

EVALUATION OF COLOR STABILITY OF DIFFERENT REPAIRING MATERIALS.

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Abstract

MTA (mineral trioxide aggregate) is a repair cement based on calcium silicate and is widely used in repair procedures in dentistry. MTA can be used in several procedures especially in Endodontics. Although it stands out for its biological propensity of tissue repair induction, this material can also bring on the darkening of the dental tissue. In scientific literature there are some hypotheses about the cause of this darkening and, consequently, new products have been launched on the market to try to avoid this color change. This study aims at evaluating if there is color change on the teeth caused by some calcium silicate cement available on the market (white MTA, HP MTA, MTA Flow). Commercially available cements will be handled according to the manufacturer. The material will be inserted into the previously cleaned, sectioned bovine teeth with a cavity with a diameter corresponding to 5.0 mm and 1.5 mm of depth prepared on the lingual surface. Each group will have 5 (five) teeth. The samples will be stored in separate flasks immersed in water and kept in an oven at 37°C during the analysis period. The color analysis will be performed by means of spectrophotometry. The color will be determined before insertion of the cement, immediately after insertion, and after a period of 28 days, 60 days and 90 days. The results of the tests will be submitted to D'Agostino and Pearson's tests to choose the most appropriate statistical test ($p < 0.05$).

Key words:

Endodontics, Zinc oxide, Color.

Introduction

To evaluate the potential for dental color alteration of high-plasticity cements, MTA HP and MTA Flow, in comparison with MTA Angelus with calcium tungstate as radiopacifier; and alternative the formulations proposed, MTA Flow + 5% zinc oxide (ZnO) and an Experimental cement (powder of tricalcium silicate, bismuth oxide, ZnO and liquid of distilled water and water-soluble polymer).

Results and Discussion

Thirty-five bovine teeth were prepared and filled with the cements ($n=5$). Triple antibiotic paste and unfilled samples were the positive and negative controls, respectively. The specimens were immersed in water and the color assessed with a spectrophotometer: before filling (B), 24 hours (24h), 28 days (28d) and 90 days after filling. The color change (ΔE) and the luminosity ($*L$) were calculated. The statistical analysis was performed using nonparametric Kruskal-Wallis and Dunn test ($p < 0.05$).

The analysis of delta E values showed that all the materials presented color alteration after the evaluated periods. High $*L$ values were found for MTA HP and Experimental, with statistical difference in relation to MTA Flow at 90d ($p > 0.05$). The addition of ZnO inhibited dental staining of MTA Flow after 90d of contact with dentine.

Conclusions

The MTA Flow presented potential for dental discoloration, which is inhibited by the addition of zinc oxide. The experimental cement presented similar luminosity values than that presented by MTA and MTA HP.

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