

THE EFFECTIVENESS OF SODIUM ASCORBATE ON BOND STRENGTH OF A RESIN-BASED OBTURATION SYSTEM TO SODIUM HYPOCHLORITE- TREATED RADICULAR DENTIN

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ABSTRACT

The present in-vitro study evaluated the effectiveness of sodium ascorbate and chlorhexidine on improving the push-out bond strength of Resilon® obturation system to sodium hypochlorite-treated radicular dentin. Twenty one single rooted teeth were selected and the coronal 2/3 of their root canals was prepared by Pecho Reamers. Irrigation with 5.25% sodium hypochlorite (NaOCl) was carried out during and after instrumentation. The teeth were divided into three groups, according to the test solution: 10% Sodium ascorbate or 2% Chlorhexidine (CHX), or distilled water. The root canals were obturated by cold lateral compaction. A total of eleven 2mm-thickness discs/group were obtained. The bond strength testing was performed using cylindrical plunger at 0.5 mm/min. Visual inspection determined failure mode and its frequency. Scanning electron microscopic SEM revealed the ultra structure of the failure pattern. Results showed that treatment with sodium ascorbate presented the highest mean bond strength (1.8 MPa) followed by water (1.6MPa) and the least was CHX (1.4 MPa), with no statistical difference $P=0.76$. Within the sodium ascorbate group, most samples (82%) had cohesive or mixed type failure. Both the water and CHX groups had almost half of the samples (55%) with mixed and cohesive failure, while 45% had adhesive sealer/dentin failure.

In conclusion, the overall mean push-out bond strengths didn't represent a substantial improvement of the Resilon adhesive system. However, the low incidence of pure adhesive failure with sodium ascorbate treatment favors its usage. Furthermore, improvement should be directed to the sealer cohesive strength and its coupling to resilon cones.

KEYWORDS: Sodium ascorbate, Resilon adhesive obturation system, push-out bond strength.

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