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Evaluation of Setting Time of Chlorhexidine-Diacetate Added Glass-Ionomer Cement

D. Dervis, C. Canevi, L. Turkun, M. Turkun
Ege University, Izmir, Turkey

Objectives Many regions around the globe have limited access to electricity, water or dental facilities, thus self-adhesive materials used with the atraumatic restorative technique (ART) are suitable and affordable restorative options for them. Furthermore, a restorative material should reduce the risk of residual caries and provide an antibacterial environment. Thus, the aim of this study is to evaluate the setting time of a chlorhexidine-diacetate added glass-ionomer cement.

Methods Nova Glass-L (Imicryl, Konya, Turkey) glass-ionomer cement (GIC) without addition was used as a control group (group 1). Chlorhexidine-diacetate was added to the GIC at concentrations of 1.25% (group 2), 1.75% (group 3), and 2.5% (group 4). Forty-disc specimens (n=10) were prepared following the manufacturer's instructions in metal molds (8x5mm). Setting time measurements were performed with a device manufactured according to ISO 9917-2:2017 standards. A needle applying 400gr of load every 10 seconds was inserted in the molds containing freshly mixed GIC materials. When the needle tip is not visible from the other side of the mold, the setting time was terminated. The results were analyzed using ANOVA and Tukey tests (p<0.05).

Results 2.5% chlorhexidine-diacetate addition increased the setting time of GIC (3.25min) compared to the control group (2.8min) (p<0.05). The setting time of 1.75% (3.08min) and the other groups compared to the control was not significant. However, the difference between 1.25% (2.72min) and 2.5% additions was also found to be significant.

Conclusions GIC with 1.25% or 1.75% chlorhexidine-diacetate additions did not affect the setting time of the material.