

19th American Dental Congress

December 08-10, 2016 Phoenix, USA

Investigation of the efficacy of passive ultrasonic irrigation versus irrigation with reciprocating activation: An ESEM study

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The objective of this *ex-vivo* study was to compare the efficacy of passive ultrasonic irrigation (PUI) versus a new activation system using reciprocating motion (EasyClean-EC) to remove debris from the root canal walls at six predetermined apical levels, using environmental scanning electron microscopy (ESEM). Mesio Buccal root canals of 10 mandibular molars were prepared with a 30/.05 final instrument. The specimens were then embedded in flasks containing heavy-body silicone, cleaved longitudinally and 6 round indentations were made into the apical region of the buccal half at 1 mm intervals. The same specimens were employed to prepare a blank control group (no debris), a negative control group (completely covered by debris) and two experimental groups: passive ultrasonic irrigation and irrigation with reciprocating activation. Standardized images of the indentations were obtained under ESEM and assessed by two examiners. The amount of debris was then classified using a 4-category scoring system. Kappa's test was applied to determine inter-examiner agreement, whereas the Kruskal-Wallis, Dunn and Friedman tests were used to compare scores. The EC group had results statistically similar to those of the blank control group for all six-root levels examined. The PUI group had results statistically similar to those of the negative control group for the 3 most apical levels and to the blank control group for the 3 most cervical levels. Activating the irrigant with a reciprocating system (EC) promoted more effective debris removal from the more apical regions of the root canal when compared to PUI.

Biography

Augusto Shoji Kato has completed his PhD from São Leopoldo Mandic Center for Dental Research, Brazil. He is an Assistant Professor in the Post-graduation Endodontics courses since 1995 and Member of the Campinas Endodontic Team. He is a Researcher in the Osaka Dental University, Osaka, Japan (2001).

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