

Recreating the Magic of Endodontics

COMPARISON OF THREE DIFFERENT ROTARY RETREATMENT FILE SYSTEMS

INTRODUCTION

Non-surgical endodontic retreatment is an attempt to re-establish healthy periapical tissues after inefficient treatment or reinfection of an obturated root canal system because of coronal or apical leakage. Among several treatment alternatives, orthograde retreatment should be considered as the first choice of treatment.

MATERIALS AND METHOD

Sixty extracted mandibular pre molars were taken, and roots were standardised using a diamond disc operated at low speed to be 16 mm in length. Canals were shaped with a WaveOne (Primary) file. Initially, Canals were obturated using Wave One gutta percha cones coated with AH Plus sealer. Later, the Calamus 3D Obturating System was used for the downpack and backfill procedure. After completion of obturation, coronal 2 mm of gutta-percha was removed, and the coronal access was sealed with Coltosol F. All teeth were stored in a humidifier at 37°C in 100% humidity for 3 weeks to allow complete setting of the sealer. All samples were randomly divided into three groups with 20 specimens each. Samples from Group I, II and III were treated with Mtwo (VDW, Munich, Germany), Protaper D (Dentsply Maillefer, Ballaigues, Switzerland) and R Endo (Micro-Mega, Besancon, France) file systems respectively. Preparation was deemed complete when there was no gutta percha covering the instrument. Removed filing material on canal walls was evaluated through Radiographs, Cone beam computed tomography (CBCT) and on stereomicroscope.

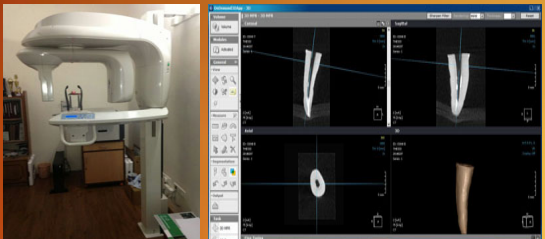
GROUP I
Mtwo
Retreatment File
(VDW, Munich, Germany)



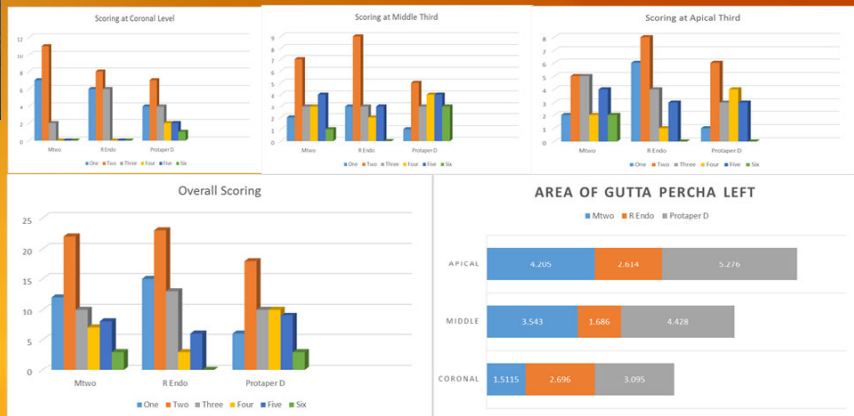
GROUP II
Protaper D
(Dentsply Maillefer, Ballaigues, Switzerland)



GROUP III
R Endo
(Micro-Mega, Besancon, France)



Statistical analysis to evaluate data was made using one-way ANOVA and post hoc analysis (unpaired "t" test). The data obtained were parametric. A p-value of = 0.05 was used to determine significance.



Stereomicroscope Evaluation:

The coronal, middle and apical thirds of the specimens were evaluated separately for remaining gutta-percha using the following categories

Category	Amount of Gutta percha left
1	Gutta-percha completely removed.
2	One to three small (< 2 mm extension) islets of gutta-percha.
3	More than three small (< 2 mm extension) islets of gutta-percha.
4	Large rest of gutta-percha (> 2 mm extension).
5	Gutta-percha covering more than 5 mm.
6	Several islets (> 2 mm extension) of gutta-percha.

CONCLUSION

Remnants of the filling material were observed in all samples regardless of the group examined. Within the limitation of this study, R Endo (Micro-Mega, Besancon, France) proved to be the most effective instrumentation system for retreatment. It removed the maximum amount of gutta percha from the root canals of the sample.

Mtwo (VDW, Munich, Germany) removed the maximum gutta percha coronally when compared to R Endo (Micro-Mega, Besancon, France) and Protaper D (Dentsply Maillefer, Ballaigues, Switzerland). However, in the middle and the apical thirds, R Endo (Micro-Mega, Besancon, France) proved to be the most effective (Anova p<0.05). However, further studies with a greater sample size are required. More in-vivo studies are required for long-term conclusions on the efficacy of retreatment file systems.

References

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RESULTS

STEREOMICROSCOPIC EVALUATION

In the coronal part of the root canals, Mtwo showed the highest number of scores 1 and 2. This was followed by the R Endo file system. Preparation with Protaper D resulted in the lowest number of scores 1 and 2. In general, only minor remnants of gutta-percha and sealer were found in this part of the root canal.

In the middle part of the root canals, R Endo showed the highest number of scores 1 and 2; followed by Mtwo and then Protaper D.

In the apical part of the root, R Endo produced the cleanest root canal walls followed by Mtwo and Protaper D. In general, the results for the apical third were worse than for the coronal and the middle thirds, leaving larger amounts of filling material.

Overall scoring at all the levels proved R Endo (Micro-Mega, Besancon, France) removed gutta percha better than the other files followed by Mtwo (VDW, Munich, Germany) and Protaper D (Dentsply Maillefer, Ballaigues, Switzerland).

CBCT EVALUATION

In the cervical thirds, the area covered by remaining material was the least for samples prepared with the Mtwo retreatment file. This was followed by R Endo and then Protaper D.

In the middle and apical thirds, the area of remaining material was found to be the greatest with Protaper D. This was followed by Mtwo and then R Endo.