

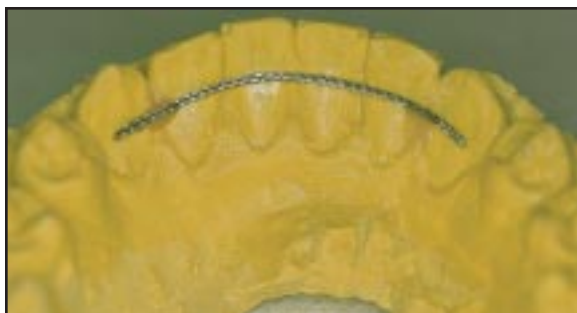
# An Indirect Method for Bonding Lingual Retainers

BÜLENT HAYDAR, DDS, MS  
SEDA HAYDAR, DDS, MS

**D**irect bonding of a lingual retainer is challenging because it requires a long working time on the lingual; there is a risk of contamination from saliva and moisture, which can cause bond failure; and it is difficult to apply the adhesive exactly where it is needed.<sup>1-5</sup> The indirect method described in this report reduces the working time in the oral environment and allows better-quality bonding.

## Procedure

1. A few days prior to debonding, take a mandibular impression, and prepare the lingual retainer on this cast so it can be put in place during the debonding appointment. The retainer can also be fabricated after the removal of fixed appliances, but this should be done no later than 12 hours after removal, since the tendency for minor relapse in the mandibular anterior segment may compromise the fit of the retainer wire.
2. Our preferred material is braided .016" × .022" wire. Fit the retention wire with its widest dimension flat against the lingual surfaces of the cast (Fig. 1).
3. Apply a high-quality separating medium to the cast. This is a critical step, because the sepa-



**Fig. 1** Separating medium applied to mandibular cast; braided lingual wire formed and waxed on cast.

rator ensures tighter adhesion of the resin to the stone and prevents the resin from coming apart during loading and shaping. Wax the shaped wire to the cast between the contact points of the canine and lateral incisor.

4. Apply a light-cured adhesive to the lingual surfaces of the incisors, adapt it with a spatula, and cure it (Fig. 2). It is important to leave enough space for cleaning between the teeth. The goal is to achieve a smooth transition from adhesive to tooth so that food impaction and tongue irritation are minimized during the first few days of wear, when the patient is adjusting to the retainer wire. If possible, the adhesive should be a slightly darker or lighter shade than the tooth color so its edges can be clearly seen in the mouth.
5. Mix a small amount of a light-body, silicone-based impression material with its activator, and load it into a 2ml syringe. Extrude this mixture onto the lingual surfaces of the incisors and around the retainer wire (Fig. 3).
6. After waiting a few minutes for the impression material to set, apply a putty mixed with an activator over the light-body material so it covers the incisal edges of the incisors (Fig. 4).
7. After the tray material has set, apply some hot water to the cast to facilitate tray removal. Pour



**Fig. 2** Light-cured adhesive shaped and cured on cast.

Dr. Bülent Haydar is in the private practice of orthodontics in Ankara, Turkey. Both authors are Associate Professors, Department of Orthodontics, Faculty of Dentistry, Baskent University, 11 Sokak No:26, Bahçelievler 06490, Ankara, Turkey; e-mail: sedagh@hotmail.com.



Dr. Bülent Haydar



Dr. Seda Haydar

more hot water into the tray to remove the wax.

8. Just prior to bonding, sandblast the resin surfaces with 90-micron aluminum oxide to remove any residual separating medium and increase bond strength through micromechanical etching (Fig. 5). Pumice the lingual surfaces of the incisors, and etch them with 38% phosphoric acid for 30 seconds.

9. Once these surfaces are dry, mix Maximum Cure A and B\* liquid resins to form a pool. Ap-

\*Reliance Orthodontic Products, P.O. Box 678, Itasca, IL 60143.

ply this mixture to the lingual surfaces of the teeth and the surface of the microetched resin.

10. Place the tray in the mouth, pressing lightly against the teeth from the lingual side of the tray (Fig. 6). The setting time is so fast (about one minute) that no saliva ejectors are required. The remaining resin in the pool can be checked to determine when the material is completely set.

11. After setting, carefully cut and tear away the incisal cap (Fig. 7), then remove the tray (Fig. 8).

12. Some minor cleaning may be required if ex-

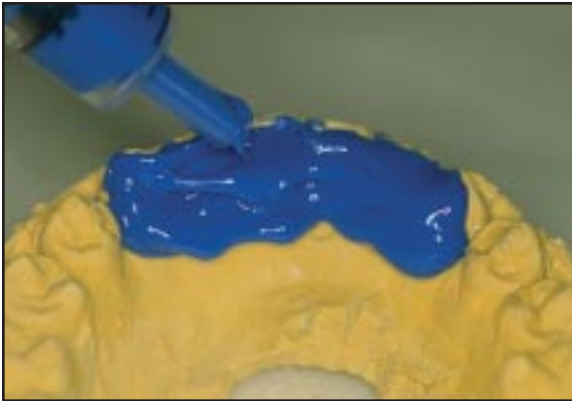


Fig. 3 Light-body silicone impression material applied to lingual retainer.



Fig. 4 Putty applied over impression material, capping incisors.

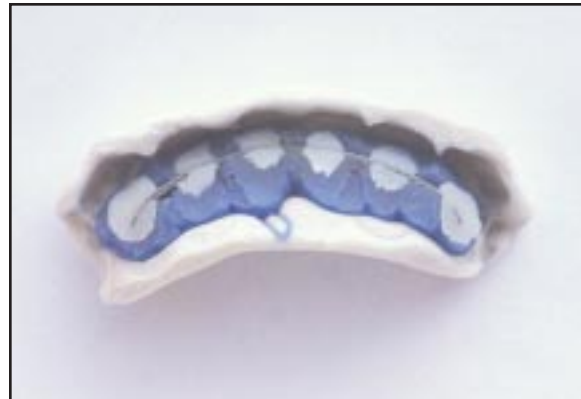


Fig. 5 Sandblasted retainer in tray, ready to be placed in mouth.



Fig. 6 After adhesive application, tray placed in mouth with light finger pressure on lingual side.



Fig. 7 Incisal cap cut with spatula and torn away.



Fig. 8 Indirect tray removed.



Fig. 9 Finished retainer.

cess resin has been used, but this can be easily scaled away. Finish the appliance by polishing its surfaces (Fig. 9).

### Conclusion

As long as the patient attends regular retainer checks, fixed retainers can remain in place for an extended period of time. Regular annual check-ups with a hygienist are recommended to keep the retainer clean.

Vacuum-formed thermoplastic materials can also be used to form the indirect tray, but the above method yields a much more precise fit in the mouth. Furthermore, the elastic properties of the silicone make it safer during tray removal after bonding. The silicone tray takes less time to construct and is also neater than thermoplastic trays.

This technique eliminates the difficulties encountered in direct bonding of a lingual retainer, which can be especially challenging in patients with upright mandibular incisors. It also provides a better fit and stronger adhesion than other indirect methods. There have been no failures in approximately 50 cases we have bonded with this method over the past year.

### REFERENCES

1. Zachrisson, B.U.: Clinical experience with direct-bonded orthodontic retainers, *Am. J. Orthod.* 71:440-448, 1977.
2. Zachrisson, B.U.: JCO Interviews Dr. Bjorn U. Zachrisson on excellence in finishing, *J. Clin. Orthod.* 20:460-482, 536-556, 1986.
3. Lee, R.T.: The lower incisor bonded retainer in clinical practice: A three-year study, *Br. J. Orthod.* 8:15-18, 1981.
4. Artun, J.; Spadafora, A.T.; and Shapiro, P.A.: A 3-year follow-up study of various types of orthodontic canine-to-canine retainers, *Eur. J. Orthod.* 19:501-509, 1997.
5. Bantleon, H.P. and Droschl, H.: A precise and time-saving method of setting up an indirectly bonded retainer, *Am. J. Orthod.* 93:78-82, 1988.