ABSTRACT

Difference of Apical Negative Pressure and Sonic Activated Irrigation System on Root Canal Wall Cleaning Efficacy

Background: *Debridement is the essential part yet challenging process in endodontic treatment especially in the apical portion of the root canal. Irrigation gained improvement because the complexity of root canal anatomy and limitation in instrumentation. Studies have shown how less effective conventional needle irrigation in cleaning the apical areas. The aim of this study was to investigate the effectiveness of three irrigation techniques in removing smear layer in root canal wall.* ***Purpose:*** *To compare smear layer removal with apical negative pressure irrigation (Endovac system) and sonic activated irrigation(Eddy system).* ***Method :*** *A Total of 27 extracted single – root mandibular premolar were rendomly divided into three groups after cleaning and shaping with ProTaper rotary files. Canal were instrumented size 30.06. In one group, teeth were irrigated by conventional needle irrigation as control. The other group were irrigated with Endovac and the other group with Eddy tips. Irrigation was performed with 2,5 % sodium hypochlorite (NaOCl) and 17% ethylenediaminetetraceticacid (EDTA) in all teeth. After instrumentation and irrigation teeth were sectioned longitudinally mesio-distal halves and examined under scanning electrone microscope for smear layer evaluation. Anova and LSD test was used to compare the amount of smear layer remaining based on scoring after photomicrographs section.* ***Results:*** *The median amount of smear layer remaining was 2,0 for Endovac group (P<.05). The median amount of smear layer remaining was 1,4 for Eddy group and 4,2 for the conventional needle irrigation group (P>.05).* ***Conclusion:*** *Sonic activated irrigation resulted better smear layer removal than apical negative pressure irrigation and conventional needle irrigation.*

Keyword: *Root Canal debridement, Negative Pressure Irrigation, Sonic Activation Irrigation, smear layer, Irrigation*