



COMPARISON OF THE EFFICACY OF RETREATMENT FILES IN TEETH OBTURATED WITH GUTTA PERCHA AND RESILON.

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ABSTRACT

Aim: To evaluate the amount of residual filling material after retreatment with R-Endo files in teeth obturated with Gutta-Percha and Resilon.

Materials and Methods: Twenty freshly extracted single rooted human maxillary anterior teeth were selected. The teeth were instrumented with EndoSequence files to 0.06 taper #35 file. The teeth were divided into two groups and group I was obturated with Gutta percha and AH-Plus, group II with Resilon-Epiphany sealer. The teeth were stored at 37 for two weeks. Retreatment was done with R-Endo files and the teeth were sectioned. The amount of residual filling material was analysed under stereomicroscope at coronal, middle and apical thirds. The data was statistically analysed.

Results: Residual filling material was observed in both the groups.

Conclusion: The teeth obturated with Resilon-Epiphany showed cleaner walls compared to teeth obturated with Gutta-Percha and AH-Plus.

KEYWORDS : Resilon, R-Endo files, Retreatment, Gutta_Percha.

INTRODUCTION

Nonsurgical retreatment requires regaining access to the entire root canal system through complete removal of the core filling material and sealer (1). Despite the development of new technologies and materials, failures are common in endodontic treatment due to persistent bacterial infection (2,3). The first therapeutic option in such cases is endodontic retreatment, for which the complete removal of root filling material is necessary.

Different techniques have been indicated for retreatment which include hand and rotary instrumentation combined with chemicals, heat or solvents, ultrasonic instruments either in combination or alone(4,5). Nickel–titanium (NiTi) rotary instruments have been used successfully in root canal cleaning and shaping(6). Recently, different companies have come up with newer Ni-Ti rotary retreatment files like R-Endo system which consists of 4 rotary files and one hand file (Re, R1, R2, R3, and Rm). Rm is only for initial penetration because all rotary files are non end cutting. Re is used in initial bulk removal of filling material material with 0.12% taper and 15mm length. R1 is used in coronal third with 0.08% taper 15mm length. R2 is used in middle third with 0.06% taper and 19mm. R3 is used in apical third with 0.04% taper and 23mm length with diameter(7).

Gutta-percha (GP) is the most commonly used root canal filling material (8), which exhibits properties such as biocompatibility, dimensional stability and ease of removal(9). However, it does not adhere to any type of sealers(10). Resilon (Pentron Clinical Technologies, Wallingford, CT, USA) is a thermoplastic, synthetic polymer based root canal filling material with manipulation properties similar to Gutta- Percha. Therefore the purpose of the present study was to compare the retreatment efficacy of rotary files in teeth obturated with Gutta-Percha and Resilon.

MATERIALS AND METHODS:

Twenty single rooted human maxillary anterior teeth were selected for the study. The teeth were kept in hydrogen peroxide and washed with water and stored in normal saline until use. Access cavity preparation was done with #2 round carbide bur ((Mani, Prime dental, Mumbai, India). Working length was determined with #15 K file until the tip of the file was visible at the apex and 1mm was subtracted. A glide path was established and cleaning and shaping was done with EndoSequence (Brassler, USA) files. The canals were instrumented to 0.06 taper # 35 file. The patency of the canal

between instrumentation was maintained with # 10 K file 0.5mm through the apex. During instrumentation with each file, irrigation was done with 2ml of 5% sodium hypochlorite. After the canals were prepared, final irrigation was done with 10ml of 17% EDTA and 10ml of 5% sodium hypochlorite. The canals were dried with absorbent points and the teeth were divided into two groups of ten specimen each.

The canals in group I were obturated with Gutta-Percha (Dentsply Malliefer, Switzerland) and AH Plus (Dentsply Malliefer, Switzerland) sealer with lateral condensation. Heated instrument was used to seal the orifices. The canals in group II were obturated with Resilon and Epiphany sealer according to the manufacturer's instructions using lateral condensation technique. The orifices were light cured for 40 seconds. The access cavities in both the groups were sealed with Cavit (3M ESPE, Germany).

The teeth were radiographed in buccolingual and mesiodistal views to check the adequacy of root canal fillings and stored at 37° c with 100% humidity for two weeks.

RETREATMENT PROCEDURE:

The temporary seal was removed with a fissure bur. The retreatment procedure in both the groups was carried out with R- Endo files (Micromega, France). First Rm hand file was used to create a pathway. Next Re rotary file was used with circumferential filing 1-3mm beyond the pulp chamber floor. R1 rotary file was used to remove filling from coronal third to the beginning of middle third. R2 file was used from middle third to the beginning of apical third. R3 file was used to the working length with circumferential filing. The criteria for completion of retreatment was the presence of clean filings on the flutes of the files and smooth canal walls. Finally, the canals were irrigated with EDTA and dried with absorbent points.

The teeth were sectioned longitudinally with diamond discs and the amount of residual material was evaluated using stereomicroscope (Magnus) under 15x magnification. The area of the residual material was calculated with Image analysing software and the data was statistically analyzed by t test and one way ANOVA.

RESULTS:

Results have shown that residues of the obturating material were seen in both the groups.

Table 1: Different cleanliness scores in each group in coronal, middle and apical thirds.

	Group I(Gutta Percha)	Group II(Resilon)
Coronal	12.01%	9.0%
Middle	11.8%	16.01%
Apical	6.9%	10.2%

Table 2: Mean and Standard deviation values for group I in coronal, middle and apical thirds.

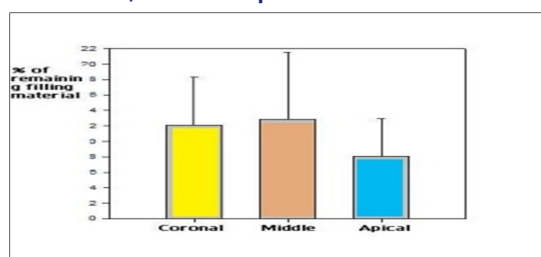
Coronal	11.08 ±5.06
Middle	12.01 ±7.09
Apical	8.2 ±5.0

p-0.26

Table 3: Mean and Standard deviation values for group II in coronal, middle and apical thirds.

Coronal	9.10±4.09
Middle	14.1 ±9.01
Apical	7.20 ±4.6

P-0.27

Graphical representation of residual filling material in Group I and II in coronal, middle and apical third.**Graph 1: ANOVA Group I****Graph 2: ANOVA Group II
Stereomicroscopic images of specimen in Group I and Group II****Figure 1: Group I****Figure 2: Group II****DISCUSSION:**

Complete removal of pre-existing filling material from canals is a prerequisite for successful nonsurgical root canal retreatment(11). This procedure can uncover residual necrotic tissues or bacteria that may be responsible for persistent periapical inflammation(12).

GP is the most commonly used obturation material and its excellent properties have made it the “gold standard” for root canal filling. However, removal of this material during retreatment is not always satisfactory. Resilon was introduced as an alternative filling material for root canals. It is biocompatible and has improved adhesive and sealing properties because of its polymeric nature.(13). Therefore, in the present study GP and Resilon were used for obturation to compare the ability to remove the root canal filling during retreatment when required.

Many techniques have been proposed for retreatment including manual files, Gates glidden drills, heat ultrasonics and solvents. Conventional methods of removing root canal filling can be time consuming and the efficacy of Ni-Ti rotary files have been demonstrated in previous studies(4,11,14). Therefore R-Endo files were used in the present study for retreatment. Resin based sealer was used in the GP group to have a fair comparison with the Resilon group and previous studies have shown that resin sealers adhere to dentin and are more difficult to remove (5,15).

Retreatment procedure was considered complete when there was no evident filling material on the files. As shown in the literature, removal of all traces of filling material and sealer was impossible. This was demonstrated in the present study also as none of the specimen were free of the material or sealer under stereomicroscope. These findings are in correlation with the previous studies (16,17).

The results of the present study demonstrated that even though Resilon-Epiphan system forms monobloc with the canal wall, removal of Resilon-Epiphan left significantly less filling material than GP-AH Plus sealer. These findings are in comparison with other studies(12,14,18).

CONCLUSION:

Within the limitations of this study, residual material was left in both the groups. R-Endo retreatment system removed Resilon-Epiphan more efficiently than GP-AH Plus sealer.

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