Antibacterial Activity of Endodontic Restorative Materials against Oral Bacteria

ASAII Tomohiro, AIDA Natsuko,
FUJI Rie and MORINAGA Kazuki

Department of Endodontics and Clinical Cariology, Tokyo Dental College

Abstract

Purpose: Elimination of microorganisms from the root canal is necessary to resolve apical periodontitis. Antibacterial activity is required in the temporary filling to protect against entry of bacteria into the root canal. The present study was designed to investigate the antibacterial activity of temporary filling materials against oral bacteria.

Methods: Zinc oxide eugenol cement, hydraulic cement, fluorine-containing hydraulic cement, polymeric filling material and photopolymerized material were used. The antibacterial activity of these materials against Porphyromonas gingivalis ATCC 33277, Fusobacterium nucleatum TDC 100, Parvimonas micra JCM 12970, Streptococcus mutans Ingbritt and Streptococcus sanguinis ATCC 10580 were investigated by the diffusion method. Data were analyzed using the Kruskal-Wallis test at a significance level of 5%.

Results: The antibacterial activity against P. gingivalis of zinc oxide eugenol cement was significantly higher than those of hydraulic cement and photopolymerized material. Antibacterial activity against F. nucleatum was also observed for zinc oxide eugenol cement, hydraulic cement, and fluorine-containing hydraulic cement. Against P. micra, only zinc oxide eugenol cement showed antibacterial activity, and against S. mutans and S. sanguinis, antibacterial activity was observed for zinc oxide eugenol cement and fluorine-containing hydraulic cement. High antibacterial activities were observed for zinc oxide eugenol cement and fluorine-containing hydraulic cement, but none of the photopolymerized material specimens showed activity.

Conclusion: Antibacterial activity differed between temporary filling materials, suggesting that the antimicrobial constituents of temporary filling materials influence antibacterial activity.

Key words: Temporary filling materials, Antibacterial activity, Endodontic infection