the bonding procedure. Vacuum-formed locating splints provide accurate positioning, but require an indirect technique and additional chair time for removal of excess composite.⁶

In this report, we describe the use of molar bands for precise and passive placement of bonded lingual retainers. The bands can be likened to a set of transfer trays for holding and placing the retainer at its predefined position.

Procedure

- The molar bands are removed and subsequently resealed loosely without cementation (Figure 1).
- Alginate impressions are made using standard trays.

- The bands are removed and placed at the appropriate position in the impression (Figure 2a,b). Sticky wax can be used for reinforcing the position of the bands.
- Accurate casts are poured in stone.
- The position of the retainer is marked by the orthodontist on the cast, and accordingly a precisely fitting retainer is adapted by using 0.0175-inch multi-stranded wire (3M/Unitek, Monrovia). The terminal ends of the retainer end up in close configuration with the molar bands (Figure 3a,b).
- The retainer is secured on the working cast with Super Glue (Norpak Adhesives, 200 Mount Laurel Circle, Shirley, MA 01464), and the terminal ends of the retainer are soldered to the molar bands (Figure 4a,b).
- The molar bands are now carefully removed from the working cast along with the retainer (Figure 5), and placed back in the patient’s mouth (Figure 6).
- The teeth are dried and etched, and bonded with light-cured adhesive (Transbond XT System, 3M/Unitek) (Figure 7a,b).
- After bonding, with the help of a high-speed tungsten carbide bur, the retainer is cut distal to the last bonded tooth on either side (Figure 8).
- The excess composite is trimmed and smoothed (Figure 9).

Discussion

The technique described eliminates the difficulties encountered in direct bonding of a lingual retainer, which can be especially challenging in patients with upright



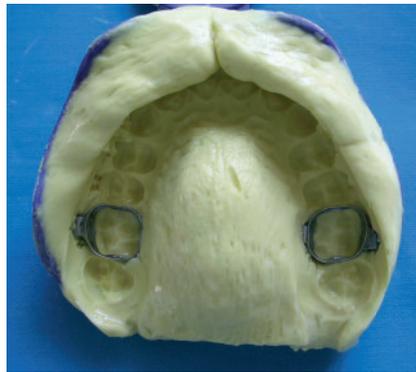
Figure 1 Molar bands being removed

mandibular incisors. According to Zachrisson,^{1,3} the primary causes of fixed retainer bond failure can be attributed to:

1. some degree of distortion during setting of adhesive;
2. use of too little adhesive;
3. direct trauma to the retainer.

Abrasion of composite was also implicated as the primary reason for bond failure in a study by Artun and Orbye,¹² where most of the patients had deep overbites after orthodontic tooth movement. For these reasons, bonded retention of maxillary anterior teeth has remained difficult and has not gained wide acceptance.

However, the present method of placing the retainer makes accurate placement possible, even in situations where it could not easily be considered before, as defined above. As the bands sit firmly on the molars, good adaptation of the wire on the lingual side is achieved. The placement is positive, exact and firm, which enables the operator to work freely with both hands, confident that the unit will not dislodge during manipulation of the composite



(a)



(b)

Figure 2 (a,b) Alginate impressions with molar bands in place



(a)

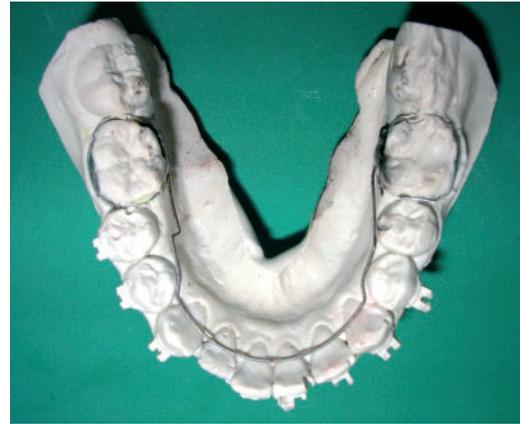


(b)

Figure 3 (a,b) 0.0175-inch multistranded wire bent to end up in close configuration with the molar bands



(a)



(b)

Figure 4 (a,b) Retainer after soldering to the bands



Figure 5 Molar bands along with the soldered retainer wire



Figure 6 Retainer seated in patient's mouth



(a)



(b)

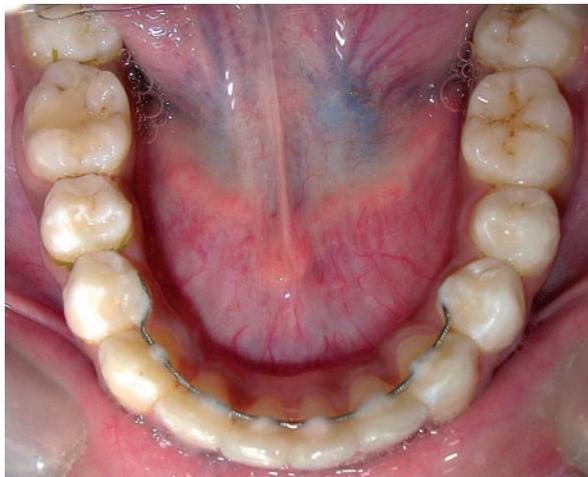
Figure 7 (a,b) Bonding of retainer complete



Figure 8 Retainer cut distal to the last bonded tooth



(a)



(b)

Figure 9 (a,b) Finished lingual retainers

adhesive material. The wire itself is in its passive, unstressed state. Thus, the setting of adhesive is totally undisturbed.

However, one disadvantage of this technique is a brief increase in the laboratory time for retainer fabrication and soldering.

Conclusion

Precision in fabrication, accuracy and passive placement and avoidance of any irritation are necessary requirements for fixed lingual retention. The method described in this report seems to fulfil all these prerequisites. Overall, molar bands appear to serve as efficient transfer mechanisms for accurate and stable placement of the retainer, simplifying and streamlining the procedure to such an extent that 15 minutes is more than enough to bond the retainer in place.

Acknowledgement

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