Resistance of Hydraulic Calcium Silicate Cements to Dislodgment in Short- and Long-term Assessment.

Abstract
PURPOSE: To investigate the resistance to dislodgment produced by Biodentine (Septodont) and White-MTA (Angelus) after immersion in phosphate-buffered saline (PBS) for different durations.

MATERIALS AND METHODS: Dentin disks 1 ± 0.1 mm thick were obtained from the middle third of the roots of 6 human maxillary canines. On the coronal surface of each dentin disk, four 0.8-mm-diameter holes were drilled. Then the slices were halved using a low-speed saw diamond disk, and the two holes in each half were filled with one of the two tested materials. Each filled half was immersed in PBS solution (pH 7.2) either for 7 days (short term) or 60 days (long term) at 37°C. The push-out test was performed after both time periods. A general linear model (GLM) for repeated measures ANOVA was used to verify the effect of the material and duration of contact with PBS on the push-out strength. The material was considered as the within-subject contrast and the contact duration as the between-subjects effect (p < 0.05).

RESULTS: Repeated measures GLM indicated a significant impact of material and time on the push-out strength of the samples (p = 0.000 and p = 0.033, respectively). Biodentine significantly improved the push-out strength compared to MTA at both times (p = 0.000). The lack of significance in the interaction between material and time indicates that PBS immersion positively influenced the push-out values of both tested materials.
CONCLUSION: Long-term PBS immersion positively influenced the resistance to dislodgement from dentin of all cements tested. The Biodentine cement provided greater resistance to push-out force than did the MTA.