ABSTRACT

Aim:

The aim of this study was to compare the root canal cleaning efficacy between Self Adjusting File and a Wave One File system along with two different root canal irrigants by SEM evaluation.

Materials and methods:

The study samples comprised of 50 recently extracted intact, non-carious, human mandibular premolars. Endodontic access cavity were prepared, working length was determined and assigned to five groups of ten specimens each (n=10). The root canals were prepared in each group as follows In Group 1 up to #30 size K file with saline, Group 2. SAF file with NaOCl . Group 3 SAF file used with QMix.Group 4 Primary Wave One file was used with NaOCl and Group 5 Primary Wave One file along with QMix . The crowns were decoronated with diamond disc at the cemento–enamel junction. Deep grooves were cut on the centre of each root both on the buccal and lingual surfaces. The roots were longitudinally split into two halves along the groove with chisel and mallet. One half of each tooth was selected and prepared for SEM examination.

Results:

Group 3(SAF with QMix) , followed by Group 5(Wave One with Q Mix) had statistically significant cleaned canal walls compared to other groups. The Group 5 differs from Group 3, which had statistically significant more amount of debris and homogeneously covered smear layer in the Apical third.In Group 2 and Group 4 more than 50% of the root canal walls were covered with debris and complete coverage of dentinal tubules by smear layer were evident at all the thirds.

Conclusion :

The SAF, operated with continuous flow of QMix resulted in root canals that were free of debris and almost completely free of the smear layer at coronal, middle and apical thirds. When operated with sodium hypochlorite ,SAF resulted in superficially debris free canals and has smear layer in all thirds. Wave One gives similar results with these irrigants as SAF in coronal and middle thirds but it has least cleaning efficacy at the apical third.

Key Words:

Self Adjusting Files, Wave One , QMix.