

A Method for Light-Cured Indirect Bonding

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Preadjusted appliances demand a high degree of precision in bracket placement. Although the advantages of indirect bonding have been well documented, it is still an infrequently used technique.^{1,2} All methods involve placing the brackets on a working cast and then transferring the setup to the patient's mouth using transfer trays^{3,4} or jigs.⁵ The adhesive can be chemically cured,¹ light-cured,^{2,4-6} or even thermal-cured.³ If a light-cured adhesive is used with a tray technique, the tray has to be transparent enough to allow light transmission.

Memosil CD, a material originally designed for bite registration, is a silicone-based, addition-cured elastomer of medium viscosity that we have found ideal for transfer trays. It is transparent and easy to mix, and it sets rapidly, in about three minutes. It is stiff enough to act as a tray, but is easily removed from the mouth once the adhesive has been cured. Accidental removal of the brackets with the tray, which can be a problem with other materials, almost never occurs.

Technique

- 1. Pour a bubble-free cast, and mark the bracket positions.
- 2. Coat the labial surfaces of the teeth to be bonded with a thin layer of polyvinyl acetate (PVA) adhesive. We have experimented with a number of different separating media, but have found that this common household glue works best in preventing adhesion of the light-cured resin to the plaster teeth. Allow the PVA adhesive to dry completely.
- 3. Brush a thin layer of the unfilled resin onto each bracket base, and light-cure it for 30 seconds per bracket.
- 4. Add the filled composite to the bracket bases, and position the brackets on the cast. Remove any excess adhesive.
- 5. Cure each bracket with a light unit for 30 seconds from the occlusal and 30 seconds from the gingival.
- 6. Inject the Memosil over the brackets with a syringe (Fig. 1). The material comes in a double-cartridge system with disposable tips to simplify mixing and application. Place the Memosil so that it covers all the buccal, occlusal, and lingual surfaces of the teeth to be bonded (Fig. 2). Allow the tray to set for 10 minutes, even though three minutes is usually sufficient.
- 7. Soak the cast and Memosil tray in cold water for 20 minutes, until the plaster is fully saturated. This softens the PVA adhesive and allows the tray and embedded brackets to be peeled off the cast.
- 8. Trim away excess composite from around the brackets with a scalpel. Use a small excavator or green stone to remove any PVA adhesive remaining on the surface of the composite (Fig. 3).
- 9. Etch the teeth to be bonded as usual. Paint a thin layer of unfilled resin over the etched enamel and over the cured composite in the tray. Place the Memosil tray in the mouth, and light-cure each tooth for 30 seconds (Fig. 4).
- 10. Peel the transfer tray away from the teeth. Cut the Memosil with a scalpel if necessary to ease its removal.

Conclusion

We have found that this method, which is simpler than other indirect techniques, produces very few bond failures. Light curing allows the operator plenty of time to place the resin on the brackets and

the tray in the mouth. Memosil CD is an ideal material from both the laboratory and the clinical standpoints. □

FIGURES



Fig. 1 Memosil injected over brackets on working cast.



Fig. 2 Memosil tray completed.



Fig. 3 Residual PVA adhesive removed from tray.

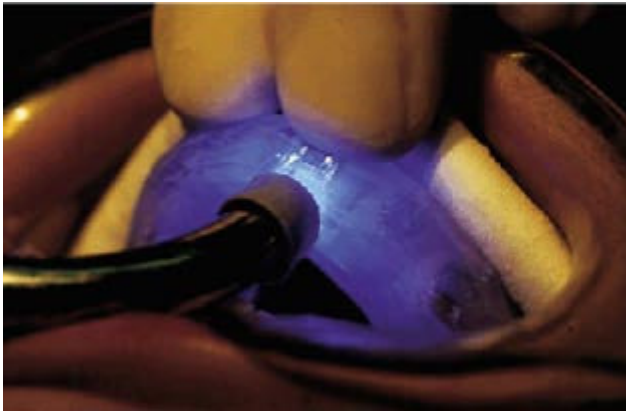


Fig. 4 Light curing of brackets through tray.

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FOOTNOTES

- 1 Heraeus Kulzer, Inc., 4315 S. Lafayette Blvd., South Bend, IN 46614.