

Abstract

Comparison of apical sealing in root-treated teeth with gutta-percha and AH plus, AH26, Sure seal root and Endoseal MTA sealers by the lateral compaction method

Introduction: The main goal of root canal treatment is cleaning and shaping all surfaces of the root canal and then three-dimensional filling to prevent the penetration of microorganisms into the canal space. Complete elimination of microorganisms is not possible due to the anatomical complexities of the root canal system, so obtaining an excellent seal is essential to prevent bacteria from entering the oral cavity; therefore, the present study was conducted with the aim of comparing the apical seal of teeth treated with gutta-percha and AH26, AHplus, Sure seal root and Endoseal MTA sealers.

Materials and methods: In this experimental study, 60 single-rooted and single-canal mandibular premolar teeth were collected. Four teeth were randomly selected as the control group and the rest of the samples were randomly divided into four groups of 14. The canals were prepared and then filled with gutta-percha and four types of sealer AH plus, AH26, sure root, Endoseal MTA by lateral compaction method. In the positive and negative control groups, the canals were filled with gutta-percha and without sealer by lateral compaction method and then the samples were divided into two halves by a diamond disc. The linear leakage of methylene blue from the apex of the root to the most coronal part where the dye penetrated was observed and recorded using a stereomicroscope, and the data was analyzed using the one-way analysis of variance between groups, Comparisons were considered significant at $P < 0.05$.

Results: The results showed that the lowest apical microleakage in AH plus sealer, AH26, and sure-seal root, Endoseal MTA. There was a significant difference in the apical seal of the investigated sealers with the positive and negative control groups; Also, a significant difference was observed in the apical seal of AH26 sealer with Endoseal MTA and sure-seal root sealers and AH plus sealer with Endoseal MTA and sure-seal root sealers ($P < 0.05$), but a significant difference in the apical seal of Endoseal MTA sealer with sure-seal root was not observed ($P > 0.05$), and also significant difference in the apical seal of AH plus sealer with AH26 was not observed ($P > 0.05$).

Conclusion: Epoxy resin-based sealers provided a better apical seal than bioceramic-based sealers.

Keywords: Endoseal MTA sealer, AH26 sealer, AH plus sealer, sure-seal root sealer, apical seal, gutta-percha, by lateral Condensation Method.