

An Acrylic Transfer Tray for Direct-Bonded Lingual Retainers

ESAD ZEKIÇ, DDS, PHD
IBRAHIM ERHAN GELGÖR, DDS, PHD

Many orthodontists use 3-3 or 4-4 bonded lingual retainers for optimal functional and esthetic retention of the anterior teeth.¹⁻⁴ One problem with these retainers, however, has been the accuracy of placement for direct bonding.⁵

Elastics cannot keep the lingual wire in a precise position. Dental floss and ligature wires are unwieldy. Holding the wire with a plier while waiting for the adhesive to set is risky, because any movement during the initial set will weaken the bond. A silicone tray is time-consuming to fabricate and trim,⁴ and can become deformed during the bonding procedure. Vacuum-formed locating splints provide accurate positioning, but require an indirect technique and additional chairtime for removal of excess composite.^{6,7}

We have developed a simple acrylic tray that allows accurate placement and direct bonding of all types of fixed lingual retainers, with solid or multistranded wires.

Retainer Fabrication

1. Prefabricate two acrylic trays for repeated use



Dr. Zekiç



Dr. Gelgör

Dr. Zekiç is a Research Fellow, Department of Orthodontics, Faculty of Dentistry, Selçuk University, 42079 Campus, Konya, Turkey, and in the private practice of orthodontics in Konya. Dr. Gelgör is an Assistant Professor, Department of Orthodontics, Faculty of Dentistry, Kirikkale University, Kirrikale, Turkey. E-mail Dr. Gelgör at egelgor@hotmail.com.

(Fig. 1). Depending on the size and shape of the patient's incisors, the wider tray will generally be suitable for upper retainers, and the narrower tray for lower retainers.

2. Take a full impression for the working cast.
3. Adapt the selected retainer wire to the lingual contours of the teeth on the cast. It is important to keep the wire just above the gingula to avoid the calculus formation that usually occurs if the retainer is placed more gingivally.
4. Secure the wire to the cast with small drops of wax in the lateral incisor or canine regions (Fig. 2).
5. Load a small amount of Optosil heavy-body

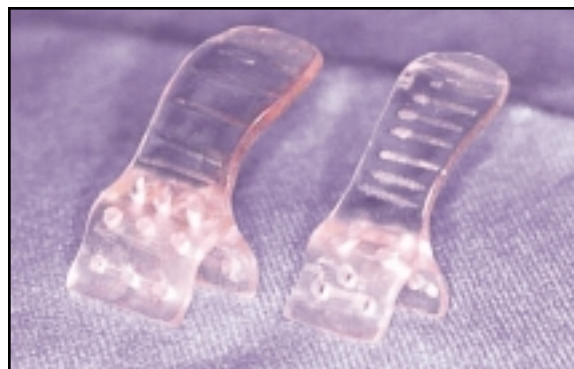


Fig. 1 Prefabricated wide and narrow acrylic trays.



Fig. 2 Retainer wire secured to working cast with drops of wax.

An Acrylic Transfer Tray for Direct-Bonded Lingual Retainers

silicone* into the inside of the tray, and press the tray gently over the lingual wire in the central incisor area (Fig. 3). Once the silicone hardens, dissolve the wax by rinsing the cast with hot water. The retainer and transfer tray are then easily lifted off the cast (Fig. 4).

Retainer Placement

1. Isolate and etch the teeth to be bonded as usual.
2. Place the transfer tray and retainer over the central incisors in the mouth (Fig. 5).

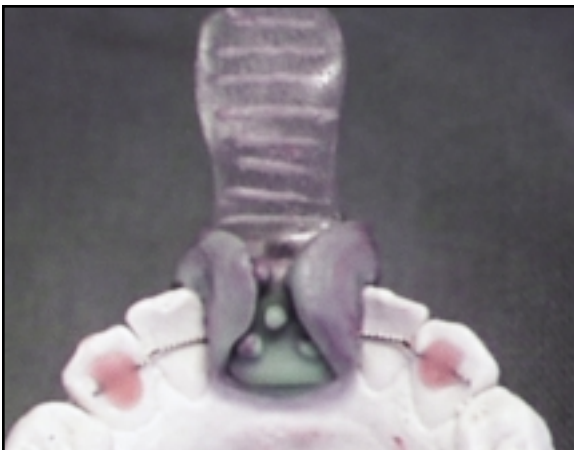


Fig. 3 Transfer tray loaded with heavy-body silicone and placed over retainer wire on cast.



Fig. 4 Transfer tray and retainer removed from cast after wax is dissolved with hot water.

3. Apply a light-cured resin directly to the free ends of the retainer.

4. Lift off the transfer tray in a vestibular direction. Occasionally, the heavy-body silicone is too thick to separate easily from the retainer wire. If this occurs, fracture the thin lingual section of the tray at its incisal edge, and cut the silicone gently with a scalpel to release the retainer.

5. Bond the remaining teeth to finish the retainer (Fig. 6).

*Registered trademark of Heraeus Kulzer, Inc., 4315 S. Lafayette Blvd., South Bend, IN 46614.



Fig. 5 Transfer tray and retainer placed over central incisors.



Fig. 6 Finished bonded lingual retainer (different patient).

Conclusion

This acrylic tray provides rapid, accurate placement of a fixed lingual retainer with no risk of accidental inhalation or swallowing by the patient. It can be used with any common type of retainer wire, and even with composite-retained bridges. The retainer can be placed before other fixed appliances are removed. Deformation of the wire is minimized by bonding it at each end before removal of the tray. Because of the flexibility of the silicone, the acrylic tray will be reliable enough for multiple uses.

ACKNOWLEDGMENT: The authors would like to thank Dr. Serdar Usumez for his help during the preparation of this paper.

REFERENCES

1. Oesterle, L.J.; Shellhart, C.; and Henderson, S.: Enhancing wire-composite bond strength of bonded retainers with wire surface treatment, *Am. J. Orthod.* 119:625-631, 2001.
2. Gottlieb, E.L.; Nelson, A.H.; and Vogels, D.S. III.: 1996 JCO Study of Orthodontic Diagnosis and Treatment Procedures, Part 1: Results and trends, *J. Clin. Orthod.* 30:615-630, 1996.
3. Sinclair, P.M.: The Readers' Corner, *J. Clin. Orthod.* 24:379-381, 1990.
4. Lubit, E.C.: The bonded lingual retainer, *J. Clin. Orthod.* 13:311-313, 1979.
5. Hobson, R.S. and Eastaugh, D.P.: Silicone putty splint for rapid placement of direct-bonded retainers, *J. Clin. Orthod.* 27:536-537, 1993.
6. Lee, R.T.: The lower incisor bonded retainer in clinical practice, *Br. J. Orthod.* 8:15-18, 1981.
7. Corti, A.F.: An indirect-bonded lingual retainer, *J. Clin. Orthod.* 25:631-632, 1991.