Effects of Bleach and Acidic Beverages on the Microhardness of Alkasite Material

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introduction

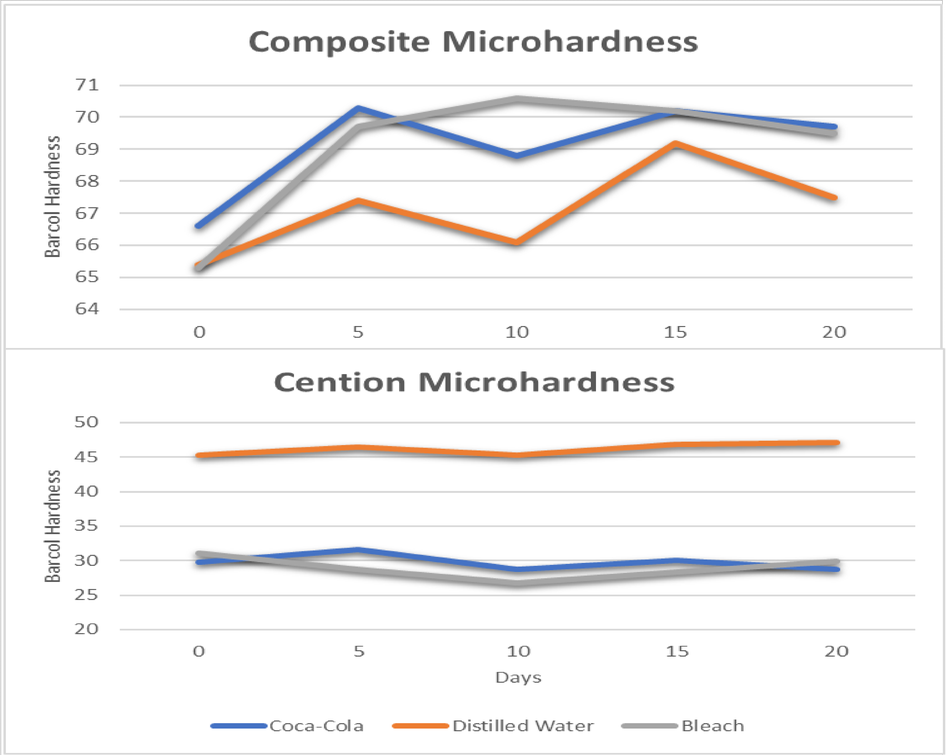
Microhardness has drawn much attention in the literature because it is an important physical characteristic of dental materials and determines the clinical durability of the restoration. The restorative dental materials should withstand the neutral and acidic media in the oral environment without disruption of the surface and loss of material. Studies on the effects of bleaching agents on the microhardness of dental materials have capitulated contradictory results on the surface characteristics of composite resins after the use of bleaching agents.

Cention-N (Ivoclar Vivadent) is a bulk fill restorative material that belongs to a new category of filling material called “Alkasite”. It uses an alkaline filler, capable of releasing acid-neutralizing ions and fluorides.

objectives

The purpose of this study is to evaluate the effect of acidic beverages and bleaching agents on the surface microhardness of composite resin and Cention-N.

results



Intra-group and inter-group comparison of the effects of acidic beverage and bleach through the F-test demonstrated p-values >0.11. These results indicate the null hypothesis cannot be rejected and favors no statistically significant effect on microhardness for both cention and composite over the period of 20 days.

methods

Eighteen specimens, composed of Cention-N, and composite resin were prepared with a cylindrical aluminum mold with an internal diameter of 5 mm and depth of 2 mm and were further divided into three subgroups with three samples in each subgroup. Group 1: Cention-N by Ivoclar Vivadent and Group 2: Filtec Z250 XT composite resin material by 3M. The material was polymerized using a LED. All light-cured specimens were stored in distilled water in a lightproof container for 24 hours at 37^{o} C . Each group is further divided into three subgroups depending on the solution used. Subgroup A: Coco-cola, Subgroup B: Distilled water and subgroup C: In-office Ultradent Opalescence Boost bleaching agent. Microhardness was measured by using a barcol hardness tester at six different points on the samples and this was recorded as a baseline value. Sub-group A and B were immersed for five minutes three times daily. Sub-group C bleaching agent was applied topically for the recommended 20 minutes once daily. After 5,10,15 and 20 days, the microhardness was measured as described above.

summary

The acidic beverage and in-office bleaching material decreased the microhardness of Cention-N and composite but the changes were not statistically significant. More studies should be done to evaluate this effect.