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Effect of Curing Technique and Emax Type on the Polymerization of Dual Cure Resin Cement

Abstract

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Objective: The objective of this study was to evaluate the effect of different types of curing techniques and composition of two different types of emax materials on degree of conversion and polymerization of dual cure resin cement after 24 hours.

Materials and Methods: Resin cement discs (90 total) were made by polymerization through two types of Emax discs: Ivoclar IPS e.max (n=30) and GC LiSi Press (n=30). 30 samples without an Emax disc were used as controls. For each group, three subgroups according to the type of curing technique were determined: 10 samples were made by a continuous curing technique, 10 samples were made with a soft start curing technique, 10 samples were made by an intermittent curing technique. Each of 90 resin discs were evaluated with the degree of conversion test by Fourier transform infrared spectroscopy (FTIR) after 24 hours.

Results: GC LiSi Press had a higher polymerization rate than Ivoclar IPS e.max. The intermittent curing technique sub-group had the highest polymerization rate compared to the other techniques independent of the emax type. Significant differences between each type of emax and curing procedure type were found using a one-way ANOVA test ($p < 0.05$).

Conclusion: GC LiSi Press allowed for more light curing in comparison to Ivoclar IPS e.max, and the intermittent curing technique increased polymerization rate of dual cure resin cement. The degree of conversion for dual cure resin cement was directly influenced by the type of emax veneer and the curing method.