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Retreatability of TotalFill Hiflow Bioceramic and AH Plus Root Canal Sealers by Using the New Re-Treaty versus Protaper Universal Retreatment Files Systems in Mandibular Premolar Teeth with Single Canal: A Micro-CT In Vitro Study V.1

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Keywords: Endodontic retreatment; micro-CT; Re-Treaty files; ProTaper Universal Retreatment; TotalFill HiFlow; AH Plus; bioceramic sealer; gutta-percha removal; residual filling material; dentinal microcracks; mandibular premolars; in vitro study., root canal sealer, dentinal microcrack formation across root third, ah plus root canal sealer, mandibular premolar teeth with single canal, human mandibular premolars with single canal, extracted human mandibular premolar, extent of dentinal microcrack, mandibular premolar teeth, dentinal microcrack formation, retreatability of totalfill hiflow bioceramic, reduced dentinal damage, dentinal microcrack, totalfill hiflow bioceramic, dentinal damage, single canal, ct in vitro study, remaining obturation material, established protaper universal retreatment system, type of sealer, protaper universal retreatment system, protaper universal retreatment files system, differences in retreatment efficiency, obturation material, in vitro study

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Nassar Faiz Alkhaldi

Abstract

This in vitro protocol describes a micro-computed tomography (micro-CT)–based comparative study evaluating the retreatability of TotalFill HiFlow bioceramic and AH Plus root canal sealers in extracted human mandibular premolars with single canals using the new Re-Treaty rotary file system versus the ProTaper Universal Retreatment system. Specimens will be standardized, obturated, and randomly assigned to four experimental groups, and pre- and post-retreatment micro-CT scans will be used to quantify residual filling material and assess dentinal microcrack formation across root thirds.
It is expected that the study will demonstrate differences in retreatment efficiency between the two systems in terms of remaining obturation material and the extent of dentinal microcracks, with potential variation depending on the type of sealer used. The findings may clarify whether the newer Re-Treaty system provides improved cleaning efficiency and/or reduced dentinal damage compared with the established ProTaper Universal retreatment system.

Attachments

PDF

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511KB

Materials

This in vitro protocol describes a micro-computed tomography (micro-CT)–based comparative study evaluating the retreatability of TotalFill HiFlow bioceramic and AH Plus root canal sealers in extracted human mandibular premolars with single canals using the new Re-Treaty rotary file system versus the ProTaper Universal Retreatment system. Specimens will be standardized, obturated, and randomly assigned to four experimental groups, and pre- and post-retreatment micro-CT scans will be used to quantify residual filling material and assess dentinal microcrack formation across root thirds.
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