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An Evaluation of Microbial Leakage After Using MTAD as a Final Irrigation

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Abstract

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Cleaning the root canal is not possible without using proper irrigation. The aim of this in vitro study was to evaluate the effect of MTAD as a final irrigant on bacterial leakage of the root canal, and its interaction with two conventional root canal sealers. We used 132 extracted human maxillary anterior teeth. The teeth were randomly divided into three experimental groups (n = 40) and two groups (n = 6) of positive and negative control. In group 1, the smear layer was not removed and irrigation was performed using 5.25% NaOCl. In group 2, the smear layer was removed using EDTA, and in group 3, the smear layer was removed using MTAD according to the clinical protocol of use. The teeth in each group were obturated with gutta-percha and AH-Plus or Rickert sealer. The coronal portion of each root was placed in contact with inoculum of *Streptococcus mutans* in Brain Heart Infusion (BHI) culture media. Each root tip was placed in one bottle containing sterile BHI. Mean duration of bacterial penetration in groups 2 and 3 was significantly greater than in group 1, but there was no significant difference between groups 2 and 3. According to our findings, it takes longer for bacteria to penetrate when either EDTA or MTAD is used for smear layer removal. The root canals obturated with AH Plus showed significantly longer duration of resistance to bacterial penetration than canals obturated with Rickert. © 2007 American Association of Endodontists.

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Author keywords

Bacterial leakage; irrigation; MTAD; root canal sealers; smear layer

Indexed Keywords

EMTREE drug terms: AH Plus; biomedical and dental materials; citric acid; doxycycline; edetic acid; epoxy resin; hypochlorite sodium; MTAD (intra canal irrigant); N Rickert sealer; N-Rickert sealer; polysorbate; root canal filling material; unclassified drug

EMTREE medical terms: analysis of variance; article; dental surgery; endodontics; human; incisor; microbiology; *Streptococcus mutans*; tooth disease

MeSH: Analysis of Variance; Citric Acid; Dental Leakage; Doxycycline; Edetic Acid; Epoxy Resins; Humans; Incisor; Polysorbates; Root Canal Filling Materials; Root Canal Irrigants; Root Canal Obturation; Smear Layer; Sodium Hypochlorite; *Streptococcus mutans*

Medline is the source for the MeSH terms of this document.

Chemicals and CAS Registry Numbers: citric acid, 126-44-3, 5949-29-1, 77-92-9, 8002-14-0; doxycycline, 10592-13-9, 17086-28-1, 564-25-0; edetic acid, 150-43-6, 60-00-4; hypochlorite sodium, 7681-52-9; polysorbate, 9005-63-4; AH Plus; Citric Acid, 77-92-9; Doxycycline, 564-25-0; Edetic Acid, 60-00-4; Epoxy Resins; MTAD (intra canal irrigant); N-Rickert sealer; Polysorbates; Root Canal Filling Materials; Root Canal Irrigants; Sodium Hypochlorite, 7681-52-9

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