

**THE EFFECTIVENESS OF ROTARY AND
HAND INSTRUMENTATION ON THE
REMOVAL OF GUTTA-PERCHA DURING
ENDODONTIC RE-TREATMENT USING TWO
TYPES OF SOLVENTS
(A COMPARATIVE STUDY)**

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By

Eman Jirjees Ahmed

B.D.S

Supervised by:

Prof. Dr. Inas I. Al-Rawi.

B.D.S; M.Sc.

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ABSTRACT

Endodontic treatments are not free of failures and re-treatment of failed cases is a common procedure reflecting an increasing demand to save teeth. This study aimed to assess the efficacy of Hedstrom files, ProTaper rotary files and ProTaper rotary re-treatment files for removal of gutta-percha and sealer from root canals with the aid of xylol (dimethyl-benzene) and Carvene GP solvents (d-Limonene) and measuring the time required for each removal techniques with quantifying the amount of solvent consumed by each group. Sixty extracted single rooted teeth instrumented with ProTaper rotary files following manufacture instructions and obturated with lateral compaction of ProTaper Gutta-Percha points and TubliSeal sealer. After incubation period of one week, the samples randomly divided into two main groups (30 specimens each) according to the solvent employed (group **A** with xylol and group **B** with Carvene) then each group subdivided into three groups (10 samples each) according to the removal technique: group **A1**: Hedstrom files and xylol, group **A2**: ProTaper rotary files and xylol, group **A3**: ProTaper rotary re-treatment files and xylol, group **B1**: Hedstrom files and Carvene, group **B2**: ProTaper rotary files and Carvene, group **B3**: ProTaper rotary re-treatment files and Carvene.

Periapical radiographs taken before and after removal of the filling materials and the images digitized. The percentage of filling material area removed from root canal by different techniques was calculated by MATLAB software. The working time measured with digital stop watch and the amount of solvent used in each group was measured by insulin syringe. Data were analyzed statistically by ANOVA and Student t-test at 5% significant level.

The results showed that Gutta-Percha removal with rotary files better than with hand files and the group that showed better results is group **B2**. The time of removal with aid of Carvene solvent was significantly faster than with xylol solvent in all the groups. The amount of Carvene solvent consumed during removal procedures was significantly less than the amount of xylol solvent. Within the limitation of present

study Carvene solvent could be considered as potential xylol substitute. ProTaper universal system for instrumentation and re-treatment is effective and faster in removing Gutta-Percha.