

CLINICAL AID

A Light-Focusing Tool for Bonding Fiber-Reinforced Composite Retainers

When a deep bite cannot be completely corrected, the lower incisors may contact the upper incisors in the middle of the clinical crowns. In this situation, a maxillary lingual retainer must be bonded either close to the gingival margin or at the incisal edge. The first option may compromise periodontal health and produce long and unwieldy lever arms; the second makes the interproximal retainer much more noticeable. Fiber-reinforced composite (FRC) retainers, which are practically invisible, can be placed much closer to the incisal edge than conventional twisted or braided lingual wires without becoming unesthetic.¹

The incisal positioning not only avoids any inflammatory reaction to the material, but facilitates better oral hygiene. In addition, because less masticatory force is exerted at the tooth-retainer interface, the bond failure rate should be lower. The polymer matrix of the FRC retainer adheres chemically to the bonding composite, which also improves bond strength compared to the mechanical adhesion of wire retainers.

Bonding Procedure

The EverStick Ortho* FRC retainer can be accurately contoured to the lingual tooth sur-

faces at the bonding appointment, which means advance fabrication by the laboratory technician is not required. The length of the retainer can easily be adjusted with a small, surgical scissor before bonding.

It is important not to bond an FRC retainer to individual tooth surfaces, as would be done with a lingual wire retainer. Because the resistance of the fibers is longitudinally oriented, breakage can occur in any unsupported interproximal areas. Therefore, both the etchant and the bonding composite should be applied in a broad strip that runs the length of the retainer (A).

An FRC retainer must be adapted and light-cured to one tooth surface at a time, with the flowable composite applied at least one tooth in advance of contouring. Since the material becomes inflexible as soon as it is exposed to the curing light, however, inaccurate light application will cause the FRC strip and the composite to harden on adjacent teeth before the retainer is properly adapted.

For more precise control, we have fabricated a focusing device from the cut-off tip of a bonding syringe (B). The focusing tip reduces the diameter of the light emission so that each section of the FRC retainer can be isolat-



ed between two double-ended spatulas for curing (C).

After the entire FRC retainer has been bonded, it should be covered by a thin layer of composite to provide additional stability and a smooth surface. The final result is a highly functional, almost invisible retainer (D).

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Discussion

In a previous article, we recommended the use of flowable composites with added chroma particles for bonding FRC retainers, because they make it easy to identify excess composite for removal.² We have found, however, that this material tends to discolor the retainer after a few months. Therefore, we now recommend the use of a standard flowable composite.**

REFERENCES

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2. Geserick, M.; Ball, J.; and Wichelhaus, A.: Bonding fiber-reinforced lingual retainers with color-reactivating flowable composite, *J. Clin. Orthod.* 38:560-562, 2004.

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