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Temperature Rise under Normal and Caries-Affected Primary Tooth Dentin Disks during Polymerization of Adhesives and Resin-containing Dental Materials

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Abstract:
The purpose of this study was to compare the temperature rise under normal and caries-affected primary tooth dentin during photopolymerization of two adhesives and resin-containing restorative materials.
Caries-affected and normal dentin disks were prepared from extracted primary molars with only mesial or distal approximal caries (4 mm in diameter, 1 mm in height). Temperature rise during photopolymerization of adhesive materials was measured with a J-type thermocouple wire that was connected to a data logger. Data were analyzed with two-way ANOVA and independent samples t-test.
Temperature rise under caries-affected primary tooth dentin disks was higher than that of normal primary tooth dentin disks during polymerization of both adhesive systems and resin-containing dental materials ($p<0.05$). It was found that adhesive systems induced a higher temperature rise during polymerization as compared to the resin-containing restorative materials ($p<0.05$). In particular, temperature rise during polymerization of adhesive materials exceeded 5.5°C under caries-affected primary tooth dentin.

Key words:
Temperature rise, Caries-affected primary tooth dentin, Photopolymerization

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