



A Comparative Evaluation of Time Dependent Polymerization Shrinkage of Acrylic Resin Post Patterns in Different Storage Environment An In Vitro Study

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ABSTRACT

Statement of problem: The dimensional stability of post patterns made using auto polymerizing pattern resin upon storage is unclear. Post patterns are often stored in air or water but there still exists the risk of cross contamination along with possible dimensional changes upon prolonged storage.

Purpose: The purpose of this in vitro study is to evaluate and compare the effect of time dependent dimensional changes of acrylic resin post patterns stored in distilled water, 1% NaOCl and air at room temperature.

Materials and methods: One mandibular first premolar tooth was endodontically treated and the canal was filled with Guttapercha. After the removal of 2/3 of the filling , 45 direct ARPs were prepared using GC Pattern resin. The samples were then divided into 3 groups based on storage environments: distilled water, NaOCl 1% and air. The dimensional changes in coronapical length


(CAL), coronal (CD) and apical diameter (AD) of ARPs were measured in 4 consecutive times (immediately after polymerization, 1, 3 and 24 hours later). All the data were analyzed by ANOVA using MS Excel software at significant level of 0.05.

Results: After 24 hours, the ARPs, which were stored in air, contracted 0.012, 0.06 and 0.2 mm in AD, CD and CAL; the ARPs, which were stored in water, showed 0.02, 0.06 and 0.05 mm decrease in AD, CD and CAL; the ARPs, which were stored in NaOCl 1%, showed slight expansion of 0.02mm in CAL after 3 hours but showed a decrease of 0.005, 0.04 and 0.03 mm decrease in AD, CD and CAL after 24 hours.

Conclusion: According to the study, the best environment for storage of ARPs is 1 % NaOCl as it can also be used for preventing cross contamination, provided the storage time is reduced to less than 3hours.

CLINICAL IMPLICATIONS

The results of this study indicate that the best storage environment for direct post patterns is 1% NaOCl which will give the added benefit of prevention of cross contamination along with minimal compromise in dimensional stability.

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