Evaluation of the cleaning potential of amyl acetate on pulp chamber dentin impregnated with epoxy resin-based cement

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ABSTRACT

INTRODUCTION: The persistence of endodontic cement residues in the pulp chamber and adhesive interface between dentin and adhesive systems can cause tooth discoloration and compromise the clinical longevity of restorations, leading to endodontic treatment failure. OBJECTIVE: The aim of this study was to evaluate the cleaning potential of 95% ethanol, acetone and amyl acetate used to remove epoxy resin-based sealer residues from pulp chamber dentin and their microstructural effects. METHODOLOGY: One hundred and eighty bovine incisor specimens were divided into nine groups according to the cleaning protocol: ET (ethanol); AC (acetone); AA (amyl acetate); E1: AA+AC; E2: AA+ET; E3: AC+ET; E4: AA+AC+ET; PC (positive control) and NC (negative control). All groups were impregnated with epoxy-sealant resin except NC. Ninety specimens were divided into groups for evaluation of residue persistence and amount of open dentinal tubules by SEM. The other ninety were subjected to Knoop microhardness evaluation. Residue persistence data were subjected to Kruskal Wallis and Dunn tests. Open dentinal tubules and microhardness data were subjected to one-way ANOVA and Mann Whitney tests. RESULTS: Protocols AA and E4 showed the lowest residue persistence. Group E4 had the highest incidence of open dentinal tubules. Protocols ET and E4 showed the lowest reduction in dentin microhardness. CONCLUSION: Therefore, the combination of AA, AC and ET is the most effective and safe protocol to remove epoxy cement residues in pulp chamber dentin.

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