



**MICRO COMPUTED TOMOGRAPHIC EVALUATION OF
SEALING ABILITY OF DIFFERENT BIO-CERAMIC
ENDODONTIC SEALERS: AN
IN VITRO STUDY**

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BY:

SAYA HADI RAOUF NAKISHBENDI

B.D.S.

SUPERVISED BY:

ASSIST. PROF. DARA HAMARASHID SAEED

B.D.S., M.Sc., Ph.D.

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KHARMANAN
2720 K.

DHU AL- HIJAH
1442 A.H.

ABSTRACT

Background: The goal of obturated root canal is to offer bacterial-tight seal, obtained by suitable quality of obturation with limited voids and gaps creation in the obturated root canals.

Objective: Aim of the present study was to compare sealing ability of four bioceramic (BC) sealers, including Endosequence, BioRoot, TotalFill, and MTA bioceramic root canal sealer with bioceramic coated guttapercha (BCC) cone or conventional guttapercha (GP) in comparison to a clinical reference standard AH Plus sealer using high-resolution micro-computed tomography (CT) analysis.

Methods: Ninety freshly extracted single canal premolars were included in the study. All the samples were prepared using 2 Shape rotary system. After completion of the instrumentation, the samples were randomly divided into nine groups (ten teeth each), based on the sealer and GP that used for obturation. Using Endosequence, BioRoot, TotalFill and MTA BC root canal sealer with either conventional or BC coated GP as experimental groups and AH plus sealer with conventional GP used as a control group. All groups were obturated with (35/.06) single cone obturation. After setting, a high resolution (micro-CT) was used to determine percentage of voids within the canals.

Result: There was non-significant difference in root filling percentage between Endosequence, BioRoot and MTA BC root canal sealer that obturated with bioceramic coated GP ($P > 0.05$). Similarly, there was no significant between bioceramic coated GP and conventional GP in TotalFill and MTA BC root sealer with respect to root filling percentage ($P > 0.05$). Ah plus with conventional GP showed significant difference in the void creation in a comparison with the other experimental groups.

Conclusion: With the limitation of the study, it can be concluded that none types of sealers used in the current study prevented creation of the voids. Besides BC sealer with bioceramic coated guttapercha or conventional GP provides superior sealing ability to AH Plus sealer. In addition, the use of bioceramic coated guttapercha showed a slightly more favorable result than conventional GP.

Key words Micro-CT, sealing ability, bioceramic sealer, void, bioceramic coated guttapercha.