

Bifix QM - Luting of posts with Futurabond DC

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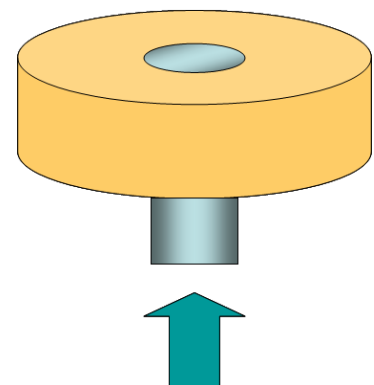
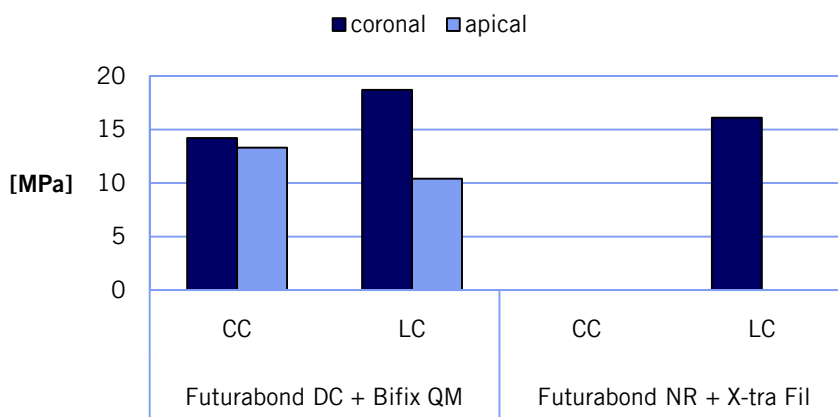
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Adhesive luting of root posts is often a compromise because pure self-curing bonds frequently exhibit poorer adhesive values than light-curing, but light-curing bonds cannot always be accessed with a curing light. Separate light-curing in an open root canal before the post is positioned can actually lead to stricture. Independent of the curing, an additional risk exists for separately etching the dentine. The hindered accessibility makes the crucial adherence to the etching duration nearly impossible. Unfortunately, traditional self-etches, which cannot be over-etched, are chemically incompatible with dual- and self-etching composite and luting systems. The self-etching, dual-curing Futurabond DC used in combination with Bifix QM offers a solution without the usual compromises.

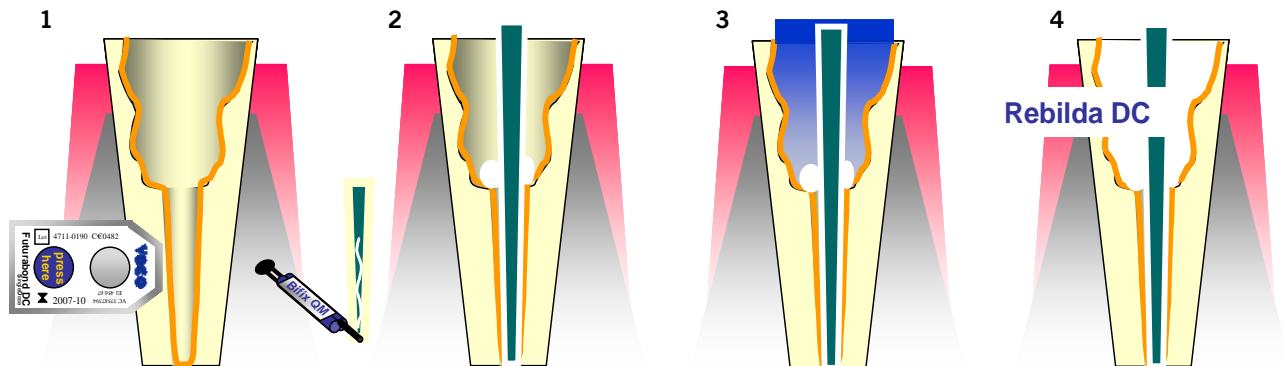
University of Erlangen dentine extrusion experiment

The adhesion values after light-curing for Futurabond DC and Futurabond NR are equivalent, depending on development, and reach tensile bond strength of ca. 39 MPa (μ TBS) on dentine with restorative composites.^[1] Shear bond strength values were measured to be between 25 MPa (unconditioned) and 36 MPa (with additional enamel etching) on enamel.^[2] The adhesion strength for pure chemical-curing ("CC") ideally should not be significantly lower than the value for light-curing (LC). At the University of Erlangen, both were tested in a dentine extrusion test in combination with Bifix QM and Futurabond DC where a fixed post was expelled from a slice of dentine. This test reflects the load situation in the root canal better than tensile or shear bond strength tests. In order to be able to compare the values to tensile and shear bond strength, a test with Futurabond NR and X-tra Fil, a filling composite, was conducted as a reference.^[3]



Picture 1: Shear bond strength of various luting materials (24 h, 37 °C water storage, then thermocycling 6/60 °C, 1000 cycles)

The graphic shows that the adhesion from Bifix QM with Futurabond DC achieves more than 80% of the dentine bonding strength of a light-cured, bonded filling composite in the root canal, coronal and apical, after pure chemical curing. The pure light-curing achieves even higher values for coronal due to the consistency of Bifix QM, but, as expected, lower for apical since the light capacity is reduced. Thus combined use, light-curing after insertion of the post, yields the best results. Pure chemical curing, however, is also equally sufficient.



1. Application of Futurabond DC on all surfaces inside the cavity
2. Wet the post with Bifix QM (or Rebilda DC QM) and insert
3. Only then light-cure the entire cavity
4. Core build-up can continue without delay

Conclusion: Bifix QM used in combination with Futurabond DC offers a safe solution for adhesive luting of root posts.

[1] A. I. Abdalla, H. Y. Elsayed, F. Garcia-Godoy, *Am. J. Dent.* **2006**, *21*, 233-238.

[2] Günay et al. MH-Hannover, BZÄK, DGZMK, Deutscher Zahnärztetag 2006 Erfurt, Poster #8.

[3] Frankenberger et al., University of Erlangen, 2006, VOCO GmbH, data on file.