



0094

Effect of VPT Antiseptic Agents on Dentin Bonding After Aging

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Objectives To evaluate the effect of antiseptic agents used for hemostasia control and pulp lavage in vital pulp therapy (VPT) on microtensile bond strength (μ TBS) to dentin after 6-month aging, using a universal adhesive, with self-etch (SE) and etch-and-rinse (ER) strategies.

Methods Exposed dentin surfaces of 40 human molars were randomly divided into 8 groups ($n=5$) according to the (I) antiseptic agent (untreated [Control], 2.5% NaOCl for 5 minutes [NaOCl_5], 2.5% NaOCl for 10 minutes [NaOCl_10] or 2% chlorhexidine for 5 minutes [CHX_5]) and (II) adhesive strategy ([SE] or [ER]). After universal adhesive application (Scotchbond Universal Plus) crowns were restored with composite (Ceram.x Spectra ST). Specimens were sectioned into beams and half of them were subjected to μ TBS test after 24 water storage and the rest after 6 months. Failure mode was determined (FM) and data were analyzed by three-way ANOVA and Student's t test ($p<0.05$), without considering pre-test failures (PF).

Results Table shows μ TBS mean values in MPa (sd). No relevant effect of the antiseptic solutions on μ TBS was detected as values were only influenced by the adhesive strategy ($p<0.001$), aging ($p<0.001$) and interaction between them ($p<0.013$). After 24 hours, higher bond strength values were determined when the adhesive was applied with an ER strategy, although after 6-month aging a significant reduction was detected.

Conclusions The antiseptic solutions evaluated for pulpal hemostasia seem not to affect μ TBS. ER adhesive strategy yielded higher bond strength values immediately in comparison with SE strategy. However, both strategies showed similar values after aging. ER application mode was associated to a significant reduction on μ TBS after 6-month water aging.