

Five-year Effects of Chlorhexidine on the In Vitro Durability of Resin/Dentin Interfaces

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Resumen

Purpose: To evaluate the effect of an acid containing 2% chlorhexidine (Ac/CHX) or a 2% CHX aqueous solution (Aq/CHX) on the immediate and 5-year bonding properties of resin/dentin interfaces produced by two adhesives. The presence of CHX in these interfaces was also evaluated under micro-Raman spectroscopy.

Materials and Methods: Forty-two molars were ground to expose a flat dentin surface. In the control group, the surfaces were etched with conventional phosphoric acid, and Prime&Bond NT (PB) and Adper Single Bond 2 (SB) were applied. In Ac/CHX, an acid containing 2% CHX was applied after adhesive application. In the Aq/CHX group, an aqueous solution of 2% CHX was applied for 60 s after etching. After placing the restoration, specimens were prepared and tested using the microtensile bond strength test (μ TBS, 0.5 mm/min) immediately or after 5 years. For nanoleakage (NL), specimens at each period were immersed in silver nitrate solution and examined by EDX-SEM. In addition, specimens at each period underwent examination for CHX using micro-Raman spectroscopy. Data were submitted to appropriate statistical analysis ($\alpha = 0.05$).

Results: After 5 years, NL was more pronounced in the control than in the Ac/CHX or Aq/CHX ($p < 0.001$). Significant reductions in the μ TBS were observed for all groups; however, they were more pronounced for the control ($p < 0.001$). CHX was still present in the hybrid layers Ac/CHX or Aq/CHX groups after 5 years.

Conclusion: The use of a 2% chlorhexidine-containing acid or the application of an aqueous CHX primer may increase the long-term stability of resin/dentin interfaces.

Palabras clave

Palabras clave de autor: adhesive systems; chlorhexidine; water sorption; nanoleakage; microtensile bond strength; longevity

KeyWords Plus: RESIN-DENTIN INTERFACES; MATRIX METALLOPROTEINASES; BOND STRENGTH; CLINICAL-PERFORMANCE; COLLAGEN DEGRADATION; CYSTEINE CATHEPSINS; RINSE ADHESIVES; CONTAINING ACID; MMP INHIBITORS; NANOLEAKAGE

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Editorial

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