Endo@Prep™ EDTA

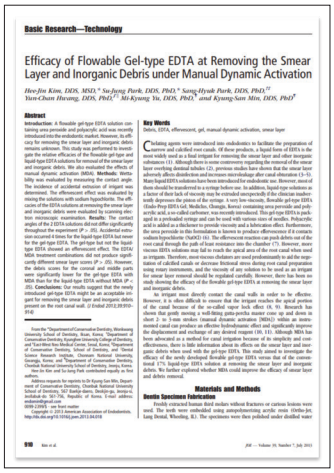
FDA
ROOT CANAL CLEANSER

A patented root canal cleaning and preparation with a great chelation and lubrication effects.

Advantages

- Removal of inorganic substances through chelation (EDTA Ca^{2+})
- Easy application with lubricating action
- Provides a clean, smear-free canal wall

Results



Basic Research—Technology

Efficacy of Flowable Gel-type EDTA at Removing the Smear Layer and Inorganic Debris under Manual Dynamic Activation

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Abstract

Introduction: A flowable gel-type EDTA solution containing urea peroxide and polyacrylic acid was recently introduced into the endodontic market. However, its efficacy for removing the smear layer and inorganic debris remains unknown. This study was performed to investigate the relative efficacies of the flowable gel-type and liquid-type EDTA solutions for removing the smear layer and inorganic debris. We also evaluated the effects of manual dynamic activation (MDA). Methods: Wettability was evaluated by measuring the contact angle. The incidence of accidental extrusion of irrigant was determined. The effervescent effect was evaluated by mixing the solutions with sodium hypochlorite. The efficacies of the EDTA solutions at removing the smear layer and inorganic debris were evaluated by scanning electron microscopic examination. Results: The contact angles of the 2 EDTA solutions did not differ significantly (P > .05). Accidental extrusion of the irrigant occurred 4 times for the liquid-type EDTA but never for the gel-type EDTA. The gel-type but not the liquid-type EDTA showed an effervescent effect. The EDTA/MDA treatment combinations did not produce significantly different smear layer scores (P > .05). However, the debris scores for the coronal and middle parts were significantly lower for the gel-type EDTA with MDA than for the liquid-type EDTA without MDA (P < .05). Conclusions: The flowable gel-type EDTA, a newly introduced gel-type EDTA might be an acceptable irrigant for removing the smear layer and inorganic debris present on the root canal wall. (J Endod 2012;38:910–914)

Key Words

Debris, EDTA, effervescent, gel, manual dynamic activation, smear layer

Cleaning agents were introduced into endodontics to facilitate the preparation of narrow and calcified root canals. Of these products, a liquid form of EDTA is the most widely used as a final irrigant for removing the smear layer and other inorganic substances (1). Although there is some controversy regarding the removal of the smear layer overlying dentinal tubules (2), previous studies have shown that the smear layer should be removed to improve the adhesion of root canal sealers and obturation (3–5). Many liquid EDTA solutions have been introduced for endodontic use. However, most of them should be transferred to a syringe before use. In addition, liquid-type solutions as a factor of their lack of viscosity may be extruded unexpectedly if the clinician inadvertently depresses the piston of the syringe. A very low-viscosity, flowable gel-type EDTA (Endo-Prep EDTA Gel, Medclin, Chungju, Korea) containing urea peroxide and polyacrylic acid, a so-called carbomer, was recently introduced. This gel-type EDTA is packaged in a prefeeded syringe and can be used with various sizes of needles. Polyacrylic acid is added as a thickener to provide viscosity and a lubrication effect. Furthermore, the carbomer is added to the solution to produce effervescence when mixed with a sodium hypochlorite (NaOCl) (6). This effervescence may help the solution to run out of the root canal through the path of least resistance into the chamber (7). However, more viscous EDTA solutions may fail to reach the apical area of the root canal when used as irrigants. Therefore, most viscous chelators are used predominantly to aid the negotiation of calcified canals or decrease frictional stress during root canal preparation using rotary instruments, and the viscosity of any solution to be used as an irrigant for smear layer removal should be regulated carefully. However, there has been no study showing the efficacy of the flowable gel-type EDTA at removing the smear layer and inorganic debris.

As irrigant must directly contact the canal walls in order to be effective. However, it is difficult for the irrigant to reach the apical third of the root canal because of the so-called vapor lock effect (8, 9). Research has shown that gentle moving a well-fitting gutta-percha master cone up and down in short 2- to 3-mm strokes (manual dynamic activation [MDA]) within an instrumented canal can produce an effective hydrodynamic effect and significantly improve the displacement and exchange of any desired reagent (10, 11). Although MDA has been advocated as a method for canal irrigation because of its simplicity and cost-effectiveness, there is little information about its effects on the smear layer and inorganic debris when used with the gel-type EDTA. This study aimed to investigate the efficacy of the newly developed flowable gel-type EDTA versus that of the conventional 17% liquid-type EDTA solution at removing the smear layer and inorganic debris. We further explored whether MDA could improve the efficacy of smear layer and debris removal.

Materials and Methods

Dentin Specimen Fabrication

Freshly extracted human third molars without fractures or carious lesions were used. The teeth were embedded using autopolymerizing acrylic resin (Ortho-Jet, Lang Dental, Wheeling, IL). The specimens were then polished under distilled water

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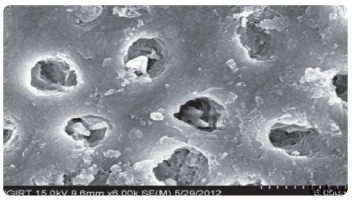
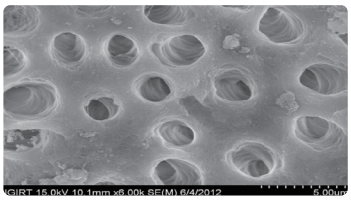
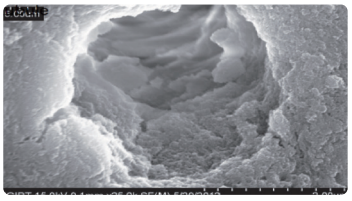
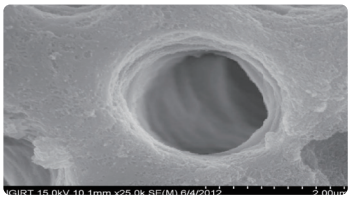


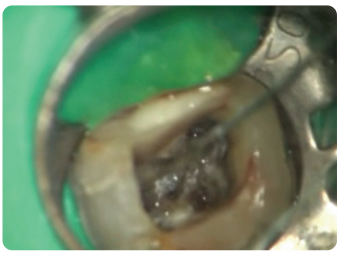






<References> Jeonbuk National University School of Dentist
Conservative Dentistry Professor Kyung-San Min's Treatise

Application



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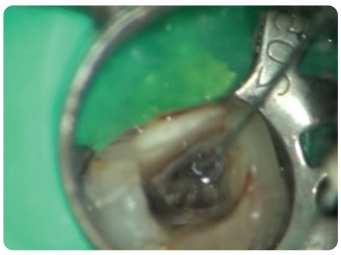
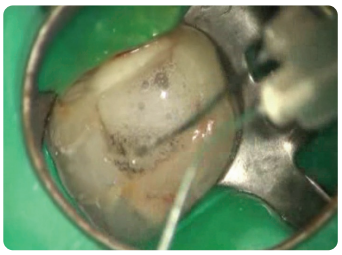


2. Apply NaOCl



3. Bubbling effect

EDTA LIQUID TYPE FDA

CONTENTS

506-1 MD-Solution EDTA 100ml x 1ea

EDTA GEL TYPE FDA

CONTENTS

501-1 Endo@Prep EDTA Gel 9g x 2ea