 DOI: 10.21608/adjalexu.2022.273602

EVALUATION OF APICAL DEBRIS EXTRUSION AFTER RETREATMENT USING DIFFERENT ROTARY FILE SYSTEMS (IN VITRO STUDY)

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INTRODUCTION

Non-surgical retreatment is the first-line treatment option when initial therapy fails.(1) During retreatment, apical extrusion of debris may occur resulting in postoperative pain, flare-ups, or delay of healing and long term failure.(2) Thus, evaluation of apical debris extrusion is important to evaluate after retreatment.

METHODOLOGY

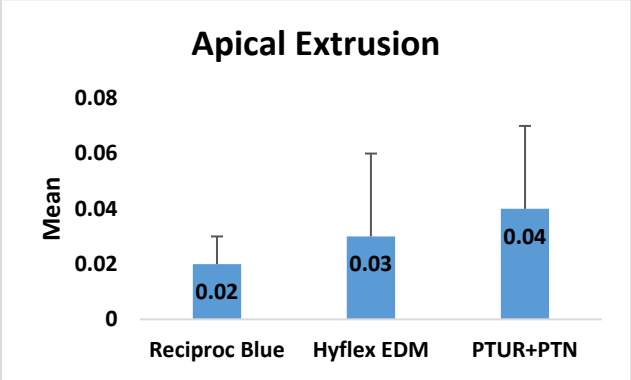
39 extracted permanent mandibular first molars were collected. Access cavity was prepared and the mesiobuccal canal was instrumented using the ProTaper Next system up to size X2 at a working length 1mm short of the apex. Obturation was completed via the cold lateral compaction technique. Teeth were stored at 37 °C in 100% humidity for two weeks to allow the sealer to set. Then specimens were divided into three equal groups according to the system used for retreatment. **Group 1:** Reciproc Blue (R 25), **Group2:** Hyflex EDM (One file), Group **3:** ProTaper Universal Retreatment system followed by X2. During retreatment, teeth were attached to an experimental model similar to that described by Myres and Montgomery.(3) Pre-weighed tubes were used to collect apically extruded debris, and a bent needle was inserted alongside the tooth, to equalize the internal and external air pressure. After retreatment, the eppendorf tubes were incubated for two weeks at 37 °C to allow all the liquid to dry out, before a second weighing for the tube after retreatment. The amount of extruded debris was calculated as the pre and post retreatment weights of the tube (W2-W1).

Figure (1): Experimental set-up for collection of apically extruded debris

RESULTS

Results of this study showed that, apical extrusion occurred with all groups with no statistically significant difference between any of them at P value >0.05.

However, it was found that the ProTaper Retreatment files extruded the highest amount of debris followed by the Hyflex EDM and finally the Reciproc Blue .



DISCUSSION

Findings of this study were consistent with previous studies showing no statistically significant difference in the amount of extruded debris between rotation and reciprocation.(4)

CONCLUSION

Within the limitations of this study, it is concluded that the debris extrusion is an inevitable event during retreatment regardless of the instrumentation technique used.

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DOI: 10.21608/adjalexu.2022.273602

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