

Efficiency of the GentleWave® System in Removing Smear Layer and Tissue Debris from the Root Canal System

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PURPOSE

The smear layer removal capability of the GentleWave® System was evaluated and compared to the standard endodontic treatment in in-vitro human molars with complex anatomies using microscopic visualization with scanning electron microscopy (SEM) analysis. This study was published in the Journal of Oral Health (2015).

METHODS

Eight molars with complex anatomy were selected for this study. The molars were treated using the GentleWave System or with standard active ultrasonic irrigation. For the GentleWave System treatments, the canals were instrumented to ISO #15/.04. For the standard treatments, the canals were instrumented to ISO #35/.04. The teeth were prepared for SEM evaluation. The specimens were scored to measure the resultant smear layer and tissue debris. Statistical analysis was performed.

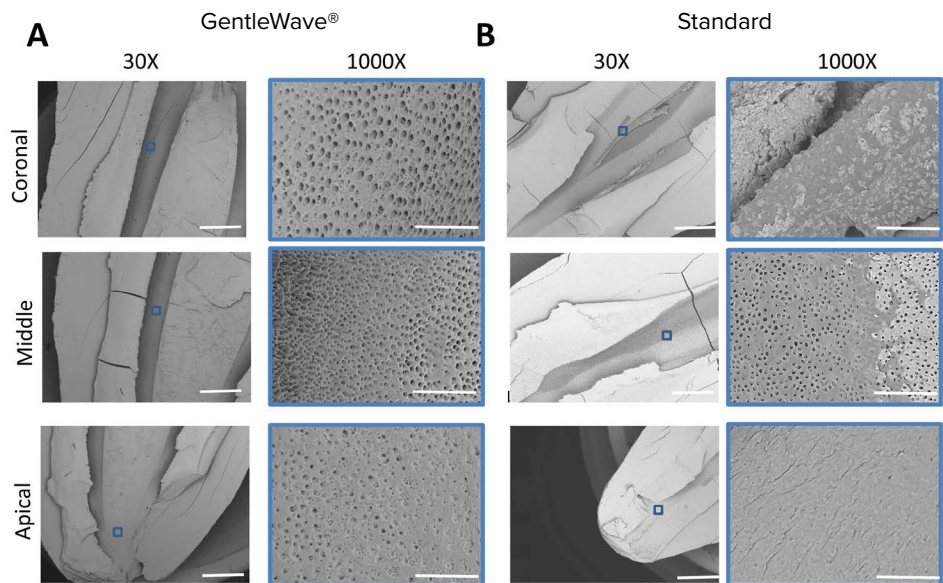


Figure 1. The figure shows representative SEM images of mesiobuccal roots in maxillary molars. The images are taken at 30x and zoomed in at 1000X. The scale bar represents 1 mm and 50 μ m respectively.

CONCLUSIONS

Completely cleaned root canal systems were found after minimal instrumentation and using the GentleWave System.

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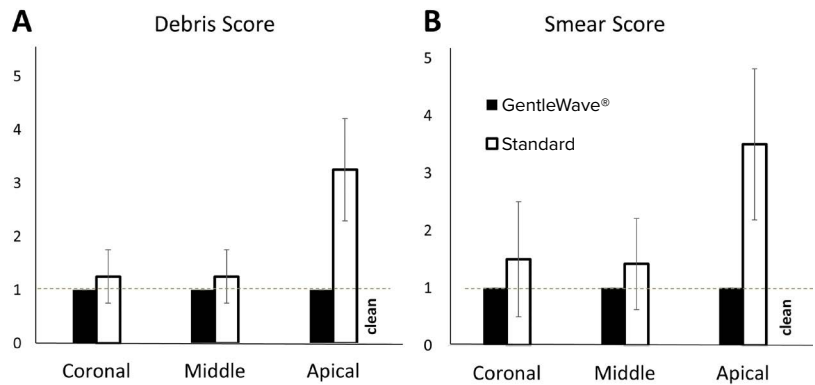


Figure 2. The figure shows the average and standard deviation of the debris and smear score in the coronal, middle, and apical regions of eight molars. When teeth were cleaned using the GentleWave System, the debris and smear scores showed consistently clean results (score=1).



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