39th IACDE National Conference

The Retreatment Efficacy of ProTaper and Hyflex Retreatment Files with Bio-Ceramic Sealer and Epoxy Resin Sealer- A Volumetric Analysis Using CBCT

Aim & Objective

To compare the complete removal of GP and BioRoot RCS/AH Plus root canal sealer in the retreatment cases using the ProTaper retreatment and Hyflex Remover file systems.

Materials

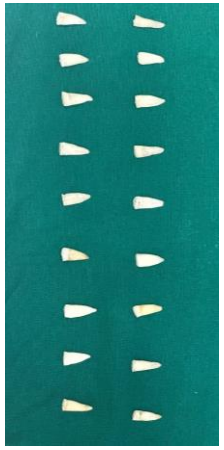
Sample Selection: 60 mandibular premolars standardized to a working length of 15±1mm

Group 1A: GP + BioRoot RCS, PTUR

Group 1B: GP + BioRoot RCS, Hyflex

Group 2A: GP + AH Plus, PTUR

Group 2B: GP + AH Plus, Hyflex



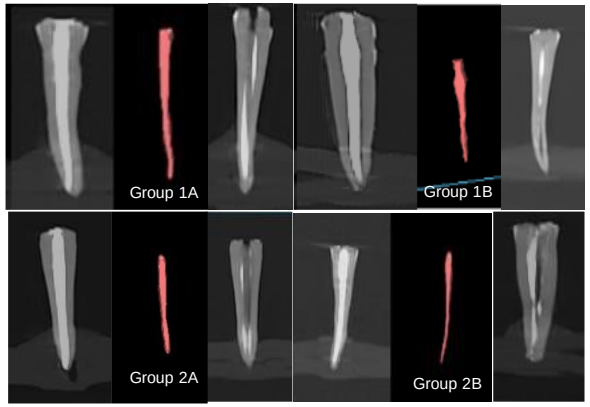
Methodology

Retreatment using ProTaper Universal retreatment files and Hyflex remover

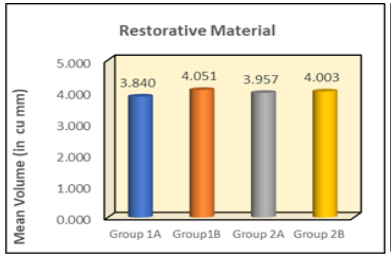
CBCT – Volumetric analysis

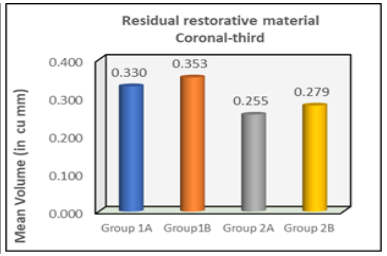
Volume% of remaining= restorative material

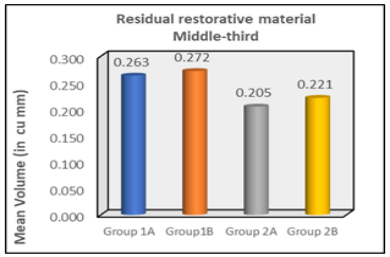
$$\frac{\text{Volume of remaining restorative material} \times 100}{\text{Total volume of material in canal before removing}}$$

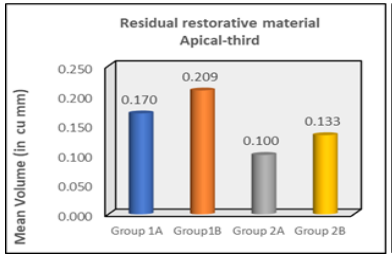


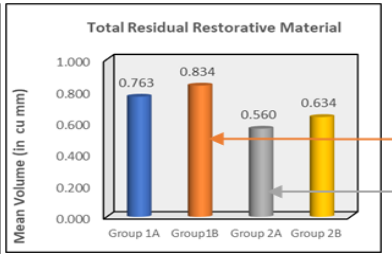
Results











One way ANOVA test
*p<0.05

Maximum residual material in GP + BioRoot RCS, Hyflex *

Minimum residual material in GP + AH Plus, PTUR *

Discussion

- **ProTaper files** showed greater effectiveness than Hyflex in removing root canal fillings, especially in the apical third, resulting in lower residual volumes and improved retreatment outcomes.
- **BioRoot RCS** (bio ceramic sealer) adhered more strongly to canal walls than AH Plus, leading to higher residual volumes, particularly challenging with Hyflex single-file systems.

Conclusion

The strong adhesion of BioRoot RCS to canal walls poses a challenge during retreatment, especially in the apical third. While Protaper files are more effective overall, no system achieved complete removal of the filling material

References

1. Khedmat S, Azari A, Shamshiri AR, Fadae M, Bashizadeh Fakhar H. Efficacy of ProTaper and Mtwo Retreatment Files in Removal of Gutta-percha and GuttaFlow from Root Canals. *Iran Endod J*. 2016;11(3):184-187
2. Purba R, Sonarkar SS, Podar R, Singh S, Babel S, Kulkarni G. Comparative evaluation of retreatment techniques by using different file systems from oval-shaped canals. *J Conserv Dent*. 2020;23(1):91-96. doi:10.4103/JCD.JCD_167_20